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Cover: *Aster (Macheranthera) coloradoensis* with *Stachys chrysantha* and Damselfly (*Enallagma* sp.)
by Cindy Nelson-Nold of Lakewood, Colorado

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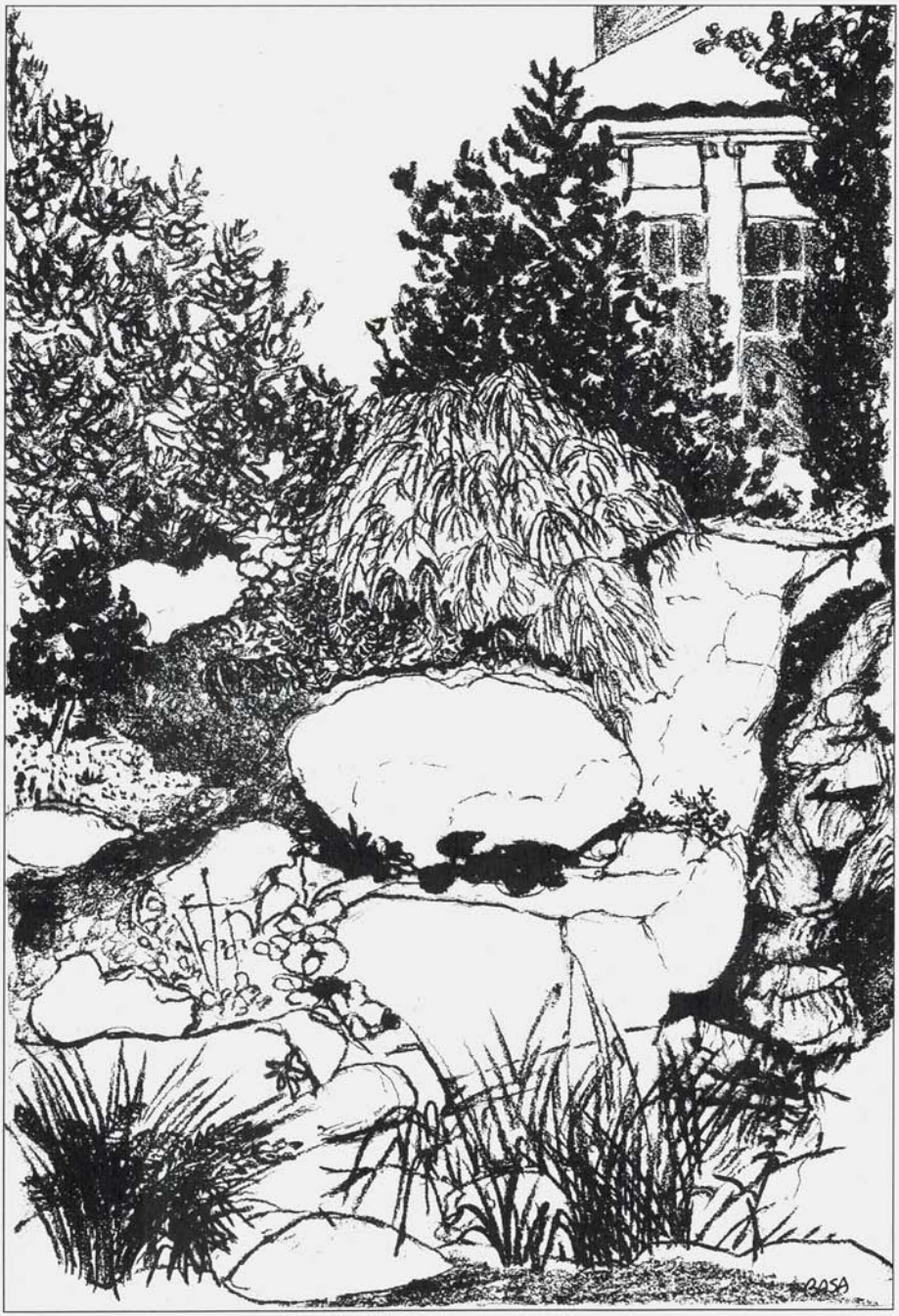
Features

Departments



Woody Plants

For the Alpine Rock Garden

by James Cross

Almost any garden, no less the alpine rock garden, needs woody plants to be aesthetically complete. These woody plants provide structure the year around. They add a significant part of the overall texture of the garden. Those that are evergreen add color and interest especially when perennials are out of sight in the winter months. Woody plants are indispensable to the overall impact of the garden on the viewer.

Probably the most common flaw seen in alpine rock gardens is that far too few woody plants are used. Also important is that many of the woody plants that we do use prove to be unsuitable, even though known as dwarfs, because they grow too rapidly, using up more than their intended share of space and becoming out of scale. I consider that plants should provide a minimum of ten years in one location to be considered suitable.

It is not easy for the gardener to locate a good assortment of very slow growing dwarfs. The slower the growth, the less wood can be taken safely for cuttings for production, making it difficult to meet increased demand. Moreover, the slower growth inherent to these plants results in a higher production cost. It is not always possible to obtain the higher selling price needed for a profit, especially from persons who are used to buying perennials, a much quicker, less expensive crop.

The ideal woody plant for the alpine rock garden is, therefore, always going to be scarce and to require more effort on the gardener's part to search for them in odd corners. Supply, in general, will continue to depend on the hobbyist, or rock garden enthusiast who enjoys the challenge of propagation of these wee, woody buns.

Perhaps the NARGS bulletin could help with a section on sources of appropriate woody plants and candidates for planting in the rock garden, some of which have only recently become known. Every little bit of information and demand will help the supply side with its built-in obstacles.

The American Conifer Society has proposed a four part classification of the term "dwarf" based upon average annual rates of growth. It is hoped that, in time, this will be broadly accepted as a universal horticultural standard, which

would greatly lessen confusion and misunderstanding in referring to any specific plant as dwarf.

In this article we are interested only in the two slowest growth categories. First is Miniature (M) with a maximum annual rate of growth of 3". Next in growth is Dwarf (D) with annual growth in the range of 3" to 6". The remaining two classifications of 6" to 12" and over 12" provide no candidates for alpine rock gardens.

There are a couple of procedures to keep in mind in maintaining miniature and dwarf plants in good condition.

Should very strong growth (vigorous and outsized) appear, cut it off at the point of the eruption or origin. Most of these plants originate from witch's brooms and a branch or two will occasionally revert to the form of the original mother plant.

Most plants of normal-sized species grow in a manner that provides ample space among the branches for discarded foliage to fall through the branches and be disposed of in the surrounding soil. Miniatures, especially conifers, have such close spacing between the branches that the discarded foliage tends to accumulate on the branches and, over time, can cause serious damage to large sections of a plant. It is controversial how this comes about, but, whether the result of disease among the damp, rotting debris or from winter damage to wood that is too well protected in the autumn when the wood "hardens" by exposure, damage usually happens just when the tiny plant reaches the size and the shape you had been waiting to see. Spend a little time every year or two in carefully cleaning out this debris—it is good insurance.

Note: Without the willing help of many, especially Ed Rezek of Long Island and Don Howse of Sandy, Oregon, this article would contain a great deal less information.

Drawing by Betty Ann Albert

Jim Cross is proprietor of Environmentals, a wholesale nursery on Long Island. His wife Conni has a separate business designing and installing gardens and is Jim's best customer.

NAME	SIZE	FORM	COMMENTS
Abies concolor 'Igel'	M	7	more adaptable than most
" *koreana* 'Brevifolia'	M	7	compact
" " 'Silberperl' ('Silberparl'?	M	7	silver underside of needle shows
" " 'Silberkugel'	M	7	" " " " "
" " 'Silber Mavers'	M	7	" " " " "
" " 'Silberzwerg'	M	7	" " " " "
" *lasiocarpa* 'Duflon'	M	9	very slow and dense
" " 'Lopalpun'	M	7	tight little bun
" *pinsapo* 'Horstmann's Nana'	D	9	compact
" *procera* 'Blaue Hexe'	M	9	tight bun, bright blue foliage
" " 'La Graciosa'	M	9	tiny dense bun
Acer palmatum v. *dissectum* 'Red Filigree Lace'	D	10	deciduous, holds red best of any Dissectum
" " 'Pixie'	D	11	deciduous, from witch's broom of 'Bloodgood'
" " 'Bloodgood Witch's Broom'	D	11	deciduous, can be grafted high or low
Andromeda polifolia 'Nana'	D	6	requires acid soil and moisture
Betula alba 'Nana'	D	3	deciduous, open, irregular, reaching 15-18"
Bruckenthalia spiculifolia	D	6	"spike heath" pale pink bottle brush in June
Buxus microphylla 'Compacta'	M	3	tight, better looking in winter shade
" " 'Morris Midget'	M	3	slightly faster growing than 'Compacta'
Calluna vulgaris 'Dainty Bess Minor'	M	5	tight silver gray, mauve flower
" " 'Kuphaldti'	D	5	same as above, prostrate
" " 'Lyndon Proudly'	M	4	same as above, irregular shape
" " 'Molecule'	M	7	requires acid soil,use gypsum *not* lime
Cedrus deodora 'Hollandia'	M-D	7	open branching more green in color
" " 'Pymaea'	M	7	silver gray
Chamaedaphne calyculata (no name)	M	11	not 'Nana' which is much faster growing. Very small white

Key to Plant Size:
M=Miniature;
D=Dwarf

Key to Plant Form:
1 narrow upright;
2 broad upright;
3 low mound;
4 irreguar mound;
5 creeping;
6 low spreading;
7 upright globe;
8 pyramid cone;
9 flat globe;
10 weeping;
11 tree form

			flower; dead-heading old flowers is important
Chamaecyparis obtusa 'Nana'	M	7	size of a volleyball in 15 years
" " 'Caespitosa'	M	7	very slow tight bun
" " 'Green Plate'	M	5	unusual growth habit
" " 'Golden Sprite'	M	3	not as hardy as most *obtusa* selections
" " 'Little Markey'	D	9	gold foliage
" " 'Nana'-types (p. 281)	M	vary	quite a number, some named, most good subjects
Chamaecyparis pisifera 'Curly Top'	D	2	unusually blue
" " 'Gold Dust'	M	7	golden, (='Plumosa Aurea')
" " 'Squarrosa Minima'	M	7	silver-blue foliage, (='Squarrosa Pygmaea')
" " 'Pincushion'	D	4	golden foliage
" " 'Silver Lode'	M	7	white flecks on small compact plant
" " 'White Pygmy'	M	4	starts with juvenile foliage turning to plumose as adult variegated, very slow
Cotoneaster apiculata 'Tom Thumb'	D	3	keep in bounds by pruning
" *adpressa* 'Little Gem'	D	3	same as above
Cotoneaster adpressa 'Cooperi'	D	3	not hardy below 0°F
Cryptomeria japonica 'Osakatamai'	M	7	
" " 'Tenzan-Sugi'	D	9	
" " 'Virodo Sugi'	D	7	compact, small upright, proabably same as 'Compressa'
Daphne arbuscula	M	5	shiny dark foliage, some rose-pink fls. all summer, prostrate
" 'Napolitana'	D	3	to 1.5'-2', dense spreading, fragrant rosy-purple flower
" *cneorum* 'Pygmaea Alba'	M	5	white flower, very fragrant, prostrate
" *retusa*	M	9	very compact, neat foliage and form, fragrant purplish-rose fls.
Euonymus japonica 'Rokujo'	D	9	o.k if not below 0°F, 6-8" tall
Gaylussacia brachycera	M	5	Box huckleberry, requires very acid soil, does not prosper in tufa debris
Hebe cupressoides 'Nana'	M	7	dense, looks like a conifer, marginal beginning at 5-0°F
Hedera helix 'Conglomerata'	M-D	5	very curly leaves, slow, prostrate

*All of these hollies were accidentally derived from Dr. Elwin Orton's breeding. All are very small and attractive. They each will fruit under the right conditions. Hardiness remains uncertain.

Ilex x 'Rock Garden'	M	9	chance miniature evergreen of Dr. Orton, fruit o.k.
" x 1112	M	6	'San Jose' x *rugosa*
" x 627	M	9	" " (" x 'San Jose')
" x 152	M	9	*Ilex opaca* x *aquifolium*
Ilex crenata 'Dwarf Pagoda'	M	11	Female, black fruit, small round leaves
" " 'Elfin'	M	9	small leaves and twigs, neat and dainty
" " 'Green Dragon'	M-D	11	Male, stronger grower
" " 'Jersey Jewel'	M	11	Female, smaller leaves and stature than 'Dwarf Pagoda'
" " 'Piccolo'	M	9	smaller than 'Elfin' in ultimate stature
" *serrata* 'Kosobai'	M	11	unbelieveably small, red fruit in fall and winter, deciduous, a fantastic bonsai!
Juniperus communis 'Compressa'	D+	1	tight foliage, severely upright, gets too tall and frequently suffers from winter damage where Feb. sun hits at sunrise when frozen in and snow to reflect, but no alternative plants of this shape are better
" " 'Chrome Run'	D+	1	like 'Compressa' but a bit slower in growth and hardier. Needs longer trial period
" " 'Berkshire' (p. 247)	M	3	excellent plant, good silver summer color and nice winter color
" " var. *jackii*	D	4	strong one sided leader (prostrate), can be trained easily to control
" " Echiniformis	M	7	very slow and tight. Difficult to propagate. Ideal for rock garden.
Juniperus horizontalis 'Glomerata'	D	5	the slowest of the prostrate junipers. Only looks vigoruous
Leiophyllum buxifolium	M-D	9	small shiny leaved inhabitor of the N.J. Pine Barrens. Acid soil, can be sheared with ease and good result
" " 'Prostratum'	M	3	from Grandfather Mt. A gem in and out of flower.
Larix kaempferi 'Blue Dwarf'	D	7	loose
" x *eurolepis* 'Newport Beauty'	D	7	loose
Nandina domestica 'Woods Red'	D	2	spectacular color in winter with or without snow. Seems to be

			the hardiest of the colorful dwarf forms
Picea abies 'Echiniformis'	M	3	compact. Often confused with *P. mariana* 'Nana' and others
" " 'Globosa'	D	7	
" " 'Humilis'	M	7	15" high in 30 years
" " 'Little Gem'	M-D	7	compact, a little touchy for *Picea abies*
" " 'Pusch'	M	7	compact bun
" " 'Saint James'	M	7	a compact bun
" " 'Wagneri'	M	7	a compact bun
" " 'Witches' Brood'	M	7	" " "
" *glauca* 'Arneson's Blue Variegated'	D	8	green and blue mixed
" " 'Cecilia'	M	7	
" " 'Gnom' (p. 284)	M	8	very dense and neat
" " 'Jean's Dilly'	M	8	very dense and neat, more narrow
" " 'Little Globe'	M	7	a bit irregular but neat
Picea mariana 'Nana'	M-D	5	a much confused name but the true *mariana* 'Nana' is a great reliable plant
Picea omorika 'Silberzwerg'	M	7	silver underside of needle shows
" " 'Pimoko'	M	8	bicolor form, silver underside
" *omorika* 'Hexenbesen'	M	8	bicolor form, silver underside
" *orientalis* 'Mt. Vernon'	M	9	
" " 'Tom Thumb'	D	7	should show gold color since it is derived from a witch's broom on the *Picea orientalis* 'Skylands' ('Aurea Compacta')
Picea pungens 'Gotelli's Broom'			compact
" " 'Jean Iseli'	M	3	blue gray
" " 'Kellerman's Blue Cameo'	D	5	almost a mat
" " 'Mrs. Cesarini'	M	9	very dense
" " 'Yvette'	M	3	compact
Picea sitchensis 'Papoose'	M	9	dense, almost the same as 'Tenas'
" " 'Sugarloaf'	M	9	very dense bun
" " 'Tenas'	M	9	same as 'Papoose'?
Pieris japonica 'Bisbee Dwarf'	M	2	needs good ventilation, no flowers, nice foliage color

