

# ROCK GARDEN *Quarterly*



Volume 61 Number 2

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Cover: *Phlox hoodii* and *Calochortus nuttallii*. Painting by Carol McLoughlin Kortnik, Joseph, Oregon.

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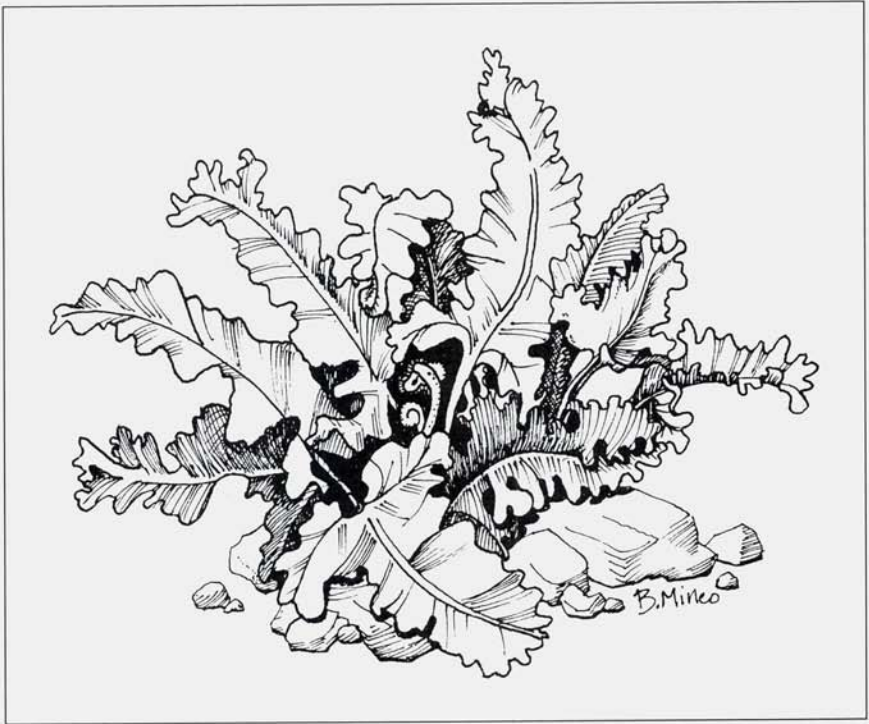
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*Asplenium scolopendrium* 'Kaye's Variety' (drawing by Baldassare Mineo)



# A Western Woodland Garden

Judith I. Jones

The mention of shade gardening elicits ominous nods and melancholy shudders from many western American gardeners. Look up “shade” in a thesaurus, and the connotations are downright medieval: murky, gloomy, abysmal, doleful, forlorn, ghastly, and grim. Yet to the lover of landscapes, shade is also mellow, delectable, enticing, and mysterious.

Not all shaded situations are created equal throughout North America—or even in a single garden. We find high-light shade and low-light shade, moist shade and dry shade, nature’s shade and human-made shade. Ideal shade gently fractures the sunbeams, sifting lacy patterns onto the plants below the trees. Creating magic with cryptogamic plants—ferns, mosses, and their allies—and with flowering plants is nearly effortless in such settings, where the subtleties of color, form, and texture create a panoply of visual effects. In the perfect sylvan setting, the soil is fluffy, well-aged forest duff into which you can plunge elbow-deep without using a spade.

The coastal Pacific Northwest is often viewed as a gardening paradise, yet gardeners here have less than ideal conditions to address in shaded sites. Despite more precipitation than most people enjoy, the forest canopy here is dominated by towering conifers that have evolved to soak up moisture both in the air and on the ground. Thuggish *Thuja plicata* (called “red cedar” on the West Coast) vie with deciduous big-leaf maples (*Acer macrophyllum*) to create an inhospitable environment for the plants of the understory. They are not gentle giants. Even so, judicious plant selection based on observations of natural plant communities can help us set achievable goals for rock gardens in these difficult sites.

Hardcore rock gardeners addicted to buns and alpiners may disdain the subtle attractions of the loose, leafy herbs that tolerate shade. Are those of us who glory in these umbrous regions devoid of common sense? A catchy 1931 Noel Coward tune suggests the contrary: “Mad dogs and Englishmen/Go out in the midday sun.” From Mexico south to Argentina, people enjoy the midday respite of a siesta in covered verandas or shady bowers. Even a few Englishmen know how to appreciate shade, as evidenced by the many wonderful plants that are the legacy of fern-crazed Victorian collectors.

Some rock and alpine gardeners seem to have overlooked the fact that there are rocks in the shade; indeed, large enough rocks can be shade providers themselves, anywhere from sea level to mountaintops. Creating a woodland-inspired "rock garden" setting need not even involve rocks at all; instead, we can utilize old stumps or mossy logs to raise, establish, and enhance plant compositions. Even without importing any elements, we can reshape the terrain to appear as if a rivulet had once meandered through it, and this will offer inviting planting opportunities. Cobble-sized rocks and gravel can be incorporated as part of the "streambed," and larger outcrops of rocks and wood can add new dimensions to environmental niches for shade plants.

It is hard not to want rocks in the garden landscape. I love them all, all types and sizes. This sets me at odds with the purists' insistence that only one type of rock should be used throughout the garden. That may work for those with unlimited budgets who can order truckloads from a single quarry, but it does not work for someone who hauls them in piecemeal. I grew up in southwestern Arizona, where I spent a happy childhood helping build stone walls and paths on a cliff perched above the Colorado River for my mother's desert display garden. My father used many types of rocks in various areas of the garden, welding all the components into a showplace.

Limiting plant choices to those that favor a single soil and rock type is difficult, too, especially in a "stone yard" like mine, which includes various types of lava, basalt, granite, tufa, serpentine, river cobbles, and more, the result of years of hauling home geological treasures. Some collections may only yield enough of one kind of rock for a trough planting, while others may be sufficient to build a substantial bed.

If you have some rocks heavily covered with moss, you can plant them with species adapted to the perfect drainage, lean conditions, and even moisture of this specialized habitat. Shade-loving saxifrages of the "London Pride" type (the *Umbrosa* section), miniature *Heuchera* species, and *Ramonda* are typical choices, along with rock ferns such as the native licorice fern (*Polypodium glycirrhiza*). Mosses are also beautiful in their own right, as George Schenk's book *Moss Gardening* demonstrates. Many of my favorite pteridophytes (ferns and their allies) and angiosperms (conifers and related groups) come from the woodlands of Japan, China, and other parts of Asia.

One of my shaded rock beds encompasses a triangular strip with a northern exposure, between a sidewalk and a wide footing at the base of my log house (photos, pp. 105–107). Two 400-pound, golden-hued griffin sculptures stand guard in front of a sinuous juniper-wood bench set against the house. The eastern end of this strip is in full shade, while the western end flirts with the noonday sun. The native soil, a sandy glacial till, stays evenly moist throughout the summer, especially in the shady end. I chose brownish black to reddish brown lava in fantastical shapes, lit with patches of buff, to settle into the damp sand. The porous, wicklike nature of the lava provides an airy perch for plants that favor excellent air circulation and drainage along with constant moisture.

## Adapting Western Woodlands

In the maritime parts of the West, where precipitation is high in winter and low or nonexistent in summer, the shade gardener who has a patch of native woodland usually has to do some selective cutting as a first step. Few flowering plants, native or introduced, can flourish in the root zone of large trees, and most of those that do bloom early and go dormant by July. One rock gardener who sits at the information table at plant sales says the most common question she hears is "What perennial can I plant under our big Douglas firs to give us some color all summer?" Her stock answer is "Put a nice bench there and paint it blue."

It is well to get professional advice about which trees to cut. One guideline, offered by rhododendron specialists, is that most shrubs should be no closer than 8 feet (2.4 meters) to mature trees. Most trees that remain should be limbed up to at least 8 feet to provide head clearance for people and slanting light to the understory.

Once the distribution of the trees is settled, you can lay out paths. Most Western woodland gardens use bark as a path surface, and this lasts longer and is easier to maintain if underlain with woven plastic nursery groundcloth. Crushed rock is an option, especially if traffic will be high, but try to find a dark-toned rock that will blend with the shady setting. Asphalt (blacktop) is sometimes used, especially in public gardens. Hard-surfaced options include exposed aggregate, stamped concrete, and (if you can afford it) brick, but remember that hard surfaces become very slippery when the inevitable moss and algae coat them in winter.

The natural understory of West Coast woodlands is much less open than that of forests east of the Rockies. Native trailing blackberry and thimbleberry and the horrible introduced blackberries (all *Rubus* spp.) must be removed, either by spraying with brush-killer in late summer over several years or by never-ending manual cutting. Mid-level shrubs and trees such as vine maple (*Acer circinatum*), flowering currant (*Ribes sanguineum*), and red huckleberry (*Vaccinium ovalifolium*) can be groomed and incorporated in the garden or replaced by exotics of similar size. If ivy has entered the site, it should be removed immediately; when two Portland gardeners, Jan and David Palmer, stripped a slope on their land of ivy, a great flush of native trilliums sprang into renewed life after many years of dormancy.

Irrigating the woodland in the dry western summer greatly increases the range of plants you can grow. An in-ground sprinkler system should be installed before other construction and planting takes place. Be sure the sprinkler heads are high enough to direct the spray over shrubs and other features, and don't place them where large tree trunks will block the spray. If you plan to grow Japanese, Chinese, or eastern American woodlanders, which enjoy a humid atmosphere in summer, consider installing some mist heads along with the sprinkler system, on a separate valve. Running these for just 15 minutes a day under the tree canopy can raise the humidity adequately, and the evaporation of the moisture cools the area, too.



It is rarely necessary or even advisable to amend the soil in a mature woodland. Boosting soil fertility is likely to encourage rampant weed growth. Even turning the soil may cause problems by altering the delicate strata in which certain highly specific woodland plants flourish; the common native orchids *Coral-lobhiza* and *Goodyera* are examples. A little granular rhododendron fertilizer applied in spring is probably all most woodland gardens need. If you are building rock features, however, fill the crevices with a mixture of sand, fine grit, and ample leafmold to host shade-loving rock plants.

## Planting

What plant choices will make rock gardeners embrace the shade with the same fervor inspired by baring all under a broiling sun? Perhaps everyone is predestined to some lifetime passion; it was pteridophytes that lured me into the shade and left me hopelessly enthralled. An avowed pteridomaniac, I specialize in ferns from temperate and dry regions. They are a treasure-trove of architectural complexity, providing the backbone of my planting schemes and the very essence of enchantment in the shade.

Along with the ferns, though, I've admired, coveted, and acquired many ari-saemas, anemonellas, clematis, corydalis, epimediums, hepaticas, hellebores, pleiones, primulas, tricyrtis, and trilliums, to name just a few favorite genera. The planting possibilities are far greater than the physical dimensions of any single shaded garden.

The first plantings in my shaded rock garden were some creeping spikemosses (*Selaginella* sp.) that were already growing in a few of the lava pieces I used. They responded to the garden with enthusiasm, cascading down the sides of the lava to fan out on the moist sand. *Selaginella wallacei*, a western North American native, can become rolled-up, desiccated curls in dry periods, then plump up into green and rust-colored twirling ringlets when moisture arrives. *Selaginella sibirica* is going to be a lovely addition to the lava bed with its rich burgundy winter color. Less apt to creep about is the twiglike, very slow-growing *Selaginella sanguinolenta* var. *compressa* from Japan, which keeps a tight dome-shaped habit, either in containers or when turned loose in a propagation flat.

Creating a bed with exposures ranging from sun to shade allowed me to use a wide array of choice dwarf fern species and cultivars. Prime space at the shady end is reserved for a group of dwarf lady ferns (*Athyrium filix-femina*): the tatting fern, *Athyrium filix-femina* 'Frizelliae', a wild Irish find with fan-shaped pinnules forming beadlike fronds; the fragile, congested fronds of favorite sporelings of *Athyrium filix-femina* 'Fancy Fronds'; their parent, with delicately dissected pinnules set closely together and embellished with fimbriate edges and tips; and the most contorted and minute of all, *Athyrium filix-femina* 'Caput-medusae', with snakelike fasciated stipes (stems) holding twists of parsleylike foliage. A 6-inch purple-flowered Solomon's seal, *Polygonatum prattii*, from Diana Reeck's Chinese collections, looks charming bobbing and weaving through the miniature lady ferns.



The midsection of this bed receives dappled shade and is ideal for many dwarf cultivars of the soft shield fern (*Polystichum setiferum*). I wish it were amenable to cultivation in more climatic zones, because this species has produced some of the most exquisitely dissected and diverse cultivars imaginable. The most commonly available dwarf forms are in the Congestum section, where the pinnae and pinnules (“leaflets”) overlap like shingles on a tile roof. This part of the garden is also a good spot for dodecatheons, erythroniums, and some smaller primula species that love evenly moist soil with dappled shade.

Where rays of sun reach the bed in late afternoon, petite cultivars of the male ferns (*Dryopteris affinis* and *Dryopteris filix-mas*) wave their festive little crisped, congested, and crested golden-green fronds amid gnarled little western phloxes and shrubby, evergreen creeping penstemons. Two of the most engaging dwarf golden-scaled male ferns originated from a single sowing in the 1870s from a dwarf crisped form found in Wales: *Dryopteris affinis* ‘*Crispa gracilis*’ and *D. affinis* ‘*Congesta cristata*’. From a sowing of the latter, I selected an even slower-growing dwarf form with congested fronds and minutely fanned tips, which is only 3 inches (7.5 cm) high after ten years; named ‘Truffles’, it is being propagated by tissue culture.

There are many massive stumps of trees felled long ago on my riverfront property, and many have new trees sprouting from them, an enchanted Northwest forest where each stump and its inhabitants are unique. Around one such stump, I built a large raised bed held by railroad ties. It is not well suited for moisture-loving forest-floor denizens; between the dense roots filling the bed and the dense evergreen canopy overhead, the bed is quite dry in the summer and only moderately damp in the winter. Adding a mixture of well-composted stable manure, peat, and pumice, shaped into undulating mounds, creates a bed fit for arisaemas, pleiones, and the smaller trilliums. The good drainage and overhead protection keeps the resting tubers and pseudobulbs from disintegrating in the relatively warm but extremely wet winters. Another genus popular for dry shade is *Cyclamen*, which offers the bonus of beautiful foliage.

The raised bed with its opportunity to view small plants with shy, nodding blooms, and even larger, exotic ones, with a slight bow instead of deep knee-bends is appreciated by even young gardeners, but especially by those whose knees creak like the Tin Man’s. I fancy the dainty, fuzzy lavender blooms dancing above the delicate lobed foliage of *Thalictrum kiusianum*, and the lacy, fluorescent yellow-green fronds of oak fern (*Gymnocarpium dryopteris*) cavorting around the massive stump add the final fairy touch.

Below the wall of the raised bed are the fronds and foliage of special collections of taller woodland plants, many of them taller species of the genera mentioned above, as well as complementary companions. This is the place to showcase larger *Polystichum setiferum* cultivars: aristocratically elegant *P. s.* ‘*Plumosum Bevis*’ with its plaited, attenuated apex and pinnae tips arching up to 4 feet, or the dense, highly divided, nearly mosslike blades of *P. s.* ‘*Plumoso-multilobum*’ hugging the soil in starfish curves. Tricyrtis enjoy the sunnier end of the bed, along with chartreuse-flowered hybrid hellebores and assorted hepaticas, nestled

between the spiky, near-horizontal divided fronds of *P. s.* 'Divisilobum Vivien Green'. The soft shield ferns have been tolerant of the ashes and little bit of extra lime I added to keep the lime-lovers happy.

