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COVER: *Astragalus utahensis*
by Lori Chips, Norwalk, Connecticut

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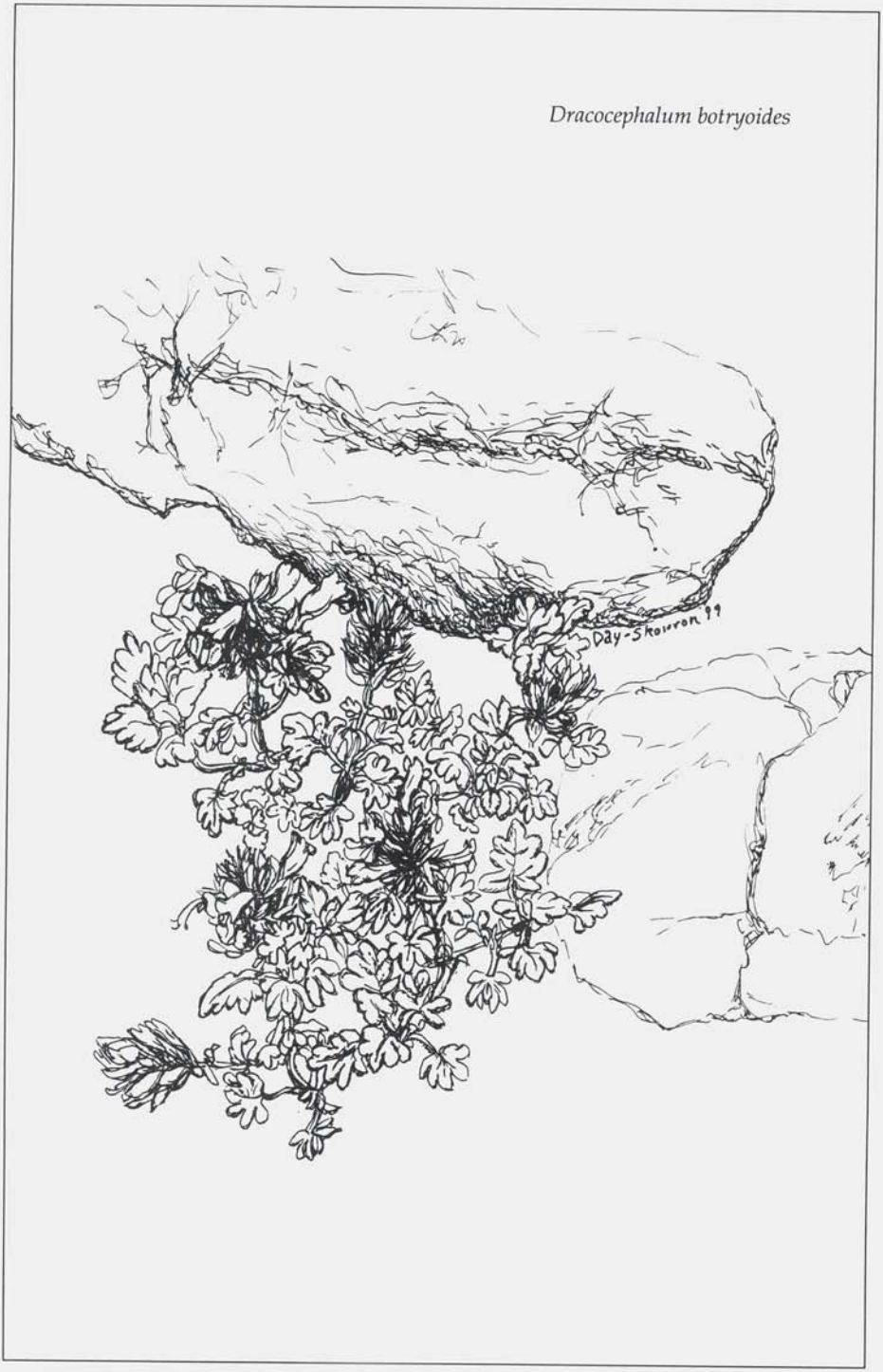
FEATURES

DEPARTMENTS


Dracocephalum botryoides
Day-Skowron '99

MINT CONDITION:

LABIATES FOR THE ROCK GARDEN

by Gwen Kelaidis

A sprig of mint may turn ordinary lemonade into a sophisticated cooler for the summer patio—even though *Mentha spicata* and *M.* x *piperita* may not be the most elegant of plants. So can the small species of mints contribute a lovely garnish to the sophisticated rock garden. Members of the mint family, or Labiatae (or Lamiaceae), are often thought of as rough herbs, like the two above, which are invasive in the extreme in average soils. The labiates are characterized by four-sided stems (square in cross-section), opposite or whorled, often aromatic leaves, and a corolla with two lips, the upper formed of two fused petals, the lower of three. Flowers, from a horticulturist's view, are often not very large relative to the leaf and plant. The seeds are often large (1–2 mm is common) and easy to germinate, a highly endearing quality. Almost all of these species prefer to grow in full sun.

The natural distribution of the mint family is cosmopolitan, but the greatest concentration of species occurs in the Mediterranean region. About 3500 species in 180 genera offer many opportunities for cultivation; how many do you have in your garden?

Gardeners who prefer to grow useful—or do they really mean edible?—plants are familiar with the riches of this family, which provide a large proportion of commonly used herbs, including savory (*Satureja*), oregano and marjoram (*Origanum vulgare*), rosemary (*Rosmarinus officinalis*), thyme (*Thymus vulgaris*), basil (*Ocimum basilicum*), and sage (*Salvia officinalis*). Perennialists have a few substantial plants in their repertoire from this family, including *Monarda fistulosa*, the fairly aggressive *Ajuga reptans*, and *Salvia*, from the commonly distributed *S.* x *superba* to a host of recently introduced species and cultivars. *Agastache* and *Nepeta* are two more genera that have been experiencing a surge of popularity (see other articles in this issue).

I have never considered myself a devotée of all of these plant wonders, but there are nevertheless mints that I consider necessary to the fully developed rock garden. I have seldom seen a garden that could carry through the seasons with just gentians and kabschia saxifrages. And is there a single garden in North America where only

true alpines are grown? I strive to have a garden with some plant in flower from the earliest snowdrops of February until the frost takes the vibrant red zauschnerias in the autumn. But merely flowers are not enough; the garden needs to have interest throughout the year. This is achieved partly through use of plants with evergreen or eversilver, durable foliage. This is actually a feature that distinguishes the perennial garden from the rock garden: most plants of the perennial border die back to the ground in winter (garden phlox, delphiniums, asters, baby's breath), whereas most plants of the rock garden retain their foliage throughout the year (silver saxifrages, drabas, creeping phlox, thymes, veronicas). There follow descriptions of a few mints that will help bring your garden into prime foliar condition.

Stachys nivea (photo, p. 202)

This is a charming foliage plant with very rugose, lanceolate, tonguelike leaves of dark green splayed out on the ground in a flat, basal circle. The very large (as much as 4 cm long), white flowers rise on short stems in late May. I have grown this in moderate conditions, in clay-based soil, where the same plant has persisted for ten years, remaining in place without increasing or diminishing. It makes a great foil for any small, gray foliage, such as *Eriogonum ovalifolium* or *Veronica caespitosa*, or even woolly thyme, or with a yellow-green foliage such as *Gentiana gelida, Hacquetia epipactis*, or one of the apple-green cultivars of *Sempervivum*. This plant should tolerate most rock garden conditions, although I haven't tried it where it experiences severe drought.

Dracocephalum botryoides

This plant came into circulation sometime in the late 1980s. It is diminutive in stature, reaching a mere inch or maybe three. The flowers are a pale lavender in many-flowered, dense, terminal whorls. Grape-purple bracts add a deeper hue to the inflorescence. The stems form a mat from a few inches to a foot wide, bearing 5–7–lobed, adorable leaves with blades about a centimeter long and about equally wide. They have short hairs that give the foliage a soft gray sheen over the basic-green color. The foliage has a pleasant minty fragrance when bruised.

This plant is particularly happy and also felicitous in its effect when placed above a rock, where it can drape over the stony surface. However, the cloak of foliage will likely be killed in severe weather. The mat will, nevertheless, recreate itself in the next season. Very good drainage will please this species. It has self sown freely into the gravel at the base of our rock garden, but not elsewhere. *Dracocephalum botryoides* is one of those happy-go-lucky plants that are easily taken for granted. Yet, I would be sorry to discover that I had lost it all. I am delighted to report that it is happy in my sandy rock garden as well as in the heavier soil of my Eudora Street garden.

In central Asia there are several other species of *Dracocephalum* closely related to this one. We had the delightful opportunity to try *D. paulsenii*, with even smaller leaves and flowers of blue, but it departed after two years. We have just planted out *D. palmatum*, which looks very similar to *D. botryoides* but has deep blue flowers. It is worth trying to sort out the species as they become available, looking for the choice little mat-formers.

Nepeta phyllochlamys

Despite the disparagement that this species suffered in the last issue of the *Rock Garden Quarterly*, I consider it a

lovely plant. It was originally collected on the 1977 MacPhail and Watson expedition to Turkey. The heart-shaped, cordate-based leaf blades are about 1.5 cm wide and 1.0 cm long, smaller when grown in harsher conditions, larger when grown in some shade. Both sides of the leaves and the stems are covered with woolly hairs, resulting in a silver overlay to the green leaves. Miniature, clear-pink flowers are a bonus to the foliage in early summer. The leaves have a sharp scent similar to peppermint.

This plant looks great with sempervivums or lewisias, and it would be fun to combine it with something maroon, such as a ruby sempervivum, the deep maroon winter foliage of *Delosperma nubigenum*, *Armeria maritima* 'Rubrifolia', or the blood grass, or the forest green of *Santolina* 'Small Nancy' or even *Teucrium chamaedrys*. The leaves look great with dew or raindrops pearled on their leaves.

Nepeta phyllochlamys is at home in the sandy crevices of a hot, southwest-facing wall, making a lovely band of rounded, almost bead-like leaves held strongly curved under along the cracks of the flagstone. It will self-sow in the garden. I consider it one of those plants that never needs propagation to maintain it in the garden; rather the gardener has the ability to remove any plants that have placed themselves in inauspicious places, while keeping those that look great. Self-sowers create a distribution of plants that can greatly augment the naturalistic look in the garden.

Marrubium rotundifolium (photo, p. 193)

Many marrubiums are coarse and floppy, and so, despite the furry leaves of interesting shape and margin, they are relegated to the margins of horticultural worth, useful perhaps between a rock and a hard spot. But this species captured my interest years ago, with its charming round leaves about 2 cm in diameter. All parts of the plant have long, woolly hairs, but they are less dense on the upper surface of the leaf, and thickly tufted along the gently toothed margins. The leaf margins are upcurled towards the midrib, and the inner (upper) -most, new leaves are curled across from each other in twin circles of green rimmed with warm silver. Each plant may reach to 40 cm across, rather large for the rock garden. I grow *M. rotundifolium* in a hot wall and cut it back hard in the fall—or whenever it overruns neighboring plants.

This is another plant that shows off in the rain. It looks equally good in the heat of summer under the blazing sun. Place it near a plant of dark green foliage, such as tansy or a dark *Santolina*. Yellow tulips are an attractive accompaniment, picking up the golden overtones of the hairs, while blue flowers, such as *Penstemon nitidus* or blue dwarf bearded iris, or blue flax take up the current fashion of blue and yellow.

It is easy to propagate *Marrubium rotundifolium* from shoot cuttings. This species was introduced by Zdenek Zvolanek, who collected seed on Ala Dag in Turkey.

Lamium armenum and
Lamium eriocephalum

These two species have little relationship horticulturally to the thugs of the shady garden, *Lamium maculatum* and its cultivars and hybrids. While they grow with some vigor in their first year and bloom abundantly in the second, instant death inevitably follows flowering.

The flowers are sweet poetry, the domed hoods of the corolla sugary with short hairs, flushed with a baby's blush of pink in *L. armenum*, a deep

rosy rose in *L. eriocephalum*. The neck of the corolla is held as slender and graceful as that of the young Gigi. The flowers are borne singly in the axils of the leaves.

The leaves of *L. armenum* are dark green, the blade wider than long, about 1.3 cm wide, lobed about 3–4 mm deep, and with a potent, obnoxious smell often compared to cigarette-lighter fluid. *Lamium eriocephalum* has dark maroon foliage, itself festooned with white hairs like hoarfrost, utterly bewitching as the rounded mound of foliage expands into flower in early spring.

Seeds, large, deep red, and shaped just like a mouse dropping, are slow to germinate in pots, coming up the second year outside, if at all. Yet in the garden both species self-sow with some abandon into the gravel downhill from the mother plant. At the moment there are at least 100 seedlings surrounding the feet of our blooming *L. armenum*. These can be transplanted while very small, scarcely beyond the cotyledon stage. But give them away before midsummer—they do not appreciate life in pots. Many will probably die, but a few survive to carry on. At least, I have been confident in this matter for the last six years; this year I find that we have no adults of *L. eriocephalum*, but only a few seedlings. If you wish to keep these plants, you should allow an area below them where they can both self sow *and* where you can dig up the seedlings without disturbing other treasures. And move a few seedlings uphill every now and then! It's a really good idea to give seedlings away to other gardeners, too, as you never know when you will need a few back. For further information, see article, *RGQ* Vol. 55(3), pp. 227-228 (1997).

Teucrium aroanium

This is a small plant with pallid lavender flowers and rounded leaves with a lavender overcast. It has little punch in the garden, although it is an attractive conversation piece. We've grown it for some years, but I couldn't find one when I looked this spring. It is telling that we never noticed when it slipped away. Perhaps we just didn't make it happy. For heaven's sake, don't plant it near anything aggressive. *Teucrium aroanium* originates in Greece near the River Styx, whither it seems to have returned.


Satureja spicigera

Teucrium cossonii—(photo, p. 203)

This little sprawler, meant for a life among the helianthemums, has gray-white leaves that are oblong to obovate, with regularly sinuate margins. Mine measure in at 0.8–1.3 cm long and 0.3–0.6 cm wide. This species is charming in its exuberant flowering, although of modest pinkish lavender hue. The mat may be a foot wide, although likely to be less. In hard winters all may perish, but in more moderate years many individuals survive. Perhaps propagation from cuttings would be profitable for hardiness' sake.

Teucrium pyrenaicum—(photo, p. 205)

Is this another humble plant, or have I merely taken it for granted? Somewhere between the impossibility of *Aquilegia jonesii* and the overexuberance of *Gypsophila repens*, this matmint is durable (ten years so far with benign neglect), dependable, and good-looking at all times. However, it never stops the show. Do visitors to the garden *ever* notice it? Probably not, except as a background part of the tapestry of the garden. Yet it has substance, covers its patch of garden well, and provides a foil for the flashier, sometimes less dependable members of the rock garden community. Not every plant can be a show-off!

The leaves are shaped like miniature fans, the blade a scarce centimeter long and about as wide, and with rounded teeth at the distal end. Of course, the leaves are hairy, in this species with straight white hairs, a few on the upper, moss-green side, many more on the lower surface, which as a result appears more gray. The fans are held ascending the stem, each pair opposite each other, very attractive, with the smaller, upper leaves at 90° from the pair beneath it. The reddish stems are hairy, too. The small flowers are creamy white with delicate purple striping, lovely and subtle. The leaves have an interesting smell like the sawdust of the workshop; I suppose it's piney—or is it turpentiney?

Should another gardener ever ask for a start of this plant, it is easy to take a piece from the edge of the mat, which roots down as it goes. It doesn't spread fast, perhaps a couple of inches a year across the gravel-mulched surface, and it is easy to restrain between rocks. I have yet to see a single seedling.

Teucrium compactum

This species is adorned with crinkly, densely white, sinuate, linear leaves, and homely little yellow flowers. The whiteness of the leaves results from straight, white hairs that extend beyond the leaves. The leaves are also sprinkled with sand-like grains or resin (could these be the epidermal glands secreting volatile oils that are described in *Vascular Plant Families*, by James P. Smith?), which are probably the source of the powerful and pungent aroma, with strong overtones of some bitter citrus smell. My Greek Orthodox husband assures me that churches in Greece emanate this scent—is it possible that someone finds it attractive, or is it part of doing penance?

This 5-cm-tall mat, from 7–15 cm across complements the mid-green mats of *Eriogonum umbellatum* or the dark green of *Veronica liwanensis*, or it can be used to advantage with more clump-forming plants such as sempervivums or the rosettes of penstemons, or even near a shrubby plant such as *Genista pilosa* or *Cotoneaster* 'Tom Thumb', where its aggressive tendencies have little chance to prevail.

This is a husky, wildly self-sowing plant, at least where it has dry conditions and gravel surfaces that promote germination. It hails from Spain. Some leaves are deciduous in the fall, and

they should be scooped off the gravel under the mat.

Stachys chrysantha (photo, p. 202)

This species is another woolly-leaved plant, with warm yellow overtones, collected on Mt. Olympus by Jim Archibald. *Stachys chrysantha* is only perhaps 9 cm tall and usually only about 15 cm in diameter. I grew it where it got very little water, and it lived to bloom a couple of years. Marcia Tatroe grows it with more success in her flagstone garden. I would be happy to have another opportunity to grow this, and next time I would be a bit more merciful in giving it water. I promise!

Scutellaria pontica

This is the only *Scutellaria* I have ever loved, and of course it has to be the least likely to persist. The flowers, borne in the axils of the leaves, as in all scutellarias, are refreshingly rosy purple, rather than the sad, ochroleucous, purple-veined mediocrity of so many other species. It will not sow itself around, sprawling and crawling over other more restrained (and more attractive) plants, the way cousin *S. salvifolia* does.

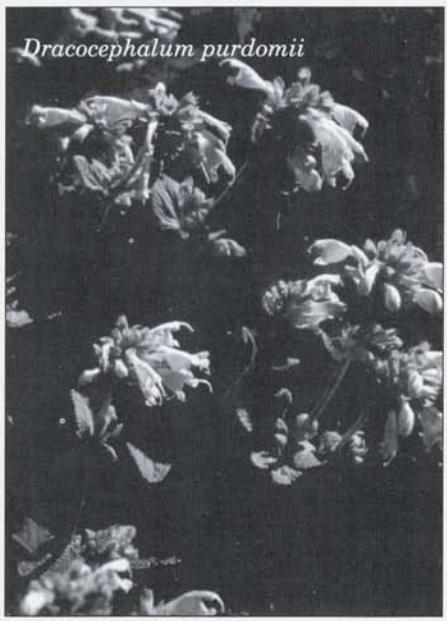
Ballota acetabulosa

A bit larger than previous species, this rises to as much as 25 cm. The flowers are hidden beneath a disc—or at least, I have never figured out where else they could be. Rounded leaves are felted with a dense layer of stellate hairs, especially on the upper surface. This plant is from the Aegean and southern and eastern Greece.

