



Diapensia lapponica

Bulletin of the
American
Rock Garden Society

Vol. 34

Winter, 1976

No. 1

The Bulletin

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Contents	Vol. 34 No. 1	Winter 1976
The Compost Pile		1
<i>Crocus laevigatus fontenayi</i> — W. J. Hamilton		8
Fringed Polygala — H. L. Foster		10
The wisdom of Merle Sutton — Gus N. Arneson		12
Variability in Japanese Maples — M. S. Mulloy		15
Chemical Stimulants and Seed Dormancy — <i>Dianthus</i> — Robert Sutcliffe		21
Looking Back — Rupert Barneby		23
Book Reviews		25
About the Interim Conference Program — Roy Davidson		26
Seattle's Climate in July — Norman Clark		28
<i>Corydalis cashmeriana</i> , History, Habitat & Culture — M. Louise Stevenson		29
Index to Vol. 33		36

Published quarterly by the AMERICAN ROCK GARDEN SOCIETY, incorporated under the laws of the State of New Jersey. You are invited to join. Annual dues (*Bulletin* included) are: Ordinary Membership, \$5.00; Family Membership (two per family), \$7.00; Overseas Membership, \$3.50 each; Patron's Membership, \$25.00; Life Membership, \$150.00. Subscriptions to *Bulletin* alone (libraries, etc.), \$4.00 annually. Optional air delivery overseas, \$4.00 additional annually. The office of publication is located at 90 Pierpont Road, Waterbury, Conn. 06705. Address editorial matters pertaining to the *Bulletin* to the Editor, H. N. Porter, 158 Whitfield Street, Guilford, Conn. 06437. Address advertising matters and all other matters relating to the Society to the Secretary, M. S. Mulloy, at office of publication above. Second class postage paid in Waterbury, Conn., and additional offices.

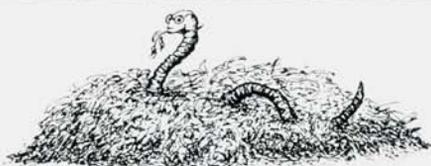
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THE COMPOST PILE

From Sharon Sutton, the editor, have come the first two issues of *Nexus*, a newsletter for the Northwest Chapter, ARGS. They are splendidly written and the accounts of the field trips make me green with envy of those greener pastures. One news item I report in full:

“AN IMPORTANT ANNOUNCEMENT — In April, 1975 the Northern Nevada Native Plant Society was formed with Margaret Williams as president. Since May, a monthly Newsletter has been published and a journal containing material of more lasting value is planned for 1976. The Newsletter is full of field trip notes, plant lists for specific areas of Nevada, botany lessons, interesting ideas, plant lore, and nomenclatural changes. The group seems especially well organized, enthusiastic and active. They have produced an admirable annotated booklist and have some books available at reduced rates for members. Those of us who have become members of NNNPS are pleased and excited by their work. We urge you to join if your interest lies in that direction.” (To join, send \$7.50 to NNNPS, Box 8965, Reno, Nevada, 89507)

This is excellent news. By and large the fascinating western Xerophytes have not done well in gardens, at least here in the East. We need the help of experts who will select clones for vigor and beauty, teach us how to grow them, and provide a continuous supply of propagating material after our usual beginners' failure. Maybe in the end, though, we will need to build structures such as that devised for mediterranean plants and which Rupert Barneby describes on p. 23-24.

One eastern gardener who does grow western plants well is Norman Deno. Those who attended the annual meeting at Monroeville, Pa. last year came back full of wonder at his successes with pure sand. He now tells us how he does it in the first of a series of articles.

How To Grow: Phlox Nana (N. Deno)

The subject of this first in a series on "How to Grow" will not be familiar to many readers though a complete description and picture appears in Wherry's monograph on Phlox and it is pictured and described in Rickett's Wild Flowers of the United States (Southwestern States). A particularly fine form is often shown in England and has won many prizes under the various names of *P. triovulata*, *P. mesoleuca*, and *P. nana*. Richard Clinebell felt that this fine form with its pale halo, yellow eye, and striations is a southern form of the *P. nana* complex and would not be hardy in our winter temperatures of minus 5 to minus 10°. It has not been tried here.

The form that does grow here was collected at its type locality, Santa Fe, NM, by Richard Clinebell and we are indebted to him for introducing it to cultivation. Average minimum winter temperatures at Santa Fe are minus 10 to minus 20°F so that full winter hardiness is assured for Pennsylvania. This type form is a uniform Phlox pink in color. Hopefully the eye, halo, and striations can be bred in at some future date and any new form with these features would be appreciated.

As noted by both Ricketts and Wherry, the name *nana* is a bit misleading as this is no microphlox. Rather it forms a rambling open dwarf shrub about 6 inches in height. It commences blooming in mid June. Below each cyme, a shoot emerges leading to a new cyme and this is repeated continuously until the end of September. This type of inflorescence is called indeterminate and can be seen in full development in the better known *P. drummondii*. The flowers of *P. nana* are larger than *P. subulata* and are flat and full-faced. It will undoubtedly become widely planted when better known and perhaps this cultural note will initiate more widespread enthusiasm for this fine Phlox. Its everblooming habit alone justifies high rank among rock plants as well as its use in breeding.

Seeds are set naturally and self-sown seedlings bloom the second year. There is also some vegetative spread through nodes that develop on the far ranging roots and these send up shoots which emerge 6-12 inches away from the original stem. Most of the growth above ground is annual in duration and dies back in winter. Like virtually all of the Western Phlox, it simply will not root from cuttings nor will it layer.* This assertion is always regarded with disbelief because the sprawling stems superficially resemble those of the easily rooted and layered *P. subulata*.

P. nana is grown in full sun in dry sand beds. These are prepared by spreading a 6-12 inch layer of ordinary builders sand, the kind used for plaster, over limestone soil. This under-soil can be hard baked clay as was used here or more friable loam. It doesn't matter because *P. nana* will romp in the sand and largely feed off of nutrients brought up from the underlying soil by osmosis. It is wonderfully easy to weed such a bed as one can press through the soft sand and get a firm grip on

the toughest old tap-rooted dandelion or dock, and the soft sand has but a weak grasp on the weed's roots. Curiously such sand beds never undergo frost heaving. This is critical for Western Phlox such as *P. nana* because they have soft, fragile, and easily broken roots. These are broken by frost action, the plant heaves completely out of the ground, and such exposed plants quickly die. These dry sand beds are never watered nor fertilized. The growth on *P. nana* is quite lusty enough.

Wherry reports that attempts to cultivate *P. nana* have not met with much success. Try the above sure-fire recipe and *P. nana*, the Canyon Phlox, will become one of your pets as it has here and its flowers will be enjoyed all summer long.

Our distinguished Editor Emeritus, Dr. Wherry, contributes the following:

Note for prospective growers of *Iris verna*. Having devised a simple method for ascertaining the reaction — acidity vs. alkalinity of soils by observing color-changes of dyes, I was invited by Dr. Frederick V. Coville to study this factor in connection with native plants reputed to be difficult to grow in gardens. In his comprehensive book on The Genus *Iris*, Dykes had recorded his failure to grow *Iris verna*. His garden being in limy country where the soils would be circumneutral, a study of this species in its native haunts seemed called for. My observations throughout the ranges of both the type slender-rootstock variety and the stout-rootstock variety *smalliana* showed both to be limited to decidedly acid soils, indicating the source of Dykes' problem.

The interesting account of the lovely color-forms collected by Mrs. J. Norman Henry, on page 166 of the Fall, 1975 Bulletin may lead members to try to grow this *Iris*; they will be well advised not to try it in limy tufa, but to use a mixture of clean sand with finely divided acid peat.

* * * * *

Just one Phlox was there. Last summer the Delaware Valley Chapter of the ARGS had an unguided trip through the Thouron garden in Chester County, Pa. There were vast showy displays of various well-known cultivated subjects, and I kept looking for a representative of my favorite, the Phlox Family. At last it turned up — a solitary, luxuriant clump of *Phlox X glutinosa* cv. Chattahoochee, dark eye-star and all! So this treasure can be grown hereabouts after all.

And Dan Weaver deals with airy ephemeral annuals.

Paronychia canadensis is indeed delightful in the Fullers' garden (*ARGS Bull* Vol 33 p. 179) Cool, shimmering, peaceful, unobtrusive but dramatic. From plants and seeds from the Fullers I established this plant on my (largely) sun-drenched terrace. As Sally mentions it is enchanting in late summer. During several years absence from my garden, it flourished. It did not really keep out weeds as I had hoped (obviously my fault!).

Psychologically, this plant resulted in some disasters on my terrace. This is the area where I have successfully grown some scree plants. Allowing the *Paronychia* to flourish obscured problems which I blithely ignored. In that small garden this plant must be carefully restrained. I also find that in fall that garden is poorly structured to make the brown foliage attractive.

Now that I can see my gardens often I plan to try this plant in various ways, in shadier areas (away from sun-screens) and perhaps as bulb cover.

Another annual, a less awkward plant, which blooms in late summer, is suitable for my terrace. This is *Gypsophilia muralis*, airy and delightfully restrained. It seeds also but quite locally. It grows among choice scree plants without endangering them. Some were still in bloom for visitors on November 15th.

Originally acquired from Stonecrop Nursery I believe it was brought from England by Frank Cabot. It is available commercially?

Another plant, possibly annual — possibly hardy appeared in my alpine house and may be most suitable for selected small areas and/or planters. It currently flourishes where *Mentha requienii* thrives. This plant is most likely Genus *Saxifraga* (a likely suggestion is *S. hederacea* — from Rupert Barneby, who also promised he will investigate the plant).

Mrs. Ralph Cannon is a scientist and an Emeritus Professor from the University of Chicago. She has entered new fields, which fields are blooming mightily, as you will read.

A Note on Colonizing Dodecatheon meadia in an Illinois Woodland

“One of our encroachments on the indigenous wild flowers that cover our Illinois woodland garden was to plant some *Dodecatheon meadia* for which we have a fondness. My neighbor had many of these growing in his woodland where his cattle grazed and offered us all we wanted. We moved about 50 rosettes and tried to plant them in moist dappled shade of the trees whose environment was similar to that from which they were taken. We went to considerable effort to see that these plants would be happy. However, they were not. They seemed to have difficulty in growing. The next spring there was poor bloom, short stems and few colors. As the rosettes began to disappear we moved all of the plants to other shady spots among the many trees. A year passed with no signs of improvement. We hated to lose these beautiful native flowers and so decided to move the plants again to an entirely different environment: a sunny meadow.

“The sunny areas in our woodland and orchard are planted with thousands of daffodils that grow in unmowed grass. Among the daffodils and grass all of the shooting stars from the shady locations were moved. Here they would have to grow or be abandoned. Imagine our surprise when in the following April the shooting stars came up briskly. What beautiful healthy plants flourishing in the grass! Hundreds of blooms, tall stems carrying umbels of glistening white, lavender or rose flowers.

“Since we try to follow the hints that our woodland gives, we allowed the seeds dropped by these healthy parent plants to grow and form a natural figuration made by the wind and rain. This colonization of these happy shooting stars growing in grass in a sunny meadow has produced hundreds of new plants which run too perfectly random to have been intentionally composed. I think that we have made a garden within a garden. They have far exceeded our expectations and have made a major contribution to our woodland. On a May day with cloud shadows chasing each other across the orchard grass, the full bloom of the quiet pastel tones of the shooting stars epitomizes a rare serenity for all of us.”



Johnny Appleseed returns disguised as Palmer Chambers of Guilford, Conn. His report follows:

“The worst moment in the life of an average rock gardener is the moment when his rock garden is completed. There will always be seeds to raise, misfish plants to replace, plant sales, competitions, etc., but the most fun of all is making the garden itself. He may find another spot on his property to convert, but when there is no more suitable area, the future begins to look bleak. Some enthusiasts have been known to sell and move to another location.

“I am pleased to report that I have found an alternative to such a drastic step. In Guilford, Conn. we are fortunate to have our ‘West Woods’, an approximately two square mile area containing one of the best stands of hemlock on the East Coast. This forest has been laced with nearly thirty miles of trails, much of the distance paved deeply with hemlock duff, traversing swamps, rockfalls, and long stretches of solid rock, and skirting precipices with magnificent views of Long Island Sound. Wintergreen is ubiquitous here, pink ladies slippers are common, trailing arbutus is in adequate supply, and one patch of rose pogonia exists, which is kept well sequestered from the trails.

“There are other interesting flowers in these woods, but not nearly what there could be. The ‘Garden in the Woods’ at Sudbury, Mass. gave me the inspiration to make West Woods my own personal rock gardening area. For a while I hoped to raise some interest among the local citizenry in making a really sizable area into a permanent showplace for plants, which would have involved a lot of weeding into the indefinite future.

An article in the local weekly asking for help in such a proposition brought only one response, from Joan Starr, who has since become an excellent rock gardener and a member of ARGs.

"I let the idea of one large area drop and have since been taking a few plants at a time to suitable spots all over the woods, so many in fact that I have lost track of a few. By suitable spots I mean places where the weeds do not offer much competition. Some of my early attempts did deal with the weeds, and a number of plants have survived the competition and look fine in the spring before they get swallowed up. Lately I have been looking for open rocks with one or two inch crevices which can be filled with hemlock duff and whatever soil is handy. Most recently I have tried poking roots down into thick patches of moss that creep onto the edges of rocks, but I won't know whether that works until after next summer's dry weather. The mossy edges of boggy spots are good for *cornus canadensis*, *chiogenes hispidula*, *coptis trifolia*, etc.

"Some purists will doubtless think it sinful to introduce foreign plants into this area, but I feel that any flower that does look beautiful in Europe or Asia can look just as beautiful in our woods.

"Heather does very well, as do *Gentiana scabra*, aethionema, various dianthus, thymus, epimedium, santolina, sedums, and many others. There is a small slowly increasing bit of pyxidantha which seems to be almost choked by moss, but when the moss dries up the pyxidantha does not. A lewisia has done surprisingly well for four years in a dry crevice. Surprisingly a genus that does not do well is sempervivum. Apparently they just get washed away because they offer so much resistance to the flow of water. Perhaps with a little more care I can get some established.

"The matter of care is somewhat of a problem in getting all the plants started so far from home. In my first attempts, which were made in the early summer, I carried an Indian tank full of water on my back, kept the plants covered, and made frequent visits. Since I have started planting in many different locations, I don't try to start anything between April and the middle of October. To conserve the small amount of water that I carry, I mix it with soil in a container, which saves the runoff, as well as assuring that the leaf-mold, which is surprisingly impervious to water, gets soaked. A big problem can be finding plants again, once they have been put in. Drawing a diagram can be helpful, but I haven't really satisfactorily answered this problem yet.

