

ROCK GARDEN *Quarterly*



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Front cover: *Fritillaria gentneri*. Painting by Paula Fong.

Back cover: *Aquilegia jonesii*. Photograph by David Sellars.

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ROCK GARDEN

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BULLETIN OF THE NORTH AMERICAN ROCK GARDEN SOCIETY

Volume 67 Number 1 Winter 2009

Contents

About the Artist: Paula Fong	2
Define and Design: 75 Years of Thoughts on the Craft of Rock Gardening	3
Two Poems, ROBIN MAGOWAN	38
The Trough Garden at Rockefeller Center, SUSAN KEISER	40
A Crevice Garden at Memorial University Botanic Garden, Newfoundland, TODD BOLAND	50
History on the Rocks: The Rockery at the Chelsea Physic Garden, MARTA MCDOWELL	53
PLANT PORTRAIT <i>Fritillaria gentneri</i> , JANE MCGARY	56
BOOKS Robert Nold, <i>High and Dry</i> , reviewed by ALAN PETERSEN Malcolm McGregor, <i>Saxifrages</i> , reviewed by DAVID SELLARS	58 59
2008 Photo Contest Results	62
Notes on the Award-Winning Photos	65
NARGS Coming Events	69

About the Artist

Paula R. Fong received her B.S. in biology from Denison University and her M.S. in forest ecology from the College of Forestry, Oregon State University. Her twelve years as a soil scientist and ecologist with the Bureau of Land Management and U.S. Forest Service gives her a unique perspective on the art in nature. Paula's primary medium is watercolor with pen and ink. She has illustrated numerous scientific publications, plant and wildlife posters, trail guides, and interpretive trail signs. She lives in the rural forest of southern Oregon with her husband and two daughters.

Paula sells her paintings and prints through her website, prfong.com. In addition to flowering plants, she has created a beautiful series on mushrooms.

She writes about her response to nature as a site for both science and art: "I have been fortunate to spend much of my career and recreation time exploring nature. It is fascinating to examine all the details, above and below ground, up close and from a landscape perspective. Every square inch of our natural world contains something artistically beautiful and scientifically interesting. I like to pick out one aspect of the environment and hold it up for inspection, with all its imperfections and variation. By changing perspective, focus, season and habitat, I have an infinite palette, and an unlimited source of inspiration."

Define and Design: 75 Years of Thoughts on the Craft of Rock Gardening

Compiled by the Editor

Seventy-five years ago a small group of enthusiasts founded the American Rock Garden Society, predecessor to the present North American Rock Garden Society. In 1943, the Society began to publish its *Bulletin*, predecessor to the *Rock Garden Quarterly*. To commemorate the achievements and longevity of the Society, we are observing the 75th anniversary year by looking back at some major themes in our publication, with excerpts we hope will stimulate new ideas for today's rock gardeners as well as offering a perspective on the history of our avocation and art.

The notion of a "rock garden" was imported to North America from the Old World, particularly from England, and early discussion in the *Bulletin* often centered on what a "proper" rock garden should be. Were Americans to imitate the Alps of Europe? Was there a correct kind of rock to use, and a correct kind of geological formation to imitate? Were there rules to follow in choosing one's plants? Some writers proposed strict limits, and others responded with a call for New World freedom. Beginning in volume 1 (1943), here are some of their thoughts. (Some excerpts have been edited for brevity, without ellipses indicated; some early authors favored an expansive, even—dare we say it—verbose style.) The italicized comments following some excerpts are mine.

☛ In order to have a naturalistic rock garden, it is desirable to imitate Nature as far as practicable. Usually the prostrate, mat-forming and dwarf tufted plants grow on exposed mountain summits. Below this, tiny shrubs often find shelter nestling among rocks. Gradually larger perennials find a home and shrubs, too, are bigger ones. Lower down they are intermixed with small trees and then come the forests.

Often a rocky outcrop part way down the mountain will carry the flora of the summit and sometimes too trees and shrubs will climb higher up above their natural range, especially in sheltered valleys. In a rock garden of small proportions this idea can only be carried out on a limited scale. Then perhaps it is best to attempt the summit type with dwarf plants only. Prostrate plants intermixed with a few diminutive tufted ones and several miniature bushes may be used. Compact shrubs and trees can form the background. (Mary G. Henry, 1:2)

☛ The original idea [for rock gardens] came from some plant enthusiast who, in travelling the high mountains, became smitten with the intense beauty and individuality of the flora. Having attempted to transplant these interesting individuals into the home grounds with only moderate success he may have conceived the idea of bringing down with them some of the rocks and soils of the native haunts in order that natural conditions might better be simulated. The things to be remembered from this hypothesis are (1) that the plants were of first importance, and (2) that the rocks were placed as aids or complements to the plant life.

On the other hand, [an] original impulse [may have come] from an individual who desired to create in the vicinity of his home a model of some outstanding natural feature, including rock. After its construction he found need for adding the plant life, found growing upon it in nature, in order to increase the sense of realness and trueness. In this instance, the rocks or natural mountain features rank first while the plant material is secondary.

Our present rock gardens are built not wholly for either [goal] but seemingly to combine features of both, but the first seems more important. Therefore, the subordination of the rock to the plant is most logical though there is undoubtedly an addition of a part of the second idea so that one does attempt to imitate a natural feature in a very limited, simple way. Effectiveness requires that one duplicate nature to a simple degree only, especially on small properties where space is at a minimum. Where space is ample and where a natural ruggedness of topography prevails, it becomes more possible to use more complicated patterns and designs.

Now we may discuss the application of the basic principles of our present method and point out the errors that most commonly follow misunderstanding or a total lack of awareness of the original impulses. Each year a new group of rock garden enthusiasts throw together incongruous stone masses, wholly out of place, and place in the crevices plants of all kinds (annuals, biennials, and greedy border perennials). With guidance they could easily be led to create quite reasonable and beautiful effects.

First, the rock garden is a place to grow plants and not a place to display boulders for their sake alone. Rock has a definite utility value: (1) it becomes the background for the plant; (2) the rock sets up favorable conditions for the growth of the plant. Stone interposes itself between sun and soil and insulates the soil's surface against the heat. It checks the upward flow of soil moisture and, instead of permitting it to evaporate, holds it in store so that the roots may take advantage of it.

Rock gardens must be very natural and informal. This is difficult when planning a rockery on a small city property where the accomplishment of isolation is almost impossible. Why is it necessary that the rockery be secluded and isolated? Because without complete isolation, all conception of the natural feature one has tried to duplicate is lost. One should isolate the rockery by planting trees and/or shrubs around its perimeter to hide it as much as possible from its surroundings.

It also follows that one should not attempt to imitate extreme natural features on small properties. Simplicity should be the rule in any garden; it is even more important on the small lot. (John H. Hanley, 1:82ff)

☛ To my mind “rock garden” signifies a garden which is built of rocks or in which rocks are prominently displayed. What kinds of plants should be used in such a garden is not implied in the name itself and should be left to individual taste. This statement, I am sure, is bound to meet violent opposition from those who declare emphatically that only true alpine plants should find a place in the rock garden.

I do not see why one should not assemble rocks or stones, either interesting in themselves, weathered to show their strata or moss covered, and place them in the garden to enjoy their beauty. Rocks all by themselves can be very attractive, and there is a great deal of pleasure in collecting them. Such a group might be further embellished with flowers planted near or between the rocks which, however, they must never hide. The kind of flowers would depend upon the fancy of the owner of the rocks. Such an arrangement would be a rock garden in the truest sense of the word.

If, however, our aim is to raise alpine plants, that is an entirely different proposition. We must, first of all, construct, with considerable labor and expense, a suitable home for them since they are rather exacting in their requirements. In a garden of this type, rocks play a very minor role. To a certain extent they are necessary for the wellbeing of the plants but they need not be conspicuous. In fact, the artificial scree or moraine which, on the surface, would show only fine rubble, provide the most satisfactory accommodations for exacting alpine plants. Such a garden I would call an alpinum and, naturally, there would be little sense in planting therein any but the kinds of plants for which it was built.

What we most frequently see are various intermediate types, or combinations of the two. One of these latter is the formal rock garden laid out in straight stone faced beds and planted with massed groups of some of the most ornamental mat-forming plants—alpine or otherwise—in a brilliant display. Should these be called rock gardens or alpinums? I believe that this should depend on whether the emphasis is placed on the rocks or the plants. (Henry Teuscher, Montreal Botanical Garden, 1:97)

☛ The joys little gardens can give should remain within the reach of most of us, and what a wealth of beauty and interest can be gathered in the narrow confines of quite a small rock garden must be experienced to be realized. The thing to aim at is proportion. Not only in the height of the dwarf trees which are so essential a feature in our picture, but also in the ultimate spread sideways, or on the little cliffs downwards, that the plants we would use for our small rock gardens will reach eventually.

If it is your aim to find room for a really wide variety of concise growing plants, so typical of the flora of the Alps, have your home for these constructed

with a multitude of narrow crevices and see that these crevices are, if at all possible, narrowest at their base so that the soil can settle down firmly into them.

Either sink your paths between your rock complexes so deep that you can deal with the greater bulk of your plants without having to stoop, or raise the whole of your rockwork to a convenient level with steep sides in which only vertical crevices need to be planted. (W. E. Th. Ingwersen, the great English nurseryman, 3:17)

☛ Space has emotional qualities. It is the joy of freedom and movement. There is pleasure in relating objects and in choosing their groupings, contrasts, and harmonies. Related lines, forms and colors constitute design. In a rock garden they exist in space. Any relationship that pleases is beautiful. This beauty of spatial relations exists between the forms and positions of the individual rocks that make the ledges and boundaries for the flowers; it exists between the forms and positions of the flowers; it exists between the color masses and their forms.

The simplest grouping of objects is at equal intervals and in a straight line, which by reason of its rigidity is inharmonious with the flowing informal character of a rock garden. Emptiness is the spatial interval between the related forms and is a device to isolate and emphasize particular forms and masses. There can be no pattern in space without empty intervals between its elements.

There is in rock gardening a related spatial corollary—the surface of the ground with its concavities and convexities. To be aware of the surface of the ground is to sense form as a joyous note in the mighty orchestra of spatial relations that a garden makes. (Walter D. Blair, 3:78)

☛ When planning the building of a rock garden, the proper location in relation to its background is very important. If on the northern border, the planting will obviously cast no shade on the rock garden. If on the southern side, a maximum of shade will be provided and then many shade-loving species can be used in an underplanting. There is a danger of which many new garden owners become aware too late: that the success of such plantings will depend very often on the whims of your neighbor, for should he decide to grow shade trees or high shrubs close to your southern border line, the shade ultimately may cause straggly and unsatisfactory growth. No deciduous shrubs will provide such a natural-looking and beautiful setting as some of our native evergreens. (K. W. Baasch, 4:37)

☛ From the standpoint of the ecologist, there are several types of rock gardens; in a large tract all may be combined, but most beginners will have to make a choice. For plants native at more northern latitudes or higher altitude than its site, the garden must be kept *cool*. It should slope more or less northward, so that the rays of the sun strike the surface in glancing fashion. Also, the surface materials should be light in color, so that the maximum of the sun's rays will be reflected. In addition, since nature's summer cooling agent is evaporating water, the cool rock garden should have moisture constantly rising to the surface and turning to vapor there.

Species from more southern latitudes and lower altitudes call for the rock garden to be relatively *warm*. Its slope should be directed more or less southward; and, since cold air tends to settle, it should be located well above the base of a slope. The darker the color of the surface materials, the more of the sun's heat will be absorbed. (Edgar T. Wherry, 5:17)

☛ Boulders are the most difficult and unsympathetic rocks to handle for a good picture. Personally, I can see only the boulder-slide type of arrangement on a slope. The varied-size boulders need to be placed with studied care, as if rolled into position by nature, with the largest the greatest distance from the slope; some rolled together in threes or fives of various sizes, with some half-buried in, and a few on top of the slope, as if ready for the journey down. With what appears to be a spring near the foot of the slide, and a small brook going from this into nowhere, a skilful designer may be able to make an interesting setting. (A. C. Pfander, 5:19)

☛ Even a rock garden wholly built by nature follows certain biological laws known as ecology. The plant grows there because it finds the location suitable to its needs. A garden wholly constructed by man has additional regulations put upon it, as the present trends in rock planting would dictate.

The choice of materials must be limited of necessity, unless your rock garden covers several acres. You might use only plants native to New England or eastern America for a New England rock garden; or plants from the Rockies or western America only; or those native only to the Alps of Europe; or rock plants from the far East; or true alpins; or those evergreen of foliage; or be restricted to special genera as main plant motif.

The effects from the union of the topography and the plants are quite different from any other type of gardening. The rock planting is a part of wild gardening and is associated less with the part of the property very neatly kept, and the feeling of the forces of nature is here evident. Rock plants of compact habit may be used in walls of formal nature, or between the blocks of squared stones used as paving. Still the purpose of the plants is to bring in the touch of nature as contrasted to the construction of man. (Stephen F. Hamblin, 5:81)

☛ What, then, is a rock garden? In spite of the name, the emphasis does not rest heavily on the rocks. A rock garden is not a pile of rocks collected as souvenirs of travels through the 48 states; nor, on the other hand, is the interest centered wholly on the plants.

The best answer is still the definition compiled by the American Rock Garden Society: "A garden which provides suitable cultural conditions for alpine, saxatile, and other low-growing plants, usually simulating in miniature the terrain and general appearance of the plants' natural habitat. Under some circumstances, the rock garden may be formal in character as, for example, when it is situated near a dwelling."

The most successful rock garden is one in which the hand of man is least apparent. A rock garden, in other words, is a naturalistic garden in which rocks

and plants are happily combined, the one complementing the other. (Dorothy Ebel Hansell, 5:85)

☛ A rock garden may not be completed in a day or a year; one must plan and build and plant and WAIT. Time alone can complete it. Time alone can give it the mellow age that makes it imitate nature as it is intended to do. (Arthur H. Osmun, 6:12)

☛ Rock gardening combines art and science, and therefore is satisfying to the creative urge that most of us possess. There is a tremendous wealth of interesting plant material to draw upon and we can spend a lifetime at rock gardening without exhausting its possibilities. (Lloyd P. Gray, 6:17)

☛ The most logical place for a rock garden is, of course, in natural outcroppings of ledge, if you are fortunate enough to have them. Unfortunately, you will often find that the soil around these ledges is acid, a condition most alpine plants abhor; also very often you will find a clay soil, which means poor drainage, and that the plants simply cannot and will not tolerate.

Not everyone has an outcropping of ledge handy on his premises. Very serious mistakes have been made in the selection of stone or ledge. All excavated and light-colored field boulders and quarried rock, no matter how large, should be excluded. Only weathered ledge, flat in appearance and so arranged as to simulate the natural stratification of existing ledges, should be used.

To place the rock garden without reason in the middle of the lawn is as unattractive as it is unnecessary. If there is a bank near the foundation of the house, that might become an ideal spot. If the grounds are small, I like to place the garden in a corner. Develop a background of hemlocks. Their lacy effect is always intriguing. For a mass of color, plant a number of azaleas that bloom at different times and a few mountain laurels in front of the hemlocks. (Alexander Irving Heimlich, 7:14)

☛ I'm sure that if each one of us enthusiasts were to write of his or her experiences, there would be as many versions of what a rock garden should be as there are people.

My conclusions are: 1. The stone you have or can get is the stone to use. Stratified limestone calls for ledges, but other native stone not only will look natural and right, but will grow the plants. 2. Good drainage is essential as is plenty of gravel or chips to keep the collars of the plants dry but allow the moisture to penetrate. Most plants do better in a lean mixture, though some need more nourishment. 3. Many of the plants we grow, instead of "abhorring" acid soil, really crave it, while others will tolerate almost anything. As Mr. Heimlich himself pointed out, plants grown from seed will adjust themselves in most cases to their surroundings. 4. Plants are like husbands. Give them a comfortable home, decent food, love and a modicum of petting, and they'll put up with almost anything and repay you a thousandfold! (Doretta Klaber, 7:31)

☛ Having read repeatedly advice by competent landscape designers to plant bulbous subjects where they will grow through dwarf evergreens, the editor wonders whether other members greet this practice with skepticism. What pleases the eye in a miniature juniper or spruce or hemlock is symmetry: if a branch is broken off, note how the beauty of the ensemble is spoiled for months or years to come. A vertical line rising through one side of a symmetrical evergreen is an atrocious flower arrangement. Even worse are the grasslike leaves which precede or follow the flower stalk: a mere half dozen will destroy the most enchanting effects which rock garden shrubbery can achieve. The leaves of many bulbous plants give considerable shade right down to the surface of the evergreen, where it does the most harm. When these leaves begin to die, flop and rot in masses, draping the evergreen foliage with their disgusting cadaverous embrace, nothing could be worse for the health of the juniper or any other conifer or broadleaved evergreen.