The Pacific Northwest is a bryophyte paradise, and I encourage mossy turf wherever it volunteers on the property. Although many rock gardeners fret and fuss over moss in their pots, mosses are very accommodating to their companions in the shade garden. They have shallow root systems that allow ephemeral plants to rise and retreat beneath with ease. Their ground-hugging stature makes them an excellent foil for even tiny treasures only a few inches tall. Quite by accident, I created a mound planting of the little fern *Blechnum penna-marina* subsp. *alpina* mingled with *Anemone nemorosa* which sprouted a nice toupee of moss—covered with flowers in spring, followed by a flush of reddish new fronds that become a thicket of upright green. When I cut the old fronds in early spring to make way for the anemones, the delicate mosses glisten in the rain.

I have many garden spaces placed or planned on my 5-acre property: a spiral hedge surrounding the monkey-puzzle tree; my collection of Victorian headstones, finally set out in a proper graveyard setting; an old streambed that can once again become lively with stepping stones and flowing water; and a meadow that consumes the toughest plants with its super-draining sand and voracious slugs. The spaces that will dominate my days, though, are the shade beds near the door with their miniature treasures to be watered, weeded, or just admired as I zoom from house to greenhouse.

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Judith Jones owns Fancy Fronds Nursery near Seattle, Washington, a premier supplier of unusual ferns. Her deep knowledge of ferns and her effervescent personality have made her a favorite speaker at garden events throughout North America.

# The Chilean and Argentinean Andes: Part I

David Hale

Trapped between the Andes and the Pacific Ocean, Chile is a long slender country that forms a band along the southwestern coast of South America. It is about 2600 miles from north to south (not counting the section of Antarctica administered by Chile), extending from 17.5° to 55° south latitude. Its east-west width through much of this length is about 100 to 150 miles (160–240 km). Chile's land area, 800,000 square kilometers, is about equal to that of Texas.

In the northern half of the country, the Andes are formed by a huge uplift containing some of the highest mountains in the Americas. Farther south, the mountains form majestic individual peaks clearly showing their volcanic origin. By the time we reach 40° south, there are many isolated volcanoes whose Fuji-like cones are reflected in the many lakes of this region. South of the lakes region, a massive icecap fills the gap between the Andes and the Pacific Ocean. This impenetrable glacial area makes land travel impossible, so to reach the southernmost part of continental Chile, you must travel by air or sea, or detour into Argentina.

The northern parts of Chile and Argentina are very dry. The Chilean deserts, particularly the famous Atacama, are perhaps the driest in the world. In addition to the Andes, there is a lower coastal mountain range in Chile which affects the climate strongly from around Santiago, a modern capital of some 4 million people at 32° south latitude (equivalent to Los Angeles in the Northern Hemisphere) down to 40° south, over some 500 miles. In the rain shadow of the coast range lies a fairly dry central valley, and subsequently somewhat drier Andean slopes; as on the North American Pacific coast, the weather at this latitude comes from the west. This valley is the mirror image of the central San Joaquin/Sacramento valleys of California, with a similar climate, and accounts for most of the good Chilean wines; it is the breadbasket of Chile, where runoff from the Andes irrigates the fields. Naturally, the eastern slopes of the Andes in Argentina are even drier than the Chilean side, but not as cold as the North American Great Basin, because they are not subject to cold continental air masses. Beyond the Andes to the east are the vast Argentine pampas, which do not concern us here.

The coastal mountains fade out to the south and the Andes are lower, so we encounter a maritime, much wetter climate with rare frosts and frequent rains



in the lakes region of Chile and also for a short distance on the Argentine side. Here lakes, rushing streams, and forests of *Nothofagus* and introduced North American conifers, especially Monterey pine, remind the visitor of our Pacific Northwest.

Thus, we can travel from the north's desert, extremely dry though not extremely hot, through a central valley with a Mediterranean climate, to the mild, moist lakes region; and from extensive beaches through rich farmland to snowbound peaks and 12,000-foot passes. From the massive uplifted northern peaks, as high as 22,300 feet (6959 m) we go south to isolated volcanoes of 6000–7000 feet, often surrounded by beautiful lakes filled by glacial-blue streams cascading off the mountains.

Nearer the tip of South America there is a more severe climate, though still maritime. The winds are intense and nearly constant and can be quite disorienting to the hiker. Large wild animals are quite rare in Chile and near the Andes in Argentina, but in southern Patagonia, ñandues (rheas), guanacos (a wild camelid related to the llama), vizcachas (a large rodent), and myriad interesting birds are common. This area doesn't have as much rainfall as many people think—there is more rain in the lakes region—but never forget that wind!

Patagonia is variously defined as the tip of South America, or as everything from 40° south in that continent. Landforms here vary dramatically from flat, pampas-like, windswept areas (did I mention the wind?) to the abrupt vertical crags of the Parque Nacional Torres del Paine, sweeping to 9000 feet and surrounded by lakes. This is one of the most dramatic landscapes in the world and now a justifiably popular adventure-travel destination.

Politics and the economy (except for brief periods) have been such that foreigners have always been welcomed in Chile, and movement has been free. In Argentina, monitoring of tourist's movements used to be very strict, but that has long since disappeared. It can still be problematic to visit alpine areas near uncontrolled passes between the two countries, and in Chile, travelers may be asked to leave their passports at the nearest customs station before driving closer to the border.

In the 1970s, the Alpine Garden Society of England published a series of about fifteen articles on alpine plants and alpine plant hunting in Chile, written by John Watson. Watson is an accomplished botanist, explorer, and seed collector who already had much experience in the Old World, especially in Turkey. He then turned his attention to what has become a long-term career of plant exploration, guiding, and writing about the Chilean and Argentine Andean flora. This series of articles was very inspiring for me and today still represents perhaps the best writing on searching for plants in the middle part of the Chilean Andes. Naturally, the accompanying photos fascinated me: I had never seen some of the bizarre but beautiful shapes and colors exhibited by these plants. Though this plant assemblage has some things in common with our northern floras, and still more with the southern floras to the north of it, much of it is unique.

So, full of inspiration, we set off to South America. There were four of us on the first trip I made, in January 1981. Reuben Hatch, a plantsman familiar to



many readers, was one of the group. The other two just wanted to see what the Andes and its flora looked like. Even then, car rentals in Chile were convenient; our small station wagon had only 2500 kilometers on it. The big surprise for me, though, was the people of Chile. Our stereotypes of Latin Americans come from our limited contact with them, and of course there is much variation from district to district and country to country. Chile is sometimes known as “the England of South America.” I’ve never understood this, except that perhaps it refers to the fact that Chileans are very organized, tidy, and clean. It didn’t take me much time to fall in love with the country and its people. The next year, I organized a sabbatical for myself and was back in Chile for six weeks. This has led me to make twelve or thirteen more visits over the past sixteen years, usually lasting for a month.

Access to the alpine regions is by way of the few roads that penetrate to some altitude in the Andean ranges. Every 100 miles or so, there is access by road, sometimes paved for a short distance but graveled (or merely bulldozed) most of the way. Travel may be as slow as a few miles per hour or at a breakneck speed of 20–25 mph. But soon the fun begins! The shouting starts, people leap from the vehicle, and cameras start clicking.

In the mid-1990s, I, my wife Donna, and Jane McGary made a trip that took in much of the middle Andes of Chile and Argentina. The Chilean side is covered to a great extent by Watson’s series of articles that I mentioned. It is these areas that I will describe in this article and its sequel.

When you plan the logistics of your trip, it is important for you or your travel agent to make it clear to the car-rental agency if you intend to cross an international frontier. If you cross to Argentina from Chile, you will have to pay some additional insurance to cover travel in Argentina, and you will need written permission from the car’s owner. Prices for rooms are reasonable, although naturally in remote areas accommodations may be a bit primitive. Camping is never necessary; the distance from the lowland towns to the mountains is not great, even though the roads may be bad. We have always found rooms available except in the most popular tourist areas, and even there space is limited only in the month of February, by far the most popular vacation time for local people, corresponding to August in the Northern Hemisphere. English is little spoken in Chile except in the largest cities, so at least one member of your party should be able to communicate in Spanish; it can be a struggle even for competent European and North American Spanish speakers to understand the dialect spoken in rural Chile, especially if your interlocutor can’t be persuaded to slow down.

The Lonely Planet travel book series publishes *Chile and Easter Island*, an excellent general guidebook. Detailed maps can be obtained from the Geografía Militar, the Chilean equivalent of the U.S. Geological Survey, which has a website, <[www.igm.cl](http://www.igm.cl)> (in Spanish). If you are a member of AAA, you can obtain maps and other guides from its equivalent organizations in Argentina and Chile. U.S. bookstores usually have only 1:1 million-scale maps, which are not very detailed.

For alpinists, the months of December and January are best—obviously, the

higher you go, the later the plants are. Flowering is usually best earlier, but seeds are ripe later, so you have to compromise.

There is only one really practical guide to the flora: a paperback, fairly comprehensive, published in 1997 by Fundación Claudio Gay, titled *Plantas altoandinas en la flora silvestre de Chile* (*silvestre* means 'wild'). The principal author is Adriana Hoffmann. This book is occasionally available via the Internet and is perhaps still available from John Watson, who is one of its contributors, but you will have better luck finding it at a reasonable price at a good bookstore in Chile. It has hundreds of color drawings as well as good descriptions (in Spanish). The best source of information in English is the many entries, also by Watson, in the expensive *AGS Encyclopaedia of Alpines*.

John Watson mentions in his original series on his Chilean travels that much of the flora of the Andes adjacent to Santiago could be botanized via taxi. Though the Andes are visible from Santiago through the inevitable haze, the city at 1700 feet elevation is hot, often 90° F in the summer. The alpine regions begin at about 7000–8000 feet, extending to 14,000 feet at the permanent snowline, so an entirely different world lies above the city.

Among areas near Santiago, the most straightforward access is to Lagunillas, a lower-level ski area which becomes snow-free by November. You drive south from Santiago through the valley of the Maipo River. Already things have changed: the area is cooler, and there are many picnic and swimming spots. Along the road you can buy sandwiches, drinks, and Chilean specialties such as their version of the tamal, which is slightly sweet, and of course empanadas, the South American meat or cheese turnover. The town of San José de Maipo just below the mountains has charmed many a passer-by with its simple life, clean air, and pastoral setting, and is a quiet alternative to lodging in the city (hotel "La Isabelita" is recommended).

A steep, winding, but fairly decent road leads from the river highway to the ski area, and the good plants begin about 7000 feet. Once on the upper slopes, you are surrounded by interesting flora. One that jumps out at you is *Argylia adscendens*, a member of the Bignoniaceae with enormous flaring trumpets set directly over finely dissected green foliage. The flower color varies from shades of pink and cream to soft dusky lavender; all colors are impressive. This woody-based plant has proved difficult in cultivation in spite of abundant seed germination.

*Chaetanthera* is an Andean genus, mostly forming soft woolly buns with sessile daisy flowers that are often quite large in proportion to the size of the plant. At Lagunillas, the chaetantheras are white-flowered, but yellow-flowered species also exist (photo, p. 110). Common here is *Alstroemeria hookeri*, a short-stemmed species with large flowers ranging from pink to white. This is quite amenable to culture in a pot or a dry rock garden. You will also see *A. umbellata*, with congested gray foliage reminiscent of a sempervivum. Our first rosulate viola of the trip is here: *Viola philippii*, a tiny brown rosette only 1 inch (2.4 cm) across, with minute white and yellow flowers.

Some distance higher are two very unusual plants. The first, found growing on a rock-strewn hillside, is *Pachylaena atriplicifolia*, a composite with 3-inch



flowers of rosy lavender on prostrate stems among large green leaves (photo, p. 115). The other has not only proven unamenable to cultivation but has, as far as I know, refused to germinate even a single seedling. It is *Cruckshanksia hymenodon*, a mat bearing an inflorescence in which large lavender bracts clash with the bright golden-yellow flowers they surround, a most improbable sight (photo, p. 109). (Some authorities now lump the genus *Cruckshanksia* with *Oreopolus*.) *Calandrinia sericea* with its large, bright magenta flowers is one of several of that genus to be found here. If you visit Lagunillas quite early in the season, you can see two interesting snowmelt plants in the Ranunculaceae: *Barneoudia major*, with yellow flowers and thick-textured brown foliage, and *B. chilensis*, a smaller, more numerous species whose white flowers are often prettily flushed blue on the outside.

On the way back to the city, there is a mandatory stop at a tiny rustic cantina in San José de Maipo for a cooling beer. If your tastes are less rustic, there are some upscale tea rooms back along the road, too.

Somewhat to the north of here and almost directly east of Santiago is a much larger ski complex offering access to the mountains above. Its different parts are called Farellones, La Parva, and Caracoles. There you can drive to about 11,000 feet and easily walk to 13,000 feet. The flora contains much also seen in Lagunillas, and much more besides. Some of the highlights: *Oenothera acaulis*, the Chilean handkerchief plant, which opens large, up to 4 inches across, snow-white flowers along the roadside, looking like discarded handkerchiefs; 12-inch-tall *Alstroemeria recurvata*, a much brighter rose color than *A. hookeri*; and *Rhodophiala rhodolirion*, an amaryllid of variable color forms, here producing red-speckled white flowers often right at ground level (photos, p. 109).

*Calandrinia affinis* has pure white flowers and normally a large rosette akin to its relative, *Lewisia* (photo, p. 114). The sessile flowers are about 2 cm across, and a large colony can present the appearance of a snowy meadow when seen at a distance. It grows in boggy areas. Here the drier edges of the bogs are lined with magenta *Calandrinia sericea*, and the petal edges of the *Calandrinia affinis* are picroteed with magenta, presumably reflecting some hybridization. If you are a little late in the morning and the hillsides have had a chance to warm up, *Oxalis compacta* will be open and waiting for you in large numbers (photo, p. 113). The woolly buns are usually 4–8 inches across and covered with bright yellow flowers. This plant has done well for me for a time, sometimes seeding a bit but eventually needing replacement. There are several *Azorella* species here which I have been unable to identify. These members of the Apiaceae (umbellifers) form large, hard mats. They are difficult to catch in full bloom, preferring to flower a little piecemeal, but they are lovely when many flowers are open (photo, p. 112).

*Viola portulacacea* (photo, p. 111) is fairly common around 10,000 feet. It forms the epitome of the symmetrically arranged rosulate violas, with very tightly wound spirals of gray-silver succulent leaves from which white-and-yellow flowers peek out. *Verbena uniflora*, though not common, is found occasionally at about 13,000 feet. It is a tight mat with nearly sessile pink/white flowers. These dwarf Andean verbenas, sometimes placed in a separate genus, *Junellia*,

are tentatively in cultivation in the Northern Hemisphere. They all have a wonderful, freely dispersed fragrance.

From about 9000 feet, alpines form almost continuous mats and cushions. These act as nurseries for seedlings that squeeze their roots down into the body of the older plants, finally taking up residence and blending in a living tapestry cushion. Often these mats are as hard as wood. By 11,000 feet, the screes have taken over, and the plants are distant from one another, often seeking shelter under the edges of rocks.

If we move north about 40 miles (as the crow flies), there is a pass to Argentina at the ski area of Portillo. The road passes through a tunnel at about 9500 feet. Near the tunnel on shifting screes grows *Alstroemeria spathulata*, looking very un-alstroemeria-like (photo, p. 111). It forms a rosette of blue-green very much like an *Echeverria*, with stems several centimeters long; the rose-pink flowers can appear right on top of the deep rocky substrates it favors. The slopes along the road are covered with enormous patches of *Tropaeolum polyphyllum* up to a half-mile across, showing its potential if it gets happy in the garden.

On the east side of the tunnel, the old gravel road continues to be maintained up to the summit at about 12,000 feet, so it can be used to gain more altitude. At about 11,000 feet is *Chaetanthera spathulata*, one of the larger species, with yellow daisies 3 cm across sitting flat atop woolly silver spheres 6–10 cm in diameter (photo, p. 110). We also get our first look at *Calandrinia caespitosa*, a mat or bun with much red in the flowers here (photo, p. 114). We can drive up to the famous statue of Cristo Redentor (Christ the Redeemer) at over 12,000 feet on the old road over the pass. There are fine views of Mt. Aconcagua from here.