"Especially recommended for bringing some beauty to even the most sun-baked rocks is *Potentilla tridentata*, which can be established where nothing grew before. *Arctostaphylos* is another great rock plant, but it has to be started along the back edge of the rock, where it can get into some soil. It won't put up with being dried for many months after planting. I could go on for pages.

"As so much of American woodland was at one time cultivated, we have lost many beautiful varieties of indigenous plants. Surely no purists could object to seeing us bring back such beauties as polygala, chimaphila, dalibarda, epigea, epipactis, claytonia, etc. etc. I want to recommend this pastime to other members of the ARGs. And you don't have to have rocks. You can find plants for almost any kind of spot."

The geranium genus is a valuable and varied one for the rock gardener. There are species from the rare and precious silver-plated *G. argenteum* to the dusky muted purples of *G. phaeum* to the prolific little seeder *G. robertianum* that has spread its Herb Robert seeds around the world in shady sites and scented our air with the pungence of its ferny foliage and lightened the scene with its evanescent red-purple flowers.

G. sanguineum, however, is for rock gardeners the ever present one in its various forms, and how varied it is. In this species are to be found restrained plants with small leaves, close growth and elegant pure pink flowers, and great ramping white flowered forms that in a single season will billow into mounds three feet across and nearly as high, as well as the typical spreading form with clear magenta blossoms, some restrained, others not. There is also the rather low, almost creeping variety *lancastrienne* with pale pink flowers delicately penciled that might merit specific separation, though I cannot swear to its purity from seed.

All of these forms, varieties, or separate species of the sanguineum geraniums have made a home for themselves in our alpine meadow, and there is no group of plants more rewarding or aggressive than these in the care-free tug of war of the home-made alpine meadow. They flourish and seed wantonly; lying in wait for their moment of glory until the earlier bulbs and phloxes have blazed away. Then, having mounted above their neighbors as they flower, they begin to kindle the seeds in those curious knobs at the base of the cranebill seed capsule. Suddenly the locks are opened; the seedcovers snap up like broken watch springs, curling up around the central crane's bill and firing the heavy artillery of seed to a distance. Then far and wide the seeds find foot hold among other plants. The insignificant seed-leaves sit waiting till their host has turned his back in a quiet moment. Then there is another flourishing *G. sanguineum*, sometimes white, sometimes striped, sometimes a delicious pure pink — most often a replica of the magenta but generous species.

Finally we had to come to grips with this exuberance. Come mid-July when the flush of flowers is over and before the seed pods have shot their cannons, we go out in attack. And that is just what it is. Standing four-square around a billow of geranium we grab each arching stem at the base and pull. The stolons, which if we didn't assail them thus would march to kingdom come, are yanked back from their rooting and the old crowns yield their top growth to the vigorous jerking on their top. There is left for a few days a bare space with what we know are tugged but sturdy roots lurking in the soil. Within a week new growth begins on the remaining crowns and by early August there is a new flush of flowers on restrained new growth.

Come fall — we'll wack them down again in the general cleanup, meanwhile we've restrained the stoloniferous sneaky widening of the plants, the wanton seeding, and have had a second flowering during a dull time in the rock garden. We like *G. sanguineum* and its forms but we have had to learn to come to grips with it.

A useful and mouth-watering communication from Dick Redfield

"ARGS members who plan to visit New Zealand and who hope to get up into the mountains to examine the very interesting native alpine flora are strongly urged to make contacts with N.Z. members well in advance. Access to the alpine areas is by no means as simple as it is in the Western U.S. or in the mountains of Central Europe. There are no major highways passing through high alpine tundra country, no cog railways or cable cars to carry the older, less hardy plant hunters to the tops of the mountains. In most cases access is possible only on foot, by four wheel drive vehicle or by helicopter.

"Nevertheless, if you are planning a more typical tour, with emphasis on the truly magnificent scenic spots, and yet would like to get a brief glimpse of the alpine plants, there are a few spots of relatively easy access, either by tour bus or with a rented car if you prefer to drive yourself.

"One such spot is Coronet Peak at Queenstown, in the Southern Lakes District. A good, hard surface road, with easy gradient, will take you, either by bus or, preferably, in your own car, to the ski hut. From this point you can either hike to the summit, if you feel ambitious, or take the chair lift to the summit and walk down. Along the way you might expect to find such plants as *Pygmaea tetragona*, *Hectorella caespitosa*, *Ourisia caespitosa*, var. *gracilis*, *O. glandulosa*, *Myosotis pulvinaris*, and many others.

"Another possibility for a do-it-yourself plant expedition is Mt. Hutt. A gravel ski road ascends well up towards the summit and, while rather steep, it is negotiable by ordinary cars, provided you are not a timid driver. This is probably the easiest place to get a good look at the Common Vegetable Sheep, *Raoulia eximia*, in large numbers. You might also expect to find *Raoulia mammalaris*, *Haastia recurva*, *Pratia macrodon*, *Euphrasia revoluta*, *Pygmaea pulvinaris*, *Caltha obtusa* and, with a bit of luck and sharp eyes, such species as *Ranunculus haastii*, *R. crithnifolius* and *Lignocarpa carnosula*."

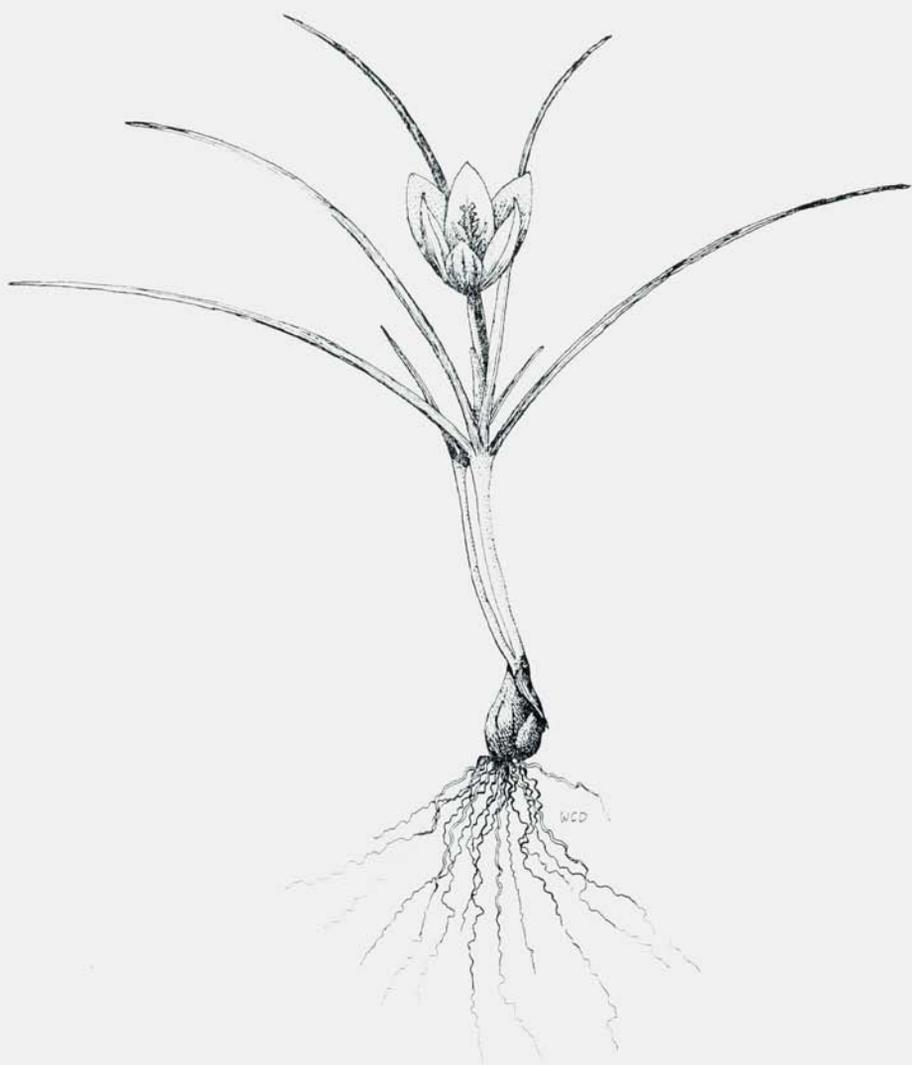
CROCUS LAEVIGATUS FONTENAYI

W. J. Hamilton Jr., Ithaca, N.Y.

The fall crocuses, flowering as they do well into the autumn, add much to our northern gardens. In central western New York, *Crocus speciosus aitchesonni*, *C. longiflorus*, *C. medius* and *C. salzmannii* are particularly admired by visitors to our gardens. After they have flowered for weeks and finally withered away in the early November snows, the real gem rears its beautiful chalice through the cooling earth. *Crocus laevigatus* opens in mid-November and often lasts past the New Year.

A very variable species, the white ground cover is veined and feathered with crimson purple venations on the outer segments. The orange throat contrasts nicely with the white anthers and finely divided orange stigmas. It was Max Leichtlin who sent Bowles the beautiful form *fontenayi*. This variety looks a bit like *Crocus imperati* which blooms fully two months later.

Crocus laevigatus is unique in several ways. Its corm tunic is unlike any other crocus, being hard and smooth, dark brown to black, the sheath



of a single piece entirely covering the corm. It reminds one of a miniature tulip bulb. The specific name alludes to the smoothness of the inner tunic.

While sitting about the kitchen table packeting seed, Dr. Bill Dilger sketched the freshly dug specimen on December 6. Three weeks later, it is still in bloom in its subnivean bed, and will open again with a bit of sun. Several firms offer this attractive crocus at a reasonable price. Planted against a south facing wall, it will give pleasure to the gardener well into the new year.

FRINGED POLYGALA

H. L. Foster, Falls Village, Conn.

The Fringed Polygala, *Polygala paucifolia*, carries its intricate, showy rose-colored flowers two or three together on leafy flowering shoots in light woodland soils from eastern Canada southward to Georgia. As it marches southward it seeks the highlands and cooler reaches where it associates with other eastern woodlanders so intimately a part of our natural background. There in company with the earlier flowering Hepaticas and Dutchman's Breeches and the late flowering Wintergreen, by virtue of its carriage and jaunty air it calls for close inspection to account for the superficial resemblance to a tiny orchid or a brilliant large winged insect.

Each flower is composed of a five-parted calyx and a three petalled corolla, but modifications and transformations disguise this division of the floral parts. Two lateral sepals of the calyx are enlarged and colored like the petals, forming the wings that give the plant its colloquial names Gay Wings or Bird-on-the-Wing. The three petals are fused into a tube with the lowest one rather canoe-shaped and crested with a contrasting white fringe at the tip. Hence the name Fringed Polygala.

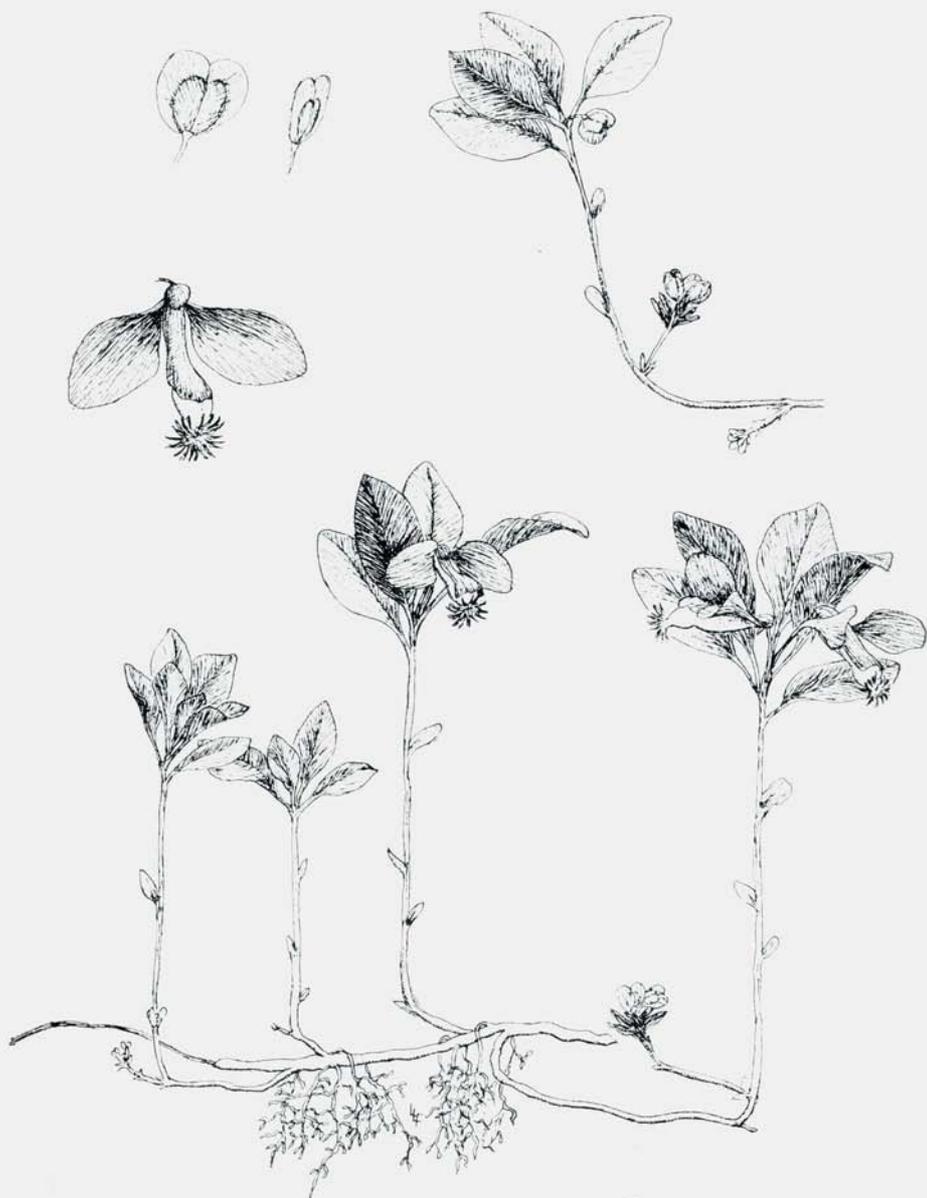
The generic name, *Polygala*, was assigned to this widespread genus by Linnaeus, borrowed from Dioscorides who had assigned it to some low shrub reputed to increase lactation and is composed of the Greek *polys* — much and *gala* — milk. The rather inept specific name *paucifolia* (and sometimes mistaken as *pauciflora*) was applied by Kall Ludwig Willdenow to this plant because the leaves, except for those just beneath the inflorescence, are so small and scale-like as to be inconspicuous. We must rely on the more colorful colloquial names to hint at the essential quality and charm of this woodland carpeter.

