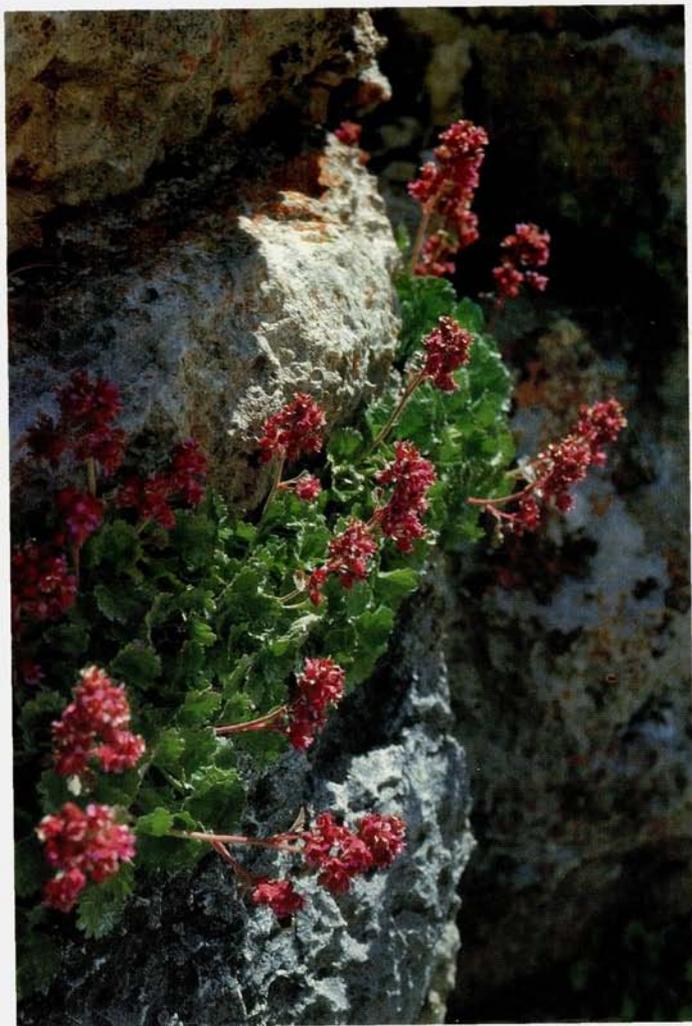


Bulletin of the
American Rock Garden Society



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CALENDAR OF COMING EVENTS

Eastern Winter Study Weekend (New England Chapter)

Sheraton Tara Hotel January 29-31, 1988
Framingham, MA

Western Winter Study Weekend (Western Chapter)

Villa Hotel February 26-28, 1988
San Mateo, CA

Annual Meeting (Columbia-Willamette Chapter)

Rippling River Resort July 29-31, 1988
Welches, OR

Cover Picture: *Telesonix (Boykinia) jamesii* in the Big Horns, Wyoming
Buffy Parker, Photographer

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Big Horns – I

Morris West
Red Lion, Pennsylvania

After considerable coaxing—perhaps it was more like badgering—by various members of ARGs, Howard Pfeifer finally agreed to arrange transportation and accommodations and escort a small group to the Big Horn Mountains in early July of 1987. Many in the group had attended Alpines '86 or made other visits to the Rockies and were more than ready for another dose of "Rocky Mountain High." The entire group was composed of former or current East Coast lowlanders more than willing to escape the muggs of a record-breaking summer for the atmosphere of the highlands. We were not to be disappointed.

Convening at the Billings airport at noon on July 11, we caravanned in our four-wheel drive vehicles to Bear Lodge at Burgess Junction, Wyoming, to find the remains of a 3-inch snowstorm which had passed through during the morning. The snow was soon gone, leaving behind clear, limitless skies

Big Horns

and thousands of acres of alpine refreshed by the snowmelt they relish. After a brief exploration of the immediate vicinity, which revealed quantities of *Penstemon procerus*, *Geum triflorum*, *Lupinus argenteus*, *Allium brevistylum*, *Pedicularis groenlandica* among others—and dinner—we retired early in anticipation of our first full day in the Big Horns.

Dawn revealed the surrounding meadows silvered by a light frost and made the heavy sweaters and coats Herr Leader had insisted on us packing in 100° heat greatly appreciated. After an ample western breakfast dubbed "The Lumberjack" on the menu, we headed north through an area called Schuler Park to a limestone outcrop of massive striated blocks. Forming emerald and brick red ribbons along the softer strata were masses of *Telesonix (Boykinia) jamesii*, and in favored sites *Heuchera cylindrica* and *Saxifraga hyperborea*. In a narrow passageway between two giant limestone boulders above a large bed of *Mertensia ciliata*, we saw our only pika scurrying along the rock ledges with a mouthful of grass to dry in some sunny spot. All too soon Herr Leader sounded the call to move out and abandon the myriad treasures we had discovered with promise of greater riches just over the horizon.

Freeze Out Point, in addition to providing one of the most spectacular views of the Big Horns, proved to be filled with riches. The meadow along the road, containing an abundance of *Calochortus gunnisonii* as well as



Calochortus gunnisonii

Photo: Buffy Parker

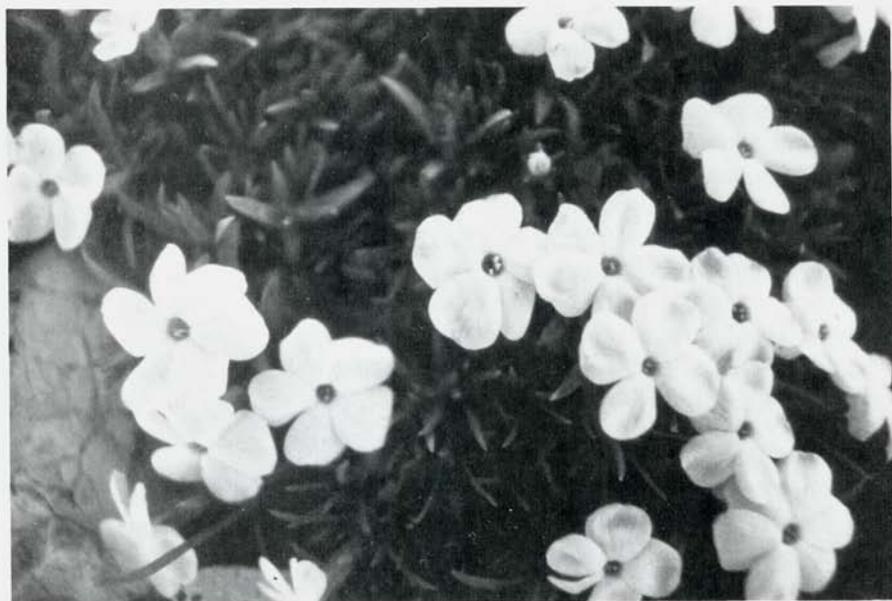
*Phlox hoodii*

Photo: Morris West

penstemon, geum, and asters, displayed a number of large boulders protruding 4 to 5 feet above ground. The eroded top surface formed a choice environment for a number of gems including *Draba aurea*, *D. lonchocarpa*, *D. praealta*, and *Erigeron simplex* producing the effect of mammoth troughs sown by the wind gods with some help from marmot excreta. Hours could be spent examining these prize winners, but the cathedral spires that formed the aisle to the view from Freeze Out Point beckoned. The journey of a hundred yards or so was long and slow, requiring a stop every few yards to marvel at increasingly impressive stands of *Polystichum lonchitis*, *Asplenium viride*, *Pellaea glabella*, *Goodyera oblongifolia*, or *Saxifraga occidentalis*. Finally after a scramble up the last boulder to the apex, the awe inspiring view took one's breath, if any remained.

Rejuvenated by a hearty dinner several of us gathered to work on keying out the specimens collected on our first day in the field.

Day Two arrived with overcast skies and the threat of day-long drizzle, so an impromptu decision was made to head west down the mountain to the Horseshoe Bend and Big Horn Canyon area of the Big Horn Basin. An abnormally wet year made the desert basin unusually lush.

At the first stop, Horseshoe Bend, we found the buns, hummocks, and mats still fresh and in active growth rather than the dormancy usually seen in July. Specimens still showing some late bloom included *Arenaria fendleri*,

Big Horns

A. congesta, *Paronychia sessiliflora*, *Phlox bryoides*, and *P. hoodii*. We also encountered a particularly attractive form of *Antennaria parvifolia* and the smallest locoweed I have ever seen, which keyed out to be *Oxytropis besseyi*.

Other stops along the route revealed, in addition to magnificent views of the impressive canyon carved by the Big Horn River, numerous species of sagebrush including *Artemisia arbuscula*, *A. cana*, *A. filifolia*, *A. frigida*, *A. ludoviciana*, and *A. tridentata*; rabbitbrush, *Chrysothamnus nauseosus*; and the common prickly pear cactus, *Opuntia polyacantha*. Less common taxa included a silky silver annual with attractive curled cymes of white flowers, *Cryptantha ambigua*; good color forms of two composites, a dark purple gayfeather, *Liatris punctata* and a deep gold aster, *Chrysopsis (Heterotheca) villosa*; and tucked among the rock crevices in choice locations, *Cheilanthes feei*. Along the canyon rim was *Cercocarpus ledifolius*, a major shrub bearing interesting plumed achenes. Two months later similar fruits would also decorate the great masses of *Clematis ligusticifolia* clambering over the willows along the road. The clematis now exhibited rather undistinguished and scentless cream flower clusters. We had been encouraged to seek out these "unusual vines" by a young park ranger better versed in the local fauna than the flora.

Our only other sojourn out of the high country occurred several days later when we descended the beautiful Shell Canyon Road into the quintessential western town of Greybull, Wyoming. There were numerous stops during our descent at elevations ranging from 8000 to 4000 feet. Along the lovely creek, where we observed a pair of ousels feeding in their unique way and the magnificent falls surrounded by their ledges of ferns, we identified a number of new specimens ranging from subalpines to xerophytes. Members of a vast array of families from Aceraceae to Zygophyllaceae were keyed out.

We made several special stops, one to photograph a particularly large stand of cowboy's delight, *Sphaeralcea coccinea*, which had been sighted previously by the senior members of our group, the Redfields. Someone questioned how this malva got such an unlikely common name. Although I can't attest to how cowboys react to its attractive foliage and orangey-salmon flowers, it always delights me. A few yards away we discovered an interesting small maple, *Acer glabrum*, that was entirely new to most of us. Its striated bark and general aspect were reminiscent of *A. pensylvanicum*, but it obviously prefers drier, more open sites. Another stop allowed us ample opportunity to scramble over giant boulders oh-ing and ah-ing over huge ancient mats of *Petrophytum caespitosum* as well as other treasures. Emergency stops were made to admire and collect seed of *Stanleya tomentosa* and photograph and examine the beautiful flowers of both the annual and perennial blazing stars, *Mentzelia dispersa* and *M. decapetala*.

The remainder of our too-brief holiday was devoted to mountains. Day-

light hours were spent roving mountain ridges, alpine meadows, and montane forests and evenings keying out the day's spoils, socializing, and reminiscing over the day's high points. There was no television for miles, but the visions of vast fields of deep blue *Delphinium bicolor* or cerulean *Campanula rotundifolia* or a mixture of purple *Lupinus argenteus* and yellow *Castilleja sulphurea* or a golden eagle soaring over the crags of Duncum Mountain searching for a hapless marmot surpassed any electronic images. Each day's discoveries were myriad.

Our day on Hunt Mountain was warmer and less windy than expected, but vestigial snowbanks allowed a few snowballs to be hurled. Like most visitors, we came to see the exquisite mats of *Kelseya uniflora* on the rock faces, but the meadows of *Aster alpigenus* and sinkholes filled with *Mertensia alpina* frequently accompanied by mats of *Silene acaulis* were certainly more than your ordinary bonus. The road crews were out along Hunt Mountain Road repairing the damage of the previous winter and in the process scraping away thousands of clumps of asters, erigerons, penstemons, and beautiful mats of *Phlox hoodii*. Further along the road a strange sound was heard over the car engines. The source was revealed as we rounded the side of the hill: acres of gray sheep inching their way up to the ultimate salad bar. Fortunately at all locations we got there first.

As always the flora at Medicine Wheel and environs proved to be much more exciting than the relic for which it's named. Near the radar station we botanized the limestone scree with its impressive array of high altitude buns and hummocks. From there several of us walked along the ridge through acres of death camass, *Zigadenus venenosus*, interspersed with *Potentilla fruticosa* and *Linum lewisii* to the Medicine Wheel. We discovered a beautiful rosette of *Lesquerella ludoviciana* with a perfect display of large bladderpods from which it gets its common name. The masses of *Dodecatheon pulchellum* seen during a brief visit in 1986 were represented by only a few scattered blooms. The earlier, wetter spring was no doubt responsible. But the remembered impressive ribbons of *Clematis occidentalis* still displayed numerous examples of their charming blossoms and were much more extensive than previously realized.

