American Rock Garden Society Bulletin

Vol. 31 **July, 1973** **No. 3**

DIRECTORATE

BULLETIN

Editor Emeritus
DR. EDGAR T. WHERRY, 41 W. Allens Lane, Philadelphia, Pa. 19119

Editor
ALBERT M. SUTTON
9608 26th Ave. N.W., Seattle, Washington 98117

AMERICAN ROCK GARDEN SOCIETY

President Emeritus
HAROLD EPSTEIN, 5 Forest Court, Larchmont, New York

President—HARRY W. BUTLER, 2521 Penewit Road, R. R. #1, Spring Valley, Ohio 45370
Secretary ..... M. S. MULLOY, 90 Pierpont Road, Waterbury, Conn. 06705
Treasurer ..... ANTON J. LATAWIC, 19 Ash St., Manchester, Conn. 06040

Vice-Presidents
MRS. ANITA KISTLER — DONALD E. HAVENS — BOYD KLINE
MRS. SALLIE D. ALLEN — JOSEPH A. WITT

Directors

Term Expires 1974		
Mrs. Herbert Brinckerhoff	H. Lincoln Foster	Lee Raden
Term Expires 1975		
Miss Viki Ferreniea	Henry R. Fuller	Richard W. Redfield
Term Expires 1976		
Mrs. D. S. Croxton	Carl A. Gehenio	Roy Davidson

Director of Seed Exchange
Dr. EARL E. EWERT
39 Dexter St., Dedham, Mass. 02026

Director of Slide Collection
ELMER C. BALDWIN
400 Tecumseh Road, Syracuse, N. Y. 13224

CHAPTER CHAIRMEN

Northwestern ..... NORMAN CLARK, 8608 39th S. W., Seattle Wash. 98116
Western ..... MRS. DONALD S. CROXTON, 6309 Green Valley Road, Placerville, Cal. 95667
Midwestern ..... MRS. LILLIAN M. LEDDY, Box 612A, R.D. 3, Mena, Arkansas 71953
Allegheny ..... CARL A. GEHENIO, R.D. 3, Box 341A, Tarentum, Pa. 15084
Potomac Valley ..... RALPH W. BENNETT, 5607 N. 22nd St., Arlington, Va. 22205
Delaware Valley ..... JOHN F. GYER, Jessup Mill Road, Clarksboro, N. J. 08020
New England ..... KRISTIAN FENDERSON, Grout Hill, South Acworth, N. H. 03607
Great Lakes ..... WILLIAM S. THOMAS, 1805 Greenleaf Drive, Royal Oak, Mich. 48067
Wisconsin-Illinois ... DONALD E. HAVENS, 2323 W. Club View Dr., Glendale, Wisc. 53209
Columbia—Willamette ..... MRS. L. C. GROTHAUS, 12373 SW Boone's Ferry Rd., Lake Oswego, Ore. 97334
Connecticut ..... H. LINCOLN FOSTER, Falls Village, Conn. 06031
Long Island ..... WILLIAM E. BROWN, 4 Wellsley Ct., Coram, N. Y. 11727
Hudson Valley ..... HAROLD EPSTEIN, 5 Forest Court, Larchmont, New York 10538

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 are: Ordinary Membership, $5.00; Family Membership, $7.00; Patron Membership, $25.00; Life Membership, $150.00; Overseas Membership, $3.50. The subscription price per year is $4.00. The office of publication is located at 90 Pierpont Road, Waterbury, Conn. 06705. Address communications regarding membership, dues, and other matters relating to the Society to M. S. Mulloy, 90 Pierpont Road, Waterbury, Conn. 06705. Address manuscripts and other matters relating to the *Bulletin* to Albert M. Sutton, 9608 26th Ave. N. W., Seattle, Washington. 98117. Second class postage paid at Waterbury, Conn.

AMERICAN ROCK GARDEN SOCIETY BULLETIN

Albert M. Sutton, Editor

VOL. 31 JULY, 1973 No. 3

A WILDFLOWER PILGRIMAGE TO ALASKA

RICHARD W. REDFIELD, *Closter, New Jersey*

The plants described in these notes were found, to some extent, in roadside areas along the Anchorage-Seward and Sterling Highways on the Kenai Peninsula; the Glen Highway from Anchorage to its junction with the Richardson Highway, thence along the latter highway to Paxon Junction and the Denali Highway to its terminus at Kantishna, just beyond the northern border of Mt. McKinley National Park. By far the greater part of our time, however, was spent exploring the wonderful alpine areas within the park and outside the park in the vicinity of Camp Denali, which was our home base for nine wonderful days.

Leaving Anchorage, the highway follows a southeasterly direction, hugging the shore of Turnagain Arm, until it reaches Portage Glacier. On this stretch of highway the outstanding floral feature was the wonderful display of bluebells, *Campanula rotundifolia,* great masses of them, hanging from the cliffs in their usual habit. At Portage Glacier, where we spent one night, we found fine plants of the Parsley fern, *(Cryptogramma acrostichoides),* growing in the gravel on the lake shore. From Portage, the highway turns to the southwest, leaving the coastline now and passing through heavily forested regions, alternating with open meadows. In the meadows we found the Yellow Monkey-flower, *(Mimulus guttatus),* Monkshood, *(Aconitum delphinifolium),* and White Bog-orchid, *(Habenaria dilitata).* In the forests, we found mostly familiar plants which we had seen previously in the Pacific Northwest or even in northern New England; the Twinflower *(Linnaea borealis), Moneses uniflora, Pyrola secunda, P. asarifolia* and that shy little orchid, *Listera cordata.* We had hoped to find an orchid new to us, *Cypripedium passerinum,* but our time was limited and we had to leave this for a future visit.

Returning to our starting point, Anchorage, we now traveled in a northeasterly direction along the Glen Highway. At Eklutna Flats, we were a little too late to see the best display of Shooting-star, although there were still many in bloom, along with *Iris setosa.* Soon we began to see large masses of the Broad-leaved Willowherb, or Dwarf Fireweed, *Epilobium latifolium,* with its bright magenta flowers, in some places covering the gravelly river bars. The first night was spent at Sheep Mt. Lodge and on the mountain here we saw our first Dall sheep, white northern relative of the Rocky

Mountain bighorn sheep.

Next morning, proceeding in a leisurely fashion along the highway, we found *Parnassia palustris* and *Pyrola grandiflora,* both new plants to us.

The Pyrolas here were growing from a wonderful ground cover of *Vaccinium vitis-idaea* var. *minus. Cornus canadensis* was also very plentiful, although somewhat less robust than the New England plants.

At one of our frequent stops for leg-stretching and plant-hunting forays, we encountered a real thrill, since the spongy, sphagnum-covered floor of the open spruce forest was literally carpeted with thousands of the Small Round-leaved orchid *(Orchis rotundifolia)* a plant we had searched for in vain in the New England forests. We even found an albino specimen, a beautiful snowy white orchid. At this same location two other orchids were also found, *Habenaria obtusata,* and *H. hyperborea,* both familiar to us.

On the banks along the roadside in many places now, we saw grand plants of *Mertensia paniculata, Polemonium acutiflorum* and *Geranium erianthum* in varying shades of blue. In this cool climate the blue and pink shades seem especially intense.