Fringed Polygala in its typical form makes sparse mats of leafless subterranean stolons loosely anchored by fine roots.

Along the stolons are 4 to 8 inch shoots that carry at the top a tight cluster of petioled ovate evergreen leaves, deep green above and reddish purple beneath. This stoloniferous growth habit, rather like that of the Shin-leaf tribe, with scattered feeding roots does make transplanting slightly tricky. If you find a small compact plant and dig it as a sod with no disturbance of the roots, and transfer it to a well-drained woodland site, it should pose no problem. On the other hand, if you attempt to lift a large patch from the kind of open soils the plant seems to favor, then, because of the tenuous root structure, you will have a limp spaghetti-like tangle of stolons difficult to untangle and replant successfully. The simplest and safest procedure is to take a few foliage clusters with a length of stolon for each and treat them as cuttings in individual pots to be set out later near together when they have formed independent root systems. Even top cuttings, without stolon attached, will root quite readily.

This is certainly the best conservation method to use, especially for the very rare and very beautiful pure white flowered form. The foliage of forma *alba*, though similar to the type in size and shape is distinctly paler green and carries no reddish cast on the under surface.

While the showy flowers of Fringed Polygala produce few seeds, throughout the summer and autumn there are produced small cleistogamous flowers on subterranean branches. As the two-parted seed capsules mature they are thrust up through the surface of the soil to ripen above ground.



Polygala paucifolia

THE WISDOM OF MERLE SUTTON

A sampling of the wise and imaginative writing with which Albert M. "Merle" Sutton has enriched the pages of the American Rock Garden Society Bulletin.

By Gus N. Arneson

Merle Sutton, in Volume 22 No. 3 of the American Rock Garden Society Bulletin, wrote: "Fortunately, we do not know the number of years that lie ahead for us to enjoy all the things we hold dear. For this reason it is incumbent on each of us to let no moment escape without savoring in full measure every emotional gladness; every delightful human experience; every bit of beauty; all of Nature's grand entertainment; the joys brought by each season in its turn; each fleeting impression made by our association with plants, in the wild or in our gardens, . . ."

The years left to Merle were too few but we know that he filled all of his years "in full measure" as he considered it "incumbent on each of us" to do.

It is especially gratifying that Merle left for us on the pages of the ARGS Bulletins a rich heritage of wise and thought-stimulating observations. If we read from these pages with listening hearts we may hear the voice of this good friend — a voice of encouragement, confidence, and comfort — and we will feel that he is still close to us, guiding us toward the beauty and peace that he sought and found in nature.

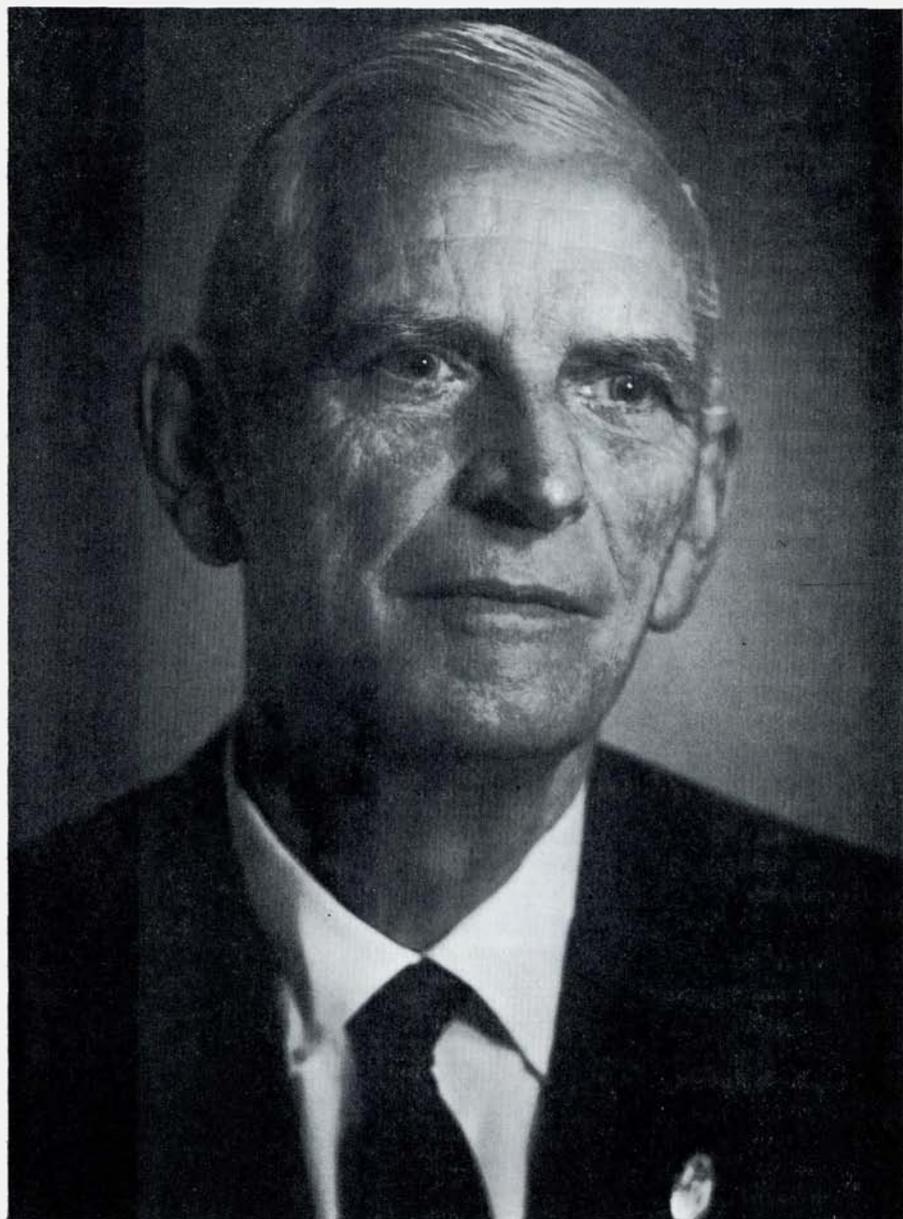
Let us turn the pages of past numbers of the Bulletin and extract from Merle's writings a few examples of his sentiments, philosophy and wisdom.

". . . above facts, above the mundane, the materialistic, even the scientific aspects of plant life there soars the bright spirit of man's fellowship with plants. Fallacy? No! Fantasy? Yes, if you insist, but nevertheless a very real factor in man's association with them and the part they play in his search for happiness.

"If a man wishes, in his own thoughts, or in his spoken or written words, though they may be termed 'flights of fancy', to give the gentler human qualities, and even more, ethereal qualities to trees he loves; to the flowering plants of field, forest and mountain that he meets in his wanderings; to the delightful inhabitants of his own garden that provide him with so much pleasure and comfort, let him not be criticized by those whose minds are concerned with facts alone. . . ." (Vol. 22 No. 1.)

"*Erigeron aureus* is a small composite that gives me a lot of pleasure when I meet it in the mountains. . . . It is only an alpine daisy, but it is neat, petite and smiles up at the beholder with great cheerfulness." (Vol. 22 No. 1)

"Mostly they were the little flowers that love the open grass lands or haunt the little watercourses. Of notable or rare flowers there were none — just flowers that are comfortable in the wind and the springtime sun and the growing grass — flowers that share their world with butterflies, the beetles and the nesting birds. And now they were sharing this lovely home of theirs with us. We walked gently in this place as guests should." (Vol. 20 No. 2)



"White flowers have ever been our favorites. In our northwest country twilight lingers for a long time and in that most tranquil time our gardens are at their best. While the light remains after the sun has set, the flowers that are not white retain their daytime charm, although their colors may have different values than in daylight. . . . Then as night . . . settles over the garden, one can still see the lovely white blossoms. They glow with a pale insistence and are the night candles of the garden." (Vol. 21 No. 1)

"Have you ever seen a mountain slope which is a mass of silvery-foliaged lupine, just coming into bloom, on an early morning when the ground mist is starting to rise?" (Vol. 21 No. 4)

". . . *Viola flettii* blooming alone; no other flower, no tuft of grass, no fern; just one small indomitable plant alone in a barren world of rock." (Vol. 11 No. 3)

"To be filled with a great and pulsating wonder engendered by the grandeur all about; . . . to lift one's eyes to the beauty of the mountain and the shining sky; to fill one's lungs with the keen alpine air; to thrill to the aeolian music in the trees; . . . to feel welling up within one an exaltation so great that one must shout; to reach the bursting point with the pure joy of life. . . . To experience such spiritual uplift is to enter a little way into the Kingdom of Heaven. . . ." (Vol. 14 No. 3)

"We came upon small colonies of that most beautiful of pyrolas, *Moneses uniflora*. Intimate groupings of these elfin plants graced the deep moss of trailside banks at eye level . . . these innocent sprites attract one's attention with a far-reaching perfume, delicate and teasing." (Vol. 17 No. 3)

"We have passed through the forest and made our way over the mountain. We have disturbed nothing. We have taken nothing. The wilderness is as it was before our coming and it is our prayer that it may ever remain as it is now. . . ." (Vol. 17, No. 3)

"Actually, there is no known limit to our ability to lead a fuller and richer life. Limitations that seem to exist are mostly of our own making, and if we are capable of limiting ourselves, we are also capable of demolishing whatever it is that is restraining us. We can unshackle our minds and send our thoughts, if we like, to the farthest star, or to the lichens that paint in brilliant color the faces of our mountain rocks, or to . . . the newly-sprung mushroom at our feet." (Vol. 25, No. 2)

". . . in the hearts of many people, especially those who love the wilderness, and know it, the Little People do exist, though never seen nor heard. To these same people such forest and mountain dwellers as are represented by *Moneses uniflora* are cherished as wonderful gifts of nature which they truly appreciate. . . . So, good people, go to the woods, the prairies and the mountains and take fantasy with you and let your hearts overflow with love of all natural beings, actual or imaginary, while there is still time. Let the wilderness into your hearts and be grateful for its gifts. Should you come upon a *Moneses uniflora* in some quiet place, please stop and assure it of our love — and should you perchance see one of the Little People, do the same." (Vol. 33 No. 1)

VARIABILITY IN JAPANESE MAPLES

M. S. Mulloy, Waterbury Conn.

One of the delights of a woodland trail in a Japanese spring is one's sudden awareness of the fresh young growth of the Momiji overhead — Momiji, the baby's hand, a name much more piquant to the imagination than our drily technical *Acer palmatum*. Yet what is a hand, if not palmate? . . . Or on a wonderfully Indian summerish day that calls out even the most house-bound urbanite, on the quiet stream below your path, as in the path itself, the fallen leaves of these same Momiji, now brilliant scarlet, crimson and yellow, tempt one to beguile the hours with innumerable fancies and fantasies . . .

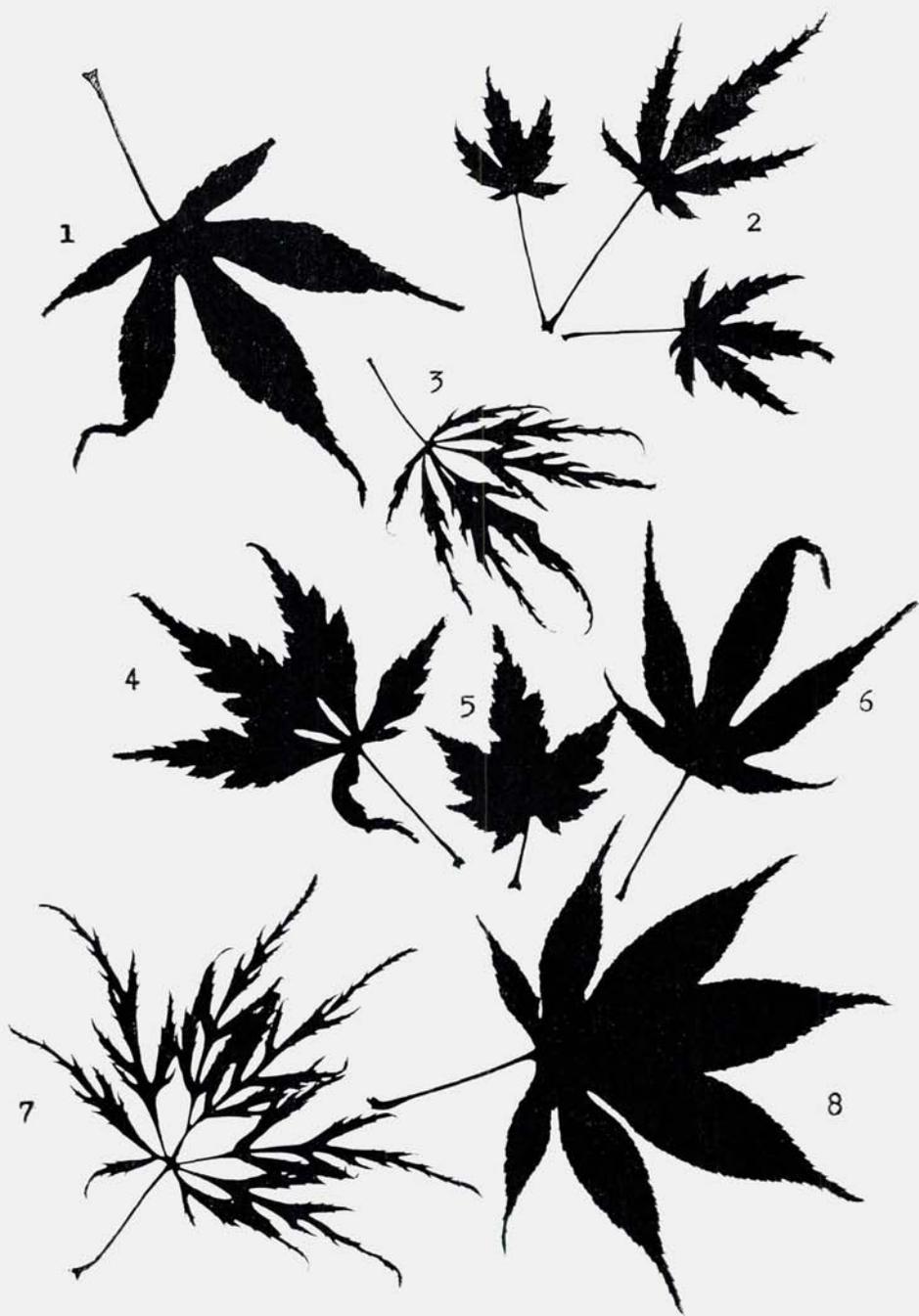
'Shishigashira', 'Koshimino', 'Kinran', 'Crimson Queen', 'Butterfly', 'Waterfall', 'Filigree', 'Reticulatum', 'Ornatum' . . . the list could go on and on ad infinitum. For with long, long practice the Japanese are traditionally "splitters"; and commerce being what it is, so too appear the Dutch, as well as many here at home. Not that it really matters much whether one favors one camp or the other. What does matter is the plant itself.