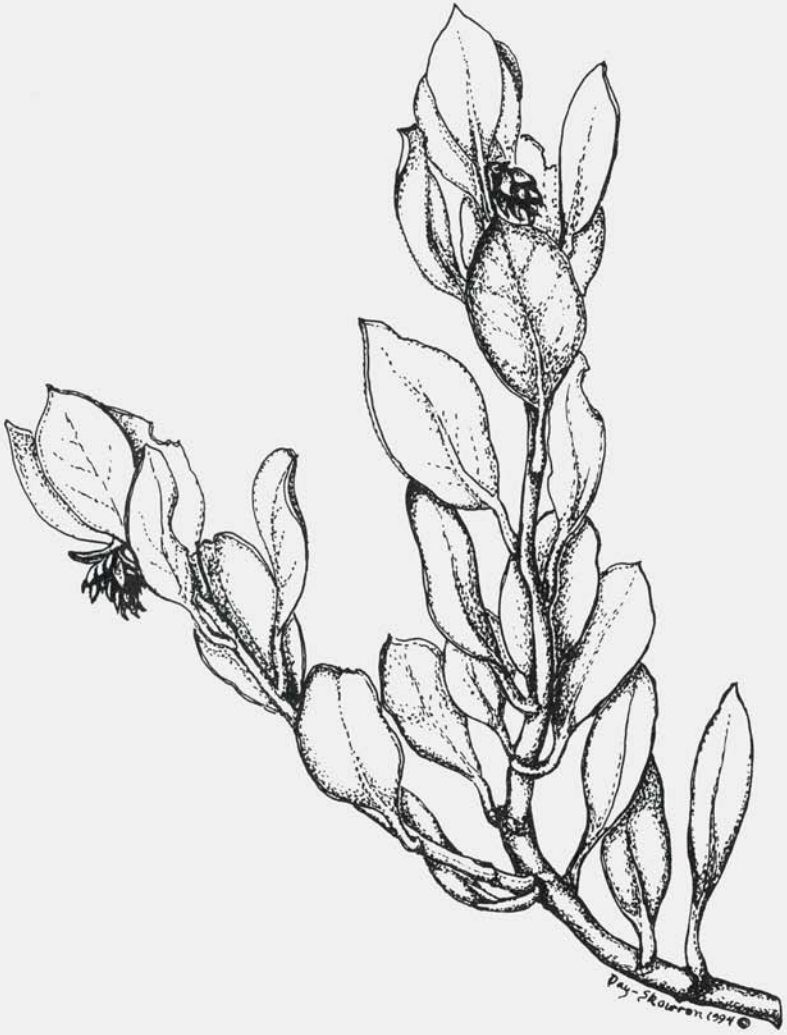
" " 'Bonzai'	M	7	a nice minature *Pieris* with white flowers
Pinus aristata 'Sherwood Compact'	D	8	
" *echinata* 'Paradekissen'	M	3	most dwarf of all pines
" *leucodermis* 'Schmidtii'	D	2	dense
" *mugo* 'Ironside'	D	4	compact slow
" " 'Mitsch Mini'	M	3	
" " 'Mops'	D	4	
" " 'Paul's Dwarf'	D	4	
" " 'Valley Cushion'	M	3	compact slow
" *parviflora* 'Adcock's Dwarf'	M-D	7	can be restrained with pruning of selected branches and candeling
" " sdlg. #1 & #2	M	7	very short needles, very slow and upright
" " 'Hagoromo'	M	7	irregular globe
" " 'Ogon Janome'	M-D	11	variegated(Dragon Eye) form
" " 'Tani Mano Uki'	D	11	variegated
" *strobus* 'Greg'	M	9	one of the many dense dwarf globes
" " 'Horsford'	M	9	probably smallest of this type
" " 'Minuta'	D	9	soft, compact
" " 'Sea Urchin'	D	9	" "
" *sylvestris* 'Saxatalis' (p. 282)	D	9	compact flat globe
" " 'Nana Compacta'	D	9	good compact low globe
" " 'Pixie'	M	8	compact gray-green
" 'Repens'	M	3	dense long needled mound
Pseudotsuga menziesii 'Idaho Gem'	M	7	very dense globe
Rhododendron—small leaf forms—keep your eyes open for new, unnamed candidates			
" *fastigiatum*	M	3	small leaves, dark purple flower
keiskei 'Yaku Fairy' x *racemosum* 'Ginny Gee'	M	6	low spreader, shade and sun, pink in bud with white fls.
" *ferrugineum*	M	3	sun or shade, pink mid-June
" *yakushimanum*	M	3	many raised from seed, look for runts whose foliage is healthy, these can be very slow, pink bud, white flower
" *keiskei* 'Yaku Fairy'	M	3	(type) very dwarf and slow, for shade

Azalea types			
Rhododendron x 'Kozan' (Rokosan)	M	9	salmon pink , very compact
" x 'Chinsei' (Chinsayi)	D	3	hot pink flower, compact
" x 'Linwood Hardy Gardenia'	D	4	white flower, open
" x 'White Nymph'	M	9	white flower, compact
Rhododendron kiusianum 'Multiflorum'	D	4	lavender, more open
Salix—the dwarf alpine willows vary greatly in rate of growth which in turn varies considerably with the differences in the soil and moisture. Most of them can be used if they are confined with perhaps two prunings a season. There are numeruous names, most are creeping mats. *Rock Gardening* lists *S. herbacea, S. nivalis, S. reticulata,* and *S. retusa.*			
Spiraea japonica 'Bullata'	D	2	also known as 'Crispafolia', compact, small leaves, flowers rose-crimson, can easily be kept in bounds by shearing
Sciadopitys verticillata 'Picola'	D	8	on upper edge of allowed range
" " 'Pygmy'	D	8	
Scleranthus uniflorus	M	9	technically not a woody plant, but otherwise fits the job specifications well. Compact dense, hardiness?—at least to 0°F
Taxodium distichum 'Secrest'	D	7	deciduous, good in wet location
Taxus baccata 'Green Diamond'	D	7	
Thuja occidentalis 'Tiny Tim'	M	7	all plants encountered under this name have been too fast growing. I include 'Tiny Tim' because descriptions suggest a much smaller plant is out there somewhere
Tsuga canadensis 'Aurora'	M	3	formerly Woods #2
" " 'Cloud Prune'	M	3	very slow, all *Tsuga* good in shade
" " 'Essex'	M	7	dense, neat, one of the best
" " 'Jacqueline Verkade'	M	7	tight globe
" " 'Little Joe'	M	7	especially small and dainty
" " 'Minuta'	M	7	dense neat globe
" " 'Mollala'	M	3	formly Woods #11
" " 'Petite'	M	7	especially small and dainty

" *caroliniana* 'Elizabeth'	M	6	does well in the East
Ulmus parviflora 'Hokkaido'	M	11	deciduous, only dwarf elm which stays very small, a delight!
Vaccinium vitis-idaea	M	5	cowberry—all 3 are stoloniferus spreaders
" " " 'Minus'	M	5	small leaf, hardier (Mt. Cranberry)
" " " 'Microminus'	M	5	very small leaves, excellent small spreader

As a starting point in the search for slower growing woody plants is the following partial list of potential suppliers. All of these nurseries sell at retail and most of them also take mail orders:

Bethlehem Nursery 66 Jackson Lane, Box 116, Bethlehem , CT 06751
Coenosium Gardens Box 847, Sandy, OR 97055
Collectors Nursery 16804 N.E. 102 Ave., Battle Ground, WA 98684
Girards Box 428, Geneva, Ohio 44041
Olivers Nursery 1159 Bronson Rd., Fairfield, CT 06430
Porterhowse Farms 413705 East Thomas Rd. Sandy, OR 97055
Raraflora 16 Beverly Drive, Kintnersville, PA 18930
Rich's Foxwillow Pines 11618 McConnell Rd., Woodstock, IL 60098
Rezek, Ed 109 Slabey Ave., Malverne, NY 11565
Stonehurst Rare Plants 1 Stonehurst Court , Pomona, NY 10970
Twombly Nursery 163 Barn Hill Rd., Monroe, CT 06468
Washington Evergreen Nursery Box 388 AC, Leicester, NC 28748



Arctostaphylos x *nevadensis*

Western Natives:

Shrubs for the Rock Garden

by Jeffrey Wagner

Gardening is very much tied to fashions that sweep through the horticultural world like summer breezes. Annuals are the most sensitive barometer for this behavior, as are popular genera such as roses, lilacs, rhododendrons, daffodils, etc. Oftentimes this type of gardening after a fashion or a particular interest is a beginner's window to the plant world, and it always has a place in amenity collections of one kind or another, be it botanic gardens or public plantings. There is even an art to "getting it right," which can reach a high level of tastefulness and polish through working with colors and blooming times, or with designs drawn in annuals. When I was an intern at Kew Botanic Gardens, people came worshipfully up to the Broadwalk from halfway around the world to see the annual displays, which were never the same two years running. Being an admirer of *Rhododendron*, and a member of the society dedicated to that genus, I have seen many gardens given wholly up to rhododendrons, to the exclusion of nearly everything, save a few other "tolerable" Ericaceae. This can be a very effective way of both maintaining a garden, and for showing off the individual plants. As one wanders through such a collection in the spring Nepalese forests full of dazzling shrubs and trees or the Tibetan heath easily come to mind.

For me, ever since I saw some of the famous woodland and geographical gardens of Europe, and a number of incredibly well done private collections, in particular in Sweden, as well as the Berry Botanic Garden in Portland, Oregon, and the Rock Alpine Garden at Denver Botanic Gardens, I have delighted in a more "ecological" approach to gardening. By that I mean a garden that is assembled and that functions as a more or less naturally occurring plant community—one that has a life and rhythm of its own and that blends in with the surrounding landscape. Such a garden is a community of all kinds of plants living together—from annuals and biennials to perennials and shrubs and trees. There may be an emphasis on particular groups, but it is never done to the exclusion of the others. The Rock Alpine Garden of Denver is a very good example of this. Although alpines are the main attraction, it

becomes apparent that they grow together with a very wide range of woody plants, the majority of them shrubs or small trees, and that it would be a very different garden indeed without them. This is done so masterfully that even in this very small space, one only gradually becomes aware of the wealth of woody plants thriving in the midst of a premiere alpine garden.

There is such a diversity of woody plants, particularly native woody plants, that it seems a shame to exclude them from the rock garden. They are hardy, dependable, durable, easily cultivated, long-lived, interesting and beautiful the year round, and they complete a garden in a way that monoculture cannot. The room that woody plants create, their quiet, unfolding life, and the beauty of leaf and bud and flower is distinct from anything an herbaceous plant can provide. Many are perfectly sized to smaller gardens and can be shaped or moved easily when required. A fine array of shrubs and smaller trees is available in the nursery trade that would be appropriate to any garden. Here, however, I would like to point to a few of the exciting, little-tried shrubs that are gaining a foothold in some parts of the country, and that are being grown by a few nurserymen and amateurs. There is a surprising reservoir of remarkably hardy populations of plants growing at middle to higher elevations (5,000'-12,000') throughout mountainous western North America, and although they are known, they are rarely used in horticulture. That is unfortunate.

Philadelphus microphyllus

This is a wonderfully diminutive mock orange with a large range in the western states. First described by Asa Gray, it grows from 2'-6' and has a galaxy of starry white flowers in June that make this shrub a wonderful addition to the garden. Its stature, too, lets it fit into almost any garden, unlike its gargantuan, pedigreed cousins and foreign relatives in the same genus. Its structure of intricately branching, pale to golden yellow shoots give it a pleasing form during the winter after the yellow or red fall leaves are gone. *Philadelphus microphyllus* is extremely drought tolerant and easily propagated from seed or cuttings.

Petrophytum caespitosum

Growing along with *Philadelphus microphyllus* in rimrock areas, and especially in dolomitic or calcareous cliffs, is a wonderful little plant, the rock spiraea. I first saw it as cuttings in a bag at the nursery. The proprietor's description of how it clung and draped over Glenwood Canyon's rock walls, next to the river, was fascinating. We successfully rooted cuttings at summer's end under mist and plastic, and had plants filling 2" pots by the following summer. It was not until then that I actually saw the plant both as herbarium specimens and growing in tiny cracks of some immense dolomite cliffs that form the canyon around Rifle Creek in Colorado. It spills out of the cracks, growing in whatever mulch that accumulates around the woody crown, and what little soil and moisture there is in the rock face. The shoots slither stiffly about, raising flat mounds of small spathulate, pilose leaves. Sometime during July the tiny creamy flowers are borne aloft in spikelike panicles that are from 2"-4" high. The whole appearance conjures an elfin world among towering cliffs of mystical proportions. This plant would be well worth trying in almost any rock garden. It has an immense range—from southwest Texas, western Colorado,

across Utah and Nevada, north through Idaho and into Washington, Oregon and California. To see specimens in the herbarium is a treat—they vary quite a bit. In some localities they are reported to make mats that cover considerable areas.

Manzanitas

Allan Taylor, who gardens in Boulder, Colorado, ranges all over the West in search of plant material to introduce into horticulture. An expert dendrologist and a good plantsman, he has followed several genera over many years, and made excellent selections of *Pinus contorta, Chilopsis linearis, Juniperus, Quercus, Arctostaphylos,* and many more. He is primarily concerned with gardening in the cool, dry climate along the Front Range of the Colorado Rockies, but many of his selections are adaptable to more distant climates that are not excessively wet or colder than USDA zones 3 or 4. Taylor has collected several taxa that are perfectly adaptable to cultivation. Of these, members of the genus *Arctostaphylos* are prominent and very promising plants in the garden, especially for drier climates that let the plants rest when they are dormant in the winter.

In the Savill-Valley gardens at Windsor, England, there was a magnificent plant of the green manzanita, *Arctostaphylos patula* for many years. It finally succumbed to the harsh winter of 1986, but until then its rich burgundy-red burnished trunks, the diameter of muscular legs, bore the large, dark green, beaver-tail leaves, and long pearl-strings of white, urceolate flowers aloft for decades. I knew that this plant was from California, but I never even dreamed of seeing it again outside of its native state, or in any but the most blessed of gardens. To my surprise I found it again in Boulder and other Colorado gardens in a shorter form, *A. patula* var. *coloradoensis*. Allan Taylor and others have collected cuttings of this taxon from various places in the Colorado Plateau from sites between 5,000'-8,000' in elevation over the course of many years. and have proven it hardy to 25°F below zero. This population of plants is a remarkable disjunct of what was probably once a continuous distribution. Now, Utah, Nevada, and Arizona are the main extensions of its range outside of California. Yet here on the Uncompaghre Plateau, and a few other places in the state, it thrives and mixes in the open in the glades between ponderosas and pinyons, with *A. nevadensis* and *A. uva-ursi*. There are many attractive hybrids showing more or less of each species' influence. Some are prostrate; others more upright and scrambling; others open upright to fastigate. There are specimens of every conceivable combination between the three manzanita species populating these glades. There are some very good, densely growing forms of the pinemat manzanita and *patula* hybrids which grow either prostrate as kinnikinnik, or to 3' and have its wonderful cinnamon red bark and reddish fruits. I have seen a *patula* hybrid of this plant effectively covering up to several hundred square feet under a huge cottonwood in a Denver garden. Not only does this planting leave no space for weeds, but its billowy, fresh green appearance lends a very clean air to the whole space—much more so than a busy, crowded perennial bed or the usual somber ivy or scraggly *Nummularia* would have.

Allan's selections of forms of the greenleaf manzanita are stiffer and more upright that the pinemat manzanita, and are quite elegant plants. They make a rounded shrub of anywhere from 1'-3' high that is very com-

pact and attractive at all seasons of the year. They are sturdy, frost and heat hardy. Their large, thick, leathery leaves held around the sinuous branches look for all the world like so many attendant servants fanning their silky smooth, richly dark-complexioned mistress. The flowers are, depending on their ancestry, either red, rose, pink, or white, and are borne in early spring, either before winter has quit the stage, or with warmer weather in April. The fruits, only borne within the good company of other manzanitas, are either red or brownish red.

In addition to these selections, Allan has forms and *patula* hybrids with other species such as *Arctostaphylos pringlei* and *A. pungens*. Some hybrids have grayer or bluer leaves, or more orange, or darker, fascinating shades of bark—from dark mahogany-purple to rich brown. These plants all thrive in a neutral to slightly acid, well-drained soil, in full sun to light shade. They are also remarkably drought tolerant. They would undoubtedly struggle in areas that are too humid, or lacking a consistent snow cover or other protection from bare frost periods or direct winter sun in freezing temperatures. But given their performance so far in the Front Range of the Rockies, they are worth trying on a much larger scale.

Propagation requires attention to proper conditions during the rooting phase of cuttings; a few nurserymen and women have achieved consistently good results. The key to success seems to be collection of cuttings at the right time, and a barely moist, indeed nearly dry, rooting medium. An excess of moisture during this phase, more than at any other time during its life span, spells doom for the plant. Mildew, too, carries it off in a trice.

This is only a very short list of a few shrubs that will add immeasurably to the diversity, distinctiveness, and interest in a rock garden. There are many more that are either drought tolerant, cold hardy, colorful, diminutive, and unusual—unusual only because they are untried on a greater scale. Shrubs are a natural part of many ecosystems, and their absence in the garden, unless planned and deliberate, leaves something wanting. When one sees them both in the wild and in the well-made garden, one appreciates them all the more.

Drawing by Rebecca Day-Skowron

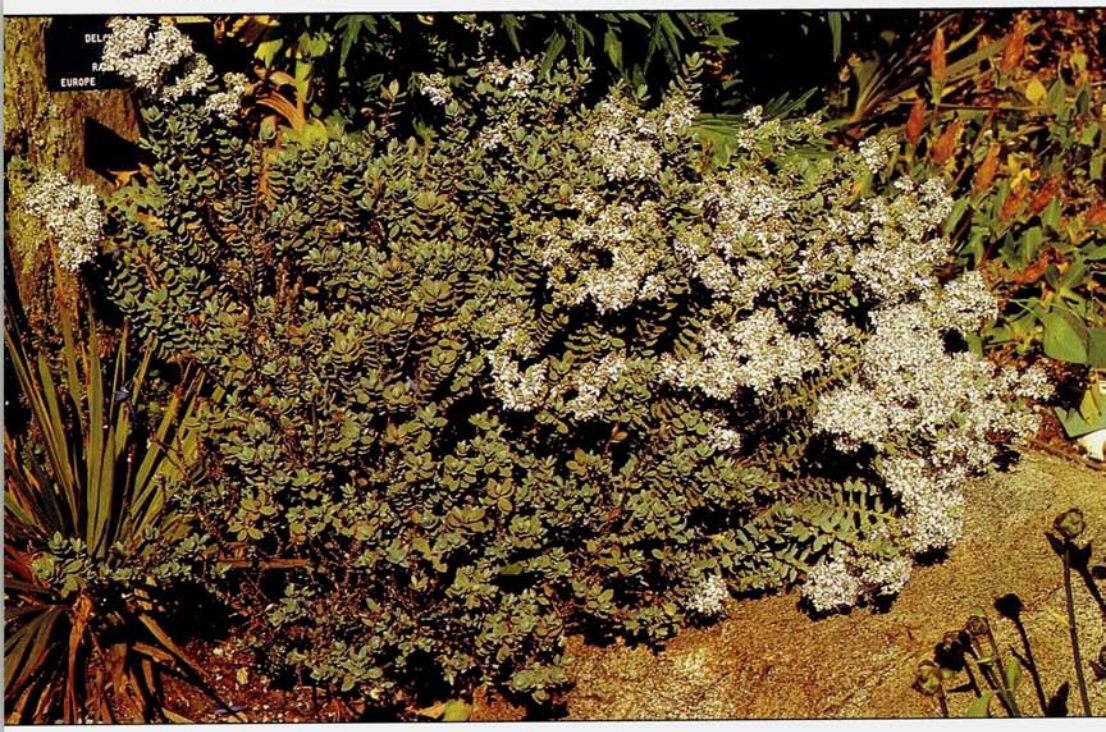
Jeff Wagner is a nurseryman trained in Denmark and Sweden, with a particular interest in dendrology and alpines of the Northern Hemisphere.