We had scheduled another overnight stop at Paxon Lodge, at the junction of the Richardson and Denali Highways and since we reached this point in the early afternoon, we decided to continue for some distance along the Richardson Highway toward Fairbanks. At mile 215, near Rainbow Mountain, we crossed one of the typical wide, gravel-covered river flats. Looking down stream we saw what we, at first, took to be a mass of *Epilobium latifolium.* On closer inspection we found it to be one of the wild sweet peas, probably *Hedysarum alpinum.* For a space of several acres the entire river bar was carpeted with their bright colored blossoms. With the beautiful snow-capped mountains in the background, it was truly a memorable sight.

Next morning we set out on the Denali Highway, the last lap of the trip to Camp Denali and our long-anticipated Alaskan holiday. Almost immediately we began to see some of the interesting alpine plants we had hoped for. At the first stop we found a fine plant of *Silene acaulis,* perhaps a foot in diameter and simply covered with flowers of a most intense color. Now we saw for the first time the Arctic Poppy *(Papaver radiatum)* with beautiful lemon-yellow flowers, nodding in the cool Alaskan breeze. The slopes nearby were covered with large white flowers, which proved to be *Anemone narcissiflora.* With great reluctance we gave up our search here and once more set out for our camp. Since we had some two hundred and fifty miles of rough, gravel road ahead of us and wished to reach camp in time for supper, we were forced to ride steadily now. However, at one point we had the good fortune to have one of the most rarely seen of Alaskan animals, the wolverine, run down the road directly in front of the car for some two or three hundred yards.

At the 160 mile mark we entered Mt. McKinley National Park for the first time. At Igloo Campground we had an excellent view of a bull moose and farther along, at Sable Pass, sighted several grizzly bears at considerable distance from the road. We arrived at camp about 6:00 P. M., in time for supper and were treated to our first view of majestic Mt. McKinley in the evening. We were to have many more views of this magnificent peak in the next week, at all hours of the day and night. Since visitors to this area

Anemone narcissiflora

Richard W. Redfield

sometimes spend two full weeks without ever seeing the peak, we considered ourselves very fortunate.

During our stay at Camp Denali we were able to explore, at some length, several different areas which had appeared to offer the most promise to us as we traveled along the highway within the park, as well as the area surrounding the camp, which lies just outside the northern boundary of the park. The first of these areas to be considered is the high alpine country to the north.

The first new plant found was a bluebell, *Campanula lasiocarpa* var. *alpina,* with solitary, relatively huge bells, on tiny one-inch stems. Although we found this plant at a number of different locations, it was never present in large numbers. A species of Arenaria, probably *Arenaria arctica,* was much more plentiful. At this comparatively low elevation, approximately 2200 feet, and in an exposed position many of the alpines had already finished blooming, notably *Loiseleuria procumbens, Diapensia lapponica, Ledum decumbens,* and the alpine Bearberry, *Arctostaphylos alpina,* which

had already formed its large fruit. The Fragrant Shield fern, *Dryopteris fragrans,* was present in some numbers in the rock crevices here.

As we progressed to higher elevations many new plants appeared, particularly in protected spots where the snow had already melted. First to attract our attention was a tiny, bright magenta primrose, *Primula cuneifolia,* then two new species of gentians, *Gentiana prostrata,* a tiny annual species with pale blue flowers, and *Gentiana glauca,* a slightly taller species with unusual greenish blue flowers. Next, in somewhat moister ground, a beautiful station of *Dodecatheon frigidum,* no more than six inches tall. Here also, were several species of Pedicularis with their oddly shaped flowers, so like little animals when viewed in a close-up photograph; a pale, creamy yellow, pink-tinted species, perhaps *Pedicularis capitata;* another with bright butter yellow, red-tipped flowers, *P. flammea;* a third with dark, reddish purple flowers; a fourth with bright pink flowers, probably *P. arctica;* and finally a plant with white, purple-helmeted flowers.

Many other plants were also found in bloom on these ridges. Noteworthy among them were *Saxifraga tricuspidata, Vaccinium vitis-idaea* var. *minus, Loiseleuria procumbens, Cassiope tetragona, Boykinia richardsonii, Silene acaulis* and literally acres of *Dryas octopetala.* On the descent we passed through a lush alpine meadow with a fine stand of the Alaska state flower, *Myosotis alpestris* with almost unbelievably blue flowers, and two violets; tiny yellow-flowered *Viola biflora* and larger, violet-blue-flowered *Viola langsdorfii.* Here, too, were two species of Claytonia; *C. acutifolia,* with comparatively large, white flowers and *C. sibirica,* with flowers very similar to our eastern species.

The following morning we decided to explore the roadsides near the camp and the river bar bordering the McKinley River. Along the road, we found two members of the orchid family; *Habenaria hyperborea* and *Corallorhiza trifida,* the latter past blooming. Along the Bar Cabin Trail, which runs from Wonder Lake to the McKinley River, we found a good stand of the Common Butterwort, *Pinguicula vulgaris,* and also very large stands of a second species of Dryas, *D. integrifolia* with flowers very similar to *D. octopetala,* but foliage quite different, together with *Andromeda polifolia.* The combination of the creamy-white flowers of the Dryas and the bright rose of Andromeda made a very lovely picture. In the grassy meadows bordering the streams which wander through the flat bar, were plants of a yellow-flowered saxifrage, *S. hirculus.* The forest along the river, however, proved quite disappointing from a floral standpoint.

Next on our list of areas to be explored were several high passes, which had looked promising from the car windows on our trip through the park. First of these was Polychrome Pass, noted for its wonderful tapestry of color in the autumn. Here, for the first time, we found a lovely species of Claytonia believed to be *C. scammaniana,* with reddish stems and vivid, deep pink flowers. Generally we think of Claytonias as growing in rich, moist woodlands and the species which we had previously found, although growing at high altitudes, were found in the moister areas, with comparatively deep soil, but this species was found only on steep gravelly slopes, which showed no soil at all. Nearby were plants which we believed to be *Saxifraga oppositifolia,* but all were well past their blooming period. Here,

too, were good stands of tiny *Rhododendron lapponicum,* which is quite plentiful on the New England peaks, but again we were too late for all but a very few flowers. Other plants found and photographed in this area were Monkshood, *Aconitum delphinifolium,* and *Mertensia paniculata,* apparently the same species previously found along the highway, but because of the higher altitude and soil conditions, much more compact in manner of growth.

Second on the list was the vicinity of Thorofare Pass, not far from the visitor's center at Eielson. Leaving the road, we walked up through a gently rising meadow filled with Spring Beauties, For-get-me-nots, Monkshoods and many others, a veritable blanket of wild flowers. Soon we were climbing a steep, gravelly incline, where the rocks were so crumbling and the footing so uncertain, that we were forced to proceed with the utmost caution. In this barren, unlikely looking situation, we again found the beautiful *Claytonia scammaniana,* a slightly-paler-flowered form. And scattered here and there on the almost perpendicular sides of the ravine, a lovely, bright, golden-yellow Arnica grew, only a few inches in height and so fiercely windswept as to be almost impossible to photograph. On narrow ledges near the top of the ridge we found tiny, yellow-flowered *Saxifraga serpyllifolia* and wonderful mats of *Arenaria arctica.* On the way down from the top of the ridge, we found, for the first time, tiny *Corydalis pauciflora* with pale lavender flowers and one of the most beautiful of all the Potentillas, *P. uniflora.*

Last on the list and perhaps the best of all, was the Highway Pass area, the highest point on the road, 3950 feet above sea level. Leaving the road, we followed a small stream swollen by recently melted snow. On the banks, where the snow had just disappeared, were wonderful displays of *Anemone narcissiflora, A. parviflora,* and yellow-flowered *A. richardsonii.* Interspersed among them were good stands of *Dodecatheon frigidum* and a little buttercup. Progress was very slow here, since every few feet revealed some new treasure—several species of saxifrage and now a tiny gem, *Androsace chamaejasme,* with creamy, pink-tinted flowers. *Cassiope tetragona* was very plentiful and there were great mats of *Dryas octopetala,* with good plants of the Arctic Poppy, *Papaver radicatum,* scattered among them. The mustard family was represented by *Cardamine purpurea* and another larger species with pale lavender flowers. Further up the slope we came upon yellow-flowered *Saxifraga flagellaris,* an interesting species which sends out red runners and forms little plantlets at the ends, much like some of the Androsaces.