Let us suggest that evergreens be planted with evergreens, deciduous shrubs with deciduous shrubs, herbaceous plants with herbaceous plants, and their groups separated by a little space of no plant's land, or better still, a rock. (G. G. Nearing, 9:99) *Mr. Nearing cherished his junipers, and, like many conifer fanciers, approved the visual stability of a conifer garden.*

☛ A successful and satisfying rock garden doesn't just happen. You attain it through an understanding of certain basic principles of design and construction, plus a clear picture of the ultimate results which can be achieved in the particular spot where you plant to create it. It is the lack of such an understanding that has given us those monstrosities so filled with fantastic stones that a certain great authority was moved to remark that their makers should have taken up geology instead of horticulture. . . .

It is all very well for some to say that rock gardens should be kept away from the house or anything formal, but what is to be done with a fifty by one-hundred-foot plot, half of which is taken up by the house. Forget rock gardening? Not by any means. My own rock garden is placed in full view of the dining room windows with only a narrow planting of *Kalmia* and a three-foot gravel path separating it from the house. A planting of evergreen shrubs and conifers and some tall trees in the distance forms a good background. Its proximity to the house is not incongruous. Rather it looks as if some rocks had been cleared away to make room for the house and paths. And I like it just this way!

A rock garden should be placed where it will not be subjected to direct sunlight all day long. If this cannot be arranged, build it with a ridge running roughly east and west, thus giving you a north slope on which the choicer alpinists requiring more coolness may be grown.

The use of one kind of rock throughout is essential to obtain a natural effect; and unless you are gifted with an unusual talent for color combinations, keep clear of multicolored rocks.

Avoid using too many small stones. A well proportioned lot of rocks should roughly consist of an approximately equal quantity of three sizes: large (as large

and heavy as you and your help can handle with thick planks, rollers and crowbars), medium and comparatively small.

If possible study small natural rock formations, in particular those composed of the kind of rock you will use. Try to picture mentally which would suit your site best, and if your powers of visualization cannot be trusted, take camera snapshots of the composition from various angles.

Avoid using too much rock. Simplicity and restraint in rock gardening are often the unsuspected companions of success, for remember that you are working for a pleasing, sane effect—not merely to produce a comfortable home for plants. (Marcel Le Piniec, 11:82) *Marcel Le Piniec, most closely associated with the Siskiyou Mountains for gardeners today, was contributing to the Bulletin even before he moved to Oregon. The NARGS Le Piniec Award is now bestowed on nursery growers, seed collectors, and plant explorers.*

☛ I made a peat garden by covering the existing soil with four inches of gravel and peat. I think a gravel and peat garden would have all the merits claimed by Mr. Ingwersen for the block peat garden. In addition, we would not have to wait until block peat becomes available, if ever. Neither do we have to build up walls, as he does, but can simply lay gravel and peat on top of whatever soil we already have. Finally, we do not need to confine such a garden to acid-loving plants. Nearly all kinds of rock plants seem to like it.

Block peat would have some disadvantages in this country. If exposed to our hot summer sun, it would be difficult to keep it from being crusted; and when once this happens, it is very hard to get it to take up moisture again. In many regions it would heave badly in late winter. None of these things happen in a gravel-peat garden. (Ralph W. Bennett, 16:113) *Bennett was responding to the British fashion for "peat gardens" made of blocks of peat excavated directly from bogs, originally devised as a way to grow lime-hating plants in parts of the British Isles where soils have an excessively high pH.*

☛ One reason [for rock gardening] is to protect tiny ornamentals from non-gardeners and other animals. Rule one, then: Where the plants are, make the walking exceedingly treacherous, but provide good inviting paths within easy seeing distance. So place the stones that they can be walked on if necessary, but the spaces between them will suggest a sprained ankle. (G. G. Nearing, 14:87) *Nearing's second reason had to do with incorporating awkward terrain into the larger garden.*

☛ Tufa, a dirty grey or yellow grey, porous, creviced, and hollowed, is used where it abounds, but I think is not so desirable as it has a dead appearance as of old bones. It is an impure, earthy substance, frequently containing bones and horns of animals, leaves, mosses, and vegetable matter (all of which may or may not be beneficial to plant health) and is found in alluvial earths in the vicinity of calcareous mountains. Tufa is suited to and picturesque in cactus and succulent gardens, but would be very tiring and flat of tone in a general and especially a large rock garden. (Ellen Page Haydon, 13:67) *Haydon's viewpoint may startle readers today, when the fashion for tufa gardens far exceeds the supply of this stone.*

☛ Throughout the years, many persons have made statements concerning lime requirements based on very poor or faulty evidence. Just because a plant is growing on a limestone cliff, or in a limestone soil is not evidence of plant requirements. Possibly the plant is growing on a lime cliff because it is especially adapted for sticking to such a precarious perch by means of special roots or maybe it grows there because of the lack of competition. It may need the cool temperatures at high elevations or needs escape from soil-borne diseases or insects found in more fertile soils.

Lime is required by many plants in varying amounts. It would be more accurate to say that calcium is required by all plants since it serves as the cement that holds cells together. This calcium may be in the soil in the form of calcium sulfate (gypsum) or calcium phosphate or a variety of other forms. Some plants require fairly high pH or soils that are alkaline. This alkalinity is often due to lime in the soil but may also be due to sodium carbonates or potassium salts. Lime is useful because it raises the pH of some soils, adds calcium to the soil and is safe to use, but plants don't require lime as such.

All plants are apt to require certain lengths of day to flower or certain combinations of high and low temperature to develop flower buds and break seed dormancy. Perhaps the seed contains inhibitors that must be washed away. Perhaps the soil must contain a certain organism for the plant to grow. Perhaps fertilization is dependent on a specific insect that inhabits a small region. Understanding these factors can contribute to success in growing and flowering any plant. Trying to duplicate soil conditions, although important as part of the whole program, is sure to fail as a means of growing most plants. (Richard C. Andreasen, 13:102) *Andreasen, a plant biologist at Cornell University, was fed up with arguments over whether rock gardens should invariably be constructed of limestone, a substance readily available in much of the American Northeast but not everywhere.*

☛ When, twenty-five years ago, several hundred rock garden enthusiasts gathered in New York City to establish the American Rock Garden Society, we were young in experience, filled with enthusiasm, and hopeful of success with androsace and eritrichium. Of the original members, but forty remain with us. The years between have, we hope, made us wiser and more skillful gardeners. But they have also revealed to us the vast extent of plant lore beyond the grasp of any one mortal, the futility of horticultural dogmatism, and the need to pass on our scanty and empirical knowledge to those who, younger, may profit from our slender achievements and approach more closely the goal to which we have striven.

The rich flora of our own country remains a largely unworked source of treasures. We tried them in our early days and found that they presented problems too great for our inexperience. Now, with maturity, we can more reasonably hope for success. (C. R. Worth, 17:33) *This introduced the silver anniversary issue. The Carleton R. Worth Award is now given by NARGS to authors.*

☛ [In November] now more than ever the firm ruggedness of rock, unadorned, makes clear its rightness or wrongness. Now is the time to take the measure, not

of bloom, but of structure. Now the bare bones of the garden, like the inner frame of a handsome woman, take the eye. At this time of year one moves through the garden full of remembrance and anticipation. It is not very difficult to recall those days of early May when here was almost too riotous a blanket of blossom and the senses jangled under the demand. Only in certain nooks is there subtlety then. Now in late November every sweep is gentle with the variety of quiet texture and subtle shape. But most of all there is the promise. (H. Lincoln Foster, 20:103) *Foster gardened in a New England natural setting of woodland, stream, and rock outcrops. He was a major contributor to the Bulletin (which his wife, Laura Louise "Timmy," edited) over many years. They are commemorated in the NARGS awards for private gardens.*

☛ What is an alpine garden plant? The [Alpine Garden Society's] "Rules for Judging" gives a definition of an alpine or rock garden plant as follows: "The term covers all plants, including shrubs, suitable for cultivation in a rock garden of moderate size or in an unheated frame or alpine house. It therefore excludes such plants which would not survive an average winter under such conditions in the district in which the show is held but includes many plants which do not necessarily grow in mountainous regions." This definition invalidates Dr. Worth's criticism of some of the plants exhibited at the Conference Show. *Pyxidantha* and *Trillium* are not alpiners, but they look definitely at home amongst real alpiners. *Rhodohypoxis* and *Pleione* are certainly somewhat exotic, but not more so than *Calceolaria darwinii*, *Glaucidium palmatum*, *Jeffersonia dubia*. Nor are they showier than many well known plants such as some of the gentians or primulas or even that pestiferous little weed *Ranunculus ficaria*. *Incarvilleas* are even more exotic, but they are in fact mountain plants. (R. Ginns, 20:46) *Another attempt to define rules, this highlights the historical divide as well as the gap between the relatively homogeneous conditions of England and the great variety of the North American continent. Worth, writing in the Northeast, was disturbed to see Trillium grandiflorum among rocks and Pleione outside "the conservatory"; he did not consider the rocky habitats of some other trilliums nor of many pleiones.*

☛ Any warm climate, even right at home, harbors good potential rock plants. What we need is more interest in the rock garden resources of the lower latitudes as more and more people move there. Too many newcomers in all branches of gardening now bring their old familiar plant friends with them when they go subtropical, only to watch them languish and die, thereby wasting valuable time in which they could have become acquainted with the plants that belong in the new climate. (Leonard J. Uttal, 21:59) *Uttal was writing from the perspective of Virginia, but his remarks also foreshadow the westward movement of rock gardening over the years to follow.*

☛ With a planned arrangement of your property, and especially by the use of stone, you can minimize areas of contention [with hired gardeners]. Rather than be worn out and frustrated by chores, you will have more time for relaxation and carefree enjoyment. (Lucy W. Harriman, 21:97) *Harriman went on to recom-*

mend such features as interplanted flagstone paving, woodland gardens, "strip" driveways with planted centers, stone-paved terraces, rock-garden banks, and planted walls instead of traditional lawn-and-border designs. She did not observe that it is easier to get a hired gardener to mow a lawn than to weed a flagstone pavement dotted with small perennials.

☛ Having unsuccessfully attempted to grow dwarf trees and alpines out of doors in ceramic containers, which promptly burst their seams in our minus 20 degree F. New England winters, I looked with longing and envious eyes at the fascinating miniature gardens grown in stone troughs and sinks in England. These were not for me, I knew; stone troughs and sinks are not frequently, if ever, found lying around our barnyards, and I am not a stone mason. While in Scotland, I inquired of Mrs. Knox Finlay, whose beautiful garden in Keillour we were visiting, whether it was possible to get frost-proof pots. She replied by giving me a recipe for making them of $\frac{1}{2}$ cement, $\frac{1}{2}$ sand, and $\frac{1}{2}$ peat. (Laura Louise Foster, 22:4) *Thus, in 1964, began the long saga of hypertufa troughs in American rock gardens; Foster added perlite to the recipe and gave practical instructions for building these now ubiquitous containers.*

☛ I think that rock gardening should be counted with the arts of the world. The longer we work on a rock garden, the more we draw upon the thoughts, colors, patterns, and compositions of the world of art. It takes only a few years in a rock garden to learn the shades of green, the texture of foliage and what they do for the garden. The rock garden should be much more than an attempt to create a picture. To me, a rock garden means relaxation. If the work in the garden becomes a burden then we should find another hobby. A rock garden expresses the likes and dislikes of the one who works there. It also expresses little characteristics of the gardener—the tidiness and the time spent in the garden—making it truly one's own garden.

There is no room for impatience. It must be a happy journey along the rock garden paths. We must learn our plants as we learn our friends. If we are to have rock gardens that are a joy to behold and a place for relaxation, we must believe. I say this to all beginners: if the little mistakes are going to irk you into an ill disposition, don't start a rock garden. It is not for you. (Madalene Modic, 23:30) *Modic was responding to a harsh criticism that the Seed Exchange contained items that were misidentified or unsuitable for rock gardens.*

☛ Insofar as competitive shows are concerned, this is sure, is it not, the quickest way to discourage members who wish to learn about and grow plants? Competition is so keen in America that heart attacks increase and our mental institutions overflow. We need cooperation and restful stimulation (if there is such a thing), and the thrill of widening horizons. There simply isn't time to compete when we have such abundant, radiant plant material to collect, understand, propagate, and share. (Elizabeth Peterson, 24:6) *One of the most notable differences between our Society and its analogues in other countries is our dearth of competitive shows, although some took place in the Northeast in early decades. Distance is one limiting factor, but another is the viewpoint Peterson expresses.*

☛ When I first began work on the main rock garden, I was not yet familiar with Reginald Arkell's lines,

A garden should be rather small,
Else you will have no fun at all.

They do not ring quite true to me, though. If one is cursed (or blessed) with a sense of terrain, he cannot but build a garden so that its size is in proportion to all the rest. Any other kind would be a perpetual annoyance. In my particular setting the rock garden had to have the size it has now. For years I kept extending it up the slope, cutting trees, uprooting brush, and planting rocks until a balance was attained. Besides, building the skeleton for the first rock garden was pure, if arduous, enjoyment. The planting was another matter, and I finally did reach the point where I was willing to admit that Arkell's jingle contains at least a half truth. Our horticultural, nursery, climatic, and other conditions being what they are, it is far from easy to stock a large rock garden with the kind of plants one imagines the efforts one has put into it deserve. It is one thing to have a handkerchief-sized rock garden in an out-of-the-way corner, which after June 15 can be dismissed from the mind till the following spring, and another thing to have a large one which is the dominant feature of the grounds, the main view to be faced day after day, season after season. (J. P. Zollinger, 24:54)

☛ What is rock gardening? It's a type of landscaping furnishing decorative charm, but with the prime objective of creating conditions ensuring successful growth of miniature plants. Rock gardening is held by many to be an art and therefore not subject to any inflexible rules, but governed only by the individual tastes of the one practicing the art. This attitude has spawned some monstrosities in our time. Present day practice seems to embrace the concept that certain basic principles of design and construction, compatible with overall good landscape design, should be the framework within which individual taste is expressed.

Any space given over to growing plants in close proximity to rocks is, in fact, a rock garden. Present day rock gardeners have raised their sights, however, and are going for alpine gardens stocked heavily with alpine or subalpine plants. The alpine gardener's quest for success will keep him happily engaged for the remainder of his life. He learns early he is not alone in his madness. Countless numbers are doing the same thing all over the world. (Donald E. Havens, 28:94)

☛ My friends, when they pick out the seeds they are going to plant, seem to prefer the rarest ones, whether difficult or not. They turn up their noses at the ones that are the most popular in each genus. Not I. I choose only those that have two or three donor numbers after them in the Seed Exchange list. I figure that if many people grow these kinds, it is logical to assume that they are not only desirable but relatively easy to grow. By coming down off my high horse and being satisfied to grow the easiest species in each genus I stand a fair chance of having my rock garden beds filled with plants at all times, instead of having to make excuses for a lot of blank spaces where difficult plants have died out. You might argue, "Yes, and you could also have the beds filled up if you just grew a lot of weeds." My answer is

that a selection of the most popular species in the various rock garden genera would not make a garden of weeds; it would make a garden of pretty good rock plants, good enough to satisfy a gardener who is willing to be without many rare plants and who is compelled to garden in an unfavorable climate. (Ralph Bennett, 32:81)

☛ Wandering around the rock garden in the evening is one of the many pleasures of alpine gardening. It is then that one sees the quiet beauty of the plants; combinations and contrasts in foliage texture present themselves with a new clarity. Even in the familiar terrain of your own garden you can find new sights and experiences. To achieve this pleasant state you must visit the garden with the intention of doing no work whatsoever. Just look and enjoy; these are the moments when inspiration visits. You will see spots that can stand some improvement much easier than when you are deliberately looking to revise. I suggest that you take to carrying a few red plastic labels with you on these occasions so that when you find something that could be worked on, stick a label in it. It may be only one plant that needs relocating, dividing or some other attention. Then next time you are in the mood for work, seek out the red labels and the inspiration of the evening will be recalled. You will be surprised at the results this little habit produces. (Rex Murfitt, 32:117)

☛ While some of us call ourselves “rock gardeners”—a term which can all too easily conjure up a vision of people sowing pebbles and watching them grow to maturity as boulders—and others refer to themselves as “alpine gardeners”—thereby making people think that they wear hats with bits of chamois tucked in the banks and blow dolefully on alpenhorns as they scratch about with trowels in the unrelenting scree—the odd one or two take to themselves the description “growers of alpine plants.” Good for them. Their title is unambiguous, it is grammatically sound, and it avoids the rather pretentions “plantsman,” which accolade is for others to bestow on them. To call oneself a plantsman is rather like saying “I am a gourmet,” or worse, “I am a connoisseur.” (John Kelly, 33:58)