Hebe species, Cobb Valley, New Zealand — Larry Korn

Hebe ochracea (p. 263) — David Palmer

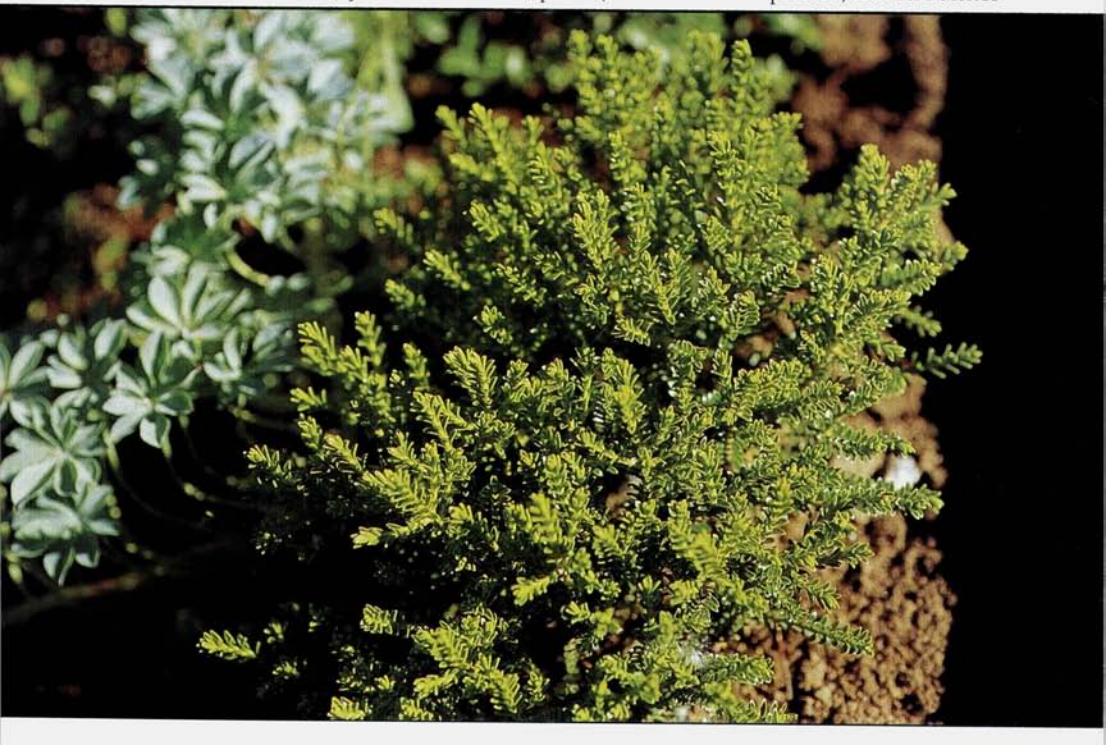
Hebe odora, Mt. Lyford, New Zealand — Larry Korn

Hebe 'Pagei' (p. 263) — Panayoti Kelaidis



Foreground, *Juniperus squamata, Origanum vulgare* 'Aureum', *Hebe* 'Youngii' (p. 263), *Hebe pinguifolia* (p. 263); background, *Hebe* 'Anomala', *Salvia officinalis* 'Icterina'

Hebe Emerald Green' (syn. *H.* 'McKeani', p. 263) photos, David Palmer



Hebe subalpina, Fiordland, New Zealand photos, Larry Korn

Hebes

by David Palmer

In Greek mythology Hebe was the Goddess of Youth, the daughter of Zeus, king of the gods. As long ago as 1789 the Goddess gave her name to a group of plants that we have also known for many years as shrubby veronicas. The name *Hebe* was revived in 1921, but it wasn't until 1926, following a paper submitted by Drs. L. Cockayne and H.H. Allen, that the name was accepted in New Zealand. It took nearly 40 years before *Hebe* finally became accepted by the rest of the world as the proper designation for these plants.

All hebes come from the Southern Hemisphere. Of the nearly 100 species, 80 are native to New Zealand, with the remaining species coming from Tasmania, South Australia, Papua New Guinea, Tierra del Fuego, and the Falkland Islands. Two species, *H. elliptica* and *H. salicifolia*, occur both in southern South America as well as in New Zealand, the former also occuring in the Falkland Islands.

Hebes differ from veronicas primarily in being shrubby and evergreen, whereas veronicas are usually herbaceous and deciduous. The leaves come in a wide variety of shapes, sizes and colors, making hebes extremely valuable as foliage plants. The growing tips are always covered by a pair of leaves, which protect the terminal buds of coastal plants against damage from salt-laden winds. The flowers are generally displayed as short spikes in the leaf axils at the end of the branches. In the related species *H. hulkeana*, *H. raoulii*, and *H. lavaudiana* the flowers are in a panicle, and in the closely related genus *Parahebe* in a raceme. The seed capsules in *Veronica* split vertically; in *Hebe* they split horizontally.

As with many New Zealand plants, white is the predominant flower color, while some species bear blue, purple, or violet flowers. Among garden hybrids other colors have been added by primarily using *H. speciosa* to produce shades of carmine red, pink, and beetroot-purple. Flowering times for many of the low-growing and small-leaved forms are May to June; the medium to taller forms generally bloom from July through September, with the occasional hybrid blooming on into winter.

In New Zealand, *Hebe* is the genus of flowering plants with the most

species. Taxa range in size from low, prostrate groundcovers to large 6'-10' bushes. They are found growing from the sea coast to the verges of mountain streams to high mountain tops. They grow in a diverse range of soils, from volcanic to sand, to clay to silt.

The climate and latitude of the plant's natural habitat in New Zealand can determine a species' ability to grow in our climate. With a distance of 1,055 miles from latitude 34° south to 47° south, annual rainfall varies from an average of 40-50" on the westerly side of the North Island to 300" at the southerly tip of the South Island. On the drier, easterly side there can be as little as 10-15" in places. Because rain falls throughout the year, these plants have a tendency to root at the surface.

Many of the larger-leaved species, such as *H. speciosa,* grow in the moist, subtropical regions on the western coast, while the smaller-leaved and prostrate species are usually found in the drier, eastern sections, often amongst scrub and tussock grassland. Since most receive some rain throughout the year, it is necessary in cultivation to provide them with adequate moisture during the growing season. Beside normal soil preparation and adding organic matter, it is advisable to mulch during the summer months. Forms with medium to large leaves can be planted a little deeper, having two or three dormant buds below soil level. This not only helps them to root more deeply but provides some insurance for regrowth should the top of the plant be killed by winter cold.

Unfortunately, little is written on the hardiness of hebes in this country. Most literature describes their cultivation and hardiness in Britain, where they are listed as hardy from zone 7 to zone 10. As a general rule, the smaller the leaf, the hardier the plant will be. Growing naturally in a climate with a moist westerly air stream, many of the larger-leaved species are excellent for coastal gardens in milder areas. Those shorter and smaller-leaved species from drier areas make great plants for rock gardens. They are best planted in full sun, which brings out the best coloring in the leaves. Dryness and exposure to cold chilling winds are probably *Hebe*'s worst enemies.

Over the years several of the species have been used to provide us with a great number of hybrids. Most of these have been produced in Britain, France, and New Zealand. This cross-continent activity has led to a lot of name confusion, with the same hybrid at times being grown under several cultivar names. With the start of a Hebe Society in 1985, and now a National Reference Collection, it is hoped that this confusion will be straightened out.

With such a large number of both species and hybrids, there is a wide range of leaf shapes, from obovate to elliptic to lanceolate and linear, ranging in size from approximately 1/4" up to 5". The smallest leaves belong to the group commonly known as whipcords. In whipcords, leaves in the juvenile state are often small and roundish, while in the adult stage they are replaced by imbricated scales closely pressed to the stem, causing them to take on the appearance of a conifer. This is an adaptation to their native exposed mountain habitat, where reduced leaf size reduces water loss.

All whipcord hebes are excellent for the rock garden, as they grow fairly slowly and can often be used in place of conifers. *Hebe cupressoides* lives up to its name and closely resembles a *Cupressus.* It grows slowly at first, although it can eventually reach 5' in height. It forms a roundish bush of a glaucous green color. A dwarf selection called 'Boughton Dome' reaches only 18", and the foliage remains juvenile.

Most other species in the group are more of a yellow-green color. *Hebe lycopodioides, H. salicornioides, H. tetragona, H. coarctata,* and *H. armstrongii* reach about 24". This last species is often confused with *H. ochracea,* a commonly cultivated species, which grows into a rather rigid 30"-high plant, its ochre-colored branches fanning outwards with small, white, starry flowers on the tips in May (photo, p. 257). *Hebe* 'James Stirling' is a dwarf form of this species that is ideal for troughs. *Hebe* 'Edinensis' and *H. hectori* var. *demissa* are other dwarf whipcords that can also be used in troughs. Not belonging to this group, but having a similar stiff, erect habit, *H.* 'Emerald Green' forms a little cushion of a bright, shiny green that looks at home in a trough as well as the rock garden (photo, p. 259).

In keeping with the shorter varieties and adding a different color, *H. pimeleoides* and its forms have a glaucous effect with dark, purplish-brown stems. The bluish-purple flowers in summer are a good contrast. The cultivar *H. p.* 'Quicksilver', developed in England, has a silvery gray appearance and well lives up to its name. Though similar in color to *H. pimeleoides, H. pinguifolia* (photo, p. 259) and *H.* 'Pagei' (photo, p. 258) are a little shorter, with larger leaves, and both bear white flowers.

Hebe 'Carl Teschner' has been a frequently grown cultivar in gardens for many years. Unfortunately, due to some confusion over naming, we now have to use the earlier name of the identical cultivar *H.* 'Youngii' (photo, p. 259). A small, procumbent shrub, it has dark, almost brown stems with small, elliptic, dark green leaves. Loose racemes of violet flowers are borne in early summer.

These low-growing hebes can also be used for carpeting the ground when several are grown together. Belonging to the whipcord group, *H. propinqua* can make a yellow-green mat just a few inches high and some 3' across in the wild. Rather uncommon in cultivation, it unfortunately doesn't repeat this useful low habit when grown in the garden. The hybrid *H.* 'Prostrata', however, will mold itself around rocks when planted next to them.

The related genus *Parahebe* has several species and hybrids of interest to the rock gardener. *Parahebe catarractae* is probably the most commonly grown. Greatly variable, it usually has a low, spreading habit with elliptic, toothed leaves, and loose racemes of saucer-shaped, white flowers, veined purple. With the common name of waterfall veronica, it looks best planted on the edge of a rock ledge, allowing the flowers spill out over.

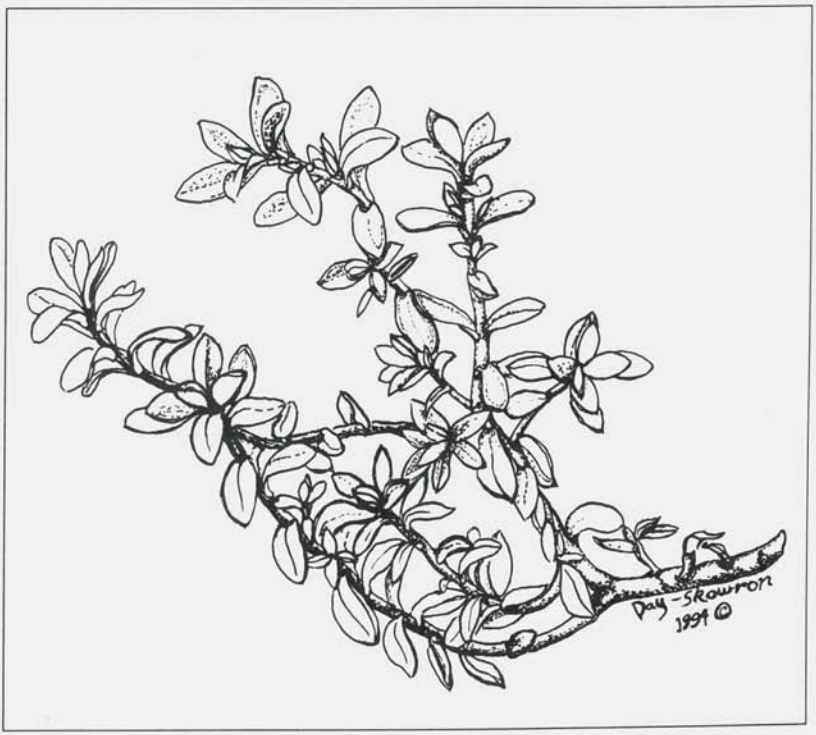
The genus *Hebe* has such diversity of both habit and foliage color that it can provide interest in the garden all year around. If planted in place of conifers, hebe species can give some structure to the rock garden, as well as adding that welcome foliage color during the winter months.

While many species are too tall for the average rock garden, they can still be used to great advantage in other parts of the garden. From the front of the border to the back, used to make a hedge, grown for foliage effect, or for the flamboyance of the flowers to attract butterflies, this genus has many uses. The hybrids with large, brightly colored flowers are probably too tender for many parts of the country, but there is still enough variety to interest the gardener and plant fanatic in trying something new. If the climate is too cold, then try cultivating hebes in containers that can be protected over the winter. *Hebe* 'Andersonii Variegata' and *H.* x 'Franciscana Variegata' are often sold as ornamental pot plants.

Sad to say, there are a limited number of hebes available in this country, yet hopefully more will become available in time. For those who cross the waters to England, you may want to check out County Park Nursery, in Essex, owned by Graham Hutchins. Over the years he has made many trips to New Zealand, both studying and collecting new and exciting hebes, as well as raising and naming selections himself. For more information on the many species and hybrids, the book *Hebes and Parahebes* written by Douglas Chalk, and published in 1988, is an excellent reference. Douglas Chalk also runs a small nursery in England where hebes are a specialty.

Drawing by Rebecca Day-Skowron

David Palmer is a transplanted Englishman who gardens in West Linn, Oregon. An avid plantsman, he enjoys growing a wide variety of plants from seed, everything from bulbs to shrub.



Hebe pinguiquifolia 'Pagei'

Dwarf Shrubs

for the Southeastern Rock Garden

by Paul Jones

Let's take a look at some of the better small shrubs that are either in use or have good potential for use in the temperate southeastern United States, roughly USDA Zones 7 and 8. My garden observations are centered in the piedmont of North Carolina, where I live and work as a public gardening professional. Like much of the Southeast we receive about 40" inches of rain distributed more or less evenly throughout the year. Coastal and mountain areas are typically wetter. The temperature bottoms out about once each year in the neighborhood of 0-10°F, and the summer generally produces a couple of weeks of days between 95-100°F. These temperature extremes are important, of course, in limiting which shrubs we can grow, but probably not as important as is often asserted. Equally suppressing are those insidious little cohorts of Mother Nature such as 100% humidity in the entire month of July, coupled with nighttime temperatures of 80°F. If the plants don't sweat to death, those little beauties from cooler or drier climes generally fall prey to fungi, which act like gophers, stealing plants from the ground up. Showing no partiality, Mother also decimates treasures from our warmer neighbors by sending her annual 20°F nights the last week of April, when their tropical plant tissues are in growth overdrive.

All that aside, the Southeast is, however, a wonderful climate in which to garden. The following list of small shrubs that can be successfully grown is a testament to this fact. I didn't realize until I put this article together that evergreens far outnumbered deciduous shrubs, at least in this size category. Throughout the text, unless otherwise noted, the plants are evergreen.

The genus *Daphne* has captured my interest far more than other broadleaf evergreens. All the eastern Asian species I've tried have adapted well. I suspect this is in large part due to similarities in climate between the two regions. *Daphne odora*, which matures roughly 2' x 3', is well known and becoming even more popular, judging by its availability. The species *D. retusa* and D. *tangutica* are about half the size and equally impressive—*D. retusa* has even re-seeded in my garden. Also from the Far East are two deciduous

species deserving greater popularity, *D. genkwa* and *D. kamschaticum. Daphne genkwa* admittedly stretches the limits of "small," standing easily one meter high by as much or more wide, but the tremendous lilac display of its early spring flowers demands mentioning. Its only shortcoming is its precocious nature, which often means, as mentioned above, that it gets damaged by cold weather in late April. It responds with a new set of flowers, though. *Daphne kamschaticum* and its variety *jezoensis* are summer-deciduous shrubs. This can come as quite a surprise if you don't expect it. Luckily I didn't throw mine out. These are both pretty shrubs with lush foliage that tackle winter head-on and still look like champs come spring. The bright yellow flowers are produced with the leaves and open intermittently through winter and early spring. *Daphne jezoensis* also adds fragrance to its dossier. There are additional Chinese species that I suspect would also be well suited to the Southeast.

Perhaps less well adapted, but satisfactory nonetheless, are the daphne species and their hybrids that hail from the greater Mediterranean region. Among those I have successfully grown or seen in area gardens, are *D. cneorum* 'Eximia' (photo, p. 281), *D. caucasicum, D. collina, D. arbuscula, D. blagayana* (thanks to Carol Fyler!), and the hybrids *D.* x *napolitana, D.* x *mantensiana*, and *D.* 'Carol Mackie'.(I use the past tense here because daphnes do have an often unexplained tendency to check out without warning. If I get four or five years I consider it a privilege to have known them, and a success.) *Daphne caucasicum*, like *D. genkwa*, is a larger shrub (to 3') that just has to be included anyway. It flowers year round and has a heavenly fragrance that kicks in around dusk. The remainder range from ground huggers to simply beautiful, little, fragrant shrubs under two feet. 'Carol Mackie', a prettily variegated selection with pink flowers, is in my opinion the cream of the crop. Although not fully deciduous, it does lose all but a tuft of leaves at the tip of each branch by winter's end.