I grow it in a dry border with tulips and lavender, santolina and zauschneria, but it could well adorn a large, sunny rock garden. It is quite hardy here in Denver, a sunny, winter-dry zone 5. Its foliage is its obvious best card, although the opposite leaves and interesting branching provide a certain architectural something. The leaves have a very mild minty scent when crushed.

It is only with this writing that I have come to see how very much I depend on these mints in both the dry and the mesic rock garden. They provide so many opportunities to contrast their silvery foliage with other plants of greener hue. They are so easy to grow and to care for! While some are a bit over-anxious, they are easily controlled. Many are most tolerant of drought and strong sun. Their leaves are intriguing, always ready to provide a moment of microscopic delight. And they offer up to the garden atmosphere their clean, aromatic scents, which few other plants do, lending healthful and fresh airs to the rockery.

Gwen Kelaidis gardens with her family, including Panayoti, her husband, in Denver, Colorado. Special gardening interests include troughs, plants of the western US, and bun-forming plants. She apologizess for omitting thyme (of which she has little) and any mention of the Denver Mint from this article.


Dracocephalum purdomii

STAYING POWER:

SUMMER MINTS TO FRESHEN THE GARDEN

by Panayoti Kelaidis

Plants that persist, like old friends and good books, are life's great compensations. Year after year we keep sowing seeds—those exasperating primulas that bloom once and disappear, poppies that, like bubbles, truly pop and vanish, penstemons that stampede through your garden as if it were a rodeo and leave not a trace behind. Most of us keep a file of the dear departed, somewhere not too conspicuous so as not to cause undue remonstrance, or remind one too often of one's failures.

And then there are the mints, largely ignored in rock garden books or taken utterly for granted. As your garden matures, I can guarantee that you will find more and more of these represented, since practically everything in this family that deigns to grow for you at all is likely to persist and prove its mettle year after year. Most bloom during the endless summer season, when alpines are largely flowerless, dormant, or dull. Even when not in bloom, mints are trim and pleasant in foliage. And not a few are really stars, spectacular plants with wonderful flowers and showy leaves. Some are even challenging to grow, which ought to give them a lot of clout among status-conscious rock gardeners. But how can one generalize about a genus that contains such extremes as Corsican mint (*Mentha corsica*), forming a minuscule mat almost like film on the ground, and the flamboyant African lion's-ears (*Leonotis*), forming shrubs with long spires of burnt orange flowers on stems nearly as tall as a man? They are so various and distinctive.

Let's begin with lavender: Who doesn't know and love the heavenly smell, or admire the compact mounds of silver foliage with their long-lasting wands of blue (photo, p. 196)? Of course, only the largest rock gardens can accommodate the various wild species, but over the years a number of tiny forms have been selected. I obtained *Lavandula angustifolia* 'Baby Blue' and its sister 'Baby White' from the late Bob Putnam's wonderful nursery almost 20 years ago. Both have persisted for that entire interval, moreover seeding around liberally to produce a whole pre-school of nanate lavenders. They combine with *Juniperus squamata* and the ground-covering *Salvia pisidica* to make a virtually maintenance-free, silvery

summit to one mound in the Rock Alpine Garden, thus providing year-around appeal, that holy grail of gardeners. We have not had sustained success with *L. stoechas* var. *pedunculata*, surely the showiest plant in the genus, although Bob Nold has grown this for many years nearby in Lakewood. I console myself by noting that this fabulous rabbit-ear lavender, with its large petal lobes held straight up like the ears of a startled jackrabbit, has a much less pleasant aroma than its more common cousin. And then there are *L. lanata* and *L. latifolia*, both definitely hardy in this very exposed garden, with sumptuous silvery leaves and relatively compact habit. Obviously there is more to be done exploring this richly aromatic group in colder climates.

The hyssops remind me of lavenders in their general effect, although the leaves are generally darker, and the flower color more variable. The only species I have grown is *Hyssopus seravschanicus*, a central Asian cousin to *H. officinalis*, the herb garden's classic denizen. This central Asian plant tolerates heavy clay and a rather dry spot in the Rock Alpine Garden. It forms a compact, blue-gray mound of foliage that is attractive through the year, with deep blue flowers in summer season. It deserves a place in any warm summer garden.

In recent years the great stars of the late summer garden have been the anise hyssops (*Agastache* species), particularly the recently introduced southwestern American species treated in another article by Rich Dufresne, who is almost single-handedly responsible for their popularity. Rich produced the first widely disseminated hybrids among this group—'Tutti Frutti', 'Apricot Sunrise', 'Firebird', 'Pink Panther'—which seem to have an even greater vigor and flair than the straight species. Their spectacular impact in the rock garden among larger rocks and in meadow areas cannot be overstated: they can even be planted among compact alpines in a meadow garden or among large rock work, where they are small and inconspicuous during the spring and early summer months, when the tiny alpines are most attractive, but provide showy wands of color in the summer months, when the tiny mats are merely a restful green. It is astonishing that plants of such hardiness and adaptability across the United States and Canada, with such showy flowers, have only just come onto the gardening scene.

Rich can also be thanked for much of the interest in salvias, which are only beginning to achieve their promise in the herbaceous border and in annual plantings (with the exception of the nearly clichéd *Salvia farinacea* and *S. splendens*). Because of the work of Jim and Jenny Archibald, salvias have been an important element in our gardens here for more than a decade. *Salvia caespitosa* (photo, p. 197) had been known in British alpine houses and raised beds for much of the last half-century, and this is perhaps the most "alpine-like" member of the genus we've grown thus far. The typical form produces pale lavender helmets buried among the leaves. Several of the great Czech seed collectors have introduced plants with similar foliage, but much more brilliant blue flowers in denser clusters somewhat higher above the foliage. These selections look distinct enough that they may actually constitute a different species: but what is it? And when will the pale yellow form once offered by the Archibalds be reintroduced?

There are a half-dozen more western Asian salvias that I consider to be essential for a sunny climate rock garden. *Salvia pisidica* is particularly vigorous mat-

former with foliage rather like that of *S. caespitosa*—deeply rugose, pinnate leaves forming a plush mat a foot or two across. The flowers rise just above the leaves, showy clusters of lavender-blue flowers, each with a prominent white lip: very showy up close, and blending wonderfully with most other colors.

Out of bloom *Salvia cryptantha* and *S. multicaulis* look similar, with low mats of dusty gray, ovate leaves that can clamber to form a ground cover several feet in extent. The impact of the flowers could not be more different however: in *S. cryptantha* the huge, inflated calyx is a creamy yellow with a pallid lavender flower, the whole suggesting bells-of-Ireland. *Salvia multicaulis* (photo, p. 198) forms similar low stems with a dozen or more blossoms; here the calyx starts out a dull lavender but ages to a crimson color, with vivid blue flowers contrasting handsomely. Both thrive in well-drained scree.

The queen of rock garden salvias at Denver Botanic Gardens is unquestionably *Salvia daghestanica*. Introduced from the Caucasus by Henrik Zetterlund, this makes dense mounds of silvery white leaves (they look as though they've been dipped in powdered sugar) with stems 8" or so high. The purple-black flowers are produced on and off all summer. Some flowering stems produce prolific rosettes above the flowering rosettes, which can be used as cuttings. Side rosettes also strike root very quickly from cuttings (the preferred way of propagating this gem, since seed is produced quite sparingly compared to most salvias). I consider this Caucasian salvia to be one of the finest focal-point plants one can have in the summer rock garden. Be warned that by midwinter it turns a dismal blackish gray color, however, that has lead more than one rock gardener to discard the plant as dead. It is worth waiting for the late spring resurrection!

For larger rock work there are dozens more species that beckon, but alpine purists would begin to grumble. Two native salvias have become essential parts of Colorado rock gardens: *Salvia dorrii* (photo, p. 198) is widespread throughout the Great Basin and neighboring parts of the dry West. It is a powdery white shrub that can be attractive even in winter, since the foliage is persistent. Most forms grow to about a foot in height, although there are very tiny forms found in nature. The flowers can be blue to deep purple: the involucres are quite vividly colored, so that even when the plant is not in full bloom it is still very attractive. *Salvia pachyphylla* is a closely allied species from southern California that has been almost as hardy as *S. dorrii*. The Californian, however, produces leafy bracts stained the same color as the involucres, so that the plant appears to be in full bloom for months: the color runs the gamut from deep pinks and roses to violet blues, a simply spectacular plant, when properly grown, and worth every effort. Fortunately, many seed collectors have introduced both species from a variety of sites in recent years.

I often feel pangs of pity for commercial collectors of plants like these salvias, or *Agastache* species, since the volatile oils are so aromatic once the plants are bruised that they make a closed car or seed office almost unbearable. In the garden, however, the occasional whiffs of minty scent when you brush past the plants is simply wonderful.

Stachys is yet another variable and protean genus. It is almost as widespread in temperate regions as pantropical *Salvia*. The indispensable lamb's ears (*S. lanata*) of the herb garden has closely allied, more dwarf cousins like *S. cretica* or *S. thirkei* that perform a similar function in larger rock work. Tiny morsels like *S.*

candida (photo, p. 200) or *S. chrysantha* (photo, p. 202) can grace the smallest of rock gardens, like miniature dittany. There is a rabble of species that I have obtained repeatedly over the years under various names—*S. densiflora, S. monieri, S. minor*: All appear to be microforms of *Stachys officinalis*, forming trim mounds of oval, somewhat hairy, deep green, dentate leaves. The flowers are on stems from 6–12" tall and are usually a vivid rose-pink. All are long-lived, easy, and delightful. And then there is *S. lavandulifolia*, with trim mats of narrow leaves and pink-and-lavender flowers emerging from wildly hairy calyces that give the whole plant the look of a groundlevel cloud. Be warned that this spreads by rhizomes at a rate of 5–6" a year —DO NOT plant near tiny plants you don't wish to have engulfed.

A beginner attempting a variety of deadnettles needs to know that many are given to exuberant spreading. I have watched with horror while *Stachys sylvestris* engulfed an entire shrub border, and *S. californica*, magnificent in its pink bloom, has rampaged through the whole of a dryland rockery, mocking its tender origins and supposed need for water. Not everything called *californica* is tender or delicate. The unquestioned gems of American *Stachys* are *S. coccinea* (photo, p. 203) and *S. albotomentosa*, two rather robust plants from the southwestern upland mountains of the United States and Mexico, respectively. They form mounds of dark green, very hairy leaves that can be almost gray in *S. albotomentosa*. They produce a constant succession of rose-red or crimson, tubular flowers that are extremely showy for the entire summer season, starting in mid-May. Both are marginally hardy in Colorado, surviving two winters of three. Since they are at least a foot in height, they barely qualify for most rock gardens, although anyone who has seen a mound of these species in full, glorious bloom would surely covet them.

If anything, the germanders (*Teucrium* species) surpass even *Stachys* for variability. Gardeners rarely venture beyond *T. chamaedrys*, which either in its dwarf form or the typical foot-high rendition are excellent groundcovers, but terribly spready in any rock garden situation. They have many closely allied species, like *T. syspirense* (photo, p. 200) and *T. rotundifolium*, which are a trifle smaller and still seem restrained after five or ten years in the garden. A departure in this genus are several spidery-flowered species that have a wide geographical distribution. *Teucrium pseudochamaepitys* (photo, p. 204) grows in the western Mediterranean, forming lax mounds of silvery, cut foliage with a sprinkling of narrow, gaping flowers in pale lavender or white all summer. It is a strangely appealing plant that is marginally hardy in Colorado. *Teucrium orientale* (photo, p. 205) has similarly finely cut leaves, a darker blue-green in color, making a fine mound of verdure to 6–8" in diameter, with a constant production of bright blue flowers through the warmer months. It is a striking and indestructibly hardy steppe plant from Anatolia. It is strange indeed to find a prostrate cousin of these two growing throughout the Upper Chihuahuan zones of the southern Great Plains and New Mexico highlands forming wide mats that likewise bloom through the long monsoonal season: *T. laciniatum* is a native groundcover with striking pale lilac or white flowers. It thrives in dry gardens or hot screes. A tiny, bright yellow-flowered variant was found once on the Mesa de Maya in southeastern Colorado and may prove to be a distinct taxon.

One genus that has always been included in rock gardens is *Thymus*. Eventually everyone attempts a bit of alpine meadow with a thyme matrix (á la Clarence Elliot). All the lemon and woolly thymes, *T. arcticus, T. pulegioides, T. praecox, T. serpyllum*, and so on, and any number of selections find their way again and again into rock gardens, where they have the habit of spreading at an alarming pace and then one day suddenly disappearing—rather like certain violets. There are a few compact, distinctive, clump-forming thymes that are essential plants in the rock garden. *Thymus nicefii*, with its trim, imbricate leaves and daphne pink flowers in early spring must be the best of all. *Thymus hirsutus* (photo, p. 206) is nearly as showy and restrained. The Balkan *T. comosus*, with compact mats of herbage and comparatively large, luminous, lavender flower clusters in late summer, is also outstanding.

The spectacular Spanish miniatures, like *Thymus leucotrichus, T. broussonetii* and the similarly long-flowered *T. longiflorus*, have not persisted for me more than a year or two, but in alpine houses or for gardens in zone 7 and warmer these would be among the showiest in the genus. I also prize the endlessly variable mound-forming members of the genus, such as T. *camphoratus*, and *T. mastichina* with its woolly, mop-headed flowers, *T.* 'Porlock', and many more that have persisted for years in the Rock Alpine Garden. Indeed, some of these have scattered far and wide, forming large patches of intensely fragrant herbage so evocative of the Mediterranean that merely brushing them with your hands instantly transports you—very inexpensively—to that vacation paradise. I was horrified when Rexford Talbert—America's horticultural master of these and many other herbs—recently visited Denver Botanic Gardens and showed me the extent to which my colonies of shrubby thymes have hybridized and integrated themselves into a sort of generic swarm, an eloquent testimony to why we must constantly rogue collections and re-grow plants from known wild provenance.

Closely allied to thymes, *Ziziphora* has proven to be an outstanding acquisition for sunny rock work. Superficially, the perennial ziziphoras look more like *Monardella* than thyme, with their mounds of lustrous green leaves and ball-shaped purple or lavender inflorescences produced from early summer until frost. *Ziziphora clinopodioides* and *Z. pamiroalaica* have both proved permanent, deserving star billing. They barely exceed 3" in height, spreading to a foot or more in time. *Ziziphora capitata* and *Z. tenuior* have been annuals here, forming quite dense colonies some years, usually with single stems and bract-like leaves and a single, ball-shaped inflorescence quite unlike any other mint. This genus is restricted to the fastness of Eurasia, reason enough to grow them, and who can resist their zippy Latin name?

Schizonepeta kokanica shares a central Asian distribution with *Ziziphora*, but there the resemblance ends. This outlandish mint forms compact mounds of foliage with rather deeply cleft leaves, usually tinged a deep rose-purple color, promising great things. By midsummer each clump produces one, or at most a few, narrow spikes of minuscule, nay, microscopic flowers guaranteed to disappoint all but the most ardent Lamiaceae buff. Just when you are tempted to remove the plant, you stay your hand—The Literature decrees *Schizonepeta* is annual or biennial after all—perhaps it shall die of its own accord? Once again, The Literature is wrong. This species, at least, is unquestionably perennial in

steep, cool but sunny scree in Colorado. The miserly plant somehow grows on you. After all, the foliage really is lovely, and when you pinch a leaf, the smell is really wonderful. Who says every plant in the garden must be a glamour queen?

Reminiscent of thymes in their fine textures and small flowers, the various permutations of *Satureja, Micromeria,* and *Calamintha* have all found niches in the Rock Alpine Garden. All of these genera offer plants that form low mounds of mats with tiny clouds of white or lavender blossoms produced over a long season. They seem to grow on any soil, from near peat to loam to sticky clays, and only want not to be in too wet or too dim a position. *Satureja montana* makes a wonderful, steely blue-gray carpet of fine herbage spangled all summer with silvery blue or white flowers that are irresistible to bees. The foliage is attractive most of the rest of the year. The variety *illyrica* has flowers twice the size of the type and vividly lavender in hue, a definite improvement over the type variety.

Most saturejas are rather compact in habit, but the closely allied species of *Calamintha* and *Micromeria* can be much larger. *Calamintha nepeta,* which forms a veritable cloud of tiny, pale flowers all summer, can grow over a foot in height, but the very similar-appearing *M. georgiana* and *M. dalmatica* are usually well under a foot. All of these thrive in loam or even mineral soils.

Calamintha grandiflora forms substantial mounds of soft gray-green color over a foot high and even wider. There is an attractive variegated leaf form that admittedly has a tendency to revert to solid green. The flower is not only larger than its airy cousins (over an inch wide) and a bright pink, it also blooms on and off for much of the summer. This is one of those rare mints that seems to do better in at least a half-day's shade with rather richer, moister soil than you would think at first. Once you master this, perhaps you can try *C. californica,* a sumptuous, hummingbird-pollinated monster that can grow a yard tall, with immense, orange-red flowers. It is not reputed to be hardy much north of Zone 7 (0° F minimum winter temperature); this has been borne out in zone 5 Denver, where it regularly perishes.

I am not a fancier of the variable forms of *Ajuga reptans.* Perhaps I spent too many hours as a young rock gardener trying to eradicate this plant from my first rock work. There may be climates where these look good at some point in the year, but in Colorado I find most creeping bugleweed looks sunburnt or wind-pinched for months. It is just like a genus of labiates to give us spadefulls of indestructible selections of the homely species, while *A. pyramidalis* and *A. orientalis,* both wonderfully hairy with striking habit and inflorescences didn't deign to stay in the garden more than a year or so, alas.

There are a rabble of yellow-flowered ajugas, most of them borderline weeds despite their wonderful laciniate foliage and trim form. But, for me, the queen of the genus must be *Ajuga chamaepitys* ssp. *glareosa* (photo, p. 193). It has wide, creamy yellow flowers held low over the foliage. Although subspecies *glareosa,* has certainly produced quite a few seedlings on one sunny scree, I have found it impossible to establish elsewhere.