☛ It has been said that the rock garden must be remade every five years, or at least redone a section at a time with some regularity. What can be done to minimize this need? How can the design and construction at the outset best serve? Or is it mainly a matter of management, of feeding or not feeding, dividing or not dividing, or pruning or not pruning, of maintaining a very rigid discipline or none at all? Surely there are many clues we might take from our past experience and from those of others. (Anonymous, 36:11)

☛ A raised bed facilitates control of two elements central to the longevity of those prized species that we have wrenched from their alpine settings in the ephemeral hope that we can induce them to accept our more temperate climes with their uneven winters and hot muggy summers. The elements are deep drainage around the plant’s roots, and a soil mixture best designed to satisfy the plant’s requirements in its unnatural and hostile surroundings. Another

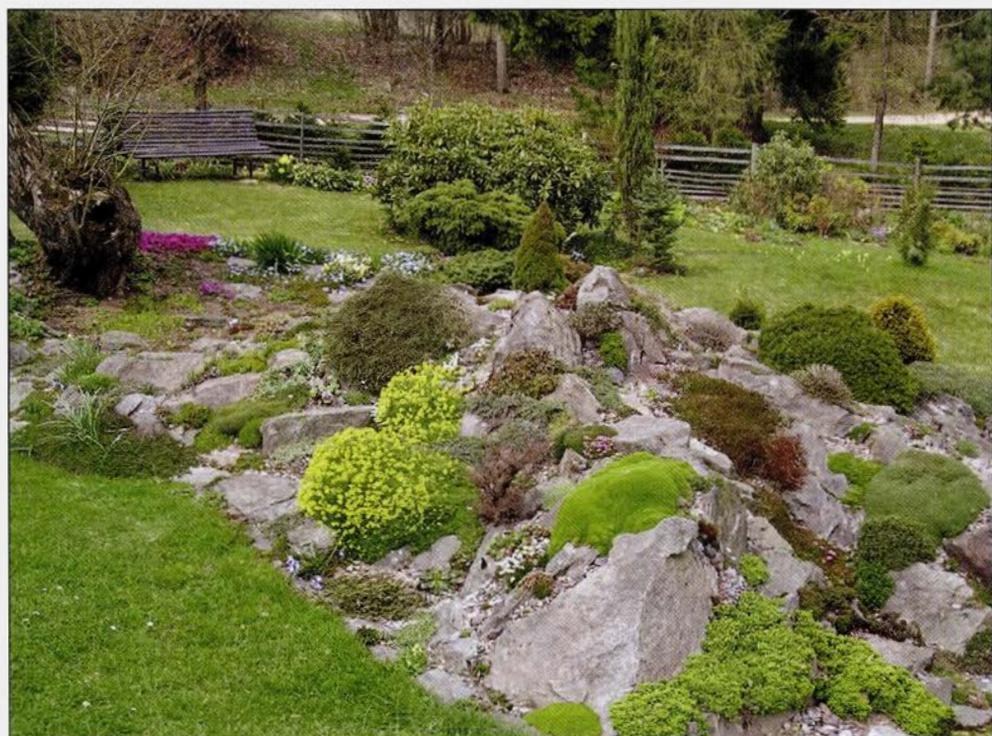
attribute is the felicitous way in which the alpine jewels are presented to the viewer at a convenient height. This agreeable method of presentation also simplifies maintenance of the plants and their surroundings throughout the year. Another important factor is the comparative ease with which a raised bed can be introduced into the garden and the generally satisfactory aesthetic result derived from its (almost always) geometric configuration. (Francis Cabot, 37:12)

☛ Rock gardeners go through many phases. Some take the high road and some the low: some become fascinated with the high alpiners and some with the plants of the woodlands and meadows. Most start growing the easier plants, but this phase is short-lived; they suddenly discover a whole new world of plants they never even knew existed and the next five years or so are spent searching far and wide for the rarest and most difficult plants. Then, after fifteen or twenty years of glorious experience, the successful growers all end up the same way: growing the plants they like best and the ones that grow best for them. The excitement of those early years can never be recaptured but its place is taken by a leisurely, happy time: tending the garden, seeing that their plants thrive, making changes here and there and introducing a new plant now and then. And the most wonderful part is that this phase goes on for a whole lifetime. (John P. Osborne, 38:12)

☛ Eighteen commandments for a rock garden: (1) The garden should remain as open and uncluttered as possible; it is neither necessary nor desirable that all of it should be visible at once. (2) Be bold with the initial layout, and make sure that paths are adequate for equipment and pedestrians. (3) Be bold with the use of rocks; use few, use them strategically, and make sure they are large and significant enough to be in scale with the remainder of the planting. Make sure they appear settled and not alien to the raw materials of the garden. (4) Leave some uninterrupted vista to rest the eye. (5) Be extremely critical, when planting under or near trees, which trees (and of which species) you retain. (6) Don't over-plant. Don't shortchange yourself of future pleasure for instant garden effect. (7) Be bold with the use of accent plants, but use them in extreme moderation. (8) Choose for the backbone or focal points of your design only plants of known durability, hardiness, general good health, and long season of interest. (9) Enliven the monotony of collections of closely allied plants by including plants of dramatically different form and texture. (10) Give full consideration to heights, lengths, and general proportions of planting areas. A rectangular raised bed would be visually jarring in a garden of soft curves, and so would a free-form simulated outcropping in very formal surroundings. (11) Keep the use of man-made and nonindigenous materials to a minimum. (12) Avoid too many varieties and discordant combinations of surfaces, particularly in mulches and top-dressings. (13) Provide a generous cold frame and nursery area. (14) Have a yearly housecleaning; remain conscious of whether a specific plant is justified in terms of the space and care it requires. (15) Rebuild and correct defects in the old garden before developing new areas. (16) Label only the most recent acquisitions

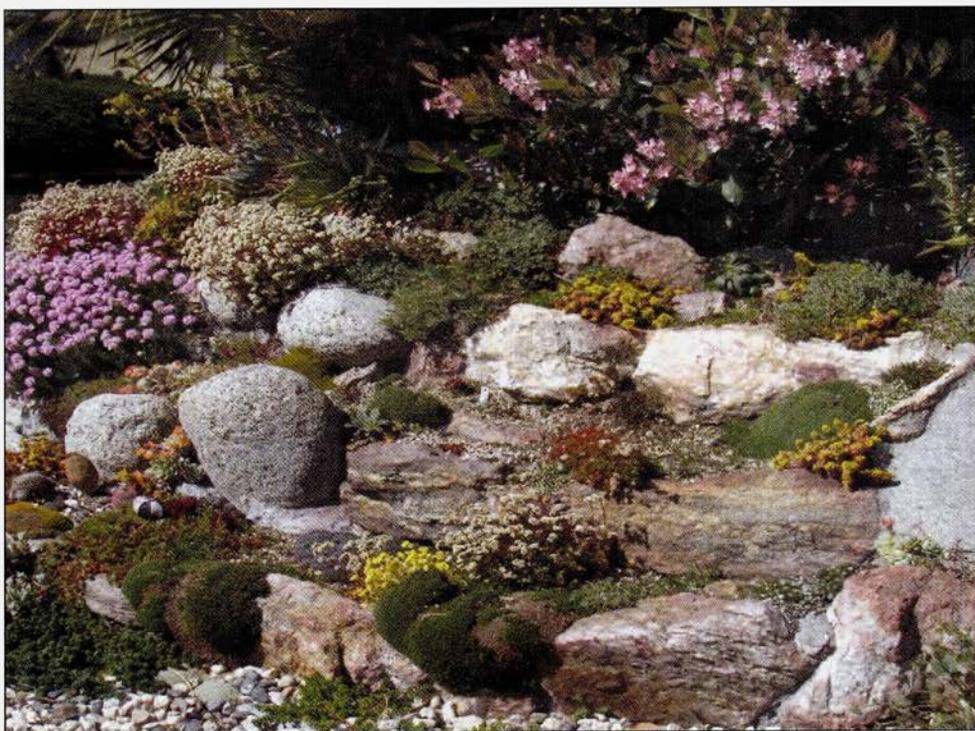


Contrast in rock garden design: above, a construction of massive sandstone blocks offers public access at the Royal Botanical Gardens, Wisley, England (photo, David Dobak); below, a crevice garden made of broken granite at the home of Zdenek Rehacek in the Czech Republic. (Z. Rehacek)



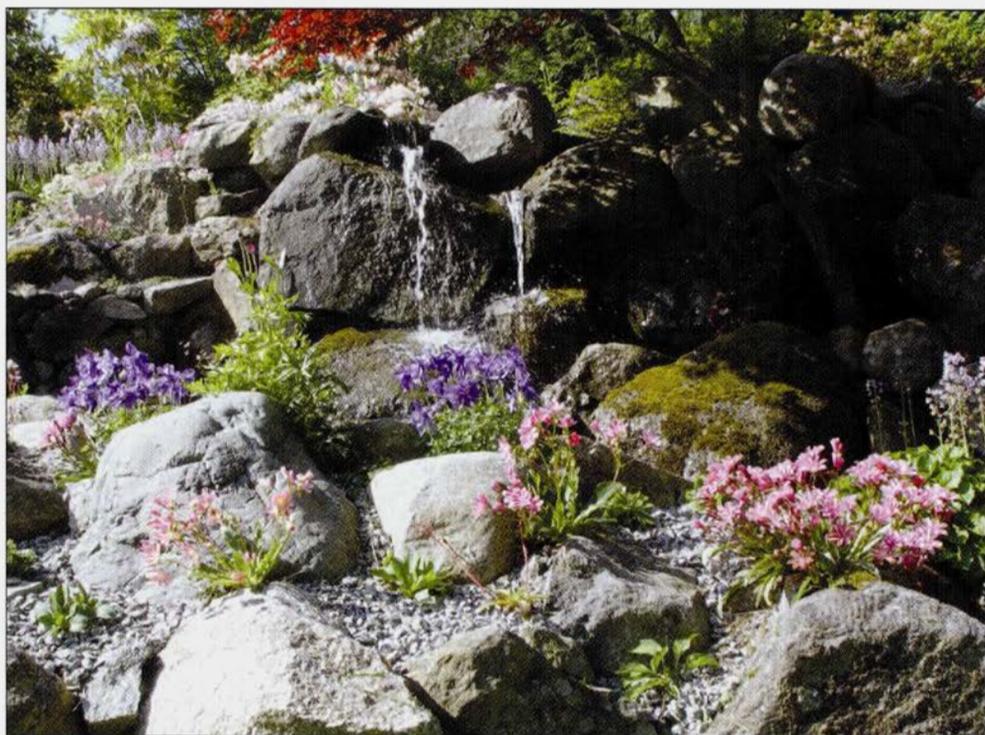


Design of these private rock gardens was dictated by their sites. Above, Kathy Allen's expansive garden of low raised beds on flat acreage near Medford, Oregon (photo, Tanya Harvey); below, Jack Muzatko's ledge garden for miniature plants on a steep slope near San Francisco Bay. (J. Muzatko)





The broad interpretation of rock gardens embraces woodland gardens on sloping sites and artificial water features. Above, Stefania Wajgert's Polish garden with *Corydalis solida* in bloom (S. Wajgert); below, David Sellars's British Columbia garden (D. Sellars). Both photos earned the gardeners awards in the 2008 contest (p. 67).





An overview of two terraces overlooking Rockefeller Center, designed and planted by Susan Keiser (p. 40; S. Keiser).

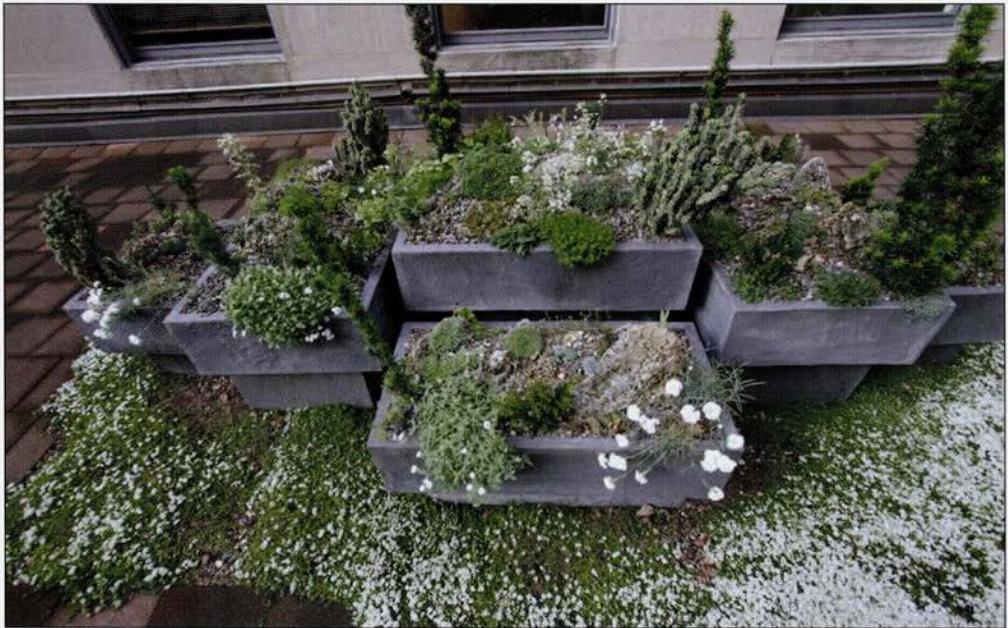
The Woodland section of the Rockefeller Center trough garden, July 2008.





(Left) part of the trough garden in July 2008; (right) a gray juniper and variegated violet are one of hundreds of vignettes to be appreciated in this garden. (S. Keiser)

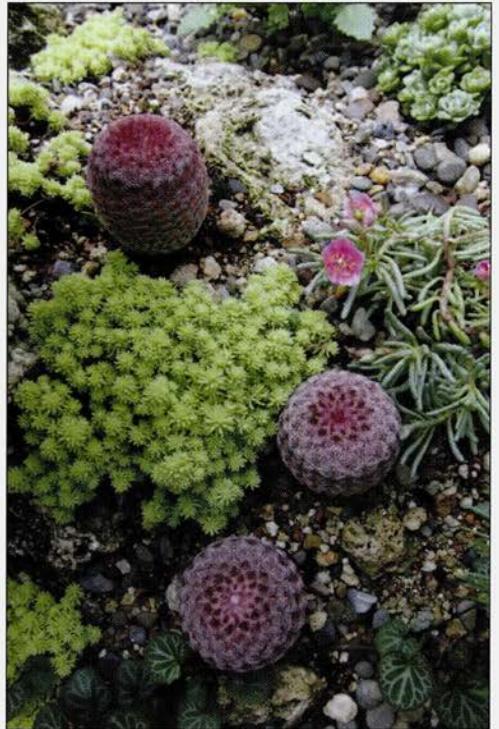
The White Alpine section of the Rockefeller Center trough garden, June 2008.





Part of the Woodland section, June 2008. (S. Keiser)

Two more vignettes among the troughs: left, *Haberlea rhodopensis* perched on rock in the Woodland section; right, cacti, sedum, and *Talinum* in the Dryland section.





The Cottage Garden section of the Rockefeller Center trough garden, June 2008. (S. Keiser)

The Conifer section features dwarf cultivars in troughs elegantly set off by New Zealand sedges in the gravel surround.





The rockery at the Chelsea Physic Garden, watched over by the stone face of Sir Joseph Banks (p. 53; photos, Marta McDowell).

Daphne jasminea is one of the choice rock plants grown on the Physic Garden's small rockery.





Construction stages of the new crevice garden at Memorial University, Newfoundland (p. 50; photos, Todd Boland).





Variation in a single small population of Oregon fritillarias, showing strongly reflexed tepals typical of *F. recurva* and the more bell-shaped flowers ascribed to *F. gentneri* (p. 56; photos, J. McGary).





Primula 'Jay-Jay' in the garden of Fred Nilsen, Portland; the photo earned Jay Lunn third prize in class 3 of the contest (p. 65).

Edraianthus serpyllifolius grown and photographed by David Sellars, Surrey, B.C., fourth prize, class 3 (p. 68).





Lewisia and photography are two of Jack Muzatko's passions. Above, *Lewisia kelloggii* in the Sierra Nevada, California, second, class 1; below, *Lewisia longipetala* in the garden, first, class 3.





Class 2, "natural scene with plants," tests photographers' technical and artistic skills. Above, *Penstemon davidsonii* (p. 67) at Crater Lake, Oregon, by Tanya Harvey, second prize; below, *Myosotis asiatica* and *Eritrichium nanum* in the Absaroka Mountains, by David Sellars, third prize.