Success with daphnes seems to hinge on very good drainage and some attention to pH. I rarely add lime but do apply wood ashes liberally, which probably has a similar effect on pH. *Daphne cneorum* miraculously recovered from an apparent near-death experience after such treatment. I don't give *D. kamschaticum* ash, however. Also, I have found the base of the trunk of some species to be a prime area for rot when moisture-retentive mulch is used too heavily. A light mulch such as pine needles, if any at all, seems to relieve this problem.

Rhododendrons need no introduction. In the Southeast, the durable azalea is synonymous with home landscaping, and just about every color and size is available for whatever the application. Many hybrids are certainly under 2' tall or can be kept small with only minor pruning. There are far too many to discuss, but at the risk of overlooking the very best I'll point out a few less frequently encountered selections that I like. Look to Fred Galle's *Azaleas* for the complete story.

Rhododendron indicum from southern Japan is an important parent in many dwarf hybrids. This includes the popular Satsukis, of which the well known 'Gumpo' is a selection. The tiny leaves and very small habit of 'Chinzan', 'Kazan' ('Rukizon'), and 'Kinsai' make them most appealing. My specimen of 'Kazan', now more than ten years old, is still under 8" with about a 12" spread. For a bit more size and bold color 'Yachiyo', 'Flame

Creeper' and *R. indicum* 'Balsaminaeflorum' are sure bets. As with most shrubs, grow these and other azaleas in full sun and hold the nitrogen to a minimum; the results will be a smaller, tidier shrub that "flowers its fool head off."

Another useful species is *R. nakaharai*, a Taiwanese native that I must thank Polly Hill for introducing to me. Working from her garden on Martha's Vineyard, Mrs. Hill has selected several mostly low-growing forms collectively known as the North Tisbury Hybrids. My favorite of these is a tiny selection (1' x 1' in 10 years) with crimson flowers and leaves best measured in millimeters, which she calls 'Fuzzy'. 'Mount Seven Star', 'Joseph Hill', both of which are also red-flowered, and 'Pink Pancake' are three more of Hill's selections to look for, but any *nakaharai* hybrid is likely to be good.

Lastly, and certainly not least, there are the Beltsville Dwarfs, a group of hybrids introduced around 1960. According to Tony Avent of Plant Delights Nursery (to whom I'm indebted for providing information for this article), the Beltsville Dwarfs were in essence the runts of a USDA hybridization program in the 1950s. Luckily they weren't discarded, for they are truly wonderful small azaleas that smother themselves with flowers. 'Purple Cushion', 'Snowdrop', 'White Elf', and 'Dainty Rose' are names to look for.

The broader-leaved, true rhododendrons are considerably more tedious to grow than their relatives, at least in hotter parts of the Southeast. A nasty battle with root fungi usually develops, and fungi are seldom frustrated in the end, even with chemical warfare—which I surely don't advocate. *Rhododendron yakushimanum* is a hero though, providing the gardener does his part to provide good drainage and adequate moisture or shade. And fortunately for us, there are numerous "yaks" and "yak" hybrids from which to choose. *Rhododendron hyperthrum* and *R. keiskei*, which are small (2'-3' at most for many years), will also succeed well when attention is paid to siting. Additionally, there are some very select, small forms of *R. metternichii* (or *R. degronianum*, depending on which author you follow) that I have known to be adequately successful, although I guess I'd have to stop short of a wholehearted recommendation.

By some estimates there are as many as 900 species of *Rhododendron*, and heaven only knows how many hybrids have now been generated. The few mentioned hardly skim the surface, but there is information galore for those interested in knowing more. In my own modest efforts, I have found rhododendrons to be an unpredictable lot, and to reward persistence, so what the heck, give 'em all a try.

Other Ericaceous Shrubs

Pieris japonica has yielded several nice dwarf forms for tight places. 'Pygmaea' is a rather statuesque little plant with crowded, narrow leaves that are most "un-*Pieris*-like." It and the more typical looking 'Bisbee Dwarf' have been around for many years. More recent comers are 'Little Heather Green', 'Bonsai', 'Nocturne', and variety *yakushimanum*. Dwarf *Pieris* are often sparse to bloom, at best. 'Nocturne' is an exception, and according to the folks at Siskiyou, so too is *Pieris japonica* var. *yakushimanum* 'Variegata' a pretty, white-variegated selection that, although not dwarf, is quite slow. Another variegated form, 'Little Heath', is truly dwarf.

Several other ericaceous genera are well represented by small, ornamental shrubs native to the eastern USA. One of my favorites is *Leiophyllum buxifolium*, a delicate, rather twiggy species

that is at its best in sandy, sunny habitats. A prostrate form found in rocky scree hails from just a few counties in the Appalachians and is perhaps the better choice for rock gardens. *Leiophyllum* needs full sun in order to age nicely, and this also produces the most flowers, an attraction if only for the parade of insects that come to visit and frolic about.

Gaylussacia brachycera is another sand lover that forms beautiful rhizomatous carpets in the wild. Heavier soils hold this tendency in check. The most magnificent quality of box huckleberry, as it is commonly known, is the blood-red foliar tint throughout winter. Acid soil is a must, and full sun produces the most handsome and colorful plants.

Vaccinium macrocarpon 'Hamilton' is one of the many jewels of this extensive and useful genus. Though typically a creeping species, this little cranberry, which flowers and fruits, is exceptional in its neat, mounding habit. Winter foliage color is dark burgundy. 'Hamilton' grows exceedingly slowly for me, but this is no doubt in part due to just how far removed the climate of Hillsborough, North Carolina is from home base for this plant.

A seldom cultivated relative of cranberry, *Vaccinium stamineum*, the squaw huckleberry, ranks as one of my favorites (I have a lot of favorites). This variable, deciduous species reputedly attains 10' or more in height, but I have never seen a specimen taller than 5' and know of many individuals which have remained under 12" for the many years I have observed them. It tolerates, even prefers, poor soils and dry sites, with a bit of shade, but will reward a little care. I know of no other *Vaccinium* as attractive in flower and look forward to the time when a few good selections become popular.

A shrub that you can often find growing in the vicinity of *V. stamineum*, but which is seldom noticed, is *Ceanothus americanus*, the New Jersey tea. I always look for its midsummer gift of flowers and am never disappointed. This is another good example of a native with unrealized potential.

Yet another neat little ericad is *Chamaedaphne* (formerly *Cassandra) calyculata* 'Nana', a dwarf form of the acid-loving leatherleaf found in and alongside coastal plain pocosins and bogs. 'Nana' grows at less than a quarter the rate of the species, maturing around a foot or so, and like the species adapts nicely to drier feet. A species not too dissimilar in appearance, though not ericaceous, is *Pachistima canbyi*, a low-growing, spreading plant native to rocky, calcareous soils in a few mountain counties of Virginia and West Virginia. Well-drained, sunny sites, organic soil, and pH corrected upward are recommended.

Erica and *Calluna* are also useful additions to the Southern gardeners repertoire, but I wouldn't suggest spending much money on them. I look on them as extended biennials; they sometimes look good for more than a couple of years but not often. It's hard to repress the urge to buy a couple, though, if you happen to be shopping at a garden center that offers them.

Other Shrubs

Nandina domestica rivals azalea in the "most common shrub of the South" category, and I won't bore you with the many common selections. But there are some very unusual dwarf forms with contorted features, extremely narrow leaves, tufted habits, etc., which apparently are classified as part of variety *capillaris*, though I'm not certain about the taxonomy. What

I am certain about is their interesting peculiarity and suggest that, if you can find them, 'Aome', 'Aochirimen', 'Soga Ikada', and 'Tamazuru' are collectors items. If you're more comfortable with Western names, 'San Gabriel' is a first rate, low, exceedingly drought tolerant cultivar which is in mass production.

Three more commonly seen shrubs, *Gardenia*, *Ilex*, and *Buxus*, must also be mentioned. *Gardenia jasminoides* is well-known for the fragrance of its flowers. 'Kleins Dwarf' is no exception in this respect and reaches only 2'. If flowers or ornamental fruits are of no concern then either *Ilex crenata* 'Dwarf Pagoda' or *Buxus microphylla* 'Kingsville Dwarf' are good choices. 'Dwarf Pagoda', with its tiny, crowded, coin-shaped leaves and beautiful branching character is really a hot item. Full sun is a must or the character is spoiled.

For Shade

For shady gardens, *Danae racemosa*, poet's laurel, and *Sarcococca hookeriana* var. *humilis*, sweet box, are similar, useful shrubs. *Danae* has especially nice marble-sized red fruits and *Sarcococca* a beautiful late winter fragrance, and the foliage of both is a lustrous dark green when grown in shade. If you can bring yourself to cut it, the foliage is super for flower arrangements. *Skimmia* is another first class shade-loving evergreen. *Skimmia japonica* 'Rubella' is a compact, low growing male clone which sets panicles of red flower buds in autumn that wait patiently and ornamentally atop the foliage then open white in spring. *Skimmia reevesiana* is more loose and open, grows to 2' tall by at least as wide, and carries a load of clustered red berries, also ornamentally, through the winter months. *Skimmia* is a member of the Rutaceae or citrus family, and consequently most plant parts, including flowers, are pungently fragrant. Also preferring shade is *Ruscus aculeatus*, a stiff and prickly leaved (actually the prickles are cladodes) member of the lily family. *Ruscus*, too, produces red fruits obvious throughout winter.

Dwarf Conifers

As best as I can discern, dwarf conifers began trickling into nurseries and garden centers in the Southeast only as recently as the 1970s. And today, even though a reasonable selection is available, the potential of this useful group remains underrealized. I often hear the myth, perpetuated even by nurserymen unfortunately, that dwarf conifers are unsuited to our climate. Nothing could be further from the truth. Some of the very best genera, *Chamaecyparis*, *Picea*, *Juniperus*, *Pinus*, etc., etc., thrive. The biggest problem is that species, such as *Tsuga*, that grow more or less continuously during the summer, as opposed to those that have a single flush of growth in a season, will grow more during our long season than their counterparts in cooler climates. This means some dwarfs might not be as dwarf as described.

Of course, many of what are described as dwarf conifers are anything but after a few years in the landscape anyway, no matter what the climate or geographic region. This raises the question of descriptive "standards" for sizes and I think the American Conifer Society is tackling that problem. I won't try. But I will recommend some very nice dwarf selections that can be depended on to stay under 2' for 10 to 12 years or so.

My favorite is the appropriately named *Juniperus chinensis* 'Echiniformis', which means urchin-shaped. It does form a dense, "hard" mound.

Picea glauca 'Echiniformis' is similarly named but tends to be just low and as wide as tall, and it is not mound shaped. It is a great plant though. In fact, any dwarf cultivar of white spruce is a favorite of mine. The now familiar dwarf Alberta spruce, which does marvelously well, too, grows beyond our 2' limit, of course, but look for 'Monstrosa' and 'Cecilia' and expect them to remain in bounds.

Chamaecyparis obtusa, the Hinoki false cypress, has produced an abundance of miniatures. Though generally well suited, dwarf Hinoki, more than any other species I know, can have pitiful, inadequate roots. But not all do. 'Nana', although it can vary from source to source, has been around for a long time and is still a good choice. 'Flabelliformis', 'Bess', 'Rigid Dwarf', 'Chilworth', and 'Juniperoides' will also please with no problems, and all are especially nice among rocks. Another stalwart Hinoki is the yellow-variegated 'Nana Lutea', maybe the prettiest selection (photo, p. 281). It must have full sun in order to color well, and it may scorch a bit during establishment, but hold on to it, for it's a gem with age.

Speaking of gems, *Tsuga canadensis* has produced an abundance. 'Minuta', 'Lewisii', 'Hussii', and 'Jervis' are all tiny little plants with crowded foliage and interesting shapes. 'Palomino', 'Jacqueline Verkade', and 'Stewarts Gem' are more formal and rounded in outline. If you don't have a rock wall or ledge, build one just so you can plant 'Cole's Prostrate'. Canadian hemlock does well in full sun but welcomes a little shade.

A few other "best bets" include: any cultivar of *Picea orientalis* you can get your hands on, but especially 'Witches Broom'; *Picea pungens* 'St. Mary's', or 'Globosa', although it is ultimately rather large; *Picea omorika* 'Nana'; *Pinus strobus* 'Horsford' or 'Merrimac'; *Pinus parviflora* 'Adcock's Dwarf'; *Juniperus squamata* 'Blue Star', a relatively common plant now, and it is a marvelous blue; *Podocarpus nivalis; Cryptomeria japonica* 'Vilmoriniana', 'Globosa Nana', and 'Elegans Nana'; and *Pinus sylvestris* 'Girard's Dwarf', upright, dark green, and the best *sylvestris*, I think.

There are just too many good dwarf conifers to mention all. With the exception of firs (*Abies*) , I don't know of any of the commonly propagated genera that aren't suitable. No special requirements or licenses are necessary, just interest and a shovel.

Well, that's a few of the small shrubs I'm familiar with. Some very good plants were certainly overlooked (I see *Viburnum davidii* on my list and wonder why I didn't include it!) Hopefully though, if there's a little nook in your garden that begs for something woody, this list will start you thinking and be helpful.

Paul Jones gardens near Hillsborough, North Carolina and at Sarah P. Duke Gardens in Durham. At home he dabbles in whatever plants interest him. Currently these include especially perennials and native plants; he has been a rock gardener since 1985.

Alpines in Containers

Growing Small Things in Small Places

by Lawrence B. Thomas

I garden in the alpine zone of Manhattan on an eleventh floor terrace—a 13' x 40' strip that some people, considering the price of real estate in midtown New York City, think an extravagance. Others of my gardening friends, who count acres the way I count square feet, think my layout pretty small potatoes. I, on the other hand, have come to appreciate the beauty of small.

While I've grown a gamut of plants, I find myself concentrating on alpines and rock garden plants—mostly because the scale of them appeals to me. I've grown them in large container boxes and tubs with occasional success, but I've found they respond much better to the confined space of a pot, pan, or trough. Like many weeds, alpines seem to thrive when they're forced to lead a hard-scrabble existence. Over-potted, with too much space in which to roam, they are apt to sit and sulk. Give them a little stiff competition, and they'll surprise you with their vigor.

When I first became interested in rock gardening in the mid-1970s, New York City was in the throes of a drought that necessitated severe restrictions just short of outright rationing, an experience that still causes city gardeners to shudder.

At the time, one raffish wag coined the bumper sticker slogan: "Save Water—Shower with a Friend!" While I didn't feel quite that gregarious, I did adapt the sentiment to my own needs by forcing my plants to double up and share their space with at least one friend. By potting them together, I was able to use less water, but I discovered an added bonus—the plants seemed to love it. The competition for root space, for water, for food, seemed tailor-made for alpines, replicating the conditions in which they often grow—tight crevices with little nutriment and water, and a perilous clasp to life itself.

After the water crisis was over, I continued to experiment with this method, growing alpines in smaller pots with leaner, grittier mixes, forcing them to compete for space, for food, for water with companion plants.

We've all seen the way sempervivums languish if overpotted but become a succulent carpet once they're confined to a tight space. I tried a similar treatment on lewisias, planting a

clutch of *Lewisia cotyledon* within the confined pockets of a strawberry jar (photo, p. 277). They quickly filled the neck of each opening with their carroty crowns, and within one short season were of a size to put on a splendid display the following spring. Growing lewisias in such cramped quarters discourages rot and rampant growth while keeping the crowns dry. It also allows me to dose them frequently with liquid fertilizer to ensure a good bloom set.

When I visited Linc Foster's garden, Millstream, some years ago and expressed dismay at the cabbage-sized rosettes he was growing upright on a gravel mound, he told me he'd found lewisias to be a clan of greedy, gross feeders, and that it was difficult to overfeed them provided they had the drainage they require. I've followed his advice ever since, giving them a shot of liquid fertilizer every two or three weeks.

I grow many of the lewisia species and treat them similarly, with the exception of catering to their different watering needs at different seasons. I dry off the deciduous ones in the summer and reverse the treatment for the succulent ones, keeping them mostly dry in winter. I begin watering in late February.

One reason often cited for growing alpines in containers is that it allows one to tailor the soil to the specific needs of the plant. Much has been written about the lime-lovers and the "acid heads" of the plant world, and how one must cater to their soil pH needs—particularly those of alpines. Actually, I've found many of the so-called "lime-lovers" to be remarkably adaptable—if not downright indifferent—when it comes to soil preference. This isn't true, of course, for acid-lovers, as most of them are downright picky about their needs and will curl up and die at the first hint of alkaline soil. Accordingly, I pot dwarf rhododendrons, azaleas, primulas, and their kissing kin in the loose, rich, peaty soil they seem to need.

The majority of my plants, however, thrive on my standard lean potting mix, which is 1/4 garden loam, 1/4 peat moss, 1/2 quartz chicken grit, to which I add a tablespoon or so of Osmocote, the amount depending upon the quantity of soil I'm mixing. Occasionally, I alter the mix by adding a very light sprinkle of dolomitic limestone for those alpines that the books say "absolutely demand it." This lean, gritty mixture serves for most of my plants for it allows both quick drainage and an adequate supply of oxygen to the root area. With any heavier soil, many alpines go down very quickly in the close confines of a pot.

Another benefit of container growing is that it brings you into close proximity with your plants. This allows frequent visual checks for disease or pests, and inspection of the pots' drainage holes for slugs, sow bugs, ants and such. Pots are portable, too, and this allows one to shift pots frequently and cater to their sun/shade needs. I window-dress my terrace constantly, putting whatever is in best bloom where it can be seen. My work area serves as a sick bay for any plant that has bloomed out, gone scraggly, or is ailing and showing signs of giving up the ghost.

One obvious virtue of pot culture is that your plants, if you've grown them properly, are ready to show. Many of my in-ground gardening friends dig and pot up plants for competitive showing a short time before the event. No matter how well done, these plants never seem to have settled into their containers and usually can be spotted on the bench. Unfortunately, some of the plants resent the experience and

never recover from the trauma.