Once the heartland of Asia is better explored, I suspect that the genus *Dracocephalum* will take its place near the head of list of indispensable alpines. Of the dozen or so species I have grown, each had some delightful quality to recom-

mend it, and the range of variation was quite astonishing, from compact, clump-forming plants to dense cushions, to tall, willowy, herbaceous beauties. The one feature that unites these is the luminous quality of the flowers, some intensely cobalt-blue, others a rich blue-purple, and yet others a fine lavender tint. I have repeatedly received identical plants under different species names, and completely different plants under the same name. Most are 8–12" in height, with substantial, bold blue flowers. I find they persist longest in north-facing scree, although they bloom fantastically in rich scree or loam, but tend to be rather short-lived under these fat conditions. I recommend virtually any plant with this generic designation: *D. bullatum, D. forrestii, D. grandiflorum,* and *D. purdomii* have all formed rosettes with scallop-margined leaves, nearly leafless stems, and comparatively huge, blue flowers. *Dracocephalum argunense, D. austriacum, D. isabelliae, D. rupestre,* and *D. ruyschiana* have all had very little basal foliage, and rather linear-leaved sheaves of stems with terminal spikes of equally brilliant blue. These produce an altogether different effect from the other groups. *Dracocephalum integrifolium* and *D. multicaule* formed dense, compact mounds from multistemmed crowns, and terminal inflorescences of white flowers, only 4" tall in the former, up to a foot in the latter. *Dracocephalum mairei* and *D. renati* are synonyms for one species from North Africa, with powdery gray leaves and a positively overpowering, sweet aroma when bruised. It has white flowers produced on indeterminate stems to 8" through the summer. *Dracocephalum moldavica* is a dazzling annual with blue-purple flowers (or white in rare individuals), while *D. nutans* is a scree-dwelling biennial from high in the Himalayas that can grow a meter high on rich scree, or only a third that on hungry, dry sites. It has very showy sheaves of bloom. The giant of the genus has been *D. thymiflorum,* a yard high, and with dazzling blue mounds of bloom for a long season, a superlative plant for a dry perennial bed.

Scutellaria is even more cosmopolitan and variable than its near cousin *Dracocephalum.* Stepping gingerly past the tropical shrub species, with waxy crimson flowers, there are numerous miniature blue scutellarias in the American West, mostly highly invasive at the root. The exception is *S. resinosa,* from the southern Great Plains, which makes a mound a half a foot high or slightly more on dry scree, with rich lavender flowers from June to frost. The Asiatic skullcaps have barely begun to appear in our gardens—the silvery miniature *S. grandiflora* (photo, p. 201), with lovely, rose-colored flowers, only showed up on seedlists in the last few years. Some find the predominantly yellow-flowered Eurasians to be repellent, but I like to collect every variation—and I am not apparently alone: there is even a *Scutellaria* web page and discussion group on the internet!

Nepeta is treated elsewhere in the *Quarterly,* but I can't resist mentioning *N. laciniata* var. *amethystina,* a splendid Himalayan that blooms the first year from seed, reaching 9" in height, with deeply cut leaves and spires of bright blue flowers for a long period of time. Wild seed of *N. mussinii* collected in Turkey has produced a compact plant more restrained than the rambling and sometimes invasive *N.* x *faasenii,* which I nevertheless find indispensable for covering ground on the back 40 acres.

Prunella leaves me cold. Perhaps I have had to weed out too many of the aggressive forms of *P. vulgaris* volunteers from between choice plants they are quickly choking out. I make an exception for *P. laciniata,* which has thus far been much more restrained in its seeding habits and has wonderfully cut foliage and a tolerance of practically any soil or exposure, short of bog or desert.

A genus that has been strangely absent from rock gardens and their literature is *Sideritis*. This is one of the most popular herbal remedies and teas in the Balkans and the eastern Mediterranean. Typically *Sideritis* species form woolly mats suggestive of *Stachys byzantina* on a diet. However, the flower stems are more wiry and delicate, producing whorls of moonlight-yellow blossoms over a long season. Of course, the habit and foliage in this genus is tremendously variable—there are even green-leaved species in western and central Europe and some biennials. Most of the genus, however, is long-lived and adaptable in any sunny spot you could attempt. I would suggest beginning with *Sideritis taurica, S. syriaca,* or *S. scardica* for especially woolly leaves and attractive wands of subtle bloom. For the sake of completeness I should mention that there is at least one rather local and unintroduced, unavailable species with purple flowers. Had I not mentioned it, this would, no doubt, be the first one you'd encounter.

I have treated *Origanum* at length in Volume 52(1) pp. 3–8, 1994. I don't have a lot to add to my comments except to say that more and more hybrid and select forms have appeared just in the last few years, some of which definitely deserve star billing. I have now received *O. sipyleum* from wild Turkish seed. This forms particularly delicate mounds of bluish foliage and clouds of tiny, bracted flowers like *O. libanoticum* shot through a prism. Like all oreganos, this does best in cool, but sunny rock work in mineral soil. *Origanum dictamnus,* the queen of the genus and one of the most sumptuous of foliage plants, has finally made it through a Colorado winter. Three one-pint pots were planted out early in 1998, and the plants bloomed spectacularly their first summer. Frost came early and hard in the autumn of that year, and I was startled to see the *Oreganum* emerging unscathed through very cold snaps dropping as low as -17°F.

The American cousin of *Origanum, Cunila origanoides,* is a true rock gardener's plant. It is never overpowering in the garden—in fact, most garden visitors barely see it. The clouds of tiny purple blossoms are alluring, and the habit is trim and appealing. Blooming as it does in the last month of summer, it has special value for those of us who seek to make rock gardening the year around pursuit we all say it is in our talks and articles.

Marrubium and *Ballota* are, of course, primarily foliage plants. I have grown some six or seven plants under the name of *M. incanum,* all differing quite a bit one from the other. I would not be without the plant I received as *M. cylleneum,* a very compact mat-former with wonderfully glowing, golden haired-leaves (photo, p. 194). Most *Marrubium* species are frankly a little large for most rock work.

In the United States the most commonly encountered form of *Ballota* is *B. acetabulosa,* which forms columns of woolly, coin-shaped leaves and can reach nearly 2' in height, obviously only for the large rock garden. The strange flowers

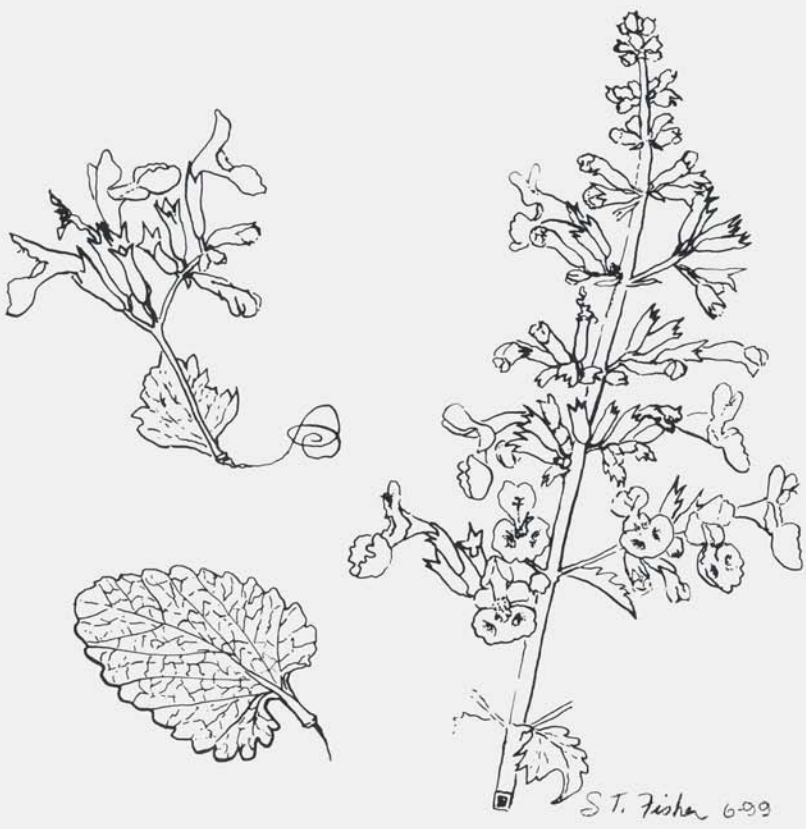
with swollen, woolen calyces, have been used in the Mediterranean Basin for millennia as lamp wicks. *Ballota pseudodictamnus* is smaller and even whiter in my experience, especially in the form 'Nana' which is much better suited to rock gardens. Unfortunately, it is not reliably hardy in Zone 5 unless perfectly situated. *Ballota africana* is widespread in the karoo of South Africa, a bluer-leaved plant with rather showier flowers, but likewise marginally hardy in much of North America.

Monarda is stunning in a border or wild garden. The Midwestern species can be quite invasive in some soils, and mildew is a perennial problem in some gardens. The Ottawa Experiment Station has released a dwarf cultivar of *M. didyma* called 'Pink Delight', which suddenly makes the genus more promising to rock gardeners. There is a naturally dwarf species in northern Mexico, introduced by the great plantsmen at Yucca Do, called *M. pringlei,* which I have not yet succeeded in growing. The genus is so showy and accommodating, I can't resist including a few in the wilder meadows and corners at the ends of the rock garden. *Monarda pectinata, M. punctata,* and *M. citriodora* are either biennial, annual, or short-lived but are particularly intriguing and floriferous in xeriscape settings.

Monardella has barely begun to be tapped for the rock garden. Largely thanks to the efforts of Ron Ratko (Northwest Native Seed), Allan Bradshaw (Alplains) and Sally Walker (Southwest Native Seed), the fabulous riches of this genus are starting to show up in a few of our gardens. The most widespread and variable taxon in this genus is undoubtedly *M. odoratissima,* whose flowers are often rather dusty and unattractive. Large-flowered and bright flower color forms are starting to make the rounds, and anyone who visited Eugene for the NARGS Annual Meeting in 1998 probably noticed a particularly stunning *Monardella* in the Sebring Rock Garden in the park. There are apricot and deep red forms of *M. macrantha* and a never-ending range of miniature and giant forms of the genus throughout California. Some suspect there may be a village somewhere in the Coast Range where new species are constantly bred and planted out, such that only God and John Sorenson can be truly sure what may be found in the genus.

This compendium is by no means exhaustive: there are whole genera like *Plectranthus, Meehania,* and *Pycnanthemum* that contain hardy plants I have not yet successfully grown. There is an almost endless scope for hybridization and selection in the family, and an even vaster prospect for combining the various mints with other plants for horticultural delight. One can only be certain that the mint family will continue to spread ermine, golden, or blue mats and mounds of foliage through our gardens, and help the rock garden immeasurably in the quest to be a truly year-around garden art.

Panayoti Kelaidis is an enthusiastic collector of new taxa of winter hardy plants suitable to the rock garden and to the climate of Denver, Colorado, where he is in charge of the naturalistic gardens at Denver Botanic Gardens.



Nepeta 'Six Hills Giant'

NEPETAS

by Dan Hinkley

Few groups of plants actualize the qualities of delicate color and brawny demeanor in the summer garden better than those collectively called the catmints, a common name that embraces several genera, including *Nepeta* and *Calamintha*. Yet, lest one equate well-balanced, cool compositions in the border or rock garden with a state of tranquilized numbness, consider an electrified, high summer swarm of bees buzzing over a blue haze of *N. subsessilis*. With a knack for attracting pollinating insects, including butterflies, the catmints and their relatives lend to the summer garden a sibilant murmur of motion and a long succession of blossom far and away from that condition thought of as heavy-eyed. In addition, it is often these plants that pick up the pace when the garden assumes its midsummer stutter, offering a strong presence until the first sharp frosts of autumn.

The catmints, as a rule, thrive on neglect and will reward the gardener more when treated to simple disregard than mollycoddling. Full sun in sandy, porous soil is the optimum; however rich soils are tolerated if well drained. An admirable trait of most, but not all, species is their long-lived, clumping nature, seldom demanding division or rejuvenation. With the exception of the *Calamintha* species, the problem of self-sowing is not a consideration. Hardiness of the commonly cultivated selections extends into the upper reaches of Zone 3, denying few North American gardeners the opportunity to give them a shake. Propagation by division is recommended over softwood cuttings; though the cuttings easily root, these often will not produce crown buds, even though they have produced luxurious plants by the end of the growing season.

And what about cats? In those gardens that host feline company, the sensations delivered by these plants to the common cat can result in crazed exuberance. Though our own cat is anomalous in this regard and shows only scant interest, I have witnessed the aftermath of cat joy in other gardens. To prevent destruction by such ecstasy, aversion therapy, tried and true, is the answer. Consider hiding small armed stems of hawthorn, rose, or barberry amongst the plants, a surprise after which cats will 'paws' before attempting a repeat herbal make-over.

(A brawny and determined feline such as 'Jake', however—notorious watch-cat companion to Lawrence Thomas of the Manhattan Chapter—may require more determined persuasion; perhaps lithium-tipped daggers?)

The mainstay for two centuries in the formal rose garden, wide sweeps and low hedges of *Nepeta mussinii* (photo, p. 195), native from northern Iran to the Caucasus, has long provided a non-demanding, drought-tolerant groundcover to European gardeners while enhancing the garden with a few weeks of lavender blossom. *Nepeta* x *faassenii*, a hybrid between this species and *N. nepetella*, hailing from southwestern Europe to southern Italy, was first noted in literature as early as 1784 and quickly usurped its parent in common usage. Though *N. mussinii* is occasionally listed in catalogues today, it is considered likely to be this hybrid, which is far and away a better garden plant. Blossoming for months on end, small lavender flowers are densely packed in axillary clusters interspersed with soft, gray, felted leaves on 15" stems. I have used this taxon, in its different forms, in several locations of my garden and have never tired of its silk-and-steel quality.

In a bed once devoted to roses, I used a cliché of nepetas and dianthus to provide groundcover and edging to the scheme, selecting a form of *Nepeta* x *faassenii* known as 'Dropmore'. A run of thirteen plants on 18" centers formed an impenetrable overlay of rich lavender-blue flowers in June. Though I find the deeper flower color of this cultivar admirable, it does not eclipse the unselected hybrid most often available through nurseries. Meriting attention are a handful of additional selections from *N.* x *faassenii*, which offer a spectrum of color from the typical lavender to pure white. *Nepeta* 'Porcelain', from the Netherlands, provides a long display of precious, light blue flowers, while those of *Nepeta* 'Blue Ice' fade from pinkish lavender to near white with a delicate glacier-blue veining. *Nepeta* 'Snowflake', often marketed under the improper name of *N.* 'White Wonder', has pure white flowers with gray-green leaves and is a superb choice for providing a neutral flower component to the front border, though personally I have managed to annihilate this selection on numerous occasions.

Similar in appearance to *Nepeta* x *faassenii*, but much taller, is *Nepeta* 'Six Hills Giant'. Considered to be a selection or hybrid of *N. gigantea*, it is a useful plant for the middle of the border and is considered hardier and more tolerant of damp conditions than *N.* x *faassenii*. I originally interplanted 'Six Hills' with *Allium cernuum*, whose pink to pinkish white, nodding flower heads arose 18" through the wolf-gray foliage and married nicely with the lavender froth of catmint flowers. This consonance, however, struck discord on its third season when 'Six Hills Giant' ultimately lived up to its name, all but burying the alliums. Instead, I now use this plant with *Euphorbia wallichii*, whose sturdy, 2' stems gather the catmint's blossoms around its iridescent, chartreuse flowers produced in late June. A midsummer clean-up encourages a reblossoming of the catmint, which then conceals the now-derelict stems of this superb euphorbia.

Nepeta sibirica, which is, not surprisingly, from northeastern Russia, departs from the sprawling nature of many species within this genus, producing upright, 2' stems and much larger, more substantive, light blue flowers. The tubular blossoms, with an extended lip blotched with white, are produced in quantity throughout the summer. It is in this species' hybrid offspring, *N.* 'Souvenir d'Andre

Chaudron', a.k.a. 'Blue Beauty', that this species is most cultivated. It is more diminutive than the species, to 18", and a useful front- to mid-border perennial. I have tried it in combination with *Geranium wallichianum* 'Buxton's Blue', the scrambling stems of which, bearing multitudes of white-eyed, lavender-blue flowers, take an occasional break from their horizontal habit by venturing vertically into the *Nepeta*.

Like *Nepeta sibirica*, *N. stewartiana* is a taller species and is found, according to the literature, from Pakistan eastwards through the Himalaya to western China, where I have observed it growing along road cuts in northwestern Yunnan Province. The distinctive white throats of the flowers set it apart from the other taller species, though it probably does not offer sufficient distinction to merit an expenditure of energy to seek it out.

Nepeta grandiflora is native to Asia Minor and geographically centered in the Caucasus. Plants growing in cultivation under this name are more than likely hybrids, as the species is very tall, with stems rising to 5'. Plants resulting from seed I have received under this name have proven to be quite garden worthy, though they seldom rise more than 3' in height. The flowers are a good, light, 'salvia'-blue with just enough pink in the buds to have the plant work well with the fingery, carmine spikes of an adjacent *Polygonum amplexicaulis*. I am overwhelmed by the lengthy period these two species continue unsullied, blossoming profusely from June to early October.

Nepeta grandiflora 'Bramdean' is a selection made by John Coke of Green Farm Plants from an estate by the same name in Hampshire, England. It is a free-flowering form, with blue-lavender flowers and darker calyces. The original plant I observed at Bramdean possessed startlingly dark stems, though the propagules that I brought back from England have frustratingly refused to exhibit this trait. *Nepeta grandiflora* 'Dawn to Dusk' was selected by Dutch plantsman Coen Jansen and produces mauve-pink flowers with dark calyces.

Similar in effect to *Nepeta grandiflora*, *N. ucranica* has proven to be a superb garden plant for me, or at least the single clone that I grew under this name was. Additionally, it represents to this nurseryman one of many nomenclatural particulars that I would just as soon forget. Either the seed was received, or was transcribed to our seed pot, as *N. veronica*, a name under which it was reluctantly but extensively distributed for several years. Fortunately, I have not seen it appear in other catalogues under this name, so hopefully I have not tainted the nomenclature of this fine genus as much as I originally feared.

I have grown *Nepeta yunnanensis* for several years under rather nasty conditions in my garden, in dry, rocky soils monopolized by the roots of a nearby Douglas fir. Here it seems to have taken the hardships in stride while offering an immensely long succession of relatively large flowers on the blue side of purple, along suckering stems to 2' in height. I have used this species in more amenable positions where I have found its colonizing habits to be simply too aggravating to recommend it for general garden use, though it is certainly admirable in droughty soils.