By this time we had reached the top of the ridge and here the ascent was very gradual towards the higher peaks beyond. It had begun to drizzle and soon there was sleet mixed with rain. Although it was the middle of July, the combination of rain and sleet, with a brisk wind blowing, made very rough going. We very quickly forgot our discomfort, however, when we discovered at our feet, one of the real gems of the area, *Eritrichium aretioides,* with its wonderful sky-blue flowers on prostrate, hairy mats. We continued on up the slope, hoping that the rain would let up sufficiently to make photography possible. At this altitude *Diapensia lapponica* was still in bloom and here we also found still another showy species of Pedicularis, *P. lanata,* with very woolly stems and bright rose-purple flowers. Finally the

rain began to subside and we turned our steps back down the slope again. After photographing the Eritrichium and spending more time in simple admiration of its beautiful color, we started downward on the opposite side of the ridge. Here the ravine was much narrower and the snow had only recently disappeared, thus raising our hopes of finding *Saxifraga oppositifolia* in bloom. Finally we were rewarded with a few plants still in good bloom although not such large plants as we had hoped.

Douglasia arctica

Richard W. Redfield

In this same area we also found a Draba, possibly *D. densifolia,* and another real gem, *Douglasia arctica,* with beautiful rose pink flowers. As we looked across the ravine we could see, growing in what looked for all the world like a huge pile of crushed rock, a large plant of some sort covered with deep pink flowers. Unwilling to leave without satisfying our curiosity, we decided to approach closely enough for identification. Upon reaching the plant we discovered that it was a magnificent specimen of *Claytonia scammaniana,* fully ten or twelve inches in diameter and literally covered with flowers. Here, again, this species was growing in what appeared to be pure gravel, with no other plants to compete.

In describing the foregoing areas, I certainly do not intend to imply that these were the only worthwhile spots. There were undoubtedly many others equally as good, perhaps some even better. However, these particular areas are comparatively accessible and did prove to be productive of many interesting plants. The species described are actually only a portion of those found. Many others were seen and many more remain to be discovered on subsequent visits. Truly, Alaska is a plant lover's paradise!

RED, WHITE AND GREEN

H. LINCOLN FOSTER, *Falls Village, Conn.*

There are two species of plants in eastern United States that have a great deal of charm but live under the shadow of some confusion for those who wish to make references to them horticulturally or botanically. The confusion lies more in the area of their names than in their botanical or horticultural reality.

I refer to *Gaultheria procumbens* and *Gaultheria hispidula.* And right away in my reference I must stutter over the spelling of the generic name for both, and then stumble over the second from a deeper and secondary confusion about whether the two belong to the same genus or in different genera. Who is to decide? What is the authority? What does it matter to the plant or its genes or even to the rock gardener in his approach to the world of plants or to those who want to grow one or the other of them?

Let us then deal with these entities as discreet and admirable plants without coming to grips with what is both a taxonomic and a historical problem. (Both problems, however, do offer a level of involvement that lends an added dimension to our already intoxicating pursuit of growing.)

Gaultheria procumbens has a fairly clear bill of lading as to name. The genus name commemorates a naturalist and court physician at Quebec, Jean-Francois Gaultier, whose name, after the fashion of the times, was also spelled Gaulthier, Gauthier, and Gautier. He is believed to have been born in 1708 and to have died in 1756, but there is some uncertainty in these dates. It may have been that this adventurous naturalist who sent to Linnaeus the North American plant that the Swedish botanist christened in the Frenchman's honor, a name which, in turn, is the generic title of about 30 species in North and South America, Asia, Australia, and New Zealand. They are all evergreen shrubs of varied stature with small, fleshy, hanging campanulate flowers, white, frequently tinged with pink or red. The fruit is a fleshy berry-like capsule, generally bright and conspicuous, pure white, blue or red. Many of the species are difficult to grow and some are definitely not hardy, at least in the Northeast.

The charge of tenderness, however, cannot be brought against *Gaultheria procumbens,* which is found growing wild in rather sterile acid soil, in sun or shade, from Canada south to Georgia and as far west as Minnesota. Its specific name it not entirely appropriate because the plants are not really procumbent or prostrate, though some plants may produce a carpet-like effect by the density of the erect stems. These flowering branches, which carry a cluster of dark green, hard and coriaceous leaves, may be six inches tall. To be sure there are other leafless branches that do creep either on the surface or just beneath to enlarge the colony.

The leaves produce a volatile oil of wintergreen and have long been distilled for use in medicine and as flavoring. The young leaves, which are tender and slightly ruddy of color, are especially delicious when chomped between the teeth and do wonders for a thirsty hiker in the wooded hills.

There is some medical opinion that, in addition, the plant contains substances inhibitive of cancer. The pulpy, rather dry white flesh of the fruit, wrapped in a crisp crimson skin, is equally delicious, permeated as it is with the same mystical flavors and principles.

Some of these qualities, plus its distinctive characters may, years ago, have led Dr. Gaulthier to this plant that bears his name. The same characters must also have given *G. procumbens* a special position in local lore as recorded in colloquial names. The very number of these names may be a measure of its prominence. How many plants can support as diverse or as many common names: Aromatic Wintergreen, Teaberry, Checkerberry, Mountain-tea, Petite Thé des Bois, Boxberry, Ivory Plum?

Aside from its place in the pharmacopoeia and lore, the beautiful *G. procumbens* is acknowledged even in the august pages of the *Royal Horticultural Society Dictionary of Gardening* in its discussion of the Gaultheria genus as "One of the most useful, decorative, vigorous, and hardy species."

Though slow to establish after being collected in the wild, the plant eventually will make a sizable carpet. In order to encourage a good root system and rapid establishment, it is wise to handle collected plants as cuttings in a mixture of peat and sand in a frame or pot. Indeed, *G. procumbens* makes a superb specimen in a pot where, because of confinement, growth is dense and flowering and fruiting encouraged.

As is true with many natives, I suspect, the Checkerberry fares better in cultivation than in nature. Enjoying in the garden a more nourishing diet than its normal fare, it returns a reward in richer foliage, lustier growth, and a far superior display of flowers and fruit. On its own in the wild, because it does not fight easily against competition, like many of the meek of the earth it is relegated either to poverty-stricken sandy arid soils or to the leaf-strewn floor of oak or conifer forest. Here, because of its tolerance of very acid soils and slowly decaying and acid leaf cover, it struggles and persists but does not have the sustenance to blossom and fruit abundantly. In the garden, however, if given a rich acid diet, relieved of weedy competition, and housed in the fullest sunshine short of dryness and baking, this aromatic wintergreen will grow lush and dense with a resplendent display of waxen flowers in late summer and before winter be beautifully decked with fleshy crimson fruits. Though of modest mien in the wild, here is another of our neglected natives that deserves not only a welcome but a fanfare as a rock garden plant.