The early spring also meant that the floral display at Duncum Mountain mainly consisted of summer flowers. Fields of *Penstemon procerus*, *Hymenoxys grandiflora*, and *Myosotis alpestris* were reward enough for the short hike. At the highest point in protected sites amid the mats of *Salix arctica* we did discover some perfect specimens of *Eritrichium nanum* and *Draba fladnizensis*, but alas, no *Aquilegia jonesii* bloom among the thousands of plants. However, we were able to collect a number of ripe seed capsules for the ARGS Seed Exchange. After lunch we continued on to Sheep Mountain where we observed an interesting sandwort, *Arenaria rossii*, and

chickweed, *Stellaria longipes* var. *monantha*, before the clouds descended upon us. We decided to return to the cars less than half a mile away rather than risk an accident in such poor visibility. A 30-minute walk brought us right back to where we started. Herr Leader saved the day with an ingenious system of positioning people at intervals in a straight line so the cars were located and everyone reconvened without incident in short order.

Our excursion to Tie Flume and Dead Swede (we saw the flume, but fortunately not the Swede) was particularly rich in montane forest flora. Our only sighting of a moose cow and calf, avidly munching yellow pond lilies, *Nuphar polysepalum*, was an additional treat. An impromptu stop to examine an unusual bryophyte that made emerald carpets in a small stream led us to numerous other interesting discoveries in the immediate vicinity. It was the perfect time in a perfect locale. Everything seemed to be at peak bloom. On the bank just above the moss was an especially attractive meadow rue, *Thalictrum sparciflorum*, with delicate leaves and airy flower clusters. But the real treasures were in the moist woodland across the road. Before photographs of an impressive stand of *Linnaea borealis* could be completed, calls from other members of the group were echoing through the canyon to come marvel at their finds. A large mat of *Moneses uniflora*; another of pink ginger-leaf wintergreen, *Pyrola asarifolia*; an expanse of *Habenaria obtusata* and a cluster of hooded ladies' tresses, *Spiranthes romanzoffiana*, both with typically interesting orchid flowers; masses of *Saxifraga oregana* with large lime-green pinked leaves and dainty white racemes growing in the icy water; and a small open meadow filled with bright pink *Allium brevistylum* each elicited their share of admiration. It was altogether a most successful hour of botanizing.

At another stop the ground cover was particularly rich in Ericaceae. The low huckleberry, *Vaccinium scoparium*, with prostrate *Arctostaphylos uva-ursi* formed a solid carpet occasionally interspersed with colonies of *Pyrola minor* and *P. secunda*. The standing water in the road ditch here seemed to form an ideal habitat for a very interesting small (15cm) rush, *Juncus castaneus*, with dense spikes of black flowers at the tops of the stems.

As we lunched amid hundreds of acres of *Campanula rotundifolia* near Big Goose Creek, an attractive young woman riding a handsome chestnut mare trailed by a pack horse came over the horizon. She stopped long enough to answer our inquiries which went something like this: Where you headed? The Coast. Which coast? West. Where you from? Wisconsin. When did you leave? Early June. Her turn: Where you folks from? All over, mostly East Coast. What are you here for? The plants, botanizing the Big Horns. She wished she could tarry and learn more about all these beautiful flowers she was riding by, but she had far to go. Besides Donner Pass was weeks away and winter was coming.

We made a rest stop at Dead Swede Campground. Along the South Tongue River which flows through the campground, we found nice clusters of *Sedum rhodanthum* and attractive stands of both *Arnica cordifolia* and *A. latifolia* with their large showy yellow daisy flowers.

Our arrival back at Bear Lodge was somewhat poignant. It had been our last day in the field. The next day it was back to the Billings Airport and our flights home. It had been a marvelous holiday with hundreds of new and old botanical acquaintances and several new and several old friends.

Dwarf Hollies

Virginia Morell
Seattle, Washington

In this age of ever smaller urban gardens the need for dwarf trees and shrubs has become not just a desire, but a necessity. Dwarf rhododendrons, dwarf conifers, dwarf daphnes, and the like are becoming more available to the eager gardener. However, the many interesting dwarf hollies have been largely overlooked. These small members of the genus *Ilex* add evergreen foliage, intriguing leaf shapes, remarkable adaptability to dimensional restrictions, and unusual forms and shapes.

In the nursery trade, "dwarf" usually means anything slower growing than the normal species. Growing conditions and climate can also restrict growth. Hollies respond so readily to pruning that low growth can be maintained in that way, too, with no harm to the plant.

The species of *Ilex* that has given us by far the most dwarfs is *I. crenata* from Japan. This is the small-leafed holly often mistaken for boxwood (*Buxus*). *Ilex crenata* 'Helleri' has been used longer than most in the rock garden and in borders. This cultivar was discovered among seedlings by Joseph Heller, the manager of a nursery in Rhode Island in 1925. It is a somewhat stiff, formal holly but is well mannered, stays in its appointed place, will spread out a bit, but won't shoot up over 18 inches to 2 feet in height.

Ilex crenata 'Mariesii' is a plant whose pedigree has been bandied about since the turn of the century. It is a coin-leaved female holly with tiny, round leaves clothing stubby, angular, upright stems. Charles Maries collected it in Japan and sent the plant to the Veitch Nursery in England at the end of the 19th century. It was distributed to other nurseries in England and seed-

lings resulted. From these seedlings larger forms emerged, so that much correspondence and controversy ensued between growers. The *I. 'Mariesii'* offered today is a favorite bonsai, dwarf, and rock garden plant.

Two more cultivars of *I. crenata* are 'Dwarf Pagoda' and 'Green Dragon.' These were developed by Dr. Elwin Orton at Rutgers University in 1965. 'Dwarf Pagoda' is the female and 'Green Dragon' is the male. In true feminine fashion 'Dwarf Pagoda' tends to stay more dwarf than her male companion 'Green Dragon.' These resulted as a cross between *I. crenata* 'Mariesii' and *I. crenata* 'John Nosal.' They are dwarf, with upright habit and with coin-shaped leaves like *I. crenata* 'Mariesii' that make them so distinctive.

Ilex crenata 'Piccolo' was originated by Norman Cannon in his nursery in Delaware in 1980. This is a very neat little holly that maintains its globular, dwarf habit.

Ilex crenata 'Nakada' was brought to this country from Japan by John Creech, former director of the U.S. National Arboretum. He found it in the Nakada Nursery in Angyo, Japan, in 1957, and it was named 'Nakada' by Ted Dudley and Gene Eisenbeiss at the National Arboretum in 1977.

Ilex crenata 'Halla' is a new introduction to us from Korea. This was named by Ferris Miller, a well-known Holly Society member and plantsman from Korea. The plant was found in the wild on Mt. Halla on the island of Cheju in Korea. On a trip there sponsored by the University of Washington Arboretum, we saw this small holly growing happily among ligularias, aconitums, and other wildlings on Mt. Halla. It was a sight long to be remembered.

There are many other *I. crenata* forms that are dwarf, such as 'Stokes,' 'Kingsville Dwarf,' and 'Kingsville Green Cushion' (both developed by Henry Hohman and similar to *I. crenata* 'Helleri'), 'Gable's Dwarf,' 'Twiggy,' 'Pin Cushion,' 'Tiny Tim,' 'Tee Dee' (from Tom Dodd's Nursery in Semmes, Alabama), as well as a number of others.

Ilex cornuta 'Rotunda' is one of the Chinese horned hollies, and grows as its name suggests, in a rounded, low form. A mature plant will grow to 3 feet high and as wide, but can also be kept lower by pruning.

Ilex opaca, the familiar East Coast native holly appears to enjoy robust growth so much that it resists dwarfing. However, *I. opaca* 'Maryland Dwarf' grows so slowly as to be nearly procumbent. *Ilex opaca* 'Clarendon Spreading' will sustain its growth at about 3 feet by 3 feet. It is an unusual and handsome plant.

Ilex aquifolium, or English holly, with its glossy dark leaves seems to resist dwarfing as firmly as its East Coast cousin, *I. opaca*. However, *I. aquifolium* 'Angustifolia,' a very narrow-leaved, handsome variety grows very slowly, particularly in the eastern part of this country, where it will stay dwarf for a number of years. It, too, responds well to pruning.

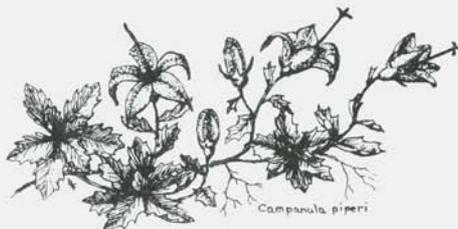
Ilex vomitoria (a name that has been made a travesty of) is better known as the Yaupon holly. It is a handsome evergreen holly native to the southeastern part of the country. It has one dwarf listed for it as 'Stoke's Dwarf.' This tiny-leaved, very dwarfed, closely-branched holly is useful in the South where it grows so well.

The deciduous hollies have produced few dwarfs. One of these is *I. verticillata* 'Red Sprite,' a highly acclaimed holly, which while not a true dwarf is much smaller than the norm. It covers itself with bright red berries, which enhance its appearance particularly when it has shed its leaves. This is considered an outstanding holly by many plantsmen.

Ilex serrata 'Koshobai' is a tiny deciduous holly from Japan. It is extremely dwarf and clothes its branches with tiny red berries. While common in Japan for the past 100 years, it is very rare in this country. It makes one yearn to see it.

The newest and most intriguing dwarf is *Ilex* x 'Rock Garden.' (See *ARGS Bulletin*, Vol. 43, No. 2.) This tiny gem is an interspecific hybrid of *I. x aquipernyi* x (*integra* x *pernyi*) developed by Dr. Elwin Orton of Rutgers University. This is a female having what is regarded as true holly leaves with spiny, sharply pointed leaves approximately 1 inch long and one-half inch wide. In 5 years it will be from 5 to 7 inches high and 12 inches wide. Pollination can be assured from any male of related parentage flowering at the same time as 'Rock Garden.' This will be rare in most gardens, so the plant should be enjoyed for its form and foliage.

These little hollies need the same cultural conditions as their larger relatives. They like a slightly acid soil, well drained, and appreciate a mulch to help protect the shallow feeder roots. In the Pacific Northwest they will tolerate full sun, but acquiesce to partial shade as well. Unfortunately, many of these dwarfs are available at present only on the East Coast. Because of their versatility they deserve to be known better and used to greater advantage. They all add an evergreen distinctive character to the garden, and enhance the appearance of the colorful rock garden plants that we grow in association with them.



The Other Alps

Allan R. Taylor
Boulder, Colorado

"When the Mountains have stolen your heart, everything comes from them and everything leads you back there." This eloquent epitaph, inscribed on bronze to the everlasting memory of the French mountaineers Louis and Margalide Le Bondidier, makes its statement in one of the most awe-inspiring spots in the world: directly facing the magnificent Cirque de Gavarnie. This towering glacial sculpture, reminiscent of the Canadian Rockies at their most extravagant, is located in the western Pyrenees on the frontier between France and Spain. Both the Spanish and French governments have established national parks around it, and the Cirque is the crown jewel in a diadem of peaks of breath-taking beauty.

The Cirque de Gavarnie is world-renowned to alpinists, including lovers of alpine wild flowers, and it has often been described in the pages of the journal of our sister society, the Alpine Garden Society. This past summer, inspired in part by the descriptions of British visitors there, twelve Americans, seven of them members of the ARGS, visited the Pyrenean region of northern Spain, southern France, and Andorra on a wildflower tour sponsored by the Denver Botanic Gardens.

The mountains of Spain are one of the best kept travel secrets in Europe. Whereas the Alps attract tourists in droves, the Pyrenees and others of Spain's high, rugged, and beautiful mountain ranges such as the Picos de Europa (a part of the Cantabrian range) are almost unknown outside of a very small circle of enthusiasts. That circle is now larger by a dozen, all of whom can hardly wait to return.

The Sierra Cantabrica and the Pyrenees are the lofty ramparts which guard the north of Spain, and which have decreed through the ages that Spain will differ in a thousand ways from the nations to the north. Nothing in North America is like this, save perhaps the high Cascades or the mountains of Alaska. The mountains are incredibly rugged, some covered with eternal snow; often they are shrouded in mists which part, now and then, to allow the viewer to catch a glimpse of distant mountains perhaps still higher.

This journal is not the place to detail the magnificent hospitality, the wealth of history and art, and the fascinating daily life, excellent cuisine, and charming people of the many cities and regions which we visited on our three-country tour. What I can do is briefly describe some of the outstanding flowers and floristic adventures which our group encountered. To keep it to a manageable length, I shall deal only with alpine places and flora which we enjoyed. A separate article could well be written about the equally beauti-

ful dryland flora of the provinces of the Central Plateau of Spain.

Rock gardeners are of course familiar with many of the mountain plants we saw, for they are shared both with such mountains as the Alps and by rock gardens everywhere. Nonetheless, there is a special thrill in finding well-known flowers such as *Viola cornuta*, *Hyacinthus amethystinus*, and *Gentiana pyrenaica* in their native haunts.