Raised from seed I received through the NARGS Seed Exchange, *Nepeta subsessilis* has proven to be an outstanding species that certainly deserves broader recognition than it currently receives. From higher elevations in Japan, the plants possess

broad, ovate, glabrous leaves to 3" in length along tightly clumping stems rising to 2'. In early summer, large, tubular blossoms of blue as much as 1.5" long are produced in quantity. It has responded best in my garden to rich soils in full sun and supplemental summer irrigation.

Nepeta nervosa, from Kashmir, is a low, spreading species with glabrous, heavily veined, dark green leavess and relatively large, handsome flowers of richly saturated blue-purple. Though desirable, I have yet to successfully overwinter this species in the Pacific Northwest; this is due to either poor winter drainage, its lack of overall hardiness, or a combination of both. Impostors frequently appear in seed exchanges under this name.

Large, blue flowers are also found on *Nepeta prattii*, with equally handsome, dark green, heavily veined foliage on stems to 2'. It is a recent introduction from Qinghai in China and has had little distribution or evaluation in this country.

In the moist and cool conditions near Puget Sound, where I garden, there is lofty admiration of those plants that seem 'droughty', yet thrive in the absence of measurable warmth. *Nepeta govaniana* is anomalous to the catmints in regard to both its growing requirements as well as its floral hue. Exempt from the typical lavender-blue signature of catmints in general, this species produces large, tubular flowers of clear yellow held on upright stems to 24". This species adds a warm touch to a planting of *Salvia guaranitica*, whose erect, 5' stems and flowers of frigid indigo rise above. I have found it to be a long lived and sturdy perennial with a delicate appearance. In 1997, our head propagator at Heronswood, Mr. Eric Hammond, collected a similar species from Yunnan Province under the collection designation of EDHC97. It possessed large-lipped, yellow, tubular flowers to 1" long, along stems to 3'. We have, as of yet, been unable to assign it a species name.

Six years ago, I raised seeds of *Nepeta tuberosa* and delighted in discovering this plant as quite remarkable in foliage as well as flower. Densely packed spikes of velvety, purple-blue flowers rise 2' from woolly, silver-gray leaves. As its name implies, it does form tubers which, unfortunately, will rot during dormancy in moisture-retentive soils, yet it is perfect for sharp drainage and a hot location. Deserving attention is the dwarf form of this species, which forms a prostrate carpet of superb, gray foliage in early spring, followed by multitudes of 6", periscopic spikes packed with enough flower buds for eight weeks of purpuresent color. Both are native to southern Europe, in Portugal, Spain, and Sicily.

Closely allied to the genus *Nepeta*, and sharing similar growing conditions, are the species of *Calamintha*, two of which are well put to use in American horticulture. *Calamintha nepetoides* produces a sprightly mass of light lavender flowers and small, aromatic leaves along lax stems to 15". It serves as a tonic to the late summer garden, knitting through and over early perennials that have long gone over, filling the voids with refreshing flowers from mid-July until the first frost. Though each plant is seemingly long lived, the species will sow about the garden. Even in midwinter, the air is filled with minty aroma from the pulling of excess seedlings, making the duty more pleasure than chore.

My experience with *Calamintha grandiflora* is based on its variegated form only, which inhabits a corner of the garden among the sable strands of

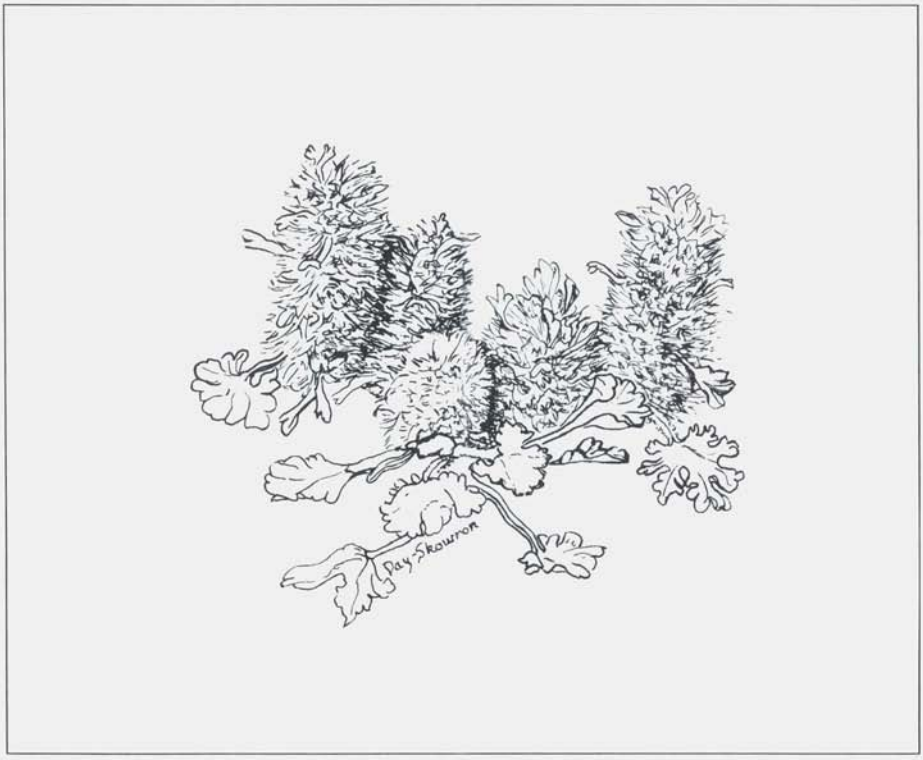
Ophiopogon planiscapus 'Nigrescens'. This rivulet of white-splashed foliage, coursing through its black-foliaged foil, shines brilliantly by contrast, though it can hold its own in a solo performance of foliage and flower. The compact mounds of broadly ovate leaves, lime-green in the non-variegated seedlings that occasionally appear, sport axillary flowers of salmon-pink in midsummer. It self sows in a restrained manner, with a good percentage of the seedlings emerging variegated.

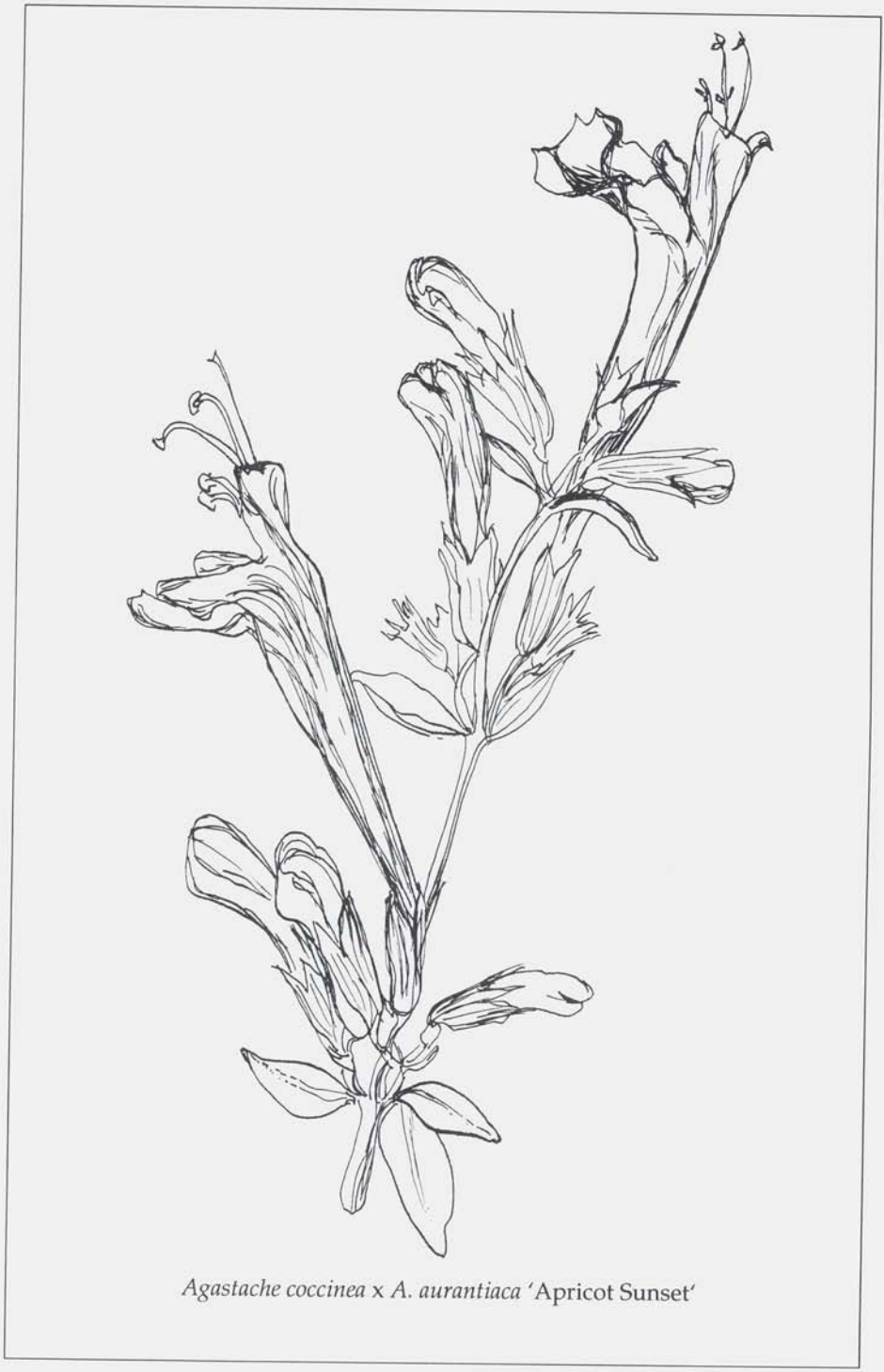
In blossom and foliage, from early summer through late autumn, these long-cultivated herbs serve up high quality, fragrant compositions that stir the heart and steady the emotions. And it is through the catmints that I can realize the calming qualities of the summer garden while appreciating the durability and diversity offered collectively by these genera.

Dan Hinkley is co-owner of Heronswood Nursery and an enthusiastic explorer and introducer of plants new to horticulture.

Drawing, p. 179, Susan Fisher. Drawing below, Rebecca Day-Skowron.

Lagopus marrubiastrum





Agastache coccinea x *A. aurantiaca* 'Apricot Sunset'

AGASTACHES
FOR THE ROCK GARDEN

by Richard Dufresne

Agastache is a North American genus of the mint family closely related to the Old World mints *Nepeta* and *Cedronella*. *Agastache* is broken down into two major sections. The more boreal section *Agastache* consists of the familiar *A. foeniculum* found in the northeastern USA and about seven other species, including the one East Asian disjunct species *A. rugosa*, found in Korea. All of these species in cultivation reach 3–5' and are too tall for use in the rock garden. The other species belong to section *Brittonastrum*, found in the American Southwest and most of Mexico. Most of these are also too tall when grown in good garden soil, but some may be suitable in lean screes.

Section *Brittonastrum* contains species that have recently gained interest in England, California, Colorado, and the northeastern United States. They have yellow to magenta, long-tubular flowers with a long season of bloom The effect from a distance in the garden is of a hemispheric, open shrublet enfolding a smoky blaze of cheerful fire. As one closes in, the image resolves into a sea of pastel fingers waving for attention. A good variety of insect wings promptly respond. All are good hummingbird plants, drawing these feathered miniatures to our gardens.

My lust for these plants was sharpened by images and descriptions from various references like Rickett's *Wild Flowers of the United States* and visits to Harvard's Gray Herbarium. These led me to Roger Sanders, who was finishing his Ph.D. research on these plants at the University of Texas at Austin in the early 1980s. He consented to give me some 5-year-old seed from his collections, and I had excellent luck germinating most of them. This material was embellished by some species obtained originally from Dr. Bob Bye of the Mexican National Herbarium at UNAM in Mexico City.

My experience with agastaches has been at my two residences in Greensboro, North Carolina. Although I have been able to grow the species long enough to produce some hybrids, these plants do much better in cooler and more Mediterranean climates. The subtropical summers of the southeastern US prevent them from becoming reliable plants here. Not so in Colorado, the center of the current stir. Judging by the images supplied to me by Panayoti Kelaidis, I

can see the reason for the excitement. I will confine this discussion to familiar forms that can possibly be grown as smaller plants.

Agastache coccinea

The best candidate for the rock garden is *Agastache coccinea.* This species is native to the Sierra Madre Occidentale in southern Chihuahua to southern Durango at 2000–2800 m, where it grows on heavy red clay or rocky igneous outcrops in mesic woodlands comprised of *Pinus*, *Quercus*, and *Juniperus* species. My plants never got taller than 45 cm, similar to the 40–70 cm height in the wild. It has the most truly orange flowers of the genus, about 2.5 cm long and darkening somewhat on aging. Adding to its beauty are the rich green, smooth, deltoid leaves, strongly colored with burgundy on the underside. Of all things, the plants from the original seedlings were stoloniferous. This feature did not make the species invasive, however. But, unlike many of its cousins, it was relatively easy to root from cuttings. While it could handle full sun, it also did well in broken light in good garden soil.

I deduced that it would do well under these conditions because it comes from cooler climates at higher elevations than many other species. *Agastache coccinea* certainly has bestowed some of these horticulturally useful characteristics to three hybrids: 'Firebird', its cross with *A. rupestris*; 'Apricot Sunrise', its cross with *A. aurantiaca*; and 'Pink Panther', its cross with *A. mexicana* 'Toronjil Morado'. The first and second of these are possible rock garden candidates—in lean soil!

Agastache aurantiaca x *A. coccinea* 'Apricot Sunrise'

This chance hybrid appeared in a friend's greenhouse. Grayer in appearance than *Agastache coccinea*, it also has flowers intermediate in color between the two species, a nice yellow-orange. Like *A. aurantiaca*, 'Apricot Sunrise' blooms well all summer. Typical of many hybrids, the flowers turn redder and darker as they age. This plant starts out with the growth habit of *A. coccinea* and winds up flowering out like *A. aurantiaca*. In ordinary garden soils, this plant gets 60–90 cm tall.

Agastache rupestris x *A. coccinea* 'Firebird'

This form appeared in my rock garden one spring and has proven to be the most rugged of the agastaches. Its flowers also show the most color change while aging, going from a rich, medium salmon color to a nice burnt-orange magenta. Also obvious is the difference of leaf form from the serrate-crenate, deltoid basal leaves to the linear leaves of the upper inflorescence. The foliage and stem color is intermediate between the rich green of *Agastache coccinea* and the smoky gray of *A. rupestris*. In good garden soils, it is similar in size to 'Apricot Sunrise'.

Agastache aurantiaca

This plant maintains a grayer color with a more open habit than *Agastache coccinea*. Its flowers are a clear yellow-orange. It has the same geographic range as *A. coccinea* but is found at 2000–2500 m on gray or pink-gray, igneous outcrops in rocky fields, canyon summits, and plateaus in open oak-pine woodlands. In the wild, it grows to 50–90 cm tall.

Agastache rupestris

If you want the species that could be described as anise hyssop, this would be a good candidate because of the distinctive, linear-lanceolate leaves with entire margins on the stems of the inflorescence. However, the most distinctive feature is the smoky gray-green cast to the foliage and the stems, making a nice contrast to the pastel salmon flowers. This species has the flowers that change color most dramatically as they age. It is also the hardest to propagate vegetatively. Fortunately, both wild-collected and cultured seed is becoming more accessible.

Wild plants range from 50–100 cm tall and grow on vegetation-covered, pale pink-gray, igneous boulders or sandy soil on protected north slopes in upper oak and lower pine zones in southern Arizona and southwestern New Mexico at 1500–2000 m.

I gave a plant of this to a friend in Amherst, Massachusetts, in the mid 1980s. Every year for five years, I was able to find it while visiting this friend, even after harsh winters. The beds were heavy with annual weeds and grasses. Even though it did not grow robustly under such conditions, it persisted. This is the experience that encouraged me to create hybrids and promote the genus.

Agastache cana (photo, p. 193)

Closely related to the previous species and once considered conspecific, *A. cana* has greener foliage, and the flowers are a uniform magenta. The leaves have the usual deltoid shape with crenate-serrate margins that remain through the seasonal growth of the plant. Plants that had long been in the nursery trade had reduced flowers and were weak growers, signs of gene pool reduction. Those being grown currently, from fresh genetic sources, are much more robust. The plants grow 20–70 cm tall where they are native in southcentral New Mexico and extreme western Texas. They are found in crevices and at the base of granitic formations in upper desert scrub or lower oak-pinyon zones at 1400–1800 m.

Agastache breviflora

This truly is a small species, and it has smaller, 1.5-cm-long, pink flowers on dense, 8–13-cm spikes. The plants reach only 45 cm in height in my garden. This agastache is a native of the isolated mountains where Arizona, New Mexico, and Sonora meet. It prefers stream courses and seeps with igneous rock outcrops in forests at 1800–2600 m.

It is a prolific seed producer, and I can often obtain all the plants I need from volunteer seedlings in neighboring pots. *Agastache breviflora* could become a thug in rich soils, but it is likely to be much more circumspect in alpine soils.

The form I am familiar with has a very pleasant, sweet, licorice or anise odor. There are other forms that have a minty scent.

Other species

There is one promising species of very limited distribution that should be collected and tested as a horticultural subject. *Agastache eplingiana*, a 20–30 cm species with 2-cm, rose or purplish flowers, is from the north slope of Cerro Huehuento in the Municipio of San Dimos, Durango, Mexico. It likes rich humus soils in steep pine forests. Its size and soil preferences suggest that it would do better in the more subtropical parts of the United States.

The following agastaches are too tall for rock garden plants but are excellent

subjects for perennial gardens: *A. mexicana*, *A. pallida* var. *pallida* (*A. barberi*), and their hybrids with other species of section *Brittonastrum*.

Sources

Currently, the best source of the species is seed from Southwest Native Seeds, although commercial production is probably coming soon. The hybrids can be obtained from various nurseries in California, Colorado, and Connecticut, such as Logee's Greenhouses. Commercial wholesale growers such as North Creek in Pennsylvania are now starting to produce these plants in earnest.

Culture

Not having ideal weather conditions for these plants, I have had my best luck growing them in rock gardens that were mostly raised sand beds with underlying sandy loam. The agastaches thrived for a few years this way, eventually succumbing to summer humidity. Judging from the soils in which they are found in the wild, they should do well in rock garden conditions.

I distributed my first plants to Logee's Greenhouses and to Betsy Clebsch. Several years later, I went to Betsy's home on Skyline Drive south of San Francisco, and the display of *Agastache* hybrids blew me away. They had continued to hybridize and producedhuge bushes of pastel yellow-oranges to pinks to magentas, many big enough to hide a professional football linebacker. These large plants were the result of incorporation of genetic material from the much larger *A. mexicana* and *A. pallida* var. *pallida* (*A. barberi*).