Its sibling, if we are to accept the latest taxonomic determinations, *G. hispidula,* occupies some of the same geographic range as *G. procumbens.* But it, the Creeping Snowberry, Moxieplum, Capillaire, Maidenhair-berry, Petit Thé de Perdrix, or Petits Oeufs de Perdrix, does not roam far south; yet it does range widely in the north from Labrador to British Columbia. The Creeping Snowberry has a rather narrow site tolerance, however, and it is found only in mossy moist spots, frequently beneath coniferous trees, and in the southern part of its range almost exclusively in the wooded fringes of sphagnum bogs. In such moist, acid spots, especially on the elongated moss-covered mound where fallen logs or stumps are slowly decaying, the plant will weave an intricate flat mat. The mat is composed of long, wire-stemmed branches with only sparse feeding roots on the lower side.

These interwoven branches are densely decorated with small ovate leaves, firm and bristly, arranged in an alternate pattern.

Here and there over a mature mat will hang out from leaf axils on short nodding stems, small white crystaline lanterns of blossoms, which when fertilized become in fall, snow white berries with a clasping fleshy white calyx. These berries are deliciously juicy with an aromatic delicate wintergreen or black birch flavor.

This pert and charming mat-former is not easily moved from the wild to the garden. Roots are delicate and sparse, constantly moist in sphagnum or rotting acid duff. There is some evidence, however, that its obligatory site in nature may be determined more by requirements of a constantly moist medium for seed germination than for mature growth. It can be propagated by layers, cuttings or seed, and when growing well in a carefully controlled situation, can be transferred successfully to less moist, acid duffy soil in the garden, but always in the shade. In sun it cringes, shrivels and dies, except perhaps in a northern bog. I have never seen it in an open bog, always in the wooded fringe.

The fact that we have in Snowberry a Gaultheria-like plant with a white fruit, which has a range full across the northern part of the American continent raises a nice set of questions. Is it, perhaps, another pre-glacial Holarctic plant which ties the flora of eastern United States with that of Asia? By way of *G. humifusa* and *G. ovatifolia* with red fruit, does it have ties with white-fruited *G. miqueliana* of Japan and the blue-fruited *G. trichophylla* of the Himalaya?

Is it, in fact, a *Gaultheria* or does it more properly merit a separate genus, as it did until recently under the name *Chiogenes*?

Though Jacob Bigelow, 1787-1879, Boston physician and botanist, proposed many years ago that this plant belonged in the *Gaultheria* genus despite its more berry-like than capsular fruit, it long bore the name *Chiogenes* (from the Greek: chion = snow and genos = of spring). There it rested in a separate genus in standard floras right through the first seven editions of *Gray's Manual of Botany*. In the massive revision of Gray's bible, undertaken by Merritt L. Fernald, the name was shifted from *Chiogenes* to *Gaultheria* with Bigelow as authority, and was so published in the long-awaited and now standard edition of *Gray's Manual* of 1950. Since that date regional floras have accepted this designation, and even eccentric H. W. Rickett uses Gaultheria for this taxon in the New York Botanical Garden's monumental series, *Wild Flowers of the United States.*

Like many eastern native herbs these two Gaultherias, as is clear from some of their colloquial names, served as a substitute for tea. One wonders, though, about the source of the colloquial Moxieplum.

* * * * *

A GENTLE REMINDER—Ye contributors to the *Bulletin.* What a wonderful group you are and a growing one, too. BUT please look to your typewriter ribbons. There is evidence that some of them have earned retirement after long and faithful service and should be replaced. There is no profit in strained eyes!

STICKY WICKETS

ROY DAVIDSON, *Seattle, Wash.*

Striving for a precision and perfection of thinking is part of being a clear-minded, good gardener, one who wants to know all there is to be known about his plants; how to spell their names, whether they are considered to be "good" species, where they were found and under what conditions, and by whom. Now a mere observer is not bothered with any of this: he cares not a whit and possibly he is the happier for his ignorant bliss. It is quite possible he may think that this *other* chap is missing a lot! Why all this over-concern for unimportant details? Like whether the southern, slighter pixie-moss is a good species in its own right, and whether the east Asian peninsula begins with a "C" or a "K".

Perhaps we are missing something, those of us who are really concerned over such matters, but our concern, far from being "nitpicking," is a reflection of a deep affection and involvement with our plants. More than that, however, it reveals a desire to communicate accurately our ideas and impressions to other persons. For this reason, the dedicated are likely to have adopted a splitter's view, recognizing the interesting variations, and going one step further in propagating and disseminating them, with names of their own. Therefore he needs to know whether there is a name already in use that will be correct.

So, thus come some of the differences of opinion, and such questions as, ARE they new species? This has been rather recently asked of *Lewisia stebbinsii* and *Trillium hibbersonii;* it might well be asked of *Sisyrinchium inflatum* and *Synthyris stellata* although they are newly coined names, and of *Campanula shetleri,* still newer, but as yet, unchallenged. Then answers are not to be found in one broad, sweeping statement, nor answered "yes or no." The academic question is, WHAT is a species? Being involved, there is no stereotyped reply. For example, within a genus that is noted for its almost uncountable variations in a rather limited area, quite a different attitude of approach is necessary, as opposed to a well-distributed genus without any appreciable degree of variability. Penstemon and Calypso might represent these two extremes. The latter are quite easily recognizable, and the former may seem so very inconstant as to give a quick heart to those who wander among them, book in hand, puzzling.

Quite some years ago, in order to better understand the nature of species, and to study other phenomena, several biological stations were established in several parts of the world. The Carnegie Institute's many stations in California (later reduced to three: sea level, midway at Mather, and Alpine at over 10,000 feet east of Yosemite) were for the observation of the precise biological unit under a great diversity of conditions. A very great variety of material was first clonally propagated, in order to rule out the probability of individual variations, and a large number of these propagules were established for observation at the various stations. From the accumulated evidence a great number of things were learned, not the least

being that "species" *per se,* is a very elusive thing!

Whereas some subjects did not appreciably respond to their interreactions with the habitat, certain others were so changed that they might have been taken as new species! Some were not at all able to succeed (died); a number of others were able to persist but were quite outside their zone of success and were unable therefore to fulfill themselves in perpetuation, and all of this had been more or less expected.

We learn constantly that the "species" is in need of very broad understanding, as also, thus, the question ARE they new species?

Similar anxieties arise in our writing over the "right" way to spell politico-geographical place names, especially those that are interpreted from a written language that does not use one's own familiar letters of expression. Thus Kamaon (Kumaon) and Kamtchatka (vs. a half-dozen other ways) are only secondarily important to the gardener, if at all, but if he wishes to write precisely about his plants he must spell them as they were spelled at the particular time the names were applied, and human frailty being what it is, there have been changes in "accepted" spelling. Nevertheless, the rules of nomenclature state that the name as originally spelled is not to be changed for arbitrary reasons and that includes the change due to the human frailty which seems to dictate alterations to the spelling of politico-geographical names of places.

Certainly, in horticulture we are not about to hang anyone for his inability to keep up with these various changes. Numerous plants of Taiwan are named for their being found on or near Mt. Morrison, yet this is an arbitrary name for the summit that in Taiwanese has long been known as Yushan, and renamed by the Japanese during their 50-year occupation as Ni-i-taki-yama. Fortunately for us, the rules governing names state that the original spelling must forever be retained, thus we have no willingness to accept *Picea morrisonicola* as "P. niitakiyamacola!" Nor is there any obligation. And some Iris seed recently received labeled *"rezaivehensis"* (a name untraceable in the literature) must certainly be *I. urmiensis,* named for being found in proximity to Lake Urmiah, now changed to Lake Rezaieh (or Rizaieh). But the name of the Iris must remain as originally given and spelled.