June in the mountains of northern Spain is late spring. Gone already are *Erythronium dens-canis* and most of the bulbs. Still available, however, at very high altitudes are fields of *Narcissus poeticus*, their glistening white a reflection of snowfields still higher up. These were especially fine in upper Andorra (near Soldeu) around June 10. Blooming among them, but completely outclassed by the narcissi, was *Tulipa australis*. A little further north, on the Port d'Envalira (the first pass inside Andorra), whole fields of *Pulsatilla alpina* ssp. *apiifolia* were just beginning to bloom, their pale yellow flowers offering a delicate contrast to the darker yellow of the flowers of *Cytisus (Genista) purgans*, which was also just starting to open. We saw the latter all over Spain, in the Sierra de Guadarrama just north of Madrid, again in the Picos de Europa, and finally at high altitudes all through the Pyrenees.

East of the central Pyrenees the season was already too far advanced, although in the central Pyrenees, among the splendid peaks of Andorra and the foothills of the Cerdagne, we saw such choice plants as deep purple *Gentiana pyrenaica* and the lovely yellow *G. lutea*. This plant is certainly a surprise when your prior experience has been with ground-hugging blue gentians only!

The western Pyrenees were where we were able to do our best botanizing. During the third and fourth week in June we botanized around El Formigal in Spain and Gavarnie in France. Getting between the two involved crossing two very high passes, the Col de Somport and the Col d'Aubisque. In the meadows between magnificent copses of *Fagus sylvatica* just beginning to leaf out we found dozens of wildflowers, among the prettiest of which were large clumps of deep yellow *Meconopsis cambrica*.

Especially thrilling in this area were banks of *Rhododendron ferrugineum* which we saw one unforgettable afternoon (June 24) from a narrow-gauge train, the little Train d'Artouste, which runs regularly during the summer from the Pic de la Sagette to the Lac d'Artouste. This is the area just to the north of the Col de Somport.

There is no more splendid train ride in the world than this. The train travels at 10 kilometers (6 miles) an hour, always more than 2000 meters above sea level, along the flanks of towering peaks. Below are deep valleys; on the day we were there these were often hidden in deep mist. The little train winds its way through forests of ancient *Pinus cembra* and past heaths which sweep upward into the clouds. Passengers sit in open cars, viewing

the beauty of the mountains, the sky, the deep valleys. Maybe it is the thin air at the high altitude which gives such exhilaration, but I suspect that the flowers and the splendor of the mountains may have had something to do with it, too.

As we rode along I was constantly reminded of a line from the *Chanson de Roland*, the old French epic of the Emperor Charlemagne's campaigns against the Moorish rulers of Spain: "High are the peaks, massive and brooding, the valleys deep and the waters swift." The troubadour who sang that description of the Pyrenees had certainly seen them. And they haven't changed in a thousand years, except that most of the swift waters are now harnessed for power generation.

The flora of the western and central Pyrenees is well represented—and displayed—at Gavarnie, and most of our really vivid memories of the plants we saw are associated with that beautiful and blessed spot.

The Parc national des Pyrenees is modeled on an American national park and it is well done. The park headquarters (which doubles as the chamber of commerce of the tiny tourist village of Gavarnie) looks very much like the visitor center at Yellowstone or Yosemite. Inside you can buy books about the park and its features; make arrangements for guides; obtain brochures, maps, and schedules of hikes and other events. But what is undoubtedly the outstanding feature offered there is a first-rate multi-media show on the political, social, and natural history of the area, including a great deal of ethnography and folklore. Even if you do not understand French (partly standard and partly the local *patois*), the pictures and folk music make the show thoroughly enjoyable.

The plant treasures of the Cirque de Gavarnie are many and glorious. Of course we saw the famous endemic *Ramonda myconi*, at first rarely, later often, as we learned to spot its preferred habitat: a shady rock face. The small, lavender-flowered plant was very common at Gavarnie, and we found it lower down the valley also, toward the charming resort town of Luz-St.-Sauveur. Of course we saw the monarch of the saxifrages, *Saxifraga longifolia*, which is also a Pyrenean endemic. The magnificent white spikes of that one can't be missed when you happen upon the vertical cliffs where the colonies occur. You see them, you realize what they are, but still you gasp and cheer, both from the thrill of recognizing a celebrity, and from the sheer beauty of the masses of plants clinging to the cliff face.

Particularly good botanizing is to be had at Gavarnie around the area designated as the "botanic garden," which, as it happens, is just below the graves of the Le Bondidiars. This is a kind of fell field with a large number of outcrops which afford the crevices which so many alpine plants love. In a very small area here we saw and photographed a large number of the plants which are so characteristic of the Pyrenees: diminutive pinkish-white

Androsace villosa; *Pinguicula grandiflora*, with its deep purple, violet-like flowers and yellow-green leaves, the latter often covered with insects in the process of being digested by the insectivorous plant; pink-flowered *Primula farinosa*; tiny *Globularia repens*, a dark green mat topped by tiny puffs of purple; the airy white blooms of both *Saxifraga granulata* and *S. paniculata*; a stunning rose-flowered thyme, evidently *Thymus praecox*; there were also two or three *Sempervivum* species. Not far away were the burgundy spikes of *Dactylorhiza maculata* and *D. sambucina*, as well as a few of the yellow-flowered form of the latter.

Other nearby plants were dark purple *Aguilegia pyrenaica*; tiny cobalt-blue *Gentiana verna* and its larger cousin, *G. alpina*; yellow and pink *Linaria alpina*; and a particularly attractive reddish-pink form of *Geranium cinereum* which only occurs here. Creeping willows abounded (probably the endemic *Salix pyrenaica*), as did our old friend *Arctostaphylos uva-ursi*. Early in June I also found excellent colonies here of the charming blue-flowered bulb *Hyacinthus amethystinus*, but these had finished their flower by the time the tour group visited the area. To prove that there is justice in the universe, however, we found an abundance of them still in flower in the nearby Val d'Heas even near the end of June.

It would be unfair not to mention here also a few of the beautiful trees and shrubs which grow in these mountains. Particularly striking to me were the beeches, whose juvenile leaves are pinkish-brown when they first emerge from the bud. Equally beautiful are the small white beams, *Sorbus aria*, which at Gavarnie looked so much like magnolias as they were just leafing out. I have already mentioned the high altitude pine, *Pinus cembra*; equally beautiful, though larger, were the Austrian pines, *Pinus nigra*, which formed huge stands along the path up into the Cirque at Gavarnie. Mixed among the pines were magnificent spruces, I presume *Picea abies*. At somewhat lower elevations we frequently saw *Castanea sativa*, the long tentacles of the male flowers making the tree look as if it were covered with pinwheels. This tree was entirely new to several of us. Of the many *Rosa* species which we saw, surely the most beautiful was *Rosa pendulina*, a shrub which was often head high. What impressed me was the intense ruby color of its flowers and its almost spineless stems and branches. That is certainly a rose which I will grow one day.

To a person from the western United States largely unfamiliar with the European mountain flora, several things struck me. One was the abundance of species of Labiatae and Scrophulariaceae in the high mountains. The latter seemed in most cases to be exact analogs, in terms of their niches, of a number of North American scrophs. Everywhere you would expect to see a castilleja or a penstemon, you would see a pedicularis or a linaria or a veronica. Another thing which struck me is that so many of the European

borages are quite attractive.

I also have to admit how cheated I feel that we do not have any native American analogs to the ubiquitous brooms. A warm slope covered with these gorgeous, fragrant legumes in full bloom can never be forgotten! I was also unprepared for the many and varied sedums and sempervivums. Although I normally associate these with arid climates, I must say that they did not seem out of place when we encountered them. (Truth to tell, they were on rocks and in crevices, so they actually were conforming to my expectations of dryness. It is just that they were in the very middle of much more mesic habitats!) My astonishment abated somewhat when I recalled our own Colorado sedums, *Sedum rhodanthum* and *S. rosea*, which grow in bogs.

I cannot possibly mention all of the plants which caught our fancy and tempted us to preserve them on film, but I hope that I have given here some sense of the magnificent experience which our Pyrenean trip was. I would also like to urge anyone who has the opportunity to do so to visit Spain and the Spanish mountains. From the poppies of the cornfields of the Central Plateau to the primroses and orchids of the alpine peaks, there is no end to the beauty.

The following observations are intended to help anyone who might like to plan a trip to the Pyrenees. My suggestions are a bare minimum; other sources will turn up as research and planning progress. Persons planning a trip there are welcome to write to me for whatever help I can give. My references will be kept up-to-date as I plan another trip there in the near future.

For planning a flower holiday in Europe, no one should begin without the following book:

Bacon, Lionel. *Mountain Flower Holidays in Europe*, Birmingham, L. Baker, Ltd., 1979.

Although there are many subjective judgments in this book, and some mistakes, it is nevertheless indispensable for finding the flowers quickly.

Books which proved to be immensely helpful in plant identification are the following:

Grey-Wilson, Christopher, *The Alpine Flowers of Britain and Europe*, London, Collins, 1979.

Finkenzeller, Xaver and Jurke Grau, *Alpenblumen*, Munich, Mosaik Verlag, 1985.

There is a good French translation of this by Valerie d'Ersu entitled *Les Fleurs de Montagne*, published in Paris by Editions Solar, 1986.

Another well-known book on the flora of this region proved to be of so little use, despite its title, that I would not recommend it. This book:

Polunin, Oleg, *Flowers of South West Europe, A Field Guide*, New York, Oxford University Press, 1973.

For general orientation, the Michelin guides and maps are superb. Guides which you should acquire are *Spain*, and *Pyrenees*, the latter available only in French. More detailed maps are of course available. For example, it is possible to purchase an excellent topographical map of the Parc national des Pyrenees at the park headquarters in Gavarnie.

A number of articles have been published in the *Bulletin* of the Alpine Garden Society since 1946 describing excursions to Spain and the French Pyrenees. The list is long, so I will not give it here. The articles are easy to discover by consulting the table of contents of each number, and you can gather much wool along the way as you look for them.

Of Interest from the Chapters:

Composites: Parts IV and V

Geoffrey Charlesworth
Sandisfield, Massachusetts

(Reprinted with permission from the Berkshire Chapter newsletters;
Vol. II, No. VII, Vol. II, No. VIII).

Woolly Plants: The Inula Tribe

The sixth tribe of the Compositae (i.e., the sixth tribe in this rambling article) takes its name from the genus *Inula*, but *Inula* is the maverick of the tribe. The others are woolly, hairy, felty, downy, nice to stroke. The flowers are often insignificant and have no rays. Sometimes the bracts take over as the objects of interest—chaffy balls of subtle colors. *Inula* itself usually has large yellow flowers with ray and disk flowers and the fruit stage is not noticeably different from many other yellow daisies. However, I have noticed whenever I have transplanted inula seedlings that the young leaves are quite hairy and catch particles of Jiffy Mix, so they probably retain this character as adults; it just isn't their most characteristic feature.

Inula magnifica has enormous grey-green leaves and can grow to 5 feet or more. It has a commanding presence in a border and needs a circle of clear space 4 feet in diameter to accommodate it. Unlike ligularias, it stands up to drought without wilting. Even taller and monumentally overbearing are *I. helenium* and *I. racemosa*. Give them a wild, rough place or let a single

giant stand sentinel over a secret corner. *Inula ensifolia* is a very reliable and floriferous perennial which can be used in a large rock garden for July bloom or at the front of a border. Much more elegant is *I. orientalis* with very long petals having the decorative quality of spider chrysanthemums.

Two rock garden inulas are *I. acaulis* and *I. rhizocephala*, the second being a condensed version of the first. These spend the winter as flat rosettes of soft green (dirty grey?) leaves. The flower buds form at the center of the rosette without a visible stem. As they open the plants take on the appearance of a bridesmaid's posy—so flat it could be just a drawing. I think both of them are biennial—that's how they have always behaved. So collect seed and start again. Somewhere I read that *I. rhizocephala* needs hand pollination (I doubt it), but certainly there are enough of the right kinds of insects around to pollinate *I. acaulis*.

Other members of the *Inula* tribe are more obviously rock garden plants. The genus *Antennaria* contains some good species. You have to have the same sensitivity to color and shape that fern people have to be an *antennaria* collector. A very vigorous species might be used to make a "lawn" to be walked on gingerly and rarely. Pull it out if it gets out of bounds; the roots won't be very deep. *Antennaria dioica* has some pretty forms where the bracts are pink and pass as flowers. *Antennaria pulcherrima* has grey leaves that don't lie flat. There is a neat form of *A. neglecta* from Eastern Canada: *A. neglecta gaspensis*.

The genus *Raoulia* comes from New Zealand and contains many gorgeous mat-forming plants. Some are hard mats with little grey or yellowish "daisies" sitting on them. It is bracts you can see and not ray flowers. Unfortunately, they all seem to disappear after one or two seasons. I strongly recommend gardeners grow them at least once; you can enjoy the variety of form and texture for a season, try to propagate pieces for the winter alpine house, win a few firsts at the shows and, if you are lucky, even find the right place outdoors for a season or so. *Raoulia australis (lutescens)* is fairly easy. I once had *R. subsericea* not only survive two winters, but flower profusely and form seed. But nothing germinated and the plant died next winter. Read this as a challenge, not as a warning.