I advise working some slow-release fertilizer into the soil at planting or at the break of dormancy in the spring. In humid areas, it would be wise to remove litter at the base of the stems to promote good air circulation.

Propagation

Agastaches are best propagated as cuttings from their lush basal growth during spring and fall. As soon as the more linear stem leaves and thin, woody stems of the hot, dry summers start to appear, this method will fail.

Although it is possible to propagate by seed, there are two factors that mitigate against this: first, agastaches are very promiscuous. They will very quickly cross and form myriad hybrids. Second, this genus suffers from gene pool reduction, resulting in weak plants with small flowers. If seed production is desired, propagate the seed-producing plants vegetatively, and keep them far apart from their relatives. Periodically enrich the gene pool with new plants of the same species collected from different locations in the wild.

Chemistry

All of these plants are aromatic. Scents are various combinations of coarse mint (cyclic monoterpenes like pulegone or piperitone), licorice (estragole), or lemon (citral and/or limonene). Sometimes it is possible to find three races of these plants, identical in all respects except the dominant odor. I assume they may be made into herbal teas and have uses as ethnobotanic medicines.

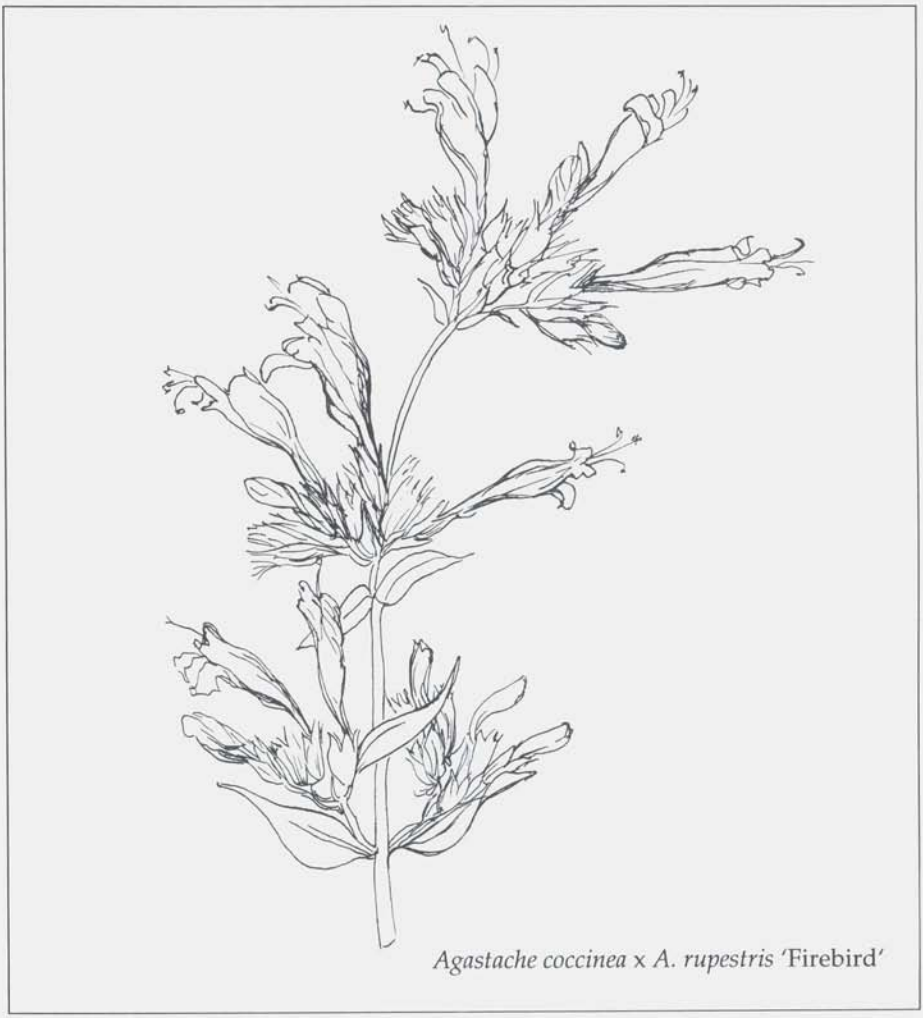
References

Sanders, Roger W. 1987. "Taxonomy of *Agastache* Section *Brittonastrum* (Lamiaceae–Nepetae)." *Systematic Botany Monographs* 15: The American Society of Plant Taxonomy. University of Michigan Herbarium: Ann Arbor, MI.

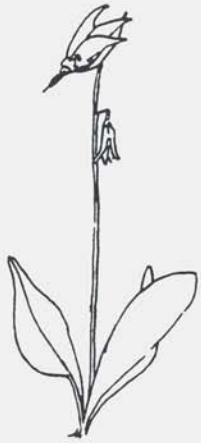
Rickett, Harold W. *Wild Flowers of the United States*. New York Botanical Garden. McGraw-Hill Book Company: New York.

Richard Dufresne lives in Greensboro, North Carolina. He is developing a new imaging technique for plants and is beginning his magnum opus, *a monograph of the genus* Salvia, *starting with a relational database of all known species. He maintains a backyard nursery to distribute new species to botanic gardens, nurseries, festivals, and collectors. His other plant passions include most species of mints.*

Drawing, Rebecca Day-Skowron, from scan by author.

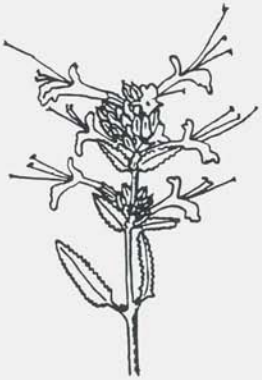


Agastache coccinea x *A. rupestris* 'Firebird'



Dodecatheon conjugens

Delphinium nelsoni



Salvia eremostachya

Calochortus aureus

from the catalog of Southwestern Native Seeds

RAINY-SEASON PLANTS
OF THE SOUTHWEST

by Sally Walker

It is early July in southeast Arizona. There may have been no rain for two months. The winds have shifted from the west to the southeast, signalling the beginning of the monsoon or rainy season and the start of many plants into growth. The summer rainy season in southeast Arizona lasts from late June or early July until mid September. This is just long enough for some Mexican plants to survive here also. Farther south in Mexico the rainy season increases in length and intensity, but there is less of a winter rainy season, so there is less of a spring wildflower display than in Arizona.

Because the summer rainy season plants have a late start, they flower later and are at their peak season after many other plants are past their best. This is a plus in gardens in which most flowers stop blooming as late summer approaches. Nearly all of the plants mentioned in this article grow above 5000', so they should be hardy in most areas.

Beginning with the monocotyledons, a favorite is *Milla biflora*. One hopes each year that the parched ground in southeastern Arizona will receive enough moisture for *Milla biflora* to start into growth. This species reaches its northern limit in Arizona in the southeastern counties of Cochise, Pima, and Santa Cruz at altitudes from 4000–7000'. Occasionally summer does not produce enough rain for the tunicate bulbs to break dormancy here, but in Mexico the rains are more dependable, and flowering is a certainty. *Milla biflora* (photo, p. 208) also occurs in New Mexico and West Texas and as far south as Guatemala. The narrow, grass-like basal leaves grow to about 15" long. The stem reaches about 10" tall before branching into two or more pedicels each about 2–2.5" long. This would be a better garden plant if it had a shorter stem, but in the wild *Milla* often competes with tall grasses, so it needs a longer stem. Each pedicel bears a salverform flower with each of the six perianth segments being 1" long. They are white with a green central stripe and have a waxy sheen. The blooms remain open at night. Antonio Cavanilles, the director of the botanic gardens in Madrid, named the plant for Juliani Milla, a court gardener, in 1793. Presumably the living plant or herbarium specimen from which Cavanilles wrote his description had just two flowers per umbel, but I have seen up to six and have read that

there may be as many as twelve.

Milla is not just an average flower. Glowing accounts have been written of its beauty, but it is still relatively unknown in cultivation and not widely available. From our own experience we know that it is popular in some Japanese gardens, and in another part of the world a king wanted it to decorate the palace grounds. In Mexico, in areas where it grows wild, children sell bouquets of *Milla* to passing motorists. There can be no doubt that it is special.

Another rainy season bloomer is *Echeandia flavescens*. This is listed in some books under its former name, *Anthericum torreyi*. Crag lily or amber lily grows at elevations from 5000–9000' in pine-oak forest. There are two varieties in the Southwest, *Echeandia flavescens* ssp. *stenocarpa*, a somewhat larger and more robust form found between 5000 and 5500', and the delicate *E. flavescens* ssp. *flavescens* of the shaded slopes from 6000–9000'. The common high altitude subspecies is known from northern Arizona, New Mexico, and south into Mexico, whereas the subspecies *stenocarpa* is known only from extreme southern Arizona and Mexico.

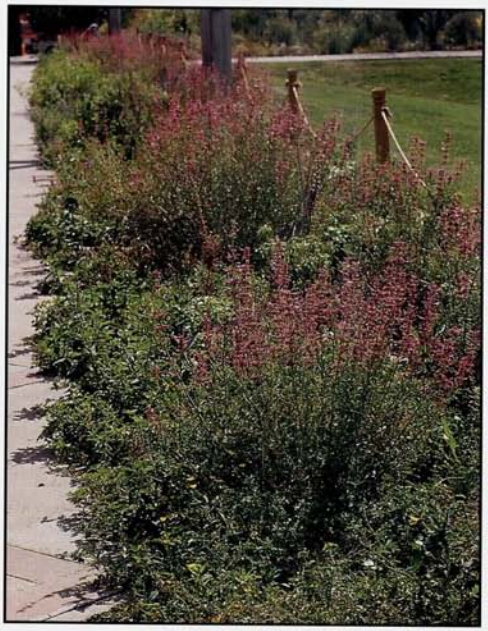
Echeandia flavescens var. *flavescens* has thick, cylindrical roots and grass-like basal leaves about 7" long; the flower stem is 15–20" long. The flowers are in a slender raceme on the top third of the stem. The six perianth segments are about 0.5" long and are pale orange-yellow with a greenish central stripe.

In the Amaryllidaceae we have only one species of the genus *Zephyranthes*, *Z. longifolia*. Its season of flowering depends entirely on when the first rains arrive, and one can easily believe that it is a very close relative of the rain lily (*Cooperia drummondii*). A fleshy stem about 3–6" tall arises from a tunicate bulb 1" across, along with a few linear, basal leaves. The solitary flower is subtended by a spathe-like bract. Zephyr lily is native to Cochise, Pima, and Santa Cruz counties in southern Arizona, where it occurs from 3500–6000' elevation in gravelly soil. It is also known from New Mexico, West Texas, and Mexico. The perianth segments are about 1" long and lemon-yellow, and the flower doesn't open fully.

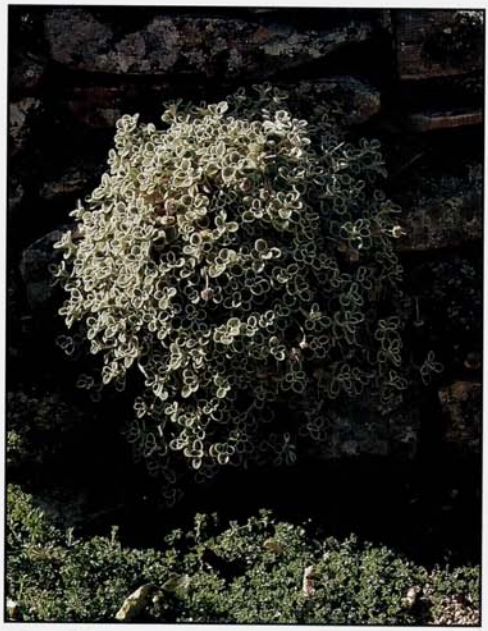
Two plants that are quite common in Mexico but barely cross into the US are *Hypoxis mexicana*, which is also in the Amaryllidaceae, and *Nemastylis tenuis* ssp. *pringlei* in the Iridaceae (photo, p. 207). *Hypoxis mexicana* has small, yellow flowers and grows under pines at 7000–8000'. Once the flowers are past, it is hard to distinguish the plant from the grass. *Nemastylis tenuis* ssp. *pringlei* grows in grassy openings and under pines at 6000' in the Huachuca Mountains.

Sisyrinchium differs from *Nemastylis* in having a short rootstock instead of a bulb. The genus *Sisyrinchium* is represented by three rainy-season species, all of which grow in wet meadows and extend farther north into the state. The largest, *Sisyrinchium arizonicum* (photo, p. 208), has branched stems, wide leaves, and orange-yellow flowers. *Sisyrinchium longipes* is unbranched with narrow leaves and bright yellow flowers. *Sisyrinchium demissum* has brilliant purple flowers and is usually more abundant than the other species.

Another family that produces some late-flowering ornamentals is the Labiatae. The genus *Agastache* has three beautiful species in our region. *Agastache*



Agastache cana (pp. 187, 209)



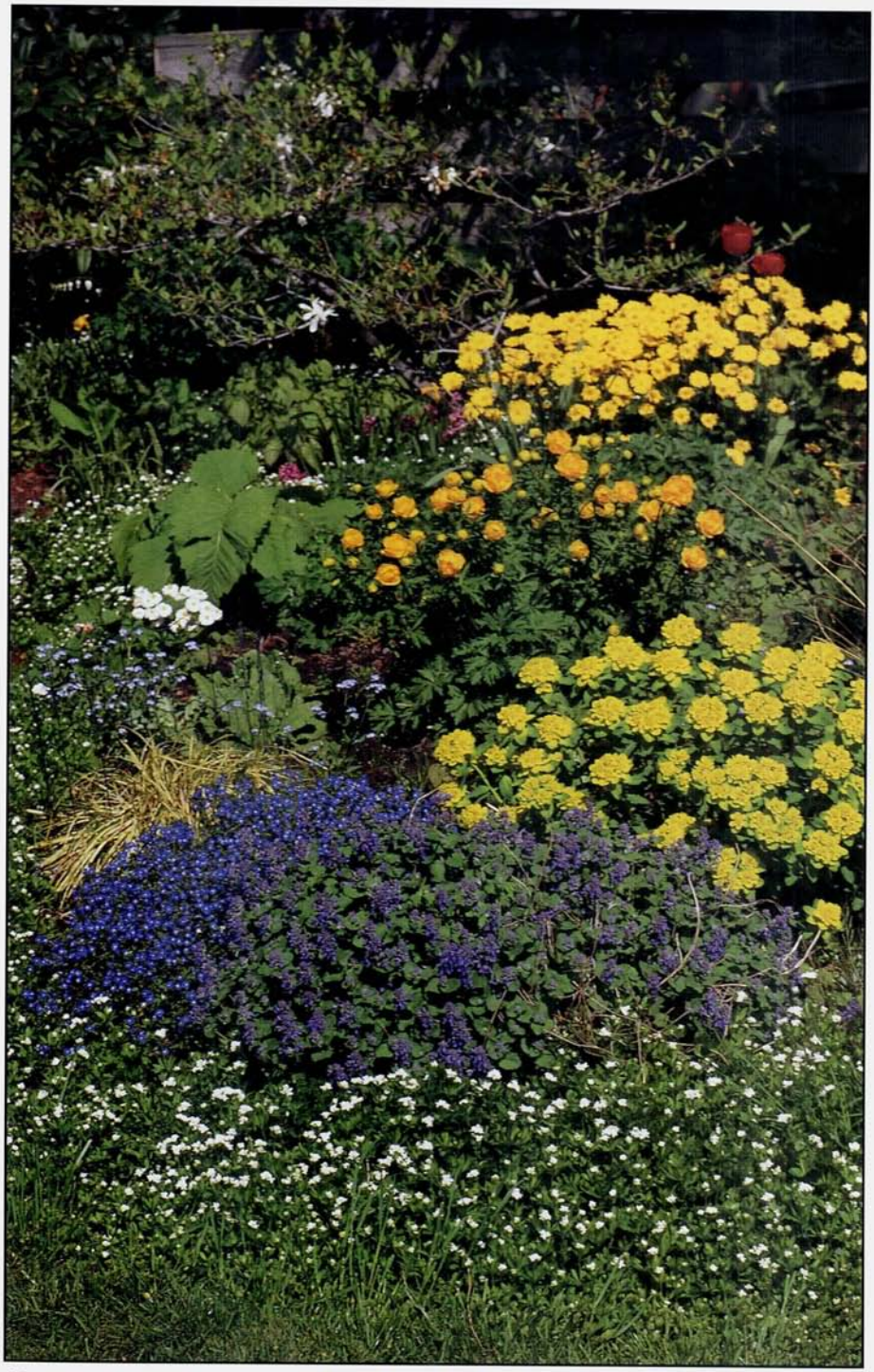
Marrubium rotundifolium (p. 165)