It is a commonplace that for generations the Japanese have studied, selected, propagated — and obviously loved — innumerable forms of their native maples. The Japanese names above are but a fragment of the hundreds thus germinated through the centuries of their gardening arts. In the 1800's and since, Dutch and English growers have come on the scene with their contributions; more recently still our American nurserymen and private collectors have surrendered to the charms of *Acer palmatum*. 'Crimson Queen' and 'Waterfall' among others are of American origin.

As among other genera and species where extensive selection has prevailed over many years, there are — perhaps inevitably — forms of *Acer palmatum* wherein the differences seem, unhappily, ones of degree rather than of kind, and where the distinctions must be held to be lacking in substantial differences. Perhaps this condition may suggest a commercial syndrome at work. Whatever may be said on that theme, however, the fact remains that this species holds a plentitude of distinctive forms well suited to a wide range of usages in gardens of widely differing characters.

Many of these forms may find ready application within the rock-garden milieu, and doubtlessly those will fall predominantly in the *dissectum* grouping, as below. The photo herewith, giving some sense of the variety inherent in the leaf-forms alone, can only be symptomatic of the wider range of variation within the species. Anyone intending to make use of these delightful accents in his garden will want to invest substantial pre-selection time to study as many different forms as he can locate. For the study of Japanese maples is, above all else, a study in variability; the following notes attempt to define some major categories of that variability, insofar as these are exhibited in the East.

Basically *Acer palmatum* divides handily for the layman into two pronounced groups; these are most readily distinguished in the leaf. What for convenience (ignoring botanical technicalities) may be called the type shows leaves deeply cut, often to the center vein, with the resulting lobes somewhat broad midway of their individual lengths. These in turn are



No. 1 — A. p. — red seedling
 No. 2 — A. p. 'Roseo marginatum'
 No. 3 — A. p. d. 'Crimson Queen'
 No. 4 — A. p. — red seedling

No. 5 — A. p. 'Sishigashira'
 No. 6 — A. p. — red seedling
 No. 7 — A. p. d. — green seedling,
 unnamed selection
 No. 8 — A. p. green seedling

sharply pointed and more or less toothed. Together, they give to the leaf a starry pattern that, with but little stretching of the imagination, appears enough like a baby's hand to quite justify the Japanese common name. The second division is, technically, *A. p. dissectum*. This form shows the lobes so very finely attenuated and cut that one may easily speak of the trees as being "fern-leaved" or "thread-leaved". En masse, a tree of this form looks a delicious frothy, billowing mound of lace. By habit of growth and by stature, this group is generally the better suited to rock-garden usage, though there are indeed selections within the *palmatum* group that would lend distinction to your scene.

Of *dissectums* there are easily a dozen or more named varieties more or less readily available in the American market. Named varieties of *palmatums* are legion, both in the trade and out. For maximum satisfaction in rock-garden usage, probably many should be examined in full growth before final selection. But for sight-unseen mail-order purchase, rock gardens will in general be better suited by the *dissectum* forms. The older varieties of these latter tend to go under such Latin names as 'Atropurpureum dissectum', 'Viridis', 'Ornatum', etc. More recent introductions come generally in English: 'Ever Red', 'Garnet', 'Brocade', for example. Still others live under their Japanese names: 'Sekimori', 'Inaba Shidare', and many more. One could hardly go wrong with any of them.

Both the *palmatum* and *dissectum* forms may appear as seedlings from the same parent tree. Both forms may show the normal green foliage or a red that varies widely in its intensity and constancy through the growing season. Among the most stable of these reds are 'Bloodgood' and 'Crimson Queen'; by repute and in my own limited experience, these hold their color well right through the heat of summer and into late fall. These two are of *palmatum* and *dissectum* persuasion, respectively. Most red selections and unnamed seedlings tend from mid-summer on to become bronzed. And this bronzing itself can vary from the distinctive to the muddy. I suspect, but can not prove, that some small part of this particular variance might be traceable to the degree of shade afforded a specific plant. Experienced nurserymen seem agreed that the species as a whole does better, at least in the East, if given some shade. But there is no foolproof formula to guarantee that a given plant will retain x degrees of late-season redness in return for y degrees of shade. Variability is indeed the name of the game in Japanese maples. Safest, if you want red foliage, to rely on the proved stalwarts.

The *palmatums* and *dissectums* separate, again, rather markedly and reliably on the bases of mature size and growth-habit. The former mature at 15 or more feet, and may be of single- or multi-stemmed or shrubby habit. In the latter, even in obviously old specimens, senior citizens with 8- or 10-inch trunk diameter at ground level, the tendency is to mature at much nearer six feet; in this group growth seems to be slower than in the palmate forms. Pendulous or weeping forms among the *palmatums* are rare indeed; in the *dissectums* they appear to be the norm. In this country at least, I know of but one upright *dissectum* in the trade. This is a greenleaf form, 'Seiryu' by name, that yellows in the fall. In contrast to the *palmatums*, among old specimens of *dissectum* the marked reduction in total height arises, in part, from the much-bent, often deeply contorted

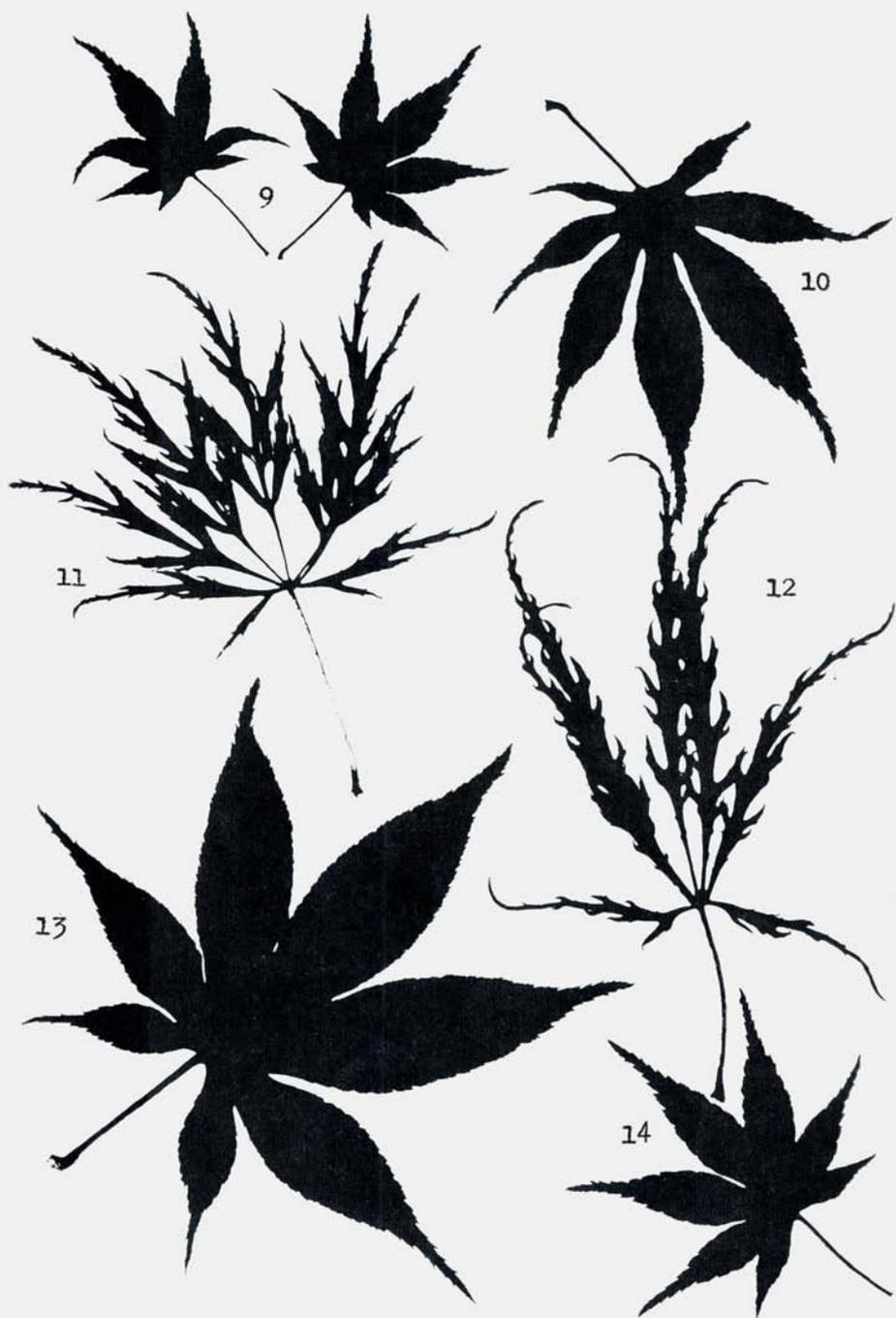
trunks. Whether this habit has been artificially induced or is natural, the final effect is one of the crown having outweighed and depressed the lesser strength of the trunk, whereby the tree becomes a fluffy, lacy mound resting lightly on the garden, wholly pleasing and fully compatible with its surroundings.

'Waterfall' would be a good example. As already noted, it is of American origin, having been introduced in the '20's by that great and dedicated plantsman-nurseryman, the late Henry Hohman. As its name suggests, this *dissectum* is obviously a weeper, with much-cut, exceptionally long leaves. 'Palmatifidium', another weeper, exhibits still another variance wherein the lobes of its leaves are distinctly less cut than would be expected in this division. Likewise among the palmate forms, 'Bloodgood' and 'Burgundy Lace' exhibit a similar contrast, with the latter carrying the more deeply slashed leaf-lobes, wherefore, in part of course, its name.

Differences in leaf size sometimes prove distinctive enough for effective separation, particularly among the *palmatus*s. Degrees and patterns of variegation, especially in the palmate, green-leaved forms, are also fairly separable. "Reticulatum" is one such, with its spring growth a pleasing yellow-green, against which the veins, rich in chlorophyll, stand out in marked contrast. Through the summer the leaves darken, the contrast fading until it adds its quota to the sum-total of fall coloring. 'Versicolor' is another old favorite with irregular splashes of cream and pink on the otherwise relatively small palmate leaves. In the right setting it can be a sparkling conversation piece. My own observation, however, indicates that this is a form much the best bought in full leaf, for the variegation in some plants is more pronounced than in others.

Another attractive *palmatum* pair exhibits a variation unusual in the species. Although in several particulars the two forms closely resemble each other, they are in fact separable to the naked eye, but their major distinction — which they share — is the pronouncedly blue-green cast of their foliage. Both are small-leaved forms, the leaves in each being quite irregular in shape, with some lobes in each apt to be in part somewhat filamentous, in part neatly toothed, to give each plant a suggestion of having no two leaves quite alike. They share also their splashes of cream against the blue-green of their leaves. But the name 'Roseo marginatum' spells its clear distinction from its companion 'Butterfly'. And both indeed are well named. (There is also among the *dissectums* a 'Roseo marginatum', but being of the much-cut grouping, it will not be confused with its palmate cousin. What is confusing is that in some quarters another palmate form goes, wrongly, under this same name. Similarly, the name 'Crispum' has been applied freely to several different plants. One gets the feeling that eager nurserymen sometimes get a trifle careless with their epithets!)

If what I said above about the similarities between 'Butterfly' and 'Roseo marginatum' seems to spell a "distinction without a difference", I confess that I would have to agree — up to a point. I would then have to note that now, in early November, my 'Roseo marginatum' still carries its leaves — wonderful in shadings of scarlet, crimson and maroon — whereas, not far away, in substantially the same soil and exposure, my gay 'Butterfly' has pupated for the season, its few remaining leaves drooping sere and wintry brown. Sic transit gloria . . . Moreover, it's hard to have



No. 9 — A. p. 'Versicolor'
 No. 10 — A. p. — red seedling
 No. 11 — A. p. d. green seedling
 unnamed selection

No. 12 — A. p. d. 'Crimson Queen'
 No. 13 — A. p. green seedling
 No. 14 — A. p. red seedling

too much of a good thing!

Another notable variation in this infinitely variable clan is to be found in those forms which, in their fresh spring growth, open not green but a rich pink — fiery in some, in others muted, the shade found occasionally in handmade bricks of buildings of the Colonial period. Startling and utterly delightful, such a plant can bring an otherwise drab and deeply shaded corner into vibrant life. Happily for rock gardeners, some of these pink forms appear sufficiently slow in their growth to remain in scale longer than other palmate forms. Some retain their color well late into the season; others tend to shift earlier. But after their spring efforts, one would be hard-hearted indeed not to forgive them any subsequent lapse from the spectacular. 'Deshojo' is one of these charmers, dwarf in stature, somewhat shrubby of habit and small of leaf, it shines fiery pink early in the season. A jewel!

Finally, my own pet is 'Shishigashira' (say it slowly, a syllable at a time, and you've got it). It is one of the dwarfiest of all the forms, is of exceedingly slow growth, with leaves, bright green, that may range from a half to a full inch in length, each leaf clearly lobed, and each heavily crinkled. However, wherever you grow it, it is a natural bonsai, well meriting the best center-stage site that you may contrive.

These by no means exhaust the forms both desirable and available. Such would run into scores. Some eastern nurseries stock a few cultivars; many more are available on the West Coast, where some of the largest collections in the country are to be found.

Nor does it exhaust the tale of variability — winter bark, red or black, or bright green in early spring; green leaves with purple tips, or deep purple-red ones flecked with gold or forming a dark backdrop for the bright green of the seeds so that they glitter like jewels. This species has been the "splitter's" playground, and it would take too long to encompass it all. More to the purpose in the above is to try to outline what seem to be the major areas of variance from the simple, green, palmate norm.

If time is on your side, if you have patience and space, you may like to experiment with seedlings garnered wherever you may find the seed. This is a pursuit filled with uncertainties however. Fresh seed, freshly planted, may sprout — or it may not. Dried seed, duly soaked and stratified may sprout — or it may not. But once having "caught your hare", with drainage, air-movement and shade, the seedlings are easy to grow in any moderately rich woodsy soil. The variations in a single lot of seed never fail to interest, and the knowledge that some really distinctive variant may, someday, turn up (one chance in how many hundreds — or thousands?) is a mild and pleasantly exciting form of insanity, less wearing on the constitution than prospecting for gold, cheaper than playing the 'one-armed bandits', and quite as satisfying in its way as fishing for brookies in your favorite mountain stream.