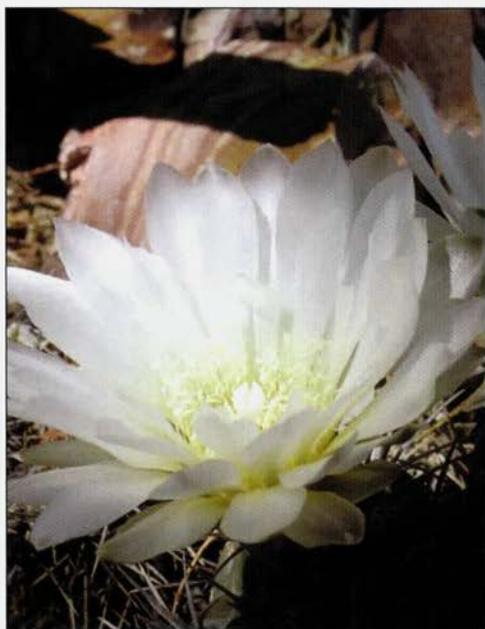


Photos in Class 2 can inform viewers about plant habitats. Above, plant community in the White Mountains, southern California, by Jack Muzatko, first prize, class 2 (plant identifications, p. 66); below, *Ranunculus glacialis* on a scree in Stelvio National Park, Italian Alps, by Stefania Wajgert, fourth prize (p. 68).





Small cacti grown and photographed by Jeff Brimley, all received Honorable Mention, class 3. Above, *Pediocactus despainii*; below, *Echinocereus* × *roetteri* and *Gymnocalycium gibbosum* (p. 65).





Calandrinia affinis at La Parva ski area in the central Chilean Andes, photographed by Tanya Harvey, won first prize in Class 1 and the Grand Prize (p. 67).

and those of which you are uncertain. (17) Invite the ARGS frequently. This will improve your housekeeping. (18) Know when to leave well enough alone. Have the self-discipline not to intrude too much into the natural landscape. (G. K. Fenderson, 38:38) *Fenderson's full article expands on each of these points. He appears to assume that the rock garden is set in a large country property, but many of his strictures are helpful in any garden plan.*

☛ There is an impression given in the literature that in some way a rock garden can and should look natural. We are exhorted not to make a “dog’s grave” or an “almond pudding,” and this or that construction is dismissed as “hideous.” What we are advised to do is some miniature replica of a geological formation, but this pointed advice is peppered with warnings and strictures so daunting in their effect that no matter what we do one or another of the pundits will pour scorn like a stone mulch on the endeavor.

Even the giants of this art form fail when looked at from the appropriate distance and appear as misplaced quarries or whatever other unkind epithet you care to invent. Conversely the worst “dog’s grave,” if inspected with love and imagination and again from an appropriate distance, can contain exquisite miniature landscapes.

By all means do it if you love geological forms; if rocks make you mystical; if you have the urge to construct a peak, chasm, cliff, or boulder field for its own sake or any of an infinity of idiosyncratic reasons. But if you merely want to grow plants, no such construction is really necessary. Therefore abandon without guilt (or embrace without self-righteousness) all conventions and ideologies insofar as they prescribe the parameters of aesthetics for growing the plants you want to grow. Especially abandon the Japanese temple garden and the Wisley mountain scene as the touchstones of taste. They are not what gardening is all about. They are fashion, not dogma, and fashions are constantly changing. The most successful parts of the gardens I have seen recently are raised beds with no pretensions whatever at imitating nature. (Geoffrey Charlesworth, 42:24–25)

☛ We are seeing the rock, alpine and desert horticulturists creating new possibilities of planting designs by distributing plant materials from differing global geographic areas with similar isothermic (temperature-related) and climatic conditions. This important concept has been termed “homeoclimatic planting.” It has been widely used in temperate and maritime climates but has only been in discussion recently in terms of arid, semi-arid, and alpine climates. For appropriate planting designs using this concept to become widely understood and used effectively, horticulturists and gardeners need to become more proficient in design, and landscape architects need to become more educated in horticulture. (Aaron Shamberg, 44:141)

☛ Well-proportioned mounds of piled earth and rocks recreate the visual effect of varied elevations. Bringing in a large quantity of soil or doing extensive recontouring of a hillside to create such an effect can be the best investment a rock gar-

dener can make. If the mounds contrast in both height and size and the slopes vary from gentle to very steep, the garden will take on a particularly dramatic quality. The greater the contrast of mound shape and size, the greater the number of microclimates, the greater the variety of plants, the greater the interest, the greater the drama of the garden scene—what more can one ask? (Harland Hand, 48:126) *Hand was one of the best-known garden designers in California; his own garden on a steep slope is being preserved by the present owner.*

☛ It is not fun to work in a garden in which paths frustrate your efforts to reach nearby points by compelling you to walk long distances. You can suffer an inconvenient design for months without complaining because you need the exercise; because you consider the design artistic and therefore inviolable; because you can't admit making an error; because someone you love or someone you paid designed it. Obstinance ensures that we shall put up with endless inconvenience to save face, or whatever you call it when only one person is involved.

Rich people and patient people design their gardens before making them. They make little drawings showing where the beds and paths are going to be. This has an air of finality about it that is contrary to the spirit of a *developing* garden. There needs to be room for whimsy, with freedom to dream in winter, knowing you will rethink the following spring. If you find yourself jumping over four feet of bed because you can't face going the whole way round one more time, then correct the mistake. Make a shortcut even if it means moving a few plants. (Geoffrey Charlesworth, 50:84)

☛ One of the most daunting aspects of rock gardening, especially for beginners, is the number of formulas for soil composition and preparation. The books are almost uniformly discouraging: equal (or unequal) parts peat, grit, leaf mold, or similar hermetic concoctions. The more unobtainable the ingredients, the more the gardener is assured of being set on the True Path to successful cultivation. Nobody ever tells you where to get "horticultural grade" grit, or limestone chips, or spent bracken leaves—or even what they are. I concluded some years ago that authors of these books lived in areas where leaf mold and other desirable stuff lay in heaps by the roadside, there for the shoveling, and I decided to grow most of my rock plants in ordinary dirt. (Robert Nold, 51:21) *Bob Nold expands on this idea in his new book, High and Dry, reviewed in the present issue.*

☛ In the design of the garden, I had used a Persian carpet concept. There are about ten colors in our carpet at home, from all areas of the palette. These colors are not arranged in drifts but in small patches, more like the pieces of a mosaic placed individually or in small groups. It turns out that Persian carpets were originally designed to represent the steppes of Asia in flower. The Persian carpet garden achieves its unity through the similar plant and flower forms represented in a single genus. Just eight genera provide the desired continuity. The gravel mulch and the rocks add to the unity of the design. The intermixing of color moves the eye across the composition. (Gwen Kelaidis, 51:52–53)

☛ If you are beginning a new garden, or viewing your yard from an altered perspective with the idea of rearranging, here are some questions to consider: Are there trees, shrubs, and structures that should be removed? Where should the rock garden(s) be? Will you be able to view it from the house or deck, and how much light will it receive? Does the overall grade need to be changed? Do supporting structures such as a fence or wall need to be built before the rock garden goes in? Where will the paths be, especially to the doors and gates? Where will the utility area (frames, gravel, soil stores) be located? Does the soil need amendments? What kind of rock will you use? What will you plant? When will construction begin? Why, now, of course! (Gwen Kelaidis, 54:163ff) *Gwen's article answers these questions with reference to her own experience making gardens in Denver.*

☛ I believe that if you collected seed of 100 alpine plants from mountains of the world—Europe, Asia, New Zealand, or South America—and treated them equally you would find only 10 to 20% amenable to regular, unprotected rock garden culture, and perhaps another 20 or 30% to specialized culture—garden artifice. While we would all prefer to garden without habitat modifications, eventually, through a desire to grow the ungrowable plant, we succumb. (David Hale, 56:28) *The modifications Hale discusses include crevice gardens, special scree mixes, troughs, containers that can be moved indoors in winter, covers installed in winter against rainfall, cold frames, and an artificial moraine.*

☛ It is possible in rock gardening to completely abandon all our nature-imitating principles. Kingdon-Ward described a paved or formal rock garden. It is rather like certain herb gardens, of geometrical form and with symmetry, approaching the two-dimensional. It is immediately suitable to urban gardening. The rocks are all pavers of natural stone or even of concrete, and the plant choices are low or flat-growing kinds, with allowance for larger plants in the center and on the edges. Kingdon-Ward points out, "It actually frees the gardener from worrying about relationships between rock and plants, or striving toward even remotely resembling mountain scenery." I have seen failed attempts at rock garden construction that would have been successful had they been built along these lines; their surroundings clamored for just such a solution. (Jeff Wagner, 57:111)

☛ Intrigue can be created by constructing ridges that conceal what is behind them, drawing the eye and mind to follow around the ridge to the next sight. Consider your view of the rock garden from windows in your house, from doors, from benches. By building ridges at least 3 feet high, much is obscured: the view of paths or lawn behind the rock garden; the other side of the ridge; perhaps other beds or borders. Privacy and a sense of intimate space is also created by the hills and valleys of the rock garden. (Gwen Kelaidis, 57:292)

☛ When converting a flat lot to a rock garden, two methods stand out. One is to create a series of free-standing raised beds, arranged somewhat like large

troughs within the context of a conventional, more formal garden. The second is to grade the entire property into a series of berms and swales so that it imitates a naturally rolling landscape. The first abandons any pretense to naturalism, while the second eliminates clashes of differing garden styles. (Marcia Tatroe, 61:194)

☛ North Americans (and maybe Scots) may find the word “alpine” more limiting than “rock.” “Rock garden” is exclusive in that those who believe gardening mostly involves buying annuals in the spring and spreading a few bags of mulch will never, ever comprehend the universe that can be seen through the lens of rock gardening. The term is inclusive because, to the cognoscenti, it encompasses the whole world: the entire planet is rock. If one is interested in growing plants from all over the world, or in one genus in all its forms, or one type of ecosystem as it exists in various places, or the wild plants from near one’s home, then one has to get used to the term “rock gardening.” (Nicholas Klise, 63:55)

☛ There’s an insulting term for every style of raised rock garden. The simplest to build is the berm, or mound. With rocks placed at random, it gets called a “plum pudding.” If the rocks are upended, it’s an “almond pudding,” probably worse. But a plum pudding is very functional. To introduce some design, place the rocks to form terraces in concentric circles, which leaves a maximum of planting area. The terrace now presents a line of rocks, and if they are uniformly rectangular, it gets called a “jack o’lantern.” Once again, ignore the insult: this is the most functional type of rock garden, and the lines will soon be softened by plants. To avoid your concentric terraces looking too naive—too much like they belong in a front yard set with gnomes and miniature wishing well—use two techniques. First, the bed should have a footprint longer than it is wide and slightly irregular. Second, “scallop” the terraces with rock so that one level doesn’t run completely around the bed. That will give you some small coves and pieces of vertical wall for special plants. (David Hale, 63:199–200)

☛ I want each plant to stand out and be seen for the extraordinary gem it is. If this means rearranging everything in the vicinity, so be it. This is where a crevice garden makes sense. The rocks not only give roots a toehold to tuck into, cooling or adding reflective light and heat; they also provide backdrops that allow smallness to be seen. Better yet is a 70-degree-angled irregular wall in which plants no longer have to be self-contained. They can spill over rocks and form mats through which bulbs and meadow plants will burst forth. The mats may also bloom a month or two later than the snowmelt cushions and hummocks of the scree garden. And I can tuck plants whose collars need to be kept dry under an overhanging rock, creating more surprise. (Robin Magowan, 63:287)

☛ A stratified rock garden certainly can appear attractive, but does it actually reflect the primary natural habitat of alpine plants, or it is simply a legacy from the Picturesque tradition? Alpine plants in mountains rarely grow among mas-

sive blocks of sedimentary rocks; they are much more common in scree slopes, talus, moraine deposits and shattered rock outcrops. These erosion and decomposition features provide a great diversity of plant habitat with a mixture of soil, stones, and rock particles.

Although the jumble of rocks of all sizes in talus slopes and moraine deposits appears chaotic close up, at a larger scale there is considerable beauty of form. Stand back from a glacial moraine and you can see the elegant shape of the landform deposited in graceful curves down the valley. Even an eroded rock outcrop has an overall shape that can be appreciated.

It may be surprising, but the hardest part of building a talus or moraine garden is making the rocks look chaotic. The reason Farrer's "plum bun" and "almond pudding" examples look unsightly is that they are not truly chaotic; the rocks are of uniform size and are distributed evenly over the berm. When gardening on a slope, it may be necessary to construct terraces to retain the soil, but they should be discontinuous. When constructing a moraine or talus, you have to stay very focused to achieve a chaotic appearance. (David Sellars, 65:12-13) *Sellars defends the rock gardeners of the Pacific Northwest, who have long resented instructions to use a material that doesn't occur in their region—stratified, weathered limestone.*

☛ When I first decided to build a rock garden, I was told the proper way was to use only the native rocks found where the garden was to be. I laughed to myself as I gazed across the ugly mudstone that made up my hillside. Another possibility would be to choose rocks and other materials that duplicate a particular place on earth: the granites of the high Sierra Nevada, the lavas or sandstones of western deserts, the limestones of the Dolomites. However, my rock garden style combines beautiful and interesting rocks from all over the world, often in combinations that never occur in nature. I like to call it "psychedelic progressive." (Jack Muzatko, 65:359) *Muzatko's style (photo, p. XX) may be otherworldly, but the plants love it.*

☛ *We conclude with our own proposal for a motto for the Society:*

IT WILL LOOK BETTER WITH PLANTS ON IT.

Two Poems

Robin Magowan

The Gardener, Winter

As dawn spreads like wildfire
Conjectures interrogate the horizon.

Soon the day's pencil will draw a note
Leaving me wondering what happened.

Buried in wool, back from the closet
Hands hold their grip in snow.

How can I reduce branching
Paths to one design?

Prune, I say, be bold, sky!
Let earth's unblemished virtues

Stake a future, land
That awaits a thousand names.

Sleet in the Garden

Music ripens as I wake to crystal pocks on glass.
Notes balance on invisible spokes.

Only the unseasonal keeps a pattern.
Illicit snowflake recurrences

Paper the arrivals shed
Where April's standing room only

Alpine plant crowd smolders in trays
Awaiting rock declivities.

The art, one of insertion;
I bury orchestral roots.

Is density, destiny? Every earthstring
Stretched taut, the garden's rockscape

Resonates, sky and wind
Struck into flowers.

Robin Magowan, a frequent contributor to this magazine, is also the author of several volumes of poems and of travel writing. He gardens near Salisbury, Connecticut. "A Gardener, Winter" previously appeared in *Fras* 8 (Scotland, 2008).

The Trough Garden at Rockefeller Center

Susan Keiser

Perched above Rockefeller Center in New York City, overlooking the famous *Prometheus* sculpture and the skating rink, sits the largest trough garden in the world. With 99 troughs and 153 additional containers providing homes to more than 700 species and cultivars of plants, it is a botanical garden in miniature. Its thousands of dwarf trees, shrubs, perennials, annuals, bulbs, and grasses from around the world create a vibrant oasis above one of the city's most famous public spaces (photos, pp. 20–23).

Gardens have always been an important feature of Rockefeller Center, from the very public Channel Gardens to the four private rooftop gardens that are visible from more than 100,000 windows. But the terraces that form the setbacks of the Center's skyscrapers are almost all barren expanses of pavers. In 1996 the chief tenant negotiator of a lease for the entire third floor of 10 Rockefeller Plaza was given a promotional brochure with the rooftop gardens featured prominently on the cover. Knowing how soft the real estate market was at the time, he asked for and received approval for the company to build its own garden on the terraces surrounding the floor as part of the lease deal. The result was a unique garden for a unique space. Accessible only to the tenants and their guests (and the occasional garden tour) the garden is as diverse and ever-changing as Rockefeller Plaza itself.

Design

The two L-shaped terraces flanking the north, south, and most of the east sides of the building, each approximately 17 feet wide by 230 feet long, had never been used for gardens and posed numerous design challenges: the sheer size of the area to be gardened, which would stretch even a generous budget; its long attenuated shape, which defied any conventional notions of garden building; and weight restrictions that made installing a traditional garden impossible. In addition, the garden needed to be attractive all year round, from inside the offices as well as out on the terraces themselves; the plantings had to be able to thrive in

the extreme conditions common to rooftops; and most important, the tenant wanted it to be a real garden, one that grew and changed through the seasons.

The tenant solicited proposals for the new garden from the Center as well as several outside designers. The plans they received all decorated the space with sculptures—one a fake beach with giant “seashells”—instead of plants. Wanting greenery, not stage sets, the tenant rejected all the proposals and was left without an acceptable design and a construction window that would soon close.