Ajuga chamaepitys ssp. *glareosa* (p. 174)

photos, Panayoti Kelaidis

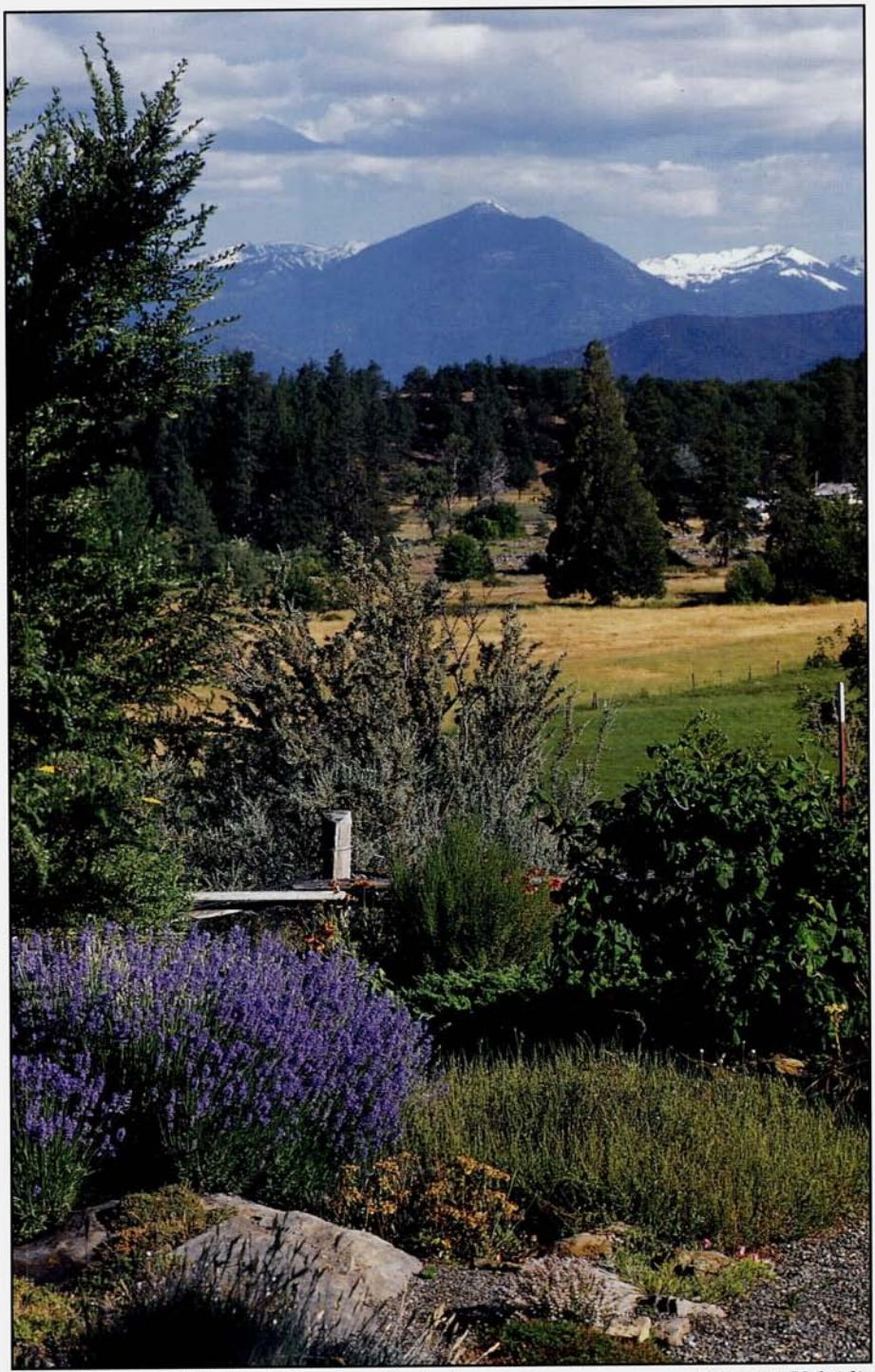
Dracocephalum cf. *tanguticum*

Marrubium cylleneum (p. 176)



Nepeta mussinii (p. 180) with *Euphorbia*

Panayoti Kelaidis



Lavandula angustifolia (p. 169) at Jeanette Axton garden Panayoti Kelaidis

Salvia caespitosa (pp. 170, 212)

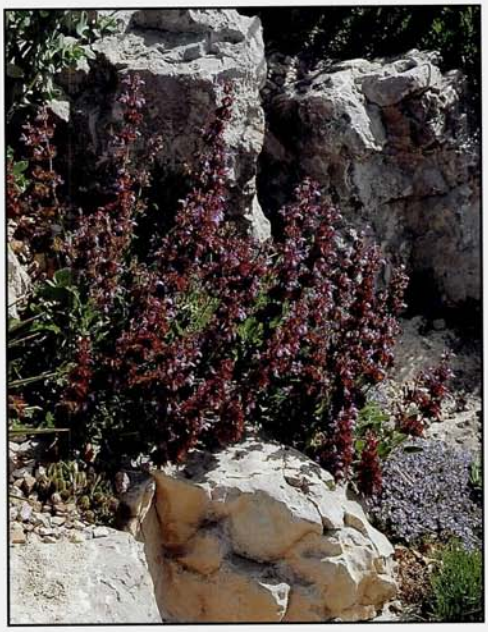
Salvia candidissima (p. 213)

photos, Panayoti Kelaidis

Salvia cyanescens (p. 213)

photos, Panayoti Kelaidis

Salvia multicaulis (p. 171)



Salvia dorrii (p. 171)

Salvia albimaculata (p. 212) Robert Kourik

Salvia carduacea (p. 212) Bart O'Brien

Salvia muirii (pp. 214–5) Ginny Hunt

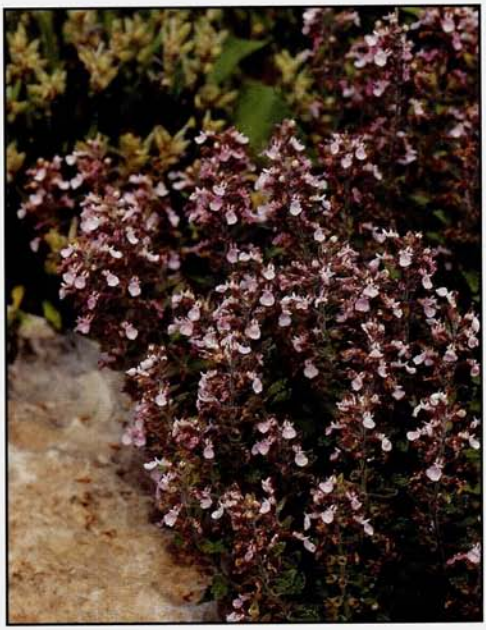
Salvia taraxacifolia (pp. 215–6) Robert Kourik

Satureja spicigera (p. 217)

photos, Panayoti Kelaidis

Stachys candida (p. 171–2)

Teucrium syspirense (p. 172)



Sideritis hyssopifolia (p. 176)

Scutellaria grandiflora (p. 175)

Stachys chrysantha (pp. 168, 172)

Stachys nivea (p. 164)

Stachys coccinea (p. 172)

Teucrium cossonii (p. 166)

Teucrium polium 'Aureum'

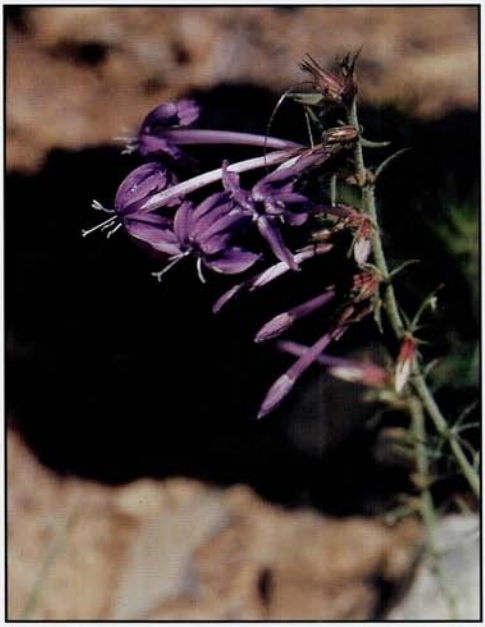
Teucrium pseudochamaepitys (p. 172)

Teucrium orientale (p. 172)

Teucrium pyrenaicum (p. 167) photos, Panayoti Kelaidis

Thymus hirsutus (p. 173)

Scutellaria orientalis (p. 173) photos, Panayoti Kelaidis



Gilia thurberi (p. 210)

Sally Walker

Trichostema arizonicum (p. 209)

Sally Walker

Nemastylis tenuis ssp. *pringlei*(p. 192)

Tim Walker

Primula rusbyi (p. 209)

Tim Walker

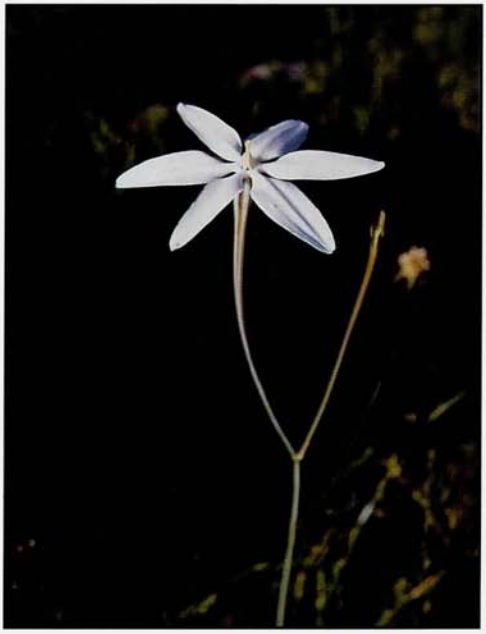
Dodecatheon ellisiae (p. 209)

Sally Walker

Sisyrinchium arizonicum (p. 192)

Tim Walker

Milla biflora (pp. 191–2) Tim Walker



barberi grows in the Patagonia Mountains near the Mexican border at 5000–6000'. The tubular flowers are 1.5" long, the corolla is lavender-purple, and the calyx is dark purple. The flowers have protruding stamens, and the leaves are deltoid-ovate with toothed margins.

Agastache rupestris is known from a few places at 5500-6000' elevation in southeastern Arizona and southwestern New Mexico, where it usually grows among rocks in canyons. It has cinereous, lanceolate leaves, a purplish calyx, and a red-orange corolla that is 1" long.

Agastache cana (photo, p. 193) ranges from southwestern New Mexico, and to West Texas; it grows from 4500–5500' elevation. The carmine flowers are also about 1" long, and it has smaller, but broader, toothed leaves. Of the three species mentioned, *A. cana* and *A. rupestris* have extremely fragrant foliage. There are other species with scented leaves, but the flowers are insignificant for gardeners.

Trichostema arizonicum (photo, p. 207), or blue curls, is very striking with its bicolored flowers. The upper petals are white and the lower purple, and the stamens are arched. It grows around 5000–6000'.

The hardiest *Salvia* is *Salvia arizonica* as it is found from 7000–9000' in the Pinaleno Mountains. Its leaves are yellowish green, and the flowers are a deep royal blue. Although the flowers are not large, they are numerous and very attractive.

Salvia lemmoni is a subshrub, growing at altitudes from 6000-8000', producing numerous 1"-long, purplish-pink flowers. *Salvia pinguifolia* grows from the desert to 7000', often on limestone. It is a shrub up to 6' high, with canescent, deltoid leaves and pale blue flowers.

In the Primulaceae, we have *Primula rusbyi* (photo, p. 208), usually among rocks in the shade at 7500–10,000' elevation. It is also in New Mexico, and we have found it at a record southern limit on a mountaintop in Zacatecas, Mexico. It is smaller and more slender than *P. parryi*, about 9" tall, and the pedicels are white and mealy.

Dodecatheon ellisiae (photo, p. 208) is known from 8000–9000' and is only in southern Arizona and New Mexico. Some of the plants are riparian. Those that grow beside a creek do not need to wait for the summer rains and bloom in late June, whereas those that grow under the spruce and fir trees do have to wait for the summer rains, and they bloom in August. It is the only white-flowered species we have. The leaves are bright green and roundish. Sometimes one sees mats of the leaves, but this species does not flower freely and is not widespread.

In the Caryophyllaceae, *Silene laciniata*, the Mexican campion, grows in pine woods from 5500–9000' in much of the state. It is easily the showiest species of the genus with bright orange-red, fringed petals and large flowers.

In the Polemoniaceae, according to *Arizona Flora*, *Polemonium pauciflorum* is only known from the Chiricahua Mountains at 7500–9000' elevation, but we have seen the plant in Nuevo Leon, Mexico. After the big fire in the Chiricahua

Mountains in 1994, the plant colonized large areas that had been totally destroyed by fire. The foliage is limp and sticky, and the pale yellow flowers are 1.5–2.0" long. The flower is tubular, flaring open at the distal end, and in the wild the plants grow in clumps adjacent to shaded cliffs. This and *Polemonium flavum* are the only yellow-flowered species of *Polemonium* in the Southwest.

Gilia thurberi (photo, p. 207) is Arizona's showiest species of the genus along with the well-known *G. aggregata*. It is also somewhat variable. The corolla tube may be 1.5" long, and its color varies from mauve to deep purple to claret purple. It is found in several of the southeastern mountain ranges near the Mexican border as high as 6500', and it is definitely a late bloomer, sometimes in full bloom in October.

In the Scrophulariaceae, among the penstemons, one of the less well-known species is *Penstemon stenophyllus*. It is known only close to the Mexican border from the Huachuca and Patagonia Mountains, growing up to 5500'. The leaves are glabrous, and the blooms are blue, and it flowers very late, being primarily a Mexican species.

Southern Arizona and southwestern New Mexico are also home to *Penstemon pinifolius*, which grows from 5000' to 10,000', and also to the taller *P. barbatus*, which has a much wider distribution. Both these species have red flowers and are well known in cultivation.

To end with the Asteraceae, *Tagetes lemmoni* is a good perennial for autumn and easy to grow. The bright yellow rays are about 0.75" long. It is known from the Catalina and Huachuca Mountains up to 8000'. *Arizona Flora* calls this species an "ill-scented" plant, but some people consider it, as other marigolds, to have an attractive odor.

This is just a cross-section of late-blooming, monsoon flowers that make Arizona special, giving us two full seasons of wildflowers instead of only spring.

Sally Walker is proprietor of Southwestern Native Seeds and has received the Marcel LePiniec Award for her contributions in making seed of many native plants available to the public. Photo, Tim Walker.


Agastache barberi

SALVIAS

SLIGHT AND SLENDER

by Betsy B. Clebsch

Sad but true, there are no salvias that grow in ideal dimensions or in the characteristic forms of a rock garden plant—no buns, no small and tight colonies, no plants that are condensed and compact. The smallest are just a little too big to be thought of as classic rock garden plants. In spite of their size they might well have a place in a border or mound with other small to medium-sized plants. I would like to suggest a few salvias, slight and slender, that are relatively small in size, have thrived in my garden, and may be enjoyed in your garden—even in your rock garden.

Salvia is a genus in the Lamiaceae that I have grown and enjoyed for many years. There are probably more than 900 species of *Salvia* growing in diverse and various habitats, worldwide. This figure does not include hybrids and cultivars, which could swell the figure enormously. Of the total number, only a small fraction of species have been brought into horticulture. Salvias range from 1–15' in height, and I have selected a few horticultural subjects on the low-growing end of the scale that fall into the slight and slender category. Sun, shade, soil, hardiness, propagation, and availability will be discussed for each species. For reference, my garden is south of San Francisco, at 2000' in the Santa Cruz Mountains, approximately 12 miles inland from the Pacific Ocean, and in the path of violent winter winds. Temperatures usually fall to 20–25°F, but 19°F occurs periodically. Summers are predominantly cool with spells of 90°F and above four or five times during the summer and autumn. My cultural experience with these plants reflects this habitat.

One thing you can count on when planting a rock garden is that if the plants don't mature or behave the way you expect them to, you can easily replace them with another plant that has the possibility of filling a specific niche. It is comforting to know that salvias grow rapidly when the weather and soil begin to warm, and that it will take but a short period of time to bring them to fruition. It is easy to experiment with salvias that grow rapidly, and all discussed here have that natural tendency. Small herbaceous plants are usually moveable and manageable, whereas the stature of trees and shrubs locks them in to permanent positions in the garden.

Salvia albimaculata (photo, p. 199) is known to occur naturally in one area of Turkey in the Taurus Mountains at 4000'. There it is found on steep clay slopes over limestone. It is probably endemic to this limited eastern Mediterranean habitat. This salvia comes closer to having the dimensions of a plant suitable for rock gardens than any of the others described in this discussion. A charming plant that barely reaches 1' in height and about the same in width, it comes into bloom in early summer. There is sporadic bloom continuing until frost. Small, grayish-green, evergreen leaves are trisected and lightly covered with hairs. The striking whorls of royal purple flowers have a prominent dead-white blotch on the lower lip. The specific epithet *albimaculata* means spotted with white.

Garden loam, good drainage, full sun, and weekly water are ideal for this salvia. It has never set seed in my garden but is easy to propagate by cuttings immediately after it finishes its first bloom. I have spread a little lime under it in early spring, but I don't think this is necessary if you have a sweet soil. It has survived 19°F on several occasions in my garden, and I expect it is hardy to 10°F with the help of a cover of pine boughs.

Salvia caespitosa (photo, p. 197) is also an endemic plant of the eastern Mediterranean with a limited habitat in Iran and Turkey. It is found on rocky limestone or igneous slopes at about 5000–7000' elevation, making it a likely candidate for gardens in cold climates. A dwarf and neatly arranged, mat-forming perennial, it frequently covers 2' with procumbent stems. The specific epithet means "growing in dense clumps." Leaves are obovate in outline, pinnatifid, and lightly covered with hairs. They tend to be evergreen in areas with a mild winter climate. In early summer, showy but short racemes of bracts and flowers that may be violet-blue to lilac-pink bloom for many weeks. My persisting recollection is that the individual flowers look just a bit too large for the size and number of leaves on the plants—looking a little out of proportion is a horticultural surprise!

My experience with this plant was a good number of years ago, and only recently has more seed been obtained. Consequently, we will soon have another go at growing it during the season of 1999. When siting *S. caespitosa* once again, I plan to give it full sun and gritty soil that allows fast drainage. Also, it will be flanked by a large rock or two to provide a place for it to nestle. After it is established, it will be given only occasional summer water.

Salvia carduacea (photo, p. 199) is a spectacular annual that occurs in a number of dry, sun-swept habitats in California. This plant may not strike the gardener as being a suitable subject for a rock garden, but I would like to propose combining it with clumps of small or slender perennial grasses on stony slopes or placing it snugly in rocky nooks.

The specific epithet *carduacea* means thistle-like and refers to the woolly, white basal leaves that are both toothed and spiny. This sage responds dramatically to its environment. In nature, with rain and moisture, plants reach 3' in height. Or in an arid setting they are dwarfed and flower when only 6" tall. For favorable results, gardeners usually sow seeds in a container in the greenhouse in late winter. Seedlings are then transplanted into individual containers before eventually being moved into the garden. Transplanted seedlings adjust speedily.

Thistle sage is spring-blooming. It grows rapidly in the garden given warm soil and warm days. Chilly nighttime temperatures do not slow the growth of

the plant. Flowers are a lively lavender electrified by bright orange anthers. They appear in headlike whorls, their woollu, congested calyces subtended by spiny bracts. In a garden setting there is seldom any seed produced because of the lack of an efficient pollinator. In desert locations the large hover moth, the size of a small hummingbird, is the pollinator. Seeds are usually available on seed lists that specialize in California native plants.

Salvia cyanescens (photo, p. 198) is an herbaceous perennial occurring at altitudes of 3000–7500' or more in Iran and Turkey. It is found growing in many diverse habitats: limestone and igneous slopes, shale banks, pine forests, gravel river beds, fallow fields, and vineyards. In these native habitats it is known to freely interbreed with *S. candidissima* (photo, p. 197), making it a prime candidate for hybridizing.

