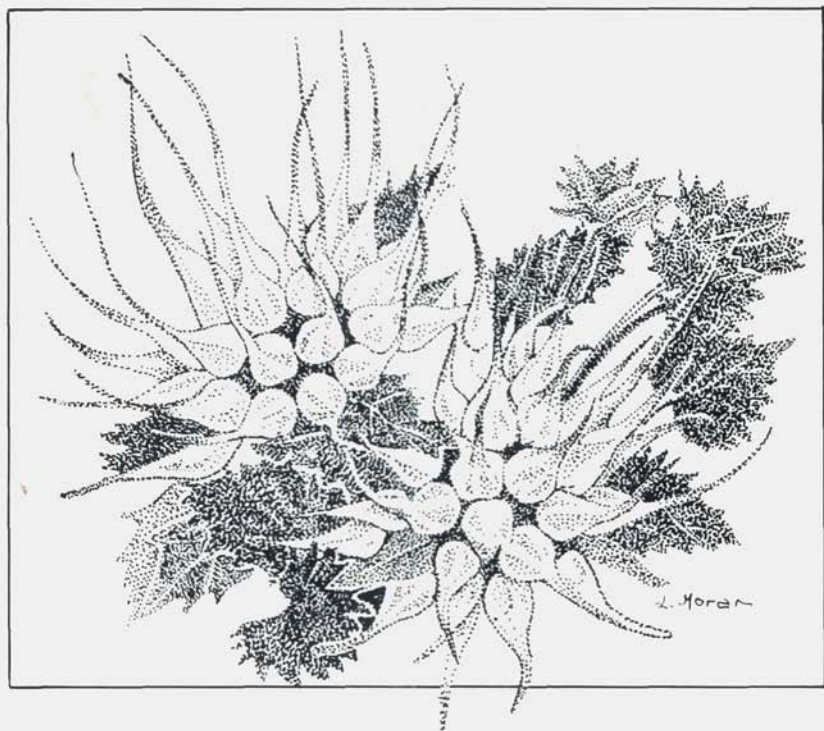


Bulletin of the
American Rock Garden Society



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CALENDAR OF COMING EVENTS

- Eastern Winter Study Weekend (New England Chapter)
 Sheraton Tara Hotel January 29–31, 1988
 Framingham, MA
- Western Winter Study Weekend (Western Chapter)
 Villa Hotel February 26–28, 1988
 San Mateo, CA
- Annual Meeting (Columbia–Willamette Chapter) July, 1988

Cover picture: drawing of *Physoplexis comosa* (*Phyteuma comosum*) by Lisa Moran (Page 146)

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Bulletin of the American Rock Garden Society



A New Botanic Garden—Why and How

Cynthia Reed
Hot Springs, South Dakota

Geographer's maps of North America show a strip of land running down the middle, right along the east side of the Rockies, labeled the "Great Plains." Those who live here know these Great Plains as an area of extremes, at times very hot or very cold, very wet or very dry, the soil heavy clay or nearly pure sand—clearly a difficult area for traditional gardening. While doggedly cultivating what's usually commercially available, we're enticed along each year by the gorgeous wildflower displays of species of *Mertensia*, *Penstemon*, *Oxytropis* and friends scattered among the grasses.

Let us suppose we develop a desire to learn more of these plains, their flora, gardening methods, and sources for these gems. We search in vain for a public garden devoted to the plains, but always hear of the glorious

work accomplished by Claude Barr of South Dakota. While he was alive, one would be led to his Prairie Gem Ranch where over several decades of "gumbo gardening" he developed ways of cultivating the plains flora, searched out new species and varieties, and offered these plants and seeds to the public via mail order from his small catalog.

Now several years after his death, and since there is no specialized garden to address our needs, we are organizing the Claude A. Barr Memorial Great Plains Garden to honor and carry on his work, to promote his belief that here in the Great Plains there is no necessity to pamper expensive exotics to the neglect of our beautiful but rather unknown native flora.

The Claude A. Barr Memorial Great Plains Garden will be installed on the grounds of the Mammoth Site of Hot Springs, South Dakota, which is a paleontological find unequalled in the world of accessible sites, being a 26,000-year-old water hole trap of mammoths and other animals. The international cross section of visitors are mainly people with a strong interest in all natural history and a certain curiosity about these Great Plains of North America. The Mammoth Site is in its early years of development both as a scientific dig and as an educational center, but already is attracting approximately 50,000 visitors annually, so the Great Plains Garden will have to plan for rather sizable traffic from the very beginning. The location at Hot Springs was chosen because of this synergy with the Mammoth Site and because of its close proximity (30 miles) from Barr's Prairie Gem Ranch. However, the site is also favored by the fact that it is at the midpoint both for latitude and altitude on the Great Plains. In fact, being at this midpoint was no doubt helpful to Barr in his continual additions of Texan or Canadian plants to his garden, and to his studies of how to manipulate the microclimate so that plants from the entire range of the plains would survive. These trials and techniques developed are described in his posthumously published book *Jewels of the Plains*.

Many ARGS members knew and worked with Claude Barr, have seen his book, and are therefore keenly interested in the developmental history of our Claude A. Barr Memorial Great Plains Garden. It is with respect for this background that I now offer these details, the paths that led to this situation.

About 15 years ago, my plant work brought me into contact with our gentleman of the plains, Claude Barr. I had been away from South Dakota for several years, but as a fourth generation native, I was succumbing to an insistent urge to return and make the plains my permanent home. A few months after our initial meeting, I moved to Barr's community and have lived in this county ever since. When his book finally came into my hands, the idea hit me with all the force of a lightning bolt that a memorial garden could, should, and must be created to carry on his work, and furthermore that Hot

Springs, and more precisely the Mammoth Site, was just the spot for it.

I wrote a proposal to the Board of Directors of the Mammoth Site of Hot Springs, Inc. who reacted favorably. That board then contractually committed themselves to providing the land space for the Great Plains Garden. We have instituted the Great Plains Botanical Society, a non-profit tax-exempt membership organization as the supervisory group for this garden project. The membership rolls are continually growing and all are invited to join to help establish this Great Plains Garden, to learn more about the plants of the Great Plains, and to help spread that knowledge.

A specific master plan for the garden was commissioned from Herb Schaal of EDAW Inc. in Fort Collins, Colorado, and completed in February, 1987. Donations from many local residents, businesses, and organizations paid for this master plan. The total raised equals more than one dollar per capita from Hot Springs which is a clear demonstration of outstandingly strong local support. The total installation is projected to cost \$355,000 with work divided into four phases. We are presently working toward the \$130,000 necessary for the first phase installation, to include the perimeter fencing, site grading, soil improvement, pathways, etc. The date of installation is totally dependent on the fund-raising process but looks as though it could be as early as this year.

The site for the Great Plains Garden is 2.3 acres sloping south, dropping about 45 feet in its 550 foot length. U.S. Highway 18 passes directly across the lower (south) end, providing ease of access to the visitor. Buffer plantings of trees and shrubs around the perimeter will reduce the noise as well as restrain the view to the Seven Sisters Range of the Black Hills beyond the highway. The concept is that of a self-guided tour of seven distinct areas spaced along terraces and slopes with a circular looped pathway allowing the visitor to return directly from any level. Informative panels will be spaced throughout the garden describing the plantings and the surrounding areas. Although several gardens are now adding plains sections, this will be the first to focus specifically on the native plants of the Great Plains of North America.

All who may be interested in the plants of the Great Plains, the establishment of a new botanic garden, or simply wish to help are invited to join the Great Plains Botanical Society, P.O. Box 461, Hot Springs, South Dakota 57747. Larger donations or memorials specifying any portion of the project are extremely welcome, and we extend our thanks here to those who have already joined or contributed to this project.

Rumblings of a Silent Partner in the Rock Garden

Jim Borland
Denver, Colorado

Almost by definition, a truly great rock garden *must* be filled with the unique experiences, endeavors, and cleverness of the gardener. A garden filled with merely the excesses of others somehow fails to fulfill that need for uniqueness.

The Denver Botanic Gardens' Rock and Alpine Garden is such a striving garden, among other national and international representatives, which, not widely known or acknowledged, relies on more than the works of one to further the attainment of that uniqueness.

In a common division of roles among botanic gardens everywhere, the silent partner in all the specialized gardens is that person who is responsible for deciding each seed's fate, actively following it through germination and pursuing it even further through the subsequent growing and hardening-off phase when, and only when, it is passed on to the gardener who, if plant numbers allow, plants the species in several different spots.

That at least one plant of many should survive and bloom magnificently, thus causing the public admirer to heap praises upon the gardener, is no surprise to the propagator. The story is repeated often in all botanic gardens. Such is the fate of the seldom-seen, behind-the-scenes propagator whose good fortune or skill is responsible for the existence of most of the publicly viewed plants.

Much of the greatness of this garden is due to the past resourcefulness of others who, for numerous reasons, deemed it necessary to discover the intricacies involved in germinating the seed of plants of the western United States inhabiting lands from the peaks to the plains. Results of these investigations and the experience gained following or repeating them is reported in several chapters of *Rocky Mountain Alpines*, where, unfortunately, condensation of the written material was necessary. Even so, the rock gardening world is extremely fortunate that this much often privately held information was compiled and made available to the interested public. To my knowledge, such a compilation of reliable germination information on this number of rock garden plants, regional or otherwise, has never before been so gathered.

Although a discourse on the optimum germination temperatures, germination rates, storage temperatures, relative humidities, and storage times, to mention only a few related subjects which can dramatically affect results, would have been most useful, it would have created a tome unto itself, even if this information had been known. Omitted also was information

gathered on several *thousand* additional species for which only a one-time, often successful, germination attempt was recorded.

The fact remains, however, that reliable information regarding the germination and subsequent growth characteristics for the vast majority of the world's plants, let alone a group of plants which have only their small size to speak for themselves, is simply unknown. In the eyes of those either willing and capable of conducting a replicable germination experiment or those able to fund such an enterprise, this group of plants is truly insignificant.

Not very long ago, an appeal made to the ARGS for funds to assist in the undertaking of this type of research found little interest. Lacking sound research, rock gardeners everywhere will have to live with the poorly executed and documented germination experiences so often reported in journals of this type. This comment is not meant in any particularly derogatory manner, but is one made from direct experience after being given the responsibility of propagating all Denver Botanic Gardens' rock garden plant material over 4 years ago.