NOTE: Over a longish period I have been much helped by growers' and nursery lists for introductions to and descriptions of many varieties. It is impossible to recount them in detail, for in this germinative period no records whatever were maintained of how I acquired what scrap of information. More recently, such growers, nurseries and collectors as Greer, Kingsville, Palette, Spingarn, and Vertrees have been of significant help that I acknowledge gratefully.

INTRODUCTION

It is well known that physical and biotic factors affect seed germination. Some seeds germinate rather easily whereas others require very special conditions. Preconditioning seeds to stimulate germination is practiced extensively in agriculture and horticulture. Common methods employed involve mechanical and acid scarification, soaking in water, moist-chilling (stratification), combination of two or more treatments, and chemical stimulation.

My particular research interest is centered with rock garden plants, all of small size, representing "alpine" plants. These alpiners are particularly notorious in their germination requirements. For example, many require long periods of stratification to break their dormancy.

Confronted with the task of breaking dormancy in alpine seeds during the winter of 1973 I discussed the matter with members of the American Rock Garden Society, Delaware Valley Chapter. From discussions I learned that apparently little has been done utilizing chemical stimulants to break dormancy — a fact which has led to my problem, as defined below:

PROBLEM

The effects of chemical stimulants on breaking seed dormancy in selected alpine plants of the genus *Dianthus*.

MATERIALS AND METHODS

A. Seed source

Through the generosity of the American Rock Garden Society, Delaware Valley Chapter, I obtained seed packets representing 32 species and/or cultivars of *Dianthus*.

B. Pre-planting

The seeds were kept in a household refrigerator for three months, October through December 1974, cooled at temperatures ranging from 35° to 40° F.

C. Pre-soaks in chemical stimulants

Commonly used stimulants are Potassium nitrate, KNO_3 , Gibberellic Acid, GA_3 , and Thiourea, $\text{CS}(\text{NH}_2)_2$ (Hartmann and Kester, 166-167).(*) Dilutions were arbitrarily selected from those commonly recommended. I felt I should be conservative so chose the following.

KNO_3 — 0.1%

GA_3 — 100 mg/l

$\text{CS}(\text{NH}_2)_2$ — 0.1%

Styrofoam egg boxes were used for soaking and planting containers because they were free, of inert material, and convenient spacewise.

Each packet of seeds was divided into four lots, one lot for each of the three chemical stimulants, and the fourth lot for a control using tap water as a pre-soak.

On January 1, 1974 the seed lots were placed in their respective receptacles and covered with five cc of test solutions and water control. They were

(*) Hudson T. Hartman and Dale E. Kester. *Plant Propagation Principles and Practices*. Second edition. Prentice-Hall, Inc., New Jersey, 1968

soaked for 48 hours at room temperature of approximately 68° F. Because it may be inhibitory to growth, Thiourea soaks of only 24 hours are recommended (Hartmann and Kester, 130). I used 48 hours for soaks as a compromise because of seed coat permeability variations.

After 48 hours of pre-soaking the seeds were drained and rinsed three times with tap water.

The seeds were then planted in moistened milled sphagnum as their growing medium. The planted containers were then placed by naturally lighted windows and kept at a rather constant temperature of 68°.

Within seven to 14 days from planting the initial surge of germination took place, and gradually waned by the end of January.

Observations were continued through March for additional germination possibilities, but damping-off organisms reduced those possibilities considerably, even though Phaltan fungicidal treatments were employed once per week.

Interpretation of the tabulated results shows that seven taxa of the 32 tested did not germinate while the remaining 25 did to some degree. Of the 25 taxa that germinated 21 responded to KNO_3 , 12 to $CS(NH_2)_2$, 20 to GA_3 , and 18 to the H_2O control.

Germination in all four test media was found to be about the same in three taxa (sp. 9" pink, dark center; chinensis; lusitanus). When compared to the water control, 11 taxa showed a stronger response to KNO_3 (armeria, barbatus "Newport Pink", carthusianorum, X Icombe, nitidus, noeanus, pavonius, plumarius praecox, pontederae, spiculifolius, subcaulus), and seven taxa (X Brilliancy, calocephalus, deltoides "Crimson Bedder", glacialis, knappii, serotinus, superbus) showed their strongest response to GA_3 . Except for two taxa (armeria, deltoides "Crimson Bedder"), a fairly strong response to $CS(NH_2)_2$ was not evident. Seven taxa (armeria, carthusianorum atrorubens, glacialis, X Icombe, pavonius, serotinus, spiculifolius) responded to stimulants, but not to water controls. Based on germination numbers nine taxa (armeria, barbatus "Newport Pink", X Brilliancy, carthusianorum, calocephalus, deltoides "Crimson Bedder", nitidus, noeanus, pontederae) favored stimulants over water soaks.

CONCLUSIONS

The experimental data on the 32 taxa of *Dianthus* tested reveals the following:

1. Many of the taxa (80%) germinated favorably from pre-soaks to break dormancy.
 - a. — Germination occurred in 22% from chemical pre-soaks, but not from water pre-soaks.
 - b. — Germination occurred in 29% of the taxa tested in such numbers as to indicate favor of chemical stimulants over water pre-soaks.
 - c. — When compared to water pre-soaks 35% showed their strongest response to KNO_3 and 22% showed their strongest response to GA_3 .
 - d. — Strong responses to $CS(NH_2)_2$ were not indicated.
2. KNO_3 and GA_3 pre-soaks are useful chemical stimulants to break dormancy in some taxa of the genus *Dianthus*.
3. Because of the varying degrees of germination incidence in the foregoing experimental results it is recommended that KNO_3 and GA_3 be used with discrimination for germinating *Dianthus*. Individual taxon preferences suggest the necessity of pre-testing.

LOOKING BACK
Rupert Barneby, Bronx, N.Y.

Mr. Elliott's recollections (ARGS Bulletin 33:167) of *Limonium asparagoides* in Dwight Ripley's cliff-house in Sussex stirs memories of the construction of that never fully successful but provocative venture in gardening. The cliff, which Elliott romantically misremembers against a sandstone outcrop was, prosaically enough, propped against a kitchen garden wall, a site chosen because it faced south into the tepid blaze of the English winter sun. The artifact rock wall itself, about 40 feet in length, was enclosed in an unheated half-greenhouse resembling an old-style vinery but taller. The glass roof, pitched forward just enough to shed rain, was immovable, but the sidewalls came away in manageably handy panels, and the plants were exposed from March to December to all the weather except wetness. The structure was designed to house an eccentric company of rare but somewhat ungainly plants which found life in pots either inhibiting or insupportable, and further to accommodate some of the great rock cabbages (true *Brassicas*, close kin to lowly kraut) and hardheads (*Centaurea*) of Spain and southern Italy which simply *require* a rock throne to show off their noble natures.

In those days Dwight and I were subject to enthusiasms, greater and less, the greater sometimes leading to excesses of what a doctrinaire Marxist might well condemn as bourgeois eclecticism, though they might as accurately and more charitably be described as symptoms of collector's mania. One year it was *Micromeria* — the Minorcan *M. barceloi* with its tiny fir-tree branchlets was the favorite, *M. acropolitana* from cracks in the marble staircase leading to the Parthenon the Cinderella of that bunch; another year nothing would do but spines, or *Erodium* (I remember the Catalonian *E. sangius-christi* with regret). There was a craze later on for non-twining twiners like the pygmy yam, *Dioscorea pyrenaica*, or bun bindweeds (*Convolvulus nitidus*, *C. cochlearis*), real drop-dead pieces; for dim monocarpic parsleys with improbable names like *Petagnia* (which resembles sanicle) and *Xataritia*; for queer mustards — we went to the Sahara to match violet-crossed *Zilla* with its yellow counterpart, the hedgehog *Vella*. And there was an evergreen obsession with non-flowers, with green, black or lurid perianth, like the delicate Clocktower (*Adoxa*) native of Sussex lanes, the aristocratic green jonquil of the Gibraltar golf-course, and mandrakes. The passports to Dwight's garden were not the somewhat inelastic criteria of neat pulchritude, high flower-leaf ratio, and difficulty of culture which guarantee a ribbon at the Fortnightly in Westminster, but some element of strangeness and rarity which set the plant above and apart and lent it a glamour visible to the eye of the mind. I think we chose a plant for the reasons one chooses a friend, not for splendor of apparel or purity of profile, but for character and individuality. As a result we had lots of weeds, always, and never space for all.

Of all our follies of enthusiasm the most persistent, other than that for mints of all complexions (*Stachys*, *Salvia*, *Thymus*, *Teurcium*, *Ajuga*), was for the Sea Lavenders, statices as we called them in those days, although we really knew that their correct surname was *Limonium*. The little list of perennial *Limonium* currently available to rock-gardeners is far from representative of the genus's full potential. Speaking very broadly, and disregard-

ing the florist annuals and their arborescent kindred, one may say that Europe has three types of *Limonium*: one of sea-marshes and some saline habitats inland, with coarse leathery plantainlike leaves and erect panicles of small lilac flowers, the prototypical Sea Lavenders of which *L. carolinianum* of our eastern wetlands is exemplary; one of limestone sea-cliffs and grottoes, similar to the last but diminished in stature and at best reduced to tightly structured half-domes of small leathery rosettes; and a small group called *Polyarthron* (many joints), found on saline and gypseous clays in steppe-desert environment, in which the basal foliage has become membranous and fleeting, and the function of photosynthesis has passed from it to the intricately elaborate filigree of the inflorescence. The first group, with some handsome members, is the least interesting from the horticultural viewpoint. The second, especially numerous around the periphery of the Mediterranean westward from Malta and on many of the islands within it, contains in addition to the familiar *L. minutum* such quaint little beauties as: *L. cancellatum*, with lime-encrusted flowering stems as precisely zigzag as an Euclidian figure; *L. sp.*, never satisfactorily identified, with leaves modified into little glaucous sausages; and *L. letourneuxii* which in the form of immense, dense-packed domes of pointed leaves plays acantholimon on one Algerian promontory. These and others like them, some confined as far as anyone knows to a single islet, were a challenge to collect and easily accommodated at home. An exception must be made only for *L. tubiflorum* which enticed us one pre-war winter to the desert shores of Egypt's Lybian frontier. This has exceptionally big, richly colored and fragrant flowers but on a tuft of wiggly wires so mean and ugly that we had no regrets about its miffy temper in cultivation. All of these came into character when grown on a rockwall that simulated their native habitat; none are really showy.

The *Polyarthron* lavenders, found only in Spain and North Africa, are the filmstars of the family, their everlasting rootstocks erupting in late summer into glaucous ostrich plumes of flower, each sugar pink or clear magenta purple funnel cupped in a silvery scarious undercup. We had at one time, I believe, all of these that could be had, certainly the Spanish *L. caesium* and *L. insigne*, and finally the best of them all, *L. asparagoides*, to which we were led by a lithograph, almost more beautiful than the plant itself, published in Paris in 1896 (Cosson, *Illustr. Fl. Atlant.* t. 161). This miraculous statice is found wild only along a short dismal stretch of the North African coast on the borders of Algeria and Morocco, where a coastal plain of alkaline or gypseous clay falls away, in a line of gullied mud banks, into the Mediterranean. The only point in its range readily accessible at that time was the Arab village of Nemours, a half day's lorry drive north from the hilltown of Tlemcen, perched back in the foothills of the Algerian Atlas. Nemours, though teeming with human life, looked from a distance like a vast ruined pigsty, and I recall with still vivid discomfort the panic of curiosity that Dwight and I aroused in our passage through it. Not, to be sure, among the adult population, who watched with that pretence of lofty aloofness that comes so easily to a servant of Allah, but among the children, who boiled out of the hovels in incredible, unquenchable swarms, ragged and (alas) often cross-eyed and rickety, each malevolently intent on backsheesh. The narrow pebble beach below the town, when we fought our way to it, turned out to be the municipal latrine,

and it was in this improbable and squalid setting that we found *L. asparagoides* draped over the mud cliffs, its massive black trunks of rootstock exposed here and there by erosion of the clay. Roots thus brought to light were budding adventitiously, and we quickly grubbed up a sheaf of murky knotted rhizomes, seemingly lifeless in the dry season. Until a few years ago, possibly still, the progeny of these pieces survived in England. I wonder if Mr. Elliott's plant is one of them.

I have mentioned that the cliff house was not wholly satisfactory, but it was not the concept that was at fault, but details of the execution. It was put up too quickly. After a year the compost within and behind the cliff compacted and settled, a condition that could not be corrected from outside the cemented blocks of limestone, and some of the narrower crevices became uninhabitable and unplantable. The compost was over-rich, at least for England. This last would have corrected itself by leaching, but Mars had other plans and the hour of bourgeois eclecticism was over.



Globularia cordifolia

BOOK REVIEWS

RHODODENDRONS: a selected Annotated Bibliography — Mrs. Diane Schwartz, Head Reference Librarian, Library, New York Botanical Garden, Bronx, N.Y. 10458. Can be purchased from the author for \$3.00

This is a vehicle to "all you want to know about rhododendrons". It is a very complete, detailed 46 page production listing books and articles on the subject plus a final section on worldwide sources of stock and seed.

It is obvious that a great deal of effort went into this work. The ordinary enthusiast will find it useful but it will be appreciated most by the advanced amateur and scientist.

Some of the Sections are titled General Works, Chemical Composition and Toxicology, Horticultural Research, Species, varieties and taxonomy, Plant Hunting and Research, etc. — Nicholas Nickou

WILD FLOWERS OF NORTH AMERICA — A Selected, Annotated Bibliography of Books in Print, Compiled by: Elsie Fish. The Library, The New York Botanical Garden, Bronx, N.Y. 10458

Again, a thorough review of books available on a subject more likely to interest the rock gardener who is usually omnivorous enough to also have an interest in wild flowers, ferns *and* rhododendrons.

The beauty of this collection is that there is a short description of each book plus a source address and price. Useful also is that along with the profound floras of various localities are simple treatises for the more casual student or tourist.

The member going to Alaska or Canada has a choice of seven books. A student of California wildflowers can feast on twelve selections.

There is even a section for young adults and another for the juvenile enthusiast. — Nicholas Nickou

ABOUT THE INTERIM CONFERENCE PROGRAM

Roy Davidson, Seattle Washington

The report of the Harrogate conference mused that the total contributions of America to rock garden plants is probably greater than that of all the mountain ranges of Europe taken together. It is fitting then that the first such meeting to be convened in America should elucidate this suggestion, and the theme "Alpines of the Americas" provides the means of doing just that.