Heading downhill toward the east, at about 4500 feet we reach Mendoza, Argentina. This is a wine-growing region with rich soils, pure water from the Andes, and a 150-year history of growing grapes. Argentineans drink a lot of wine, and historically their demand for quality was low, but in the past decade or so both national and international demands have increased substantially, and many growers in this region (which produces 80% of Argentine wine) have achieved quality recognized internationally. So this is a good place to try the wines and fill up your trunk with gifts and samples.

By following Highway 40 south along the eastern flank of the Andes, it is possible to penetrate from time to time into the heart of the mountains via dirt and gravel side roads. There are enough little towns along the way to find comfortable, if at times quite simple, lodging. Eating in Argentina follows the Spanish schedule strictly. In Chile it is possible to find food at almost any hour, even if you are the only person in the restaurant, but in Argentina restaurants close from 4 or 5 pm until 9:30 or 10:00 pm, and the food won't be on the table before 10:15, so if you're not a late diner you will have to devise your own eating scheme. South Americans usually eat their main meal at midday, but at that time we're always up in some inhospitable spot, clinging to a cliff.

I will just mention some areas, along with a couple of interesting plants, as we go south toward the point where we cross back into Chile near Bariloche. At Las Leñas, another ski area, are the bright red form of *Rhodopiala rhodolirion*; *Schiz-*



*anthus gilliesii*, looking for all the world like a brilliant red-and-yellow orchid; and showy purple *Calandrinia gayana* and magenta *C. dianthoides* (photo, p. 114). *Senna arnottiana* (syn. *Cassia*) is a pea-family shrub with copious bright yellow flowers that are more flat-faced than the usual pea; a dwarf plant, it begs to be grown in the larger rock garden.

Highway 40 also has its roadside attractions. There is the occasional *Argyria bustillosii*, a low mat with black-centered yellow flowers. *Argyria robusta*, as the name suggests, is stout and tall (to 30 inches) with luminescent yellow flowers (photo, p. 114). These grow in very dry, hot areas in clay soils at 3500 to 4500 feet. Also worth a stop from time to time are species of *Adesmia* and *Astragalus*, both mat-forming peas.

Farther south we can drive up to Paso Pino Hachado (“chopped pine,” undoubtedly referring to the monkey-puzzle tree, *Araucaria araucana*; photo, p. 108). Here there are many fine plants, including bright yellow *Rhodophiala elwesii*, *Tropaeolum incisum* (photo, p. 115) with the habit of *T. polyphyllum* but soft peach-colored flowers, and *Tarasa humilis* (photo, p. 113), a low-growing mallow with glowing magenta flowers, not difficult to grow. This is also the first place we see my favorite *Mutisia*, *M. decurrens*, a climbing member of the Compositae with 4-inch-wide neon-orange flowers (photo, p. 110).

We crossed the Andes near 33° south latitude, and we have now driven some 500 miles south when we reach San Martín de los Andes, a popular upscale resort town with good if expensive lodging and food. There have been six opportunities to reach considerable altitude in the Andes on this side of the mountains, with Cerro Chapelco near here being the seventh. This is a ski area with a lift that operates during the summer, making the ascent quick and easy. Many fine alpine plants abound right at the top of the lift. In a windless depression grow clumps of *Oxalis adenophylla*, emitting an almost overpowering aroma; the color range will amaze those who are familiar only with the pale pink of the commercial strain (photo, p. 113). Nearby is the form of *Calandrinia caespitosa* known to plant enthusiasts as “*Skottsbergii*,” with the brightest of golden-yellow flowers (photos, p. 114). One specimen I photographed had almost a hundred flowers. *Nassauvia pygmaea* is a very tight plant, in habit much like a small heather with white flowers (photo, p. 115).

In the second installment of this article, we will drive to Bariloche, a tourist center at the base of the mountains, constructed mostly of local stone in European mountain style. Here accommodations, cuisine, and nightlife (if you’re interested) improve greatly. There are also several good sites to visit nearby in the mountains. Later, we will cross through the Andes to the lakes region of Chile and proceed north up the Chilean side of the mountains, following the canyons to the alpine areas on that side. Finally, we will return to Santiago.

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David Hale, a retired physician, is contributing a series of “Botanical Traveler” articles to this journal. He and his wife, Donna, travel several months a year and grow many of the treasures they discover in their two gardens in Portland and Arch Cape, Oregon. David presents many slide programs to NARGS meetings, especially on the Andean countries.

# The Native Primroses of Newfoundland

Todd Boland

Most rock gardening enthusiasts are on the lookout for new primrose species. The spectacular blooms of the European *Auricula* types and any of the Himalayan species are always desired. Unfortunately, North America is not wealthy in native primulas, and most have the misfortune to be notoriously difficult in cultivation. By far the most desirable of the North American species are those native to the western United States. In the Northeast, there are only four native species, but luckily for gardeners in my own region, Newfoundland is home to all of these.

The native primulas here are mostly restricted to the coastal limestone barrens of western Newfoundland and the western shores of the Great Northern Peninsula. Here they grow among a multitude of lovely arctic-alpine plants, including *Dryas integrifolia*, *Iris setosa* subsp. *canadensis*, *Sagina nodosa*, *Parnassia glauca*, *Silene acaulis*, *Saxifraga aizoides*, and *Oxytropis terrae-novae*.

Our smallest native primula is *Primula egaliksensis*, the Greenland Primrose, a frail beauty with thumbnail-sized efarinose rosettes (“efarinose” means that they lack the farina, or light-colored powder, that appears on the leaves of many primulas). From late May in the south to early July in the north, the plants send up wiry 2–10-cm (1–4-inch) stems topped with two to six white, yellow-eyed flowers. Rarely, you may encounter the violet form. In the wild, *P. egaliksensis* grows in wet, peaty swales that overlie limestone (photo, p. 116). I have found this species impossible to cultivate in the open garden, even so near its home. It does not tolerate close neighbors and has a tendency to be heaved out by frost in winter. I have had limited success when cultivating it in pots, where constant attention to watering is needed. Once a plant dries out, it is lost. Adding to the problems of pot culture, root weevils love them. If you insist on trying this difficult species (seeds do germinate freely), try shallow pans *without* drainage holes; use a mixture of peat and sand to which you have added some powdered limestone. After watering the pot, simply pour off the excess. In the wild, I have seen this species actually inundated and yet thriving.

Although not as widely distributed on the Island (the offshore portion of the Province of Newfoundland), *Primula mistassinica* (photo, p. 116) is by far the



most numerous. It is almost as small as the Greenland primrose, but not nearly as difficult in cultivation. Superficially, it looks like *Primula scotica* from the British Isles, but it has paler lavender-pink flowers. The small rosettes are lightly farinose and vary from thumbnail size to 5 cm in diameter. The flower stems are slender, 4–10 cm tall, and topped with three to ten pale lavender flowers. The ‘Alba’ (white) form also grows on the Island. These plants usually are found in peaty pockets on limestone or even in fine limestone gravel. They can tolerate very wet soils but do not demand as much moisture as does *P. egaliksensis*. In the open, give them space and carefully mark the location, since they almost disappear in winter. Unfortunately, their shallow root system leaves them prone to heaving. They are not long-lived—three or four years is normal—but they produce seed freely. To appreciate their small size and lovely flowers, I prefer to grow them in pots or troughs. Under this regime, they often self-seed.

Perhaps the best and certainly the most robust species is *Primula laurentiana* (photo, p. 116). It is perhaps the least common primula on the Island but is the most widespread, occurring not only along the west coast and the Great Northern Peninsula but also as far east on the Island as Cape Freels. In the wild, these primulas are quite variable in size, ranging from minute specimens with 3–7-cm rosettes and short, stout stems only 2–6 cm tall, to robust giants sporting 15-cm (6-inch) rosettes and 20-cm (8-inch) stems. They produce many more flowers per stem than our other native primulas; in fact, a good plant may have a head as full as that of *P. denticulata*. Their leaves and stems are heavily coated in white to cream farina. The standard color is lilac-pink, but I have seen lavender-blue and white individuals. In the wild, they also prefer peaty-sandy soils in limestone areas, but they do not appear to be as restricted to limestone substrates as are *P. egaliksensis* and *P. mistassinica*. Like their cousins, they are apt to be short-lived, but again, their seeds germinate freely. I have greater success with this species growing it in pots, but plants have survived in my open garden for several years.

The rarest of our native primulas, *Primula stricta*, was only discovered here a few years ago. A small population grows at L’anse-aux-Meadows National Historic Park at the northern tip of our Great Northern Peninsula. This site is the only confirmed settlement of Vikings in North America and dates back to around 1000 A.D., some 500 years earlier than Christopher Columbus’s historic voyage. Strangely enough, *P. stricta* is fairly common in northern Scandinavia, Iceland, and Greenland, the other countries once occupied by the Vikings. Could there be a connection? Because it is so rare and is located in a national park, I have never collected seeds from this species, so I have no experience growing it. It looks like a miniature *P. farinosa* and would likely be challenging in cultivation. Unlike our other three native primulas, this one is found not on limestone but rather on granitic rock.

All these primulas grow in full sun in the wild. They can tolerate full sun in my home city of St. John’s, but I cannot say whether they could survive it in more southern, less maritime locales. I expect the greatest deterrent to success would be summer heat. All four species grow in close proximity to the sea, sometimes

within reach of salt spray. In such sites there are constant cooling breezes. Even in St. John's, a day or two at 30°C (86°F, a hot day here) seems to stress the plants. Thus, it is doubtful that any of these primulas will ever be popular in cultivation. If you are a primula fanatic and don't mind a challenge, then try them; otherwise they are best admired in their native haunts.

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Todd Boland is a college instructor in general horticulture in St. John's, Newfoundland. His rock garden features a wide range of alpine plants, dwarf Ericaceous shrubs and dwarf conifers.



Saxifrage, drawing by Baldassare Mineo



# Snowdrops in New York

Hitch Lyman

I have added a month of worry and pleasure to the start of the gardening year in the Northeast by collecting the species and garden varieties of snowdrops. I worry whenever the snow buries them and am glad to find them bouncing back when it melts. Long ago, I read E. A. Bowles's discussion of snowdrops (*Galanthus*) in *My Garden in Spring*, but it wasn't until I saw one of the English National Collections displayed at a winter show of the Royal Horticultural Society that I began to fall for their green and white charm.

I looked around my neighbors' gardens to see what succeeded in central New York state. *Galanthus nivalis*, the "common" snowdrop, is widespread. A friend had *G. nivalis* 'Flore Pleno', a double-flowered form, as a weed. It would push bulbs up to the surface every spring (perhaps by frost action?) and get scattered around; the bulbs would then be pulled back down by contractile roots, I suppose. I discovered *G. elwesii* with two green marks on the inner bell, top and bottom, and felt very sophisticated: three sorts!

Then, in another garden, I saw a clump of snowdrops with shiny green leaves, rather wide and splayed. This turned out to be *G. woronowii*, whose bulbs are wild-collected and sold to the Dutch, who resell them as "single snowdrops."

I bought a copy of F. C. Stern's *Snowdrops and Snowflakes* (1956) and read there Bowles's last overview of the garden sorts. I read E. B. Anderson's story of the cultivar 'Mighty Atom' in his book *Seven Gardens*. I read Christopher Brickell on species in *The Flora of Turkey*; I read Mme. Artjushenko on the Russian sorts, and then went back to the 1891 *Journal of the Royal Horticultural Society* to read Allen, Burbidge, and Melville on their discoveries. Much fell into place in 1993, when Richard Nutt's masterful article on *Galanthus* appeared in the *AGS Encyclopaedia of Alpines*. In 1999, Aaron Davis came out with his "model botanical monograph," *The Genus Galanthus*, and in 2002, Matt Bishop, John Grimshaw, and Aaron Davis published *Snowdrops: A Monograph of Cultivated Galanthus* (reviewed in this issue).

"Quite enough has been written about this genus," Mme. Artjushenko remarked tartly in the preface to her long 1967 survey. Not for me! For gardeners new to the range of snowdrops, I will say a few things about my luck (up to now) growing the pretty things.

First, as to my climate, I quote from *The Flora of the Cayuga Lake Basin* by Wiegand and Eames (1926): "The Cayuga Lake Basin lies in the general forest belt of the eastern U.S. and has an average yearly rainfall of about 85 cm (33.4 inches). The yearly average temperature for Ithaca is about 47°F." We usually have snow cover from mid-December to mid-March. The driest months seem to be July and August. The area is rated USDA Zone 5.

*Galanthus nivalis* is perfectly suited to this climate and will grow in grass, in sun, in ditches. It dwindled in pure sand and liked ordinary vegetable garden soil shaded in summer by tomatoes. Its named varieties are equally good-tempered.

*Galanthus reginae-olgae*, which flowers before its leaves emerge in autumn, is not happy here. Snow destroys the winter foliage. I have one under a cloche which persists, without enthusiasm. The spring-flowering subspecies *G. reginae-olgae* subsp. *vernalis* is thriving, oddly enough.

The beautiful and interesting *Galanthus plicatus*, rich in varieties, doesn't flourish here. One small form from Turkey, introduced to England in the 1950s, romps away, so I hope someday to have patches worth looking at of 'Warham', 'Gerard Parker', 'Sibbertoft Manor', or the yellow-marked 'Wendy's Gold'. *Plicatus* forms take the longest to recover from lifting and don't like a lot of wind. They are forest-dwellers. *Galanthus plicatus* subsp. *byzantinus* has two green marks, top and bottom, on the inner segments, and the clones I have are easy-going. Here, it grows in grass in sun.

*Galanthus alpinus* var. *alpinus* from the Republic of Georgia has come through one mild winter. The sterile tetraploid *G. alpinus* var. *bortkewitschianus* makes lots of bulbs but few flowers; nonetheless, it is an adorable little plant worth attention.

The species *Galanthus angustifolius* has me stumped. Though I grow a plant which came directly from the Moscow Botanic Garden, it is now said to be a small *G. nivalis*, and the real *angustifolius* is said not to be in cultivation. Humph!

*Galanthus cilicicus*, another autumnal bloomer, just exists here. However, *G. peshmenii*, an allied species from Kastellorhizo and the adjacent Turkish coast, has lived and flowered for two years, on both occasions with jam jars over the winter leaves. I've never seen *G. koenenianus* nor laid hands on the recently named *G. trojanus*.

*Galanthus elwesii* is a well-known species that was and is widely collected from the wild in Turkey and has been exported in millions for over a century. Some of those millions have lived, and I've begged from friends' gardens two or three sorts that "do" in this climate. I went to dig the most successful clump last spring and was surprised to find that the bulbs had descended to 12 inches (30 cm). Often a plant will grow but not clump up, as happens in nature, where they increase by seed. Robustly multiplying forms appeal to gardeners and so become the sorts with names. 'Comet' is a beauty, 'Mrs. McNamara' as well. 'Miller's Late' has the advantage of arriving fresh at the end of the season. 'Kite' can sport two flowers on one scape. *Elwesii* variants can have the largest flowers of the genus. 'Llanarth', 'Maidwell L', 'Big Boy', and so on shock the viewer at first sight.



The plant from southwestern Turkey that used to be called *G. caucasicus* has become *G. elwesii* var. *monostictus*.

I think of *Galanthus gracilis* as "the small *elwesii*," but in fact it can be quite big. The selection that grows best here is very early and quite small. As they grow, the leaves acquire a beautiful corkscrew twist that annually delights me, like the Leonardo drawing of *Ornithogalum* or *Allium senescens* 'Glaucum'.