Now, on name changes, Liberty Hyde Bailey gave us very sobering advice on the many things involved, to aid in keeping our "cool" when names are changed. Under a particularly impossible involvement of circumstances, he once wrote, "What do you do? You do the best you can." And in his marvelously sensible little book, *How Plants Get Their Names,* we are advised that we ought not to resent name changes; most such being evidence that an error has been righted at last. We should be rejoicing!

As days and years roll by, the answers to many of these uncertainties will be self-evident, through either their usage and acceptance or their rejection and disappearance. In the meantime we may need to replace some of them with the alternative, the replaced interpretation. Perhaps we are perplexed on being confronted with such a name as *Gaultheria (Chiogenes) hispidula;* perhaps it seems like "hedging" in print. Interpreted, this tells us that the plant formerly known as *Chiogenes hispidula* is now to be called *Gaultheria hispidula,* and when it appears as *Chiogenes (Gaultheria) hispidula,*

it means exactly the opposite; the explanation here is that this plant is one of those which is continually being changed, since it doesn't comply as quite typical of Gaultheria, but some feel it is close enough. There are other seemingly "multiple-choice" names; which are likely to be confusing but should not be once their meanings are explained. *Iris biglumis (ensata)* for instance, tells us that the species once known as *Iris ensata* is now correctly *I. biglumis; Iris ensata (kaempferi)* tells us that the one that used to be *I. kaempferi* is now *I. ensata.* These two changes together tell the story of an error in nomenclature that has persisted for over a hundred years; The incorrect name and description were applied to *Iris kaempferi* which was in reality the one already named *I. ensata,* thus a second plant named as *I. ensata* was deposed and required renaming, becoming *I. biglumis.* These consternations are abominable, but they must be faced up to. We must "Do the best we can," and "Rejoice that errors have been corrected."

In horticulture it is not ordinarily important to follow the binomial of a plant with the name of the authority who gave it and the date applied. However, in botanical writing it is imperative to do so for precision, and a name used without these appendages most often conveys no meaning whatsoever. There may be a possible dozen interpretations of a given binomial! When citing the taxonomic history of a given subject, it is often necessary to bring in the binomials of from three or more genera in many cases, all the names ever given it. Thus some of the borages may have been at one time or another considered as Eritrichiums. A simple run-down on "Penstemon menziesii" as a taxon runs to three or four pages if all the ramifications are brought into the discussion.

"Some praise at morning what they blame at night, and always think the last opinion right." Alexander Pope's *Essay on Criticism.*

* * * * *

FROM NEW HAMPSHIRE TO GERMANY—Mrs. Inge Bartho has moved from her home in Center Conway, New Hampshire to West Germany following the lamentable death of her husband in 1972. Her friends and ARGS members will be glad to know that she intends to remain an ARGS member and hopes to return to the USA for a visit in a year when the Annual Meeting is to be held in the Northeast so that she may attend. She writes that she is starting a rock garden and it is certain that she would appreciate seeds.

* * * * *

MEMBERS HONORED—A letter from the Arnold Arboretum of Harvard University informs us that Dr. Richard A. Howard, Director of the Arnold Arboretum at Jamaica Plain, Mass., has been named President of the American Association of Botanical Gardens and Arboreta at a meeting held in Los Angeles in April. Dr. Howard succeeds Joseph A. Witt, Research Asst. Professor and Curator of Plant Collections at the University of Washington Arboretum in Seattle. Mr. Witt is an ARGS member. Another ARGS member and past Vice-President of the ARGS to be honored is Brian O. Mulligan, recently retired Director of the Arboretum in Seattle. He has been named a Vice-President of the Royal Horticultural Society of England. Congratulations to both outstanding plantsmen!

HUNTING A GARDEN IN THE ALPS

GORDON POLLOCK, *New Canaan, Conn.*

When my wife and I were making our plans for an extended trip to Europe this spring (1972), the one thing I most wanted to do was to cross from Italy to France over the Mont Cenis Pass. I had a vague remembrance of having read an article which mentioned an alpine garden in that area. We arrived in Florence, Italy, on May 24 for a short visit with old friends nearby. The next morning I checked with the Auto Club of Italy and was told that the Pass was open.

Accordingly, on the morning of the 27th we left Florence for Turin where we expected to spend the night. However, traffic was light that day and we arrived near Turin early in the afternoon. So we pushed on to Susa, the last town on the Italian Side, before starting to make the ascent to the Pass. At the Tourist Information office in Susa we learned that the Italian border was only about 40 minutes away and that there was a nice mountain hotel there. There was a terrific gale blowing, and it was a stiff climb all the way but it was worth it. The Hotel Quo Vadis is situated about 300 yards from the Italian Customs office. We obtained an adequate room and at the same time learned that this was the first day the Pass was open.

The sun was still shining, the air crisp, so we immediately went out for a walk and to make plans for photographing the next morning. Can you imagine our surprise when less than 100 yards from the hotel there was a field rising abruptly from the road, dotted with masses of white flowers. At first we thought they were Narcissus, but they turned out to be fully opened Anemones—*Anemone narcissiflora* which with *Pulsatilla alpina* extended as far as the eye could see. Upon closer examination we noted that *Adonis vernalis* and *Pulsatilla vernalis* were almost completely spent, yet all around us were patches of snow. As we started up the hill the first blue flower to greet us was *Gentiana verna* and then a profusion of *G. acaulis,* both of these a most "brilliant gentian blue." These were interspersed with quantities of *Viola cenisia, V. biflora* and also a small white viola. Some of the flowers of *V. cenisia* were quite large and looked like small pansies. Then we found *Anemone blanda,* and also a very short dark blue Pulmonaria with an occasional dark purplish red flower showing—not at all like *P. officinalis* with pink flowers—the leaves were unspotted. There were quantities of *Potentilla tridentata minima,* but not a single bud open. To brighten the scene *Primula veris* was dancing in the breeze. I do not mean a gentle zephyr for it was more like a gale. It was all we could do to keep our balance. I wondered how I was going to photograph the next morning. (I need not have worried for all my film turned out to be defective).

We had an excellent dinner of *truite au bleu* and fresh asparagus, with fresh strawberries for dessert. The wind howled all night. The next morning, armed with reference books and camera, we climbed to the higher areas where we tried to photograph the plants we had seen the previous afternoon.

While I was trying to photograph *Orchis globosa,* my wife, Tania, who had gone up ahead a bit, called to me. She had come upon a small patch of *Soldanella alpina,* or *S. montana.* I could not tell the difference. We noticed that whenever we found one flower of a species, if we persisted in our search we would find many more nearby. So it was with the Soldanellas—there were literally hundreds of them. The rocks were covered with masses of *Rhododendron ferrugineum* (Alpenrose) but we were much too early, not a single bud showed color. There were any number of varieties of plants which we did not stop to study for they were not in bloom; and we were too busy photographing those that were.

After a luncheon of *truite amandine,* beautifully prepared, we crossed the Col de Mont Cenis in bright sunshine, between banks of snow higher than our car. On the summit (French side) we stopped for an expresso and to photograph the snow-capped peaks all about us. We descended and spent the night in a small mountain resort (Lanslebourg) which was almost completely deserted. It was too early in the season for most tourists and too late for all but the most expert skiers. Again we found a small clean hotel and a very good dinner.