To get some advice, the president of the company contacted me; then a horticulturalist and designer at The New York Botanical Garden. My immediate response was that Rock Center needed a rock garden. Because a traditional rock garden would require many tons of large rocks, it seemed an unworkable idea; but given that alpine plants are ideally suited for the difficult conditions on an outdoor terrace, the concept wasn't completely without merit. But how do you make a lightweight rock garden? Robert Bartolomei, then the curator of the NYBG rock garden, thought troughs might be part of the answer.

Since the 19th century troughs have been the ambassadors from the rock garden world to the rest of the gardening public. The first were created out of the large, rectangular stone vessels used to water livestock, which enterprising gardeners turned into homes for challenging plants. In these converted troughs they could control soil composition, moisture, and other cultural factors, enabling them to grow plants that could not survive in an open garden. Used individually or in casual groups, troughs are an integral part of many rock garden displays and can be seen at the NYBG, Kew Gardens, and other botanical gardens around the world. At the request of the tenant, Bob and I submitted a proposal for a trough garden that was accepted in 1996.

Construction

Although rooted in tradition, the Rock Garden uses a mix-and-match system of troughs that I designed and had custom-fabricated out of fiberglass to reduce their weight and give the garden a distinctive look. Each trough is positioned on a base to bring the plants closer to eye level, and the five different sizes of containers (ranging from 18 by 24 inches to 24 by 40 inches) and two different base heights give the garden an underlying structure without being too formal.

The clean-lined, sculptural quality of the fiberglass containers, which most visitors believe are made of stone, gives the plants far more presence than they would have at ground level in a garden bed of similar size. Their impact is enhanced by the plantings in the gravel areas surrounding the troughs, and also by running the nine distinct sections in long sweeps down the center of the terraces instead of concentrating them around the edges, as is typical of most terrace plantings. The center placement also means that the plants are at the optimal viewing distance from the windows, enabling the garden to be enjoyed from inside the office space.

Where weight permitted, we arranged chunks of tufa in the troughs to increase their water-holding capacity and to accent the sculptural quality of the

plantings. Plants literally root into the soft stone. To help shape those areas where tufa would have been too heavy, a collection of five rocks in a variety of shapes and sizes was reproduced in cast fiberglass. Visually interesting enough to stand alone, they were specifically chosen to fit together in a number of different ways, leading visitors to assume they are each unique, real rocks.

In May 1997 the troughs for the south side of the terrace were assembled off site, trucked to the Center, and hoisted up to the terrace by crane. These were followed in June by the troughs for the north side. The first groupings were strategically positioned outside the cafeteria, executive offices, and boardroom, and at the end of floor-through view corridors.

Once the initial installation was complete I took over development of the garden as a project of my landscape design company, Greystone Gardens. The garden proved so popular that additional sections were added in 1998 and 1999. In 2001 I installed the first group of zinc containers. Three different sizes of these lightweight cubes complement and extend the garden; because they can be moved easily, they give the garden greater flexibility.

In 2003, just as everything was coming together, the entire garden had to be uprooted and moved, first to one end of the terrace and then to the other, to facilitate necessary roof repairs. While difficult on the troughs—not to mention the gardeners—this disruption offered an opportunity to rethink and improve the design. I reconfigured all the sections to include additional troughs, and in two of the sections, I added a third base height. In 2007 and 2008 the garden was completed with seating areas on both terraces.

Plantings

Gardens have always been the places in which we could experience the natural world in a controlled and safe way. The concept of the garden as an outdoor “room” extends from clearings in the primeval forest, to the walled herb gardens of medieval monasteries, to the backyards of today. Even large gardens are often structured around a series of rooms, with dramatic focal points to lead visitors from one space to another and seating to allow them to enjoy each new area.

The challenges to creating this garden as outlined above, especially its shape—two long, thin, unconnected corridors—dictated that the Rock Garden would not fit into any traditional “room”-based garden design. But the first few seasons demonstrated that the weather conditions were less difficult than those on most city terraces, opening the door to creating a far more interesting and complete garden than originally envisioned. While the first troughs relied on tried and true alpine and rock garden plants, as the garden grew the range of plants grew as well. The first plants came from several local nurseries, but by the fourth year they were arriving from 20 or 30 specialty nurseries around the country.

The development of the Rock Garden parallels the development of rock gardening as a distinct branch of horticulture. From an emphasis on alpine, the

dwarf plants native to the snowbound regions above the tree line, the field expanded to include plants growing in rocky areas at all elevations, and finally to embrace plants distinguished primarily by their small stature and their need for a degree of special treatment to survive outside their native habitats—including woodland and dryland plants from around the globe. Rock gardeners are the “plantaholics” of horticulture, whose gardens are always to some extent tributes to biological diversity.

Because the two terraces are not connected, they offer two separate yet complementary paths through Earth’s botanical diversity, in displays that draw inspiration from moments in garden history. The areas outside each entrance are the most traditional gardens, with their primary emphasis on color and design. The areas at the end of each terrace offer spectacular displays of life’s complexity, with the unique beauty of woodland plants on the north side, and on the south side the myriad forms and colors of the tropics we plant as annuals.

Over the years what were originally viewed as the site’s challenges became the garden’s primary assets. Each addition and reconfiguration allowed new plant ranges to be explored. The search for plants to keep the garden exciting throughout the year yielded not only a more beautiful garden but also a garden encoded with lessons on botany and ecology. Walking down the length of each terrace, one is propelled not by architectural focal points but by the diversity of plant life on earth. It is a garden best described not as a place but as a journey.

Gardens are ephemeral creations, constantly changing and evolving, some lasting for centuries, others only a few seasons. For more than a decade the Rock Garden has enlivened 10 Rockefeller Center from its perch on the third floor. Most of the photographs accompanying this article were taken in 2007 and 2008, during its most recent restoration and expansion, and record the garden as it is today. The sections that follow describe how this container garden has been designed to reflect different traditions in garden design.

The Cottage Garden

Before there were rock gardens or perennial borders, cottage gardens were an informal complement to the extravagant parterres of large estates. In the 17th and 18th centuries the conversion of open, communally farmed land into enclosed, individually owned plots freed village streets from roaming herds of sheep and cattle. This in turn allowed streets to be narrower, opening up a gap between street and houses that could be gardened by homeowners. Within tightly controlled boundaries of hedges, walls, or edging plants, they encouraged a wide variety of flowers to flourish in the first “front yards.” The contrast between the formal edging and the varied plants within gave these gardens spontaneous charm while maintaining a certain dignity.

In the Rock Garden’s front yard, the area just outside the cafeteria, the formal structure is provided by the plantings in the seating area, a symmetrical group of cubes, each containing a single shrub or a single plant species. Fastigiate plum

yews (*Cephalotaxus harringtoniana* 'Fastigiata') create the basic structure in the troughs, with green-and-gold variegated forms of dwarf *Chamaecyparis*, boxwood, and ivy adding year-round color. The vibrantly variegated *Hakonechloa macra* 'Aureola' billows over the sides, framing daffodils, tulips, and crocuses in the spring. But the main color show comes from a long parade of dwarf lilies, campanulas, and other perennials throughout summer. The overall scheme is yellow, purple, and blue, with the lilies providing taller bursts of pink and peach.

Bright Alpines

When the Rock Garden was first installed, the alpines were dispersed throughout. While they can still be found in most sections, two areas on the north terrace are now planted almost entirely with these tiny gems, allowing them to shine without competition from larger plants. The Victorian gardeners who "invented" troughs were attracted to alpines not only because of their rarity but also because the adaptations to harsh mountain conditions result in plants with characteristics most people find irresistible: wonderfully tight, bunlike shapes; beautifully grey and strokably furry foliage; and exceptionally large flowers for the size of the plants. Because they have just a few weeks to attract pollinators, they put on a flower show that would be vulgar if the plants weren't so small. These glowing flowers are the focus of the Bright Alpines section.

Upright junipers (*Juniperus communis* 'Compressa') give some needed height, while *Juniperus horizontalis* 'Pancake' flows over the sides. From the mountains of the western United States come candy-colored lewisias, intermingling with erigerons, geraniums, campanulas, gentians, and other essential alpine flowers. Among the most striking are the primulas, favorites of Victorian plant hunters. Gardeners were so enthralled by the range of colors and patterns in their flowers that they often displayed them in a "Primula Theater," a sort of outdoor bookcase, often embellished with arching trim to resemble a stage set. Out of fashion for decades, wonderful new cultivars have brought primulas back into style.

The Tapestry Garden

The 18th century was the great age of plant hunting, with adventurers setting out to the four corners of the globe. The creation of the Wardian Case (the first terrarium) enabled those explorers to bring back specimens by keeping newly discovered plants alive for months at sea. Back at home, the abolition of the glass tax and the invention of a machine to roll out glass in panes led to a rage for greenhouses and conservatories where tropical plants could be kept alive through freezing winters. African and South American plants were particular favorites and grown in great quantities in glasshouses. Taking advantage of their long season of bloom and colored foliage, "bedding out" soon developed, in which these bright leaves and flowers were arranged in regimented, geometric

patterns. With the coming of naturalistic gardening styles, bedding schemes fell out of favor with homeowners, but they are still popular in public gardens today.

While such formal arrangements would be impossible to create within the context of the Rock Garden, the Tapestry Garden borrows from that tradition. A vertical form of purple-leaved barberry (*Berberis thunbergii* 'Helmond Pillar') and several forms of dwarf golden-foliaged spiraea give the area height and coherence, while heucheras and blue-foliaged dicentras offer long-term color. Within this stable structure the area is planted each summer with different combinations of tropicals, including begonias, tradescantias, coleus, kalanchoes, gerberas, and eucomis. The possibilities are endless.

White Alpines

One of the best-loved and most influential gardens ever built is Sissinghurst Castle, the former home of Vita Sackville-West and Harold Nicolson in Kent, England. And one of the favorite rooms at Sissinghurst is the white garden. Tightly clipped boxwood encloses plants with green, gray, or silver foliage and white or near-white flowers. The essential simplicity, freshness, and elegance of this scheme has led to countless imitations.

The White Alpines section is a miniature tribute to this iconic garden. Upright yews (*Taxus × media* 'Beanpole') supply the framework, along with a tightly congested, variegated *Euonymus*. But it is the silver saxifrages that were the inspiration for the area. One of the quintessential alpine plants, they get their name from the deposits of calcium that give their foliage a fantastic silvery edge. Androsaces, another classic alpine, have similar foliage and mingle with plants with gray leaves and naturally white flowers, like *Antennaria* and *Arenaria*, as well as with white-flowered cultivars of *Campanula* and *Dianthus*.

Just as the plants in the Bright Alpines section respond to climatic adversity by producing extraordinary flowers, those in the White Alpines section produce extraordinary foliage. Mostly evergreen to enable them to photosynthesize whenever conditions are favorable, and low-growing to keep out of the wind, their foliage is often covered with silky hairs to trap moisture, making them appear gray or silver. Growing in tight geometric mounds or flowing carpets, they are beautiful year round, sparkling especially brightly when covered with their similarly ice-toned flowers.

Evergreen Forest

All the troughs in the Rock Garden are planted first to look good on their own and second to work with other troughs to make each section look complete and harmonious. The Evergreen Forest goes a step further. The entire section, including the areas around the trough bases, is a gentle allusion to mountaintops rising out of an alpine forest. This effect will be enhanced in the coming years as the

conifers around the bases grow in a bit, and those in the troughs are pruned back regularly to keep them in the correct relative scale. Gardeners in both Eastern and Western traditions have long used miniature or dwarf plants to create miniature landscapes. Japanese bonsai specialists have done it for centuries, while some intrepid early rock gardeners created entire mini-mountain ranges in their backyards. The Evergreen Forest pays tribute to their efforts as well as providing a setting for some of the choicest alpins in the entire garden, of *Saxifraga*.

This is actually the most temperate area of the entire garden and includes a number of cultivars of *Cryptomeria japonica* and *Chamaecyparis lawsoniana*, conifers that are difficult to grow well in this part of the country. It also contains a number of hebes, equally difficult shrubs native to New Zealand. *Cryptomeria* is endemic to Japan, where it is important economically and culturally. Large stands of these trees, often hundreds of years old, can be seen planted around important shrines.

Deciduous Woodland

The largest and perhaps most spectacular section on the north terrace is the Deciduous Woodland. The fragile-looking Japanese maples that dominate the scene are among the oldest plants in the garden, having survived droughts, abnormally frigid winters, and being moved around to accommodate roof work. In addition to their glorious spring hues, they provide the garden's final burst of color, turning brilliant orange and red under the watchful eye of the Rockefeller Center Christmas tree. Many of the other plants in this section are of Japanese origin as well. Millions of years ago eastern North America and Japan were part of the same land mass and shared a single flora. After the continents drifted apart, these species evolved separately, creating floras that are distinctly different but that have many similarities, making this woodland look familiar and yet a bit exotic at the same time.

Azaleas, kalmias, and pieris create an evergreen understory beneath the maples, surrounded by terrestrial orchids, epimediums, astilbes, and other shade-loving plants. Among the most unusual are the arisaemas. The American jack-in-the-pulpit (*Arisaema triphyllum*) is a common sight here in the Northeast, but its Asian counterparts are wonderfully strange and beautiful, as are the Japanese asarums, with their shiny heart-shaped leaves and unique brown flowers that open beneath the leaves at soil level. Asarums are deeply embedded in Japanese culture, with hundreds of special forms available to avid collectors. Intermingled with these exotics are the immediately recognizable hostas. Virtually ignored in Japan, their native land, they are now the most popular herbaceous perennial in the United States. Among the more than 2000 registered cultivars are the miniatures featured here.

The English Garden

Sissinghurst Castle, the inspiration for the White Alpines section, is just one example of the “classic” English garden. In the early 20th century, the “controlled chaos” of the cottage garden became the model for the country gardens of the now substantial middle class. Instead of a single enclosed area, their gardens became a complex series of interrelated spaces, with hedges, paths, walls, lawns, and other formal elements containing and complementing exuberant planting schemes. One of the essential elements in these gardens was the perennial border. Against an evergreen backdrop of boxwood or holly, designers arranged a wide assortment of native and exotic plants in carefully controlled compositions of color and form.

Surrounding the boardroom at one of the two entrances to the south terrace, deep green columnar hollies give structure to the Rock Garden’s rather loose interpretation of this style. Each season brings flowers in shades of blue, pink, and soft yellow. In the spring, traditional rock garden favorites like phlox and dianthus flow around the hollies and a number of dwarf *Chamaecyparis*, limbed up to expose their branching structure and to allow for planting beneath. *Scabiosa columbaria* ‘Butterfly Blue’ blooms through much of the summer, as do platycodon, dwarf pink gaura, and the dramatic ornamental oreganos that form pale pink and green cascades. Several very dwarf crepe myrtle cultivars begin blooming in August and carry the garden well into fall. Around the bases of the troughs, geraniums, silver-foliaged lamiums, ajuga, and asters form a continuously blooming carpet.

Conifers

The vast majority of plants now living on earth, including grasses and virtually all deciduous trees, reproduce through seeds borne in flowers; and this predominance is reflected in the species that populate the Rock Garden. But scattered throughout are more primitive plants, nonflowering species that represent most of the earlier stages in evolution. Mosses and liverworts, two of the world’s most ancient plants, grow on the tufa in the alpine sections; and selaginellas, horsetail rushes, and ferns, representing three later stages, can be found in the Deciduous Woodland. All produce spores, not seeds. Conifers grow in all sections of the garden but take center stage in their own area on the south terrace. Conifers and their close relatives, the final stage before flowering plants, produce seeds not within flowers but openly on cones or other structures.

Many of the close to 50 different taxa of conifers in the garden are featured here. Five troughs, one of each available size, are planted with blue-foliaged cultivars and positioned next to an identical, mirror-image arrangement of five troughs filled with gold-foliaged forms. Trees that would normally grow into forest giants are represented by dwarf or miniature cultivars that grow happily within the bounds of the containers. While most conifers are evergreen, the

deciduous varieties are represented by cascading larches and *Ginkgo biloba*. The brown New Zealand sedge, *Carex comans*, complements both the blue and gold foliage without being an unnecessary distraction.

Dryland Plants

Snow-covered mountains would seem to have little in common with sand-covered deserts, but there are surprising similarities in their flora. Because the processes of natural selection that drive evolution work within the laws of physics, when subjected to similar environmental pressures, the structures of unrelated plants often become very similar in appearance. Despite their obvious differences, mountains and deserts share one crucially important environmental trait: they are both very dry. Deserts just don't get much rain, while the ample water on mountains is frozen during winter and drains off quickly in spring and summer. And both can be extremely windy, which adds considerably to their aridity. The silken hairs that hold moisture and protect alpine plants from wind do the same for some desert species, and reduced periods for reproduction mean cacti also tend to have huge, glorious flowers. In the mountains, leaves can be reduced to mounds of contorted foliage or clusters of needles, while in the desert they can be reduced to simple spines. And both environments have their share of succulents, plants whose stems, roots, or leaves are capable of storing water during wet periods to survive periods of extended drought.