Having never before propagated plants that were grouped by size alone, I was led to believe by the appropriate literature that there was something special about them that required procedures different from those used for propagating and growing ordinary nursery or greenhouse crops. I learned, after the fact, that one was not supposed to be able to propagate and grow castillejas, eritrichiums, and *Ipomoea leptophylla*, among others, in a pot. Much to everyone's surprise except mine, they and a lot of other "impossible" species grew quite nicely using the same techniques and procedures as those commercially used for growing petunias, marigolds, and carnations.

The major challenge before a botanic gardens' propagator is much the same as it is with any rock gardener—to get a plant at any price. The major difference between the two is one of the numbers of species attempted each year. Where the hobbyist sows and hopes for at best a few dozen species each year, the professional may be given the responsibility of germinating and growing several hundred or thousand species annually.

The propagator who has had any formal training or has studied well, knows of the months of scientific research and properly calibrated equipment necessary to uncover the germination secrets of even one species. Unfortunately, most botanic gardens are not so equipped. Many is the hobbyist with a backyard greenhouse better equipped than even some of the most prestigious botanic gardens that annually spend thousands to travel to remote places in order to gather seed, only to turn it over to a propagator who has only the barest of equipment with which to operate. Commonly, the propagator is given only one shot at success, often with very few seed of often dubious quality.

The major challenge now, as the past germination problems we had with

the genus *Acantholimon* indicated, is to first find viable seed. Here, a small but time-consuming test with several hundred garden grown, apparently sound, and variously prepared seeds resulted in poor (less than 10%) germination. (A word to the wise botanic gardens propagator: Involve your rock garden curator in the propagation of the difficult species. First-hand exposure to less than perfect germination has to be personally experienced to be fully appreciated.) Now, no one worries excessively, least of all the propagator, when the received packet of five seeds fails to produce a germinate.

In response to Norm Deno's article "Germinating Seeds Hot and Cold" (*ARGS Bulletin*, Vol. 45, No. 2, Spring 1987), I would like to add that most seed of temperate zone plants (including rock garden examples) will germinate at temperatures below 50°F., given enough time to do so. Reported germination experiments often do not reflect their brevity which can result in reports of little or no germination at lower temperatures merely because the experiment failed to run long enough.

The problem with labeling a species' seed as one possessing a double dormancy is the definition of the term *dormancy*. Many professionals do not consider a seed "dormant" if this dormancy is imposed merely by a hard or thick seed coat or a water impervious waxy barrier. Although the common methods employed to overcome these physical barriers are usually, as Norm states, hot water, mechanical abrasion, or acid treatments, merely allowing the sown and moistened seed to sit at warm temperatures can have the same results. Bacteria which flourish under these conditions have been implicated in the gradual breakdown of seed coats, thus allowing either water and/or oxygen to penetrate the interior or allow the germinating seed to break free of its physical constraints. Unfortunately, seed so treated is often referred to as possessing a "double dormancy" if it then must be further subjected to a cool and moist period before germination occurs.

The problem here, then, is one of definition, one with which The American Society of Horticultural Science is currently wrestling. "Stratification" and "vernalization" are two other terms which plant scientists and hobbyists alike have problems with defining distinctly or using in a consistent manner.

A related, although currently somewhat philosophical issue is the re-thinking of nature's strategies regarding seed storage. Although man is forced to devise some means to store future plant genetic resources, dry storage at low temperatures was undoubtedly never nature's intent. This imposition on the seed can dramatically alter later germination characteristics and man, once again, must devise some means to overcome any problems inherent with that type of storage process.

Simple observation or conjecture will reveal that few places in the world

have climates conducive to the long term seed storage that we now know is possible under controlled conditions. Although storing seed naturally on or in the ground is not conducive to lengthy storage periods, it is almost guaranteed that, come spring, germination characteristics will be different for seed so stored as compared with those stored dry and cold.

It is also not my observation that the germination of true alpine species requires any kind of stratification periods. Although I have been unable to verify this impression with anything else but experience, it fits with the natural alpine ecology. True alpine areas are noted for their short growing seasons which are usually contained between, not spring and fall seasons as at lower elevations, but snow covers and below freezing temperatures.

Anytime the alpine surface is free of snow, soil temperatures can heat up to well above stratification temperatures, 34 and 41°F., not 32°F. as stated in Norm's article since water at this temperature can be frozen and unavailable to the physiological processes required for stratification. (Don't bother freezing seed; any benefit derived by the possible rupturing of the seed coat as the freezing water inside the seed expands can be accomplished by either a quick freeze or, preferably, through some other scarification process.)

If alpine seed required the usual 1 to 3 month stratification times necessary for so many other lower elevation, temperate zoned plants, there would be little or no time for the emerging seedling to establish before the coming winter. The non-established seedling could be heaved from the ground with the first hard frost.

Another comment is the perpetual use of the terms employed to describe what a young plant is doing before it finally sends up its first flowering stem. Although this process may take years for some species grown from seed, it is probably a misnomer to label the process as "building up strength." What is this strength? It is comparable to describing the demise of a plant after blooming especially heavily as "blooming to death" when in fact the blooming process may have had little or nothing to do with its destruction. Remember when all ill-diagnosed tree problems were described as "blight" and when all the elderly of our species died of "old age"? The continual ignorance of what really is occurring can only perpetuate the non-discovery of same.

It is also not true that *all* fleshy fruits contain seed germination inhibitors in the pulp. Most vaccinium seed and even the lowly pumpkin and other cucurbits will germinate without the removal of the pulp, even though it is certainly more efficacious to do so.

Finally, before the *ARGS Bulletin* is filled with account after account of unaccountable germination experiences, let us first give thought to the information necessary for documentation in order that everyone knows exactly

Rumblings

how the investigator conducted the project. In this vein, may I suggest the keeping of the following information on each germination attempt:

- 1) species (verified)
- 2) species source information
 - wild collected (longitude and latitude)
 - garden grown and under what conditions:
 - irrigation
 - fertilization
 - light conditions
- 3) plants from which collected
 - indicate health of specimens
 - collected from one or more individuals?
 - length of time in the garden
- 4) collection information
 - where (state, county, or latitude and longitude)
 - week and month collected
 - elevation
 - how collected (before dehiscence, stripped, etc.)
 - percentage of viable seed
- 5) storage information
 - storage container type
 - temperature stored
 - length of storage period
 - relative humidity of storage
 - percent moisture content of seed
- 6) pre-germination information
 - stratification
 - temperature
 - light conditions (type and intensity)
 - moisture conditions
 - time
 - scarification
 - how accomplished
 - chemicals (type and description of process)
 - hot water (temperature and duration)
 - mechanical (type and description of process)
 - other procedures (chemical soaks, etc.)
- 7) after-ripening
 - time spent
 - temperature
 - relative humidity
 - light conditions

- 8) germination information
 - light (natural, incandescent, fluorescent)
 - light intensity
 - alternating light with dark
 - dark conditions
 - temperature (constant or fluctuating)
 - moisture (how provided)
 - time to germinate
 - germination percentage w/ time
 - rate of germination
 - number of seeds sown
 - sowing procedures
 - sowing soil (type, inherent nutrients, etc.)
 - number of seeds not germinating and still viable
- 9) after germination information
 - rate of growth of seedling
 - conditions of seedling growth
 - light (see "light" conditions above)
 - moisture (see "moisture" above)
 - fertilizer (analysis)
 - soil type
 - day length
 - temperature

Without records of these conditions, among others, replicating someone else's experiences may result in a completely different outcome. It should also be recognized that there may be several different, yet successful strategies used to overcome the seed dormancy of a single species.

May I suggest that if all this seems too complicated or time consuming for the gardener, that some thought be given to relegating the problem to a properly directed student of a nearby high school, vo-tech center, or college which may have the proper facilities and understanding of the physical and physiological processes involved.

With the current sophistication of the society, it is time to throw off the self-imposed encumbrances of completely emulating the pioneers and leaders of the past who probably would be embarrassed should they reappear and find us no further ahead in our understanding of soils, nutrition, dormancy, etc. than they were in their age. Norm Deno's article takes a big step in that direction. If we can not all participate in that leadership, let us at least support those willing or capable of leading.

Neglected

Laura Louise Foster
Falls Village, Connecticut

Why is *Omphalodes verna* so seldom seen in rock gardens, or any gardens for that matter, particularly in the northeastern United States for which it is eminently suited? It is an easily grown plant in shade or semi-shade, a pleasant ground cover though not evergreen, hardy to about -20°F. , ignores hot muggy spells of summer, and has a rather spectacular bonus of brilliant true-blue blossoms for about 2 to 3 weeks in early spring.

It is an easy plant to propagate, producing short stout stolons that root down at the tip to produce new rosettes. These can be left on the parent plant to ramble among rocks or to form a cluster and eventually a tight ground cover on open ground. The mature plants can easily be divided or the stolons may be rooted to form new colonies. It perhaps prefers alkaline soil, but seems to grow quite readily, if not so lushly, in acid conditions and, though it does well in reasonably moist soil, seems to be impervious to drought.

A member of the Boraginaceae, *O. verna* declares its affiliation to that family by its clusters of forget-me-not shaped flowers, though of a much deeper, brighter blue and is indeed sometimes known as the creeping forget-me-not. It is also called blue-eyed Mary and by the rather unprepossessing names of navelwort or navel-seed. Its botanical name is derived from the Greek *Omphalos*, meaning *navel*. The round, nut-like seeds, indented on one side, do to some degree resemble the human navel. Or so we are told. Our plant has never set seed.

Omphalodes verna is very occasionally listed in the seed exchanges. There are also listed, along with a few other species, two forms: *O. verna* 'Alba' which is reputed to be very handsome, and *O. verna* 'Anthea Bloom' with sky-blue blossoms.

The type plant grows to 8 inches or less in height, with dark green, heart-shaped, somewhat fuzzy leaves that seem not to be attractive to insects or slugs and so remain in good condition throughout the season.

By some, *O. verna* is not thought as beautiful as *O. lucilliae*, which is considered the queen of the genus with glabrous gray leaves and sky-blue flowers. It is, however, a miffy plant, not nearly as cold hardy as *O. verna* and tending to sudden departure. Perhaps this is the problem. A lovely plant in its own right, *O. verna* may be too amenable and is therefore scorned as an "easy" plant by rock gardeners who sometimes seem to equate a plant's difficulty of culture with its desirability. It does seem a shame, though, not to include *O. verna* among the constituents of a shady bed if only for the scilla-blue of its flowers.