We found the way to Col d'Iseran and Val d'Isere was closed. However, we went up the road about 10 miles to Bonneval, a medieval village much as it was 500 years ago, where cheese is being made the way it was done then.

Since the Col Galibier (2586 m) which leads into the Col de Lautaret (2058 m) was also closed, we took advantage of the delay by staying an extra day in Lanslebourg to take several long walks and climbs in the Parc de Vanoise where there are well-marked trails and fields in which the plants are protected. Here we found fields of Narcissus, Ajuga, Muscari, *Trollius europaeus* and *Orchis tridentata* and one species which was probably *Anacamptis pyramidalis.* On the rocks were Sedums and saxifrages and between them *Helianthemum nummularium.* Continuing up we came to a pine grove with *Viburnum lantana* in abundance. Under the pines we found some very young leaves of *Hepatica nobilis.* We searched until we found a single blue bloom. On the way back we discovered many more patches but only a few in bloom (blue) and one white one.

To my great astonishment no one up to this time knew anything about "an Alpine Garden" either on the Italian or the French side of the border. Next day we went to Mondane, the next larger town, where we learned that the Col de Lautaret was open but the Galibier was still closed. By making a wide sweep to the west we could reach Grenoble. Here, at last, we were told about an Alpine Garden at the top of Col de Lautaret, but the hotel near the garden was closed until June 1st. We were advised to go as far as La Grave, a high mountain village where there were three hotels, and only 30 minutes away from the summit—to spend the night there and to go on to the Col in the morning.

Heeding this good advice we started off at once for La Grave which we reached shortly before 5 o'clock. Only one of the three hotels was open and since they were having a poor season, a room was readily obtained. The sun was still shining, however it looked as though the weather was going to change. So we took off at once and drove to the summit.

There we found the "Alpine Garden" experimental station of the Univ. of Grenoble with a closed gate and a sign on it—"Reouverture Fin de Juin." We did not wish to wait a month so I pushed the unlocked gate open and in we went. There was no need to be quiet about it as there was not another soul within half a mile. The short distance from the gate to the rock garden was a lawn over which we had to tread carefully so as not to step on Gentians, Soldanellas, Narcissus and violets. In fact there were most of the species found in the fields at Mont Cenis. However, there were fewer Anemones.

From whomever we inquired about the "Garden" when we were searching for it, we were told not to bother going up as "it was much too early; you will find much snow and few flowers." Almost any alpine you could think of was in flower. There were naturally many more which were in bud with no color showing and more which were just starting to grow.

Among the early bulbs were lavender and white Crocuses, *Ornithogalum umbellatum,* a few Muscari, only one *Tulipa oculus-solis,* thousands of *Narcissus poeticus.* There were hosts of *Gentiana verna, G. acaulis* and *Soldanella montana.* Of the Primulas there were *PP. veris, villosa, rubra, viscosa, auricula, elatior* and *marginata,* the latter in every imaginable shade of blue, one that was not quite red and one pink. Also there were *Potentilla nitida* and *P. verna,* and the Pulsatillas included *P. alpina* and its var. *sulphurea, P. vulgaris, P. vernalis* and *P. pratensis; Adonis vernalis, Papaver alpinum* (yellow, orange and white). Among the saxifrages were *S. aphylla, S. oppositifolia,* and *S. squarrosa.* There were Androsaces, Pulmonarias and a clump of dwarf heather; perhaps a form of *Erica carnea; Petrocallis pyrenaica, Douglasia (Gregoria) vitaliana, Chrysanthemum alpinum minimum,* more Androsaces and Drabas.

After a sandwich and coffee in the souvenir shop and snack bar nearby, we drove down toward Antibes where we were to meet our daughter and rest for a couple of weeks. As it was getting late we did not stop to photograph. We were now in the Alpes Maritimes, going down and climbing up again over very winding roads. The last part of the descent was made in thick fog at a crawl. Vision was about 200 feet. We had a feeling we were passing interesting terrain.

So three days later, after we were rested, the three of us returned over the part we had missed in the fog. In one vast, moist meadow we found a pink Armeria, probably *A. arenaria* or *alpina, Caltha palustris, Orchis tridentata, O. mascula, O. italica, Ranunculus montanus, Narcissus poeticus, Muscari comosum* and a deep blue *Phyteuma orbiculare.* Can you picture the color combination? Along the road in a dry rocky spot was one pink Orchis with characteristic leaves, light green but with dark green splotches. There were a few specimens of *Aquilegia vulgaris,* a dwarf pink Silene, undoubtedly *S. acaulis, Cerastium alpinum* and color variations of *Thymus vulgaris* and *T. serpyllum.*

When we leave Antibes about June 18, we will wander slowly through Provence and Aquitaine, visit the Romanesque churches and monuments frequented in the 10th to 12th centuries by the Pilgrims on their way to Jerusalem. Ultimately we hope to reach Gavernie in the Pyrenees for another climb in search of alpines.

SEEDLINGS, WITHOUT TEARS

A. J. BROWNMILLER, *Gibsonia, Pa.*

It is not a lack of knowledge that causes the inexperienced or dubious minority of ARGS members to abstain from the elemental and interesting activity of rock gardening, or the propagation of alpines from seed. Research and experience with light and temperature conditions, soil mixes, watering and climatic factors have shown that most rock garden plants, with the exception of orchids, can be grown by the inept, the fainthearted and the dabblers without complicated equipment and a laboratory approach. No one who is intrigued by plants would fail to be entranced by the seed leaves emerging from the bare ground, or would await without breathless anticipation the first true leaves which proclaim the aristocratic identity, or not, of the seedling. There is joy in rebirth, whether plant or animal, to stir the most lackadaisical from his bed in the morning to see how his seedlings are faring. Yet not all of us raise our plants from scratch.

In our ARGS chapter which is one of the more recent ones, under 10% have either alpine house or basement lights, under 20% donate to the Seed Exchange, and less than 50% raise their own plants. This may correspond roughly to the national wherein some 300 donate seeds, and if 1500 members requested 20 packets each, our overworked and underpraised Director of the Seed Exchange, and helpers, would be superextended to the point where 30,000 seed packets would be distributed, a number we hope is more in the actuality. Clearly, many plant buffs avoid the infancy and adolescence of plant life in favor of rugged maturity.

Those who buy, beg, or have their stepchildren thrust upon them never reach that plateau of understanding and satisfaction which the full cycle of a plant's existence may bring, with bloom as an added bonus but not the sole *sine qua non* of the harried housewife or the tired businessman who likes plants tremendously but have the wits scared out of them by the technical gadgets and laboratory requirements they are sometimes advised to supply. Consider the optimum conditions.

One should have an alpine house or basement lights, coarse sand, peat moss, gravel, sifted garden loam, limestone and granite chips, perhaps Cornish sand and ground hoof and horn meal, spoons and tweezers, dibbers and trowels, old shoes for luck, a cold frame with lath and vinyl covers, thermometers, mist sprays, hormone powders, antidamping-off solutions. One must sterilize the soil and freeze the seeds in the fridge, carry seed pots and seedlings from the basement to the cold frame and vice versa. All this fuss for a dream of things unseen, like paradise, with manifold pitfalls and no certainty of getting anywhere, anyhow. Mr. I. M. Willy-Nilly is a case in point.