All these species have more or less gray-brushed leaves, solid or centrally striped. The rest of the *Galanthi* have green leaves which may be shiny or matte, light or dark, narrow or wide. They are less familiar to our gardens because most come from the former Soviet Union. The exception is a plant from the Greek island of Nikaria that was long confused with a similar Caucasian entity called *G. ikariae* subsp. *latifolius*. In real life (if there is a real life for botanical names), it is *G. woronowii*. True island *G. ikariae* is a rare plant grown in collections in a clone called 'Butt's Form', which continues slowly increasing here.

*Galanthus woronowii* does well here in shade. There's a similar plant from eastern Turkey and the Lebanon, *Galanthus fosteri*, with narrow, shiny green leaves. It is the most southern species, but I believe the forms in cultivation are from the northern part of its range since they do quite well in the garden.

*Galanthus transcaucasicus*, *G. krasnovii*, and *G. platyphyllus* are apparently high-elevation snowmelt plants of the Caucasus. Soon they may enter cultivation, but I have only seen one or two on the hoof, and none in commerce. Perhaps they are not easy.

*Galanthus lagodechianus* and *G. rizehensis* are easy, narrow-leaved plants, medium and dark green respectively. Both grow well here in shade, though *G. rizehensis* makes minute bulbs, and I wonder if I should feed it or give it more sunlight. This might be just a characteristic of the clone I have.

I do not feed my plants with commercial fertilizers, but I give them a friable soil enriched (not too much) with compost. Most want a steady summer temperature and a steady low level of summer moisture, which would explain why they succeed in turf and at the edge of woods. While in growth, they need a lot of light and moisture. Canon Ellacombe said to "stir 'em up," which I think means lift and divide often. After a move, they take time to recover their true character. One expert grower lifts them when the shoots first surface. Another divides in full flower, and yet another just after the flowers fade. I think that when the plant is in full leaf one should leave it alone, because that is the moment when next year's bulb is being constructed. I killed a rare clump by moving it as the leaves were yellowing.

The myriad hybrids formed from felicitous crossings of *G. nivalis*, *G. plicatus*, *G. elwesii*, and *G. gracilis*, as well as the fancy selected forms of the pure species, are garden plants and enjoy rather high culture: compost, some lime, full light, and frequent division. 'Magnet', 'Merlin', 'S. Arnott', 'Atkinsii', 'Straffan', 'Robin Hood', and the Greatorex doubles are some of the older sorts. The newer names one sees in the monographs will slowly become available. Few new sorts, though, will be as large and handsome as 'S. Arnott' or as showy in the garden as 'Straffan'.



There's a fine collection under glass at Stonecrop Gardens in Cold Spring, New York, that may be seen by appointment in January and February. Richard Nutt gave a collection to the National Arboretum in Washington, D.C., that may be found in the Narcissus Wood. About the middle of February, a number of gardens in England open to show off their collections. The Philadelphia-Baltimore area, the Pacific Northwest, Raleigh-Durham, the end of Long Island, and southern Connecticut all have aficionados and histories of collecting, so it should be possible to search out plants in flower. This would be a good way to begin to appreciate the endless variety of snowdrops, welcome when there is nothing else in the garden.

I must add that the early hybrid sorts, which often have the largest flowers, do get damaged by heavy snowfalls. I had them first in the open garden, then moved them to the hedgerow, out of the wind. I am not sure that is any more successful. The better plan is to grow them on the north side of the hedgerow where the snows stay on the ground. They grow under the snow, but when it finally melts, they have been held back an extra ten days or so. The mid-season sorts don't suffer that way—usually.

Watch for the diseases of snowdrops. Botrytis makes a gray furry muff at soil level around the shoot and is truly fearsome. Drench with fungicide, or better, lift and soak the clump, discarding soft bulbs. Do not hesitate. The common "amaryllis" (*Hippeastrum*) carries a fungus, *Stagonospora curtisii*, which makes red blotches on the bulbs and leaves, mild in amaryllis but deadly in *Galanthus*. Don't buy them! If your plants don't look right, read Matt Bishop's discussion of pests and diseases in *Snowdrops*.

Laying a deep, coarse organic mulch over snowdrops is a very bad idea. They often grow naturally on slopes where even leaves are blown away. Manure is another source of worry, the old growers said, when they had an ample fresh supply. Very old, rotten stuff doesn't seem so bad. Try to replant bulbs at the same depth they were—the sheath enclosing the leaves ends just at soil level. Water well after transplanting; it helps. If Narcissus bulb fly is a pest in your area, plant your snowdrops (also favored by this insect) in shade. Keep the foliage from being overgrown by lush spring plants. Chervil took over one bed here, looked beautiful, and suffocated the snowdrops. In the wild, they often grow with ivy, which is slow to start in spring, but this would not be advisable in mild-winter areas where ivy stays erect and vigorous year round.

But don't be put off by this list of possible woes. (I waited 40 years to grow tall bearded iris because its pests sounded so rampant.) The chances are very good that nothing but joy will attend snowdrops in your garden.

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Hitch Lyman gardens in upstate New York. He offers many species and cultivars of snowdrops "in the green" in spring through his Temple Nursery. A catalog may be obtained from him at P.O. Box 591, Trumansburg, NY 14886.

# In and Out of Pakistan's Mountains

Panayoti Kelaidis

On September 11, 2001, I and my Denver Botanic Garden colleague Dan Johnson boarded a plane in London, heading for Islamabad. A few hours before the flight, we had watched live television coverage of the Twin Towers burning and then collapsing, and we speculated en route about what might come of that dramatic and desperate act. Unlike most Americans, however, we were soon far from the media saturation that followed, in lofty, television-free mountains.

In the Islamabad airport we met our traveling companions, Don Howse (co-proprietor of Porterhowse Nursery in Sandy, Oregon) and Robert and Rochelle Watch, avid Australian plant-lovers. As our bus wove through roiling crowds to our hotel in Rawalpindi, we felt as though we had entered a novel by Rudyard Kipling rather than the precincts of Osama bin Laden, as our families became convinced in the coming weeks.

Pakistan contains a lion's share of the world's highest peaks and a richly diverse flora: our reason for going there. A number of Henrik Zetterlund's collections on the Swedish Expedition to Pakistan 20 years ago have proven to be superb rock garden plants in Denver. The westernmost Himalayas occupy the northeast quadrant of Pakistan, and this is the coldest and driest part of the world's highest mountain range. Consequently, this should be a valuable source of potential garden plants for Colorado.

We spent the first few days adjusting to the exotic atmosphere and foods and preparing for the journey inland. Looming above Islamabad, the Muri Hills were dark with warm temperate forest. We drove up to an overlook and gazed over the dun distance, heavy with humidity and late summer heat—not exactly an alpine experience. The next day, Mehboob Ali, the efficient and helpful guide engaged for us by Karakoram Expeditions, had assembled the three jeeps and the cheerful staff who were to support us for the next weeks.

The Indus Valley may embrace the largest irrigated tract on earth, the famous Punjab, with practically no wild flora, yet as we drove northward, stark dry hills appeared near the road, heavily grazed but unplowed. We spent a few hours exploring the excavations at Taxila, an ancient city where Alexander the Great

had lingered; the museum's ancient Greek artifacts, from the decades when this region was invaded by Macedonians, made me feel strangely at home.

The jeeps soon began a steep ascent along the Kunhar River, which rushes through the Kaghan Valley. This is perhaps the wettest and most heavily forested part of Pakistan, and the farms, though steep, looked prosperous. The remnant forests of majestic Himalayan pine (*Pinus wallichiana*) and deodar cedar (*Cedrus deodara*) were imposing, although even here, and more so in the drier and colder parts of Pakistan, almost every limb within reach had been harvested for firewood.

We stayed overnight at an elegant lodge in a dense subalpine forest, which revealed a tremendous number of wildflowers during the next few days: four or more species of *Arisaema*, *Peonia emodi*, several sedums, and *Polygonatum geminiflorum*, undoubtedly an enchanting site in the spring. We followed the road to treeline, and a relatively pristine meadow revealed some of the finest tundra we would find on our trip.

Any rock gardener can imagine our delight as we first encountered classic alpiners there, including primulas, saxifrages, gentians, and especially androsaces. All these genera have their centers of greatest concentration of species within this colossal mountain range. At any given site, we never found more than a few species in any of these genera, although the monumental *Flora of West Pakistan* by Nasir and Ali indicated dozens more in each group. The Himalaya range is many times the size and extent of the Rockies or Alps, with hundreds of distinct ranges; our trip was only to sample a tiny portion of this richest of the world's alpine regions.

As we climbed through rugged, ancient deodar cedars, pines, and spruces, we came onto a meadow full of *Iris hookeriana*, a wonderful aril iris with mottled flowers, in the *Pseudoregelia* section of the genus, growing by the thousand in dense clumps among the last trees before the tundra. We were to see this iris again and again, but only at this first stop were there many ripe capsules. The most puzzling plant of the day was a tiny, prostrate flower that on first glance resembled an autumn crocus. Examining the flower structure, I realized it was in the gentian family, probably a *Swertia*, although I have yet to determine which species. The luminous, blue-purple bubbles among the grasses were irresistible.

We had arrived here so late in the day, with a beckoning trail leading higher and higher and disappearing into a green valley tucked between giant glaciers, that we barely had time to take a few pictures and rush back down to the lodge before dark. More than once I've dreamed of returning there with tents to camp and spend days exploring what Henrik Zetterlund declared was the best plant hunting area of his trip.

For the next few days, we continued north through progressively higher and drier country. We crossed several passes high above treeline. Babusar Pass was particularly encrusted with cushions (I could recognize androsaces from the jeep, and even the reddish tufts of *Biebersteinia odora*), but a snowstorm at dusk precluded a stop at what had to be an alpine heaven. Several subsequent camps at subalpine valleys revealed that grazing here is as thorough and efficient as what used to be practiced throughout the Mediterranean basin. A few minuscule





Ferns are prominently displayed with flowering plants in the shaded rock garden of Judith Jones (p. 84). Above left, *Woodsia polystichoides*; above right, *Dryopteris affinis* 'Congesta Cristata' with *Campanula portenschlagiana*; below, *Dryopteris affinis* 'Crispa Gracilis' with *Ranunculus ficaria* 'Flore Pleno' and purple-veined *Viola* foliage. (photos, J. Jones)







Fern fanciers treasure unusual variants like these reduced forms of the common lady fern. Above, *Athyrium filix-femina* 'Caput-Medusae'; below, *Athyrium filix-femina* 'Fancy Fronds'. (photos, Judith Jones)



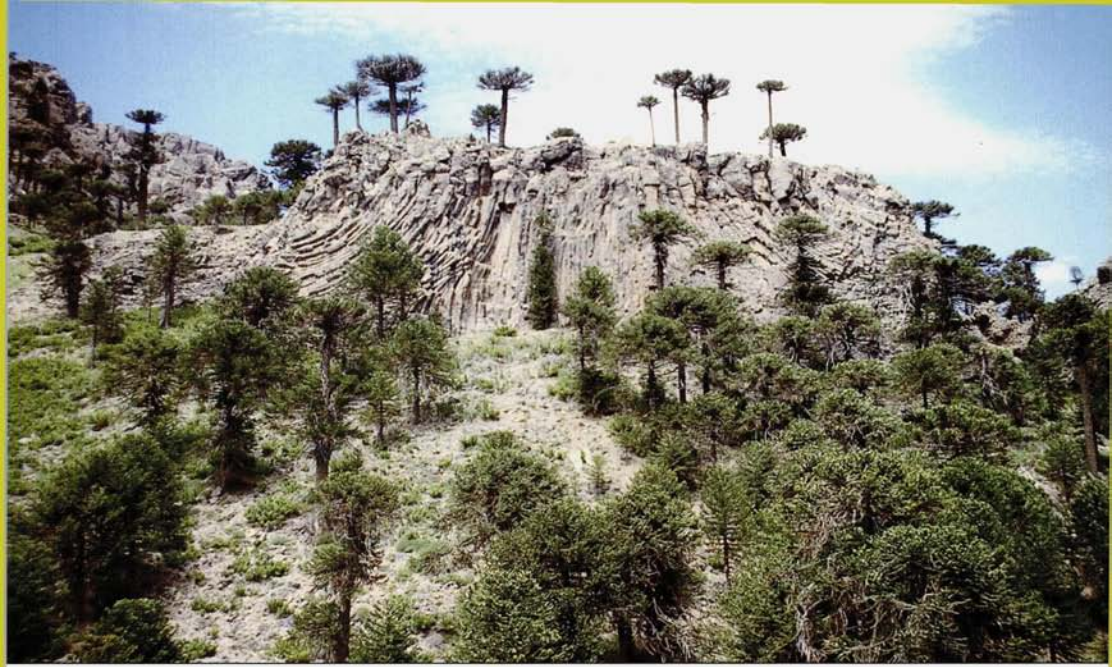




The shaded rock garden at Fancy Fronds nursery features pleasing plant combinations. Above, *Adiantum aleuticum* (upper right), *Athyrium nipponicum* or Japanese painted fern (upper left), and *Polystichum setiferum* 'Divisilobum Laxum' (foreground). Below, *Cornus canadensis* or bunchberry mingles with *Gymnocarpium dryopteris*. (photos, Judith Jones)







The dry eastern slope of the Andes near Paso Pino Hachado (p. 95): spectacular rock formations crowned by wind-pruned *Araucaria araucana*. (photos, J. McGary)

David Hale, author of the Botanical Traveler series, photographing *Viola coronifera* (past flowering, but worth the climb) on Cerro Colohuincul, Argentina.







*Rhodophiala rhodolirion* (p. 93) has a white form (above, at La Parva, Chile) and a pink form (below left, at Las Leñas, Argentina). (photos, D. Hale)

Below right, *Cruckshanksia hymenodon* (p. 93) at La Parva. (photo, J. McGary)







*Mutisia decurrens* (p. 95) at 4600 feet on the road to Paso Pino Hachado, Argentina. (photos, D. Hale)

*Chaetanthera spathulifolia* (p. 94) at 10,800 feet on Paso Cristo Redentor, Argentina.







*Alstroemeria spathulata* (p. 94) at Portillo, Chile. (photos, D. Hale)

*Viola portulacacea* (p. 93) at Paso del Vergara in the central Chilean Andes.







*Azorella* sp. (p. 93) at 9000 feet, La Parva, Chile. (photos, D. Hale)

Copahue Falls on Highway 40, a route along the eastern slope of the Andes, with *Argylia robusta* in the foreground (p. 94).







The genus *Oxalis* (p. 93) has many alpine species in the southern Andes. Above left, *O. enneaphylla* on Cerro Chapelco, Argentina; above right, *O. compacta* at Portillo, Chile (photos, J. McGary); below left, *O. adenophylla* (p. 95) on Cerro Chapelco. Below right is the showy dwarf mallow, *Tarasa humilis* (p. 95), below Paso Pino Hachado, Argentina (photos, D. Hale).