An "alpine" in this context is intended to mean any plant suited to being grown in the rock garden, regardless of its origin. The first two sessions, morning and afternoon of the opening day, Monday 19 July will be very full ones and will present some of the major interest groups of North America — *Phlox*, *Dodecatheon*, *Penstemon*, *Viola*, *Trillium* and *Eriogonum*, liliaceous bulbs, ericaceous shrubs and sub-shrubs and the "Daisy clan", *Asteraceae* (composites). Some of these are ours alone, or nearly so, and some additional groups to be treated through display media include *Lewisia*, *Iris*, *Castilleja* and cacti, with a wrap up entitled ". . . And All the Rest", which — unless it runs far overtime — bodes to be a major project in discrimination (or a masterpiece of articulation!).

Monday's evening session is to be devoted to "Plant Hunting in the Andes", more violas and cacti, composites and ericoids, plus many unique genera, and not a few shared with New Zealand and other lands of the southern hemisphere.

After such a jam-packed opening day, Tuesday is anticipated as being somewhat more relaxing, its morning session explaining somewhat the geology and climate of one small sector of America, the State of Washington, from seashore to volcanic peak to semi-desert (the Upper Sonoran life zone extends this far north), and the plant life that has been spawned. This will be rather a prep-course to assist in the appreciation of excursions both before and after, as well as during the proceedings of the conference, as will the evening series of short presentations, a seminar planned around "The Edaphic Factor", the basis of all soils. Plants of tundra, prairie and pumice-fields will be featured, as will others from lime-, shale-, and pine-barrens. All are unique botanical provinces which have developed plant populations strangely their own, as have, too, serpentine barrens and gypsum-balds. The afternoon intersession will afford the elective opportunity to visit private gardens in the Tacoma area, some 30 miles to the south with Mt. Rainier beckoning all the way.

Wednesday is to be given entirely to the elective of a visit to the lower slopes on the northeast face of that majestic mountain, where cliff and meadow and scree and marsh are home to some of America's finest rock plants, many "true" alpine species among them, plants from the regions of ice and wind, short sudden bursts of summer, and long, sullen, dry winters, cocooned in snowbanks. Mt. Ranier is in full view from the University of Washington campus, where the conference is to convene, terminating, on the southern skyline, the major axis of the design of the grounds.

The following morning the session is divided between "The Case for Hybrids", which may give a new insight into the controversial garden subject,

and "Plants of Tectonic Appeal", those we'd grow even if they never flowered (and some do not: ferns and mosses and their close allies), or which are not of primary appeal for colorful, bizarre or beguiling blossoms (conifers, willows — North America is one of the major distribution centers for the latter). The afternoon of this day provides another elective opportunity to visit private gardens, this time in Seattle and environs.

The ARGS has taken the opportunity to schedule its necessary annual meeting and awards dinner, to which all are invited in the evening, following which the featured speaker, Ann Zwinger, noted naturalist and author will speak to us of "Land Beyond the Trees", American tundra, its life forms and the forces which birthed them.

The entire conference is to pick up and move northward to Vancouver on Friday, following the Puget Sound glacial trench, bordered on the west by the Olympic Range and on the east by the Cascades, with lovely panoramic views of verdant coniferous forests and broad valleys, seascapes over Puget Sound itself, with its plethora of San Juan Islands, sparkling in the summer sun. Just after crossing the international boundary, the procession will visit "Dartshill", another private garden, where luncheon is to be served. Travel will then resume to bring the caravan to the University of British Columbia campus, with awesome panoramic views of distant mountains and further seascapes. Following welcoming ceremonies, the evening is to be given over to "American Woodland Plants" and "Ground Orchids".

Saturday will initiate the more relaxed, informal nature of the Canadian sector of the conference, the morning intersession given to leisurely viewing of plants established in 22 large trough gardens representing as many phytogeographic areas of the Americas from northern tundra to southern Andes. The afternoon offers opportunities to visit the series of University Botanical Gardens, within strolling distance, and featuring an exceptional Japanese garden as well as the newly established rock garden, something no one will want to leave, once there.

The evening program will feature the subjects of the trough gardens, "Favorite Plants of the Mountains". Since this will be summer, not every plant will be looking its very best; thus their pictures and the discussion will be doubly anticipated and appreciated.

Sunday morning's fare will be quite a different sort, a symposium by distinguished guests themselves, "American Rock Plants in Cultivation Throughout the World", followed by the opportunity to share in viewing "Member's Slides", always enjoyable. The conference will have its official closing at luncheon, after which a fun-fair of how-to-do-it demonstrations will show novice and expert the arts of rock-gardening, from the scree, the pool, peat-bed and crazy-paving to dry-wall, growing ferns from spores, germination of seeds and growing-on the seedling, vegetative propagation, etc.

There will be opportunities to visit Van Dusen Botanical Garden as well as private gardens of Vancouver members. From Vancouver it will be possible to undertake additional attractions; Victoria and Vancouver Island members plan an extra-curricular series of tours and hospitality. We will be awaiting your arrival. Come see the Alpines of the Americas.

SEATTLE'S CLIMATE — IN JULY

Norman Clark, Seattle, Washington

The following is abstracted from an annual summary of local climatological data compiled by the local station, U.S. Department of Commerce. It will show principally why July was chosen as the optimum period to achieve favorable weather conditions in an area known, often without basis, for its rain.

Seattle is located on a hilly stretch of land overlooking the salt waters of Puget Sound to the west, and in an easterly direction, the waters of Lake Washington, a 22 mile long fresh water lake. The Lake Washington shoreline roughly parallels that of Puget Sound at distances varying from about 2½ to 6 miles. Hills rise rather abruptly from both shorelines and reach elevations of more than 300 feet in the central sections and more than 500 feet in the extreme northern and southwestern sections. The general north-south trend of the city is paralleled on the east by the Cascade Mountains, while to the west and northwest, at somewhat greater distance, the Olympic Mountains rise abruptly. The main commercial section of the city lies along the east shore of Elliot Bay, an indentation in the Puget Sound shoreline.

The climate is mild and moderately moist due to the prevailing westerly air currents which advance inland from the Pacific Ocean, and to the shielding effects of the Cascade Mountains which serve to exclude and deflect the cold continental air toward the east. Although the city is 90 miles distant from the ocean at its nearest point, the marine air penetrates readily inland, an effect that is aided by the extensive water surface of Puget Sound. The prevailing westerly air currents cross vast reaches of the ocean, acquiring much water vapor and a temperature near that of the sea. This effect is received from the general currents of the ocean rather than from the Japanese current which curves far northward into Alaskan waters. As a result of the rather steady influx of marine air, winters are comparatively warm and summers cool.

Some of the following statistics may more closely define what visitors may expect to experience in July 1976, or any year.

Our "dry" period extends generally from May through September, 42% of the year, during which we can expect to receive 18% of our annual precipitation, which annually is less than 35 inches. The total of 0.25 inches for July represents therefore about 0.75% of our monthly expectation. Precipitation greater than .01 will occur on only 3 days during our average July. There will be 12 clear, 10 partly cloudy, and 9 cloudy days when sky cover is expressed in a range of 0 (zero) for no clouds, to 10 for total cloud cover. Clear days are based on 0-3, partly cloudy 4-7, and cloudy 8-10.

As for temperature, the daily maximum will be 76°F, daily minimum 56°F, with a monthly average of 66°F. The 40 year high for July is 100°F, the 40 year low is 48°F.

Winds are relatively light during the summer months. During the course of a typical summer day the winds will be light and variable at night, becoming northerly and picking up to 8-15 M.P.H. During the afternoon, the proximity of the sound results in a form of land-and-sea breeze.

Looks like good weather is in store.

The following article consists of excerpts from an essay in which virtually every reference in horticultural literature to this very beautiful plant was quoted and which reported on an international correspondence on the subject. I regret that we could not print the study in full. Ed

Without any exaggeration *Corydalis cashmeriana* is one of the garden pearls. The intensive sky-blue color gleams a long distance off. It is a joy to look at and it has a longer flowering-time than other *Corydalis*. It flowers early in spring lasting several weeks (April-May) — the wisdom of nature giving it time to flower before the trees are fully burst into leaves and prevent the sun from making its way to the plant.

It is a small, tuberous-rooted perennial, some 6 to 9 inches with deeply cut, bright green foliage and compact inflorescences of blue flowers on reddish stems. The leaves are compound, fern-like, carried on long petioles, giving the plant a light and graceful appearance even when not in flower. Flowers are $\frac{1}{2}$ to $\frac{3}{4}$ inches in length, long spurred, bright blue with darker tips, white around the throat, and are borne in short racemes of from three to eight flowers in clusters or sprays. The four petals are very unequal, the upper one running back into a spur and the lower one forming a platform rather like the labellum of an Orchis.

It almost invariably flowers twice a year, in the spring displaying a wonderful fantastic bloom "but when it flowers in the autumn, it is quite revolting; it is a horrible, muddy, purple color."¹ A second crop of leaves is made at the end of summer appearing to come from the tiny new offsets. In winter all growth disappears from above ground completely and it is then that most losses seem to occur. "Of all the miracles of plant development few can be more magical than watching the green buds of this plant gradually flushing with color towards this unusual and almost piercing blue."²

After a rapid seed-forming, the leaves fade completely. During the long pause, which continues til the next spring, the plant continues by its subterranean bulb to concentrate upon the flowering next year. When the bulb has fulfilled its mission to nurse the flowering plant, a new bulb is formed inside. The new radicle grows straight down through the former bulb. Each bulb will therefore only remain one year.

Its natural home is over 12,000 ft. (3,600 meters) in the Himalayas. The geographical range has usually been given as the Temperate Himalaya from Kashmir to Sikkim but it extends eastwards to Bhutan and reaches Southeast Tibet. Few have actually seen *Corydalis cashmeriana* in its native site. Few reports have appeared in the literature of on-site observations.

The first record of this plant was made by John Forbes Royle in his classic work *Illustrations of the Botany of the Himalayan Mountains and the Flora of Cashmere*, which appeared in 1839.

It has been collected by B. N. Ghose who wrote an excellent article which gives us a picture of its site and of the difficulty in securing collected specimens:

"*C.c.* grows near Kanchenjanga, both towards the south and the north. The Singalila range rises from Kanchenjanga and runs in a southerly direction and forms the political boundary between India and Nepal. It has many high serrated peaks culminating in the perpetually snow-capped mountain of Kanchenjanga. For many miles one has to pass through uninhabited regions where one can get no food or shelter and must carry his own tent and provisions. The track goes over serrated mountain ridges with many descents and ascents where ponies cannot be used. Streams and springs supplying water for one's use are few and far between."³

* * * * *

Beers tells us that both in size and in coloration of the flowers will be variable in the wild.

R. E. Bevan spent three years in India during the war years (W.W. II) and twice went trekking into the Kashmir Himalaya. His report in three parts is fascinating reading and I excerpt pertinent parts.

"August 2nd, 3rd & 4th. Yamher Pass, from Sind Valley to Liddarwat. At about 11,500 ft. we cleared the woods, and great numbers of *Primula nivalis* appeared, already in seed. The dominant flower was a golden Geum, and I also noticed a few *Meconopsis aculeata*. Suddenly to my great surprise, I found the plant I most desired — *C.c.*, growing on a steep, earthy bank on both sides of the path, in full sun and almost out of flower. As a rule there were only two or three flowering stems to each plant. In Nature it grows very often in the foot of much grosser plants, and the bulbs are three-quarters of an inch down, very small indeed and quite a job to dig up. The small tubers seemed to prefer some protection in the shape of a half-buried stone or the roots of a *Bergenia saxifrage*.

"... it was growing, as nearly always, as a single bulb. It was very delicate and so fragile that one would think it could hardly exist in those hard conditions."⁴

* * * * *

It was first exhibited in the Alpine Garden Society's Conference Show in May 1934 and received on A.G.S. Certificate of Merit. "This plant was one of the sensations of the Spring Show.

* * * * *

Of its first appearance on the Show Bench, the following story will be of interest:

"I once knew a man who wasted a good deal of time growing a collection of dreary plants. Sempervivums, or something of the sort — I forget exactly what. He had, of course, other plants; but as far as I could gather he wasn't deeply interested in them. Amongst them was a little thing in a pot which used to come up, year after year, and throw a splutter of brilliant blue flowers which he said, were as pretty as any delphinium, though infinitely less efficient.

"There was a rather special Show coming on, which you may remember; and my friend, having a spare corner in his car, pushed in his little Blue Boy to prevent, as he said, his cherished houseleeks from rattling loose. He dug out its old label and with difficulty deciphered it as *Corydalis cashmeriana*, and he typed out a new one for it. To his disgust nobody took the slightest notice of his houseleeks, but quite a lot of people raved



about his *Corydalis*, which took all sorts of prizes. Dozens of people asked him how on earth he had managed to flower it so brilliantly; and when he retorted 'just brute force', they voted him a curmudgeon for keeping so vital a secret to himself. That wasn't the end of the sensation his *Corydalis* created. Letters came to him from all sorts of people about it. Experts asked for cultural advice; a substantial firm of seedsmen told him to name his price for his whole crop (that word pleased him) of seed; and the distinguished editor of the most famous of learned botanical journals sought permission to illustrate 'this rare and beautiful plant, which until now I have not been privileged to see in flower'.

"All this went to my friend's head, and he racked his brain to remember how he had grown his *Corydalis*. But nothing came to him. He had just, as he said, bunged it into a pot and left it to look after itself. But now everything was going to be different. He was going to cherish the plant that had placed him on a pinnacle of fame as never a plant had been cherished. He gave that plant love overflowing. He had a special pot made for it, and he reported it in an elaborate soil-mixture which had taken him sleepless nights to evolve. He cleared a quarter of his alpine house so that it should have room to breathe. Heaven knows what he didn't do for it. But he never saw it in flower again; and after it had failed to come up for two seasons he emptied out the pot and put all the soil through a hair sieve without finding a vestige of root. "That's the last plant," he said, 'that I'll ever try to grow'."5

CULTURE

Open Garden

It is generally agreed that *C.c.* is much healthier outdoors than in the alpine house. It seldom thrives for long in a pot, but given the more natural conditions of a rock-bed it does well. It is a plant that likes to be put out and forgotten about. In cultivation the spring flowers are true blue while autumn flowers are purplish. "The ice-blue flowers take on a more intense color in the open and make their alpine-house-coddled brethren look but pale shadows of themselves."6

Though most recommend cultivation in neutral peaty soil with good drainage, some report success in limey soil. Temperature of the soil in summer seems to be a critical factor, and the need for shade can be effected by planting under a north-facing rock, or in the shade of dwarf shrubs. In its native home its roots are always kept shaded by the growth of other plants.7

* * * * *

Of its hardiness there is no question in some areas, but for most of us, it would seem prudent to offer some winter protection, either in the form of plastic sheeting, pine boughs, a glass jar, a pane of glass, or a piece of slate. This protection should be removed early enough in the season to allow growth. In our American west a planting of some 60 bulbs was almost lost in a surprise 6° below freeze (the remaining few bulbs are now making a comeback). The tubers should not be more than 2" beneath the soil surface, and as the tubers become crowded, the whole crown sometimes shows above ground. When happy, it spreads rapidly and covers large tracts of ground.