Like many others before him he merely wanted to find a solution for an unsightly bank with immovable rocks, these surrounding an ex-pigpen with numerous stepping stones behind an ex-farmhouse. With the stones piled into a wall out of reach of the car's bumper, he planted *Cotoneaster*

horizontalis and day lilies, but eventually wild carrots dominated the impossible scene. Thereafter, he had in succession a carpet of chickweed, *Pachysandra terminalis,* liverworts and ferns. While he had read all the books and in spite of them, it was not until he had incorporated the remnants of builder's sand and gravel that he was able to grow creeping phlox, for his soil was not the light shale he had supposed but clay disguised by the humus of the pigpen. By accident he hit upon *Dianthus deltoides.* Then when *Gentiana gracilipes* did not damp off in the kitchen window he gave some consideration to raising seedlings.

In the meanwhile he had read, probably in Wilkie's book, that an English housewife sowed seed of *Gentiana verna* in flats in the fall under an apple tree to sell in the spring to nurserymen. This revelation was quite in keeping with that of seeds in the wild which somehow grow without powders or paraphernalia. Not exactly instant germination but germination with the least fuss and bother. Such is often the cold water approach to rock gardening —reluctantly, until the tyro beats a retreat or takes the plunge.

Accordingly, he bought two bushels of sand, a bale of peat moss, sifted garden loam and ordered seed from the Botanisher Alpengarten, Schenkel, Correvon; borrowed partial packets of Drake's seed from a friend and ordered from the ARGS seed list. He mixed shovelfuls of the mix all too willy-nilly, added some coarse leftover vermiculite and filled his pots in the fall under an old shed. When the seed arrived in January, he sprinkled it over the surface of the mix, threw on pinches of limestone or granite gravel and heeled in the pots under the apple tree.

January had been so exceptionally warm that it was later discovered the drupe fruit buds had frozen in February's snow and cold. When the ground became bare in mid-March, snow trilliums were not yet up, much less in bloom, as was their want. With the night temperature below freezing the daily suspense of awaiting the seedlings was unbearable. He succumbed to his wife's suggestion to go to Florida to avoid the strain.

In Florida, snow and cold had been reported daily from home until the middle of April when snow banks were still on the hillsides along the Turnpike. The snow trilliums were then in full bloom along with the early daffodils but no seed germination had occurred. While the suspense was again agonizing, the sun was warm with hope. Below are the approximate germination dates:

April 15-30. *Dianthus alpinus, D. neglectus, Calandrinia umbellata, Dianthus nitidus, D. glacialis, Erinus alpinus, Androsace latifolia, Dianthus gratianopolitanus.*

May 1-15. *Lewisia cotyledon, L. rediviva, Arabis blepharophylla, Saponaria lutea, Saxifraga aizoon, S. purpurea, S. mutata, Dodecatheon meadia, D. lemoinii, Dianthus arenarius, Gentiana makinoi, Saxifraga hostii, Anthemis cupaniana, Aster likiangensis, Cyananthus lobatus, Dryas octopetala, Saxifraga engleria, Primula japonica, Gentiana acaulis, G.* 'Inverleith', *G. tibetica, G. lagodechiana, G. angustifolia, G. purpurea, Saxifraga aizoon baldensis.*

May 15-30. *Heliospermum alpestre, Saxifraga purpurmantel, Pulsa-*

tilla alpina, Anemone baldensis, Saxifraga stellaris, Gentiana verna, Saxifraga gelbe, S. caespitosa, S. cotyledon, Aubrieta 'Victoria', *Campanula portenschlagiana, Rhodiola rosea, Anemone magellanica, A. sylvestris, Gentiana hexifarreri, G.* 'Inschirach', *Aubrieta* 'Fire King', *Anemone hupensis.*

June 1. *Trollius laxus.*

While no count of the seedlings had been made, it can be stated that the Dianthus ran from 50 to 100 each, the Gentians and Saxifraga less than a score, Anemones under a dozen, the Pulsatillas and Aubrietas on the fingers of one hand. Only one of four Pulsatillas germinated, all of the Anemones, none of two Ranunculus, all of the Gentians, but *G. ornata. Gentiana verna* from one source came up in two pots but none from the other two sources. The recalcitrant seed were single species of various genera.

About 70% of the species from all sources produced at least two specimens. This percentage does not apply to the summer surplus which was not frozen but planted in August and not kept beyond the following spring. While none of the remaining 30% produced a single seedling they can not be counted as completely lost for some germination might occur the second spring. Indeed the previous year Mr. Willy-Nilly had secured seed of *Adonis vernalis* from Europe which he had planted in what afterwards proved to be too crusty a mix. According to Jos. Starek, ARGS Bulletin, Vol. 24, No. 4, the species, "sometimes germinate perfectly the following spring" and, "sometimes germinate not at all." However the seed in question did not come up in the spring but *mirabile dictu,* early in August. The "internal dormancy" which Mr. J. P. Zollinger pointed out in the ARGS Bulletin, Vol. 30, No. 2, not always works according to schedule but ofttimes in ways too surprising to relate. In like manner Anemones and Aubrietas germinated months after the first flush of seedlings appeared. The variability in desiccation within the pots and the growth of moss attested to a too variable soil mix.

Now for the bad news. When rain had not fallen for two days the pots had been watered. With more rain the *Calandrinia umbellata,* thick as hair on a dog's back, disappeared over night. Likewise, 20 *Lewisia cotyledon.* Then the purchased *Lewisia cotyledon* in the south wall, large as a saucer, shrivelled up two days after blooming beautifully, after copious rain, of course. Before Mr. Willy-Nilly could recover his wits another 60 *L. cotyledon* seedlings shrivelled. But upon covering the remaining 20 with a pane of glass the leaves perked up their points like rifles in a bivouac.

When tropical storm Agnes poured down eight more inches of water, half the Saxifrages bid adieu. In transplanting the remainder, after two rainless days, forsooth, the mix in the pots was as wet as a saturated sponge, presumably too much peat moss. But the gentians and the other seedlings thrived wonderfully well.

In sum total Mr. Willy-Nilly had about 1500 seedlings. For his own use he cut a pie slice from the pot so he could give the surplus to the propagation chairman. By August he had 375 of his two- and four-leaved seedlings in the beds with less than 1% loss excluding the Dianthus with a 50% loss. About a score of the less exuberant, principally *Gentiana verna* and *Rhodiola rosea,* were kept in the cold frame. Thus the minimum care project

ended.

Now what can we conclude from the carelessness and brashness of the inexpert? First, any beginner can raise more than enough rock plants for his own use without much travail. A bushel of sand, one of peat moss and loam, pots, a trowel, turkey gravel and a square yard plot in shade will suffice with a dozen half hours of labor. Secondly, the ARGS seed seems to be as viable as that of the renowned seed houses. Thirdly, the advice of experts should be undeviatingly followed. A specific comment is not given to show the expert's erudition but to warn the unwary of a specific eccentricity of a species. Such admonitions as Mr. Zollinger's, "Germination behavior is generally characteristic of a genus" and Lincoln Foster's recommendation in *Rock Gardening* which specifies that *Lewisia cotyledon* should be placed on the east or north face of a wall and "no overhead watering" for the species would have prevented some of the failures. Thus, it is not what we do but what we must be reminded of, that brings success.

While it is human to disregard advice, which may result in failure, it should be rewarding to *aficionados* that a common sensical approach can be most rewarding. The important point is to become involved.

A DWARFED BLUE COHOSH

PAUL H. BOSWELL, *Massillon, Ohio*

In late May or early June of 1968, in a woodland near Massillon in a woodland I had not previously explored, I encountered a plant which I had not met with in many years of wild flower studies. Noting that there were several clumps in the area, I took one and transplanted it to my shaded rock garden. The specimen had no flower or fruit when it was dug, nor did it show any inclination to bloom the following spring, though it made abundant foliage and seemed perfectly healthy. Having grown for years an extensive collection of native woodland plants, I began to compare the newcomer with the other residents of the garden and settled upon *Caulophyllum thalictroides* as being the one most similar in foliage.