The most satisfying genus of the rock garden in this tribe is *Leontopodium*. Ignore all the Austrian-Swiss hype and all the subsequent debunking by indignant rock gardeners and come to the genus without prejudice. *Leontopodium alpinum* is very variable. The leaves are usually a pleasant grey and the "flowers" like floating iris beards. *Leontopodium nivale* which is sometimes listed as a subspecies of *L. alpinum* has exquisite light grey leaves and almost white beards and is usually only 3 inches tall. Another form of *L. alpinum* comes from the Dolomites and is shorter and neater than the standard form. Other *leontopodiums* come from Asia and are variants on the

edelweiss theme. Try any of them for a quiet, cuddly contrast to a green mat.

A larger member of the tribe is *Anaphalis*. The one you usually see is *A. margaritacea*—pearly everlasting—for a border or a wild garden. Also, I have tried *Gnaphalium* now and then but never had a plant I wanted to keep.

Thistles and Knapweeds: The *Carduus* Tribe

This tribe consists of plants with no ray flowers. The disk flowers are elongated forming a dense cushion. The characteristic of most species is the prickly nature of the leaves, the bracts of the individual flowers and the involucre of bracts surrounding the head. The entire plant can be the apotheosis of hostility. In this lies part of their charm. A plant that sets out to defend itself against animal life with such directness and success becomes an object of admiration and respect. Well, respect at least, but some of them are in fact beautiful. Think of the statuesque quality of *Onopordum acanthium*, the "Scotch thistle." Look at the marbled leaves of *Cirsium japonicum*, *Cnicus benedictus* and *Galactites tomentosa*.

The non-hostile members of the tribe include *Centaurea*. These are usually called knapweeds. *Centaurea montana* has rather meager, shaggy blue flowers. A better one is *C. dealbata* with good reddish mauve flowers. This is one of the first border perennials to bloom and signals the last flourish of the late spring rock garden. *Centaurea macrocephala* has large yellow bundles of fluff preceded by a bud with a metallic bronze look as good as the flower itself. Smaller and almost suitable for the rock garden is *C. uniflora*, a particularly good magenta.

Most of the *Echinops* are tall plants that belong in a semi-wild area where they can self-sow madly. *Echinops sphaerocephalus* has grey flowers and needs to be the foil of a brighter color such as liatris, otherwise you hardly notice it; in *E. ritro* the spiky balls are metallic blue. Dig up unwanted seedlings as soon as you notice them. If they pass the adolescent stage, the leaves are already prickly and the roots headed for China.

There are a few members of the *Carduus* tribe that fit in well with rock garden planting. *Serratula seoanei* is a quiet plant, 6 or 7 inches high which blooms so late in the year—September, October—that its little purple brushes make a point. No prickles and the leaves are nicely cut. Then there is *Carlina acaulis*, a real thistle which makes a round mat of prickly leaves with the thistle head barely rising above the center. Much finer but with similar effect is *Carduncellus rhapsodicoides*. This is a first class plant with smooth etched leaves and no spines. It seems to divide easily, but the seed can be overlooked as it forms a messy brown blob at ground level.

This covers the most interesting tribes of the Compositae as far as rock gardeners are concerned. There will be one last piece on the rest of the genus

and a few look-alikes that may fool a gardener into thinking they are daisies and thistles.

Part V

The Rest of the Composites and Some Imposters

The Cichorium tribe has no disk flowers. The plants in our gardens are dandelions, hawkweeds and lettuces. The only dandelions of horticultural interest are the colored forms. These are not easy to obtain and not, in my experience, easy to grow, but whatever success I have had has convinced me not to long for more. *Hieracium*, though, contains some plants worth considering. Many of them are grown for the decorative leaves which can be blotched (*H. maculatum*) or felty (*H. heldreichii*, *H. lanatum*, *H. welwitschii*), and perhaps the best is *H. waldesteinii* which has nearly white leaves and bright lemon flowers and makes a ground hugging mat. You could cut off the flowers of the taller kinds but you might enjoy the consternation that seeing a "dandelion" growing in the garden sometimes causes in a non-gardening visitor. The gorgeous orange hawkweed, *Hieracium aurantiacum*, is a European import and must not be introduced into the garden. The first forgetful season you allow the seed to blow will begin years of regret.

Lactuca perennis is a blue lettuce, probably biennial despite its name. It isn't as good a blue as the roadside chicory, but then it isn't quite so weedy and I have found it safe enough to have in the rock garden. It provides mid-summer color and a little sowing around is desirable. I would like to recommend an annual too, *Crepis rubra*, a pink hawkweed which refuses to self-sow but I like it so much I collect seed and sow it every year. This year Thompson and Morgan put out a white form which is equally attractive.

This leaves only a few tribes unmentioned and really none of them are of much interest to a rock gardener. The Eupatorium tribe contains Joe Pye weed of course for the wild garden and also *Liatris*, gay feather, which has a number of interchangeable species that can be used discreetly in a border. The Calendula tribe includes the annual pot marigold for an herb garden, perhaps. The Arctotis tribe is mostly South American and not hardy. The Mutisia tribe is mostly South American and ungrowable outside in Massachusetts. The Veronia tribe includes the beautiful *Stokesia laevis*, a good border plant that I have found a bit difficult. Also *Veronia* (ironweed) and *Elephantopus*, neither very valuable.

Plants, not Composites, that Look Like Daisies

Of course you can hear the botanists sneering. But there are many of

us who simply don't know what to look for or even how to look. So I want to confess to some of my errors, slipshod observation, and rank ignorance.

There are plants like *Phyteuma hemisphaericum* and *P. orbiculare* whose flowers form "heads" but each still has its own short stalk attached to the main stem; there is no receptacle. These are in the Campanulaceae family as is the genus *Jasione* with clusters of flowers reminiscent of a *Stokesia*. I was astonished, too, to discover that globularias are not daisies either; in fact, they are the name-bearers of a small family of their own, Globulariaceae.

Scabiosa, *Knautia* and *Pterocephalus* are also genera trying to belong but, in fact, are members of Dipsacaceae which are the teasels. And the teasels themselves look as though they ought to be thistles. True, too, of *Eryngium*, a member of the Umbelliferae. Another example more nearly daisy-like is the whole Mesembryanthemum family (Aizoaceae) where the petals really are petals and not individual flowers.

Recognition is a peculiar phenomenon. We don't measure nose length or count eyelashes in order to identify our friends, nor do we need more than a quick glimpse of a plant to recognize an iris, say. In our memory are stored hundreds of plant portraits like a photograph album. Some are derived from a plant we have grown ourselves, some from plant shows and other gardens, some are from garden books and slide shows. A very few are from written descriptions. It should cause little surprise if we cannot recognize the genus or even the family of a completely new and strange plant. But there is a sense of accomplishment when we can put a name to a plant, especially one we have never seen before. These notes are not going to guarantee that you will always know a composite when you see one, but might help sort out the possibilities.

Finally, a list of composites which have been used at one time or another as herbs, i.e., medicinally or for food. I shall use the common name and leave you to look up the botanical name.

Agrimony, burdock, camomile, centaury, coltsfoot, tansy (costmary, alecost), cudweed, dandelion, devil's bit, elecampane, endive, feverfew, chicory, mugwort, pellitory, spikenard, ragwort, scabious, blue simson, southernwood, sowthistle, starwort, tarragon, yarrow, fleabane, salsify, goldenrod, samphire, gosmore, groundsel, knapweed, hawkweed, lettuce.

What wonderful names with so many literary resonances, but, of course, many are weeds to strike fear in the heart of a gardener. I wonder how long it took the people that utilized them to decide that some herbs deserved cultivation and others were better left in the fields and hedgerows. Did ever a garden exist filled with such rampant vigor? The present day herb garden is only an effete descendant. A refinement? A compromise?

The Wonder of Some *Erythroniums*

Roy Davidson
Seattle, Washington

Among the earlier contributions to this series (*ARGS Bulletin*, Vol. 26, No. 1) was an attempt at a simplification of the clues for determining which trout lily or avalanche lily or lamb tongue or fawn lily you might have found. This resulted from wondering (read agonizing) over some of those in Oregon's coast ranges. Today some of these populations are explained as constituting a heretofore unrecognized new species, and reading of the circumstances brings remembrances of certain catastrophic events, both of ancient time and actual memory.

As a youngster in eastern Washington in the summer of 1928, I still vividly recall the compelling, fascinating horror of being unable to see the sun for days on end, only an obscure coppery orb in an angry swirling bronze sky, as the Tillamook Burn consumed the Oregon coastal forests, over 300 miles away—a memory more vivid than yesterday! Surely such a configuration must have destroyed bulbs as well as woody plants, or did local conditions in certain places allow the earth to go unscorched as crown fires burned above?

Hammond and Chambers (*Madroño* 32,1; 1985) have described *Erythronium elegans* from a wonderfully bewildering population found on only about 3 square miles of this old burn on the Hebo Escarpment, nearly due west of Portland at about 3000 feet elevation and within 10 miles of the Pacific. By their analysis, these plants show an affinity with *E. klamathense* of the southern Oregon Cascades and farther south, and/or *E. montanum*, mainly from the Olympics and Washington Cascades but also found in the northern Oregon Cascades. There is evidence, too, perhaps of an ancient encounter with the pink-flowered *E. revolutum*, common to these coastal Oregon mountains.

Now as to its wonderful appearance: it is handsome. The leaf is quite separate as to blade and petiole, not so tapered as with *E. revolutum*, commonly plain green but often faintly or distinctly cast over with a smokiness and occasionally very deeply bronzed; stamens may be of varying breadth, one flower from another; moreover the flowers themselves, which are of dangling posture, may be white to whitish or pink to deep rose. (This may sound like that "source of wonder" that sets up a reaction to botanical pigeon holing! It certainly is in marked contrast to *E. hendersonii*, inevitably found in carbon-copy colonies.)

While visiting gardens in the Portland area one April, many plants taken to be *E. revolutum* (what else?) were cause for comment. Likely they originated from seed off the Hebo Escarpment, some of them so deep in color as to appear carmine in decline. Often these were in such profusion as to suggest that every fallen seed had germinated, and often groups of unusual forms seemed to indicate that offsets were produced as well. This is of course natural to *E. montanum*, *E. revolutum*, and this new taxon, too.

We might wonder at the erythroniums on this old burn. What were they like before? Had circumstances somehow allowed the mingling of *E. montanum* within the territory of *E. revolutum*? When might this have come about? The description sounds like that of a hybrid swarm, but from when might it be dated?

Another erythronium still far from clear in my mind is that yellow-starred white one found in the Idaho–Washington borderland; *Erythronium idahoense*, it was called originally, so let's hang onto the name—at least for the moment. It is certainly to be compared with *E. grandiflorum* (indeed Hitchcock calls it *E. grandiflorum* var. *candidum*) which grows all around its narrow territory but not within it. As I observe this in cultivation in eastern Washington (where once I put three hard-earmed corms), it behaves much like *E. montanum*. Unless the seeds produce flowering plants in record time, this is increasing by offset. In the starvation conditions of its nativity it must endure competition of grass and pines of the Arid Transition Zone in a heavy yellow clay. A dig into this reveals almost no humus, except on the thin surface, and the small corms seated in the clay, of course. Stalks there produce an occasional two flowers, whereas in watered, slightly better soil in the garden, five are not unusual.

Nowhere is this to be found plentifully (I had salvaged a few from a highway project) and it is widely scattered on northerly slopes of low hills that lie between the fertile grasslands and black soil of the basaltic Columbia Plateau to the west and the thin upland Idaho granites which form the foothills to the Rocky Mountain ranges. Furthermore this is just above the contours that mark the devastation of ancient times wreaked by the rampant flooding as the ice melted to release the untold waters of Lake Missoula; some have declared this to have been one of the greatest floods of all time, and here too fire may have had its influence. Such grasslands are of course very prone to lightning-struck prairie fires. All of northern Idaho and western Montana was totally incinerated in the burn of 1910. It is well known that certain plants considered to be typically of coastal incidence also are found in the cool, moist Idaho panhandle; could these once have included *E. montanum*? Was it lost in the burn of 1910? The area to the south of Lake Coeur d'Alene was spared this burning, and it is here that *E. idahoense* is found. We may continue to wonder about such things, and for a long time.

Symposium: Creating Gardens — Four Views

Building a Rock Garden

Nicholas Klise
Red Lion, Pennsylvania

I'm not sure my experience with building a rock garden could ever be duplicated by anyone else because the circumstances under which it was built are unique and the lessons to be learned and the methods of execution can only be applicable to a very few; yet it makes an interesting story.

First let me introduce the principal players: Morris West and Shorty Deller. Morris is my companion and partner of 25 years. He, like me, is an avid gardener and he, moreover, is a knowledgeable plantsman. Shorty is our friend and neighbor whose family business is that of an excavation contractor; he had access to and is a master operator of a yellow 280E Construction King Case backhoe that can move and position 2-ton stones. Every rock gardener should know such a person as Shorty. I'm an architectural illustrator, both an architect and artist who pictures architecture long before it is built and, many times, long before it is designed. It's a very esoteric profession to be sure but one that fits hand-in-glove with my current advocacy: that of garden design. This is the story of the three of us and how we built a rock garden.