*Calandrinia*, like the related *Lewisia*, favors moist spots that become dry later in summer. Above left, a deep reddish form of *Calandrinia caespitosa* (p. 94) at 12,000 feet on Paso Portillo, Argentina; above right, *C. caespitosa* "Skottsbergii" (p. 95) on Cerro Catedral, Argentina; below left, *C. dianthoides* (p. 95) at Las Leñas, Argentina; below right, *C. affinis* (p. 93) at La Parva, Chile. (photos, D. Hale)





Endless floral variety exists in the southern Andes. Above left, *Pachylaena atriplicifolia* (p. 93) at Lagunillas, Chile; above right, *Tropaeolum incisum* (p. 95) below Paso Pino Hachado, Argentina; below left, *Calceolaria lanceolata* var. *pusilla* on Cerro Chapelco, Argentina (p. 95); below right, *Nassauvia pygmaea* (p. 95) on Cerro Chapelco. (photos, D. Hale)







Native primroses of Newfoundland (p. 96): above, *Primula egalikensis* in the wild; below left, *Primula mistassinica*; below right, *Primula laurentiana* in cultivation. (photos, Todd Boland)







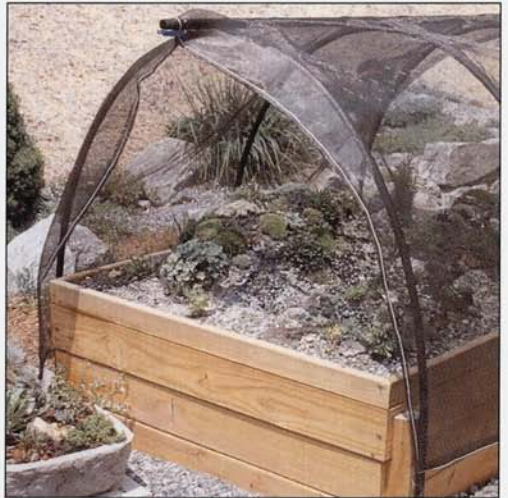
Plants of autumn in the mountains of Pakistan (p. 103): above left, *Adiantum venustum*; above right, *Bergenia stracheyi*; below, *Acantholimon lycopodioides* (p. 122) beside a cairn. (photos, Panayoti Kelaidis)







Ev Whittemore's hypertufa mini-mountains (p. 128): above left, the sand-covered mold, with planting holes being formed around a cup; above right, empty mini-mountains ready for planting; below left, a planted feature after one year; below right, saxifrages and other alpines are protected from summer scorch with shade cloth. (photos, Ev Whittemore)







*Balsamorhiza deltoidea* near Marcola, Oregon, a digital photograph by Tanya Harvey, won class 1 and the Grand Prize in the 2002 Photo Contest. (p. 130)

*Crocus sieberi*, a digital photo by Bobby J. Ward, took first prize in class 4 (p. 131).





*Diapensia lapponica* in the White Mountains, New Hampshire. Thomas Clark's photo received second prize in class 1 of the 2002 Photo Contest (p. 130).

*Epimedium* 'Silver Queen', by Erica Schumacher, third prize in class 4; described on p. 134.





*Leontopodium* and omnipresent *Bergenia stracheyi* (photo, p. XXX) and *Polygonum affine* were the only recognizable plants at several sites, with everything else chewed to nubbins.

After winding over impossibly steep roads with rocks clattering down on us distressingly often, we arrived at Tarshing, Mehboob's native village. Looming overhead, the pink shoulder of Nanga Parbat, the ninth highest peak on earth, greeted us the next morning at dawn. After trekking across glaciers the next day, we set up camp at nearly 12,000 feet (4000 m) directly under the two-mile vertical face of the mountain, the largest such cliff on earth. I was astonished that villages perched above the glaciers, and late in September, huge mixed herds of sheep, goats, cattle, horses, and yaks continued to browse the tundra.

Several species of *Juniperus* formed the krummholz vegetation (stunted, horizontally growing trees): *Juniperus excelsa*, *Juniperus turkestanica*, and *J. communis* amazed me not only in their picturesque, windswept, bonsai-like habit, but also because they so closely paralleled the appearance of *Juniperus osteosperma*, *J. scopulorum*, and a very similar form of *J. communis* in the Intermountain West of North America.

Only after we had climbed high above the valley onto the steepest slopes and ledges did an abundance of unbrowsed alpiners finally appear. And what a bounty! *Anaphalis triplinervis* in a single-flowered form like a *Helichrysum* was in full bloom, and many potentillas still had a few flowers, but *Morina coulteriana* had already shed most of its seed, to my chagrin. Primulas, drabas, aquilegias, *Rhodiola* species, and no end of novelties appeared every few steps. The flora was so rich and diverse that we quickly became distracted and kept climbing higher and higher. The stark pinnacle of Nanga Parbat mottled with glaciers loomed constantly to the west, and at one point I looked down and was startled to see how far our tiny tents lay below us in the chasm.

Possibly the most famous gentian of Pakistan is *Gentiana kurroo*, a tiny, strap-leaved species of lower elevations that has been sought by gardeners for decades (plants grown under this name are usually some other species). We were astonished to find many specimens of a plant that seemed to fit the description, although we now believe our collection was *Gentiana tianshanica*, a closely allied, higher-altitude miniature that likewise has not found its way to gardens. We donated a good lot of seed to the NARGS exchange.

The genus that provided the greatest delight was probably the "rock jasmines." *Androsace muscoidea* var. *uniflora*, a densely silvery cushion plant with stemless white blossoms, occurred in huge drifts at the base of Nanga Parbat. A few days later, we found another dense rock jasmine, the pink-flowered *Androsace mucronifolia*, growing just as abundantly among the pristine alpine tundra of the Deosai Plains National Park. The most surprising plant of this genus for me, however, was a lush, large-leaved species, *Androsace rotundifolia*, which looked much more like a primrose than any androsace; it grew on exposed, sunny slopes with various xeric alpiners.

Two old friends greeted us everywhere at higher elevations: the Himalayan knotweed, *Polygonum affine*, and *Bergenia stracheyi* (photo, p. 117), a lush-leaved

“saxifrage” I have grown at Denver Botanic Gardens for decades, were among the commonest plants everywhere we traveled. In fact, they almost excluded other vegetation. Both must not be palatable to grazing animals, since they appeared untouched and bristled with seedheads and even fresh flowers. Both have spectacular fall colors that paint the highest peaks with wide swaths of scarlet.

Although much of the country we had traversed had been heavily overgrazed, the vast Deosai Plains National Park formed a stark contrast. This lofty plateau at nearly 13,000 feet (4300 m), surrounded by snowy peaks, reminded me of South Park in Colorado. Uninhabited and very cold much of the year, the rolling hills of the plateau were bristling with every kind of cushion plant and tufted alpine. Ironically, the park was created primarily to preserve the rare Himalayan brown bear and snow leopard, but the plants have been the most visible beneficiaries of protection. (Every time one of us sighted a leopard or bear, it turned into an amorphous boulder once we focused our binoculars.) This is a pristine vision of what much of the Himalayas must have been like before the flocks and villages had burgeoned up to treeline. I am told that early in the season, many of the desolate fields we passed are full of spring flowers, and that they are quite lush in early summer. However, overgrazing for centuries must have had a devastating effect on biodiversity in this richest of alpine floras. Alpine gardeners must ponder the enormous impact that overpopulation is having on our fragile mountain environments.

We camped one night above a frigid alpine lake in the heart of the Deosai Plains. Everyone agreed this was the longest, coldest night we'd ever tried to sleep through. At one point, I was startled to hear what had to be a Himalayan brown bear growling menacingly just outside my tent. I listened with increasing dread, finally waking my tent companion to warn him. You can imagine my chagrin when it was pointed out that one of our traveling companions had a distinctly ursine snore.

The highlight of the trip for me was encountering my very first spikethrift (*Acantholimon*) in the wild: first on the upper Astore Valley near Babusar Pass, and then again near Nanga Parbat, and finally on steep limestone steppe below the Deosai Plains. This was *Acantholimon lycopodioides* (photo, p. 117), a dense hedgehog plant that is the most widespread species in northern Pakistan. We have grown dozens of species of *Acantholimon* over the years at Denver Botanic Gardens, helping to popularize this immense genus of dryland plants that are a constant feature of the semiarid plains of Asia from Turkey all the way to Tibet.

The *Acantholimon* was particularly massive in the steep limestone canyon descending from the Deosai to Skardu, a road with banks so steep that they had largely escaped the ravenous herds. We encountered some of our most treasured plants on the few tiny places where we could pull off here, including an *Aquilegia*, *Comarum salesovianum* (a wonderful shrubby potentilla relative with white flowers) forming dense mounds bristling with seed; giant rheums (rhubarbs) grew on stark, arid screes. Near the bottom of the valley, Dan Johnson recollected *Aeo-*



*niopsis cabulica*, one of our favorite biennials, first introduced by the Swedish expedition. The lacy patterning on the foliage is slightly different from the clone we are growing. We were delighted to find *Perovskia abrotanoides* in the wild.

When we descended out of the Himalayas into the ancient city of Skardu (southernmost outpost of the Silk Route), our hosts had arranged flights out of Pakistan in response to the deteriorating political situation. We peered longingly out of the plane windows at the soaring Karakoram Mountains. We glimpsed the southernmost steppes of Asia, the largest and richest of our "sister climates" on the surface of the globe. We were sad to cut two weeks from a wonderful expedition, and sadder still knowing we would be the last American horticulturists to explore these hills for months if not years to come.

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## Corrections

In the photograph section of the winter 2003 issue (vol. 61, no. 1), please correct the following errors in captions:

P. 36, the photo labeled *Townsendia glabella* should be labeled *Erigeron pinnatisectus*.

P. 39, the correct name is *Penstemon fruticosus* 'Kristal'.

P. 42, the images became "rotated" when placed, and the correct caption should read: above left, *Eriogonum acaule*; above right, *Eriogonum flavum* var. *xanthum*; below left, *Eriogonum caespitosum*; below right, *Eriogonum ovalifolium* var. *depressum*.

We apologize for the errors. We're still getting the "bugs" out of our new printing routine and hope readers will bear with us while we learn to work with Allen Press.

# Death of a Draba

Brian Bixley

Our garden is attached to a working farm, separated from it in most places by a thin but sturdy cedar rail fence. I like this neat division, the proximity of the functional and the aesthetic, the utilitarian and the amusing. I don't know *why* I like it, unless it be that life's sharpest pleasures derive from contrast and paradox.

We used to grow grain and cut hay, but now the fields are used only for pasture. Perhaps the men who came to do the cutting and the baling found the work hot and tiring, but they sometimes appeared to find great pleasure in their shared toil, and snatches of song drifted through the morning's heat. Wives and mothers would bring lunch, and for half an hour stillness would envelop the group. Now all that has gone from our part of the country.

The cows in the surrounding fields are a nondescript lot. I had hoped that we would have shiny black Aberdeen Angus, or Charolais ("Charlies") of creamy brown, but they are as genetically confused as the dogs we adopt. We don't disdain them, though we don't pay much attention to them, either. We are happy to have the cattle nearby. We are aware of their daily migration around the farm, of their ritual treks along slender well-defined paths, of the thick-necked bull, of their lying down before a storm. We worry about them when there is a storm, but for their collective safety, not individual. Their slow movements, glimpsed through a slatted fence or through a gap in a row of poplars, make the garden move in the opposite direction. The borrowed landscape continually changes.

TO MAKE A GARDEN in the middle of open fields is to underline its artificiality in a complimentary sense: made or produced by art, to which we might add, made visible by art. The wild garden has its charm, perhaps especially that of softening the transition from nature to the garden, but I would no more want nature to be indistinguishable from the garden than I would want the drapes in the windows to melt without delineation into the paintings on the walls. The passion for wild gardens, like that for labor-intensive harvesting, is mostly a passion with city folk.

In many gardens, the rock garden—if there is one—is the most artificial part. If there is a rocky outcrop, perhaps waiting to be stripped of grass and weeds,



then the artificiality is reduced, but it is reintroduced by plants that are not endemic, or that are not found together in nature. In any case, most of us do not have a natural rock formation waiting to be exploited, so we make something resembling a “haphazard collection of pudding-like paleolithic barrows, or ill-conceived ramparts.” The temptation—if one has the strength or taste, or can purchase those two scarce commodities—is to try to emulate nature, but I think Reginald Farrer, whose *The English Rock Garden* (1919) did so much to foster the enthusiasm for alpine plants, was correct when he wrote that “to talk of imitating nature, as so many vainly do, is to encourage a rank and empty delusion.” Yet that delusion is what he most coveted: “The highest art is to conceal art; and accordingly the first and last essential of the good rock garden is that it should not look like a garden at all, but like the unharvested flower-fields of the hills—effortless, serene, and apparently neglected.” The premise is wrong, and has been the source of considerable dreariness across the land.

What underlines the artificiality of the rock garden is the size of plants. The rock garden is to the garden proper as a doll’s house to a place where people live, and one is reminded of Graham Stuart Thomas’s reference to alpine plants as “garden toys.” This is why we often try to situate the rock garden away from the shrubs and perennials; the scale is all wrong. The frequent use of dwarf conifers and miniature trees and shrubs in and around the rock garden is an obvious effort to correct for this imbalance, in the way that ambitious toy railways are set with miniature landscapes with churches and windmills a few centimeters high. An alternative response might be to grow small plants on a large scale. “Very ‘rare’, for instance, is *Primula spectabilis*,” writes Farrer, untouched by Freudian anxieties, “yet, in its own tiny territory, all the hill-tops are crested for miles with the blush of roseate ripples”; and I have read somewhere of the borders of a long driveway being bedded out with the Chinese *Gentiana sino-ornata*. But unless we have a very large garden—and numerous gardeners—this is not an option.

But the appeal of the small is for many of us irresistible, and we are prepared to accept the larger aesthetic failure for the pleasures of succeeding with the alpine gems, just as we are prepared to listen to musical masterpieces in dreary concert halls. To grow well an alpine plant that is both difficult and beautiful is not simply to cultivate, but to reach out to wild and lonely places that mirror the wild and lonely places of the heart.

The drabas grow in such places. “The race is alpine and high-alpine, very freely spread in the loftiest and sternest rocky places of both the Old and the New World, extending in a wide range right down the Andes,” and into the Arctic. They are crucifers or Brassicaceae, the mustard family, sharing a lineage with cabbages, Brussels sprouts, cauliflowers, radishes, turnips, wallflowers, and the Great Sea-kale, *Crambe cordifolia*. As their family name suggests, their common feature is the placement of the petals to form a cross; the flowers are typically borne in a raceme or corymb “in which the flowers are formed on lateral stalks of different lengths . . . resulting in flat-topped clusters of flowers.”

Farrer divides the drabas into three categories: *Aeizopsis*, spiny-looking clumps; *Chrysodraba*, with a looser, softer habit; and *Leucodraba*, with flowers

invariably white. His distribution of the species to these categories is so overtly idiosyncratic that I wish to propose an alternative taxonomy: the ordinary, the extraordinary, and the magical. Among the extraordinary I would include *Draba rigida*, *D. acaulis*, *D. rosularis*, and *D. cappadocica*. The magical are *D. polytricha*, *D. longisiliqua*, *D. mollissima*, and the greatest of these is *D. mollissima*.

I do not remember when I made my first efforts to grow *Draba mollissima*. It is at home in the Caucasian mountains, and has a reputation for being difficult to grow in gardens ("the infamous *Draba mollissima*," wrote a contributor to the *Bulletin of the North American Rock Garden Society*), but whether this was an incentive or a deterrent I no longer remember. Our rock garden was begun in 1981, and in 1982 I find references in my garden diary to some ordinary drabas. Then, on May 21, 1983: "*Draba mollissima* (2) planted on their side, but looking unhappy this evening." Two days later, "Most of the new plants look all right, except for the *Draba(s) mollissima*." I don't remember where the seed came from (it is almost impossible to purchase plants of the magical drabas), but probably from the Seed Exchange of the NARGS. There was no further mention until October 16: "I have not mentioned before how well *D. mollissima* has done this summer. The problem is that it is insufficiently covered to survive the winter. Too bad, it looks so handsome." One of the seedlings must have died. The one that had survived was growing horizontally between two flat stones. That I had planted the seedling horizontally suggests that I knew that it disliked water on its foliage. That I had predicted its death is characteristic warding-off-the-evil-spirits gardening talk.