In the Beginning:

Easy Alpines and Rock Plants for Beginning Gardeners

Ann Lovejoy
Seattle, Washington

I don't think I am the only eager novice to fall for the charms of rock plants, join the ARGS in haste, flip open the *Bulletin* and gape dumbly at the more technical of the articles therein. Many of the plants mentioned were unknown to me even by family. Captivated by a stunning photograph or a show-and-tell gem seen at a meeting, I would search long and hard for the subject, then feel unreasonably depressed when my treasure went promptly to plant heaven. That was especially puzzling—surely Seattle already WAS plant heaven. A couple of years of this was nearly enough to convince me that I ought to stick to perennials. Just about then, a visit from a more experienced gardener changed my mind. Not only did she like what I was doing with perennials, she kept saying over and over, "I've never seen rock plants used like this."

Rock plants? Where? Oh, THAT old thing? It wasn't till my visitor was gone that I really started to look around. Sure enough, there were any number of alpines and rock plants, forming the understory to shrub plantings, in the front of the perennial border, mixed with tiny bulbs and subshrubs along pathways. My failure with the toughest had blinded me to the success scattered throughout the garden, relicts of attempted rockeries, survivors of would-be alpine meadows. Some are common plants, lifted up by thoughtful placement, while others are not scorned in many "real" rock gardens.

Perhaps there are other neophytes who could benefit from a crash course in easily grown rock plants. After all, it is far more heartening to build on success than on failure. When my children began gardening we started them off with pumpkins and sunflowers, not cauliflower or meconopsis. Onward and upward, step by step!

Understandably, experienced gardeners aren't sending snapshots of arabis to the *Bulletin* editor, yet the arabis tribe includes some charming and willing plants. Consider the neatly bordered little leaves of *Arabis ferdinandicoburgi* 'Variegata,' attractive year-round in soft green edged with white. These small rosettes take on warm tints of pink and red in the cold. Try them near a small euphorbia, *Euphorbia amygdaloides* var. *purpurea*. This is an upright form that may be 15 inches tall in rich garden soil, but with sharp drainage and a lean soil, it rarely reaches a foot. It has typical euphorbia

leaves, slim and arranged in whorls up lily-like stalks, but in this case they are suffused with deep reds and purples. A clump of this plant looks like a highly exotic group of miniature palm trees and brings a delicious splash of color to the winter garden. The flowers are formed at the stem tips, which curl down like candy canes just before Christmas. In earliest spring the stems straighten up and present their colors: shaggy mops of greenish yellow, the familiar paired bracts, each decked with a beady black eye.

A handy geranium further complements this small euphorbia: *Geranium wallichianum* 'Buxton's Blue,' a fetching and useful plant selected from a batch of seedlings by a respected English plantsman. The leaves are rather small, usually palmate, deeply cut and toothed. In autumn, they turn shades of flame and scarlet and tomato red. This lasts for much of the winter, and by early spring a host of new leaves are emerging from the small crown to replace the tattered glory. It flowers from late summer through the fall, the soft lavender-blue or violet blossoms cup-shaped and centered with clustered black stamens. Each petal is touched with white at the base, clouds in a summer sky. 'Buxton's Blue' is handsome in or out of bloom, a good companion plant at any season. A compatible plant with equally good foliage is *Geum x borisii*, a cross between *G. bulgaricum* and *G. reptans*. The small, cut and toothed leaves splay out in a neat basal clump from which the bud stalks rise 8 or 10 inches. The nodding flowers are warm orange in the bud, and open to a coppery orange. This blooms from mid-summer well into fall. I use it interplanted with 'Buxton's Blue' and blending into a colony of the willing *Corydalis lutea*, with delicate glaucous maiden-hair foliage and primrose yellow flowers.

A very easy hawkweed that is always a hit with visitors is *Crepis incana*. Its long toothed leaves radiate from a central point, very like a dandelion but grayer and slightly hairy. The flowers are quite like dandelions as well, except that they are shell pink. An annual cousin, *Crepis rubra*, is much the same, but with deeper pink flowers. Think how your local reputation will soar when even your dandelions are pink! The perennial *Crepis aurea* has red-gold, almost orange flowers, very effective when used in clusters of six or seven plants. In each case, the basal rosettes are quite flat, the flowers rising 8 to 12 inches above. They bloom generously from late June through September, even later in a mild, warm year. All are very easily raised from seed, and need only a rather poor soil of an open nature; my plants seem to prefer a mixture of builder's sand and loam. They like full sun but will take partial shade in stride. Both *C. incana* and *C. aurea* are quite hardy, as you might suppose, but it is crucial to label your plants very well indeed, not because they die back or rise late, but because you might easily weed them out, as I did several years in a row. They really do look a good deal like dandelions

A Turkish tansy, *Tanacetum (Chrysanthemum) haradjanii*, is a splendid plant that is seldom used to advantage. A well-grown plant looks like what an avid birder would call an LGB—a little gray bird. Its evenly dissected leaves are softly gray, exactly like feathers and just as strokable. As a dot plant, it is nothing, but in loose drifts (even small driftlets) and interplanted with choice tiny bulbs, some for every season, it gains character and presence, a focal point for many months. In full sun with very sharp drainage it may reach a height of 10 inches with a spread of as much as 15 inches. It looks fluffiest and happiest when given an annual mulch of compost over a rather lean, gravelly soil. Try it as a backdrop for species crocus, or the 4-inch-tall *Tulipa linifolia*, as elegant as a Chanel suit, and lipstick red. Each petal is insouciantly pointed, and the leaves are appropriately narrow. The slim and twisting petals of the equally short, deep red *T. acuminata* make an interesting counterpoint. Any of the dwarf, pink-petaled *T. humilis* varieties are engaging with the tansy as well. For summer and fall bloom, try *Schizostylis coccinea*, the South African Kaffir lily, rather like an ethereal gladiola. Some of its hybrid forms are especially long blooming, lasting from late fall through the New Year, weather permitting.

For more autumn color, plant a few flame flowers, as *Crocsmia masonorum* are locally called. These bulbous irids make sheaves of sword-like foliage that is beautifully veined, stunning as stained glass when backlit by slanting autumn sunshine. The flowers are flaming sprays of red-gold, held in stiff horizontal brackets. This is a generous and showy bloomer. These South Africans have adapted gracefully to garden life, spreading like weeds in the milder parts of Oregon and California, but more restrained here in Seattle, where the occasional deep freeze will decimate established colonies. The type reaches 15 inches, but the hybrids vary between 12 and 30, so it is important to choose the smaller sorts. All are effective when placed where the leaves can sweep over a broad path, or be framed against the sky. A clump of eight or ten bulbs forms a powerful accent to a group of low growing and small-leaved shrubs, juniper, heath or heather gardens.

A large tribe of intergeneric hybrids have been developed using *Crocsmia*, *Montbretia*, *Curtonus*, and other related Iridaceae. Most are listed simply as *Montbretia* hybrids, among which 'Lady Wilson' stands out, a smaller plant with golden yellow, rounded flowers, orange in the bud. 'Emily McKenzie' is another favorite, also on the delicate side, with fat, flat-faced flowers of burnt orange. For sheer pizzazz, 'James Coey' has big, wide flowers in hot, heavy red, a striking, smouldering color that seems especially appealing to men. All these are hardy for zones 5 or 6 through zone 8, but probably should be treated as if they were gladiolas in other areas. Once you have a stock built up, you could experiment with leaving them in the ground, well mulched, in cold-winter areas without reliable snow cover.

Try a few of these winners: pink dandelions, gray tansy, flame flowers, easy arabis. Start with the common varieties, then work your way through to the toughies; succeed with *Corydalis lutea*, attempt *C. cava*, and finally, triumph with *C. cashmeriana*!

A Nursery Owner's Response to "Thoughts and Trials of a Tenderfoot"

In the article by John W. Smith of Grand Rapids, Michigan, "Thoughts and Trials of a Tenderfoot," Mr. Smith answers his own question or statement about nurserymen not giving full culture requirements of all the plants they sell (page 95). If nurserymen had to give all cultural information, the catalog would be large, heavy, and still confusing, and no one would send for it at the cost it would be.

I have hundreds of inquirers each season claiming faithfully they will pay for my catalog if only I will send it. It costs me, with a 22¢ stamp, about 47¢ to produce and mail my catalog. Inquirers too often lose interest as soon as their request is in the mail, or they are looking for an elaborate color picture book perhaps the size of Sears Catalog, all for free.

I do have a number of customers gained by sending catalogs without asking for prepayment, but the number of people wanting something in their mail box is enormous. I give a very concise cultural requirement for the plants I list—no pictures, but the information is about as complete as many wildflower books and would be sufficient for people really interested in growing the plants and willing to read.

Color pictures aren't everything. Except for letting people know something about the size and color of flower, they do not give height, habit, soil or moisture requirements, and many other things essential to the plants. That is why books are written, to give detail in whatever the author is familiar with (and sometimes what he is not familiar with). All this information cannot possibly be printed in catalogs which must necessarily be little more than price lists. Many people suppose that wildflower nurseries make lots of money and can afford to give a practically free education in botany. That takes deduction and a struggle on the part of the individual even if he is enrolled in a university botany course.

— Norma Phillips

Summer Harebells

Derrick Rooney
Hororata, New Zealand

Campanulas, the summer standby flowers of the rock garden, are absent from the New Zealand flora, and from the Southern Hemisphere generally, but the family has its equivalent here in the form of various native harebells belonging to the genus *Wahlenbergia*.

They range from the very rare (*Wahlenbergia trichogyna*, from one known site in Marlborough) to the common (the ubiquitous *Wahlenbergia albomarginata*, New Zealand's own harebell).

Throughout the summer and well into the autumn, the New Zealand harebell may be seen flowering in hilly and mountainous country in most parts of New Zealand, in a variety of forms with broad or narrow leaves, and white or blue flowers, varying in size from a thimble downwards. It is hardy, and tolerant of prolonged drought.

Several of these forms are well worthy of cultivation in rock gardens—the species is among the daintiest of our alpines, and as it ranges in altitude from 300 to 1600 metres it is fairly easy to grow, once established.

Getting it established is the hard part, but it can be done, with care. Seed, which is ripe from about mid-January onwards, affords a ready means of propagation, but seedlings vary in the size and hue of their flowers and few gardeners have the time or space to grow 40 or 50 plants to supply the one superior form that they require. Vegetative propagation of plants selected from the wild seems like the obvious solution; unfortunately this problem is not straightforward.

Many healthy-looking clumps of large-flowered or dark blue forms of *Wahlenbergia albomarginata* have been transplanted from the wild to rock gardens, where they seem to thrive for a few weeks, and then disappear, never to return. There is an explanation for this, to be found in the relationship between the plant and its natural habitat.