Two words of warning: Don't overpot! The tendency of most gardeners is to put plants into pots that simply are too big. Alpines love tight spots, the tighter the better. Some of them are so shallow-rooted that they can be grown in an inch and a half of soil with no problem. I'm not talking just of sempervivums. Many saxifrages—particularly the kabschias—will do remarkably well in a shallow 2" to 3" pot. They tend to spread horizontally more quickly than vertically. My rule of thumb is to pot them up to next width-size only when the bun has reached the edge of the pot. This holds true for drabas as well, unless you want those exhibition-sized monsters that fill a 10" to 12" rose pot and take the blue ribbon year after year.

Campanulas are a different matter. Some adapt readily to pot culture; others simply hate the confines of a pot. The *garganica* group thrives under adversity, growing easily in the tightest situation with the least amount of soil, requiring only that you divide and reset them every two to three years (photo, p. 278). Some of the other crevice-growing forms respond similarly. I've grown the difficult *Campanula zoysii* in a pot that is only 3" wide, 5 1/2" deep. Others, however, require considerable root room, frequently replenished and enriched soil, along with the sharp drainage all of them appreciate. Some of the smaller, running forms, *Campanula cochlearifolia* and *C. lasiocarpa* for instance, resent the confines of a pot or pan and won't stay around very long unless allowed to run about freely. Most are more tractable, however, if given sufficient root room.

An English "Long Tom" pot that is 5" or 6": wide at the mouth and at least 8"to 10" deep suits the ones accustomed to sending roots a foot or two deep into rock crevices or beneath a constantly shifting scree. I grow *Campanula aucheri*, one of the gems of the *tridentata* group, in this manner, repotting every second or third year if the soil seems exhausted. A close ally, the beautiful *C. bithynica*, responds well to similar treatment.

The problem, of course, lies in finding such pots. Readily available to our Scottish, English and Irish friends, "Long Toms" are not produced commercially in this country and are virtually unknown. While some occasionally show up in outrageously pricey garden ornament boutiques, they boast price tags that account for the dust they usually accumulate, untouched on the shelf. Your best bet lies in finding a potter friend and coaxing him/her to throw and high-fire a dozen or so for you. Failing that, you might consider learning to throw them yourself, as I did some years ago when I couldn't obtain the pots I wanted in this country.

I mentioned that I high-fire my pots. Most commercial pots have been low-fired, are quite porous, and are so "soft" or fragile that they will shale and crack during winter months in any area where the ground freezes. High-fired pots are not porous and require careful attention in watering, but usually withstand the alternate freezing and thawing that splinters commercial pots. The trade-off is that they are more brittle and will crack or break easily if knocked over or given a hard lick.

Selecting a container for a plant becomes an esthetic decision, for the pot should not only fit the plant in size but enhance it as well. Be creative in choosing your containers; imaginative, in fact. One of my terrace-gardening friends has a foot-wide, foot-long length of weathered tree trunk standing on end that is covered with sem-

pervivums growing happily in nothing more than the rotted end of the stump. While she grows many sophisticated alpines, this is the show-stopper that grabs every visitor.

Several years ago, both she and I independently of each other, improvised troughs from 2" thick Styrofoam containers in which frozen steaks had been shipped. Since the white surface of the containers seemed a bit intrusive, we spray-painted them. Fortuitously, we found that chemicals in the paint melted the surface of the Styrofoam, giving it a rough-textured look that mimics Hypertufa. She used a blackish-gray; I used a terra-cotta-colored rust preventive.

I've seen terra-cotta drain tile and chimney flue-liners used as containers. They not only make handsome containers but offer good depth for those requiring a deep root run. Even ubiquitous cinder block can be used as a container of sorts. I've seen a splendid terrace herb garden constructed of nothing more than a series of cinder blocks artfully stacked and planted to perfection. Alpines could be similarly displayed.

What to grow in containers? Try any of the alpines or rock plants. A few may resent it and chafe under the conditions I've described, but you'll find many will adapt readily and thrive—some surprisingly so. I'm thinking particularly of one of the rock garden mainstays, *Acer palmatum* 'Dissectum', the beautiful cut-leafed maples that win every heart. Plantsman Barry Yinger makes the point in his lectures that the Japanese devised these beauties solely for pot culture. One rarely finds them planted in-ground in a garden setting in the Orient, though literally hundreds of varieties are grown in pots.

I have six of them growing in pots that range from a 6"-wide, 10"-deep "Long Tom" to a 14" rose pot. Clustered around a fountain, their lacy foliage is simply enchanting, and they are absolutely spectacular in full fall color.

Species iris lend themselves readily to the shackles of pot culture. I grow a number, among them *Iris setosa, I. graminea, I. prismatica, I. forrestii.* Our native forms, *I. cristata, I. lacustris,* and *I. verna,* like a bit more space in which to run and will do better in a trough than in smaller pots. My favorite, *Iris gracilipes* 'Alba', a perfectly ravishing plant in or out of bloom, is at its best in a larger pot where its fountain of leaves can cascade artfully over the side. Grown side by side with *Hakonechloa macra* 'Aureola,' it is a living sculptural delight of which I never tire.

Dwarf forms of hosta seem tailor-made for container growing. While larger forms take almost yearly division, the smaller forms grow much more slowly and will rest happily in a pot for three or four years. I ring the fountain and larger tubs with their billowing mounds of foliage to give a sculptured look to areas of the terrace. The truly dwarf forms work beautifully in troughs. I have one of my own seedling crosses whose leaves are a mere inch long.

Species *Dianthus* put on a splendid show in the spring, some of them continuing to bloom through the heat of the summer. Over the years I've grown many forms from seed but have come to concentrate almost exclusively on the bun or mound-forming ones. *Dianthus simulans, D. monspessulanus* ssp. *sternbergii, D. haematocalyx, D. callizonus, D. erinaceus, D. anatolicus,* and everybody's favorite, *D. alpinus,* are among them. There are at least a half-dozen more that make good pot plants. Their only drawback for me is that few of the alpine pinks

have much in the way of scent, an exception being *Dianthus tianschanicus*, which is deliciously pungent.

The 8'-long windowsill overlooking my terrace is the year-round home to a group of smaller species *Penstemon* grown in remarkably small pots. I grew them for some time without ever blooming them. Finally, in exasperation, I put them on the windowsill, the hottest, brightest spot on the terrace, and within a remarkably short time, each of them had set flowers. There, year 'round, they bake happily in strong sunlight reflected from the expanse of window behind them. *Penstemon davidsonii* ssp. *menziesii*, several forms of *P. davidsonii*, *P. linarioides* ssp. *coloradoensis*, *P. rupicola*, *P. crandallii*, and *P. pinifolius* are a few that have persisted with never a trace of fertilizer. Despite this seemingly harsh treatment, they put on a spectacular show of bloom early each spring (photo, p. 277).

All rock gardeners are a little soft in the head over that gem of our Western alpines, *Aquilegia jonesii*. Indeed, I'd grow it for its tightly-furled, gray-blue foliage even if it didn't bloom. With a bit of smugness, I can say that without wincing, for I did finally bloom it this year after replanting it against the wall of a newly-made trough that had not had all the lime leached from it. I'm convinced the overdose of lime triggered its bloom, despite the fact that I've babied other plants in the past, growing them in pieces of limestone rubble laboriously toted home from its native habitat in the Wyoming's Big Horns, with nary a bloom to show for the trouble...

Other Westerners that I grow with varying degrees of success are *Smelowskia calycina*, *Physaria alpina*, *Townsendia rothrockii*, *Douglasia montana*, *Phlox condensata*, *Draba oligosperma*, and species of *Talinum* . The lovely prairie phlox, *P. bifida*, and its white-flowered form are one of the spring delights of my terrace, for sheets of it cascade from virtually every corner. Out of its flowering season, however, it can look downright scruffy as the foliage browns off. This makes it an ideal candidate for pot culture since it can be stuck out of the way behind better-looking plants during summer and fall.

Probably the question I am most asked—even by sophisticated gardeners—is: "What do you do with your plants in the winter? Bring them indoors?" The answer is simple: for many of them, I do nothing. A wide range of my alpines stay where they are throughout the growing season—in their pots, naked, so to speak, to the whims of Mother Nature in her Zone 6 mode. Penstemons, dianthus, and phloxes, for instance, come through with no problem. Some alpines, however, demand a bit more care. While they can take almost any amount of cold, they give up the ghost at the slightest bit of winter wetness. Dampness at the crown spells sudden death for these.

In the wild, alpines grow high in the mountains where they are subjected to high winds, intense solar radiation, and wide variations of temperature from daytime to nighttime. During winter months, they are protected from these elements by being blanketed with snow cover that, regardless of its depth, keeps them in a state of dormancy or suspended animation by 1) reducing the light level, 2) keeping them at a constant temperature of around 28°F. (no matter how sub-zero surface temperatures may be), and 3) keeping them absolutely dry until spring melt occurs.

Having lost my fair share of these miffy plants over the years, I devised a system for container-grown alpines

that mimics to a degree the conditions they face in the wild during winter. It works for me, and I'll share it with you.

I have two 6' x 2' cedar potting benches that I use as shallow sand plunge display beds during the growing season, then convert to improvised alpine houses at season's end. To the upper worktable shelf, I added foot-long 2" x 4" upright stanchions and connected them with 2" x 1" wood strips, creating an open framework on top of each bench that allows a foot-high space. Late each fall, usually in November, I pack each bench with those potted alpines that require the winter-dry treatment, plunging them into the inch or so of sand, and watering them one last time. Next, I cover the top of the benches with lighting louver (the sort you see in elevators). This effectively reduces the light level, and protects the plants and pots from the harsh sunlight that can thaw the soil and crack the pots. I top this waffle-grid with sheets of Plexiglas, then drape a large sheet of heavy-gauge plastic over the top, stapling it only at the top so that a foot-long overlap hangs loosely down the side of the bench. This allows adequate air circulation but keeps out the moisture.

Though my jerrybuilt alpine house is no thing of beauty, it functions perfectly, which is reason enough for me to overlook its esthetic shortcomings. Midwinter I check the state of things and sometimes succumb and add a quart of so of water to the sand, thinking I am doing my dehydrated, sad-looking plants a favor. I am not, and often live to regret it, for this early watering can stimulate the plants to break dormancy too early and go down as a result. Bone dry is the answer. Steel yourself to this reality, and withhold all water until the plants break into growth on their own, and you'll find yourself admiring your alpines in bloom come springtime.

For my troughs, I use a variation of this treatment. At season-end, I insert four 12" lengths of bamboo upright in the corners of each trough. Over these, I set sheets of Plexiglas that have been cut to allow a 2" overhang. To hold the Plexiglas in place and keep the wind from lofting it around, I heated an icepick, melted holes in each corner of the Plexiglas, and threaded lengths of cord through. I cinch up the cord and and knot it at the top, and make a loop of cord that fits under the edge of the trough at each corner. This holds the Plexiglas rigidly in place, effectively keeping out most winter moisture, while allowing good air circulation in the 4"-6" space underneath each cover. Alpines seem to love it. Even those that I find difficult to winter-over, such as *Campanula raineri*, come through the rigors of winter without a hitch.

Container gardening of the sort I have described is largely a matter of trial and error—of trying and re-trying techniques until you find a method that works. I have a fairly extensive gardening library, but, frankly, little of the gardening literature has been of much help to me. Basically, I have learned by doing, devising and improvising methods that work for me. I hope some of them will work for you as well, or, at the least, encourage you to experiment and find ways that will.

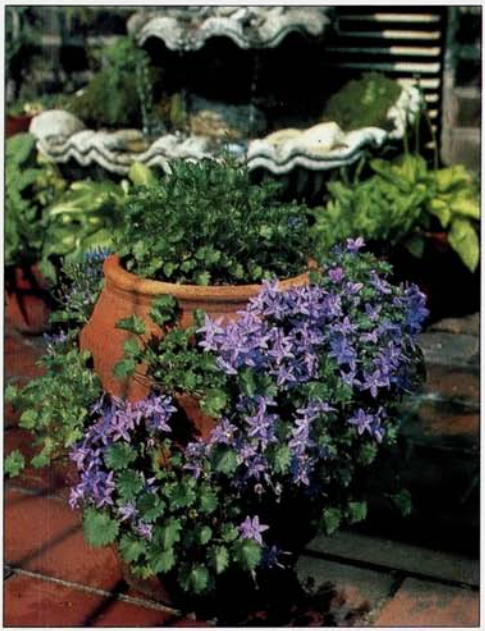
Along the way, I've discovered bits and pieces of disconnected information that have helped me grow alpines and rock plants. Perhaps they will be of help to you. Some specific tips you might consider:

- Forget about crocking your pots and troughs. Use nylon or wire-mesh screening to cover drainage holes.

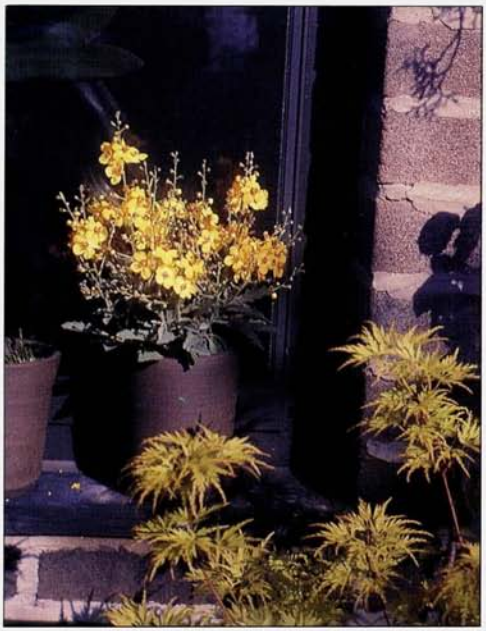
Lewisia cotyledon and sempervivums in strawberry jars hand-thrown by Lawrence Thomas (pp. 271-272)

photos by Lawrence Thomas

Penstemon davidsonii and *Rhododendron* 'Komo Kulshan' (p. 275, p. 272)



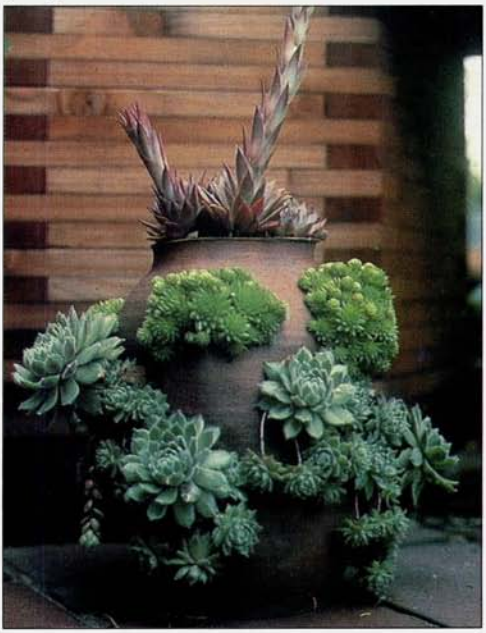
Campanula garganica,
several forms in a strawberry jar (p. 273)



Verbascum 'Letitia' (*Verbascum dumulosum* x *spinosum)*

photos by Larry Thomas

Sempervivums in hand-thrown strawberry jar (p. 272-3)



Geranium dalmaticum with *Erodium chamaedryoides* 'Rosea'

Enkianthus cernuus Paul Jones

Picea orientalis 'Gracilis Nana', durable, slow-growing (4' wide by 15"-18" high in 25 years), but appears less tidy and dwarf than it is. James Cross

Rhododendron 'Beattie' Paul Jones

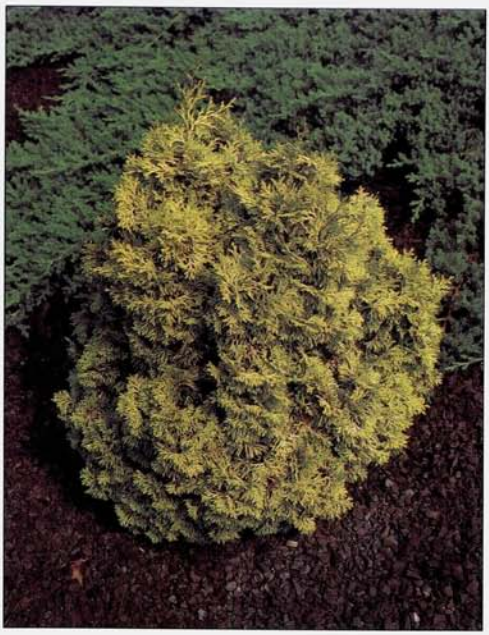
Juniperus communis 'Berkshire', an excellent candidate in rate of growth and as a contributor to both winter and summer foliage color. James Cross

Daphne cneorum 'Eximia' (p. 266)

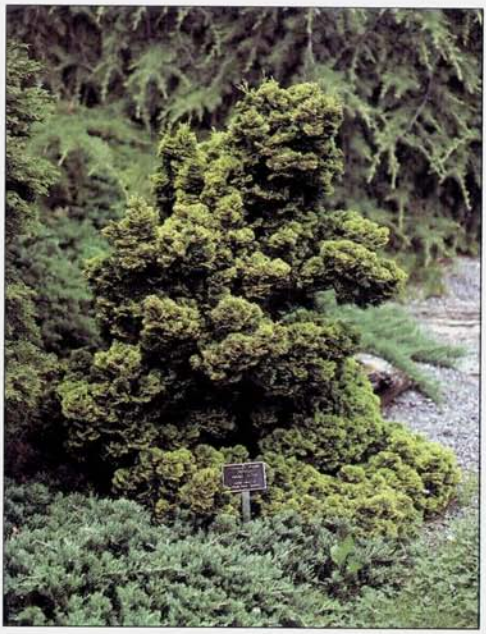
Paul Jones

Chamaecyparis obtusa 'Nana Lutea', below, both left and right. With time it will reach a size too large for the alpine garden. (pp. 246, 270)

James Cross



Paul Jones



An Ed Rezek collection of dwarf and miniature conifers carefully kept within limited space by judicious and regular pruning

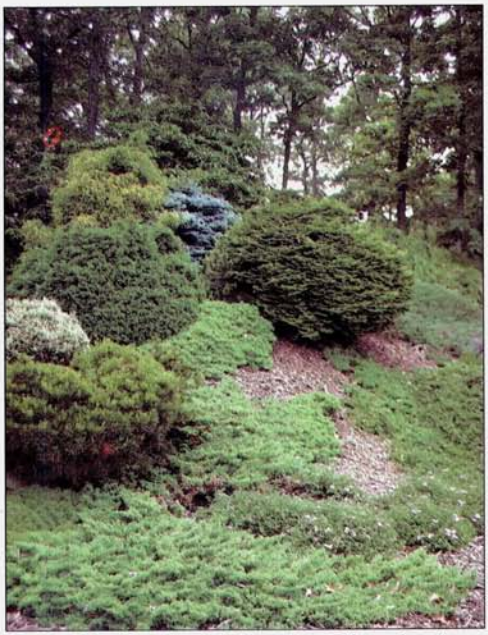
photos, James Cross

Pinus sylvestris 'Saxatilis', durable and maintenance-free (p. 249)

A planting showing how the even the most dwarf of the severely narrow, upright forms like *Juniperus communis* 'Compressa', 'Pencil Point', and 'Chrome Run' outgrow their place in height before long. photos, James Cross

Pinus sylvestris 'Viridis Compacta Aurea' in Anita Kistler's garden is getting a bit large but served well for a respectable number of years.