Not until August 16 was there any mention in 1984, when a note of alarm was sounded: "The sad story is *D. mollissima* which is clearly rotting away." This was the first of many August alerts, but nine months later (May 5, 1985) the diary recorded that "*D. mollissima* has 3 flowers and has filled in nicely." The flowers are not more than 1.5 cm across, of a light glossy mustard. In August 1985 came a significant entry: 4 days of rain . . . absolutely perfect, except for its timing which is about a month too late. . . . Even the drabas—with the exception of *D. mollissima*, belatedly covered—are looking happy." The significance was the covering. I had stumbled on the secret. It was not adequate for the plant to be planted horizontally. If it was to ward off the fatal clamminess of August, it had to be protected from moisture on its foliage at all times, which is why most garden writers think of it as a plant for the alpine house. Perhaps because we have no alpine house (essentially a greenhouse in which winter temperatures are kept just above freezing), I think of growing plants in one as a lesser challenge. My compromise had been to cover *D. mollissima* with a plastic cone, stapled at the top so as to admit no rain or splash from a passing sprinkler. Even the "almost unbearable heat and humidity" of the first weeks in September of that year created no problems. The cone was removed only for special occasions, for visitors, for the ceremony of touching.

From this time the plant began to grow strongly, forming a hard, pale green mount of tiny rosettes, and flowering more boldly each spring. It dealt with the coldest temperatures and little snow (for it would pass the winter in its native



habitat under a blanket of snow) by turning, under its plastic protector, a dead-looking brown. As soon as spring returned, the rosettes would green up from the margin inward, woolly at this season, and I would count the flowers: 8 in '86, 7 in '87 but "looking—O hubris—gorgeous"; 19 in '88 "looking spectacular," 28 in '89, and dozens—"too many to count"—in '90. I learned when I cut off the tiny flower stems to collect the seed that I had to be careful not to tug on the stem, or the rosette from which it emerged would wither and die, leaving a dark hole in the otherwise perfect mound. As the season went on, and the plant was protected from moisture, it would lose its early woolliness and develop a tight, hard surface. This surface was so enticing that everyone who saw it wanted to touch it, as though it were a talisman, as though it could heal some human ache. In the spring of 1991 it had formed a flawless cushion, 13 cm in diameter.

Many plants die a slow and unbeautiful death. Their leaves begin to yellow or their woolly foliage to rot. "Too much water," we think, but the rotting goes on. "Not enough water." "Perhaps it needs feeding." "It's not getting enough light." "The sun is too strong." Plants have a will of their own; they make a decision to leave, and nothing we can do will dissuade them. "*Je te salue, auguste et profitable mort!*" they cry, and die. Sometimes, they are taken.

On July 29, we returned from lunch with friends to find that the cattle had broken through the barnyard fence and had made their way into the garden. Left to their own devices, the cattle would probably have followed the sweep of the driveway and spilled harmlessly onto the roadside. But a passing neighbor, spotting them in the driveway and wishing to be helpful, had closed the gate to the road, so that the cattle were trapped in the garden. There was surprisingly little damage. Some of the hedges were a bit straggly, the front lawn resembled a derelict dance-hall, new paths had been made through shrub beds, a *Clematis flammula* had been torn down but not out, a 700-pound heifer had skipped into one of the raised beds. And *Draba mollissima* was scattered in limp fragments, the tension of that tight mound released by an unmalicious hoof.

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Brian Bixley is a retired economist who lives with his wife on a farm in southern Ontario. Their main concern is to connect the garden to its surrounding landscape, but they have specialized interests in alpines, species clematis, and unusual trees. Brian is the author of *The Canadian Gardener's Journal* and of *Essays on Gardening in a Cold Climate*, in which this essay first appeared. His spoof on the passion for snowdrops appeared in the December 2001 *Alpine Gardener*. Contact him at <lilactree@sympatico.ca>.

# Hypertufa Mini-Mountains

Ev Whitemore

I love playing with hypertufa mix, and I love mountains, so I decided to combine the two in a project I dubbed “hypertufa mini-mountains.” This is a way of creating relatively lightweight artificial rock formations that can be used as planting sites in the rock garden or in large troughs. (Photos of the various stages appear on p. 118.)

I informed Bruce, my husband, of my plans to make three mini-mountains of graduated sizes. He got a supply of lumber to build a box foundation 4 by 5½ feet (about 1.3 by 1.8 meters) in size. The box rises 20 inches (50 cm) above ground level, because I planned to plant around the mini-mountains and needed the depth for the roots.

My supplies were 80-pound bags of Sakrete (a commercially available premix of cement and sand), dry peat moss, and creek sand, along with various tools and objects to be used for molds. I cleared out a workspace on the sand bed in my alpine house and laid down a sheet of plastic film.

The largest mini-mountain was to be 19 by 24 inches, and 14 inches tall (about 50 by 60 by 35 cm). To support the hypertufa, I placed a large cooking pot upside down on the plastic and covered its handle with a rectangular metal baking pan. To complete the form, I mounded damp sand over these objects at two heights.

After mixing the Sakrete with less than one equal part by volume of dry, sifted peat, I added enough water to make a mixture just moist enough to be workable and started covering the sand mold. I made a few planting holes near the bottom of the resulting mound and added others at random points on its surface. To make the holes, I formed them around a small plastic cup, which I removed after molding the hypertufa around each one. I took care to make the larger holes at the top of the mound so that rain could enter the interior of the mini-mountain. I applied the hypertufa very roughly to achieve a naturalistic surface.

With experience, I learned that it's a good idea to make a small lip of hypertufa on the lower side of the planting hole. The holes should be cleaned of excess hypertufa before it dries completely. A measuring tablespoon is a good tool for this, with the tip of a cement trowel to outline the hole.



I made the other two mini-mountains similarly, using different bases for the molds to vary the size and shape. I also made several solid "rocks" of hypertufa.

After the hypertufa had dried for a week, I lifted the mini-mountains carefully off their molds, cleaned off the loose sand, and allowed them to dry for two more days. The next step was to spray them and the "rocks" with flat black paint. I followed this with a "hit-or-miss" application of flat dark brown in a few areas, and an even lighter spray of dull dark green.

While the hypertufa and paint were drying, I started the long process of preparing the growing medium for the box frame. I shoveled creek sand into the frame to a depth of 12 inches (30 cm) and wet it thoroughly. I then mixed a bag of commercial "topsoil" purchased from Wal-Mart with one-third bag of Nature's Helper (finely ground pine bark), two heaping shovelfuls of creek sand, and two shovelfuls of poultry grit, repeating the process until I had enough to fill the frame. A thorough watering settled the mix, and the mini-mountains and "rocks" were arranged on top of it.

To fill the mini-mountains, I mixed more batches of the same soil, adding two handfuls per wheelbarrow of granular Osmocote 14-14-14 fertilizer. I allowed the small plants I had chosen to dry a bit so I could shake the potting soil off their roots and insert them into the holes with minimal root damage. I set the plants into the holes starting at the bottom, then added soil through the holes above until I reached the next level and added its plants. I firmed the soil with water from a hose and gentle finger pressure.

For the north sides of the mini-mountains, I chose saxifrages, campanulas, androsaces, and dwarf ferns. *Gypsophila aretioides*, *Silene acaulis*, and other tight, low plants are on the tops. *Drabas*, *Aster coloradoensis*, *Arabis bryoides*, *Gypsophila nana*, *Helichrysum sessiloides*, and *Helichrysum* aff. *pagophyllum*, along with tiny grasses, are among the plants in sunnier spots.

Once the three mini-mountains were completed, I added plants to surround them. Each plant, including those in the mini-mountains, received a mulch of small gravel. I misted the plants carefully for several days after planting.

After two weeks, I decided that this had been so much fun that more mini-mountains were needed on the slope by the lily pool. I constructed five in larger sizes, which would suit the larger scale of that part of the garden better. While the hypertufa was drying, we hauled out the tiller and grubbed out roots and rocks, and I started putting down a sand base for good drainage (the climate here in the hills of North Carolina features frequent rainfall almost year round). Many wheelbarrows of growing medium elevated the new bed, an interesting addition to the garden we call "Fort Knox."

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Ev and Bruce Whittemore's remarkable garden in Penrose, North Carolina, was described and illustrated in the Winter 2003 issue of this journal. Active in NARGS for many years, Ev is a continual source of novel ideas for rock and container gardening.

# Rock Garden Quarterly Photo Contest

The first *RGQ* Photo Contest drew entries from about 20 participants, submitting as many as 20 images per contestant. Competition in the digital class was especially keen, and this year (see below) we have decided to judge digital and conventional photos together. A few winning photos appeared in the Fall 2002 issue, some in this issue, and more are scheduled for future issues. We will repeat this successful feature this year; details on how to enter appear at the end of this article.

## Awards

**Grand prize** (gift membership to NARGS for a designated non-member):  
Tanya Harvey, Lowell, Oregon, for the winning entry in Class 1 (see below)

**Class 1:** Portrait of a plant in the wild, indicating habitat

1. Tanya Harvey, Lowell, OR: *Balsamorhiza deltoidea* near Marcola, Oregon (p. 119), taken with Olympus 2100 digital zoom camera (2.1 megapixels)
2. Thomas Clark, Granby, MA: *Diapensia lapponica* in the White Mountains, New Hampshire; Minolta Maxxum 7000 with Tokina 35–70mm macro lens (p. 120)
3. Graham Nicholls, Timsbury, England: *Pulsatilla occidentalis*, Mt. Rainier, Washington; Minolta 505 si with 28–80 zoom and macro lens

Honorable mention: Doris Taggart, Kirkland, WA: *Viola flettii*, Olympic Mountains, Washington; Canon EOS Elan, 100mm macro lens (published in Fall 2002)

Honorable mention: Thomas Clark: *Vaccinium vitis-idaea*, details as for 2nd place (published Fall 2002)



### **Class 2:** Portrait of a plant in cultivation

1. Thomas Clark: *Papaver burseri* in the Botanical Garden, Mt. Holyoke College; details as above (published Fall 2002)
  2. Ev Whittemore, Penrose, NC: *Diapensia aretioides*
  3. Bobby J. Ward, Raleigh, NC: *Iris unguicularis*; digital image
- Honorable mention: Graham Nicholls, *Clematis fremontii*, details above

### **Class 3:** Rock garden scene

1. Ev Whittemore: Crevice garden (published Fall 2002).
2. Bobby J. Ward: Streamside rock garden with bridge, digital image

### **Class 4:** Photo taken with a digital camera, any subject

1. Bobby J. Ward: *Crocus sieberi* (p. 119)
  2. Tanya Harvey: *Lupinus* sp. and *Erigeron aureus*, Mt. Rainier
  3. Erica Schumacher, Ballston Spa, NY: *Epimedium* 'Silver Queen' (p. 120)
- Honorable mention: Graham Nicholls, *Campanula cashmeriana*  
Honorable mention: Tanya Harvey, Hoary Marmot on Mt. Rainier

## How to enter the 2003 Photo Contest

This year's prizes for first place in each category are one-year gift memberships in NARGS for the recipient of the winner's choice. In addition, there is a grand prize of a copy of *Portraits of Himalayan Plants* by Toshio Yoshida.

You may submit photos as prints, slides, or digital files on CD. Last year we had a separate class for digital photos, but this year you may enter your digital images in any class. A judge's comment on the first year's contest was that the home-processed digital prints submitted were not of sufficient quality to be competitive, despite the likely high quality of the images themselves, and that most prints submitted were not well processed. He suggested that both digital and conventional prints, if submitted, should be "studio quality." Please write your name on each item sent (these will be masked during judging); if labeling prints, write the information on a paper label in pencil and stick it on the back, because ink is likely to bleed through the paper.

Each person may enter up to ten photos in each category. Include a list, with your name and address, of the images submitted with subject, location where photographed, class entered, and (if known) camera, lens, and type of film used. Technical details are not required. If you are submitting your entry on CD, please include a list on paper with the names of the files for each item.

Send all entries by post, FedEx, or UPS to the Editor: Jane McGary, 33993 S.E. Doyle Road, Estacada, OR 97023, USA. **Do not submit entries as e-mail attachments.** The deadline for receipt of entries is **August 1, 2003.**

All materials submitted will be returned by October 2003, except for award-winners to be published in the 2004 volume of the *Rock Garden Quarterly*, which will be returned later.

By entering the contest, you grant NARGS the right to publish your photograph one time in the *Rock Garden Quarterly* and to post it on the NARGS website; however, you retain copyright on your work.

**Classes:**

Class 1: Portrait of a plant in the wild. Image should be centered on the plant, but extreme close-ups are less desirable than photos showing the entire plant.

Class 2: Natural scene featuring wild plants. The plants should be clearly visible but the perspective is wider than in the close-up portrait.

Class 3: Portrait of a plant in cultivation. Image should give a good idea of how the entire plant appears, rather than a tight close-up of single flowers. (Hint: Removing labels before taking the photo produces a more pleasing picture.)

Class 4: Rock garden scene, showing both landscape and plants.

We look forward to seeing your photos!



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# Plant Portraits

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## *Phlox hoodii*

RANDY ALANKO, Baker City, Oregon

*Phlox hoodii*, this issue's cover subject, is a 'microphlox' with a widespread range over most of interior western North America. It occurs from Alaska south to California and New Mexico, and east to Saskatchewan and the Dakotas. I am blessed to live within this range in northeastern Oregon, where I have both wild and "domesticated" populations. This dwarf phlox keeps its attractive form and gives its flowers freely when successfully cultivated.

*Phlox hoodii* grows from 3000 feet (900m) elevation in valleys and rangelands to 10,000 feet (3000 m) on ridges in many different xeric plant communities. It tends to live in dry sites with similarly minded companions; here in northeastern Oregon these include eriogonums or "buckwheats," penstemons, erigerons (e.g., *E. linearis*), lomatiums or "desert parsleys," the showy composite balsamorhizas, the alpine clover *Trifolium macrocephalum*, *Calochortus macrocarpus*, and sagebrush (*Artemisia* spp.). This phlox seems indifferent to soil pH, inhabiting a variety of soil types, but most often I see it in well-drained soils low in organic matter or in rocky clay. It likes a sunny, windy site with a good view.

The typical plant forms a prickly mat or loose cushion 8–12 inches (20–30 cm) wide, spangled with white, pink, lavender, or even light blue flowers, often with a lighter, white, or darkened "eye." The colors can be quite variable in our local populations (and sometimes not so attractive), but I am told that white predominates in other portions of its range. The width of the corolla lobes also varies from thin to wide. The tiny leaves are green or gray-green with fine webby hairs, linear, usually rather rigid, and sharp at the tip. It has a straight, unbranched taproot usually until the third year, then develops a deep, woody rootstock with occasional branches arising several inches below the surface, a characteristic more evident in cultivated plants.

The cultivation is the tricky part. *Phlox hoodii* has a reputation for being difficult to grow, at least outside its native range. Here in the natural habitat of the plant, it is easy, and I've heard of similar success in Colorado and Idaho. The

main problem elsewhere is untimely excess moisture for the rootstock, causing it to rot. In our area, the soil is usually unsaturated and/or frozen through winter until the late-winter thaw, when the ground can be very wet and muddy for a few weeks at the start of spring growth. The soil then dries out about flowering time in April and remains dry until late fall. In summer, the dormant brown, brittle plants look dead, but they revive in the fall (unless they are in your garden). The plants experience the occasional summer thunderstorm, but wind soon dries the foliage. In years of abundant rain or under irrigation, the foliage will stay green and the plants will rebloom in late summer.

One growing strategy successfully used in other, wetter climates is the sand bed. I'm told Anne Spiegel has done so successfully in New York State. Other creative methods that provide the plant excellent drainage with low organic matter should work as well.

Direct protection from excess moisture, using a frame or protectable or movable trough, could certainly improve chances of keeping it, and of course an alpine house would be suitable. Even an expert grower such as Graham Nicholls has had trouble with losses, however. I've wondered if his plants look out on the rain and long for a snowy hibernation.