In the tussock slopes and stony places where it grows, the New Zealand harebell faces stiff competition from larger species. Its seed often has little or no chance of germinating. To survive, the harebell has adopted a device also used, though for different reasons, by scree plants.

Its leaf-rosettes and flowers appear at the ends of stolons, which are long, underground runners which push through the tussock roots or rock crevices and emerge wherever there is a gap in which the rosettes can grow and flower. Thus the leaves and flowers of the New Zealand harebell may appear some distance away from the actual root system.

Summer Harebells

Several of the plants with which it grows naturally have also adopted this device—most notably the snowberry (*Gaultheria novae-zelandiae*) and the patotara (*Leucopogon fraseri*). These plants also defy most attempts to transplant them from the wild, but it is possible to succeed by treating them as cuttings. Seed of the snowberry usually germinates freely if it is fresh, but the seedlings are of excessively slow growth. The patotara freely sets good-looking seeds in its attractive orange fruit, but these rarely, if ever, germinate in cultivation. The mechanism which enables patotara seeds to germinate in the wild is not as all well understood, and it may be that the seed has to pass through the gut of a bird. Or there may be some other, as yet unknown, element. All these factors in combination may explain why the harebell, the snowberry, and the patotara have arrived by different routes at their common solution to the space problem.

As a horticultural entity, the New Zealand harebell is largely confined to the gardens of those to whom New Zealand plants are an obsessive interest. It is not quite pretty enough to compete on equal terms with the European harebell, *Campanula cochlearifolia*.

Wahlenbergia trichogyna, with its large, sky blue flowers, is a more striking plant but its fugacious life-style lessens its garden value. To find the best of the southern harebells you have to look to the Australians—*Wahlenbergia gloriosa*, *W. tasmanica*, and *W. ceracea*. The last is the pick of them. Above dense, green foliage mats it flaunts large, sky-blue, wide-open bells over a period of sometimes months in summer.

The other two share the peripatetic habits of the New Zealand harebell, indicating that they are colonizing plants which appreciate fresh soil from time to time; they tend to thrive in one place for a year, perhaps two, then die out, only to re-emerge elsewhere.

Wahlenbergia tasmanica has sky-blue, thimble-sized flowers, with more substance than those of the New Zealand harebell. Its tufts of small foliage are closer and glossier, too. *Wahlenbergia gloriosa* runs about and sends up short stems, rather than rosettes. Each shoot is crowned by large, open bells which are deep purple-blue.

(Reprinted from *The Bulletin*, Journal of the Canterbury Alpine Garden Society, Vol. 5, No. 3, December 1986)

Mount Cheeseman Weekend

Lorraine Sprosen
Timaru, New Zealand

There were only seven of us for the weekend: Three visitors and four locals from the South Canterbury Alpine Garden Society. Among our visitors was Joseph Cartman from Christchurch, author of *Growing New Zealand Alpine Plants*.

We left Timaru at eight in the morning and met the others at the Forest Lodge about eleven. The lodge is a lovely building with six 6-berth bunk-rooms, hot showers, and a huge kitchen-dining room with a piano, magazines, and games to while away any idle time.

After an early lunch we drove an additional 8 km higher through beautiful beech forest then through tussock to the top lodge. It was a hive of activity with men outside doing essential repairs while the ladies worked indoors painting. Farther up the mountain were more willing helpers right up to the summit, checking the ski tow for wear and tear and doing maintenance.

After parking our cars, we started walking up a bulldozer track for a short distance, then veered onto the scree. One of the first plants we came across was *Pratia macrodon*. The flower scent is heavy and can be smelled from a tiny single flower. The patches were an absolute mass of white. We also found *P. angulata*. The celmisias were much in evidence with *Celmisia angustifolia*, *C. sessiliflora* and *C. viscosa*, the latter the only one with ripe seed which we beat the grubs to. The other seed brought home, ripened and could be picked off the heads.

Most of our climb was scree and tussock until we were quite a bit higher and really had to climb like mountain goats. As the plants became thicker, we found *Raoulia grandiflora*, *R. subsericea*, *Gentiana corymbifera*, *G. bellidifolia*, *Stellaria roughii*, *Lignocarpa (Anisotome) carnosula*, *Ranunculus haastii*, *Viola cunninghamii*, *Cheesemania ensysii*, *Senecio* species, *Hebe tetrasticha*, and *H. epacridea*.

The tops of the mountains required real rock climbing. I balked at only one bit that looked to me as if it were only 20 cm wide on top. I certainly wasn't going to spoil everyone's weekend by falling. It was a long way down, about 1693 m. The view was absolutely magnificent and truly worth all the puffing and blowing I did.

For me, the most exciting find of the whole weekend was *Cotula atrata* right at the top. We saw about eight clumps, the largest the size of a dinner plate. I brought some pieces home and shared it around. Another species

at the top was *C. dendyi* (*C. atrata* v. *dendyi*); *C. pectinata* was found a little lower. On the top also were *Myosotis macrantha*, *M. traversii*, and *Hebe pinguifolia*.

In one real castle we found *Leucogenes grandiceps* and *Raoulia mammillaris* massed with flowers. There were also six or so plants of the bi-generic hybrid between these two plants. This was the only place where we saw the hybrids though both species were thick all the way up the hill.

After we arrived back down at the lodge, we had a cup of tea and drove down to the lower lodge to have our evening meal and then a quick walk through part of the beech forest before dark.

On Sunday morning we did an easy walk along an old road where there were huge carpets of *Raoulia subsericea*, masses of *Gaultheria depressa* berries, and species of *Cyathodes*. Climbing back up to the main road was harder over large boulders and plants of *Celmisia*. In this area were also plants of *Clematis marata* and *podocarpus* (*totara*) in fruit.

After lunch we left the lodge on our homeward journey. Our first stop was at Flock Hill to check out Cave Stream with the view of coming back to walk through the cave. The inlet to me looked a little daunting—a dark cavernous hole with the water rushing in, to drop out of sight. A rope was anchored into the rock wall above the opening. We walked to the exit of the cave about 300 m down a zig zag to the river. Five of us decided there and then to go through, which meant a climb back up to the cars to change into older clothes and get our torches.

The water, surprisingly warm, was up to our waists in parts. The rock formations high up in the cave were fascinating. An occasional root had penetrated right through and was hanging like rope. There were plenty of hand holds which we needed as we had to wade through the odd pool, one with a live eel in it, and through three narrow fast flowing waterfalls between 3 m rock walls. The last part of the cave was a sheer rock face 4 m high with a rope fixed into it for our hand hold. I loved that bit. I felt as though I could have run up twice the height. Then came the dark cavernous hole which was the entrance of the stream. After we climbed this last sheer face, we needed then to crawl on our stomachs under an overhanging rock using the rope to hold onto until we came out into the daylight. The length of the cave is 362 m. It took us 40 minutes to go through and left us with a feeling of having accomplished something different. It was great fun and helped to round off a lovely weekend.

Our last stop was at Lake Lynden to see *Parahebe canescens* in flower. Once we had found the first ones, the rest were easy to see. Without their tiny blue flowers, the plants were nearly invisible as the minute foliage blends so perfectly with the gray-brown stones around the lake. There we parted, one car going to Timaru and one to Christchurch, the end of a lovely weekend.

Gentiana montana

Fred Watson
East Alstead, New Hampshire

This New Zealand gentian can be found over a large part of South Island, but the specimens I will describe come from the Armaud Range in Nelson. My brother and I found them growing in open grassland somewhat above treeline in late February at which time they were in full flower. However, by searching about we were able to find a good quantity of ripe seed. This I sowed immediately upon arrival back in New Hampshire, but it was not until the following spring that germination took place. From hundreds of seedlings, I planted out about a dozen. The next spring I was surprised to find the young plants with no winter damage since I am in Zone 4 and our temperatures usually drop to at least -20°F . for a week or so every winter. The only other New Zealand gentian I had tried was *G. saxosa* which cannot tolerate our cold. After another year of growth and another winter, two plants flowered profusely and then died, not before one set seed. The next year after an almost snowless winter in a very windy location two more plants flowered. Afraid that these would pass the way of their sisters, I took cuttings which apparently have rooted both in wet peat and in damp sand.

Here is a brief description of my plant. From a single rootstock about thirty rosettes branch and spread to form a plant 6 to 8 inches across and about 2 inches high with thick spatulate leaves an inch or so long. On flowering, each rosette sends up a flowering stalk of 8 to 10 inches with a terminal cluster of eight to fourteen flowers and sometimes a flower or two from the axillae of the few paired cauline leaves. The flowers are white and are quite handsome. As for cultivation, I've found it to do well in damp almost boggy soil in full sun.

I'd like to see this plant remain in cultivation in North America.

Marvin E. Black, Plantsman

Marvin E. Black, plantsman, educator and a major force in the world of trees and plants, passed away Sunday, March 1, 1987 at the age of 56.

Marvin was the arborist for the city of Seattle for 16 years. As an ambassador for trees, he talked to groups, involved communities in tree planting in their neighborhoods, and served as arbiter in disputes over trees' rights. Among his accomplishments were the production of a film "Trees in the City" and a *Tree Owner's Manual* on Seattle's street trees. He also designed and taught a series of courses on Urban Forestry at Edmonds Community College.

His influence extended beyond Seattle. He was active in the International Society of Arboriculture and the American Forestry Association. He was selected to serve on the National Urban Community Forestry Leaders Council. He played a major role in founding the Pacific Northwest Chapter of the International Society of Arboriculture and over the years served as president, vice president and board member. He also organized several training sessions for arborists.

Marvin travelled and lectured extensively providing guidance and support to fledgling programs throughout the United States. In recognition of his extraordinary efforts, the American Forestry Association awarded him their first National Urban Forestry Award in 1982.

Perennials, alpines, and Northwest native plants were his first love. He was active in the American Rock Garden Society, co-founded the Northwest Chapter of the Hardy Plant Society of Great Britain. With his colleagues, he coordinated no less than fifteen major study weekends and training conferences which brought speakers from England, Scotland, New Zealand, Canada and across the United States to share their knowledge. Over the years more than 3000 attended from the United States and abroad.

In his "spare" time he provided wild collected seeds of the Northwest natives and select horticultural plants to seed exchanges around the world, wrote numerous articles in horticultural magazines, trade and professional journals, and lectured nationally and internationally. He also taught traditional and Japanese flower arranging and submitted arrangements at major shows of the Senke School of Ikebana International.

Wherever he went, he sought those individuals and programs with hidden or unexplored talents and challenged them to grow and to share that knowledge with others.