Dwarf form of *Tsuga canadensis* in Anita Kistler's garden, also becoming too large.



A small collection of dwarf conifers that in 25 years have outgrown their use.

Picea abies 'Gnome'

Juniperus conferta 'Silver Mist', attractive, but don't be tempted unless you love to prune—once settled in, it grows too fast. photos, James Cross

Your pots will have better capillary action (i.e., soak up water easier and quicker from below), and you'll alleviate the problem of slugs, sow bugs, and ants taking up residence in the drainage hole.

❁ When potting up mail-order or commercially grown plants, bare-root them first. Do this by dipping the plant gently up and down in water until the roots are clean, then dredge the roots in sharp sand and pot up in your own mix. I do this for two reasons. First, the plant settles in to my soil mix more easily. I've found that if the original soil ball is left intact and planted into a new soil mix, the plant often simply sits there without making new root growth outward and goes downhill quickly. Secondly, this helps alleviate the problem of slugs that has plagued me over the years. People often wonder how slugs manage to get 11 floors up to a mid-Manhattan terrace. The answer is simple—slug eggs arrived in the soil of mail-order plants, hatched, and grew into voracious monsters, necessitating frequent and savage forays on my part. I do it with a vengeance that would do Rambo proud.

While I shy away from chemical means of control because of a cat who thinks he owns my terrace, I did try something different this year—diatomaceous earth, an inert, silica-like substance made from ground-up, fossilized, prehistoric algae, which presumably disembowels the critters. I would say it worked considerably well, for I have seen little evidence of my dreaded foe this summer. On the down side, a gardening friend commented recently that she thought the summer had been remarkably slug-free, that possibly the unseasonable spring might have contributed to it. Whichever, it's a blessing that I accept readily.

❁ Take a tip from our bonsai friends: practice frequent root-pruning. My method does not involve actual root-pruning but will allow you to put plants that grow too vigorously into a trough or planter-box. Keeping a plant root bound in a pot dwarfs it somewhat. What I sometimes do is to knock the plant out of the pot and tease the rootball apart. Then I knock the bottom out of the pot, insert the plant into it once more, and plant it—pot and all—in a trough, being certain the rim of the pot is submerged. Restricted to the confines of the pot, the roots ultimately will grow out the bottom of the pot, but they spread at that level without rising to the surface. This allows shallow-rooting alpines to grow with less competition from the more vigorous plant. I've used this technique successfully with dwarf conifers whose root systems can quickly take over an entire trough and deplete the soil. Try it—it works.

❁ Top-dressing your pots with grit will save you a host of problems. It keeps the soil cooler and moister; weeds are easier to pull, and the plant looks better. Quartz chicken grit, if you can get it, is ideal. Turface, an expanded, fired clay product that is used by golf courses to recondition their greens, also works well. I have used it in place of chicken grit as both an aerator in my soil mix and as a top-dressing. It also works well for cuttings in place of vermiculite or perlite.

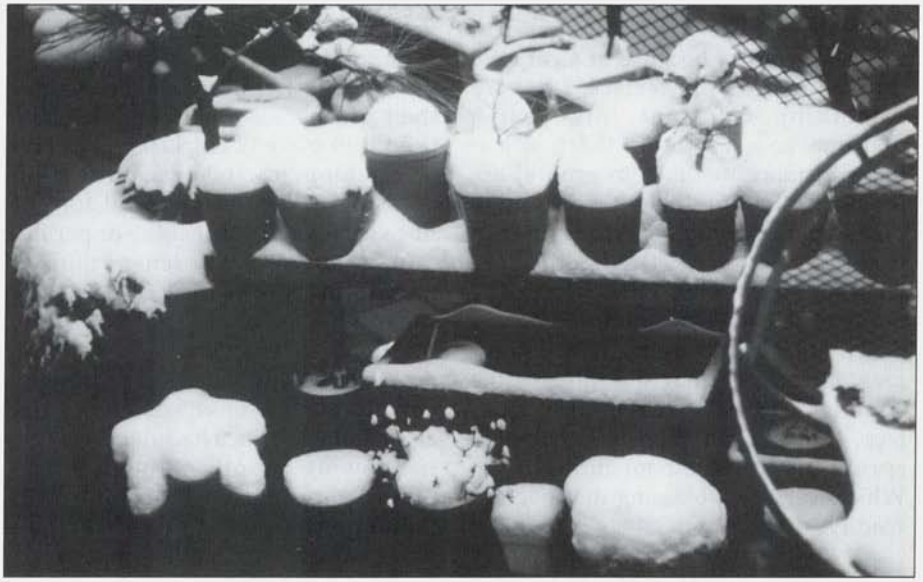
❁ Many rock gardeners think of moss as the bane of their garden. I find it can be a valuable and decorative mulch for some alpines. Several of my best plants grow vigorously through a velvety bun of moss, sometimes half an inch thick. I once had *Aquilegia jonesii* growing happily through a thick pad of moss into a limestone wall. Some gentians and encrusted saxifrages also thrive in this company.

To encourage moss to grow on the exterior of a hypertufa trough, puree a 2"-wide pad of moss with 1/2 cup buttermilk, 1/2 cup water, and paint the slurry on the sides of your troughs. Water trough frequently to keep it dampish, and you'll soon have a fine stand of moss. The curator of a beautiful moss garden on Long Island feeds his many varieties of moss monthly with a buttermilk/water cocktail of equal proportions.

- I often direct-sow seed of the same plant under a mature one growing in a pot. Young sprouts seem to like growing in the shadow of their Big Daddy, are easily identifiable, and I don't have to make out a label until I've pricked them out.
- Make your plants share their space. Choose different types of plants for the same pot. Underplant taller growing species or small evergreens with low-growing or mat-forming sorts. Tight, low, gray forms of *Dianthus*, for instance, set off the sharp greens of dwarf conifers beautifully. A mat-former such as *Veronica oltensis* is a perfect understory companion for many plants, though it sometimes can be a bit vigorous. It has taken over one of my troughs, weaving itself into an alpine lawn with a variety of kabschia saxifrages.

If I've piqued your interest in growing these small alpine beauties in smaller spaces, I hope you will consider joining us in New York City for the Eastern Winter Study Weekend, January 27 through 29, for an in-depth study of THE CONTAINED ALPINE. As I'm sure you know, alpine madness is an all-consuming passion, and we have assembled an all-star group of some of our finest alpine specialists who'd like to share their passion with you. We hope to see you there.

Larry Thomas fell in love at first sight with alpines in pots at Kew Gardens' Alpine House and has remained faithful ever since. He is founder of the Manhattan Chapter of NARGS.



Stellar Asters

New Worthies from the West

by Panayoti Kelaidis

I am always surprised that the only aster I seem to see in most rock gardens is *the* alpine aster, *Aster alpinus*—often in one of its deep violet-blue or pink forms, such as 'Goliath'. Now, mind you, my garden has more than its share of alpine aster—it is such a wonderful foil for the dianthus and phlox of high spring. But to sit down at the rich, many course banquet of *Aster* and quit after just one appetizer, this surely will not do.

Unfortunately, gardeners who want to test this genus find themselves drifting in a veritable galaxy of asters that occur in both Northern and Southern Hemispheres, almost as abundantly in the Old World as in the New. Many are very, very large. Others are very, very weedy. And, of course, there are problem asters: the endless array of New York and New England.asters that can vary from a foot to over a yard high and spread up to a yard across in time. For larger rock gardens the dwarf forms would seem to be the autumn equivalent of creeping phloxes, they are so easy to grow, so showy and so American. And there are so many colors and selections. But some conspiracy of rock garden taste makers apparently placed a curse on these, and they are deemed inappropriate for rock gardens. More's the pity. I suspect part of the reason *novi belgii* asters are neglected is due to the laziness and fatalism rock gardeners lapse into after the headiness of spring. How can our gardens ever again aspire to the glory of May? If we would only climb out of the dank chasm of *Primula* out onto the sunny alps of the Daisy clan, rock gardens (and their owners) might not become so very dull the first warm days of summer.

I never tried to systematically explore the genus *Aster*. I have simply been lucky enough to stumble first on one, then another stunning miniature in this genus—plants largely missing from reference books—and in one case, dropped from floras! Despite the haphazard nature of my own experience, I am surprised how little known and appreciated asters really are, beginning with *Aster alpinus* itself. Nowadays the huskier European form of the species can be found at many garden centers. But you would expect a circumboreal alpine that grows in a score of countries around the world to be somewhat variable, wouldn't you?

The first variation I obtained was collected in the Balkans and called var. *dolomiticus*. This is barely half the size of the typical Alpine form, with dusty gray leaves and over an inch across on stems 3-4" tall—far more in scale to rock gardens than the common sort. For many years some leading mail-order alpine nurseries have sold *Aster tibeticus*, often classified as a subspecies of alpine aster proper.

I was intrigued to notice that *Aster alpinus* was listed as native to Colorado by several floras. There are hundreds of thousands of acres of tundra in Colorado, and I have walked only a fraction of these, so I wasn't surprised that I hadn't run across it. But then neither had anyone else in recent memory. It had last been collected in the 1890s on Berthoud Pass, to the west of James Peak in the central Front Range of Colorado. Local botanists had explored the area repeatedly in search of it and not rediscovered this station.

A few years ago our family decided to finally explore James Peak from the east. On one of the many rugged, four-wheel-drive roads that crisscross this portion of the Front Range we drove onto a stunning meadow just above treeline on a nearby mountain. We unpacked our picnic lunch and sat down among an anthology of alpine daisies (*Erigeron, Hymenoxys, Haplopappus*) among which I noticed a particularly large head of bloom, of a soft silvery blue. *Townsendia? Erigeron* on steroids? I looked more carefully at the basal leaves, and then it struck me, *Aster alpinus*! It was only a few inches tall, with white or pale lavender rays, the flower head almost the size of those of its European cousin. Almost 30 miles by air from where it had first been found a century ago. As luck would have it someone had just found the same species in the La Garita Mountains just east of the San Juans in southern Colorado, over 200 miles away. How many colonies might still be lurking between these two outposts? If this variety *vierhapperi* occurred in a darker, purer shade of blue or lavender, it would make an

Aster alpigenus

Aster pattersonii

outstanding garden plant. As it was, we found only a few hundred plants on the hill and thought it ought to stay on the mountain and prosper.

Aster pattersonii

We likewise stumbled on our first endemic species of alpine aster in the Rockies by accident. First on the lower slopes of Mt. Evans and later on nearby Grays Peak we found a few dense but local colonies of a very tiny, mounding aster with huge, deep violet rays that blooms much of the late alpine summer. I keyed it out in an older flora to *Aster pattersonii,* but in recent floras this name is used for *Aster bigelowii* as well. There are significant differences between the two plants. *Aster pattersonii* grows entirely at or just above treeline, while *Aster bigelowii* grows well below treeline. The latter is abundant from the roadside verges of the lower subalpine and montane zones all the way down to the plains. The principal distinction between the two is size: *Aster bigelowii* is invariably 12", even 24" tall. It is a definite biennial, dying as the plant forms seeds. *Aster pattersonii* rarely exceeds 3" in height and barely twice that in width. Significantly, it is a true perennial, living five or more years in our experience.

We have grown *Aster pattersonii* in troughs, on sunny scree, and in part shade, and it seems to be quite happy anywhere we put it. In places where water lingers on the leaves, it can be prone to mildew. Badly powdered plants are unsightly but seem to come back the next spring just as strong. Even out of bloom, the blue-green rosettes of neatly scalloped leaves are quite attractive. We rate this the queen of springtime alpine asters.

This and the following aster are sometimes segregated into the genus *Machaeranthera*—a group of two dozen or so tap-rooted asters mostly from the American West, mostly biennial or even annual. These are distinguished primarily by their sharply dentate leaves that often end in soft prickles. *Aster tanacetifolia* is one of the best known and loveliest of these larger cousins. It forms mounds a foot or more high on sandy soils of the Great

Plains, producing 2" flower heads with bright yellow centers contrasting brightly with the luminescent lavender rays—a superb ephemeral for the wildflower meadow.

Aster coloradoensis

Aster coloradoensis

I remember I first saw this plant in a photograph in Ruth Ashton Nelson's *Handbook of Rocky Mt. Plants*. The picture showed a daisy with such a large head, proportionate to its leaves, of such a lovely pink shade—I discounted the whole thing, thinking it was some sort of trick of the camera. But then when I read Dwight Ripley's account of finding the plant, where he avers that this was the best alpine aster in America, I reconsidered. At the soonest opportunity I departed for South Park, entered the general area Dwight alluded to, and stumbled on the very same tufa hillock where he, too, first saw this star among our native asters. Tucked in this crevice and that over the entire hill—several acres in extent—were the trim, gray, jagged leaves of Colorado's namesake endemic aster. Each tuft consisted of several rosettes—over a half dozen in some instances—each of which in turn would have a 2-3" stem with its own reduced leaves culminating in prickly involucral bracts forming a spiny ball in bud, expanding to a shimmering pink blossom an inch and a half across.

It isn't for a year or two that the full glory of this plant reveals itself. In the garden it produces its first flush of blooms in late spring, completely covering trim rosettes with dozens of sugar-pink daisies. Even if you forget to deadhead the plant, you can count on periodic repeats of this wonderful show throughout the summer months. In early autumn, the same plants that have flowered through the whole summer are still loaded with buds and open blooms.

Few plants seem to grow happily in such a range of conditions. *Aster coloradoensis* tolerates lime or acid conditions. It likes full sun but blooms just as well in half shade. Once it is established, you will find it hard to kill *Aster coloradoensis* in a trough—even if you forget to water. It seems to bloom more generously in open soil, however—it may like lots of nutrients.

In nature, *Aster coloradoensis* is almost entirely restricted to its namesake state. There are apparently a few colonies sneaking across the border into southern Wyoming in North Park, and I know it grows perilously close to New Mexico in the San Luis Valley. I have found it most commonly on a certain tufa cliff, and on a number of

very unlikely roads in South Park where it can grow quite thickly in the borrow ditch along the highway, and even more densely on the steep roadcut above. Most of the parkland stations occur around 9000' elevation.

Romantics might be disappointed to find it growing ignobly next to asphalt. They are welcome to comb the tundra of the Mosquito Range, where we have found it growing in sparse colonies at almost 13,000'.

I find this aster particularly pleasing in the garden, where its repeated flushes of bloom bring to mind the clean, clear vistas where it grows wild. You will find it strikes easily from cuttings, while seed also will produce blooming-sized plants in a year or two. Lest you suppose all these *Machaeranthera*-style asters are exquisite, be warned that *Aster grindelioides* with such a superlative tuft of tiny leaves, growing on the choicest bunneries with the most aristocratic companion plants, lacks ray flowers altogether.

Xylorhiza

Just as the spiny, tap-rooted asters have been classified as *Machaeranthera* by botanists who love to carve up genera, another group within the genus has been segregated as *Xylorhiza* by many botanists in recent years. These are mostly very large, pale-rayed asters that form neat mounds up to 12" high from a woody taproot. The species I know best in this group is *Aster xylorhiza (Xylorhiza glabriuscula)* from the badlands of Wyoming. It can form wide colonies that glisten white from a distance among sparse Great Plains grassland, blooming for much of June in nature.

The larger and even showier *Xylorhiza venusta* is from the deserts of Utah and western Colorado. These seem to grow most vigorously on rather barren sites that average less than 12" of rainfall a year. I remember driving a hundred miles through the San Rafael Swell one May accompanied along the roadside by a more or less continuous patchwork of this aster in full bloom with seas of pink and white Sego lilies.and stout columnar cacti (*Sclerocactus parviflorus*)—a spectacle one doesn't see every year.

These and their even more stunning Mojave cousins have thus far proven to be somewhat fussy to cultivate in a conventional rock garden. They will probably demand very dry conditions and semi-arid climates to adapt to garden culture. Someday they may become a mainstay of the young art of xeriscape.

Aster alpigenus

Anyone who visits the Middle Rockies at the height of the summer season is apt to find a grassy-leaved composite with decumbent stems 3-6" long ending in frilly, rayed flowers an inch or more across. These come in a multitude of hues that can be characterized as lavender, from nearly pink to nearly blue. It takes a while to decide this is an aster, it is so distinct. *Aster alpigenus* comes in two subspecies, varying in rather fine details, from Washington and southernmost British Columbia to the high peaks of northern and central Wyoming. As is the case with many asters, this is a plant of turfy meadows, thriving in competition with a welter of tiny sedges, grasses and rushes. We have found it growing alongside a tiny form of *Dodecatheon, Myosotis alpestris,* erigerons galore and *Delphinium menziesii.* It does best in the garden in a scree that's neither too lean nor too hot.