Morris and I met Shorty Deller 16 years ago soon after buying raw and undeveloped farm land in York County, Pennsylvania, as a weekend recreational place, a place to garden mainly, with no thought of living there. There was no house or other structure on the 8 acres. What it *did* have, however, was a rock-filled, 20-foot-wide creek winding its way through the middle of the property, so we owned both sides. Shorty was building a bachelor cabin on an adjoining property for the hunting and fishing that are his avocations.

From the very beginning we seemed to be friends, although our backgrounds, our philosophies of life, our social *milieu* would suggest polarization. Shorty had never met anyone from the city; we had never met anyone from the country. We did realize, of course, right from the beginning, the advantage of friendly neighbors in uncharted lands, and we cultivated the friendship by demonstrating, whenever we could, the value of it. If he were to ask a favor, for example, we would fulfill it immediately, or we volunteered our services for chores around his place. He, correspondingly, was helpful with information, and if in the course of his "landscaping" he came upon unwanted plants he thought we might like, he would dig and deliver them to us. We have dozens of plants that are testaments to his generosity and

thoughtfulness.

Shorty introduced his fiancée to us a few years later and showed her around our property. They married and Shorty built, again with his own hands, a "real" house near the bachelor cabin. We subsequently also built a house on our property.

In 1981 we built a dry wall for the display of small-scale plants, or, I should say, Shorty built the dry wall. Using our unlimited supply of stone from the creek, he laid up a beautiful stone wall while we backfilled and planted a variety of choice plants in it. We also built a semi-bog, a lined reservoir of wet peat (the bog) over which we put a 12-inch layer of scree (the thing that makes it "semi"). In it we try to grow gentians.

In 1982 we built a flight of steps from 6 by 6 timbers and also a small frog pond at the top of the steps which surprises visitors with its unexpected appearance. This time Shorty used the backhoe for digging the foundations and pond as well as for the final grading. He delivered several very large rocks with it from his property and we collected hundreds more of a small size from our property. I arranged them in a naturalistic manner which gives the impression the pond was always a part of the natural landscape. This new landscaping gave Morris and me new opportunities to grow choice plants in an appropriate setting; we used a whole range of shrubs, herbaceous perennials and small-scale rock plants along with the aquatic plants we were now able to grow. I planted a yew backdrop for the tree peonies we moved from another location to the far side of the pond; they reflect and effectively double their show-stopping capability. But all of this was just a prologue to the building of *the* rock garden in 1985.

The site was a slope facing north adjacent to the parking area which is remote from the house. Years ago, when I designed the house, I made a decision to separate the house from the car so that the house retains the feeling of being romantically detached from civilization and seems always to be a holiday house deep in the woods of south central Pennsylvania. From the house one cannot see the parking area or the rock garden, which would please Reginald Farrer, who advised that a rock garden should never be anywhere near a house. From the parking area, the visitor walks past the rock garden, past the dry wall and semi-bog, up the timber steps, past the frog pond to the little redwood house with the big screened porch overlooking Beaver Creek.

The site had two constraints: an electric pole on the east and a clump of birch on the west that I wanted to save. The electric pole will be removed this year when the electric service is put underground at a point before the parking area, but, nevertheless had to remain while the rock garden was being constructed. My plan was to excavate the slope between the electric pole and the birch in a large semi-circle and to construct a crescent-shaped dry

wall that only a giant, or a Shorty Deller, could lay up with huge refrigerator-sized rocks. At the bottom of this mountain of rock would be a scree and, at the lowest point, a bog. Since the bog would be directly adjacent to the parking area and at a level with it, I immediately imagined a worst case scenario: someone would drive into the rock garden and get bogged down.

I needed something to differentiate the garden from the parking area. A heavy trough would suffice if only one existed. We put an advertisement in the local paper to see if any farmer might have a big stone trough in the barnyard that he might be persuaded to sell. We got one call and looked at a derelict trough made of sheets of slate held together with cast iron fittings and threaded rods. The slate was broken and pieces were missing; it wouldn't do even if in good condition because it didn't seem substantial enough to confront a vehicle.

A third constraint that I had to be aware of was that of the height limitation of the lift of the front end loader scoop on the backhoe. Shorty could lift and drop a huge stone only within the absolute limits of his equipment and that established the top course of rock, and consequently, the depth of the bite we took out of the existing slope. The plan was conceived as a semi-circle between the electric pole and the birch tree and the elevation tapered from ground level (the parking area) at those points to a crest as high as Shorty could place rock with the backhoe.

I drew the entire plan to scale showing imaginary boulders, hypothetical scree and bog and a 6-foot nonexistent trough. I showed the plan to Shorty and he was excited about working on such a large-scale project. But how would it be done? Where would the rock come from, not to mention a 6-foot trough?

That winter Morris and I, sometimes joined by Shorty, would drive the rural roads around us looking for rock. We not only had to locate potential monoliths but be mindful of the fact that they had to be accessible with the backhoe; many big, beautiful boulders had to be left to enjoy the sleep of eternity because there was no way we could get to them with the equipment. We discovered quite a few on the property of two neighboring landowners. One was a farmer named Snyder who some years ago sold Shorty the piece of land on which the Deller house was built; they were adjoining neighbors. Shorty told us that Farmer Snyder was always in need of fill "ground" since the unlucky farmer had inadvertently broken the seal on his pond and was attempting to remedy the situation by rebuilding the berm that formed one end of it. Shorty had assured us that Snyder would gladly exchange rocks for several truckloads of fill. So we were relieved to find out that we had a commodity that had value to farmers: the cut from the original excavation of the rock garden slope. Shorty talked to Snyder and reported that the farmer would be happy to part with any stone on his property in exchange for the

ground we were taking out.

The second landowner happened to be Shorty's uncle. Mr. Douglas did not farm but rented his fields to someone else and the tenant had last year broken his plowshare on a huge subterranean monolith right in the middle of a cultivated field. Both the tenant and landowner would be happy to part with that obstacle; and furthermore, Shorty reported, Mr. Douglas would be happy to part with any other stone on the property if Shorty would dig out and remove with the backhoe the huge boulder. Later while executing the rock garden, I was with Shorty on the backhoe when we went to unearth this rock. Shorty spent 2 hours trying to coax the thing to rouse from its subterranean sleep, but it was a giant. At first, of course, we thought of transporting it back to the rock garden construction site in the front end bucket, but it was too large in every direction and we resigned ourselves after a struggle to drag it slowly to the edge of the field with the backhoe arm where we let it resume its sleep. We had to spend the time removing this rock because that was part of our agreement with Mr. Douglas.

Morris and I knew we wanted the large rock in the garden to be back-filled with a planting mix and not just the clay subsoil of the excavation. We wanted a true rock garden scree that would be appropriate to the nurture of a wide range of rock garden plants. We thought we would purchase the individual components—the sand, gravel, and compost—and mix them in a wheelbarrow by hand and place the mix as each large stone was placed. It seemed like a monumental but inevitable task that was part of building a rock garden.

One cold and rainy Sunday, Shorty invited us to go with him to the gravel supply company in York. There we stepped over the chain at the entry and inspected dozens of piles of various types of sand, gravel, and stone, picking up each to feel the quality. In a corner we discovered a mountain of black humus that looked and smelled like composted sewage sludge; we later found out that it was sold as a lawn topping—to golf greens keepers, mainly—and no one seemed to know how it was made. We were delighted to find out that the sand and gravel company sold compost since we could buy all our planting mix components from one source. We found the sand we wanted, big grained and clean, and the stone, from ½ inch screening. The golf green humus would do just fine.

When Shorty inquired for us about the purchase of these components, the salesman asked if the sand, gravel, and humus could be delivered in one truck and if it mattered if they got a little mixed up. "Hell, no," Shorty responded, "we want them mixed." Well, if that was the case, the sand and gravel company could mix the three before it was loaded onto the truck to be delivered to the site, explained the salesman. What a relief! Now the part that we dreaded the most, because of the labor involved, was eliminated,

and we felt confident that we would not be overwhelmed.

We ordered a mix of three parts sand, two parts gravel, and one part golf green topping and it was delivered to the site in a gigantic twelve-wheel dump truck. Even though it made a mini-mountain on the parking area, we decided it wasn't going to be enough, so we ordered another batch; but this time we got more gravel in the mix because the first load seemed too sandy. The black humus was barely visible but was there in sufficient quantity to make the scree stink. The gravel was crushed limestone, the sand was collected somewhere, and nobody knew where the black stuff came from, but when all was mixed together the pH turned out to be 8 which seemed acceptable.

The problem of the car-deflecting super trough remained until Shorty asked us if a pre-cast concrete storm water collection box would do. No sooner had we answered, "Of course," than Shorty took us, again, for a ride in his pick-up to Monarch Concrete Products Company in Dallastown, Pennsylvania. There they cast many different shapes of concrete pipe and elbows, boxes and tanks, manholes, wellcasings, and hundreds of shapes whose use was a mystery to me.

We drove into a yard where these pre-cast shapes awaited orders and parked next to an open concrete box, 7 feet long, more than 2 feet wide, and 3 feet high. It had a steel angle frame cast into the top edge of the 5-inch-thick concrete sidewalls and several large holes in the sides; the steel angle provided a lip for some sort of lid and the holes received inflow and outflow pipe. While we inspected this massive concrete box, a black Buick pulled in the yard, stopped quickly with the motor running and a man in a trench coat ran into the office; he didn't notice the three of us. "That's Mr. Wagman, the owner of this company," said Shorty, "I'll talk to him when he comes back out." We walked around the yard looking at all the shapes. The round ones would make nice underground bamboo planters. Mr. Wagman appeared. After first name greetings, Shorty said, "Let me introduce you to two friends of mine who want to buy a concrete box to use as a planter." We told him that the 7-foot one would be perfect except for the holes in the sides. He said to tell him what we wanted and he'd have it cast for us. Did we want the angle around the top? We told him that we would prefer it without the angle and that we needed several holes in the bottom. He assured us this was no problem. It could be cast the next week for delivery anytime after that. Later, when Shorty officially ordered it, we were told the cost: \$300.00 delivered in place for a 6-foot 9-inch by 2-foot 3-inch trough with walls 5 inches thick. It was 3 feet high, but the height didn't matter because I could sink it into the ground any distance.

Morris found a big piece of vinyl we could use in a storage room of the small factory where he works as a microbiologist. This piece of vinyl (*vinyl*,

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not polyethylene) was almost perfect for the liner of the bog. It was a big piece—maybe 10 by 12 feet—and it was thick; its flaws were several holes in the middle. We cut patches from the corners and mended the film using aquarium sealer (silicone rubber) to cement the patches over the holes. We know for a fact that aquarium sealer works under water. For the substance of the bog, we bought six bales of peatmoss.

Now all was ready to begin. When Shorty arrived the first morning I asked him to start by stripping the site of the couple of inches of topsoil. He objected, saying that the topsoil was so poor and thin that trying to remove it was a time-consuming and useless exercise. Was I working for the Environmental Protection Agency? I insisted that even if the topsoil were thin and poor it was a little bit better than the sub-soil and would, consequently, be worth the effort to set aside. I won. Shorty stripped the site and laughed at the quality of the soil we saved. Then he started to eat away at the slope and load the dump truck which was periodically driven three-quarters of a mile down the road to Mr. Snyder's farm, dumped, and brought back for more. Shorty decided that he would first excavate the big crescent-shaped bite from the slope and forget about excavating the bog hole until all the large rocks were delivered and placed with the backhoe because he needed to traverse the bog area with equipment to place the rock.

The next day that we worked on the project, Shorty hired for us a strong young man because we were now ready to start collecting and placing rock and we just didn't know how it would go and how much brute strength would be needed. Even though we had spent the winter scouting rock and had quite a few spotted, the magnitude of that expanse of raw clay at the site worried me that we would not find, we could not find, the amount of rock it would require to build this mock mountainside.

We started, logically, at the very beginning with the first rock, the biggest one we knew of close at hand; we didn't know any other course of action than to just plunk it down and backfill it with the scree planting mix. After the rock was dropped Shorty just drove over to the pile of backfill mix and scooped up a load, drove back to the rock and dropped the load behind it. The strong young man shoveled it into all the pockets under and around the stone where it did not fall on its own while Shorty went to fetch another rock on the backhoe. Morris and I made sure that the rock was seated and back-filled properly. Shorty made sure with all of the rock that it tilted backwards into the earth so that water would run *into* the structure.

There would be no justification for the placement of the first rock—it was just kind of dropped—but with the second one, and continuing until the last one was placed, the new rock had to be evaluated in relation to the rock that had already been placed, and so, inadvertently, the first rock established a pattern by its disposition and strata as did the cumulative structure of rock.