Those who have been successful in the open have been so perhaps because they have planted under the protection of other plantings. This does not always guarantee success as the following quote shows: "Of two small clumps, one was planted out in rich moist scree, amongst bulbs of the moisture loving fritillaries — it seemed the ideal place until the clump died and thus proved otherwise. The final small clump was placed in full shade under the protection of *Rhododendron keiskii*, where it had

root association with a dainty little *Thalictrum* species with foliage like a maiden-hair fern . . . here it was successful, and has flowered, if not profusely, at least enough to prove that it is moderately happy . . .”⁸

Dr. Henry Tod of Scotland reported the following experience with six bulbils of *C.c.* planted up in pots, that just disappeared with a sort of mathematical regularity. “I was thoroughly disgusted with myself for having made such a complete mess of its cultivation, so I just pushed them into an appallingly bad mixture of what was virtually sweepings off the drive, plus a very small amount of soil, and with a fair amount of tree roots underlaying it to rob it more completely. To my astonishment, the plant has prospered magnificently in those very inhospitable surroundings, and this makes me suspect that it is a plant that requires rather poor soil, extremely stony, with very sharp drainage.”¹

Venison’s excellent accounting of planting in the open garden was reported as follows:

“Strangely enough, the plants seem rebellious of much shade here in the south (of England), and though they enjoy ample moisture whilst in growth, at other times their little twiggy or bulbous tubers prefer not to be soaked by autumn rains or melting snows.

“In recent years I have found plants will re-appear for several successive summers if set in a leafy scree — if that is not a contradiction in terms. A well-weathered mould of old beech leaves, aged into a spongy soil-like mass and mixed with an equal part of fine grit seems to suit these fickle plants as well as anything.”⁹

* * * * *

It has been grown outdoors in a scree adjacent to a small pond, the scree containing pieces of tufa, river washed and hard; “we do not drill very much, preferring to plant between the pieces, but seeds germinate in the tufa and these include such unwanted plants as dandelions and other weeds. On the other hand one is sometimes surprised with a seedling of a choice plant; in the scree, *C.c.* lived five winters.”¹⁰

* * * * *

From Czechoslovakia . . . better in the open, in semi-shade in two types of situations: in gritty moist mixture of disintegrated gravel, plus some peat and compost, or under a tree in a woodland mixture of leafmould. It is not fussed over, and it blooms freely since 1967.

* * * * *

I have tried two plants in the opening garden, planting out in early September. One was planted in a shaded area under the protection of a rock in a site with ample moisture available; the other was tried on the top of a raised wall, the tuber underlying the protection of a stone, shaded most of the day with only filtered light. The following spring, both specimens showed new growth, the plant on the raised wall even displaying a fall blossom. The next spring, the wall plant grew to one inch and grew no higher for the remainder of the season and was then transferred to a pot. The garden plant continued to increase in clump size, showing 18 stems, but no sign of blossoms appeared. At least it is healthy looking and, I hope, will prove to be a “propagating section” to share with other gardeners.

Peat Bed Cultivation

With luck *C.c.* will flower regularly and increase fairly fast in a peat bed so that towards the end of each summer the tubers are showing above the surface. After 5 years in a peat bed flowers were less numerous because of overcrowding, and on taking up, were found to have 40 or 50 tubers. Tubers in a peat bed should never be more than two or three inches beneath the surface.

Pot Culture

Corydalis cashmeriana is best grown in a pot (not pan) no smaller than 4 ins. in diameter. A deep pot is not necessary as the roots do not spread far. Good crocking is necessary. All agree that a peaty compost should be used. Various mixes used by successful growers were:

- a) Loam — 2 parts, with equal parts moss peat and leafmould
- b) Oak leaf mould and coarse sand with a small proportion compost or bit of well rotted saw-dust
- c) Peat (or leafmould) two parts with one part sharp sand or grit
- d) Cinder-soil mix
- e) Stream sand $\frac{1}{2}$, Compost $\frac{1}{2}$

Watering would seem to be the critical factor for successful cultivation, and meeting its needs for all seasons is of great importance. Heath tells us 'a good supply of lime-free water during early spring and summer is essential, reducing the amount as the foliage dies back in autumn.'¹¹

* * * * *

On the other hand, overwatering invariably seems to rot *C.c.*

* * * * *

It prefers not to be under glass during the spring and summer.

* * * * *

My own experience with *C.c.* may be of interest to readers. A tiny tuber was received in the fall of 1972 with instructions to plant it very near to the surface, the tip just showing.

It was planted in a 4 inch pot and wintered in a covered frame. The following spring, new growth appeared but no blossoms. Instructions for general culture were followed, and it was again wintered in the covered frame. The third spring showed an increase in the clump size followed by sparse, but nonetheless, bloom lasting three weeks and I was elated. Another winter in the cold frame and in 1975 *C.c.* came into its own. It not only increased in clump size, but also gave, with its beautiful display of bloom, the thrill one knows if he has been successful with a "difficult or rare" plant.

Thirty-six stems were counted in the pot which varied in height from 1 inch to 6 inches — six of which bloomed with blossoms totalling 27, each stem carrying from 2 to 5 blossoms. Up to this time it had remained in the same pot as when originally planted, but seeing the stems hugging the outer edges of the pot told me it was time to repot. Although afraid and reluctant to do this, I forced myself to repot, choosing one of exactly the same depth (4"), but a larger diameter (8") to allow for future growth. It was in its prime bloom at the early May Plant Show in Connecticut, earning the Osborne trophy for "Best Plant in Show". I took it some 500 miles to the annual meeting in Pittsburgh some two weeks later when it was just past its prime and had only a few remaining blossoms. It did not enjoy traveling this distance as evidenced by the drop of blossoms and a rather premature dormancy.

Seed

Notorious for being difficult to germinate only because it must be sown immediately — as soon as the green seed pods have grown fat and ripe. They explode at the slightest touch shooting out its valuable black seed. The seeds are almost, if not quite, viviparous, and will grow as soon as they drop resulting in a profuse production of self-sown seedlings. Time to germination can go from a year to 18 months if seed is not fresh, most times not showing germination at all.

* * * * *

Seeds are of a soft consistency, and liable to be crushed if mailed.

* * * * *

Soil mixes were generally leafmould, sand and peat mixtures.

* * * * *

Division

It would seem that division is beneficial for continued growth and flowering. Those who have dared to lift and divide the tubers have had good results. If tubers become overcrowded, it will not flower well.

PESTS

The literature reports *C.c.* is subject to infestations by aphids and one report stated aphids will migrate for miles to get to it; the plant must be checked regularly as the infestation builds up quickly and can weaken the plant to the point of killing it. On examination for aphids, the part of the stem infested with greenfly are shrunken and devoid of sap.

* * * * *

Marion Harding presents us with another method of control, easy with no fuss or mess. Insert one Vapona strip (made by Shell Oil Company, U.S.A.) in a garbage can with a tight lid. Put the infested plant in the garbage can overnight or for 24 hours. Repeat in 5 or 6 days to subdue hatching, lurking eggs.

* * * * *

A brief note mentioned slugs as a problem in the early growth but after it gets growth, it seems to lose its appeal to them.

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BULLETIN
OF THE
AMERICAN ROCK GARDEN SOCIETY

Index to Volume 33, 1975

AUTHORS

Allen, Sallie	201	Kaspar, Marlon	141
Arneson, Gus N.	39, 180	Kelly, John	58
Baggett, James R.	175	Kistler, Anita	26
Brownmiller, A. J.	14, 114	Kristinsson, Dr. Hordur	105
Clinebell, Richard	28	LeComte, James R.	134
Davidson, Roy	19, 64, 149	Leimseider, Edward B.	192
Drew, Alberta	62	Mulloy, Milton S.	61
Dusek, Mrs. G. W.	11, 72	Porter, Howard	157
Elliott, Roy	167	Prell, Deon	53
Foster, H. Lincoln	172	Sojak, Dr. Jiri	183
Freeman, Mary Tibbetts	119	Stich, Aida	142
Fuller, Selma	178	Sutton, Merle	31, 42, 85, 146
Goroff, Iza	53	Thurman, Charles	112
Halda, Josef	3, 78, 128, 195	Webr, Dr. Karel	183
Horny, Dr. Radvan	183	Wherry, Dr. Edgar T.	33, 75
Hull, Catherine	168	Worth, Dr. C. R.	126
Kaspar, Mrs. James E.	1		

SUBJECTS

An asterisk (*) denotes an illustration

Aciphylla, In Search of	134*	Lewisia, First Aid	72
Advertising in Bulletin	113	Members, Live Where	125
Advice to Members (Seedlist Handbook)	2	Membership List	200
Alpine is an Alpine	58	New Member's Suggestion	141
Alpine Land, Babes In	114*	New Zealand, Hospitality	38
An Amateur Reports	1	Northwest Travelers	11
Basin Phenomenon, The Great	19*, 64*	Obituaries:	
Bit of History, A	44	Murray-Lyon, D. M.	87*
Bloom in My Garden, Long	26	Worth, Carleton R.	182
Book Reviews:		Omnium-Gatherum	42, 85, 146
Alaska-Yukon Wild Flowers Guide	147	Om The Trail	31
Reflections	148	Plant Identification from Color	
Run, River, Run	200	Photographs, Beware of	75
Wildflowers of Alabama and		Polemoniums with Whorled Leaflets	126
Adjoining States	147	Prairie, Backyard II	28
Caucasus Mountains, In The	3*, 78*, 128*	Prairie Flowers & Grasses	60
Collator (see also: Information		Publications, ARGS, Localized	10
Exchange)	25, 57, 164	Putting Greens or Alpine Scree?	112
Collector's Notebook	149	Requests by Members	200, 201
Colors and Combinations	178	Rock Garden Conference	
Compost Pile	157	1976	77, 97, 145, 150, 162, 163
Dr. Worth's Garden, Part III	119	Rock Garden Ferns — The Woodsias	175*
Edgar T. Wherry, Garden, The	142	San Juan Islands in May, Edge of the	39*
English, Carl S., Jr., Honored	86	Saxifrages of Section Porophyllum	
Houstonia Caerulea	172*	(Kabschla)	183*
Hurricane Ridge	180*	Seed Exchange	89*
Iceland, Vegetation and Flora of	105*	Seed Exchange, Comments 1975	88
Index for 1974, Vol. 32	90	Seeds or Plants Wanted	127
Index, General	25	Study Weekend-East	61
Information Exchange (see also:		Study Weekend-West	62
Collator)	14	Travelers Information	63
Information Wanted	10	Tufa Cliff in My Garden	167
Isle Royale, Fourth of July	53*	Tufa Garden of Paul Palomino	168
Julian Alps and Karawanken Mts.,		Tufa Gardens, Miniature	159
Plants of	195*	Woodland Groundcovers for Northeast	192
Key to 50 Rock Garden Flowering			
Plant Families	33		

PLANT REFERENCES

Acer grandidentatum	64	szovitsii	128
laetum	8	victoralis	81
Achillea clavennae	120	Alopecurus pratensis	110
ochroleuca	83	Alyssum oviense	196
serbica	120	tortuosum	132
Achlys triphylla	13	Androsace hausmanii	198 (illus. pg. 166*)
Aciphylla aurea	139	lactiflora	16, 27
gracilis	139	lanuginosa leichtlinii	15
indurata	138	septentrionalis	68
'Mt. Hutt'	140*	villosa	131*
scott-thomsonii	140	Anemone blanda	8, 120, 134
similis	138	caucasica	134
Aconitum nassutum	9	fasciculata	79
orientale	9	narcissiflora	79, 120
Adiantum pedatum	193	nemerosa	134
Adonis vernalis	134*	ranunculoides	134
Adoxa moschatelina	134	rivularis	119
Aethopappas pulcherrimus (pict. only)	81*	speciosa	79
Agastache	19	Antennaria dioica rosea	120
Alchemilla faeroensis	109*	dioica	9
Allium cyaneum	123	Anthyllis alpestris	196
ostrowskianum	119	variegata	83
ruprechtii	128	Aposeris foetida	198

Aquilegia bertolonii	119	var. magnifica	138
coerulea v. ochroleuca	66	vespertina	137*
formosa	181	Centaurea fischeri	78
olympica	9	Cerastium alpinum	110
saximontana	119	beeringianum	65
scopolorum	65	purpurascens	78
viridiflora	119	Cercocarpus ledifolius	24
Arabis alpina	196	Chamaebatiaria millefolium	67
androsacea	123	Chamaebuxus alpestris	199
blepharophylla	14	Chamaecyparis obtusa	25
caucasica (A. albida)	132*	Chamaenerion angustifolium	196
Arctostaphylos alpina	199*	latifolium	79, 109*
uva-ursi (130* illus.)	54, 199	Cheilanthes	55
Arenaria lychnidea	132	feeii	68
rotundifolia	78	Cherleria sedoides	196
Argemone munita	20	Chrysanthemum haradjani	122
Armeria alpina	198	Chrysogonum virginianum	194
maritima 'Laucheana'	17	Cimicifuga racemosa	179
Artemisia marschalliana	83	Cirsium hillii	30
Asarum caudatum	12	ovalatum	132
Asclepias asperula	66	simplex	132
Asperula gussonii	15	Clematis Fremontii var. Riehlii	162
pontica	15	tangutica	122
puberula	15	Clintonia borealis	193
suberosa	15	umbellata	193
Asplenium seelosii	199	Colchicum agrippinum	124
Aster alpinus	78*	autumnale	124
caucasicus	78	byzantinum	124
scopulorum	20	speciosum (80* pict. only)	10, 124
sibericus v. meritus	120	umbrosum	134
yunnanensis	120	Collomia debilis var. larsenii	182
Astilbe chinensis pumila	123	Convallaria transcaucasica	8
Astragalus aureus	132	Coptis groenlandica	193
kentrophyta var. implexus	23	Corallorhiza maculata var. flavida	55
oreades	83	trifida	55
Astrantia carniolica	196	Corallospartium crassaule	140
helleborifolia	9*	Cornus canadensis	13, 53, 193, 194
trifida	80	florida	179
Athyrium filix-femina	13	kousa	179
goeringianum pictum	123	Corydalis conorrhiza	80*
Baptisia leucophaea	29	solida	120
Betonica nivea	130	Crepis caucasica	78
Betula litwinowii	8	Crocus iridiflorus	80
pubescens	106	scharojanii	80*
raddeana	8	speciosus	81
Botrychium lunaria	79*	vallicola	81
Calochortus nuttallii		Cyclamen vernum	8*
var. brunonianum	25	Cypripedium candidum	1, 2
Caltha polypetala	132	parviflorum	1, 2
Calypto bulbosa	55	pubescens	1, 2
Camassia scilloides	30	reginae	1, 2
Campanula anomala	85	Daphne alpina	196
bellidifolia	121	axilliflora	8
caespitosa	121, 198	blagayana	161
carpatica	121	cashmiriana	124
cephallenica	121	caucasica	8
cochlearifolia	13	glomerata v. nivalis	78*
'Miranda'	121	pontica	8*
collina	80	striata	196*
glomerata acaulis	120	Delphinium caucasicum	132*
hawkinsiana	125	Dentaria trifolia	196
lactiflora	10	Deschampsia flexuosa	9
makaschvilii	121	Dianthus carthusianorum nanum	119
muralis	121	discolor	78
ochroleuca	121	erinaceus	119
petrophila	85	kusnetzovii	132
raineri	121, 158	myrtinervis	119
rotundifolia	56, 182	nardiformis	123
saxifraga	85*	neglectus	119
Stansfieldii	121	petraeus	119
tommasiniana	121	superbus (81* pict. only)	
tridentata	78, 121	Dicentra canadensis	194
tridens	78, 84	cucullaria	194
zoyzii (166* illus.)	158, 198	eximia	194
Capsella bursa-pastoris	109	formosa	12
Carex lyngbyei	109	oregana	194
tristis	85	Dictamnus caucasicus	134
Cassiope mertensiana v. gracilis	70	gymnostylis	134
Castanea sativa	8	Digitalis orientalis	120
Castilleja glandulifera	70	Dionysia michauxii	58
Catananche caerulea	120	Dodecatheon meadia	30
Ceanothus americanus	28	Doronium dolichotrichum	78
Celmisia alpina	138	glaciale	198
cordatifolia	135	macrophyllum	78
var. similis	135	oblongifolium	84
discolor	138	Douglasia laevigata	182
du-rietzii	138	Draba bryoides	85*
laricifolia	138	globifera	132
macmahonii var. hadfieldii	135*	repens	132
petiolata	137*	siliquosa	132
sessiliflora	137, 138	bruniifolia	130*
x C. petiolata	138	Dryas caucasica	83
spectabilis	135, 138	octopetala	197