Don't be confused if you see *Townsendia alpigena* listed alongside *Aster alpigenus.* These are two very dif-

ferent names. The townsendia grows over much the same range; however, it has much grayer, spoon-shaped leaves in a dense rosette 2-3" across. It is a plant of screes and exposed rock outcrops.

Bush Asters

There are a handful of asters found over much of the continental United States that have been segregated into yet another distinct genus, *Ionactis*, by many botanists. These are the bush asters, quite woody at the base, with stiff, erect stems, including *Aster linarifolius* from the eastern half of the United States, and a handful of showy counterparts in the Rocky Mountains and Great Basin. This eastern toadflax aster may grow by the thousands along roadsides in New England, but it seems to be practically absent from gardens. I've planted a small colony of a dozen or so plants that has hardly seeded about at all, although the spectacle it produces would make seedlings very welcome. Lincoln Foster described the plant superbly in an early *Bulletin of the American Rock Garden Society*. If you would like to have these dense little candelabra mounds of lavender stars in your garden, seed can produce blooming-sized plants in a year or less.

The two western cousins of the toadflax aster are even smaller plants, with dusty blue, wavy margined, crisp-textured leaves half an inch long in stiff curls about erect stems to 6" tall. The rays of terminal clusters of heads are often deep purple-blue. *Aster scopulorum* has a huge range throughout the northern Great Basin far up into Idaho and Montana. It can flower from June to frost. It seems to favor exposed slopes among sagebrush, often near the welter of ornamental cushion plants one finds on the ecotone of sagebrush and grassy meadow. It grows with *Castilleja, Lesquerella, Calochortus nuttallii, Sphaeromeria nuttallii, Erigeron tweedyi* (with lavender daisies and round, powdery white leaves) and, of course, *Eriogonum ovalifolium* and *E. caespitosum* —and let's not forget penstemons. *Aster stenomeres* grows a bit farther east and north, Idaho to British Columbia, often at higher elevations. This has softer leaves up to an inch and a half long and stems to 12" tall. The flower heads are larger, too, up to 2" across.

This by no means exhausts the theme of asters in the West. We have seen and grown compact, deep violet forms of *Aster foliaceus* var. *apricus* that are lovely in wild, but bloom sparsely in the garden. Claude Barr's stunning pink *Aster kumleinii* 'Dream of Beauty' is a trifle too quick to spread, and tall for all but the largest rock gardens. It is now classed as a form of *Aster oblongifolius*. There are still dozens of species of asters that abound after the summer solstice. Many more will find their way into gardens with time.

A garden that contained representatives of all these new micro-genera would have vivid bursts of color long after the cool season alpines of spring are forgotten. There are asters that rise with the dawning of the flower season, and a good many last until the twilight of September and October when their bright stars seeem to shine even more brightly.

Drawings by the author

Panayoti Kelaidis gardens at Denver Botanic Gardens and spends as much time as he can exploring for decorative plants on alps, steppes and deserts of the world. He is a devotee of native plants,utterly excluding extraterrestrials.

Garden Etiquette

Showing Your Garden: A Modest Proposal

If you were selling your home, your realtor would recommend that you vacate the premises when he was showing the house. You know its defects and are perhaps all too likely to mention them. I suggest the same line of reasoning can be applied to showing your garden.

I know the argument that what makes your garden unique is you. Implicit in this is that to visit your garden in your absence would be to miss an important part of the experience. No doubt there is a great deal of truth in this. Only you can relate the history of your garden and of your efforts to turn a weed patch, thicket, or grove of trees into a beautiful bed or landscape. Only you can explain your idiosyncratic choice of plants, such as "They serve as food plants for butterfly larvae," or "That was during my hosta period," or "I never thought they would grow that large."

However, most gardeners are too modest. How often have you heard a gardener say, "Yes, I think it's a terrific garden, and you've come at just the perfect time"? Much more commonly, you hear remarks such as "I haven't had much time for weeding," or "This plant [or bed] looked much better last week [or last year]," or "We've lost so many plants this year," or "This tree needs pruning." It seems gardeners are a bit ashamed of their gardens and the state in which visitors find them.

As an alternative, I suggest having a knowledgeable friend show your garden. That way, he or she can point out your lovely color schemes and meticulous attention to detail, your thoughtful pruning of trees and shrubs, and much more, without sounding immodest. True, he won't know everything, but he will certainly sing your garden's praises (and yours) far more sweetly than ever you would. And what's more, you can reciprocate the favor.

We often have visitors dropping by our garden unexpectedly, mostly neighbors, people just passing by, or friends bringing friends or relatives. It may not be the greatest garden in the world—there I go again—but at least it stands out on the block. Needless to say, we are always behind in something, such as mowing the lawn, or weeding the beds, and we never fail to mention these lapses. Perhaps on these occasions we should call up the designated friend and then tell the visitor, "Your guide will be with you in half an hour."

—Bob Faden

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Plant Portrait

Hedera helix 'Arborescens'

English ivy, *Hedera helix*, is usually seen covering a wall or enveloping the trunk and major branches of large trees. It can climb up 80' or more with the aid of aerial rootlets. The well-known, coarsely dentate or lobed ivy leaves are the juvenile form of the foliage. *Hedera helix* 'Arborescens' is a form with unlobed mature leaves. The most common forms of the species are easily rooted and easily grown. *Hedera helix* 'Arborescens' is propagated only from fertile stems (which bear flowers and produce fruit). These flowering stems are seen high on the tops of old vines.

A misapprehension which persisted for years was that the mature growth of *Hedera helix* 'Arborescens' was difficult or impossible to root. This was given as an excuse for the scarcity of this choice item. Yet various friends have taken cuttings from my plant and had no trouble rooting them. Still, this plant is rarely seen for sale.

Once rooted, the mature twigs of this selection no longer climb. Each develops into a grand evergreen shrub which in 10-15 years attains a height of 2' and a width of 3'-4'. The plant should not be fertilized if you wish to keep it compact. My own is in full sun, has good leaf color, and in late spring every twig is surmounted by an umbel of flowers.

This would be a fine background plant for a small rock garden and can be placed anywhere in a larger planting. The shiny, unlobed, evergreen leaves are attractive all year. The umbels of greenish-yellow flowers are attractive on close inspection, and they bear enormous amounts of nectar. I don't know any plant that attracts so many bees—and a dozen species of wasps. The insects are never aggressive while feeding, as I've discovered while working near the plant in the flowering season. Flowers are followed by black fruit, held well into the winter.

The genus *Hedera* is Eurasian; it occurs as far east as China. I have *H. nepalensis* (from Nepal, of course), which is hardy to about 0°F. It winter-kills occasionally and rarely gets taller than 12'-15'. The leaves are very nice.

Hedera shares the family Araliaceae with such plants as ginseng, devil's club, spikenard, and wild sarsaparilla. It is a native of Europe. Surely it should join other small-growing, broad-leaved evergreens so often featured in our rock gardens.

—Nickolas Nickou

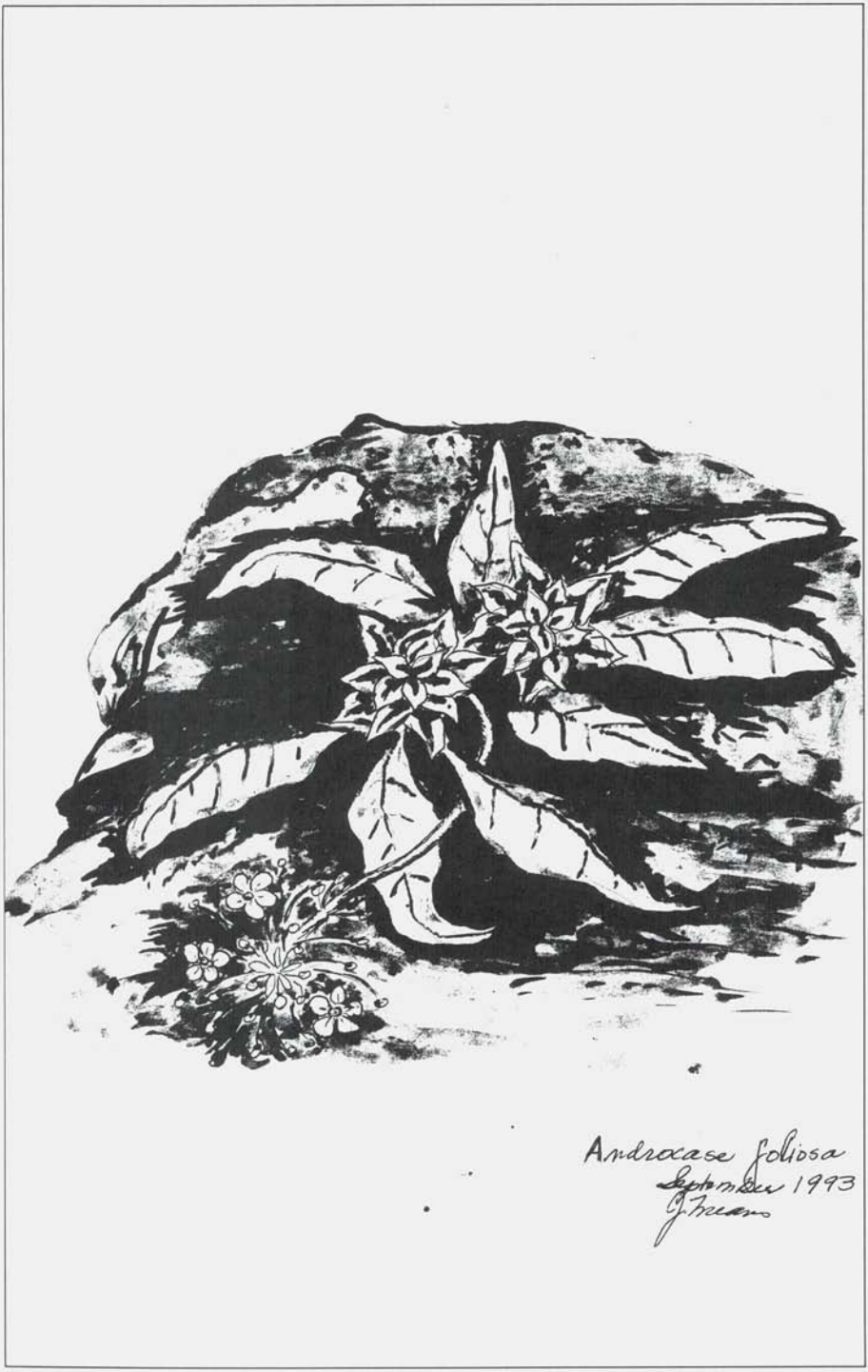
Plant Portrait

Androsace foliosa

Poor *Androsace foliosa*! If only it had been called a fall-blooming primrose, everyone would want it. But, somebody once poor-mouthed it and called it "coarse"—which it is, at least when compared to aretian androsaces, those classic, tight buns covered with overlapping blossoms, most often seen imprisoned in pots in alpine houses. As a result of its bad press, this apparently good-natured androsace seems to be quite rare in cultivation. It's too bad. Clear your mind of preconceptions and look at *A. foliosa* for what it is: a plant of great sculptural beauty that looks best in the open garden, where it produces a long succession of soft pink flowers from late July until hard frost.

At times this plant looks like a primrose, and at other times like a sempervivum, but what it doesn't look like is an androsace. In winter, there is a circle of old, withered leaves centered by a neat rosette about 1 1/4" wide, made up of small, sharply pointed leaves folded lengthwise into neat packages. As the weather warms, these open and elongate to form a starfish of light green leaves more than 1 1/2" wide and 4" long, virtually hairless except at the margins. In midsummer, a thick, brown, almost woody stem snakes out horizontally and at the tip, about 4" out, an umbel of pink, orange-eyed "primrose" flowers appears. The flowers are small, maybe a third of an inch across, and only a few open at any one time, but new tiers of buds keep forming, and the plant is never out of bloom. In fact, long after a new winter rosette has begun to form and the last flowers are nipped by a hard frost early in November, there are still unopened buds as well as pods splitting to release their contents of hard, black seeds.

Androsace foliosa is one of a small group of androsaces from the Himalaya and western China that grow in lower alpine meadows and scrubby woodlands. These large-leafed androsaces are quite closely allied to primulas, and they and their nearest relatives fall within the group of *chamaejasme*. These include the androsaces which are most easily grown in the open garden, since they seem to tolerate summer heat and humidity: *A. sarmentosa, A. lanuginosa, A. villosa,* and *A. sempervivoides,* all of which make rosettes at the ends of strawberry-like runners. These are popular and well-known plants; by contrast, the large-leafed androsaces are rarely seen in gardens. *Androsace geranifolia* (stoloniferous) and *A. rotundifolia* (no stolons) both have leaves and long-stemmed umbels of flowers which look much like one of the Japanese woodland primulas. Then there are two that are easily confused with *A. foliosa: A. spinulifera* (the winter rosette is round and made of hard, spiky leaves while the umbels of lilac flowers appear on tall stems among upright, rather hairy leaves) and *A. strigillosa* (the winter rosette is also round but quite woolly, and the flowers are most often white with a red reverse). There is a small version of *A. strigillosa* called *A. wardii,* but it may not be in cultivation, though it will probably appear


Androcase foliosa
September 1993
G. Means

as more botanists are able to visit western China. Another androsace from that area, this time a small relative of *A. spinulifera*, is already beginning to appear in the seed exchanges; it has scarlet flowers and is called *A. bulleyana.*

Truth to tell, the literature on these androsaces is extremely confusing. *Androsace foliosa*, for example, is often described as having hairy leaves and purple flowers, but in their classic monograph on the genus (*Androsaces*, published by the Alpine Garden Society in 1977 and reprinted in 1988), George Smith and Duncan Lowe describe the leaves as smooth and the flowers as soft pink. On the other hand, they describe *A. foliosa* as being stoloniferous while they say *A. spinulifera* is not, and *A. strigillosa* often puts up stems bearing leafy rosettes instead of flowers. Some of these root down. My *"foliosa"* acts that way—but only if I firmly pin the rosette down with a rock. Otherwise my plant most certainly doesn't have stolons; under optimum growing conditions it would like to form a mound of rosettes all growing from a rather woody center. In other respects—the shape of the winter rosette, the smooth leaves, and the extremely long bloom season—it meets the Smith-Lowe criteria for *A. foliosa.* Of course, the experts all agree that most plants of *A. foliosa* seen in gardens are really *A. strigillosa*, so who knows? After reading all the contending botanical descriptions, I sometimes think my plant must be a hybrid with the qualities of both parents. It was grown from seed offered as *"A. foliosa"* several years ago in one of the seed exchanges. Two seedlings resulted, but the one potted for the alpine house died before flowering. Either the soil mix was too austerely sandy, or the plant just hates pots. Some plants do.

As might be expected from its habitat, *A. foliosa* prefers to grow in light, dappled shade. In my garden in eastern Massachusetts (zone 6) close to sea level, the plant gets some morning sun, but most of the day it is in the light shade cast by tall pine trees. The soil is rather acid, sharply drained, but with far more organic material than most androsaces care for—a mix suitable for primulas or gentians is about right. Smith and Lowe report that the resting rosette "tends to rot in winter," but in my climate, the rosettes are more likely to suffer from wind-burn during subzero, snowless periods. A light covering of hay, evergreen branches, or Reemay seems to offer sufficient protection.

—Joan Means

opposite, *Androsace foliosa.* Drawing by Joan Means

Japanese Violets

An Introduction

by Kim Blaxland

In spring of 1994 I was invited by Dr. Jun'ichi Miki to visit Japan to study violet species in the wild and at the Japanese Violet Society's exhibit at the Hyogo Flower Show. Dr. Miki, who has collected violet species for over 40 years, is a leading member of the J.V.S. and author of a book about violets, "Sumire Jiten." At 82, he is still practicing as a pediatrician and was a most delightful, thoughtful host. Another active J.V.S. member, Mr. Iizuka, who was my guide in the field and host in the Himeji area, was very helpful in every way.

The area I visited is west of Osaka, centered on Fukusaki and Himeji with visits to Mt. Sepiko in the north, and Kyoto. The time was the second week in April, also, by coincidence, Cherry Blossom week.

With limited space for ornamental gardening, cultivation of small plants like violets is very popular in Japan. Hybridization of violets has produced many interesting named and unnamed cultivars. Natural hybridization is also common among species in the wild.

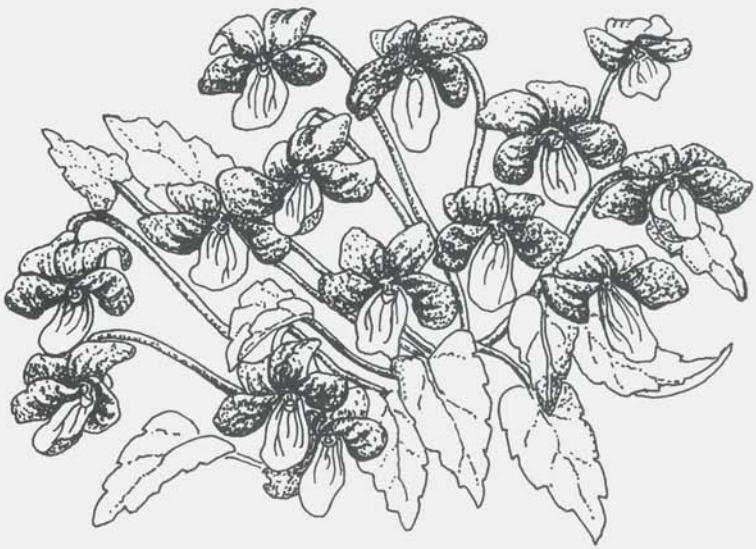
The three-day spring show at the Hyogo Flower Centre was in a large park setting. The J.V.S. exhibit displayed nearly 200 pots of Japanese species violets, natural and cultivated hybrids, and a small number of foreign species—a fascinating collection. There are 58 recorded species of violets in Japan. The most stunning cultivar on the show bench was a cross between *Viola eizanensis* and the red-flowered form of *Viola chaerophylloides* producing large flowers the petals of which were white on the outside but bright crimson-red on the inside with a fine white outline. The leaves were very divided, like those of both parents (see photo, p. 303).