Propagation is primarily by seed, which germinates readily in early spring if sown in early February, but viable seed—which is brown with a distinct groove—can be hard to acquire. The capsule contains usually one seed, sometimes as many as three, and it explodes at maturity, scattering the seed, often as one touches it. Use a deep pot: that root digs deep. I've had more success with delayed planting out with one- to two-year-old seedlings than with earlier stages, maybe because of the scant, fine roots of young plants. I've had no success rooting early spring tip cuttings, but others, such as Graham, have had a little success. I tried division once, obtaining two new plants where the rootstock branched. I hope means can be found to multiply the many good color forms available and give this beautiful plant a better hold in cultivation.

**Sources:** Seed is sometimes available from the NARGS Seed Exchange and usually from Northwest Native Seeds, 17595 Vierra Canyon Road, #172, Prunedale, CA 93907. Plants have been offered by Beaver Creek Greenhouses, Box 129, Fruitvale, BC V0G 1L0.

## *Epimedium grandiflorum* 'Silver Queen'

ERICA SCHUMACHER, Ballston Spa, New York

Having heard how wonderful epimediums are for dry shady sites, I purchased *Epimedium* 'Silver Queen' at a Berkshire chapter plant sale in the fall of 2001. Shortly thereafter, I planted it near the base of a tree. In late April the next year, a cluster of reddish green leaves with red serrated edges emerged, topped by pure white, starlike flowers over an inch (2.5 cm) across. Deep reddish purple stems



hold up the flowers, and each flower is cupped by similarly colored dark sepals, providing a lovely contrast of colors. In flower, the plant stands about a foot tall. *Epimedium grandiflorum* is native to Japan. 'Silver Queen' is a named clone of this species and a parent of many other named cultivars.

Last summer, my woodland garden was very hot and dry at times, as evidenced by the fact that some of my ferns started to wilt. Despite these conditions, 'Silver Queen' flourished. The leaves remained a bright, light green until fall, showing up nicely against the brown mulch. In fall the leaves turned a lovely golden color before they were shed. The plant handled extremes of weather well, from snow in late May to several days above 90°F (32°C) in the summer months, both of which are unusual in my zone 4, upstate New York garden.

## *Mitchella repens*

GENE BUSH, Depauw, Indiana

It is not easy being an evergreen groundcover in southern Indiana. Reliable snow cover to protect foliage during the winter months seldom exists. I live and garden in Zone 6, but Zone 5 weather is no stranger to our gardens. The soil freezes solid, and winter winds whistle through, sucking moisture from foliage and leaving brown blotches. Shortly after freezing, the soil thaws, only to freeze once more in a continuous cycle, heaving all but the best-established and most tenacious root systems. Yet our native woodland wonder, the partridgeberry (*Mitchella repens*), always comes through unscathed, remaining a deep, lustrous spring green.

The sheer number of common names for this member of the Madder family attests to its popularity. "Deerberry" and "partridgeberry" say something about its importance to local wildlife as a food source. "Checkerberry" refers to appearance of the bright red berries over the green foliage. "Twinflower" (a name elsewhere for *Linnaea borealis*) aptly describes the flowering habit. In all, I am aware of more than 30 common names for this widely distributed and well-loved creeper.

*Mitchella repens* can usually be found forming small carpets on embankments and hummocks in woodlands. Its preferred locations are raised areas, such as occur around the bases of mature trees, where accumulating leaf litter does not smother the tiny foliage. The soil is usually acidic, but I am not convinced of their need for acid soil, since *Mitchella* grows with good vigor in nursery pots containing a neutral medium. I have plants growing in three widely dispersed gardens under varied conditions, and it thrives in all three, one of which is among limestone rocks.

Partridgeberry, the only member of its genus, is among our most interesting native woodland plants. It is a diminutive ground-hugging creeper that forms a dense evergreen mat with its rooting stems. The tiny leaves are set in opposite pairs along the stem and are rounded-ovate. Individual leaves range from 1/3 to

2/3 inch (8 to 16 mm) in length. Their color is deep, rich spring green, with white along the midrib and veins.

The flowers appear in June and July: 1/2-inch long, flaring white trumpets, fuzzy inside and fragrant. They are scattered along the individual stems, always in pairs, joined at the base like Siamese twins where they share a single ovary; thus, it takes two flowers to produce a single berry.

Each bright red berry has two small "eyes" or "bumps" reflecting the point where the corollas were joined. The bright red of the berries against the spring green of the foliage is quite showy, especially when the berries persist into the next flowering season. It is remarkable to see the white twin blooms accompanied by red fruits against the green mat.

Partridgeberry is easily propagated. Snip off a short section of stem that has a hair-like root or two and pot it up in a moist medium. Two or three pieces to a four-inch pot quickly form a nice beginning for the garden.

In my garden, partridgeberry flows between and creeps over limestone rocks, a combination that shows both to advantage. In early spring, several species of trout lilies (*Erythronium*) push through the green mat to display mottled foliage and bloom. A bit later, Jack-in-the-pulpit (*Arisaema triphyllum*) makes an appearance to form its own red berries, extending the colorful display.



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# Books

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***Flora ID Northwest: Interactive Keys and Color Photos***, CD-ROM, Version 4.0 for Windows (also available in Apple version) by Bruce Barnes. Distributed by the New York Botanical Garden Press. ISBN 0-9711405-8-8 System requirements: Windows 95, Pentium 133 and 32 MB RAM or better. \$300 for full database, or \$100 for any single state in database.

*Reviewed by* LOREN RUSSELL, Corvallis, Oregon

About ten years ago, a computer-literate friend remarked that the just-published *AGS Encyclopedia of Alpines* would be "the last of its kind; after this all the big references will be in computer format." Further, he said, these reference works would be organized as databases. I was unimpressed at the time, and not only because I value the convenience, feel, and familiarity of books. Databases, I thought, are necessarily cruder and less specific tools than the dichotomous keys and descriptions that we are used to in floras and field guides. *Flora ID Northwest* is the first database I've used that has any clear advantages over conventional floras, and certainly the most ambitious I've seen to date. It may in fact show the way of the future my friend predicted.

I first saw Bruce Barnes's database demonstrated at a Native Plant Society meeting in 1996, when it included only the flora of Oregon. I was intrigued, but not converted: it was slow and did not seem to include many of the features I normally use to identify plants. The present version, with many added features and with advances in computer memory and speed, is both more convenient and more capable. The CD database now runs rapidly on most desktop or laptop computers; it has been expanded to cover much of western North America, and "thumbnail" color photos have been added for most species.

For its scope alone, Barnes's work demands the attention of anyone interested in western American plants. It covers British Columbia, Washington, Oregon, Idaho, Montana, Wyoming, Colorado, and Utah; future releases may expand coverage to the northern Great Plains (but not, unfortunately, to California or the Southwest). In all, 6,484 species are included in four separate databases (ferns and allies, conifers, graminoids, and non-graminoid flowering

plants). Barnes's work is essentially a compilation from the major regional, state, and province floras, supplemented and updated from such sources as the (still unpublished) Oregon Flora Project and the *Flora of North America*. Some, but not all, recently described species are included in the database; e.g., among Oregon species of interest to gardeners, *Erythronium elegans* and *Romanzoffia thomsonii* appear, but not *Asarum wagneri* and *Dodecatheon austrofrigidum*. As can be expected in any work of this size (recall Rickett's *Wildflowers of the United States*), a few of the photographs are misidentified. Barnes updates his database as such omissions and errors are reported to him.

This is a work that emphasizes user-friendliness, and it is possible to locate species, genera, and families under their most familiar alternative names and synonyms. Thus, Barnes follows current practice in placing false Solomon's-seals in the genus *Maianthemum*, but these species can also be retrieved by highlighting the familiar *Smilacina* in the list of genera. Similarly, activating *Brodiaea* will also list all species of *Triteleia* and *Dichelostemma*; activating *Gilia*, 14 species of *Ipomopsis*; and the *Penstemon* keys include species now separated as *Keckiella* and *Nothochelone*. Subspecies and varieties are not keyed in the database, but some are listed under the species, usually with differentiating attributes; occasionally, photos of one or more varieties are included.

Anyone who is computer-literate and comfortable with botanical terms and keys should be able to learn the basic features of *Flora ID Northwest* in a single session. As with a dichotomous key, identification proceeds by sequential elimination of species, until only one (you hope!) remains. Unlike a key, this elimination process can use the most obvious attributes, or just those that can be seen, whether in a photo or a seed-head. These attributes are nested; for instance, to sort for "yellow flowers," you open "flower," then "flower color." Other attributes—like inflorescence type, flower shape, and number of petals and sepals—can also be found in the "flower" menu. As the sort continues, an alphabetic list of the remaining species is updated and a status line tells how many are left. Menus that will be useful in sorting the remaining species are displayed in blue, while those where all remaining species have the same character state are displayed in red.

The real power of this database becomes evident only with experience. There is a left-border toolbar allowing you to, for instance, activate the "analyze" function, which suggests the characters most likely to separate the species remaining, or deploy a photo gallery of the remaining possibilities. At most key points in the menus, help menus activate definitions and drawings of characters used at that stage (e.g. shape of leaf base). These drawings are one of the weak points of *Flora ID Northwest*: they are not original, and many are too crude to be of much help.

Barnes's database is at its best in a complex group with which the user is not familiar, especially where similar-looking species may key out far from one another (e.g., yellow composites, crucifers, or umbellifers). I found the database features generally no more effective than traditional keys where I knew the species was one of a moderate number of species in a genus, and where I had a specimen in hand with all the structures required for the key.



Barnes faces problems inherent in a database approach to any complex group. The most important of these relates to the fact that *every* unusual and very obvious species characteristic can be used in a dichotomous key. For a database, though, the multitude of such unusual or unique characters makes it impossibly unwieldy to "score" all of them for all species. In most instances, Barnes avoids using such unusual qualitative characters. For example, variegated foliage is an obvious characteristic, but rarely useful in identifying wild plants. It is not in the database, and this means that the marbled-leaved *Asarum hartwegii* and green *A. caudatum* have to be separated on features of the roots and flowers. Similarly, the distinctive shape of the tepals in *Allium falcifolium* is not used in its identification. In instances where certain characters are important for identification within a large genus or family (for instance, characters of the fruit in umbellifers or crucifers, or of the pappus in composites), Barnes does use special menus for that group alone.

Barnes warns users that some included attributes, such as range and season of bloom, should be used with caution. Dimensions like plant height are very important in the database, but these are often based on "typical" specimens, not the largest or smallest, so the user is to "select specimens that are of average size for that population." This dependence on "typical" ranges of measurement from published sources applies to a wide range of attributes. Consequently, I frequently use the "OR" feature in to enter a *range* for such features as plant height, leaflet length and flower length. No flora is complete for such data, but the incomplete recording of extreme variation becomes more obvious in Barnes's database, since it is so easy to falsely eliminate a species by specifying these attributes.

Most menus dealing with qualitative attributes (those that are not measurements) are quite trouble-free, but I had trouble with the "flower color" menu, as simple and useful as this should be. Flower colors are notoriously non-spectral, and in such genera as *Penstemon*, *Phlox*, and *Collomia*, the database assignment of "blue", "blue-purple to red-purple", and "pink to red" is not predictable, and so it is easy to eliminate species falsely. (This may be a consequence of Barnes's compiling several regional floras, each with its own usage over the blue range.) I routinely key in the "OR" function to include all "blue" or "blue-purple"; in some cases I resort to the "NOT" function to disqualify only "yellow" from the maddening purple-to-pink range.

Ever since I became interested in wild plants, I have wished for the impossible: a comprehensive, foolproof, easily carried guide with color images of every plant I'll ever encounter. This dream is not yet realized, but *Flora ID Northwest* is the nearest approach to it in existence. Its combination of area of coverage, analytic power, and color images goes beyond anything previously attempted for the American flora. This work is well worth its cost and should be in any serious reference collection on western plants.

*A Rage for Rock Gardening: The Story of Reginald Farrer, Gardener, Writer and Plant Collector*, by Nicola Shulman. London: Short Books, 2002. ISBN 1-904095-21-6 118pp. Hardcover.

Reviewed by NICHOLAS KLISE, Red Lion, Pennsylvania

I surmise that avid gardeners find nothing more delightful than reading about the personalities of the collectors and gardeners whose lives connect with the garden plants we know and grow. Every plant brought into cultivation has a story to be told, many of those highly dramatic. Reginald Farrer, an early twentieth century character, was one of the most important—and certainly the most interesting—plant explorers who acted in the drama of rock gardening. Very little has been written *about* him, although he himself was a prodigious writer who authored shelves full of books about his travels, as well as a heavy encyclopedia, in two volumes, of rock garden plants. He is not well known (even by rock gardeners) outside of Europe, but in Britain he is revered. The Alpine Garden Society awards the Farrer Medal to the most outstanding plants chosen each year at their shows, the highest praise invoking the name “Farrer.” His strict rules for the design of rock gardens are still quoted today, along with his pejorative terms “almond pudding” and “dog’s grave” for styles of which he disapproved.



Nicola Shulman has now taken up the task of writing a concise biography of this colorful character, and it makes very entertaining reading. Writing about Reginald Farrer is a challenge because he was a complex person who alienated all of his contemporaries, and we are left with little documentation: his own mother burned his diaries. It is fascinating to note that this “Prince of Rock Gardeners” (as I referred to him in my essay on him) is still called unprintable names by rock gardeners today; twenty-first century observers are still caught in a web that Farrer started spinning over one hundred years ago.

Shulman is to be admired for attempting to be even-handed in her analysis of Farrer’s motivations, since he was not a very likable person. His accomplishments—his gardening and writing—tip the scales of history in his favor, regard-



less of his personality flaws, with which Shulman could have filled her entire book. A character like Farrer deserves not only a great book like this, but a feature-length, Hollywood movie; the last scene would swell with crescendo as he lies dying, alone and friendless, in a wet tent in a trackless wilderness, still dreaming of finding “a new lovely flower.”

*A Rage for Rock Gardening* is a slim little book (the publisher’s name is “Short Books”) that can easily be read on a flight across the country. It is a handsome hardcover volume with several color plates of Farrer’s own watercolors of plants he found in the wild. It would make a wonderful gift; even if the recipient is not a gardener, the untold story of this Edwardian fop gone into a complete “rage” over searching for flowers—and love, and respect—is high drama and engaging entertainment.

Those who are familiar with the name “Farrer” and have tried to plow through his books or his encyclopedia still get no inkling of the complex and exasperating character he was. Shulman is the first biographer who attempts to breathe coherent life into what, by modern standards, seems to be a diagrammatic cartoon of his time, place and circumstance: the repressed homosexual, iconoclastic, silver-tea-service English flower-lover. She has done this by researching the lives of those he knew and with whom he had tumultuous relations—that is, everybody who was a part of his life. There are even pictures of the handsome men with whom he was smitten.

You will not regret making this little book a part of your library, and after reading it, you will want to share it with friends. Get it before the movie comes out.

***The American Woodland Garden: Capturing the Spirit of the Deciduous Forest***, by Rick Darke. Timber Press, 2002. 378 pp. 738 color photos. ISBN 0-88192-545-4. Hardcover, \$49.95 (available at a discount from NARGS Book Service).

*Reviewed by* JIM McCLEMENTS, Dover, Delaware

When I first opened and flipped through this publication, I thought, “Another coffee-table book!” In many ways it is: it is loaded with the author’s magnificent photographs and is beautifully produced. However, after a second pass, I realized that it’s a coffee-table book with meat.

The subtitle and preface clearly define the scope: the book is “not intended to be an encyclopedia but, rather, a synopsis: a portrait drawn from the ethos, the aesthetic, and the ecology of the eastern deciduous forest.” It is divided into five relatively independent sections, or chapters, each of which could almost stand alone, but which together satisfy the aim and scope of the work.

The initial section, “A Forest Aesthetic” is lavishly illustrated with the author’s photographs of woodland scenes, depicting all of the elements—light, color, seasons, layers, and so on—that compose the beauty of the forest. It’s easy

to understand what Darke is getting at, and why he is fascinated with the subject, even without reading all of the text.