Evergreen in a mild climate, *S. cyanescens* develops a small clump of gray-green leaves, ovate in outline, that are 12" wide. A mounding plant, this sage is both tough, reflecting its native habitats, and handsome. It is reported to be hardy to 0°F. The plant's pale gray foliage becomes more white and silvery in the long, hot days of summer. This is probably a mechanism for protecting the leaf surfaces from excess heat by the reflection of light and at the same time preventing water loss by evaporation. A slender inflorescence about 1' tall is branched like a candelabra. Flowers are small and a washed out, pale purple-violet color. *Cyanescens*, the specific epithet, means bluish or becoming blue—a name that is far from reality in this instance. Blooming periods are in summer and again in late autumn if dead-heading is practiced.

Ordinary garden soil, good drainage, and full sun are needed for this sage. It is considered to be drought tolerant, but occasional water is recommended. Viable seeds are readily produced, and propagation is easily carried out by either seed or cuttings.

Salvia engelmannii is a endemic to central Texas on limestone hills. An admirable plant that is exceptionally rare in horticulture, it warrants the attention of gardeners because of its attractive appearance and ease of culture. Discovered by Ferdinand Lindheimer during his nine years of plant collecting and botanizing in Texas, the plant was named for the botanist George Engelmann, Lindheimer's friend, who was vital to the establishment of what is known today as the Missouri Botanical Garden.

From its woody taproot, *Salvia engelmannii* forms a dense clump, as much as 12" wide, of entire to denticulate leaves. In my garden the clump never quite reaches that size but is in the 8" range, and the leaves are evergreen. Individual leaves are unusual for a salvia, covered with short hairs, and very narrow in width. The color is a sharp, mid-green, and the hairs give the plant a bit of a frothy look. Small whorls of pale lavender flowers that are less than 2" in length appear in early summer. The lobed leaves and short flowers are in nice proportion one to the other.

Engelmann's sage prefers gravelly soil that drains rapidly, full sunlight, and regular but moderate water throughout the year. Summer heat is not a problem, but temperatures that fall below 20°F may be fatal. A small amount of lime around the base of the plant in spring will keep the soil sweet. The usual form of propagation is by cuttings taken in August. However, seeds germinate quite

readily. An easy plant to care for, this salvia comes very close indeed to having the proportions of a rock garden subject.

Salvia frigida has long been a favorite plant of mine for a variety of reasons. In the wild it occurs in northwestern Iran, northern Iraq, and eastern Turkey, where it is found at altitudes 3000–8000' that reflect the specific epithet, *frigida*, growing in cold regions. In Anatolia, it grows on limestone slopes, in crevices, and meadows, as well as being prominently situated on the edge of woodlands and forests. It is apparently an adaptable plant that may be found in many habitats.

A perennial herb with mostly basal leaves and a single, thick rootstock, this salvia attains about 12" in width and height. It has slender leaves about 6" long, covered with gray hairs that give them the smooth texture and soft, warm look of flannel. The leaves tend to persist through the winter and appear to be worn and a bit tattered. Nevertheless, with the coming of warm weather, the plant produces a number of fine, new, grayish leaves. Blooming in summer, the small flowers may be white to a pale lilac—the inflorescence does not call attention to itself, and I have failed to notice it bloom several times. However, the following spring I have found three or four seedlings near the mother plant and suddenly realized there was an active pollinator in the garden. This plant is truly easy from seed.

Given good garden soil, full sun, fast drainage, and occasional summer water after it is established, *Salvia frigida* will not only persist in the garden but will produce a sparse population of seedlings that might possibly be shared with gardening friends.

Salvia jurisicii, widely known and grown by European gardeners, comes from the former Yugoslavia, spilling over into Bulgaria and Albania. An herbaceous perennial that is both petite and compact, it is hardy to 0°F, reflecting its high mountainous home. It is one of very few salvias that I think of as having the qualities that are appropriate for rock garden plants—small in scale, fairly dense in growth, and the ability to withstand the cold of winter.

A cunning plant that will develop to about 12" in both height and width, *Salvia jurisicii* is reported to grow to 2'. To date, I have not been able to find anyone who reports plants of this size. Its leaves are pinnate with hairs on each rib and vein, giving a visually inviting, tactile effect. These textured leaves look frothy and are eye-catching. Whorls of flowers appear in early summer. They are less than 0.5" in length, closely spaced, covered with hairs, and rotated upside down from the usual position. The flower color is variable but in the violet range. There is a white-flowered form that comes true from seed called 'Alba'.

With little effort *Salvia jurisicii* can be grown from either seed or cuttings. It needs soil enriched with humus, good drainage, weekly water, and sun for at least half a day. On rare occasions I have found seedlings near the mother plant.

The limited habitat of *Salvia muirii* (photo, p. 199) is confined to the Mossel Bay area near the southernmost tip of the Cape of Good Hope in South Africa. There it was found by Dr. John Muir (I have not been able to find out anything about Dr. Muir), for whom it was named when it was botanically described in 1930. Writing about this salvia to a friend, Dr. Muir said, "Its flowering period is

from April to June, but it is very fine in May."

A small, stiffly erect shrub, *Salvia muirii* reaches one foot in my garden but is reported to attain 24" in its native habitat. Its stems are either round or quadrangular and in time multiply by underground runners. Covering about a 2'-square area, this salvia is not compact. Small and rounded leaves lightly cover the branches and are evergreen in a mild climate. Pale blue flowers with a white bee line can come into bloom any time between April and October, and I agree with Dr. Muir, flowering is very fine in May.

A good garden loam that drains readily and a minimum of sun for half a day will help this salvia increase its underground stems. Water is also needed year round. Propagation is by cuttings taken in summer or by division of rootstock. If seed were sown, it would be entirely possible that a deeper blue flower might be found. This salvia did not survive 19°F in my garden, but it remained healthy and evergreen during winters that occasionally dipped to 24°F.

Originating in Japan, 'Fuji Snow' is a selection of *Salvia nipponica*. The species epithet *nipponica*, means of or from Japan, and the plant is rather commonly found in the southern part of the islands, where it is distributed far and wide. Throughout those warm, moisture-laden mountains its customary habitat is thickets and woods. The cultivar 'Fuji Snow' was brought to this country from Japan in the late 1970s by plantsman Barry Yinger. He found it had been grown horticulturally for centuries, and consequently its origins are obscure. In this country it has proven to be a difficult plant to grow except in areas with medium to high humidity.

A perennial about 1' tall and, if in a happy cultural situation, about 2' wide, 'Fuji Snow' is remarkable because of the wide, cream-colored band that outlines each hastate leaf. This banding will disappear in summer but returns with new growth in the spring. In late summer or early autumn there is flowering. Delicate, pale yellow flowers each with a small, hairy calyx are borne in whorls and bloom on spikes that are 9–12" long. Although not showy, flowering is nice to see after the banding has disappeared. Reported to be hardy to 0°F, 'Fuji Snow' will remain evergreen if winter temperatures are mild.

A rich, moisture-retentive soil with humus, reflecting its woodsy habitat, along with shade from the hot sun will help establish 'Fuji Snow' in the woodland or shade border. Regular water and a weak, half-strength liquid fertilizer are needed to encourage growth and development. Propagation is by division when clumps have expanded.

Salvia taraxacifolia, commonly called dandelion sage, is from the Atlas Mountains of Morocco (photo, p. 199). Adaptable to many habitats, it may be found on rocky slopes or in forest clearings at altitudes ranging from 2000–8000'. It apparently is not similar to other salvias botanically and occupies an isolated position in the genus. Its delightful appearance and ease of cultivation make it a choice plant for a spot in the garden.

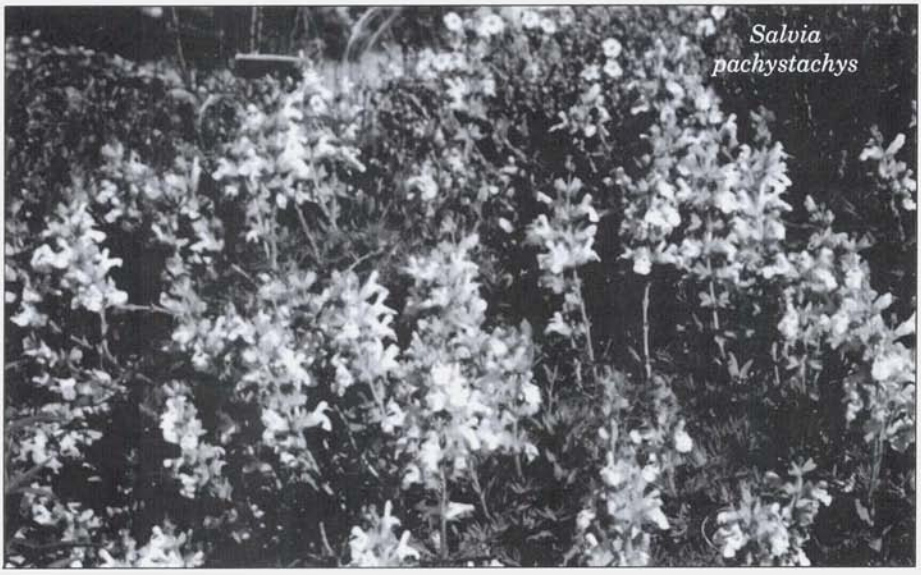
A mat-forming, herbaceous perennial, the dandelion sage's gray-green leaves remain evergreen in a mild climate. If temperatures fall below 20°F, the plant might succumb to the cold. Shaped like a lyre, leaves grow in thick basal rosettes with dense, white hairs covering the back of each leaf. There are glands on these hairs, and when rubbed, they release an aromatic citrus odor that is quite pleas-

ing. The specific epithet, *taraxacifolia*, is of Persian origin and means with leaves shaped like those of a dandelion. In early summer, abundant upright flowering stalks about 6–8" appear. Whorls of pinkish-cream flowers rise above the gray-green foliage and make a delightful and pretty sight. Be sure to remove these flowering stalks before seeds start to mature in order to promote another blooming period. A second or even third period of bloom can be encouraged with dead-heading.

To encourage matting, give this salvia good garden soil enriched with humus and fast drainage. Three-quarters to a full day of sun is recommended along with regular water. A small amount of lime may be applied in early spring. Propagation is easily accomplished by either seed or division.

In discussing these smallest salvias, I have been describing old and valued friends, for I have grown them in my garden for many, many years. This winter of 1998–99 has been particularly devastating, and five out of the nine plants described will have to be replaced. In this area of California we are fortunate to have many nurseries and also institutions such as arboreta and botanic gardens that include many salvias in their plant sales. I receive catalogs from nurseries across the country that have long lists of salvias as well. And recently, more and more seed companies have added a great number of salvias to their availability lists, so it will not be difficult to find my replacements. I hope you are able to take advantage of these resources by experimenting, testing, and putting on trial slight and slender salvias in your gardens.

Betsy Clebsch gardens in the Santa Cruz Mountains near Woodside, California. She has a wide-ranging interest in California native plants, other plants adapted to the California climate, and especially in plants of the mint family.


Salvia pachystachys

PLANT PORTRAITS

Satureja spicigera (C.Koch) Boiss. (photo, p. 200)

(*Micromeria spicigera* C.Koch, *Satureja intermedia* ssp. *laxior* Benth., *S. alternipilosa* C.Koch, *S. repandens* hort.)

Among the odds and ends of many nurseries there is a 10–15-cm-tall plant under the name of *Satureja repandens*, whose white flowers are borne from August to October. A search for this species in the literature was in vain; no normally consulted floras mention the species, and it was not to be found even in *Index Kewensis*, where almost all validly published species may be found. An attempt to determine the identity of the plant in *Flora Europaea* struck out. Since the genus *Satureja* has many representatives in the eastern part of the Mediterranean region, the floras of this region were consulted. Attempts at identification in the *Flora of Turkey*, the *Flora of the USSR*, and the *Flora Iranica* all arrived at the conclusion that the so-called *Satureja repandens* matches the descriptions and drawings of *Satureja spicigera* (C. Koch) Boiss.

The accompanying pictures (photos, pp. 166, 200) show the species grown in full sun. It is better understood as a perennial if one compares it to the form of *Satureja montana* already known to us,winter savory. The stems are prostrate to upright and are thick with bright green, 8–20-mm-long and up to 5-mm-wide, linear-lanceolate leaves. The flowers of the form found in cultivation are white and borne in 3- or 4-flowered whorls—the literature suggests that in natural populations there are plants with flowers overlaid with pink (hopefully these are not descriptions from herbarium specimens!). The stamens are widely exserted from the flowers. The flowers are much visited by honeybees and bumblebees. When the plants are touched, a powerful aroma streams from the leaves. According to one excerpt in *Flora of the USSR*, the species is used as an herb in some regions of the (former) USSR. Research by T. A. Kezeli shows that the leaves of this species are richer in oil that those of the annual *S. hortensis*, summer savory.

Satureja spicigera is found in lower and middle elevation woodlands on stony soils, in clearings and such, in the Caucasus, eastern Turkey, and in northwestern Iran.

Satureja spicigera is doubtless undervalued. It forms thick carpets, provided that the garden is free from roots of competing weeds and in full sun. It is fully winter-hardy and very long-lived. Propagation may be done by division if only a few plants are needed, otherwise by cuttings. This is certainly a plant that is not only beautiful in flower but can also be used in the kitchen; it deserves the widest distribution!

—Fritz Kümmert

Cunila origanoides

What is the significance of the common name Frost Mint used for *Cunila origanoides*? At the edge of a woods, this is a straggly, one- or two-stemmed plant about 8" high. But in a rock garden in full sun, here in Pennsylvania, it develops into a big bun. The stems, of which there may be as many as 18, are about 9" tall, with pointed, mint-like leaves. One of my plants had a reddish cast on the undersides of the leaves. Altogether the plant is about 15" across. It may be a little big for a bun collector's garden, but it is nice for the larger rock garden.

In August the tips of each stem are covered with what appears to be a purplish haze, conferred by a myriad of tiny blooms. The bees love this species. I like it because August is the doldrums as far as bloom in my rock garden. Another plus is that I've never had a seedling pop up, so there is no unnecessary weeding required.

The meaning of the common name comes into focus with the first frost. The first year I grew it, I was out early in the morning and was mouthing nasty words because a tissue had gotten caught in the base of the plant. But it was not a tissue, but rather a half-inch-wide ribbon of ice that had formed along each stem, looking like ribbon candy! The ice extended almost 3" up each stem. This ice is formed through perhaps the first three frosts each autumn; after that, no more. Of course, the ice melts quickly when the sun warms the air, but in the meantime, it is so fascinating that I still rush out on chilly mornings to inspect the ice ribbons on my Frost Mint.

—Anita Kistler

Satureja spicigera

White forms of *Hepatica nobilis*

Among the color variants that occur in the genus *Hepatica* I have studied the various white forms of *H. nobilis*. I do not include here all those almost white forms in which the petals when newly opened are a different hue, only just discernible. They may be blue, pink, mauve, or some other shade, whose feeble nuances disappear after a couple of days, and then the petals become white. These forms cannot be counted as completely white.

I want to establish here a few distinctions among the most often collected forms, all distributed under the name 'Alba'. The completely white forms may be divided into three main groups.

Group 1. Forms have pigments other than green found on various parts of the plants. The sepals (three, usually very small, leaf-like flower segments just below the petals) may be almost brown or red-brown. A bud formed in the autumn, whose small leaves enclose the coming leaves as well as the flowers, may also be light reddish mauve, but the petals are quite white. Leaves are glabrous, i.e., with no hairs.

Group 2. Specimens of this group could, at first sight, be mistaken for albinos. They generally have light green leaves. If the specimen is completely hairless, then it must be in Group 1 or 2. Members of Group 2 have brown-black coloring at the base of the leaf stem, the color fading up the stem for the first 2–3 cm. There is also a small patch of brown-green at the top of the petiole just under the leaf. Immediately under each sepal there is a small, faintly pink patch. The glabrous leaf character is genetically bound to white flower color; the flowers of these plants are always white. Incidentally, hairless, white-flowered specimens of *Pulsatilla vulgaris* have also been found.

Group 3 is a group in which the flowers completely lack pigment but are at the same time covered with hair. The conspicuous light green color of the foliage is typical of albino plants. These plants might be classified as *Hepatica nobilis* "forma albina".

I have never come across a specimen that combines albinism with hairlessness. Perhaps there are genetic barriers that make this combination impossible. In my greenhouse I am trying to produce such a plant.

White-flowered forms of *Hepatica* are interesting. White, pigmented forms are probably the most common; those of other groups are more rare.

—Severin Schlyter, Lund, Sweden

Musings from a Rock Garden

ROCK GARDEN SCREE

High-mountain screes are some of the most desolate, dreary, and awesome places on earth. Nevertheless, for a rock gardener, they are the ultimate hunting grounds for exquisite plants that are so difficult or even impossible to grow in ordinary soil. However, from the work of Reginald Farrer and other rock gardening pioneers, there appeared a solution: a rock garden scree, or moraine, as some prefer to call it.

Prescriptions for constructing a scree abound, but the essentials are almost always the same. Select a sunny or at least partially sunny spot, dig out a hole some 60 cm deep, replace the soil with a mixture of crushed stone and humus (rich garden soil, leaf mold, or peat moss with some fertilizer will do), but the top 15–20 cm should be just pure crushed stone. Ambitious rock gardeners, especially those who used to be plumbers in previous existences, may add underground watering and other amenities, but simplicity has its own rewards. The top, soilless layer is the scree's most important element, because it rapidly drains moisture off the plant's crown and encourages its roots to seek water and nutrients in the deeper parts of the scree. Because most plants, be they true alpine aristocrats or just plain low-land commoners, enjoy living in a scree, it makes good sense to convert the entire rock garden into a series of scree beds, and when a new rock garden is constructed, it may just as well be a scree into which large stones are embedded.

There are endless variations to the actual material, which I here call, for convenience, *crushed stone*. The fortunate rock gardener with easy access to high mountains may select anything from volcanic ash nodules to stone rubble or pebbles of all possible sizes and colors, alkaline or neutral in chemical composition; however, most city dwellers have to rely on what is available in building and construction supply stores. The selection is usually meager, but if you live in a region with hot and humid summers, avoid a rather common and enticing material called pea gravel. These brightly colored, pea-size pebbles of river-tumbled quartz look fine, almost too pretty, when first used, but after several months, they develop a coating of fine moss or algae that glues them together into a water-repelling layer that defies the primary purpose of the scree. For the same reason, the sand bed, which some rock gar-

deners consider similar, or even superior to a scree (cf. *Rock Garden Quarterly*, 56 (2), 83-98 (1998)) may be quite disappointing in some areas of the southeastern USA.