— Sharon Collman and Dan Douglas

Naming the Chihuahuan Phloxes

Roy Davidson
Seattle, Washington

The many colorful Mexican phloxes found by the late Paul Maslin and his wife Mary are certainly among the most exciting new subjects of the rock garden plant catalog. When these were described (ARGS *Bulletin*, Vol. 37, No. 2, Spring, 1979), Maslin employed the nomenclature of Brand, a purely herbarium treatment of 1907, probably for the color detail it provided.¹ Later researchers in phloxes have considered it to be unrealistic in that detail. Dr. Wherry called it "a complex hierarchy based at least in part on superficial and inconstant characters" consequent to the extensive and detailed field work which prepared him to undertake a monograph of phloxes, published 1955.

When the one called 'Mary Maslin' was first to appear on the show bench in England, the question arose as to whether it differed sufficiently from what was there known as "Phlox mesaleuca" to be legitimately named, and the matter was referred to the RHS Scientific Committee which ruled that so distinct a color variant was *quite* entitled to a cultivar name, but Dr. R. K. Brummitt of Kew Herbarium interprets them as being color forms of *P. mesoleuca*. These varied opinions naturally have left gardening enthusiasts quite uncertain as to just how their labeling ought to read.

On this side of the Atlantic when dealing with Polemoniaceae in general, but with the genus *Phlox* particularly, we rely heavily on Dr. Edgar T. Wherry's many studies, and even those who take exception to his decisions must give a great deal of attention to him for his considerations of "ecology as the shaper of speciation" that formed the basis of his opinions. Brummitt has further declared that what is known as *Phlox* 'Mesaleuca' (as cultivated there and figured in *Curtis Botanical Magazine*) is actually an atypically large-flowered example of *P. triovulata*—as if we needed another complication!

As accepted by Wherry in his primitive Section Protophlox, the Subsection Nanae consists totally of five species (or of merely three or less if one so chooses), these alike in not forming a woody base but springing from subterranean rootstocks that wander about and shoot up in a soboliferous manner, as does *Rhus glabra*.² They are alike also in the constricted orifice of the corolla which tends to discourage bees and to favor moths and hummingbirds as pollen vectors, and most importantly, they are alike in the production of multiple ovules in each locule of the ovary, unusual for the genus.

Of these species, one is annual and of course not soboliferous. Of this we have no concern here. A second is to be found only much further to the south in Durango State, and then only sparsely. The remaining three (or one) occupy a range consisting of the high Chihuahuan Desert plateaus and ranges in the state of Chihuahua and northward into New Mexico, southernmost Arizona, and westernmost Texas. To a degree at least, this trio (if there are three) may be assigned to more or less distinct ecological niches within that territory, seemingly as the result of local conditions and resultant responses to stresses. A serious transplant study might have revealed corollaries further than those here assumed, although Maslin and his companions have reported that since Wherry's time in the field less than 40 years ago, the vegetation is much depleted by agricultural practices, especially by overgrazing and that the phloxes are no longer commonly found. Meanwhile it seems appropriate to the present situation to allow Wherry's existing alternate nomenclature to express the facts.

Phlox nana Nuttall 1848. As the earliest described this becomes the type species of the Nanae phloxes, described from material taken from the northernmost part of the total range, near Santa Fe, New Mexico, in 1845. It is known locally as "canyon phlox." With the summer rains typical of all this range and following on the normally dry spring, the phloxes flower through summer and into early autumn. Although the following two occupy much the same total range, neither extends so far northward. This species seems capable of success in more severely stressful conditions, and Wherry photographed it in an exposed rockslide to illustrate the point. If one so chose, it might be taken as an ecological race within this group of closely interrelated plants. Not surprisingly it forms a more compact plant with leaves relatively shorter and broader and closer on the stalks. The flowers, however, are quite comparable to all the others in every way, with quite fully rounded corolla lobes, and there may be up to a dozen per stalk, the stalks continuing to spring up successively as long as moisture allows. The color may be purple to lilac, or light yellow to white, paling toward the orifice, and that may be marked with a nectar guide, either spots or a ring. The sepals in this one are not at all unusual for a phlox, the ribs and interstice membrane quite ordinary. This is the most widespread one, according to collection records.

Phlox mesoleuca Greene³ 1905; ***Phlox nana ensifolia*** Brand 1907. Wherry has interpreted this as being the ancestral stock from which other members of the Nanae phloxes were derived. It would seem to be favored by a more sheltered or protected situation, and not surprisingly a taller looser plant with

longer and narrower leaf results. Flowers are comparable in every way though often with distinctly paler eye which suggested the name *white-eye phlox*. The floral tube may be totally glabrous and the herbage is frequently quite pubescent, especially in the inflorescence. The sepals may be as ordinary as typical phloxes or may tend to a degree of fullness in the interstice membrane.

Phlox triovulata Thurber ex Torrey 1858; *Phlox nana glabella* (Gray) Brand 1907. The essentially glandless phase is represented in this taxon. The name was first applied in 1858 to specimens collected in the course of the Mexican boundary survey of 1851. Most individuals are quite glabrous even to the corolla tubes, a quite distinguishing mark, and the sepals bear distinct ribs with the interstice membrane ample to actually plicated, like plisse fabric. As to the corollas, they are not significantly different in any way. The natural distribution is with the others, especially the last, and there is no evidence that they actually ever form populations separated from one another: not so far to the north as typical *P. nana*, and further to both the west and the east.

Forms and Cultivars of the Nanae Phloxes Presently Cultivated

These are here listed as they appeared when published (or cataloged) without regard to the present discussion as neither the degree of the hirsuteness nor detail of the sepals was made known. They were not all the finds of the Maslins; some predate those explorations, and on later forays to Chihuahua, Professor Maslin was accompanied by Panayoti Kelaidis. Later the two were joined by Baldassare Mineo. Some are not listed as they were not generally distributed.

Phlox 'Alborado'—yellow-centered orange bicolor.

P. lutea—as per ARGS article cited above where it was illustrated in color; AM, 1985, Scotland.

P. lutea 'Paul Maslin'—soon supplanted the former in cultivation; a finer flower of clean light lemon, fading a bit, with tiny red eye-ring.

P. 'Manzana'—clear soft pink with overlapping corolla lobes.

P. x 'Mary Maslin'—vermilion with prominent yellow eye.

P. 'Mesaleuca'—as cultivated in Britain (not necessarily the *P. mesoleuca* of the Curtis Botanical plate).

P. nana—pink and not so full-flowered according to illustration in Sampson Clay.

P. purpurea 'Arroyo'—a stouter and hairier plant; glowing carmine-rose.

P. 'Tangelo'—positively huge flower of shocking tangerine-orange.

P. 'Vanilla'—neutral bone-white with prominent raisin-purple eye-ring.

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- 1 Brand was describing the Chihuahua collections of Pringle made in 1887; published in Germany.
 - 2 Although Maslin has written that *P. nana* comes from a taproot, this is not the case; he very well may have referred to *P. woodhousei*, which does not belong in this discussion though it appears much like *P. nana*.
 - 3 It may be worth remarking that E. L. Greene was a believer in absolute priority in nomenclature and that he was as well the most notorious of splitters; he was not a field botanist.

Books Worth Knowing

Alpine Plants of China, published in U.S. by Gordon and Breach—Science Publications, New York, 1982, 132 pages, 197 plates.

In a letter, Ruth Krasner of Oxnard, California, writes that this is a fantastic format-sized book, the plants unique, and the photography and reproduction of excellent quality. Problem—it's out of print. Solution—the publisher here said that if they received a substantial number of orders they would reprint it. If you have not seen the book, you probably can find a member who already has it, and then if you are interested you may contact the publisher at 50 West 23rd Street, New York, NY 10010 or call (212) 206-8900.



Phlox mesoleuca 'Arroyo'

Photo: Ted Kipping



Phlox mesoleuca 'Manzana'

Photo: Ted Kipping



Phlox mesoleuca 'Mary Maslin'

Photo: Ted Kipping



Phlox mesoleuca 'Tangelo'

Photo: Ted Kipping



Phlox nana

Photo: Ted Kipping



Erigeron chrysopsidus v. *brevifolius* 'Grand Ridge'

Photo: Ted Kipping



Erigeron compositus

Photo: Ted Kipping



Townsendia parryia

Photo: Ted Kipping

Of Interest From the Chapters:

Composites

Geoffrey Charlesworth
Sandisfield, Massachusetts

(Reprinted with permission from the Berkshire Chapter Newsletter, Vol. II, No. IV, April 1987)

You are sometimes faced with the name of a plant, for instance in a seed list, where you wish to know more about what the plant looks like; you go to a reference book and find it is a member of the Compositae—the Daisy family, sometimes called the Sunflower family or the Thistle family.

This is an enormous family that has, depending on your source, as many as 800 genera and between 10,000 and 20,000 species. *Hieracium* alone has 15 sections, several with subsections containing as many as 20 species. Even allowing for a bit of “splitting” this is rather daunting. How can one possibly select garden worthy plants from such a huge array? One needs to know something more than family membership to get a picture of the plant, so let's break down the family into smaller groups and stay on the lookout for plants worth growing. The family contains many weeds and obscure, insignificant plants; you would expect the weeds because the family is so biologically successful, i.e. pushy, having colonized every corner of the world with some genus or other. This combination of coarseness, weedy behavior and lack of redeeming decorative value has given composites a bad name. Many of the genera will be dismissed with a shudder by gardeners. Part of this piece will be to point out a few plants you might want to grow in spite of the name.

The family has been broken down into “tribes”; these can be thought of as sub-genera. It makes for more digestible pieces, but mere membership in a tribe will not be the determining factor for whether you do or do not want to grow a plant. The unifying characteristic of compositae is that the flowers grow in “heads.” The visible object that we casually call a “flower” consists of several flowers. Each “petal” of an aster is a strap-shaped or ligulate (ray) flower and the yellow disk at the center consists of a multitude of disk flowers or tubular flowers. These individual flowers may have pistil and stamens, just pistil or neither. Dandelions have only ligulate flowers while tansy has only disk flowers. Thistles and their relatives are composites too; their flowers are discoid only, though the outer flowers are sometimes enlarged and fluffed up camouflaging the disk effect.

First we shall look at those tribes that are daisy-like with both ray flowers and disk flowers for the most part.