In the Dryland Plants section we see plants from mountains, deserts, and other environments in which the lack of water is a driving environmental force. Many of the cacti are not hardy enough to survive northeastern winters and are planted each year, but a surprising number can handle our climate, including varieties of *Opuntia* and *Echinocereus*. In addition to cacti, this section features rosemary from the Mediterranean, *Portulaca grandiflora* from Brazil, and *Titanopsis*, "living stones" from South Africa.

Sitting Areas

Zinc containers (12-, 18-, and 24-inch cubes) were introduced into the garden in 2001, and additional containers have been added periodically. The natural gray color of the metal (which over time develops a beautiful patina) complements the troughs, as does their geometric formality. In 2007 seating was added to the group of cubes outside the cafeteria on the north side and to those facing the Dryland Plants area on the south, allowing visitors relax in the garden as well as stroll through it. In 2008 a new sitting area was created outside one of two terrace doors on the south side, composed entirely of planted zinc containers as well as tables and chairs.

Virtually all well-designed gardens, from cottage gardens to the largest estates, involve some interplay between formal and informal elements. Without

structure a garden looks unkempt; without some wildness, it looks fake. In the original design of the Rock Garden the clean lines of the containers and their placement on rectangular pads of gravel brought order to the freeform plantings within. In later years planting into the gravel surrounding the troughs' bases made the garden much larger and easier to keep flowering for much of the year. But it also made it more difficult to keep the plantings anchored. Arranging the zinc containers symmetrically, planting them with "normal-sized" rather than dwarf plants, and limiting them to a single plant or species, helped to restore the necessary balance. The introduction of furniture also helps to keep the garden grounded. In the newest area almost 90 of the 12-inch cubes are arranged in two striking pyramids filled with exotic annuals.

Susan Keiser was manager of the Rock and Native Plant gardens at the New York Botanical Garden. She is now the principal of Greystone Gardens, Inc. and tends her own garden in Ossining, New York. She can be contacted at susankeiser@hotmail.com

A New Crevice Garden in Newfoundland

Todd Boland

The Memorial University Botanical Garden is in St. John's, Newfoundland, Canada. Our botanical garden consists of 10 acres of developed gardens and another 100-acre natural area. Some of you were fortunate enough to visit this botanical garden during the 2005 NARGS Annual Meeting, hosted by the Newfoundland Chapter. Those attendees may recall that our rock garden comprises close to half of our ornamental planting area.

The rockery consists of several specialized alpine gardens. The older portion, built in the early 1970s, utilizes sandstone and siltstone and has soil with an acidic pH. Here we house a number of alpinines that prefer acidic conditions. Adjacent to this garden is our scree, where we grow plants as diverse as *Bolax* from the Falkland Islands, *Yucca* from Colorado, *Genista* from the Mediterranean and *Morina* from the Himalayas. In the late 1980s we constructed the limestone rock garden and scree to accommodate calciphile (lime-loving) alpinines, which include many of our native arctic-alpine species. Our alpine house provides visitors with up-close-and-personal views of exquisite alpinines and allows us to cultivate plants that would suffer from the excess winter wet associated with our 60 inches (1500 mm) of annual precipitation. And of course, here and there we have hypertufa troughs. The one rock garden feature that we were missing was a crevice garden.

Several of our local NARGS chapter members attended the Western Winter Study Weekend hosted by the Vancouver Island Alpine and Rock Garden Society in 2006. During that meeting we attended a workshop on crevice gardening and visited the garden of Joyce Carruthers and Zdenek Zvolanek. The concept, although recently introduced to North American alpine growers, seemed quite simple. Among ourselves, we thought a crevice garden would be ideal for our botanical garden. It was also around this time that the *Rock Garden Quarterly* reported on the huge crevice garden constructed at the Montreal Botanical Garden. Ours would be much more manageable in size. Our botanical garden is a nonprofit organization with a limited budget, so we decided to apply to the NARGS Norman Singer Fund for a grant to make our wish a reality. I am delighted to say that we were successful. Together with a donation from the

Newfoundland NARGS Chapter and a private donation from a Friend of the Garden (also a Newfoundland Chapter member), we accumulated enough funds to pay for the rock material needed for the crevice garden, along with new plants and a trip to northern Newfoundland to collect native arctic-alpines.

The rock material was purchased in late fall of 2007, but construction was delayed until early summer 2008. The book *The Crevice Garden and its Plants* by Zdenek Zvolanek gave us helpful construction suggestions. At first it seemed daunting, but once started, the construction proved quite simple. We placed a 12-inch (30 cm) layer of coarse, rocky topsoil as our base. The rocks were then positioned one at a time and backfilled with a mix of sand, $\frac{3}{8}$ -inch (5-mm) chip stone, compost, and topsoil. The medium proved to be well-drained yet moisture-retentive. In just a few days, the construction was complete (photos, p. 25).

We left a running sprinkler on the garden for several days to settle the soil, then proceeded to plant. The intent is to grow smaller alpines and allow them to self-seed to fill in the small crevices and cracks. Already, however, we have seen that some of the choices are becoming bullies and will require removal next spring. But that is all part of the learning curve.

As I write this, our crevice garden will be going into its first winter. We have had some serious rainfalls so far and, touch wood, the crevice garden has not suffered any washouts, so our soil mixture seems to be working well. Plants have literally tripled in size since planting. They seem to be appreciating all the cool root runs provided by the numerous countersunk rocks. We are particularly delighted with the success of our native arctic-alpines. While we do grow quite a number at the botanical garden, certain species have proven difficult, such as *Saxifraga aizoides*, *S. oppositifolia*, *Primula laurentiana*, *Pyrola asarifolia*, *Mertensia maritima*, and *Anemone parviflora*. All of these are now in the crevice garden and doing exceptionally well. We have seven species of native arctic willow, including *Salix jejuna*, a Newfoundland endemic and one of the rarest willows in the world. Some other natives include *Tofieldia glutinosa* and *T. pusilla*, *Cypripedium parviflorum* var. *planipetalum*, *Platanthera aquilonis*, *Spiranthes romanzoffiana*, *Saxifraga paniculata* var. *labradorica*, *Solidago multiradiata*, *Rubus acaulis*, *Silene acaulis*, *Draba arabisans* and *D. laurentiana*, *Stellaria longipes*, *Arnica chionopappa*, *Erigeron hyssopifolius*, and *Iris hookeri*. In shaded cracks we have our native ferns *Woodсия ilvensis*, *W. alpina* and *W. glabella*, *Cystopteris fragilis*, and *Asplenium viride*.

We also have alpines from more exotic localities, such as the Rocky Mountains, Pyrenees, Alps, Himalaya, and southern Andes. A selection of these alpines include *Campanula* spp., *Moltkia petraea*, *Lewisia*, many named encrusted saxifrages (thanks to Rex Murfitt), *Dianthus* spp., *Gentiana* spp., *Primula* spp., *Erigeron* spp., *Ramonda myconi*, *Haberlea rhodopensis*, *Potentilla* spp., *Allium* spp., *Oxalis* spp., *Phlox* spp., *Sedum* spp. and many named *Sempervivum* cultivars.

Next spring we will no doubt have some casualties, and certainly there are still plenty of cracks to be filled. Already many visitors have complimented us on the new garden. Currently it still looks quite new, but with maturity it should be even more appealing. I have already seen a private crevice garden constructed locally by one of our repeat visitors (and hopefully a new Newfoundland NARGS

Chapter member!). I would like to take this opportunity to extend a sincere “thank you” to the NARGS for helping make our crevice garden a reality.

Todd Boland is curator at the Memorial University Botanic Garden and also maintains his home rock garden with many choice species. Active in both national and regional NARGS, he headed organization of the 2005 annual meeting.



A nineteenth-century view of the Chelsea Physic Garden, with the rockery at left.

History on the Rocks: The Rock Garden at the Chelsea Physic Garden

Marta McDowell

It is August in the year 1773. The long summer days in London are witness to some hard labor in the Apothecaries' Garden in Chelsea. A rock garden is in the making. The Thames laps along the edge of the property; sounds of boat traffic are steady background accompaniment to the construction project. Cargo boats have easy access via the river gate, and just as well. Joseph Banks has contributed black lava rocks from his voyage to Iceland on His Majesty's ship *St. Lawrence*. And, of all things, someone has arranged for pieces of the Tower of London, then undergoing a bit of remodeling, to be donated as well.

This unique assemblage of rocks and plants was the latest addition to a garden that was already celebrating its 100th birthday. While no particular evidence suggests that the rockery was a direct salute to the centenary, it seems fortuitous and somehow fitting that it was installed that year. To understand the context of the oldest rock garden in Europe (in continuous use), let's have a brief look at the strange and glorious history of the Chelsea Physic Garden.

Ten decades earlier, in 1673, the Worshipful Society of Apothecaries established a four-acre botanic or "physic" garden among the Chelsea's orchards and market plots. In those days, apothecaries needed to know their plants. They used leaves, stems, roots, and seeds to distill and compound medicines. Botanical identification was more than an intellectual exercise for apprentice druggists: a mistake could easily be fatal.

The Chelsea apothecaries were in good company, from a literary point of view. About 1595, William Shakespeare wrote of Friar Lawrence in *Romeo and Juliet*, contemplating the virtues and vices of a single plant:

Within the infant rind of this small flower
Poison hath residence and medicine power:
For this, being smelt, with that part cheers each part;
Being tasted, slays all senses with the heart.

Given the importance of their Physic Garden, as time passed the Society made capital improvements. The perimeter was walled in brick, supplementing the

warmer microclimate provided by the river. A heated glasshouse and library were added. A succession of gardeners, notably Phillip Miller, built a renowned collection of plants. Miller is perhaps best known for his horticultural prowess and as the author of the *Gardeners Dictionary*, the reference book of choice among 18th-century horticulturists. His 50-year tenure (1721–1771) was synchronous with a huge influx of new species from the British colonies. Plants were pouring in.

Like the NARGS Seed Exchange, early plant trade relied on the post. Long before the invention of the Wardian case (a large terrarium used to transport live plants) in 1848, most of the stock was in the form of seeds. The longest running seed exchange, the *Index Seminum*, started between the Physic Garden and the Botanical Garden at Leiden in 1683. Over the years, the Chelsea seed lists were augmented from many sources, including America, via Philadelphia's John Bartram.

Among this rich mix of flora the idea of a rock garden emerged. The minutes of the Garden Committee from April 1773 report that "a piece of ornamental rockwork will be a very ornamental addition" and "very useful for the cultivation of such plants as will only thrive in very stony soil." William Forsyth, who had assumed the head gardener position from Miller in 1771, must have at least supported the idea. Forsyth, for whom *Forsythia* was named, was busily rearranging the "order beds" to correspond to the new Linnaean system.

The director of the garden, apothecary Stanesby Alchorne, donated 40 tons of stone from the Tower of London "for the purpose of raising an artificial rock to cultivate plants which delight in such soil." This idea of creating a habitat specific to plant requirements was something quite new. In her book *The Apothecaries' Garden*, Sue Minter notes: "It is interesting because it was built many years before the Victorian heyday of interest in rock gardening and is also a very early example of an interest in what we would now call 'ecological planting.'"

The Chelsea rock garden was quite the cabinet of curiosities, decorated with tufa, corals and shells from Captain Cook's trip to Tahiti and Joseph Banks's trip to Australia. One giant clamshell remains from this hoard. A bust of Sir Joseph was donated to the garden in 1824, and a replica still looks out from the front of the rock garden like a figurehead on the prow of a wooden ship. To top it all off, by 1836 a pond was added to the middle of the rockery (photo, p. 24).

As in all gardening genres, rock gardens are subject to fashion. William Robinson, a tastemaker in the 1870s, wrote *The Wild Garden*, advocating naturalistic plants and practices. In his chapter entitled "Wild Gardening on Walls, Rocks, or Ruins," he pointedly remarked: "The rocks meant here are natural ones—not the absurdities too often made in gardens." I imagine the Chelsea Physic gardeners of the Victorian period read that and cringed.

Over the years different gardeners made alterations to the look of "The Rock," as it was sometimes called. They took away the stone from the Tower, hid the shells, and moved the lava rock. But in 1999, with Heritage Lottery funding, the Pond Rockery was restored to its original footprint, materials replaced or reproduced, and the garden replanted with "plants that will only thrive in very stony soil."

Sadly, no record remains of what Forsyth planted on "The Rock" in the 18th century. Today the inventory of the plantings in the "Pond Rockery," as it is

called today, runs to nine pages representing over 120 species. Many of the plants are endemic to Crete and the Peloponnese, Corsica, Spain, and Mallorca. One of the gardeners told me that the collection gave visitors a feeling of being on holiday, as many Britons seek the sun of the Mediterranean during their long damp winters.

On an extended working holiday of my own, I was a volunteer intern at the Physic Garden in the summer of 2007. Here are some of my favorites in the Pond Rockery.

Cephalaria squamiflora subsp. *squamiflora*, native to the Aegean Islands, is a member of the Dipsacaceae family and looks like a sturdy scabiosa. In late summer it was covered with white flowers and round purple seedheads, bobbing in the breeze.

True to its name, prostrate *Daphne jasminea* (photo, p. 24) has sweet-smelling tubular flowers. The glaucous leaves are a bonus. In the Pond Rockery it was well sited where it could creep down the edge of the rocks.

I would grow *Paeonia cambessedesii* solely for its bulging burgundy seedpods. From the Balearic Islands near the east coast of Spain, it is small in stature with single pink flowers in spring. The leaves are blue-green with a metallic surface sheen.

Saxifraga maderensis var. *maderensis*, endemic to Madeira as its name suggests, sports beautifully dissected foliage.

The Physic Garden continues to be an active participant in the *Index Seminum* seed exchange. As a result, plants are allowed—actually encouraged—to go to seed. It gives the garden a wild look, especially in late summer. Where we might be tempted to deadhead and tidy up our own rock gardens, the Chelsea gardeners step back and let the plants in the Pond Rockery assume their natural late-season forms.

The physical appearance of its neighborhood has changed considerably since the Garden's founding over 300 years ago. The country estates gave way to Victorian townhouses and the chic shopping districts of Sloane Square and Kings Road. Traffic whizzes by on the Embankment, built in 1874, which divorced the Garden from its river frontage.

Yet inside the brick walls of the Chelsea Physic Garden, time seems suspended. Birds linger at feeders. Toads plop into the tank pond. And visitors ponder the quirky Pond Rockery, its splendid collection of stony-soil plants, and the ever-watchful gaze of Sir Joseph Banks.

For more information about visiting the Chelsea Physic Garden, see www.chelseaphysicgarden.co.uk

PLANT PORTRAIT

Fritillaria gentneri

JANE MCGARY, *Estacada, Oregon*

This issue's cover subject is *Fritillaria gentneri*, a plant found in southernmost Oregon (and possibly in adjacent northern California) in a few scattered populations. It is listed as endangered by both state and federal agencies. This status reflects its uncommon occurrence and loss of habitat through human activities; the plants are also threatened by the increasing population of deer, which eat many liliaceous plants. Local groups are active in preserving the plant, and its image is a favorite on local publicity materials and souvenirs.

This tall fritillaria grows among grasses and shrubs (often, poison oak) in the light shade of scattered trees. Precipitation is low and occurs mostly in winter. Summers are very hot and dry, but the dormant bulbs lie deep in the rocky clay soil. Frosts are common during its growing period, but winter temperatures don't go very low, so it is difficult to predict how well it would survive away from the Pacific coast states, could it be introduced into cultivation.

Despite the importance that conservation efforts have assigned to this plant, its status as a "good" species has long been in doubt. It is very similar to the widespread species *Fritillaria recurva*, which grows in the same area, and it has some characteristics typical of the even more widespread *F. affinis*. Botanists looking at its morphology (visibly observable features) have hypothesized that it is a natural hybrid of these two species. The main visible difference between *F. gentneri* and *F. recurva* is the shape of the flower's segments (the tepals), which curl back strongly at the tips in *F. recurva* and are straight or only slightly recurved in *F. gentneri*. The flowers of *F. gentneri* are also larger than those of some populations of *F. recurva*, but the latter appears quite robust in this area. In general, *F. gentneri* flowers appear darker than those of *F. recurva*—crimson rather than scarlet—though both, on close examination, are checkered ("tessellated") in red and yellow. In a single stand one can see quite a range of flower forms and coloration (see photos, p. 26).