I became aware of the fact that it would be advantageous for me to go with Shorty on the backhoe when he pulled the rock from the earth because I could evaluate the nature of it, see it from every angle, study the strata, or, in effect, get to “know” the rock before I had to make a decision about its placement. Morris’s and Shorty’s input was weighed with consideration, of course, but everyone agreed that, as the official “designer,” it was I who would have to take final responsibility. Morris thought it should go this way; Shorty thought it should go that way; and the young man leaning on the shovel thought it should go yet another way. It was a committee meeting for each rock. It was slow—very slow—but we didn’t know how to do it any faster. None of us had built a mountain before. As we approached the top I realized that there now existed a mountain that the cartographers didn’t know about and would need a name for future maps; I named it Mt. Deller.

The backfill mix was an ugly gray color that did not blend with the beautiful rock we had scavenged from the local area. I wanted a topping of brown creek gravel which would blend with the large rock. Shorty drove the backhoe down to our creek and all of us shoveled sand and gravel into the front end scoop; he drove back to Mt. Deller and we scattered the creek gravel all over the surface. I brushed the excess off with an old broom.

One last detail had to be attended to before we went on to the next step. The gigantic dry wall laid up more vertically than we thought it would and there was a gap at the summit between the stonework and grade. The cut Shorty made in the hillside angled more than the rock work stacked up, resulting in this chasm. We filled it with backfill mix, but the grade at the top still needed to be pulled forward to make the transition at the top from rock to grade seem natural. Shorty couldn’t reach it with the backhoe and so we had to move several cubic yards of soil by hand which turned out to be the most physically exhausting job of the whole project. Later, when Morris was planting tiny baby plants in the mountainside, I repaired all the scarred areas above and around the rock garden, but outside of it, with woodchips over thick newspaper which is our typical non-rock-garden mulch. The 1-inch sections of newspaper are laid flat, like shingles, and covered with woodchips or shredded bark.

Now we were ready to make a scree and a bog. The scree was easy because it was nothing more than the backfill mix piled at the base of the rock face as it would be in a mountain environment. We studded it with relatively small rocks (the size of microwave ovens) and mulched it with a topping of sand and gravel from Beaver Creek.

The bog was more complicated. For one thing our custom trough was one side of the bog and *that* had to be delivered and placed. Shorty made all the arrangements again and even told the concrete form company the *hour* he wanted it delivered. Since our custom trough was 3 feet in height,

Shorty excavated the bottom of the hole for the bog and trough a little more than 2 feet so that the trough would be out of the ground a foot. He put some backfill mix in the bottom of the hole to get a smooth, flat, horizontal surface for the massive concrete form to sit on and as soon as he was finished smoothing out the gravel foundation, the trough arrived—at the appointed hour—on a big truck equipped with an electronically controlled crane. The driver held an instruction panel in one hand that controlled the movements of the crane. In a moment the massive thing (which looked something like a burial vault) was hoisted into the air, swung over the excavation and dropped exactly into position on the prepared foundation. It took just a few moments to place this piece of concrete that weighed at least 2 tons. Having two thirds of it buried with only a 12-inch height visible made it look much more like a traditional trough even though it was an intrusive and incompatible new concrete color. Later I colored the concrete trough by drizzling oily black and brown paint on it and although it might look suspicious at close range, to the casual eye at a moderate distance, it is quite convincingly stone. As the plants grow over the edge, of course, the effect will soften and as time marches on, the prosaic concrete will acquire a dignity only age can bestow.

We shaped the bog excavation by hand and got it somewhat smooth before putting down a cushion of newspaper as a precaution against a stone in the subsoil puncturing the liner while we were filling the bog. Morris decided to use a black polyethylene film in addition to the vinyl. Why not? It couldn't hurt. Morris stood in the middle with bare feet and arranged more newspaper over the two layers of film. On this newspaper cushion he placed several large rocks to consume space because we foresaw a big problem. We were fast realizing that we did not have enough peat to fill this 7- by 9-foot bowl that was 2 feet deep. Six bales of peatmoss would not even fill a third of the volume required. We started to fill with a water/peat slurry; that is, we put the dry peat in while the water was being let in with a hose. The first few bales I wet by letting the hose slowly introduce water into the polyethylene-wrapped bale through a small puncture. It sounds like a good idea but has one disadvantage: once a bale of peatmoss is saturated with water it is immobile, weighing almost as much as a rock that size. Should we run somewhere and buy more peatmoss? What to do?

Again, Shorty Deller came to our rescue. He reminded us that Farmer Snyder had kept a goat for years in a remote barn that was now a part of his farm but formerly had been an independent homestead. The barn stood solitary not far from our place and I had passed it many times; as a matter of fact, I had photographed it many times at various seasons and wondered what the house had looked like and wondered how and why it had vanished. I remembered the goat; I used to see him looking at me from the barn when I passed and even took several photographs of him. The goat did not live

there anymore but, Shorty informed me, what was there was several years' accumulation of sawdust that had served as bedding for the goat. This sawdust was mixed with manure and had been composting for several years. Shorty asked Snyder if we could have just a few scoops of the stuff and since we had just plied him with many truckloads of fill, he was very accommodating. Shorty drove the backhoe over to the goat barn and we collected more than enough to fill the bog to the brim. We continued to run the hose into the lined basin and created, at first, something that looked like chocolate soup. We wondered if it wasn't a mistake, but by the next day the liquid mud had coalesced into a homogeneous mass that looked and felt like a bog. We trimmed the plastic liners and hid the edges with rock. We were almost finished with the construction.

The last step was the reworking of the edge of the parking area and the laying up of stone around the existing birch tree. Shorty again used the backhoe to place the rocks, which at the lower courses were the size of garbage cans and which diminished in size to that of footballs around the base of the tree. I wanted the rock work to look very un-constructed, not like a laid-up wall, but rather like a farmer would pile rocks at the edge of a field, and I wanted it to look as if the birch had seeded itself in this pile of rock about 15 years ago. We backfilled this pile of rock with our backfill mix and it too is planted with a wide range of small-scale plants.

Morris planted the entire rock garden with hundreds of plants. I wanted a weeping hemlock for the top and we procured a choice one from Jim Cross when we visited his place on the tip of Long Island. We got some very admirable slow junipers which are inching their way around the edges and there are a few other rare small shrubs including dwarf cotoneaster, spiraea, and lonicera, but the premier display is that of small rock plants. It is a motley collection from the four corners of the earth and only some are really alpine but all are small and unusual. We've been putting in more bulbs each year because they do so well here—especially small tulips. The plants display themselves well because every aspect of the rock garden is sloped up for the viewer to see easily from the parking area. Since the slope faces north, snow cover is maintained to the maximum.

The rock garden has been a constant source of pleasure and delight to Morris and me. Most plants have grown better than expected and the bog has been phenomenal. Little sundews generated spontaneously; we grow pitcher plants and *Andromeda polifolia* to perfection; bog primulas are happy there; and the sphagnum moss that Siskiyou Nursery uses as packing is patted into place and regenerates to form a lush ground cover. Occasionally the prime growing conditions of the rock garden and bog are too much of a good thing for the plants, with the result that they grow too large, but that can hardly be considered a complaint. We have something in bloom from

mid-March to mid-December with most of the big splashes of color coming in May and June.

I feel very fortunate that fate has offered me the opportunity to design and build a large rock garden from scratch; it has been deeply gratifying. Morris feels very lucky to have such a place to garden. We collectively feel very fortunate to have Shorty Deller as our friend. The rock garden would never have come to be without him because even though Morris might want a rock garden and I might have the urge to design one, it never would have, or could have, been implemented without Shorty Deller, a rock gardener's dream come true—a sympathetic man with a backhoe.

Garden Environments

Richard and Carolyn Critz
Rosemont, Pennsylvania

We've been gardening on our three-fourths acre property near Philadelphia for more than 20 years now, and over these years have discovered that a lot of desirable plants just won't (or can't) grow in the climatic and soil conditions our place affords. But we have gradually come to see that in limited areas, special conditions can be created, special conditions that greatly extend the range of plant varieties we can grow really well and that can be nicely integrated into our overall grounds design.

We have devised a number of environments arranged like a series of beads along a walk, or tour, that takes in our whole property. Along the way these little self-contained "events" fulfill such functions as foundation plantings, herb garden, and cutting garden.

Some of these environments we have been enjoying for years, some are quite new. Except for the bog, none of them require special skills or materials to construct. What follows is a how-to description of the environments we have found most satisfying along with a list of plant suggestions for each. Shall we start our tour?

Some of our oldest plantings, here with us almost from the beginning in 1960, we now recognize as full-scale environments and treat them as such. These include a 16-foot-wide areaway protected by walls, a sun and shade azalea planting, a peat bed for heather, and a dry woods area. Let's look at these first.

Sun Trap We have an areaway leading from ground level down to a

basement which is glazed floor-to-ceiling and wall-to-wall. This intimate, sloped garden area, about 16 feet square and fully visible from the house, is enclosed on all sides by block walls, and is a perfect sun trap. In it we are able to grow some Zone 8 and even some Zone 9 plants, although we are in Zone 7. The flowering season often begins in late February with aubrieta and the small bulbs. Later we have corydalis, campanulas, ferns in variety, violets, and a lovely carpeting mondo grass only 2 inches high, which we rescued out of a path at the Bok tower in Florida. Any really protected spot open to the sun can be made to serve in this way.

Sun and Shade Azalea Planting Our sun and shade azalea planting was our first major garden development, and it forms the principal foundation planting along the front wall of our home (which faces due north). In order to make this bed attractive, we brought it out in a great sweeping curve from the east end of the house into the sunlight and concentrated the principal planting there. Against the house we arranged large flat rocks, like Japanese stepping stones, interplanted with pachysandra. Near the front door a grouping of shrubs breaks the pattern.

In this fully shaded part we have planted camellias, which in our climate will only flourish in a place where the winter sun never shines directly on the leaves. The north side fills that bill for us and we have been successful with several kinds, notably *Camellia* 'Glen 40,' which is a beautiful smoky red. Other plants which we use in this situation are *Pieris japonica* (including *P. japonica* f. *variegata* and several others), ferns, and *Sarcococca hookeri*, a beautiful dark green ground cover with strongly scented flowers in early spring. For color in the summer we put in brilliant red impatiens.

The place selected for the azalea planting itself was almost pure clay. We were fortunate to find lying on a friend's property, a huge rotting oak tree from which we brought what seemed to be tons of duff to mix with the clay and with builder's sand. Kept 2 to 4 inches deep in wood chips and/or pine needles, our azaleas have been healthy and beautiful for 20 years now. These azaleas are carefully chosen to fulfill two criteria: flower colors must be white, yellow, orange, or fire-engine red, and the leaves must possess winter color interest. This is important. The planting is, in fact, almost as attractive in winter as it is in full bloom.

The environmental secret of the azaleas is this: azaleas grow best in crowded clumps, and by judiciously placing more tender kinds under the protection of larger, hardier ones, they can sometimes be induced to grow and flower in temperatures that might otherwise do them in.

Heather Bed Our heather bed, which is in full sun and immediately opposite our front door, is in bloom literally 12 months a year. Heather is rather difficult to grow in this area, requiring good drainage, definitely acid soil, strong sun, plenty of water in every season, and an abundance of cer-

tain fungi in the soil with which the plants live in symbiotic dependence. These conditions we have met by a) raising the bed 6 inches, b) incorporating lots of acid peat moss, and mulching annually with pine needles or wood chips, c) placing the planting to be fully open to the south but protected on the north and west, d) watering with a sprinkler every single week (when it doesn't rain) between June and September. The final condition, e) requires some faith and perseverance. Building up a sufficient concentration of the mycorrhiza (fungi) to sustain plant health may take several years. The trick is to continue replanting in the same ground with new plants until concentrations are sufficient for plants to become established. Our experience has shown that this effort (and expense) is worthwhile. We have over a hundred varieties of ericas and callunas in an area no larger than 150 square feet—a place of continuous color and garden interest.

Dry Shade Bed Our dry shade bed is located under a small stand of trees at the rear of our property. We built this area up for maximum drainage and worked both compost and clay into the sandy soil. Except in times of extreme drought, we do not water, but a variety of lovely plants flourish here anyway. The hostas for one. We have collected a dozen charming kinds from huge to petite, from yellow to blue, variegated and plain, which add color and texture. *Saxifraga sarmetosa* carpets the ground—a living mulch. All the woodland primulas flourish, especially *Primula kisoana*, but also *P.* 'Wanda' and *P. seiboldii*. We also grow *Vancouveria hexandra* here, several exotic jack-in-the-pulpits, *Tiarella wherryi*, corydalis, *Dicentra eximia* 'Alba,' *Phlox stolonifera*, and finally a number of the very dwarf Satsuki azaleas which flower spectacularly in June and July.

The plantings described so far were made before we seriously adopted the idea of creating environments. As soon as the idea had taken hold, we made three more special areas.

Wet Semi-shade Our wet semi-shade area is perhaps our largest single planting bed—a place for housing a collection of dwarf and species rhododendrons. We call it wet because this area is watered regularly all summer, about once every two weeks unless it rains. Like our other woods area, this ground was sandy, so we incorporated clay to make the soil just right and use pine needles or wood chips for mulch. Besides the rhododendrons and their relative shrubs (pieris, zenobia, laurels, ledums, et al.) we have a variety of small plants partial to these conditions: *Spigelia marilandica*, dwarf astilbes, lysimachias, *Mitchella repens*, iris in variety, *Vaccinium vitis-idaea* 'Minor,' and many other jewels including a large number of primulas.