The Astereae includes some of the best garden plants. The tribe takes its name from the genus *Aster*. You can buy many asters from a perennial nursery. Some of the named varieties of border plants have been derived from *Aster novi-belgii*, a plant from the eastern United States; the other main source is *Aster novae-angliae*, another easterner which has given us several beautiful forms. In our garden the most spectacular forms of *A. novi-belgii*, often called Michaelmas daisies, tend to get leaf diseases, mildew and wilt and do not seem to grow well in their own "native" soil, probably longing for the rich deep loam of the English and German gardens that bred them.

The species *A. novae-angliae* is itself a lovely sight on the highways of New England and New York and is a strong purple as good looking as any of its varieties. If it isn't living just outside your garden fence already you might want to grow this in the border. Asters in general suffer the same drawback as goldenrods; the plants you grow in the garden ought not to look like weeds however intrinsically beautiful. There are "red" and pink forms such as 'Harrington's Pink' and 'Alma Potschke' which are far removed from the wild beauty.

Aster tongolensis, *A. subcaeruleus*, *A. yunnanensis* are almost the same middle-sized plant and have given us *A. 'Napsbury.'* They are close to a large *A. alpinus* in general effect as are *A. farreri*, *A. forrestii*, and *A. soulei limitanus*. Grow any or all of these from seed or clones and keep only the good forms. They look best in a border being a little heavy for a rock garden. *A. amellus* is a European that has produced many garden forms; the popular *A. x 'Frikartii'* is one of its children. You can find pictures of many of the plants mentioned so far in a glossy catalog such as Wayside Gardens, and some of them are pictured in the *R.H.S. Dictionary of Garden Plants in Color*.

There are several mid-sized asters and it is worthwhile growing any of the species from seed to "take a look" at the plant. The ones to reject would have wishy washy colors, too much leaf, a gawky habit or be highly stoloniferous and very weedy. One has to hope that the person who collected the seed is a gardener at heart who knows a good plant and not "merely" an aster buff or a botanist with an inclination to split an already dull species into a hundred dreary parts.

Aster alpinus qualifies as a good rock garden plant probably at the upper limit of size for a small garden. After all, it needs a couple of feet to ensure having enough room the second year. But it well deserves space for its attractive large flowers on fat 6-inch stems. It is variable, so smaller, neater forms exist. There are color variations too, including a white and one called *A. himalaicus luteus* which is indeed yellow but had rather poor, thin, curly petals when I last grew it.

Aster kumleinii is an attractive species from the plains states. A good form was found by Claude Barr and is now in commerce as 'Dream of Beauty.'

This is a little finer than *A. alpinus* though just under a foot tall.

Aster ericoides is a sprawly shrubby plant not unlike a heath in general aspect with many small flowers, very promising in bud and opening to a rather weak pinkish white. Nevertheless, a great plant to grow because it is so late in the season and will flow down a wall in a solid cascade that outdoes even *Campanula carpatica*. Good forms exist (at least in the U.K.) including one from Long Island found by Linc Foster.

Aster linearifolius is also called the stiff aster. It forms a tighter bush than *A. ericoides* with brighter flowers. It doesn't wander quite so gracefully, but sends up its woody stems about 2 feet mostly inclined at 45 degrees to the vertical.

Aster dumosus is the name attached to many dwarf Michaelmas daisies; the species may be the parent of some of these. You can find names like 'Niobe' and 'Professor Kippenberg.' They are not rock garden plants. They take up a lot of space, they are a long time in coming to flower and they look highly cultivated. They tend to be stoloniferous and need frequent division to get good flowers. Grow them in front of a border or around standard roses if you like that sort of thing. I am drawn to them in the same way I am drawn to dwarf iris: nice names, nice colors, a substitute for the big plants I have no room for, but not very stylish. Somebody needs to invent a new garden environment for these plants that mope at the edges of a perennial border and are excluded from the rock garden aristocracy.

Machaeranthera is a genus of annual, biennial or tender perennial asters. I suppose results depend on where you live, but *M. bigelovii* is a splendid "annual" for me, flowering from seed sown in February around the end of August and continuing until cut down by hard frosts in October. It forms a large "tumbleweed" bush of good blue-purple flowers that sprawls around but not very destructively, since its woody stems are airy. It is a good "filler" near species tulips; being a desert plant it won't need water in summer and, while not a ground cover, it fills a lot of vacant space by the time it blooms.

Close to asters are the erigerons. The difference seems to be in time of blooming—erigerons early, asters late—and in the bracts which form the cup where the calyx would normally be. In *Aster* there are several overlapping (imbricated) rows, (you can see these in the shaggy buds of *Aster ericoides*); in *Erigeron* only two or three rows (look at the two neat flat rows of phyllaries surrounding the heads of *E. compositus*). Also, the ray flowers of *Aster* form one row and in *Erigeron* more than one (but this can be confusing as many garden asters are "double"). None of these criteria gives foolproof identification and you will just have to look at the label if you want to improve your chances of being right.

There are border erigerons and many excellent rock garden species. The border plants include 'Foerster's Liebling' (Forester's Darling), a lovely pink

form of *E. speciosus*. There are many cultivars or hybrids of this species; one strain (plants grown from seed collected from segregated plants) is 'Azure Fairy,' a double mauve.

Among the plants suitable for the rock garden is *E. glaucus*, the seaside daisy. This has short stemmed dumpy daisies on a rather solid mat. I am not sure it is completely hardy in the Berkshires.

Erigeron aureus and *E. linearis* are two very choice yellow erigerons. The latter has finer leaves but it is a toss-up which is more elegant. *Erigeron chrysopsidis brevifolius* is another yellow beauty. Grand Ridge Nursery sells a selected form of this which is especially floriferous (you have to go to the nursery near Seattle to pick it up!). These three warrant a home in your second best trough, but in any case protect them from the rough and tumble of a large casual rock garden. *Erigeron elegantulus* is another lovely plant, like a purple *E. linearis*.

Erigeron compositus is a very carefree plant, easy to establish and easy to keep. It is quite variable in size and color, varying from 2 to 4 inches and from good white to deep pink. This means you can safely accept another plant in addition to the one you already have, hoping it will be a different form. They can sow around too and perhaps need to be watched if you want to limit the number of plants. *Erigeron trifidus* looks like a small *E. compositus* and *E. montanensis* a diminutive one. (Claude Barr would disagree.) *Erigeron humilis* is still smaller and could be completely overlooked in the wrong place.

There are a number of erigerons seen less often than *E. compositus* and the same size or bigger. They have individuality that is hard to describe without dry descriptions of leaf shape and approximations to measurements of parts. *Erigeron thunbergii* from Japan is a good purple sometimes; the best bet is to try *E. leiomerus*, *E. peregrinus*, *E. asper*, *E. subtrinervis*, *E. glabellus*, *E. polymorphus*, *E. gracilis* and any others that show up in the seed lists. You can get anything from 4 inches to 2½ feet, several factors contributing to the variability. *Erigeron aurantiacus* is a flashy coppery orange about 6 or 7 inches tall. It flowers in the summer so the intense color is appropriate and welcome. The times I have grown it, the plants lasted a full year but died the next winter. I see no reason why it should not be genuinely perennial though; perhaps it will not survive a really severe winter.

Another rock type is *E. flagellaris*. This plant sends out thin "whiplash" runners which root down lightly filling up plenty of space in one season with new babies each with its own umbilical cord. At the outset, you are pleased to see it bouncing along but it can irritate a placid arenaria unwittingly sitting in its path. The roots are shallow and can be pulled easily, but the strings are in such a tangle there is usually a mess when a clean-up is attempted. Another one with the same personality is *E. mucronatus* but this one sends runners underground. It is not much of a menace in Massachusetts as its

home is Mexico and not much survives the winter. The flower stems are quite weak in both plants and they loll around delicately.

The third genus of the aster tribe important for rock gardens is *Townsendia*. The ARGS seedlist usually contains about ten names. The number offered has grown longer fairly recently as more collections of seed in the wild are being made and gardeners are showing their appreciation by growing them. The new Harkness admits fifteen species. The big question is how perennial they are. Norman Deno on his Pennsylvania sand gardens has townsendias self-sowing (and hybridizing?); I have never had this experience and only rarely had plants live to flower more than once. However, all the species are worth growing. They look well with alpines even though they may not come from the high mountain tundra. Their form is alpine and Nature made an error allowing them to grow on the high plains. Their lifestyle is so close to being biennial that you would expect them to be dismissed by the gardening elite. In fact Clay and Farrer are less than enthusiastic, but you are left feeling that they couldn't get hold of the plants. Now we have them we know they are worth growing; if it turns out that one or other of them is biennial we accept the challenge to grow it so that it reproduces itself each year. Until then, we can collect seed and start afresh each year. Townsends make a spectacular case for including plants that grow below 10,000 feet and for including non-perennial plants in the rock garden.

Townsendia parryi is the easiest to get going; keep saving the seed and resowing until you reach the happy Deno state of self-perpetuity. The first flower to form is usually a single large head on one stem rising 3 inches from a rosette of fine greyish leaves; before the head dies and forms seed, cut off the stem and several new buds will form as the plant enlarges. The plant can bloom at any time including mid-winter in the alpine house. The head is 2 inches across and a pretty lavender color. *Townsendia grandiflora* is similar but always white and the stems not as stolid as *T. parryi*. Some writers say with confidence that this one is really biennial. We found it growing in Roxburgh Park at Alpines '86; it was in short grass, not scree.

The flowers of *T. eximia* are not as large, but it is more likely to form a clump which survives another year, so you can have a satisfying mass of large strong colored daisies the second year. In *T. rothrockii* the stems are shorter and the daisies almost sit on the mound with large disks greenish at the center and short ray flowers giving it a paunchy look. *Townsendia sericea* may be the same as *T. exscapa* and again the large heads sit on the rosettes. I have never had a really good plant with either name but the picture of *T. exscapa* in Claude Barr's *Jewels of the Plains* is mouth watering. He describes *T. hookeri* as a less glamorous *exscapa* but it is just as photogenic.

Townsendia hirsuta and what I have grown as *T. formosa* are more like sumptuous erigerons with smaller flowers than *T. eximia*. The phyllaries (bracts) of townsendias are more like asters than erigerons and these two have an attractive hairy "calyx" (involucre) of shaggy bracts surrounding the base of the flower head.

(Reprinted from the Berkshire Chapter Newsletter, Vol. II, No. IV, April 1987)



Creating a Nature Preserve in Your Own Back Yard

James L. Hodgins
Toronto, Canada

Nature preserves are no longer the sole domain of monarchs, governments, the wealthy, and nature clubs. Your back yard nature preserve will probably not support wild boar, wolverine, mountain sheep, gyrfalcon, or white lady's slipper orchids, but it can support an array of native flora and fauna, which once established will be self sustaining or require minimal maintenance on your part.