Botanists at Oregon State University have done DNA studies on this plant. A paper by Stephen C. Meyers, Aaron Liston, and Robert J. Meinke, presented at a conference in 2006 (see www.2006.botanyconference.org), confirmed the hybrid origin of *F. gentneri*. The abstract concludes: "Based on superimposed nucleotide additivity patterns (SNAPs) in the ITS sequences, our results indicate that *F. gentneri* is a hybrid of *F. affinis* and *F. recurva*. In addition, both nuclear and chloroplast sequences suggest that separate hybridization events, leading to the origin of local *F. gentneri* populations, have occurred on multiple occasions."

In his chapter in *Bulbs of North America*, David King writes, "Maintaining it as a species is something of a political issue rather than a botanical one, since its rarity makes it a candidate for listing, and its presence would then be grounds for preservation of its habitat." Certainly the wildflower enthusiasts of southern Oregon would be sad to see it lose its current botanical status. Moreover, it is a fascinating example of speciation—the evolution of new, clearly definable species—through hybridization. Would the most robust and fertile *F. gentneri* individuals eventually form a stable, true-breeding population if their environment were less affected by human activities (or, indeed, by preservation measures)?

Its hybrid nature may explain in part why *F. gentneri* does not set a great deal of fertile seed, and thus is rarely cultivated. (Some other American *Fritillaria* hybrids, such as *F. purdyi* × *F. biflora*, readily produce fertile seed.) Like *F. recurva*, its bulb produces hundreds of tiny bulblets, called "rice grains" for their appearance—an adaptation to disturbance by animals, since the tiny bulblets may remain scattered in the soil after the main bulb has been eaten. It is very easy to propagate fritillarias of this type from rice grains, and there is no practical reason why *F. gentneri* should not become widely cultivated, could the political objections to this be overcome. *F. recurva* and the closely related *F. eastwoodiae* are grown in many gardens today, both in North America and abroad. I hope that someday people who have to rescue bulbs of *F. gentneri* from locations to be developed will preserve the tiny bulblets and allow some of them into nurseries for propagation.

Some conservationists contend that no rare and endangered plant should be cultivated because its presence in gardens and the nursery industry would induce ignorant gardeners and unscrupulous nursery growers to remove wild plants from threatened populations. A competing view is that the propagation of such plants from seed or other material collected under strictly controlled conditions, and then from cultivated stock, would reduce pressure on wild populations. I believe that the latter would be true of *F. gentneri*. Most of its populations are easily accessible and not well protected, and thus vulnerable to collectors, especially those who are not willing to attempt seed propagation. Nursery production of this iconic fritillaria could reduce pressure on wild populations and, if managed by a conservation group, provide income for conservation efforts.

BOOKS

Saxifrages: A Definitive Guide to the 2000 Species, Hybrids and Cultivars, by Malcolm McGregor. Portland: Timber Press, 2008. 384 pp., color photos throughout. ISBN 978-0-88192-880-8. Hb, \$49.95; available at a discount from NARGS Book Service.

Reviewed by DAVID SELLARS, Surrey, British Columbia

Saxifrages have been considered the backbone of the rock garden for over a century. They are relatively easy to grow, form attractive low mounds with year-round foliage interest, and have a wide range of flower colors. It is thus surprising that there has not been a comprehensive treatment of the worldwide saxifrage family since 1919. Malcolm McGregor's new book does not just fill the gap in the rock gardening literature. It packs the void with excellent granular material combining authoritative taxonomy, personal observations, and accounts of mountain travel.

This is a book that is very satisfying to pick up and sample. It has a nice heft to it, like a particularly pleasing rock when one is building an alpine garden. It is beautifully illustrated, which invites browsing through the several hundred photographs elegantly laid out within the text. The images illustrate leaf and flower details of selected plants and also capture the variety of saxifrage habitats in many locations throughout the world.

The book begins and ends with journeys: how the author developed his interest in saxifrages and the far-flung places around the globe that he has visited in pursuit of his obsession. We learn that there are 33 genera in the saxifrage family, including such familiar garden plants such as *Astilbe*, *Bergenia*, and *Heuchera*, but the book is primarily focused on two genera, *Saxifraga* and *Micranthes*. *Saxifraga* means "rock-breaker" because ancient traditions ascribed medicinal properties to them—the treatment of urinary stones—rather than because of their supposed habit of growing in and fragmenting rocks.

Recent taxonomy has split *Micranthes* from *Saxifraga*, which will be unsettling to North Americans, as we now have to change the name of familiar native sax-

ifrages to *Micranthes tolmiei*, *Micranthes lyallii*, and *Micranthes ferruginea*. The author is particularly fond of *Micranthes* because most are difficult to grow in the garden, and the only way to see some species is to seek them out where they grow wild. McGregor takes us as far as Nome on the Bering Sea in western Alaska in search of *Micranthes* species.

The section on growing saxifrages in the garden is one of the best descriptions of the art of rock gardening that I have read. It includes useful tips on propagation such as peeling away the lower leaves of a rosette before inserting a cutting, and a discussion on the challenges of growing in warm summer climates common in much of the United States. The author's suggestions for the 100 best saxifrages enliven this part of the book and provides a useful list for anyone with even a passing interest in the genus. On the other hand, the curious prejudice of British authors against peat-based potting composts is once again advanced, despite the fact that loam-based composts are not generally commercially available anywhere else in the world. (McGregor, a historian in his academic career, lives in northern England and is a former editor of the Scottish Rock Garden Club's bulletin.) Contrary to the concerns expressed in the book, saxifrages can be successfully grown in peat-based composts as long as they are amended with copious sand and grit.

There is an excellent and comprehensive section on the history of the development of *Porophyllum* hybrids, including lists of the crosses from which they originated. There has been keen interest in developing *Porophyllum* hybrids for over a hundred years, starting in Britain, with the Czechs taking a major role in recent years. While most of this activity was in Europe, the most prolific hybridizer in the 1960s and 1970s was Lincoln Foster in his garden at Millstream, Connecticut.

This is a very well written and substantial work both for reference and for entertainment, an essential volume for the library of the serious and casual rock gardener. The quality of the publication and the comprehensive content extending to 384 pages has set a new standard in rock gardening literature, aided by the glory of the saxifrage family. Malcolm McGregor writes that the charm of saxifrages is that they retain the qualities of the places from which they come. The charm of his book is that he has successfully captured the magic and beauty of saxifrages and their habitat.

High and Dry: Gardening with Cold-Hardy Dryland Plants, by Robert Nold. Photographs and artwork by Cindy Nelson-Nold. Portland: Timber Press, 2008. 420 pp., color photos and paintings throughout. ISBN 978-0-88192-872-3. Hb \$34.95; available at a discount from NARGS Book Service.

Reviewed by ALAN PETERSEN, Flagstaff, Arizona

I *love* this book. Perhaps because its focus is on the intermountain West, my favorite region in North America; a region that *is* high and dry. Those of us who

garden in the intermountain West enjoy continual challenges, and nothing can be taken for granted here. Gardeners and plants face a short growing season, unpredictable weather, and generally poor soils. The climate is one of four seasons, with most of the moisture coming in the winter and summer—sometimes. Weather can be extremely variable owing to the wide ranges of elevation and local topography. Soils are commonly thin and rocky, or heavy clay. As a result, the plants have adapted to these less than optimal soils.

Or perhaps I love this book because of Robert Nold's wry sense of humor. He has a down-to-earth, practical approach to gardening and is wary of the visual deceit of coffee-table books on garden design.

High and Dry begins with a chapter on gardening basics tailored to our region. Nold discusses the common characteristics of drought-tolerant plants and what these characteristics really mean with regard to gardening philosophy and practices. He goes on to discuss considerations for designing wild gardens and rock gardens, and basic plant propagation. His no-nonsense approach to garden design, as in most aspects of gardening, is based on allowing the plants in the garden to determine their optimal population size and distribution in your yard.

Gardeners in the West do have one of the greatest selections of native plants in the world to work with, including a very high proportion of fascinating endemic species. Ninety percent of *High and Dry* is a brief catalog and description of Western plant species suitable for dryland gardening. All those that Nold discusses are western North American native species, fascinating and well-adapted to the climate and suitable for natural gardens in the West. Readers will be familiar with many of the species discussed, but they will also find many new and fascinating ones to consider. There is a nice large section devoted to penstemons for the penstemaniacs, in the "annual and perennial" section. Nold also includes sections on grasses, cacti, shrubs, and trees. While not all of the species the author covers in his book are necessarily suitable for a rock garden, the longest chapter in the book does cover plants most appropriate for rock gardens. I recognized many of my favorites along with dozens of new ones that I will look forward to seeking out and introducing into my garden.

In his introduction to the book, Panayoti Kelaidis calls *High and Dry* "nothing less than an act of grace." Those of us who live in the West love our native plants and the sweeping plains and intimate niches they inhabit. With this appreciation in mind, why don't more western gardeners welcome them into their gardens? As Nold notes, gardening styles and practices and plant preferences moved west with settlers. Traditions like these are as tenacious as the native plants themselves. Gardening with natives does require a different approach, but not secret techniques or necessarily irrigation. The vast majority of western residents who garden (or, anyway, grow plants in their yards) are in denial of a few essential facts that lead to unnecessary and in many cases copious watering. In his classic essay "Thoughts in a Dry Land," written in 1972, Wallace Stegner succinctly states that "You have to get over the color green." Nold's thesis includes rejecting "much of the accepted wisdom of traditional horticulture . . . a new catalog of plants . . . new gardening techniques . . . and acceptance, without reservation,

of the realities of the climates of the west.” I will add my “amen” to Panayoti Kelaidis’s. *High and Dry* is a celebration of the plants that inhabit the western landscapes, and it offers sound and reasonable advice for helping them to prosper in your yard.

I do love this book because its focus is on the intermountain West. It is engaging for all of the right reasons why we celebrate the plants that inhabit the western landscapes. I also love this book because of Nold’s humor and down-to-earth approach—it is fun and easy to read, and very nicely illustrated with good photographs. *High and Dry* combines a practical approach to native plant gardening with a large and comprehensive listing and discussion of plant species suitable for gardeners interested in creating a truly drought-tolerant garden, as opposed to the species your local chain nursery would lead you to believe are “drought-tolerant.” I love this book too, because I felt as if I were reading about myself. I, like many others who will love this book, believe in the philosophy and practice of “If it works—excellent! If not—try something else.” And like Nold, I don’t believe in trying to solve problems by adding more water. Robert Nold’s book has found a welcome home in my library.

2008

Photo Contest Results

Once again our frequent contributors and some new names have exceeded the wonders of the previous year and made the judges' task ever more difficult. We're delighted to be able to feature these images throughout the coming year, and to preserve the digital photos in our growing archive for use when they are needed in future years.

In addition to the four numbered placings and the Honorable Mention, the very high quality of the top tier induced us to add a new placing category in the larger classes, "Exceptional Quality," for photos equal in technical quality to those placed higher but less appropriate to the criteria of the class entered, or less artistically composed.

Grand Prize

Tanya Harvey, *Calandrinia affinis* at La Parva, Chile (from Class 1)

Class 1: Portrait of a plant in nature

1. Tanya Harvey, *Calandrinia affinis*, La Parva, Chile (p. 32)
2. Jack Muzatko, *Lewisia kelloggii*, Sierra Nevada, California (p. 28)
3. David Sellars, *Aquilegia jonesii*, Wyoming (back cover)
4. Peter Downe, *Pulsatilla patens*, Medicine Wheel, Wyoming

Exceptional Quality

David Dobak, *Agoseris glauca*, Washington; *Collomia debilis*, Washington;

Linnaea borealis, Montana; *Trollius albiflorus*, Montana

Tanya Harvey, *Nassauvia lagascae*, Volcan Lonquimay, Chile; *Oxalis squamata*,

Valle Nevado, Chile; *Oxalis subcaulis*, La Parva, Chile

Michael Hoppel, *Centaurea achtarovii*, Pirin Mountains; *Viola grisebachiana*, Pirin

Jim McClements, *Monotropa uniflora*, Delaware

Jack Muzatko, *Lewisia disepala*, Yosemite, California; *Lewisia kelloggii* (3 images),

Sierra Nevada, California; *Eriogonum* sp., White Mountains, California

David Sellars, *Androsace villosa*, Pyrenees; *Douglasia montana*, Wyoming; *Eriogonum*

ovalifolium, Nevada; *Eritrichium nanum*, Wyoming; *Penstemon speciosus*, Nevada

Doris Taggart, *Phyllodoce empetriformis*, Mt. Rainier, Washington; *Oenothera*

deltoidea, Sierra Nevada, California

Stefania Wajgert, *Viola calcarata*, Gran Paradiso NP, Alps

Honorable Mention

Peter Downe, *Cypripedium calceolus*, Swiss Alps; *Calypso bulbosa*, Wyoming

David Dobak, *Aquilegia jonesii*, Montana (2 images); *Campanula piperi*,

Washington; *Castilleja occidentalis* × *rhexifolia*, Alberta;

Tommie Majors Gillam, *Dodecatheon meadia*, Arkansas; *Pedicularis canadensis*,
Arkansas

Tanya Harvey, *Douglasia laevigata*, Oregon; *Penstemon rupicola*, Oregon;

Valeriana sp., Cerro Bayo, Argentina; *Viola cotyledon* (2 images), Volcan
Lonquimay, Chile

Michael Hoppel, *Campanula cenisia*, Alps; *Campanula cochlearifolia*, Alps;

Saxifraga diapensioides, Alps; *Senecio incanus*, Alps

Jack Muzatko, *Lewisia kelloggii*, Sierra Nevada, California (2 images); *Lewisia*

disepala, Yosemite; *Lewisia* aff. *pygmaea*, White Mountains

Erica Schumacher, *Gentiana acaulis*, Pyrenees

David Sellars, *Fritillaria atropurpurea*, Nevada; *Ipomopsis aggregata*, Wyoming;

Penstemon compactus, Utah; *Townsendia parryi*, Wyoming

Doris Taggart, *Cypripedium montanum*, Eastern Cascades; *Saxifraga tolmiei*, Mt.
Rainier

Stefania Wajgert, *Geum reptans*, Alps; *Ranunculus glacialis*, Alps (2 images);

Senecio incanus, Alps

Class 2: Natural scene with plants

1. Jack Muzatko, Plant community in the White Mountains, California (p. 30)

2. Tanya Harvey, *Penstemon davidsonii* at Crater Lake, Oregon (p. 29)

3. David Sellars, *Myosotis asiatica* and *Eritrichium nanum* in the Absaroka
Mountains (p. 29)

4. Stefania Wajgert, *Ranunculus glacialis* in Stelvio NP, Alps (p. 30)

Exceptional Quality

Tanya Harvey, *Calandrinia affinis*, Chile; *Castilleja linariifolia*, Oregon; *Ivesia*
gordonii, Oregon; *Oreopolis glacialis*, Chile

Michael Hoppel, *Viola calcarata*, Alps

David Sellars, *Balsamorhiza sagittata*, Wyoming; *Erythronium grandiflorum*,

Washington; *Lupinus arbustus*, Nevada; plant community, Mt. Baker,
Washington

Doris Taggart, stream with *Mimulus lewisii*, Mt. Rainier

Stefania Wajgert, *Campanula alpina*, Alps

Honorable Mention

David Dobak, *Cryptantha celosioides*, Montana

Tommie Majors Gillam, *Pedicularis canadensis*, Arkansas

Tanya Harvey, *Castilleja applegatei*, Oregon; *Castilleja arachnoidea*, Oregon;

Erigeron compositus, Oregon (2 images); *Lilium washingtonianum*, Oregon

Michael Hoppel, *Anemone narcissiflora*, Maritime Alps; *Gentiana acaulis*,

Maritime Alps; *Pulsatilla alpina* ssp. *apiifolia*, Maritime Alps

Jack Muzatko, *Lewisia triphylla*, California

David Sellars, *Aquilegia jonesii*, Wyoming; *Penstemon eatonii* and Wheeler Peak

Erica Schumacher, mossy rock with *Polygala*, Pyrenees
Doris Taggart, *Anemone occidentalis*, Washington; *Lupinus and Polygonum*,
Washington
Stefania Wajgert, *Rhododendron ferrugineum*, Alps

Class 3: Portrait of a plant in cultivation

1. Jack Muzatko, *Lewisia longipetala* (p. 28)
2. Tanya Harvey, *Lewisia tweedyi*
3. Jay Lunn, *Primula* 'Jay-Jay' (p. 27)
4. David Sellars, *Edraianthus serpyllifolius* (p. 27)

Exceptional Quality

Jeff Brimley, *Coryphantha vivipara*; *Pediocactus despainii* (p. 31)
Tanya Harvey, *Lewisia cotyledon*
Jay Lunn, *Colchicum × agrippinum*; *Crocus banaticus*; *Erythronium oregonum*
Jim McClements, *Helleborus thibetanus*
Erica Schumacher, *Pulsatilla nigra*
David Sellars, *Androsace studiosorum*
Stefania Wajgert, *Hepatica nobilis*; *Phlox kelseyi*

Honorable Mention

Jeff Brimley, *Coryphantha vivipara*; *Echinocereus × roetteri*; *Gymnocalycium gibbosum* (p. 31)
Jay Lunn, *Veronica* sp.; *Iris tenuis*; *Lilium vollmeri*; *Epilobium canum* (*Zauschneria californica*) (2 images)
Jim McClements, *Trillium rivale* picotee; *Shortia galacifolia*; *Paris stenophylla*;
Jeffersonia dubia
Jack Muzatko: *Lewisia cotyledon* ssp. *heckneri*; *Lewisia* hybrids (4 images)
David Sellars: *Androsace laggeri*; *Erythronium oregonum*; *Lewisia rediviva*; *Saxifraga oppositifolia* (2 images)
Stefania Wajgert: *Callianthemum anemonoides*; *Eryngium maritimum*; *Penstemon caespitosus*; *Primula rosea*; *Pulsatilla caucasica*

Class 4: Rock garden scene

1. Doris Taggart, rock garden at Coenosium Gardens
2. Jack Muzatko, ledge in his garden (p. 18)
3. Stefania Wajgert, *Corydalis* in her woodland rock garden (p. 19)
4. David Sellars, waterfall in his garden (p. 19)

Honorable Mention

Tanya Harvey, Kathy Allen garden (2 images; p. 18)); Hodges garden
Jack Muzatko, scene in his garden (p. 18)
Erica Schumacher, trough in Grenoble
David Sellars, gentian and daphne; water feature in his garden
Stefania Wajgert, scenes in her garden (2 images)

Notes on the Award-Winning Photos

JEFF BRIMLEY of Bountiful, Utah, grows cacti and has photographed them beautifully. His line drawings have also appeared in past issues. He provided the following notes on the illustrated species.