Many native species were growing wild on the grounds of the Flower Centre. *Viola sieboldii* and its variegated leaf form were both growing in semi-shaded areas. The tiny plants were 4-5 cm. high, its white flowers with pink-purple sepals and large, rounded, pink spurs held well above the leaves on purple pedicels. Pale gray-green outlined the veins of the variegated leaf form, the underside of the leaves of both forms was purple (see photo, p. 302). A larger lowland species, *Viola japonica*, common to all Japan, was growing in part sun, its ovate leaves pubescent on the top and

purple underneath. The large flowers had narrow purple petals. I saw a white-flowered form growing on Mt. Sepiko in the north, but the most attractive was the variegated form on the show bench with leaves of a yellow background splattered with dark green spots (photo, p. 301).

Three stemmed species were flowering at the Centre. In the sun at the edge of the car parking lot, *Viola obtusa* produced rounded, fragrant, purple flowers each with a large, contrasting, central white eye. The leaves were cordate with rounded tips. *Viola grypoceras*, also in full sun, was very floriferous. Showy, large, pale mauve flowers were held well above the foliage. The leaves were more pointed and obviously serrated. White- or pink-flowered forms of *V. grypoceras* can occur. A mountain form has more cuneate leaves, and there is a form in which the leaves have deep red veining in the center. *Viola ovato-oblonga* was growing in sun to part shade under deciduous trees. Its pale mauve-purple flowers had a less obvious eye, no perfume, and more pointed leaves on the upper branches. The leaves had dark purple veining especially in the center, some purple coloring on the underside, and dark purple petioles. Dr. Miki has found and propagated a flore-plena form of *Viola ovato-oblonga*. *Viola obtusa* and *V. ovato-oblonga* were hybridizing here also.

During the week I was shown five forms of *Viola violacea*. The normal species type growing on the more sunny edge of a path through woods near Himeji had mid-pink flowers, dark pink-purple pedicels and petioles, elongated leaves, green on top and purple underneath. A variegated leaf form, *Viola violacea* f. *versicolor*, with paler green outlining the veins of the top of the leaf, produced pale pink flowers (photo, p. 304). It grew on exposed sunny roadside slopes of Mt. Sepiko. Only three colonies of a rare black-leaved form have been found.



Viola violacea

Viola yedoensis

With white or pale pink flowers, red petioles and pedicels its coloring was very dramatic at flowering time; later in the season the leaves are not as black (photo, p. 304). *Viola violacea* var. *makinoi* growing in semi-shade on the Flower Centre grounds had deep pink flowers, long red-purple petioles and pedicels, and narrower, elongated, dark green leaves (photo, p. 301). All forms were between 6 cm. and 9 cm. high.

Along the roadside on south-facing slopes beside a small cemetery we found *Viola yedoensis*. This very pubescent species had large, dark purple flowers that faded in the full sun. A white-flowered form also occurs. This should not be confused with *Viola yezoensis* , a different species.

Three very common species are so prolific that they are weeds in any open sunny ground. The Japanese word for violet, "sumire," is also the Japanese name of the species *Viola mandshurica*, the most common violet found all over Japan. Many localized forms of this species occur. Flowers of most forms are deep purple, but there are many variations(photo, p. 302). These robust plants have long, narrow leaves, but the most distinguishing feature is the constriction on both sides of the top of the petiole. *Viola betonicifolia* var. *albescens* has leaves similar in shape to *V. mandshurica* but does not have the constriction at the top of the petiole. Flower color is usually white with purple striations. Navy or pink striations can occur. There is also a pure white form, and a variegated leaf form.

The wide range of the species stretches southwest through Asia, dividing into two arms, one spreading west towards the Himalayas, the other through New Guinea to southeastern Australia. *Viola confusa* ssp. *nagasakiensis* grows in all Japan except Hokkaido. It has smaller, purple flowers on long petioles. The two top petals point stiffly up, the lower three point downwards, with the horizontal sepals showing in the space left in the middle. The small, narrow, spring leaves grow larger and much wider at the base in summer.

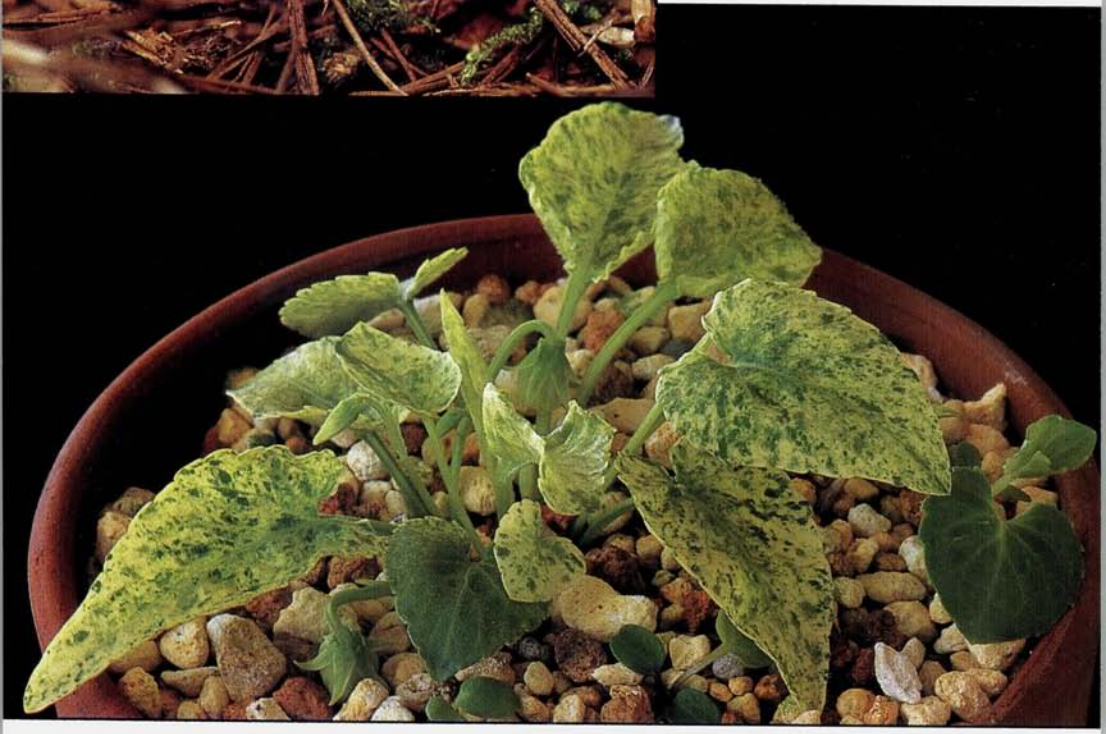
One memory that will always stay with me was the beauty of a small Buddhist temple, O-Shi-Ji, surrounded by blossoming cherry trees and heavily scented *Spiraea* bushes in the late afternoon light. I am very grateful for the overwhelming hospitality of everyone I met.

Drawings by Lynn Janicki

Kim Blaxland is an Australian who gardens near Philadelphia where she moved six years ago from the Netherlands.

Viola violacea var. *makinoi*
(p. 300)

Viola japonica forma *variegata*
(p. 299)



Viola sieboldii (p. 298) photos, Kim Blaxland

Viola mandshurica var. *mandshurica* forma *albovariegata* (p. 300)

Viola eizanensis x chaerophylloides, red form (p. 298)

Viola violacea, black variegated leaf (p. 300) photos, Kim Blaxland

Viola violacea forma *versicolor* (p. 299)

Books

Encyclopaedia of Alpines, Kenneth Beckett, Editor. AGS Publications, Ltd.: Pershore. Two volumes, hardback. 1411 pp. Price, $315.00 postpaid, by check or credit card to AGS Publications, Ltd., AGS Centre, Avon Bank, Pershore, Worcestershire, WR10 3JP, Great Britain. ISBN 0-900048-63-8.

The long-awaited *Encyclopaedia of Alpines* is finally here! A remarkable achievement, it covers nearly 1000 genera and will be the standard rock garden reference for the foreseeable future.

The coverage of genera and species is impressive. Each genus is well introduced, and the species are described with their key botanical features and natural habitats. As promised in the introduction, a significant number of Andean and Australasian species are included. These plants have been generating a lot of excitement within the last few years, but until now comprehensive information has been difficult to find in one place.

The book is illustrated with a generous number of color plates, and the line drawings are useful, especially where several species of the same genus are shown together. It would be nice to see the entries on favorite North American genera, such as *Eriogonum*, expanded. Deficiencies like this seem to occur where taxonomic work is overdue and good monographs are lacking. Cultural information is concise and very useful, but North Americans will have to extrapolate for their local climate.

The book is generally consistent and complete, but I have two significant reservations. First, anyone expecting to use the *Encyclopaedia* for identification will find it rather clumsy. Unfortunately, there are no keys to the genera or species—these are becoming distressingly rare throughout contemporary horticultural literature. Secondly, the number of cultivars listed for each species varies greatly. For example, there are over eight pages of detailed *Sempervivum* cultivar descriptions, while very few are listed for *Saxifraga* or *Primula*.

Not since Farrer's *The English Rock Garden* (1919) have rock gardeners had such a complete reference to alpines in cultivation. What a pleasure it is to go to one work and find useful information on just about any plant one might want to grow. The serious rock gardener will find the substantial investment worthwhile.

—Robert Bartolomei

A Garden of Conifers—Introduction and Selection Guide, by Robert A. Obrizok. Second edition, revised and expanded, 1994. Capability's Books: Deer Park, Wisconsin. 117 pp., 50 color photographs. 11" x 8.5". ISBN 0-913643-08-4. $24.95, paperback; NARGS Bookstore, $20.00.

Don't let the title of this book put you off! Few rock gardeners are likely to be interested in having "a garden of conifers." Of course, the author, Robert Obrizok of New York State, has one. But the book is really an introduction to dwarf conifers for the garden and a guide to their selection, significant because it describes conifers available in the United States and Canada, whereas previous conifer books have been written by Europeans.

What are dwarf conifers? They are naturally slow-growing small trees that attain only a small fraction of the size of their species. Dwarf conifers are natural genetic mutations, occurring as dwarf seedlings of a normal tree or coming from an unusual dwarf cluster of twigs called a "witch's broom" on an otherwise normal tree. Dwarf conifers may retain the color and shape of the species, but usually have more dense branching and smaller needles.

Why dwarf conifers in rock gardens? Their small size and year-round evergreen presence suggest their use as accents, anchors or backdrops for rock garden plants, which are usually small, more fragile alpine, saxatile or woodland plants. And the dwarf conifers' variety of shapes, colors and foliage textures makes them instantly appealing and continuously rewarding as companion plants in the rock garden.

Author Robert Obrizok presents salient facts on the culture of conifers in general and then describes the unique characteristics and cultural requirements of each conifer genus. A section entitled "A Conifer Sampler" gives information about 31 cultivars across the spectrum of genera, including some of the author's favorites. However, since ten of the evergreens listed have yellow foliage, his list seems skewed beyond the average gardener's taste.

All this is a preamble to the main body of the book, which is a descriptive list of 2,550 conifer cultivars generally available here. The presentation is organized by botanical name and provides a brief description of each cultivar, including size, growth habit, color, and hardiness zone. But one wishes for more than a line or two describing the more popular or most highly regarded plants. A novel innovation is the use of symbols for size and shape before each plant name, which makes it easy for the reader to search for conifers of the character he is interested in.

Superb color photographs show off over 60 cultivars, mainly from the gardens of the author and his brother and from the National Arboretum in Washington, D.C.

The book concludes with four useful lagniappes: 1) explanations of the meanings of botanical names of the species; e.g. *scopulorum*—Latin—of the cliffs; 2) a list referencing common names to botanical names; 3) a directory of 22 principal conifer nurseries in the USA and Canada; and 4) a bibliography.

Obrizok abundantly conveys his enthusiasm for the usefulness of dwarf conifers in the garden. Rock gardeners will appreciate that he has filled a void in North American books on this important companion for their gardens.

—Clark Coe

Waterscaping: Plants and Ideas for Natural and Created Water Gardens, by Judy Glattstein. 1994. A Garden Way Publishing Book. Storey Communications, Inc. Pownal, Vermont. 184 pp., paperback ($18.95) and hardcover ($27.95).

Occasionally there comes a book that could rightfully include in its title the word "Complete." Judy Glattstein's just published text on waterscaping is one of the few. If I had been collecting all the articles from various magazines about water gardening that I thought worth saving, I would now put them in the "dead" file and substitute in their place this one book.

Glattstein takes us through the realm of gardens from the natural wetlands to pools and ponds and on to water gardens in containers. Important variables such as sun and shade are considered. Various ecosystems are also well defined and suitable plants suggested. And, no, this book is not just another dictionary of plant names. The shaded window inserts throughout the book give details about selected related topics, another excellent feature. Of course, in my opinion, a book on gardening must include color pictures to increase the adrenaline flow within the body. This requirement is well met.

Glattstein is an author, lecturer, and landscape designer who currently lives in Connecticut. This is her second book on gardening, and it is sure to be well received: it will appeal to both the novice and to the most sophisticated gardener. Simple facts presented in a refreshing manner are its backbone.

—Bobby G. Wilder

Viola obtusa

NARGS Coming Events

Winter Study Weekends

Eastern: The Contained Alpine

January 27-29, 1995
Manhattan, New York

at the Roosevelt Hotel

Western:

February 24-26, 1995
Tuckwila, Washington

Annual Meeting

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June 2, 3, & 4, 1995

Pittsfield Massachusetts

at the Berkshire Hilton Inn, sponsored by the Berkshire Chapter.

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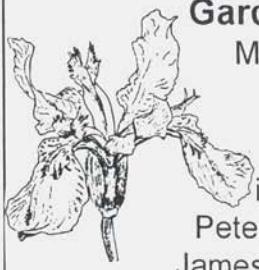

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Allegheny	Al Deurbrouck, 6915 Hilldale Drive, Pittsburgh, PA 15236
Berkshire	Doroyth Clark, Route 1, Box 58, Stamford, NY 12167
Calgary/Alberta	Sheila Paulsen, 6960 Leaside Dr., SW, Calgary, Alberta, Canada
Columbia-Willamette	Don Howse, 41370 SE Thomas Road, Sandy, OR 97055
Connecticut	Sally Katkaveck, 82 Ashford Road, Ashford, CT 06278-9609
Delaware Valley	Jane Grushow, 213 Meadow Valley Road, Ephrata, PA 17522
Emerald	Loren Russell, 3420 SW Willamette, Corvallis, OR 97330
Gateway	June Hutson, 10601 Knollside Circle, St. Louis, MO 62123
Great Lakes	Richard Punnett, 41420 Harris Rd., Belleville, MI 48111
Hudson Valley	Thomas Stuart, PO Box 517, Croton Falls, NY 10519
Long Island	Shelley Herlich, 43 Greenfield Lane, Commack, NY 11725 Fred Knapp, 58 Kaintuck Lane, Locust Valley, NY 11560
Manhattan	Lawrence Thomas, 340 E. 74th, #11G, New York, NY 10021
Minnesota	Steve Roos, 311 Sunnydale Ln. S.E., Rochester, MN 55904
Mt. Tahoma	Steven Hootman, PO Box 3798, Federal Way, WA 98063
New England	Stuart Sotman, 73 Mt. Vernon St., West Roxbury, MA 02132
Newfoundland	Bodil Larsen, Box 50517, SS#3, St. John's, Newfoundland A1B 4M2
Northwestern	Judith Jones, 1911 Fourth Ave. W., Seattle, WA 98119
Ohio Valley	Barbara Abler, 990 Blind Brook Dr., Worthington, OH 43235
Ontario	Andrew Osyany, Box 146, Shelburne, Ontario, L0N 1S0, Canada
Ottawa Valley	Lois Addison, 201 Wagon Dr., Box 9015, RR 1 Dunrobin, Ont. KOA 1T0 Canada
Piedmont	Norman Beal, 2324 New Bern Ave., Raleigh, NC 27708
Potomac Valley	Robert Faden, 415 E. Mason Ave., Alexandria, VA 22301
Rocky Mountain	Marilyn Raff, 8055 W. Ontario Place, Littleton, CO 80123
Shasta	Fai Schwarzenberg, 7800 French Creek Rd., Etna, CA 96027
Siskiyou	Barbara Lane, 2945 Lone Pine Road, Medford, OR 97504
Southern Appalachian	Furman (Frank) Strang, 105 Albany Rd., Oak Ridge, TN 37830
Watnong	Jeanne Will, Rd. 2, Box 119, Chester, NJ 07930
Wasatch	Bruce Grable, 2166 Wellington, Salt Lake City, UT 84106
Western	Jana Olson Dobrinsky, 917 Avis Dr., El Cerrito, CA 94530
Wisconsin-Illinois	Jack Ferreri, 3118 Timber Lane, Verona, WI 53593

Bulletin Staff

Editor	Gwen Kelaidis	(303) 322-1410
	1410 Eudora Street, Denver, Colorado 80220	
Advertising Manager	Al Deurbrouck	(412) 653-0281
	6915 Hilldale Drive, Pittsburgh, Pennsylvania 15236	
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Allegheny	Al Deurbrouck, 6915 Hilldale Drive, Pittsburgh, PA 15236
Berkshire	Doroyth Clark, Route 1, Box 58, Stamford, NY 12167
Calgary/Alberta	Sheila Paulsen, 6960 Leaside Dr., SW, Calgary, Alberta, Canada
Columbia-Willamette	Don Howse, 41370 SE Thomas Road, Sandy, OR 97055
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Delaware Valley	Jane Grushow, 213 Meadow Valley Road, Ephrata, PA 17522
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