My lilliputian back yard in downtown Toronto measures 20 by 20 feet and for the last 8 years has successfully supported forty species of transplanted native plants including trees, shrubs, vines, herbs, ferns, horsetails, mosses, and liverworts. There is still room (a few square centimeters) to introduce spike mosses this summer.

The yard has a northern exposure. The house and a tall English cherry tree cast a partial shadow of mottled and filtered light—ideal for woodland plants. Annually I prune a few of the upper tree branches to optimize light for the ground herbs.

By observing the vegetation in nearby ravines, woodlots, and conservation areas, you will learn which species would be most appropriate in your back

yard nature preserve. Use a field guide to identify the species you think might be suitable for transplanting to your property. Make written notes on their environment, including data on available light, soil composition and moisture, height, slope of land, associated plant and animal species, and those features which strike you as particularly attractive about the plants: eg. flower, foliage, fruit, growth habit. Glean further details on species you may wish to grow from standard botanical and horticultural texts.

Remember, all plants in public parks are protected from human destruction and transplanting by law. Therefore to acquire native plants you will have to grow them from seed, get them from the surplus stock of a friend, purchase them from a nursery, or get permission from a private landowner to transplant.

In your efforts to recreate a pocket of nature, you should eventually incorporate non-flowering native plants such as ferns, horsetails, mosses, liverworts, and spike mosses. Unfortunately club mosses do not seem to favor garden conditions, but this is not conclusive. Large, pocked limestone rocks and rotting logs, appropriately placed, will further enhance the natural woodland look of your pocket nature preserve as well as providing favorable microhabitats for many of the previously listed non-flowering plants.

Once your wildflower sanctuary is established, animal forms will move in of their own accord. Most of these species will be beneficial or non-injurious to your plants, but it is naive to expect all animal forms to avoid your favorite plants. After all, we are partially herbivorous just like the slugs. Fauna such as bees, butterflies, moths, and hummingbirds will visit your preserve to gather floral nectar, thus pollinating many of your garden wildflowers. Other animal forms may provide soothing or interesting sounds such as those made by crickets, katydids, cicadas, and birds.

After mulching your soil with leaves, grass cuttings, and compost there will be an increase in the populations of pill bugs (terrestrial crustacea), millipedes, earthworms, and other soil larvae. The presence of these organisms is a positive sign that your soil is being built up and aerated. Without them the soil would be impoverished, as would be your wildflowers.

A recent study of a 658 m garden in suburban Leicester, England, recorded over a 2-year period, 15 species of butterflies, 74 species of hoverflies, and 455 species of ichneumons (wasp-like insects). The latter two groups represented one-fourth of the total known species of these taxa for Britain. The owners of the garden encouraged much diversity of plant species including local "weeds."

Home yards need not be ecological deserts. Most of us pay a mortgage on the land. All of us pay a municipal land tax. Many of our native plant species are suitable for gardens. Why not make nature part of your investment?

European Notebook:

The Garden at St. Triphon

Paul Halladin
Geneva, Switzerland

It is rare indeed, even here in Europe, for a rock gardener to obtain an attractive natural site that does not require extensive rock work on order to create a rock garden. The garden at St. Triphon is one of those rare and most unusual sites in which the natural underlying limestone rock formations form a superb framework for one of the most pleasant gardens in Europe.

Just 14 years old, this garden has already become a superb attraction thanks to the non-stop efforts of its dedicated owner, Mr. William Aviolat. The garden is open all day during daylight hours on all 365 days of the year regardless of rain or the occasional rare snow.

One could wonder why he keeps this garden open in the winter, when virtually all public rock gardens are closed. A visit on February 8, 1986 answered this question. The day was clear and sunny but quite cold. In fact, it was the coldest day of the year to that point, about 29° F. The ground contained a frost that penetrated about half an inch, but there was very little snow cover and that only about an inch in the shadiest part of the garden.

A brisk walk revealed both *Cyclamen coum* and *C. abchasicum* in full bloom as well as a number of healthy looking *Primula vulgaris*. The annual *Iberis amara*, which self sowed easily, was in full bloom in many locations. *Daphne mezereum* buds had just started to open, but for *D. blagayana*, we were a week too early. Among the other items noticed in bloom were *Helleborus niger* and *H. foetidus*, *Eranthis hyemalis*, and a large cushion of *Draba lasiocarpa* wedged tightly into a crevice on a very large rock. The winter blooming shrubs *Jasminum nudiflorum*, *Hamamelis mollis*, and *Chimonanthus fragrans* were all at their winter best in spite of the cold.

At that point we were cold enough to take a break from our wanderings about this rather large garden. Mr. Aviolat escorted us to a small chalet-style heated cabin on the property. One advantage of visiting in the winter was that he could spend time with us; we were the only visitors on that day.

The chalet display room had over a hundred line drawings of plants in the garden mounted on one wall. A large table had an open display of folios and books containing press clippings about the garden and numerous photos of guests. (In 1985 over 130 different groups or clubs visited the garden, in total over 9000 people.) On display also were the outer envelopes of seed distribution from over sixty botanical gardens representing most of the major countries throughout the world. Our host told us that he collects

the seeds of over 400 species from his garden for exchange with other botanical gardens.

Also of interest was the fairly large collection of French botanical books. Mr. Aviolat is an avid collector of rare botanical publications and in particular those by Henry Correvon, including some unusual first editions. We were told that many Correvon books have become quite difficult to find and consequently were particularly attractive to collectors of rare books. Even more noteworthy was the comment by our host that he regularly referred to one of these books (a 1914 edition of *The Plants of the Mountains and of the Rocks*) which contained Mr. Correvon's recommendations on soil composition for the treatment of various difficult plants. It is remarkable that this accomplished plantsman, the creator of the magnificent garden at St. Triphon, should be referring to a book over 70 years old for horticultural information.

Perhaps we should really start at the beginning. We originally heard about this idyllic garden by sheer accident from a member of an organization that once had an outing there. It is not easy to find, and unless one reads the Swiss French newspapers it is quite unlikely that one would ever hear about it. The Garden of St. Triphon is on the outskirts of the miniscule village of St. Triphon (altitude about 1400 feet). Both the village and the garden are perched on a large hill (rock outcrop) located in the flat Rhone River basin about 12 kilometers from the easternmost end of Lake Geneva and about 17 kilometers from the town of Montreux.

This little village from its 11th century watchtower has a commanding view of the surrounding countryside, and of course was a strategic vantage point centuries ago in this relatively narrow valley. The Rhone valley at this point is hemmed in by the very steep slopes of the Vaudois Alps on the northern side and to the south by the massive Dent du Midi range. In the Middle Ages, all travelers crossing the mountain passes from Italy to the lake of Geneva had to pass this point. There is evidence at St. Triphon that it was inhabited prior to the year 200 A.D.

The area is of interest today mainly because of its unique microclimate. This valley is one of the warmest places in Europe during the winter and is usually snow free; if snow does fall it usually melts in a day or so. In fact the winter temperatures are warmer than those of Milan, Italy, far to the south. The garden is perched well above the valley on a warm south-facing slope. It is further protected by high trees to the north, east, and west. The coldest recorded temperature on its south slope during the past 4 years was about 25° F. The relatively mild winter temperatures have allowed Mr. Aviolat to experiment with many plants from South America, South Africa, New Zealand, and Australia that normally could not be grown in the open in Switzerland such as his more than 100 varieties of cactus, some of which are found only in the Andes above 16,000 feet.

This garden is not just a rock garden. It is also a garden of general interest. There are perennial beds interspersed by broad grassy areas, woodland paths with naturalized endemic orchids, a section containing medicinal plants, another of unusual annuals, and wall gardens containing a large collection of ramondas and haberleas. These are also several water gardens attractively planted and beautifully maintained. The water gardens are inhabited in summer by a fairly large species of frog that makes a very peculiar sound, somewhat like a duck quack. This sound can be heard throughout the garden whenever the water gardens do not have visitors nearby. The frogs are quite shy and do not make a sound if anyone is close.

Even though the rock formations here are largely calcareous, many calcifuge species apparently flourish, according to Mr. Aviolat, because the ground water contains a form of calcium that the plants do not readily assimilate. In addition, most of the garden is top dressed with over an inch of peat moss each year during the month of November which assists in keeping soil conditions fairly acid. This covering of peat is beneficial in two ways. It serves as a protective layer, much in the way snow would, shielding the surface roots of somewhat tender plants from the occasional freeze. The mild climate induces a great deal of weed germination during the winter months which the peat moss considerably hinders. It must be noted here that the very fibrous and coarse type of peat used in this garden does not mat down and form an impervious crust; instead, it seemed to remain rather loose in small clumps.

Over 3000 species are currently being grown in this garden including about twenty per cent of all the species endemic to Switzerland. The majority were grown from seed obtained from other botanic gardens. Among the noteworthy, as seen on various visits during the past year, were *Physoplexis comosa* (*Phyteuma comosum*); *Romneya coulteri*, originally from California; *Ranunculus calandrinoides*, thriving in the open garden since 1977 according to our host; *Erodium guttatum*, Morocco; and *Lithodora oleifolia* (*Lithospermum oleifolium*), Spain, flourishing to the point of being rampant. The celebrated night-perfuming *Matthiola fruticulosa* ssp. *valesiaca* which is native to this region but still quite difficult outside of its preferred habitat, rambles about in such volume that it must be weeded out. One of the most outstanding features of the rock garden section is the spectacular appearance of a 6 or more foot long section of *Geranium dalmaticum* growing out of a tight crevice in a massive rock formation. It proves itself here again as one of the premier rock garden plants.

Those who wish to visit the garden need not make an appointment. Just take the auto route (superhighway) from Montreux to the Aigle exit, then after leaving the autoroute, follow the road to Aigle Ouest (west). Then continue on the road in the direction of Martigny. At a point a little more than 3

kilometers from Aigle, you will be able to see on the right a prominent hill with an ancient tower perched on one end. There will be a small sign to the right of the road marked to St. Triphon. Follow this road into the village and ask for the road to the *Jardin Botanique*. The roads are very narrow in this ancient village, just wide enough for one car, so drive slowly. The sign for the garden is very small and the garden is located about 200 yards in from the sign on a narrow curving lane. It is necessary to park near the tower and walk back to the garden. Be prepared to enjoy your visit for at least 2 hours. Note also, the excellent landscaping details, the careful blending of one area into another, the attention to detail such as the carefully trimmed grass growing right to the edge of the water areas, and the almost total absence of weeds. Above all, notice the spectacular background provided by the surrounding mountain ranges, truly a photographer's paradise.