Pediocactus despainii (photo, p. 31): This little gem grows in the Utah Juniper forests of central Utah. It is rare in the wild and is listed as endangered. In the winter months, it can shrink to hide below ground. The light peach flowers appear in early spring.

Echinocereus × *roetteri* (p. 31): This New Mexico native, a naturally occurring hybrid, is a cross between *Echinocereus coccineus* and *E. dasyacanthus*. This vigorous cactus is winter-hardy in zone 5 and a spectacular bloomer in late spring.

Gymnocalycium gibbosum (p. 31): This little Argentinean cactus struggles in my cold Utah winters. In the late spring it shows off with large, white, tubular flowers. It can grow in light shade to full sun.

JAY LUNN of Hillsboro, a suburb of Portland, Oregon, is an avid photographer and gardener. Both he and his wife, Ann, have a particular love of growing primulas. He wrote this about one of his award photos: The photograph of a patch of *Primula* 'Jay-Jay' (p. 27) was taken in the garden of Fred Nilsen, retired Portland Parks Department executive and former chairperson of the Columbia-Willamette Chapter of NARGS. 'Jay-Jay' is an anomalous type of primrose called "Jack-in-the-green," or often simply a "Jack." This type has an enlarged calyx consisting of a ruff of green leaves.

As I recall the story, after the famous grower Peter Klein died, his widow gave the specialist nurseryman Herb Dickson some primrose seed that Peter was storing in their refrigerator. In one vial marked "Juliae × Jack," there were 12 seeds, from which Herb raised six plants to maturity; four were Jack-in-the-green type. In 1964, Herb named a cushion-type plant with ruby-red flowers 'Jay-Jay'. It had the best color and habit of the four. He had observed the plants for six years before naming and introducing this one.

Peter Ward, in his book *Primroses and Polyanthus*, says that 'J. J.' stands for 'Juliae Jack', and that this cultivar is considered one of the most reliable and pro-

lific primroses in the Pacific Northwest. He claims that it arose as a byproduct of Peter Klein's double *Juliae* hybridizing program. It has the creeping habit of the species *P. juliae*. I'm not sure if it should be placed under *P. × juliana* or *P. × pruhoniciana* (a cross between *P. juliae* and other members of the *Vernales* section).

Another of Jay's winning photos, *Colchicum × agrippinum*, appears on p. XX. This hybrid between *C. variegatum* and (probably) *C. autumnale* is sterile but increases fast in the garden, soon producing a free-flowering clump like that in the photo. It combines the strong checkering (tessellation) of *C. variegatum* with enhanced cold-hardiness. At least two clones are grown in the Portland, Oregon area where Jay lives.

References

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Ward, Peter. *Primroses and Polyanthus: A Guide to the Species and Hybrids*.

JACK MUZATKO's winning photo in Class 2, "Natural scene with plants" (p. 30), fits the criteria for the class well because it shows an entire plant community. Jack describes the site as follows: "This natural rock garden on a southeast-facing slope at almost 12,000 feet in the White Mountains of southern California shows a wide variety of alpiners. *Phlox covillei* and *Phlox pulvinata* are seen with large white flowers. A rather rare clover (*Trifolium andersonii* var. *beatleyae*) has beautiful, silvery 5-leaflet foliage. *Castilleja nana* and *Ivesia lycopodioides* var. *scandularis* also find a place here.

"The most beautiful plant in this collection, and the one most interesting to me, is the *Lewisia*. This strain has been called *L. glandulosa*, *L. pygmaea*, and various hybrid combinations. It is not sterile—I originally grew it from Ron Ratko's seeds. *L. glandulosa* has plane-bladed narrowly lanceolate leaves with small white flowers and highly visible glands that line the margins of both bracts and sepals. *L. pygmaea* displays a wide array of variations. It generally has leaves that are longer, narrower and not as flat as those of *L. glandulosa* and sepals that do not have the glandular display. The White Mountain lewisia has leaves that are intermediate between the two species and flowers that are in many cases larger and more deeply colored than either. The sepals in all cases show a spectacular glandular display. There are other very unusual differences that suggest this variety may deserve a special taxonomic designation. It appears to hybridize easily, and I am currently attempting germination of seeds from crosses between this White Mountain population and six other species of *Lewisia*. I can hardly wait to see what I get next year."

Also illustrated in this issue are two of Jack's many portraits of *Lewisia* species: *L. kelloggii* in the wild in California, and *L. longipetala* in his garden (p. 28).

The CLASS 4 WINNERS exemplify the broad range of designs now used in rock gardens, as we saw in the excerpts that begin this issue. The little waterfall in David Sellars's home garden (p. 19) has the same elements but is more intimate in scale. Stefania Wajgert's garden in Poland includes a woodland (p. 19) community, as do many rock gardens in North America. Kathy Allen's garden in southern Oregon, photographed by Tanya Harvey (p. 18), lies on flat ground in

a valley with a view of nearby mountains; the plants grow in gravel beds raised only slightly above the basic grade in this dry, relatively warm climate. Jack Muzatko's garden near San Francisco Bay (p. 18; discussed in his article in *Rock Garden Quarterly* 65.4, p. 359) is built with an assortment of interesting rocks and planted with both alpinists and subjects suited to a nearly frost-free climate.

TANYA HARVEY spends many days each year hiking and photographing wild plants, especially for a planned book on Oregon natives. Her grand prize photo of *Calandrinia affinis* (p. 32), however, was taken during a trip to the Andes of Chile. Calandrinias, related to lewisias, are prominent members of the flora of the higher Andes, usually growing in areas moist from melting snow and flowering quite early, much as deciduous lewisias do in North America. *C. affinis* is in cultivation and has been grown well by Rick Lupp of Mt. Tahoma Nursery. As seen in the photo, color variation from white to pink is common in some populations. Tanya also contributed a winner in class 2, *Penstemon davidsonii* (p. 29), in the mountains of Oregon. The composition of this photo accords well with the criteria for the class: it shows both plant and the larger scene, artistically envisioned. *P. davidsonii*, a low-growing shrubby penstemon, is one of the most popular of its section for growing in rock gardens, and a number of selections have been introduced over the years.

STEFANIA WAJGERT submitted a series of photographs of the exquisite *Ranunculus glacialis* (class 2, p. 30) in Stelvio National Park in the north Italian Alps. This photo shows the scree habitat and a range of flower colors. The species grows in the Spanish Sierra Nevada and Pyrenees as well as the Alps in rocky situations where ample moisture is present. Expert alpine gardeners succeed in growing it, but for most of us it is probably one of those plants we will appreciate only in nature. *R. calandriniioides* is a similar species with pink to white flowers; it comes from lower elevations and is more often seen in temperate-climate rock gardens.

DAVID SELLARS travels, hikes, photographs, builds, and grows—and generously shares the results with this magazine. His portrait of *Edraianthus serpyllifolius* (p. 27) is a good example of what is desired in class 3, portrait of a plant in cultivation, showing the whole plant in good detail, in an attractive garden setting. *Edraianthus* is a genus closely related to *Campanula* and contains several compact-growing species often planted in rock gardens, where they are usually long-lived and very floriferous. They are easily raised from seed. David also contributed the back cover photo, *Aquilegia jonesii*, a species that never ceases to engage photographers and taunt growers.

Corrections

Two readers have sent corrections related to "Saddle Mountain: Oregon's Vertical Botanic Garden," by Nathan Miller (fall 2008, p. 248).

Judith Jones of Fancy Fronds Nursery in Washington writes: "The photo identified as *Polypodium scouleri* on p. 262 of the fall 2008 issue is not that species. The blade shape, texture and the number of pinnae are incorrect for *P. scouleri*. The closest *Polypodium* in appearance to *P. scouleri* is *P. californicum* in the form that occurs near the coast, but its range does not extend into Oregon [where our photo was taken]. It is difficult to tell from the photo whether this species is *P. amorphum* or *P. × hesperium* (*amorphum* × *glycyrrhiza*), or possibly a hybrid of *scouleri* with *glycyrrhiza*. *Polypodium scouleri* is also known to hybridize with *P. californicum* and most likely *P. callirhiza* as well where their ranges overlap. I have a handful of hybrids found in California, Oregon, and Washington, and knowing where they are from is the best way to narrow down their parentage."

David Dobak of Portland, a longtime member of the Native Plant Society of Oregon, notes: "(1) *Synthyris missurica* is not on Saddle Mountain. The plant covering the hillside near the saddle, and visible up close with some scrambling through the shrubs near the trail, is *Synthyris schizantha*—actually a much rarer plant than *S. missurica*, and prettier, too. (2) *Dodecatheon hendersonii* does not occur in Tillamook or Clatsop county (although it is widespread in the Coast Range as far north as Washington County). The plant seen on Saddle Mountain is *Dodecatheon austrofrigidum*. Prior to publication of that species in 2006 (the name was proposed about 20 years ago, and has been in common usage ever since), specimens collected on Saddle Mountain had been identified as *D. pulchellum*. There is a fact sheet on *D. austrofrigidum* at <http://www.oregonflora.org/rarepdfs/dodaus.pdf>. There is a web page about *Synthyris schizantha* at <http://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Genus=Synthyris&Species=schizantha>."

Phil Zimmerman points out that on p. 281, the western American shrub *Coleogyne ramosissima* is misspelled *Coelogyne*, which is a genus of orchids native to India.



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2009 Eastern Winter Study Weekend: January 30–February 1.
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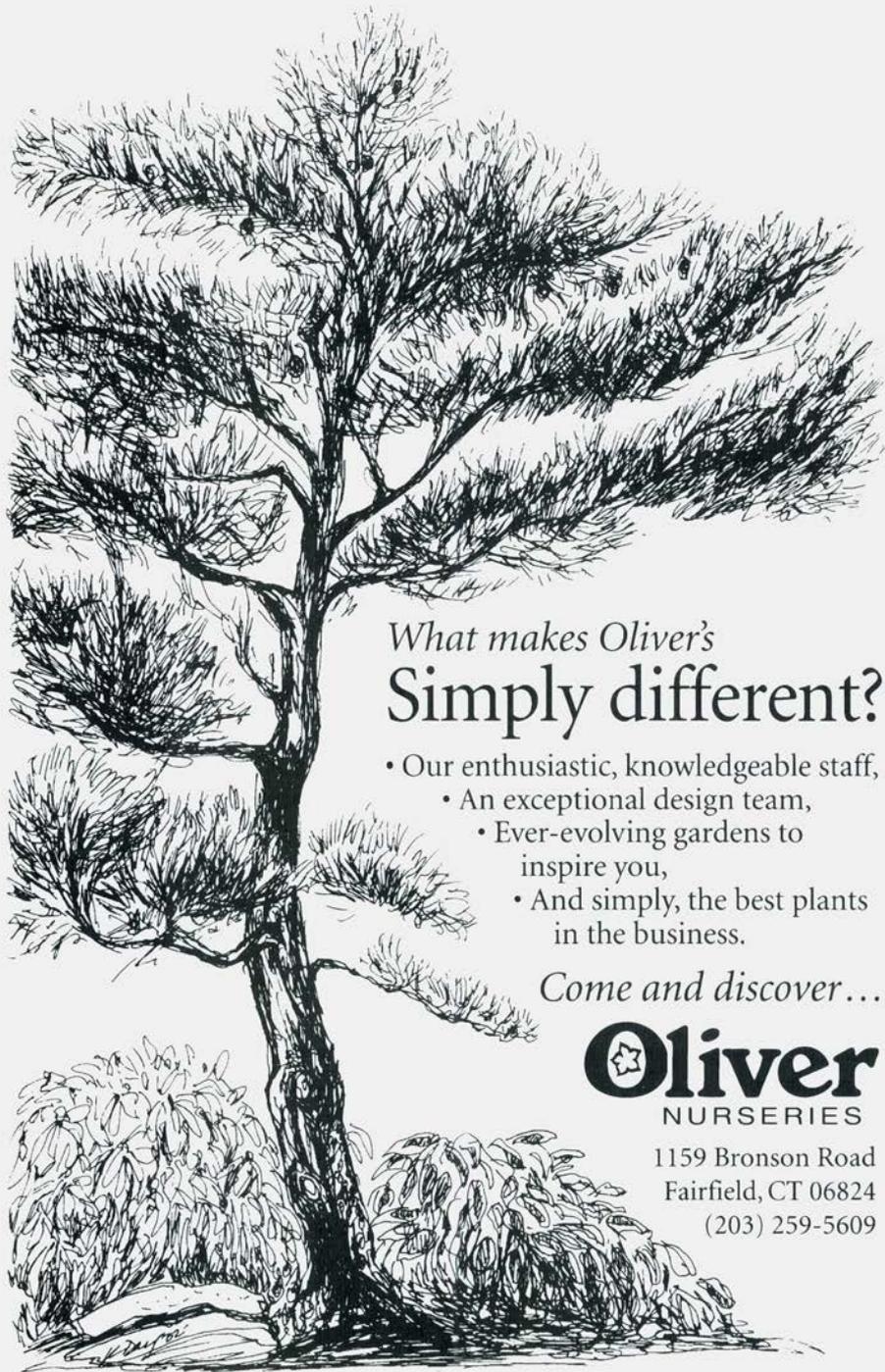
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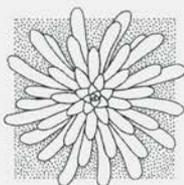


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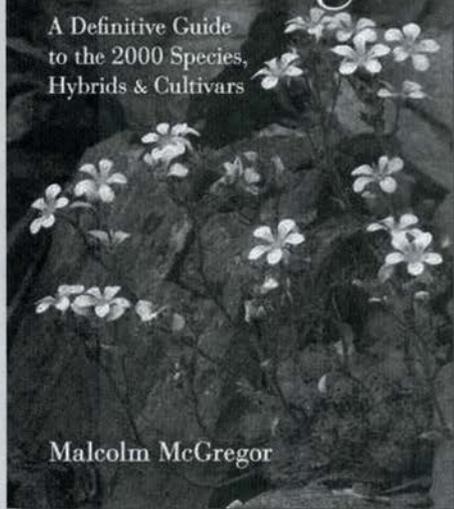
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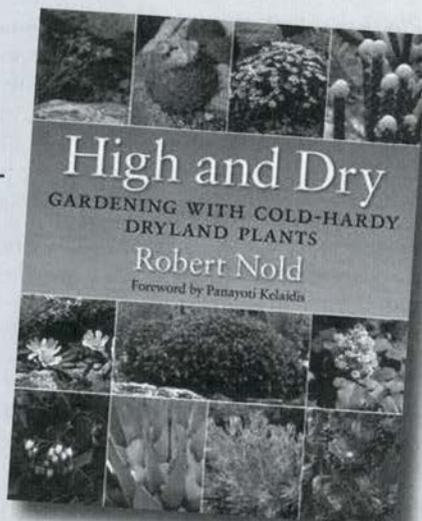
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