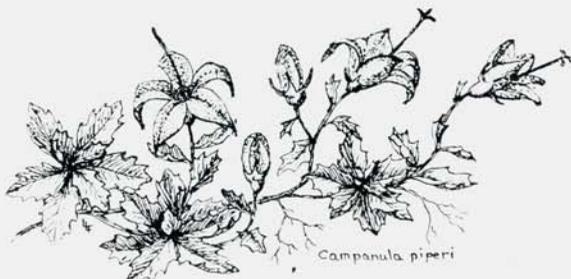
Dryopteris felix-mas	10	nummularium	132
Elyna capillifolia	84	Heliosperma alpestre	199
Empetrum hermaphroditum	9, 84	Holodiscus discolor	149
Ephedra	24	microphyllus var. boursieri	21, 149
Epigea repens	193	'Tenaya'	149
Equisetum hiemale	193	Homogyne discolor	198
Eremurus spectabilis	134	Houstonia albiflora	174
Erica carnea	196*	caerulea	172*
Erigeron alpinus	83	faxonorum	174
Erinus alpinus	123	'Millard's Variety'	174
Eriogonum androsaceum	69	serpyllifolia	174
caespitosum	69*	Hutchinsia alpina	26, 196
inflatum	24	Hymenoxys (Rydbergia) grandiflora	69
ovalifolium	67, 69	Hypericum polygonifolium	78
rosense	20	yakusimanum	27
Eriophorum vaginatum	132	Huperzia	131
Eritrichium caucasicum	128*	Hypoxis hirsuta	123
terglouense (166* illus.)	197	Ilex aquillifolium	8
Erythronium caucasicum	7*	Inula grandiflora	9
grandiflorum	181	Iris californica	10
montanum	181	cristata	193, 194
oregonum (pict. only — no text)	40*	missouriensis	21, 68
tuolumnense 'Pagoda'	18	unguicularis ssp cretica	168
Eunomia rotundifolia	132*	verna	166
Festuca ovina	84	Incarvillea delavayi	120
vivipara	110	Jankaea heldreichii	167
Ficaria calthifolia	133*	Juniperus communis	106
Filipendula rubra	30	depressa	131*
Fritillaria atropurpurea	20, 25	horizontalis	56
caucasica	134	nana	196
lanceolata (pict. only — no text)	41*	sabina	131
latifolia	81	squamata prostrata	161
lutea	81*	Jurinea woronowii	130
orientalis	81	coronapifolia	130
Gagea anisanthos	81	Kelseya uniflora	67
glacialis	81	Larix Siberica	106
lutea	8*	Laurocerasus officinalis	6, 8
sulfurea	81	Ledum groenlandicum	55
taurica	134	Lepidium nanum	20, 158
Galanthus caucasicus	8*	Leptodactylon (Gilla) congesta	20
Galium fistulosum	132	pungens	68
Galax aphylla	193	Leucogenes grandiceps	140
Gaultheria procumbens	193	Lewisia cotyledon	73
shallon	12	maguirei	25
Gaylussacia	25	pygmaea	21
Genista compacta	133*	rediviva	67, 73
Gentiana andrewsii	194	var. minor	20
angulosa	78*	tweedyi	73
asclepiadea	123	Lilium auratum	122
calycosa	70	carniolicum	198
clusii	198*, 199	caucasicum	8
crinita	29	cernuum	122
cruciata	9*	columbianum	181
decumbens	15	concolor	122
djimitlensis	78*	kelleryanum (L. shastense)	22
flavida	29	monadelphum	81*
froelichii	197*	tsingtauense	122
kolakovskiyi	132	Linanthastrum douglasii	70
lagodechiana	123	Linaria alpina	26, 196*
newberryi	21	supina	123
nivalis (Hippion nivaie)	78*	Linnaea borealis	11, 12, 53, 193
oschtenica	78*	Linum flavum	120
procera	29	julicum	198
puberula	29	Liriope spicata	193
pumila	197	Listera cordata	55
quinquefolia	29	Lithospermum croceum	30
scabra saxatilis	27	incisum	30
septemfida	79*, 123	Lloydia serotina	81
var. uniflora	84	Lobelia cardinalis	15, 30
terglouensis	166*, 197	syphilitica alba	123
verna	15, 117	Loiseleuria procumbens	199
Geranium argenteum	198	Lupinus breweri	22
pylzowianum	124	nootkatensis	110
sanguineum	123	Luzula arcuata	110
Geum campanulatum	18	Lycium andersonii	24
speciosum	132	Lycopodium	131
uniflorum	138	alpinum	79
Gilia spicata v. orchioides	70	species	56
Gladiolus caucasicus	81	Lygodesmia grandiflora	66
Globularia cordipolia	195*	Mahonia aquillifolium	12
Gonololium caucasicum	6*	fremontii	24
Grayia spinosa	24	repens	12
Gymnocarpium dryopteris	14	Meconopsis grandis	18
Gypsophila cerastioides	120	Menyanthes trifoliata	55, 132
glauca	128	Merendera eichleri	134
muralis	27	trigyna	134
tenuifolia	131	Mimulus nanus	67
Haastia pulvinaris	136	Minuartia caucasica	84, 132
Haplopappus acaulis	19, 68	colchica	131
Hedera colchica	8	oreina	78, 84
Helianthemum alpestre	198	Mitchella repens	193

Moneses uniflora	31, 54	Polygonatum glaberrimum	83*
Monotropa hypopitys	8	verticillatum	83
Muscari caeruleum	81*	Polystichum munitum	13
pallens	81	Populus tremula	106
Myosotis alpestris	79*, 196	Potentilla crantzii	78
Oenothera caespitosa	70	pygmaea	16
flava	120	divina	128*
fremontii	120	fruticosa	56, 84, 121
Omphalodes lojkae	130*	mandschurica	121
lucilliae	168	gelida	78, 132
Opuntia	19	nitida (166* illus.)	128, 197
Origanum rotundifolium	122	tridentata	56
Orinthogalum balsanae	81	villosa	194
pyrenaicum	79*, 134	Prenanthes purpurea	196
schmalhauseni	81	Primula acaulis	8
Oxalis acetosella	8	algida	83
Pachysandra procumbens	193	amoena	83*
Paederota lutea	196	auricula	198*
pontica	130	auriculata	78
Paeonia tenuifolia	134*	bayernii	83*
Papaver kernerii	196	broadheadiae	69
ilsae	132*	carniolica	199
Paris incompleta	81	cusickiana	70
quadrifolia	81	elatior	83
Parnassia palustris	132	mistassinica (intercedens?)	56*
Paronychia canadensis	179	nevadensis	24
Pedicularis atropurpurea	10	parryi	67*
crassinostri	78	pseudoelatior	83*
groenlandica	70	ruprechtii	83, 84
nordmanniana	80	sieboldi	179, 194
rostro-capitata	199	x venusta	199
subrostrata	132	wulfeniana	195*
Pediocactus simpsonii	19	Prunus andersonii	20
Penstemon bridgesii	21	Pteridium aquilinum	13
davidsonii	22, 119	Pulmonaria mollissima	8
eatonii	66	Pulsatilla alba	131*
fruticosus	70	aurea	9*, 78
humilis	68, 70	vulgaris	15
menziesii	71	Purshia tridentata	24
montanus	70	Puschkinia scilloides	134
var. idahoensis	71	Pyrethrum poteriifolium	8
newberryi	22	Pyrola asarifolia	54
pinifolius	119	chlorantha	8
rydbergii	70	meadia	8
tweedyi	70	minor	8
Pentachondra pumila	140	rotundifolia	8
Peraphyllum ramosissimum	25	secunda (Ramischia secunda)	8
Petrocallis pyrenaica (166* illus.)	158	uniflora	8, 31
Petrophylum caespitosum	24, 67	Ranunculus crithmifolius	139
hendersonii	182	elegans	79
Phacelia sericea	70	hybridus	198
Philadelphus microphyllus	24	insignis	138
Phlox austromontana var. prostratum	20	lojkae	128*
'Chatahoochee'	15, 164	oreophilus	79, 84*, 197
covillei var. tumulosus	20	platanifolius	196
diffusa	181	seguieri	198*
divaricata	165, 178	seriocophyllus	138
'Fuller's White'	179	thora	198
griseola	19	traunfellneri	166*, 197
hoodii	20	Raoulia grandiflora	138
pilosa	30, 165	Rhamnus microcarpa	130*
stansburyi	20, 21	pumila	199
stolonifera	193	Rhododendron albiflorum	181
'Ariane'	179	caucasicum	6, 8*, 9
'Blue Ridge'	194	ferrugineum	199
Phyllocladus empetriformis	70	flavum	8
Physaria eastwoodiae	25	hirsutum	196*
newberryi	66	x intermedium	199
Phyteuma comosum	158, 199*	'PJM'	179
Picea orientalis	8	ponticum	6*, 7
sitchensis	106	'Ramapo'	178
Pinguicula vulgaris	56, 132	luteum	133*
Pinus aristata	22	Rhodothamnus chamaecistus	196*, 197
hamata	6	Rhus trilobata	24
longaeva	22, 23*	Rumex alpinus	24
mughus	196	Ruscus hypoglossum	8
Platycodon grandiflorum	121	Sagina saginoides	131
Poa annua	109	Salix arbuscula	84
Podophyllum peltatum	194	caucasica	78
Polemonium brandegii	126	herbacea	110, 199
confertum	126	nivalis	21, 70
lemmonii	126	pantosericea	78
mellitum	126	phylicifolia	106, 107
viscosum	65, 126	reticulata	199
Polygala amoenissima	78*	serpyllifolia	198
caucasica	78	Salvi dorrii var. argentea	22
seneca	30	Saussurea pygmaea	166*, 197
Polygonum alpinum	84	Saxifraga, Section Porophyllum	183*
sp.	68	bronchialis austromontana	17
viviparum	78*	bursleriana	199
carneum (pict. only)	82*	bryoides	59

caesia	197	Taraxacum stevenii	78
cartilaginea	130*	Taxus baccata	7
caucasica	130	Telekia speciosa	9
cotyledon caterhamensis	17	Thalictrum alpinum	132
crustata	197, 198	chelidonii	122
flagellaris	84	Thelyspermum subnudum	66
hostii	199	Thlaspi pumilum	132
juniperifolia	128*	rotundifolium	196*
kolenatiana	130	Tiarella wherryi	194
moschata	130	Trachelium rumelianum	123
oppositifolia	59, 110, 197	Tricyrtis hirta	123
scleropoda	132	Trientalis latifolia	12
siberica	132	polyphyllum	132
squarrosa	166*, 197, 198	Trifolium pratense	110
tricuspidata	56	Trillium hugeri	194
'Tumbling Waters'	168	luteum	194
x tyrolensis	197	Trollius patulus	132
virginensis (v. michaux?)	56	Tulipa biebersteiniana	134
Schivereckia podolica	26	lipskyi	81
Scilla siberica	8*	Umbilicus oppositifolius	8
Sedum ternatum	193	(Chiastophyllum oppositifolium)	
Selago	131	Urostachys	131
Semi-aquilegia ecalcarata	119	Uvularia	194
Sempervivum caucasicum	131*	Vaccinium arctostaphylos	6
pumilum	132	myrtilus	9, 78, 84
Senecio abrotanifolius	199	uliginosum	78
fuchsii	196	vitis-idaea	9, 78, 84
incanus ssp. carniolicus	199	Valeriana supina	198
integrifolius	83	Vancouveria hexandra	193
renifolius	130	Veratrum lobelianum	81
scorzoneroides	138	Verbascum dumulosum	168
Shortia galacifolia	193	Veronica filiformis	79
Silene compacta	78	gentianoides	79
hookeri	124	v. minor	84
lychnidea	131	rupestris	119
pygmaea	131	wormskjoldii	70
Smilacina stellata	12	Vinca herbacea	134
Soldanella minima	166*, 196, 197	minor	178, 180
Solidago virgaurea	83	Viola biflora	196, 197
Sorbus aucuparia	106	caucasica	132*
Sphaeralcea munroana	68	ignobilis	80
Sporobolus heterolepsis	29	labradorica	13, 194
Stellaria graminea	109	oreades	80*
media	109	priceana	13
Sternbergia lutea	80	rosea	13
Swertia albomarginata	25	zoysii	198*
iberica	132	herbacea	133*
perennis	70	Waldsteina fragarioides	193
Symphyandra hoffmannii	121	ilvensis	174*
pendula	130	Woodсия scopulina	175*
wanneri	121	obtusa	178
Symphytum sp.	196	Woodwardia aureolata	194
Syntheris laciniata	65, 67	Yucca gilbertiana	25
pinnatifida v. canescens	70		



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