Book Reviews

Rocky Mountain Alpines, Jean Williams, Editor, 1986. American Rock Garden Society and Denver Botanic Gardens. Timber Press, Portland, Oregon. \$35.00 (hard cover).

For decades, the world of rock garden and alpine plants has been dominated by old-world species. And rightly so. For it was plantsmen of Britain and Europe who founded the cult of gardening with rocks and plants of low stature. Men such as Reginald Farrer and Henry Correvon drew upon the rich diversity of alpinines that grow wild in the Alps of Europe. But other continents have their alpine floras too. Asia, South America, and North America came into their own later as sources of alpine plant treasures, as rock gardening grew up. Farrer, in his great classic, *The English Rock Garden*, described many a western North American alpine in his florid style, praising his personal favorites and ridiculing those that were either too cabbagy or too "miffy" in his wet British garden. But no thorough account of western alpinines, *written* by North Americans, has existed—until now.

Then, all at once, we are blessed with a lavish display of color, rich diversity, and erudition. The great volume, here reviewed, *Rocky Mountain Alpines*, will set the highest standard for all other encyclopedic works on the world's alpinists. This regional approach should become the wave of the future. Here, under one cover, is the whole story, from geology and geography of the Rocky Mountains, to detailed floral accounts of each major Rocky Mountain region from Canada to Mexico. Everything about this book bespeaks a flavor of unsurpassed quality: the high quality of the informative text, the profuse display of color and black and white photos, and exquisite art work.

Like its setting, *Rocky Mountain Alpines* is big! The book is in quarto size (8½ by 11¼ inches) and runs to 333 pages. The text is packaged into three distinct parts: Part I, "The Roots of the Rockies," deals with geography and climate, geology, botanical exploration, and early rock gardens in Rocky Mountain country.

Part II, "Wild Rock Gardens of the Rockies," is the most extensive, taking the vicarious traveler into the high homelands of Rocky Mountain alpinists. Its five distinct sections invite the reader to start in Canada with choice alpine habitats and plants of Alberta and British Columbia. This tempting beginning is followed by treatments of every other major Rocky Mountain area: the north and middle Rockies of Idaho, Montana, and Wyoming, thence south to the Rockies of Colorado. Recognizing that not all plants of rock-garden suitability are alpine in origin, this section also invites the reader into the mid-altitude treeless habitats of sagebrush, grasslands, and canyonlands. No major landscape that could furnish rock plants has been overlooked along this grand tour from north to south.

Part III, "Rocky Mountain Plants in Cultivation," turns to the practical questions of how to tame the alpine wildlings in a garden setting. The first section describes the progress at the Rock Alpine Garden of the Denver Botanic Gardens in creating an alpine garden with Rocky Mountain natives. The next section, II, gives a thorough treatment of experiences with these plants in the nursery and the private garden. The last section, III, tells how Rocky Mountain alpinists have fared in gardens around the world, in urban North America, Europe, and even Japan.

Rocky Mountain Alpines was inspired by the challenge of convening the Second Interim International Rock Garden Plant Conference in the summer of 1986 at Boulder, Colorado. What a fitting and lasting masterpiece is this book in distilling the essence of the meeting! Further, its timely publication by the joint sponsors of the Conference, the American Rock Garden Society and the Denver Botanic Gardens, bespeaks of a careful advanced planning by the publications committee. A final word about Timber Press, the producers of the book. Gardeners and horticulturists have learned to expect high quality

in the publications of this Portland, Oregon, firm. *Rocky Mountain Alpines* is an outstanding example of the superior offerings of Timber Press. Our hat's off to *Hortus* (logo of Timber Press) in demonstrating how garden books should be done. *Rocky Mountain Alpines* will set the example of high quality in textual substance and telling display for years to come.

— A.R. Kruckeberg

(Courtesy of Sallie Allen, Editor, *Horticulture Northwest*)

A Field Manual of the Ferns and Fern Allies of the United States and Canada by David B. Lellinger, Smithsonian Institute Press, Washington, D.C., 1985, 389 pages, over 300 color illustrations, \$45.00 (hardbound), \$30.00 (paper)

It has been a generation gap or two since some of the world's finest fern literature ever written was published in 19th century Britain. The chromosome counters continued to work doing the necessary research and publishing for today's bank of knowledge, but for the horticulturist of the first half of the 20th century very little was added to the reference library. Fortunately, with the advent of Reginald Kaye, John Mickel et.al., literature for the fern lover has suddenly become greatly enriched.

One of the most recent publications is a comprehensive study of North American ferns by Dr. David Lellinger. The book is botanical by intent, but hybridized to give horticultural and field information as well.

Lellinger catalogs some 406 species, subspecies, and hybrids with botanical descriptions and, although by his own admission he is not a field botanist, habitat descriptions and brief cultural recommendations. In addition the book is supplemented with a chapter on hybrid complexes and complex many of them are! Normally, getting through the dryopteris crosses offers all of the pleasure of reading a map to a tense driver while entering a strange city; however, Lellinger handles it with clarity. Also his glossary is extensive and well illustrated with pertinent figures detailing distinctions in fern architecture, divisions, outlines, margins, hairs, etc.

The book's introduction is especially useful and presents a wide range of information on geography, ecology, and evolutionary theories as well as the life cycles, parts of ferns, etc. without which no fern book would be complete.

The bulk of the book is devoted to an encyclopedic coverage of our North American (north of Mexico) ferns and fern allies in an exhaustive effort to document and describe a diverse and extensive family of plants. John Mickel, in *How to Know the Ferns and Fern Allies*, preceded Lellinger in this effort, and for those of us who have been weaned on his book there will be found some changes both in descriptive terms and names. As usual in botany each author has his persuasion. Lellinger, however, does not include synonyms in the book which can make it difficult to correlate with other works.

It is rarely, if ever, that one finds a newly published fern book without some attendant botanical name changes, or revisions, or revisions of revisions and Lellinger's is no exception. I'm fully aware—brace yourselves horticulturists—that advanced genetic research techniques will lead to some major revisions in several genera in the next decade or so, but I was totally unprepared for Lellinger's new, or more correctly, old name, *Asplenium trichomanes-ramosum*, for our stable and until now, non-controversial friend *Asplenium viride*. In all due respect, I hope the name goes the way of Nehru jackets as the type plants as we know them are in no way branched or "ramose" such as the *Asplenium trichomanes ramosum* illustrated in Druery's *British Ferns and their Varieties*. I have questions, too, about the botanical discussions of West Coast species of *Polypodium* and *Adiantum*, but am basically approaching this review with a horticultural perspective rather than from botanical precision.

Horticulturally, as a resident of the Pacific Northwest, I am forever dismayed at what is or is not cultivated according to writers from the East Coast. Perhaps we need a Chamber of Commerce to promote our floral cause. At any rate, readers west of the Mississippi may be surprised to find some of their garden specimens listed as "not cultivated." I appreciate the difficulties involved in determining what is in use as it would be as unreasonable to expect the gardener in suburban Washington, D.C. to be growing an Arizona cheilanthes as it would be troublesome for the dryland gardener to be cultivating a lush and leafy East Coast dryopteris. However, the restrictions should not discourage the fern grower from trying what might be appropriate for his landscape. All of this may sound overly critical which is not my intent as there is a wealth of knowledge and information in this reference work.

The book is extensively illustrated with colored photographs. I admire photographer A. Murray Evan's response to the challenge of recording some 361 species, many in their natural habitat, plus many detailed shots to display significant aspects of the fern's anatomy. The reader will find the pictures a very useful visual aid for identification, although for some of the look-alike genera, such as lycopodiums, positive identification cannot be done by the pictures alone. Fortunately the photos are very well cross-referenced with the text.

In summary, here is a valuable volume which is a necessary reference for anyone seriously interested in current information on the ferns of the United States and Canada, their distribution and potential for cultivation.

— Sue Olsen

Omnium-Gatherum

Chapter Newsletters — Those of us who have the privilege of seeing the newsletters from the chapters cannot help but be impressed and excited by their tremendous growth in content and visual appeal. Several of the editors have access to advanced computer technology allowing them to produce such an array of sophisticated graphics as would make a print shop pale. In addition, the editors know how to use all of that technology effectively, and what's even more important, the newsletters, computer aided or not, have such interesting things to say. Upon opening a newsletter from time to time, I have been known to sit down with a plunk and a WOW! and read the thing from cover to cover oblivious to the shrieks and prods of my unraveling schedule. A new column, "Of Interest from the Chapters," begins in this issue; its object, to share some of this richness with the wider audience that the *Bulletin* affords and to let the whole membership in on a good thing.

Mini Book Reviews — Good books on gardening come out in a steady stream to delight and inform us. The *Bulletin* reviews a selection of them, but what of the worthy books for which no reviews are written? What of all the wonderful books already out that we may have missed or forgotten about or weren't ready for or that don't apply strictly to alpine or rock gardening? Another new column, "Books Worth Knowing" appears in this issue. It is a place to share brief reviews of books that have been an influence, a joy, or a treasure to you in some way.

The Alpine Computer — A new feature for those of us who have been smitten by the attractions and possibilities and mysteries of computers as new garden tools is "The Alpine Computer." Here is a place to share articles or comments about what has been tried, what has worked, questions, problems, pleas for help, solutions, ideas, and what is new on the market. Those of you who are experienced or have expert status, please help those of us who are baffled but eager.

Symposium — One dictionary says that among other things a symposium is a “collection of comments or opinions brought together; especially, a series of brief essays on the same subject,” and that is exactly what will begin in the winter issue of the *Bulletin*, or the fall issue if you are quick enough. The first topic will be general and retrospective: “The Plant of the Year—1987.” This may be a plant found by surprise, one long-awaited, a particularly good form, one totally new to you; it may be in your garden, in another garden, in the wild, or even in a book. You may write briefly. Suggestions for topics are welcome.

Questions and Answers — Yet another new feature will begin when the first question arrives. Our Society is as full of answers as it is of questions. Let's get them together and help one another out.

Deadlines — My deadlines are August 15 for the Fall *Bulletin*, November 15 for Winter, February 15 for Spring, and May 15 for Summer.

Pictures — Please send sharp, well-exposed photos for possible inclusion in the *Bulletin* to the Photo Editor, Ted Kipping, 257 Joost Ave., San Francisco, CA 94131. If you have sample drawings to submit, they are also most welcome. Send all drawings to the *Bulletin* Editor.

— SFS



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