The Mountain Our favorite bed we call simply "The Mountain." This planting area is a raised construction made of lumps of tufa embedded in a sandy-lime potting mixture. The whole thing is simply built up on top of undisturbed ground (cleared of grass, of course), shaped like a miniature

mountain range and so situated that it gets 4 or 5 good hours of sun a day (afternoon shade). The whole thing encompasses not more than 100 square feet, but on it we grow perhaps 350 different kinds of rock garden plants. The flowering comes in waves. First, in late March and April, a yellow and white period with drabas, saxifrages, tiny iris, and dozens of other accents and grace notes. Next, in late April and May there is a pink period with androsaces and many kinds of dianthus. Finally, in June and July, there is a blue period, created principally by several kinds of campanulas. Even in winter this bed is nice to look at. The evergreen, or blue in this case, foliage of the dianthus is like smoke on a mountain.

Among the many other things which flourish here is a charming little flat plant called *Mentha requieni*, Corsican mint. The individual leaves of this plant are a mere one-eighth inch across, so that the effect is of grasses and underbrush growing on a mountain side.

The Mountain requires frequent watering, sometimes twice a week in dry weather. So we have created a wet sand bed around its base on two sides. To do so we dug out all soil to a depth of 8 inches and filled in with plain builder's sand. That's all—nothing more. The dianthus are particularly happy in this unlikely kind of place, but lots of other things are too: grasses (like carex), sedums, acaenas, orostachys, globularias, and many more.

Dry Sand Bed Perhaps the most different of our environments is our dry sand bed. This bed is in full sun. It contains 8 full inches of just plain builder's sand. But this small garden provides a home for a number of western American plants which will grow nowhere else for us. Examples are penstemons, the prostrate western phlox including the red Mexican ones, oenotheras, and western daisies such as erigerons and townsendias. *Phlox bifida*, a number of the hardy cactus, and iris from the eastern Mediterranean (*Iris bakeri*, *I. danfordae*, *I. histrioides* 'Major' and others) also grow here. All these plants are striking in flower. The thing that makes these plants difficult is their tendency to succumb to our eastern plant infections (fungi and rots) which they never meet in their dry native habitat. The sand seems to insulate the plants from disease, and allows them to live in our much wetter environment. The plants make long roots down into the relatively safe soil underneath; the tops stay nicely dry above, as they do at home. Since this bed is right outside our kitchen window, we enjoy it daily, all year long. We have been so pleased with these special areas that we have recently created three new ones.

The Bog and the Herb Garden We built a bog by burying a 3- by 6-foot plexiglass skylight dome upside-down as the focus of our geometrical herb garden. The dome is filled with plain builder's sand, nothing else, and it is in full sun. Soil used in this situation would soon become hopelessly noxious. Strangely enough, although it has no outlet at all, the bog never overflows.

But it seldom dries out, either. Ideal! In it we plan to grow the candelabra and other primroses, *Caltha palustris*, *Lobelia cardinalis*, some sundews and pitcher plants, ferns, and other bog lovers. And, of course, a few special bog-loving primulas such as *Primula rosea*, *P. warschenewskiana*, and maybe even *P. clarkei*.

This unusual planting feature is set to one side of a loose grid of 14-inch square terra cotta flue liners which have been cut into 12-inch lengths and buried 10 inches in the ground in a checkerboard pattern. These boxes, planted individually with different herbs, confine the roots and make maintenance of the herb bed a breeze. Between the boxes is loosely laid flagstone paving. We can provide entirely different soil conditions as the plants require. There are about twenty slots.

Shady Mountain We have another new environment, a mountain set in a shady place, but otherwise much like its sunny prototype. On this tiny bed we intend to plant a number of kinds of hardy cyclamens as well as other dwarf bulbs (tulips and daffodils, mainly). For the rest of the year, it will feature a few choice dwarf conifers and some small annuals such as impatiens, an ibis, *Ophiopogon arabicum*, and so on.

There you have it: some of the plant environments with which we have experimented on our small property. I'm sure that besides these there are a number of others you can devise, an effort we know you will find both rewarding and a lot of garden fun.

Never Use a Rock If You Can Help It

George Schenk

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Scouting about, I have found natural stone used to good effect in the garden in an amazing variety of ways: The natural outcrop, a treasure that comes to few gardeners, embellished with a little soil in the seams and saddles and planted with rare or common things; rocks artfully placed in a garden to suggest natural outcropping stone; field stones casually arranged, the glacial rollers fussed with only slightly, each lying almost as the gardener tossed it on the ground.

On occasion rocks in no arrangement whatever may be very effective, as when riprap is dumped from trucks to cover an extensive embankment and planted with broom and other big tough rock plants wherever crowbar

and shovel can work a plant into the ground. The eye will find its own compositions in any such stonefall, especially if the rocks are of various sizes.

Rocks may also be used to good effect as plant-enriched architecture. A dry stone wall, for example, planted with such immortals as mother-of-thyme, basket-of-gold, and cheddar pink can be a piece of folk art if very neatly constructed and cared for. Then there are stones used as paving inviting to the feet, or conversely, rocks as paving politely discouraging to the feet (no short cuts, please) with a few rosettes, perhaps of mullein or of some finer leaved plant between the rocks.

Natural stone can be well used as sculpture, but it requires a poetic bulldozer operator (a rare bird indeed) to tip a glacial monolith on end and grade the soil comfortably about it. More often, such great stones, when encountered in the process of grading, end up pushed over a bank.

But there are also many ways of using natural stone to *no* advantage in the garden.

There is a Northwest kitsch classic: at least ten thousand gardens in the Seattle area display collections of blocky "mountain rock" trucked from talus slides in the Cascades and deposited in clots resembling nothing so much, to my eye at least, as canine scats mineralized and of colossal size. Such stuff is worthless for the romantic landscape uses to which it is usually put. True, there *are* a few good rocks, even magnificent rocks, in this geological subspecies but finesse in selecting these few is not to be hired. To get the best rocks one must go to the mountains, scramble over rock slides and search out the singular organic shape amidst countless diced and lifeless units. Unselected stones brought in as an eight or ten stone load and costing probably fifty dollars each installed is throwing away money better used for plants. Never use a rock if you can help it.

Furthermore—as long as I'm being insufferable—never use blocky stone in hope of naturalistic effect. Blocks will stack up to nothing more than a parody of an outcrop, but this same routine blocky granite can make a fine dry stone wall.

Rocks usually add only confusion in the already confused facade of bad architecture or non-architecture. Farrer's famous advice about locating rock gardens out of sight of all buildings seems to me as valid in the event of contemporary trash-buildings as it was in the case of the heavy Edwardian architecture of his era. However, in the Pacific Northwest many of our later 20th century houses, particularly those utilizing stained wood, take beautifully to a rock garden as close as can be to walls and windows.

We do much visual gardening, even in gardens into which we are never invited. We walk by, keeping to the sidewalk; we look in; we care about what we see; in seeing, sometimes we suffer—rather often we suffer. For example: we may very well have in our care one hundred thousand completely

unnecessary stone retaining walls or wall-lets—stone retaining that retains nothing, but annoys the peaceful progress of eyes and feet. One can almost hear the curses heaped on such rows of stones over the years by gardeners plodding behind lawn mowers. In most cases gentle grades of stable soil should be sloped instead of being chopped into upper and lower levels.

And finally, and eternally, there is the Date-Nut Bar Rockery with its inevitable wrappings of concrete. There must be millions of these the world over, constructed of rocks too much the same size, rocks too regularly placed, rocks the wrong answer to begin with. Never use a rock if you can help it.

The strength of our compositions of rocks and plants comes from our analysis of natural stonescapes. I can't conceive of anyone constructing a plausible rock garden without having been physically knocked out of one's shoes at some time, probably many times, by the hallelujah majesty of stonework in nature.

Good rock gardeners are superb tourists, tourists that is, who see more in a mile, more in an inch than the average traveler. We are what I call trail-side types, rather than trail marchers. While the more athletic marchers pass us by—their eyes on the dirt track, their minds on some mystic goal (Lake Divine or Pillar Rock)—here we are stopping at trailside to take mental pictures of the way the world fits together. Here, now, is the hairstreak butterfly irritably probing an alpine daisy (a slow-yielding well), the flower clinging in thrilling suspense in its cleft of the cliff, the cliff cascading mightily from the sky down to us and on down below absorbed in turf and forest.

Rock gardening is based equally on such close-ups and on such grand views. One must be a constant student of rocks and plants in all places: in the mountains, at the beach, in the desert, along the streambed, and even in the pasture; for if rocks are here, here too are dutiful rock gardeners; horses and sheep, deer and rabbits, who keep the herbage nicely addressed and neatly edged about the rocks, making meadow grasses, dandelions, bull clover, and plantains artful rock plants for the moment. I'm smiling quite seriously as I write this. This pasture with its haphazard, yet orderly, rocks and its buttoned-down, yet blended plants is a great teacher of rock gardening.

Not every wild landscape of rocks and plants is pretty, however. Some are tumultuous and disturbing, yet even these hectic landscapes reveal the balance required for the rock gardener's art; we must work with a sense of the fierce and of the gentle.

Three words have just come to the fore in my mind unbidden. I am suspicious of them for their jingly sound as a trio but they won't go away. The words are Power, and Bower, and Flower; for me, these three words ring the garden values of all natural landscape.

A considerable amount of the Power of the stony world transplants with

surprising ease to the rock garden when we develop that connoisseurship of rocks which rock gardeners sum up in saying, "That's a good stone," meaning that is certainly no broken or newly laid egg of a rock, but shows goodly age of surface, warm tone, and a lively shape. As a piece of stone-craft the rock garden can't be much better than its stones, each individually weathered, warm, and lively. The Bower in nature—to return in search of our second value—is that place of environmental wholeness, surround, and intimacy which compels us to stay; this is the place to be. A garden is a garden only when it enfolds the gardener in such a place. Finally, the Flower is the detail in nature that entertains; each flower is as something to read, and I know rock gardeners to be insatiable readers of nature. In plants we read flowers, leaves, roots and all; stone surfaces we read as a good mystery. The rock garden provides more to read than any other garden form, which is to me the reason for its being.

High sounding stuff. I wonder now, how is it possible to be a bad stylist in rock gardening when all about us there is such an exemplary world free for the looking? And yet even the most faithful observer of wild rock gardens can go sadly astray when trying to translate these nature-works into a natural appearing, home-made rock garden. And in naturalistic garden composition a near miss ranks with false brickwork or plastic daffodils. What has gone wrong? Some detail can throw a whole concept into disunity; a scree topping unrelated to the rocks it surrounds, the stones themselves too regular in outline and set like building blocks in strata lines too monotonously regular, a magnificent rock inappropriately pedestalled as a lone menhir at the summit of the garden, a curbing of bricks. Any one of these or several in combination may destroy the unity of the garden and thus destroy the natural effect sought by the gardener.

Brick curbing, suitable as it may be in other garden contexts, detracts from the value of stones—and vice-versa. Brick, if it must be used, should at least be covered with plants—a single sort for peaceability: thyme would serve well. Or, the rock garden might feature bricks—might use bricks entirely instead of stones, grouping them from place to place on the side of a hillock as low fragments of brick walls, suggesting ruins nearly submerged by accumulated soil, suggesting simultaneously outcrops of stone. The latter would be a far abstraction of a natural outcrop but the mind would make the merger. Having gone this far, would one dare use crushed brick as a scree topping? I believe I would. Why not?

If any of my readers have gone green and queasy, I'm sorry. But I won't retract. In rock gardening one must, I believe, either recreate free-form nature meticulously or forget nature almost entirely and frame one's beds with straight lines and milled or manufactured materials. Imitating nature badly is the only crime.

And yet the classic rock garden designed in admiration of wilderness, its mazy paths and well-stocked shelves adding up to a library of sensual delight, its cliffs not tall but noble, its stones crusty with aeons of sun and wind, its joints so cunning an Inca might pat the gardener on the shoulder, and even a rustyback fern will believe in you—who does not rejoice in this antique, thus juicily romantic art and craft? When it succeeds.

But—oh!—the cost. I have found myself spending an entire day arranging no more than three to five stones, taking each stone out of the ground, lifting each stone off the ground—twenty, thirty, forty times; making countless little adjustments of closeness, of angle, of height; then to bed at night to be a captive audience before my own mental movies of stones—figments of an ossifying brain—conjoining and separating in a kind of hefty ballet. And that's not the end of it. I have got up the morning after, twenty years older, probably as stiff as rigor mortis; I have gone outside to examine my effort of the day before and, in the merciless morning light of self-criticism, I have found the whole business to be embarrassingly bad and demanding to be done over.