The second part, "Learning from a Woodland Stream," is essentially an essay based on a series of time-lapse photos of a woodland stream, showing how it has changed from season to season and year to year. Again, great photography and an interesting idea, but I question whether it warrants 37 pages. The author has shown these photos more than once as a slide presentation to various groups in my area, the Delaware Valley, however, and perhaps they will be of more interest to those seeing them for the first time.

Next is "Designing the Woodland Garden," in which Darke shows various ways of transposing the elements laid out in the first two sections into a garden setting. Many of the gardens used to illustrate points, such as Longwood, Winterthur, and Falling Waters, may not be of much practical value to many home gardeners, but if one's interest lies primarily in garden design, the important concepts are certainly included and are well illustrated.

Chapter 4, "Planting and Maintaining the Woodland Garden," is what I (as one whose interests lean more toward plants than to design) would consider the real meat of the book, chock full of practical nuggets for all gardeners. Though still more than adequately illustrated, this chapter is mostly text, covering plant selection and purchase, woodland soils, planting techniques and hardiness, and pests and diseases. A good example of the kind of detail included is an explanation of the importance of considering summer night temperatures in addition to winter lows when assessing hardiness factors.

The last chapter consists of a "Forest Palette" alphabetically arranged by genus. This occupies about half of the book and is also beautifully illustrated. One should understand that the only plants included here are natives of the eastern woodland, excluding any exotics or western natives. Personally, I would find woodland gardening considerably less satisfying if I could not include western or Asiatic plants, but such things are obviously beyond the scope of Darke's intention. In addition, I would have preferred to have the trees, shrubs and herbaceous plants listed in separate categories, but this is hardly worth complaining about, given the overall strength and beauty of the book.

The book concludes with a list of plant sources, a glossary, a bibliography and an excellent index with common names cross-referenced.

If you're a pure "plant nut," this book may not be for you, but it's hard to imagine that anyone who does woodland gardening in eastern North America wouldn't want it. It should also stimulate all of us to appreciate and to try to preserve what remains of a rapidly disappearing ecosystem that formerly covered the eastern half of our continent.



*Carnivorous Plants of the United States and Canada*, 2nd edition, by Donald E. Schnell. Portland: Timber Press, 2002. 468 pp., 200 color photos, drawings, maps. ISBN 0-88192-540-3. Hardcover, \$39.95.

Reviewed by WILLIAM H. KING, Salt Lake City, Utah

Rock gardeners are continually seeking new challenges and new gardening ideas. Many rock gardens now have water features or pseudo-bogs incorporated in them or in the adjoining garden. A new edition of Donald E. Schnell's classic 1976 book on carnivorous plants has been published by Timber Press and will catch the interest of rock gardeners who seek more information about these curiously beautiful plants. Dr. Schnell is a pathologist and naturalist who lives in Virginia. The second edition is a great improvement over the original 1976 book, both in content and in quality of printing.

The book contains an informative introductory chapter on carnivorous plants that encapsulates the author's 40 or more years of study and answers many questions that Schnell has been asked over the years. It is followed by detailed chapters on the many taxa involved: Venus fly traps, or *Dionaea*; eastern American pitcher plants, *Sarracenia*; California pitcher plants, *Darlingtonia*; sundews, *Drosera*; butterworts, *Pinguicula*; bladderworts, *Utricularia*; and other possibly carnivorous plants. The book ends with a chapter on conservation issues. This is followed by a glossary of terms, an excellent bibliography, and an index of plant names.

The book strictly adheres to metric measurement, but the publisher conveniently provides a conversion chart in the back. Schnell uses only internal scientific-style citations that do not include page numbers; while this is fine for shorter journal articles, it is inadequate for referring to a 500-page book with which he takes issue. A more comprehensive index including more than just plant names would have made the book more useful. Overall, however, the format seems to flow well and is highly readable.

Each genus chapter contains a description, habitat, history, distribution map, pollination details, and cultivation notes for each species, and, in many cases, a discussion of how the plant attracts and digests its prey. For those tempted to grow some of these species, even if they are rock gardeners already, the requirements might be somewhat overwhelming. For example, the California pitcher plant, *Darlingtonia californica*, requires cool running water on its roots at all times. While recirculating water is a common feature in our gardens, adding a refrigeration unit for hot summer days might be a bit much. Schnell estimates that only about 1% of those who attempt to grow carnivorous plants are successful for more than a year or two, but reading the detailed species-by-species descriptions in his book must surely better our odds.

The final chapter is on the conservation of carnivorous species; clearly Schnell is concerned about their future. He blames much of the problem on habitat destruction such as draining of wetlands, on invasive species, and on large-scale collection of wild plants for mass marketers. He seems to downplay the role of

private collectors such as himself or the possible role his appealing new book will play in stimulating demand for carnivorous species. He places his hopes for the future in tissue-culture propagation rather than collection and in habitat preservation.

For those who want to experiment with carnivorous plants, the author does not recommend any sources for these plant materials. However, the *Carnivorous Plant Newsletter*, of which the author was founding co-editor, makes many useful source recommendations for nursery-grown plants on their website, <<http://www.sarracenia.com/faq/faq6280.html>>.

This book is well worth the \$40 retail price (lower through the NARGS Book Service) for anyone fascinated by carnivorous plants or those who would like to try to grow them. The publication is of the highest quality, with many wonderful photos, mostly by the author, and finely reproduced. It is suitable for the coffee table, though smaller than most such books at 6 by 9 inches, but it is certainly substantial at 468 pages.

***Snowdrops: A Monograph of Cultivated Galanthus***, by Matt Bishop, Aaron Davis, and John Grimshaw. Griffin Press, 2001. xi + 364 pp. \$68.65. Available in the USA from Arnold Trachtenberg, 140 Lakeview Ave., Leonia, NJ 07605; also available from NARGS Book Service.

*Reviewed by* M. J. HARVEY, Victoria, British Columbia

*Snowdrops* is a book that sets out to accomplish a certain task and does so brilliantly. This is not a beginner's book, but, like an encyclopedia, it is a delight just to thumb through with a blank mind and allow the flood of pictures and stories about people, plants, and places to grip you. You come back to earth and find that your coffee has gone cold.

The ambitious aim of the authors is to enable you to take any snowdrop (*Galanthus*), be it species or hybrid, and put a name to it—or at least to track it down to a narrow range of possibilities. To do this, the book displays a degree of organization and precision that is usually regrettably lacking in gardening books. Moreover, it does this without being dry or excessively academic in its prose style.

The book starts out with the structure of a snowdrop plant and an extensive account of the description, ecology, and geography of the various species by Aaron Davis. In 1999, Davis produced a more formal monograph of the genus *Galanthus*, defining 18 species and including a somewhat frustrating supplement on named cultivars. In the present volume, he has rewritten the descriptions and added a nineteenth species, *G. trojanus*, named for ancient Troy in north-western Turkey. Also included in this section are the naturally occurring hybrids (those not originating in gardens), of which only three are recorded.

Matt Bishop then takes over as the major writer on the cultivars—the book was largely his idea—with John Grimshaw acting as the general editor and contributing the chapter on Galanthophiles (“snowdrop lovers”). The meat of the



book then appears in four chapters on single-species cultivars and three chapters on hybrids, two of these being brief introductory chapters.

To identify a particular plant, the user is required to learn a limited vocabulary of terms concerned mainly with leaf type and inner petals. (The older gardeners among us must learn to substitute “supervolute” for “revolute” to refer to plants whose leaves are rolled in bud.) Then the keys to the sections can be used.

The keys, one of the book’s most remarkable features, are initial multiple-entry keys, as opposed to the dichotomous keys commonly found in plant identification manuals. To use them, you have to look down a list of choices labeled with letters. For instance, there are five choices on hybrids with single flowers. Having chosen the appropriate one, you then go through the dichotomous subkey within it and end up on the page where the plant or plants with these characteristics are described in detail. These keys seem to be very effective and represent a ground-breaking improvement in identification techniques in the context of a gardening book. I contrast unfavorably some recent books—on *Arisaema* and *Euphorbia*, in particular—in which the lack of rigor and consistency of descriptions have left me frustrated and furious at being unable to identify the plants in my possession. I hope future authors take the hint.

Apart from the keys, the book is an excellent reference for more than 500 snowdrop cultivars, including one or two named just before it was published. Many but not all cultivars have excellent close-up photographs, by Bishop, showing the flower characteristics. In addition, there are some more decorative plates of clumps and gardens.

The book ends with chapters on cultivation, Galanthophiles, and conservation. In the extensive cultivation section, propagation by twin-scaling is described in detail; this is now used to increase particular clones rapidly, enabling more people to own newer ones. It is intermediate between tissue culture and simple division of a clump of bulbs. The historic section includes brief biographies of the principal snowdrop growers.

This is a well-produced book, generously illustrated with high-quality photographs. It is the first volume under the Griffin imprint, founded by the authors, who hope to publish similar works in the near future. This small-press production partly accounts for its high price; however, since there is no other single source for the information it contains, snowdrop lovers and bulb growers in general will find it both invaluable and delightful.

### **Brief Notices**

By JANE MCGARY

The following titles have been received recently. Though not immediately related to the topic of rock gardening, they may interest some of our readers.

*Native Plants in the Coastal Garden*, by April Pettinger with Brenda Costanzo. Rev. ed., Portland: Timber Press, 2002. 232 pp., 35 color photos. ISBN 0-88192-

582-9. Paperback, \$19.95. Originally published in British Columbia, Canada, this idealistic work combines standard novice gardening information with the "True Believer" species of "native plant" enthusiasm, a view under which all one need do to create a perfect garden is remove everything introduced, install local species, tend them without "chemicals" for a year or two, and stand back to watch the ever-increasing flowers and the entirely charming fauna. (It might work inside a sealed dome.) The authors' political correctness is exemplified by such statements as "This handsome plant [*Lysichiton americanum*] does not deserve the unfortunate common name skunk cabbage; a kinder alternative is the less frequently heard, but much more suitably descriptive swamp lantern," a name I have never heard used in 55 years of living in the region concerned. Their intellectual rigor is exemplified, in a sidebar titled "A Few Appalling Facts," by the unqualified "A lawnmower pollutes the air as much as a car driving 350 miles." There is also the obligatory section on creating a "wildflower meadow," a myth perpetually recycled by garden writers who have not tried doing it for more than two years. Books like this are as unhelpful in the long term to the environmental movement as television evangelists are to Christianity.

***Succulents for the Contemporary Garden***, by Yvonne Cave. Portland and Cambridge: Timber Press, 2003. 176 pp., color photos throughout. ISBN 0-88192-573-X. Hardback, \$29.95. Originally published in New Zealand and written from the perspective of that nation's North Island, this attractively illustrated book introduces about 40 genera, picturing and describing only a few representative ornamental species for each. The majority are suitable for gardens only in climates that are frost-free or nearly so, though the author touches on *Delosperma*, *Dudleya*, *Jovibarba*, *Sedum*, *Sempervivum*, and *Yucca*. The excellent photos are mostly close-ups; more garden scenes would have been welcome. Some of the species illustrated are little known in North America, so this book should offer some new ideas for container-gardening fans and growers in southern coastal regions.

***Variiegated Plants: The Encyclopedia of Patterned Foliage***, by Susan Conder. Portland: Timber Press, 2001. 191 pp., color photos throughout. ISBN 0-88192-512-8. Paperback, \$24.95. Originally published in Great Britain, this is aimed at the designer of perennial borders. Numerous garden photos offer ideas for the tasteful use of variegated foliage (as opposed to the tasteless use to which it is often put). Few of the plants discussed are of rock-garden stature; a discussion of variegated plants that *are* would be welcome in this journal.





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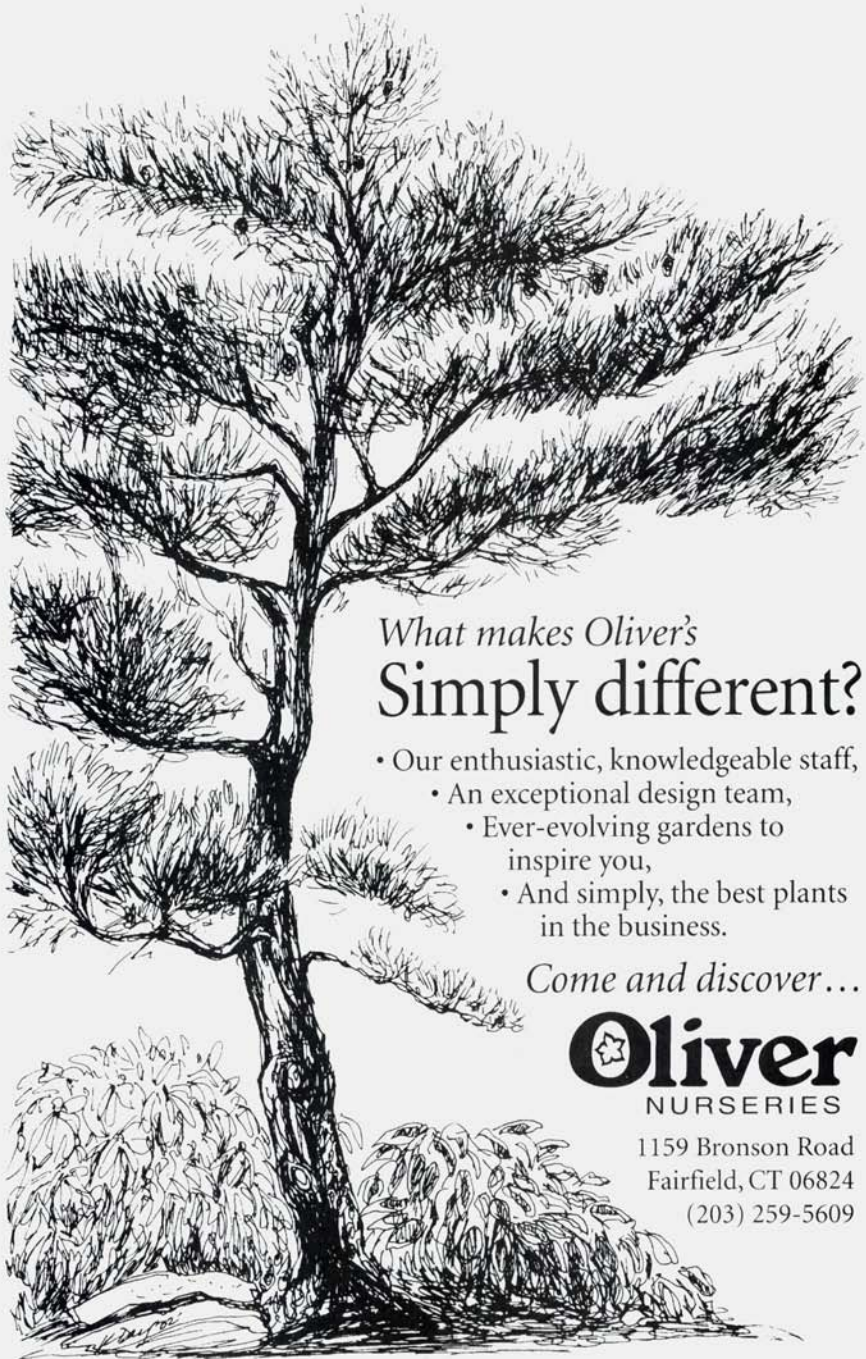
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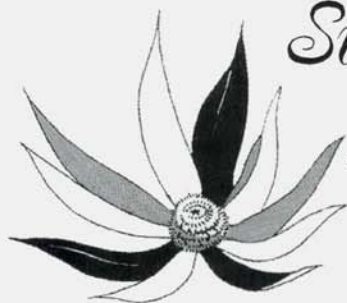
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