In contrast to alpine screes that remain essentially unchanged for decades or centuries, a scree in a lowland garden undergoes a drastic change in only a few years, primarily owing to the incessant and very effective labor of the common earthworm. With the exception of very severe winters, when even the lowest layers of a scree may be frozen hard, these diligent creatures labor incessantly by carrying in their guts amazing quantities of soil and transferring it from the bottom to the critical top layer, thus substantially reducing its fast-draining potential. Apart from a complete overhaul, the only remedy is an occasional top-dressing of the scree with fresh, crushed stone. This is not to imply, however, that a *contaminated* scree wouldn't be suitable for growing most rock garden plants. It is, but it doesn't provide the exquisite drainage and deep rooting of a freshly constructed scree.

When planting a new scree, its special properties must be kept in mind. Because rapid drainage also means rapid drying out, small seedlings with short roots will almost always fail unless they are kept constantly moist. Larger plants or seedlings with unusually long roots should be first freed of most of their planting medium, placed in a hole in the crushed-stone layer sufficiently deep to accommodate their roots, and then watered daily for several days. Some shading during the first week is usually beneficial.

In addition to the benefits that a scree provides to the plants, it also offers some to the gardener. Weed seeds seldom germinate in the upper, sterile layer, and the few that do are easily removed. Although in hot and dry periods the top layer may dry up completely, the roots of established plants can reach considerable depths that are still moist. During a prolonged drought, a scree allows for deep watering, which is difficult or even impossible in ordinary soil. Deep watering is critical in rock gardens infested from below by roots of nearby trees that dehydrate the lower levels of the soil and may kill most deep-rooting plants. Squirrels and other rodents don't like the sharp edges of crushed stones, and even turtles, if they happen to consider the rock garden a good place to lay their eggs, will shy away from stony screes.

There are, however, some plants, especially those with relatively short hair-roots, that are difficult to establish in a scree of this type. In hot and dry weather, the upper stone layer dries out completely in one or two days, and so do the plant's hair-roots. Many androsaces and saxifrages need closer contact with humusy soil and are much happier in nooks and crevices where the subsoil is within easy reach.

—Alexej (Sasha) Borkovec

SEED EXCHANGE 1999

How the Seed Exchange Works

Donors send seed to the Intake Chapter at the address given on the Seed Donation Form (58 Kaintuck Lane, Locust Valley, NY 11560 USA). Here the seed is cataloged on a computer database, which is used to produce the Seed List. Each donor is assigned a Donor Number.

After the last date for acceptance of seed **(November 1, 1999)**, the seed is sent to the Packaging Chapter. The finished packets are then sent to the Order-Filling Chapter, which receives the order forms and sends the seed out. Orders are filled from early January to late February; after that the surplus seed is sent to NARGS chapters for distribution to their members.

Advantages of Participating

Donors receive 35 packets of seed, while non-donors receive only 25. Furthermore, orders from donors are filled before those from non-donors. Finally, donors receive the recognition and gratitude of their colleagues!

Collecting Seed

Collect seed in your garden and while viewing plants in the wild. Do not collect seed in areas where this is forbidden, such as national parks and certain other preserves. Clean the seed by removing it from capsules, discarding debris and chaff. If the seed is enclosed in a fleshy fruit, remove as much moist material as possible.

Packaging Seed for Donation

Please use paper or glassine (not plastic/polythene) envelopes no larger than 5x10cm (2x4"); suitable envelopes may be purchased from the NARGS Bookstore.

Very clearly write the botanical name, collection site (if wild), and your surname on each envelope (the donor's name is needed to ensure that the correct donor number appears in the Seedlist). Be sure that the seed envelope does not leak! Very small seed should be wrapped in a piece of waxed paper or foil before being placed in the envelope.

If any seed is unusually moist, enclose it separately in plastic to prevent the moisture from ruining the rest of the seeds. This applies particularly to aroids and peonies.

If you wish to send seed that must be refrigerated to retain viability, you should send it in close to the deadline. We cannot provide special storage of seed after mid-September, when filing begins.

Fill out the Seed Donation Form (see below). Place the seed envelopes in the same order as they are listed on the form and put rubber bands around each group of 5 to 10 envelopes. *Please do not tape the envelopes together, because it is difficult to separate them without damaging them.*

Place seed envelopes, Donation Form, and a mailing label with your own name and return address in a strong mailing envelope or box. Padded or cardboard envelopes are best. If you cannot get one, wrap the seed envelopes in some kind of padding inside the envelope. To avoid damage, do not put loose seed packets inside large envelopes. If you do not send a return mailing label, we will not acknowledge receipt of your donation; however, you will find your donor number in the Seed List.

Sending the Seed

Mail your donation to the address on the Donation Form as early as possible to help the cataloger. DO NOT SEND SEED TO ANY OTHER ADDRESS. Overseas donations should be mailed by October 10, 1999, Canadian by October 15, and USA by October 25. No item can be added to the catalog after November 2, 1999. Seed that arrives too late to be listed will be sent out as substitute items and distributed to chapters.

Late Donations

If you are sure you will send seed after November 1, you may send a list to the Intake Manager for inclusion in the catalog and mail the seed at any time up to **December 1**. This special service may be used only for late-ripening or wild-collected seed; it is not intended to provide donor numbers to procrastinators!

Special Collections

We are delighted to assist in the distribution of large collections from botanical expeditions. Collections of more than 50 items from a single region can be listed in separate sections of the catalog, with abbreviated site information. If you expect to donate such a collection, please inform Joann Knapp at the Intake address as soon as possible so we can plan for your list.

Seed Donation Form

This form is used by the cataloger entering your donation on the computer. If you do not have a blank form, please enclose a clearly written or typed list of the seeds you are sending. You do not need to fill out all the parts of the form. Only the botanical name (and wild collection site, if any) are necessary. The remaining spaces (class, height, flower color) should be used only if the item is (a) new to or rare in cultivation in the Northern Hemisphere, or (b) an unusual size or color in its species (e.g., pink *Gentiana asclepiadea* or 4-cm tall *Campanula rotundifolia*).

The column 'Authority/Reference' should be used if you believe the item is new to cultivation and has not previously been listed in the Seed Exchange; a very brief citation such as "Fl. USSR" or "Smith 1996" is adequate. If you are submitting an item under a very recently revised name, it is also helpful to cite the source.

What to Send

The most frequently ordered items in the Seed Exchange are small, highly ornamental alpine plants, especially those collected in the wild. Very unusual items, especially from temperate climates, are also much desired. There is also a certain demand for easily grown garden standards. American members in par-

ticular are urged to collect more seed of specifically alpine plants in the wild.

What Not to Send

Although the Seed Exchange is charged to include "plants suitable for rock gardens," in practice it offers opportunities to obtain unusual plants of many kinds. However, certain items are not desirable; some of these will be discarded if received, and others will simply cause useless work and be discarded after orders are filled. In general, the following kinds of plants should not be sent to the Seed Exchange:

—Common trees and large shrubs, unless wild collected;
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—Wild-collected seed of federally listed or CITES listed endangered species;
—Aquatic plants;
—Food plants of little ornamental value;
—Seed of any species of *Lathyrus* from outside the USA (agricultural quarantine);
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—Large quantities of seed of large plants like *Clematis, Eryngium* or *Eupatorium.*

Send seed donations and correspondence regarding donations and catalog to:

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58 Kaintuck Lane
Locust Valley, New York 11560
USA

E-Mail
Direct questions about submitting seed to the Intake Manager:
jknapp@optonline.net
Do not submit your donation list by e-mail; it must accompany the actual seed. Requests will NOT be accepted via e-mail.

Send general comments and administrative correspondence to:

Carole Wilder, Seed Exchange Director
221 West Ninth St., Hastings, MN 55033 USA

GARDENS

Comments from a Rank Beginner

I don't know a *Chasmatophyllum musculinum* from a *Rabiea albipuncta* (a couple of names copied at random from the Summer 1998 *Rock Garden Quarterly*, my first issue). But I'm not too old to learn—75, going on 37. I remember upon my introduction to the American Rhododendron Society in about 1958, being totally awed by the strange botanical names, yet they eventually became as familiar as my kids' names

For many years we had a garden in the Coast Range about 35 miles west of Eugene, Oregon, with about two acres landscaped along the banks of two year-round streams and about 1500 rhododendrons and azaleas. When we sold the place five years ago and moved to five acres close to Eugene, we brought along about 500 rhododendrons and azaleas, knowing full well that the new site had historically had a severe water problem, and no public water supply was available. And of course rhododendrons need water—lots of it. After drilling four wells we finally got one that produced ten gallons a minute; not too bad for our purposes, considering our intended use of a drip irrigation system.

Our building site was on a gentle slope with a fantastic view of Eugene-Springfield and the surrounding mountains and valleys. We needed to level a space for the house, excavating down some 16' on the upper side. Lo, the workers hit bedrock at 4' and had to bring in a huge drilling machine and blast away 12' of rock. This produced boulders up to 6' in diameter. My landscaping instincts immediately went into high gear. There were no trees as yet, hence no shade; why not use the boulders for shade for the plants that required it? So we terraced the steep bank, with walkways and switchbacks and huge rocks strategically placed, hopefully looking as though they had occurred there naturally.

Can you imagine a stronger incentive to create a magnificent rock garden? Yet we ended up with merely another rhododendron garden. Oh, there were a few things like wild iris and a couple of hostas and a few sedums and sempervivums (we called them hens-and-chicks at the time). But I had from the first thought how nice it would be to eventually construct a cascading watercourse, originating from under a huge rock on the top level as a "spring" and trickling noisily down the various banks, under bridges where it crossed the walkways, crashing over a couple of waterfalls along the way, and ending in a pond at the bottom, where a submerged pump would recycle the precious water.

In the summer of 1998 it seemed the time had come to proceed with the watercourse. The man who had blasted our rocks owned a black basalt quarry, and he gave me permission to select rocks from his quarry to build the proposed watercourse. A plastic liner was acquired from a water-garden company, a water course was excavated down the banks by hand, and PVC pipes for the recycling system were placed in the bottom. The liner was put in place, then

basalt rocks were used to construct the watercourse and a 6' by 8' pond excavated (good exercise) at the bottom. Some masonry was required to create a waterfall. I'm not entirely satisfied with the overall result, but some small changes will improve it. Fortunately, power was readily available for the pump.

Well, it all looked pretty bare with just that pond sitting there. So maybe a rim could be built around the pond to retain enough soil for a few plants to dress it up somewhat—a few perennials, a few rock garden plants. My kissin' cousin, NARGS member Vickie Sauer, presently of Silverton, Oregon, had once given me some tiny rock garden plants that had been lost but remained in my memory. Maybe a few of those would do the job.

Some 15' from the pond stands a 50'-tall Douglas fir, so my wife Elaine suggested maybe, instead of just building a rim around the pond, the thing should be extended over to that tree. A trip to Ernie and Marietta O'Byrne's nursery to explore possibilities threw the whole dern idea out of hand from there on. Marietta advised me that many of the nicer rock garden plants require partial or total shade, but the fir tree was north of the pond. So the only thing to do was extend the new bed beyond the fir tree in order to take advantage of the shade. My neighbor had some large boulders left from his building project, and he generously offered them to me. They were placed in the part of the new area beyond the fir tree and added a whole new dimension. Then there was a blank space on the bank along one of the walkways that cried out for a raised bed of stone. Elaine says I never do anything on a small scale.

Marietta also informed me that the national convention of NARGS was to meet in Eugene that year, and she offered me an application blank to join the organization. Well, why not? I noted the registration fee for the convention was a little steep, but Elaine said, "You can't take it with you. Go for it!" Done.

At the first talk attended at the convention I fortunately sat next to a man recognized as having been always present at the Rock Garden Society's booths at county fairs and other local events. He introduced himself and patiently explained to me some of the things that were going on and what to expect from the convention. Then Nattie Hopewell stopped by and shook my hand. It was impressive to be welcomed to my first convention by the president of the local chapter and the convention's voice. Of course, I have known Nattie in connection with her Rhododendron Society activities for a number of years, but she had always appeared in jeans and grubbies, never in her dress-ups. Gad, what glamour! What class! What poise! What...

Yes, well, the next morning a tour bus took us to visit a number of local gardens. One was just an ordinary small city lot, and it was amazing how much could be crowded into such a small space and still be attractive. Next was a new and much more spacious garden, with considerably larger plants, yet it was enclosed and intimate. A garden in the countryside some miles from Eugene was quite large and still under development, but showing spectacular promise. It even had a banana tree, which I was amazed to find in this climate. Then there was a stop at the O'Byrne nursery to top it all off. It was most unfortunate that conflicting family schedules prevented my taking part in more of the convention activities, like the mountain treks, but maybe next time.

I'm getting a late start in this rock gardening thing, but learning a lot, and that's one of the keys, reportedly, to aging gracefully. The first winter has passed, with a couple of days and nights at 10°F. A few plants have expired.

Marietta informs me that winter is the worst time for losing plants, due to our constant rain. But replacements are available, and I'm acquiring some. I've provided good drainage and am hoping for the best. What a pleasant prospect!

I welcome correspondence, including advice. I need all the help I can get in this fascinating subject. Our address is 87344 Prince Lane, Eugene, OR 97402-9122; e-mail: barrette@lanecc.edu. Where do I go from here?

—Clarence (Slim) Barrett

Wallflowers

Oh, I DID enjoy the articles about sempervivums in the *Rock Garden Quarterly* in Summer 1998! But I was surprised that one of the most intriguing common names was not included, the name that must win the prize as the longest one ever—'welcome-home-husband-however-drunk-you-be'! Although engaging, certainly this name is no longer politically correct. I have also recently heard of another usage for sempervivums. The Victorians made living fire-screens of them by growing them in a wire mesh frame stuffed with moss, Once the plants were established, the screen was brought in to place in front of the fireplace during the summer.

I have always loved sempervivums, as they give the appearance of a tender succulent yet cope with both winter and wet. We live in Swansea, in southern Wales, and enjoy fairly mild winters due to being less than two miles from the sea, but that also means we have a high rainfall. Theoretically, we are within zone 9, but we find winter wet kills off plants that would be happier at lower temperatures, if kept drier.

I hate the dull winter months, but that's when houseleeks and other cushioning and encrusting alpines give me such joy with their shape, form, and texture, added to that, sempervivums often change color with the cold. When we moved to our house, the fairly long front garden was bounded onto the road by a wall topped with filigreed concrete blocks, painted white. Luckily, the blocks were in a bad state of repair, so my husband agreed that we could knock off the double row cresting the wall, together with the whitened rendering of the wall, which readily fell off in most places to reveal a standard wall of bricks. Subsequently, I have spent hours kneeling on our crude pavement attempting to introduce plants into the narrow crevices between the bricks, and, more successfully, into the slightly larger and less gravitationally-challenged space between the brick rows atop the wall.

I have had many failures, but thankfully I have forgotten most, and renew my efforts whenever I have sufficient suitable seedlings I can face appointing to this suicide mission. The successes obviously include an abundance of sempervivums, together with sedums and saxifrages, all well suited to the hostile environment. I believe that the lack of water is not the main challenge, but rather getting the plantlets to stay in place long enough to establish a root system to hold themselves there. I merely push the roots into the crack with a handy clod of soil—although most of the soil lands on the ground. I have had little or no success with seeds.

I have some *Arabis caucasica* 'Coccinea' and *Aubrietia*. As for *Cerastium tomentosum*, it grows with uncontrollable exuberance on a wall. *Silene shafta* I have

always thought rather common and coarse, so it was relegated to the wall, and there looks unbelievably lovely, especially in flower. On top of the wall *Campanula poscharskyana* crouches to adorn one gate-post pillar. Some years ago, I collected seeds from a yellow sunrose (*Helianthemum*) that grows wild on the cliffs of nearby Pwll-Du Bay. It has a tight, creeping habit and is staunchly evergreen, without a tendency to get thin and leggy as most of my others have done.

However, pride of place on the wall top must go to two plants of winter savory (*Satureja montana*) growing to 12" each year. They are the tallest plants here on the wall and form nicely symmetrical domes of tightly packed, dark green leaves that smell wonderful as I brush my hand through them whilst passing. Somehow I always forget to pick them to use in recipes. These savories are at their best in late summer when smothered with flowers, although at this time it is impossible to carelessly crush the aromatic leaves, as they are alive with bees, bringing sound and motion to the crowning glory of my wall.

My favorite sempervivums, however, cling not to this wall, but to that of 'Ty-Bach', the old outside privy halfway down the back garden. There I have a glorious cluster of my favorite *Sempervivum arachnoideum* which looks its best when starting to grow each spring with delicate cobweb strands joining each leaf. But it is its position close to the more common *S. tectorum* that is growing nearby that makes these two plants my favorites. Because a spider inhabits the same crevice as that houseleek, and as spring encourages the plant into growth, it also stimulates the spider, and my *S. tectorum* ends up with leaves ravelled with gossamer, just like the neighboring cobweb houseleeks! What a glorious joke! It never fails to amuse me. May my spider live long, or produce offspring to continue to live with the houseleek!

—C.R. Thomas

NARGS Coming Events

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Chasing the Blues
January 28th–30th, 2000
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Bill Plummer, Chairman

Western Study Weekend:

The Wild, Wild, West
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The Western Chapter
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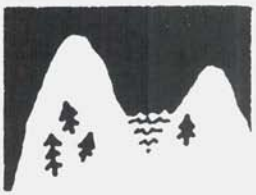

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Narrowing the Focus:
The titles being stocked will now more accurately reflect the specific interests of rock gardeners. Titles on general gardening or those on less appropriate genera will no longer be included. This will allow for a more efficient and viable operation of the service.

Discounts:
The Book Service will continue to offer the standard 20% discount on all US publications in stock. However, due to the high shipping costs and typically lower discounts, non-US publications will now be priced to cover such costs. Discounts on non-US publications may range from 10% to none, depending on the title. Even with little or no discount, members will still benefit by not paying higher overseas shipping charges, dealing with exchange rates or waiting longer for delivery.

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*Garden Alpines**/Alan Bloom. 128pp. $24
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Rock Gardening: How to Design, Building and Care/Duncan Lowe. 191pp. $14

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See Complete List insert included with this *Quarterly* for additional new titles.

N·A·R·G·S
BOOK SERVICE

SPECIAL NOTE:
Any titles published by Timber Press, whether on the Bookstore list or not, are available to NARGS members through the Bookstore at 20% off list price. If you wish to receive one of their catalogs, contact them at: 133 S.W. Second Avenue, Portland, OR 97204; 1-800-327-5680; 503-227-3070 fax; orders@timber-press.com.

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