I assume that each of us who arranges stones creditably enough for our friends to give our work an appreciative nod goes through a similar trial. Therefore I advise anyone who is unprepared to wrestle mightily with stones to forego any attempt to arrange them into fancy work such as outcroppings or ravines. There is no honor in naturalistic stone composition for anyone but the zealot, the tomfool artist. There is, however, dignity for us all—and even some free and easy fun—in using a stone as a stone, unattached, or only very casually linked up with others, if at all. This work is related to the natural scatter of stones in pastures, and to the gardener's scattered handful of bulbs in drift planting.

But there is an epilogue to these garden vignettes so artfully and arduously constructed. Some will be revised, uprooted to give place for further experiments on the same piece of ground. Others will be torn up as too large and costly of maintenance. And with most the growth of plants will revise the original construction beyond recognition or obliterate it cleanly out of sight. Yet the early stages of nature's commentary on one's work is eagerly awaited by the gardener. Now comes the greening of the blanks, the softening of outlines and mistakes; the gardener grows proud and invites garden visitors. There is, however, a stage beyond, and a stage beyond the beyond. There is, for example, the mystery of the disappearing stone. Who would suspect perfectly well-behaved rock plants (as we set the bounds of behavior in saxatile species) of being secret octopuses of stones capable of flowing over and consuming (for all visible purposes) a thousand-pounder in no time, in a decade or less? Moss will do in the grandest stonework even more speedily in a moist shady garden. Rocks may be retrievable but the plant community is irreversibly alive and of its own mind and one may end up with rock plants

without a rock in sight, and none needed.

“Never use...” but you know my refrain.

Do I mourn my losses? Not much. In rock gardening there is a perfect excuse for starting over: most rock plants are pioneers in nature. They like new soil, a freshly made bed. Now that I think of it I am only the humble chamberlain of the rock garden. I have chosen my service with a free mind, or perhaps with cultivated delirium, and I suppose I'll never give up until it is absolutely time.

“Do As I Say — Not As I Do” Eighteen Commandments for a Rock Garden

G. K. Fenderson
South Acworth, New Hampshire

(Reprinted from the *ARGS Bulletin*, Winter, 1980, Vol. 38, No. 1)

1. The garden should remain as open and uncluttered as possible, with a minimum number of visual distractions. It is neither necessary nor desirable that all of it should be visible at once; rather, those areas which are visible should present a unified, well thought-out picture with balance, interest, perspective and, above all, restraint. A natural visual progression from one area of the garden to another should be apparent. Not every plant in the collection should be on display at once. An ideal garden would consist of a gradually unfolding series of plant tableaux, each constructed with the intent of providing an ideal cultural and aesthetic setting for its components.

2. Be bold with the initial layout of the garden. Make sure that paths are adequate for wheelbarrows, mowers, garden tractors, and pedestrians. Generosity in the size of the planting area to be developed will help eliminate crowding and clutter if your garden is small and will provide ease of access for maintenance.

3. Be bold with the use of rocks; use but few, use them strategically, and make sure they are large and significant enough to be in scale with the remainder of the planting. Make sure they appear settled and are of a color and texture not alien to the raw materials of the garden. If they are none of these things, do not use them.

4. Leave some uninterrupted vista, be it water, lawn, rough meadow,

uncluttered woodland glade, or distant prospect, to rest the eye. Visual breathing space is important

5. Be extremely critical, when planting gardens under or near trees, of which trees (and of which species) you retain. Removing natural visual clutter often can produce better design than any number of additions you might make. Trees to be eliminated should be selected well in advance of developing the rock garden. Strive to have your site appear as attractive as possible before any plantings are made. Remember, the site will become the permanent showcase for your collections.

6. Don't overplant. Allow space for plants to grow and develop uncrowded to their best advantage. Don't shortchange yourself of future pleasure by opting for instant garden effect; such efforts are costly, extremely short-lived, and can mean much extra work and the loss of valuable plants within a short time.

7. Be bold with the use of accent plants, i.e., those with distinctive form, color or texture. But use them in extreme moderation; otherwise that which makes them distinctive is lost in a clamor of many contrasts.

8. Choose for the backbone or focal points of your design only plants of known durability, hardiness, general good health and long season of interest. Leave for the background or less conspicuous areas plants of marginal hardiness, those that are prone to pests, those that have a shabby dormancy, and those of mere botanical interest, however rare.

9. Enliven the monotonous effect of collections of closely allied plants by including plants dramatically different in form and texture.

10. Give full consideration to heights, lengths, and general proportions of planting areas. For example, a stiffly rectangular raised bed, though perhaps easier to build, would be visually jarring in a garden where the majority of the lines were soft curves. So too would a very free-form simulated rock outcropping in very formal surroundings.

11. Keep the use of man-made and non-indigenous materials (such as cement, brick, slate, railroad ties, newly quarried or foreign stone, glass and plastic) to a minimum. Do not mix mediums unnecessarily. For example, if there is a need for a raised bed, try to incorporate it into an existing wall or structure. Build it with native stone whenever possible, rather than contrast the fieldstone of one bed with the bricks of another and the wooden ties of yet another.

12. Be conscious of surface texture and try to avoid too many varieties and discordant combinations. For example, a rock garden mulched with very light or highly colored stone in a woodland setting appears unnatural, however beneficial the topdressing may be to the plants being grown there. Likewise, a mulch of pine needles looks strikingly out of place in an open sunny area far removed from any pine trees. Use native mulches whenever

they would be less distracting to the eye. They are usually cheaper, and more readily available.

13. Provide a generous cold frame and nursery area. Such an area, used for propagation and evaluation of plants before they earn a place in the landscape, will contribute greatly to the overall appearance and order of a garden.

14. Try to have a yearly housecleaning. Give excess plants away or discard them. Remain constantly conscious as to whether a specific plant is justified in terms of the space and time required for its care. Be critical of inferior clones; grow only the best. Try to avoid redundant collections. Don't allow your garden to resemble either a warehouse of plants or a hospital ward of perpetual invalids.

15. Try to rebuild and correct defects in old gardens before developing new areas.

16. Label only the most recent acquisitions and those of which you are uncertain. Labels are often an intrusion in the landscape, and their lack improves the memory. If you must collect, collect plants, not labels. Don't allow your garden to resemble a cemetery for mice.

17. Invite the ARGS frequently. This will improve your housekeeping.

18. Know when to leave well enough alone. Have the self-discipline not to intrude too much into the natural landscape.

More on Aconites

Dear Botanical Law Diviner,

I am delighted that my little *jeu d'esprit* should have provoked so earnest a reply.* Unfortunately, your letter, despite its clarifying intentions, is not without its confusions. For example, you opt for my Possibility 2, but then persist in describing *Eranthis x tubergenii* as an inter-specific hybrid, which I imagine to be inadmissible.

The real difficulty with your letter lies deeper. For though you choose Possibility 2, it is not clear how your "run-down" should be evaluated. My point in quoting "a lot of varied opinions" was to show that some serious authorities (perhaps even taxonomists and specialists in winter aconites) do not accept Possibility 2. You accurately repeat the difference between *E. hyemalis* and "cilicica" summarized in my note, but draw different conclusions from those drawn by many of the sources I cited. I do not know

whether they were "in possession of correctly identified material" since that phrase presupposes that the taxonomical dilemma has been resolved.

A few small comments:

- a. Are the differences—if they exist—in the shape of the anthers of any significance?
- b. I did not contrast the positions of Ingwersen and Mathew, whose views appear to be similar (synonymous?).
- c. You have changed the date for the *tubergenii* cross (if that's what it was. I asked about the evidence for this; can someone supply it?) from 1922 to 1923. Such revisionist history requires explanation.
- d. What is the relevance of the reference to *E. pinnatifida*? I have been seeking it for some time—see (f) below—but it does not exhaust the list of species in cultivation.
- e. I was not concerned in my note with the BEST and the TRUE—I abhor capitalized words, though I like dashes (and parentheses), and have a fondness for italics.
- f. While I admire Mr. Christian's catalogue, how much weight can one attach to the views of someone who will not export to Canada?

Yours sincerely,
Brian Bixley
Toronto, Ontario

*(ARGS *Bulletin*, Vol. 45, No. 1, p. 35; Vol. 45, No. 2, p. 87.)

Omnium-Gatherum

Interest Checklist—If you are interested in what kinds of articles appear in the *Bulletin*, please take a few minutes with the enclosed checklist. Fill out as much of the checklist as interests you, add comments and suggestions if you wish, and return it to the editor. The answers you give will act as a guide. If several hundred of you would like to see articles about sandworts and not a one of you shows the least interest in the secrets of propagating *Eritrichium nanum*, for example, then the editor will not only be astonished, but will know to pour energies into soliciting articles on the former rather than the latter. It is, however, a sad fact that even an overwhelming consensus of your interest does not necessarily produce an article on that subject if no one can be found to write it and mail it off to the editor.

How to Shorten Winter—An excellent way to spend the dark, cold hours

that you'd spend gardening if only it were light and warm, is to write about plants and gardening for the *Bulletin*. You'll become so absorbed in remembering and anticipating and producing something useful, that the winter will pass happily and in a fraction of the usual time. (Spring deadline is February 1. Articles may be long to very, very short. Articles double spaced and typed with a ribbon less than 15 years old are helpful but handwriting is acceptable if necessary.)

Photo Editor—Our photo editor has retired from active service. Please send all color slides to the *Bulletin* editor, Sharon Sutton, P.O. Box 1371, Port Townsend, WA 98368 until a new photo editor can be found.

Seed Exchange Note—In a letter to the Seed Exchange Director, Roger F. Whitlock pointed out a few mix-ups in last year's contributions.

1) Seed donated as *Mandragora officinarum* ssp. *haussknechtii* was listed as *Mandragora autumnalis*. The plant is a vernal flowering form, and the name I have for it came with the seed originally from the RHS Wisley Garden. Brian Mathew has seen it in flower and pronounced precisely the same name without prompting.

2) Seed donated as *Scilla hughii* was listed as *Scilla peruviana*, which some consider an appropriate treatment of a horticulturally distinct but botanically indistinct form. However, in fact, the plant has been identified as *Scilla litardieri* (syn. *Scilla pratensis*), which renders the matter moot.

3) Seed donated as *Iris sintenisii* is in fact from *Iris siberica*. My face is very red over that mistake, you may be sure!

Sedum Society—Micki Crozier writes, "Ron Evans, author of *Handbook of Cultivated Sedums*, 1983 Science Reviews Ltd., was organizing a Sedum Society at the time of his death. Ray Stephenson, Keith Powell, and other friends have taken on the responsibility of forming a Sedum Society. The principal aim of the Society is to preserve in cultivation as many species and varieties of Sedum as possible. The Society has a 'Material Exchange Scheme' where members list the Sedums they can share with other members for the cost of postage or exchange. There is also a Literature and Seed Scheme in the works. Members will receive four newsletters per year, and can list their wants, or request cultural instructions, etc. Anyone interested in Sedums would benefit from joining the Sedum Society. Dues are \$9.00 per year for U.S. members and should be sent to Micki Crozier, Route 2, Box 130, Sedgwick, KS 67135."

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Reuben Hatch, Vancouver, Washington, wholesale rhododendron nurseryman, also uses his talents to produce difficult and rare plants (mostly alpines). His visits to "far-away places with strange sounding names" have made him a local legend. He will share his continuing enthusiasm for Mount Hood's alpine flora Friday evening before the bus tour takes you there to see for yourself.

Also on Friday's program, Ken Love, veteran backpacker and author, past president of the chapter and of the American Rock Garden Society, contributes his vast knowledge of the area, particularly the contrasting dry country, east of Wy'east. Here, in Hood's rain shadow, temperate jungles open to pine needle carpets punctuated with gray-leaved undergrowth. The dryland blooms are no less spectacular.

After Saturday's banquet, Lois Kemp, native plant expert who has made the Columbia River Gorge her own, shares her joy in that extraordinary place. On Hood's cold shoulder, north-facing cliffs host *Douglasia* that never see the sun. Tall waterfalls shelter fern gardens spotted with *Dicentra*, *Synthyris*, *Clintonia* and *Aconitum*. Eastward, the rain shadow again creates a dry, rocky habitat for native cactus, penstemons and the airy wild lilac, *Ceanothus*. Lois, a fine photographer, is also known for her unique ability to discover unknown populations of endangered plants.

All day bus-hiking tours, Saturday, will take you to see and hike the mountain's alpine slopes following Timberline Trail at 6,000 feet. Plan to lengthen your stay to include the optional tours on Friday, Monday and Tuesday when our guides will show you yet more mountain meadows, alpine trails, and snow-melt lakes.

Lodging is on Mount Hood's western slope at the Rippling River Resort, where rustic is defined as comfort and scenic means awe. A plant sale featuring native alpines and rock plants from the Columbia-Willamette Chapter's magic fingered propagator, Jan Palmer, and from local commercial growers, will encourage you to take a piece of the mountain home.

Reserve July 29-31 for the 1988 American Rock Garden Society's Annual Meeting on Wy'east. Registration forms are in the winter *Bulletin* or write Ruth Korn, 3606 Robin View Drive, West Linn, OR 97068.

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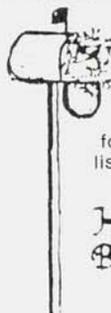
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