I dug both plants, washed off the soil and compared the root systems. Sure enough, the rhizomes and wiry feeder roots were identical, except that on the new plant the rhizomes were compounded extensively and from each of them sprang several stem growths; whereas in the typical plant the rhizomes were simple and seldom put forth more than one or two stems which could grow to twenty-eight inches, flowered consistently and fruited into handsome blue-black berries in the fall. The new plant never flowered in the four years I had it, went into dormancy in late July or early August and did not grow above eight or ten inches in height.

For the 1969 Spring Meeting of the Great Lakes Chapter of the ARGS, I divided the highly complicated rhizome mass and gave a plant to Harry Butler and another to Dr. R. C. Allen, Director of Kingwood Center who was hosting the gathering. The following September, I sent dormant roots to Linc Foster and to the Bowman Hills Wildflower Preserve near Philadelphia, a native plant center much loved by Dr. Wherry. All reports that

have come to me from these custodians indicate that their plants came up every year but refused to flower.

I did not go back to the source of my find until early May of 1972, and then I found the dwarf mutation in good quantities. The old woodland, which until about ten years ago had been virgin forest, was now being slashed completely for pulp wood. With the plants now threatened by full sun and by soil erosion, I had no compunction about taking all I could carry. I found some intermediate sizes, including one fruiting plant. Three of these plants went into my wild garden and the rest were kept in a flat until they were dormant last summer. Around the second week in September, I mailed ten plants with letters of explanation to friends in the ARGS, to the Brooklyn Botanic Garden and to the Pennsylvania Wildlife Commission.

Having only the physical appearance of the dormant root to go on, George Kalmbacker, the taxonomist of the Brooklyn Botanic Garden, has recognized that the plant is a mutant which has taken to reproducing vegetatively for some reason at present unknown. He writes that this phenomenon more often occurs in arctic alpines where the growing season allows them only a few weeks for a plant to flower and set seed. He seemed pleased to have the plant and promised to observe it carefully when it grows again next year.

Professor Fred Case, of Saginaw, Michigan, is also much interested in this plant. He, too, believes that it may be a localized mutant and, as such, might turn out to be a garden oddity and a valuable dwarf for the rock garden, however, he informed me that the abnormal condition of the plant could be caused by some type of fungus or organism infection, such as the mycoplasma which created the variegated *Trillium grandiflorum*. In this case, my plant will be of no value except as a pathological example and I shall inform all recipients that they should destroy the plant before it can infect the specific blue cohosh, or possibly, other genera. If Prof. Case gives it a clean bill of health, I will continue distribution of this dwarf *Caulophyllum thalictroides* and will try to supply as many people as I am able to do, on their request.

* * * * *

FROM AUSTRALIA—A book, *Wildflowers of the East Coast* (Australia), by Michael and Irene Morcombe, published as one of the Periwinkle Series, has been sent to the editor by Marshall Mitchell who lives in Moe, Victoria, Australia. One short quotation follows concerning plant collecting under the heading, "Recording," which is tucked in among the many colored plant portraits. "Unless you have a phenomenal memory, record all observations on the spot, at the time. If you wait until you get home, or even back to your car, you will almost certainly forget some points, and if you have several plants you may get mixed up, with disastrous results. Therefore, always carry a notebook with a pencil *attached*." Good advice! Marshall Mitchell was a delightful member of our tour during our sojourn in England and Scotland in 1971 at the time of the Harrogate Conference. Three packets of seed came in a letter from him recently—*Trochocarpa clarkei, Stylidium graminifolium* and *Celmisia asteliaefolia (longifolia)*. Wonderful little ambassadors from "Down Under."

ROCK GARDEN FERNS–*CRYPTOGRAMMA CRISPA*

JAMES R. BAGGETT, *Corvallis, Oregon*

The Parsley Fern or Rock Brake stands somewhat alone among garden ferns, not only in botanical relationship, but also in appearance. No other fern could so well qualify for the common name, which is well known and often used. The Parsley Fern is also to be appreciated as a pleasing and easy addition to the rock garden.

The genus *Cryptogramma* is considered by most botanists to contain two species, *C. crispa,* the Parsley Fern, and *C. stelleri,* the Slender Rock Brake. The latter is a more delicate and rare plant, differing from the Parsley Fern in having a creeping rootstock. An additional species sometimes included as *C. densa,* is that fern commonly called *Cheilanthes densa* by most authors. The final classification for this fern will probably be decided some time in the future.

Cryptogramma crispa is a complex with several varieties, with the typical form occurring in Europe. Variety *acrostichoides* is called the American Parsley Fern, but also occurs in eastern Asia and differs from the typical by having leaves of a thicker texture. The principal problem encountered in the

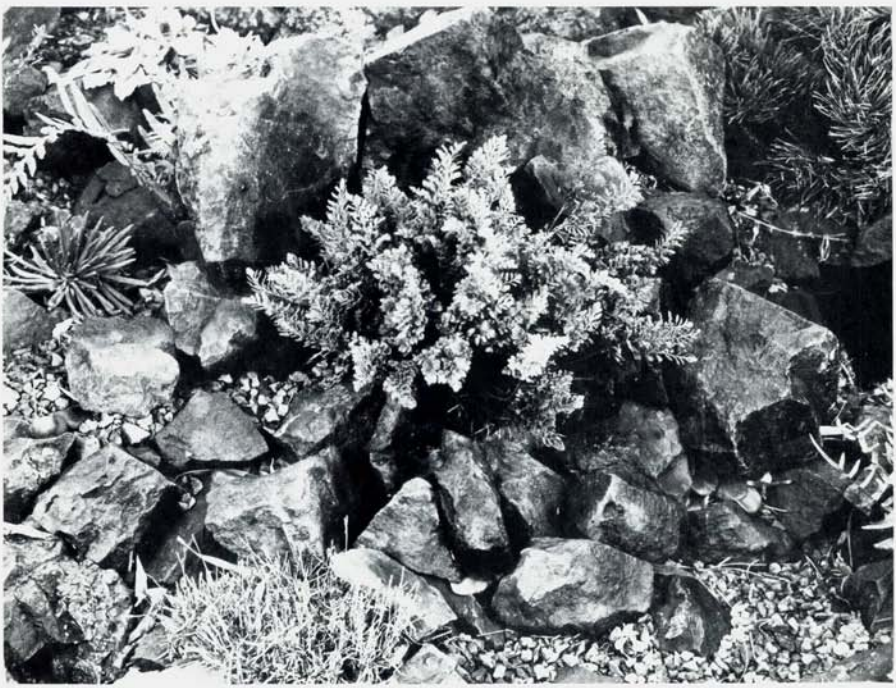

Figure 1—*Cryptogramma crispa* var. *acrostichoides,* the Parsley Fern, well established in a rock garden.

James R. Baggett

nomenclature of this variety is its designation, especially in older books, as *C. acrostichoides,* rather than as a variety of *C. crispa.* Another form var. *sitchensis* occurs in Alaska and has more finely divided sterile leaves. At least one more, var. *raddeana,* occurs in central Asia, and resembles var. *sitchensis.* The differences between these varieties are probably not important to gardeners, and the form available will depend on the part of the world where you live. We will consider them all under the common name of Parsley Fern.

The distribution of this fern is rather widespread in the mountains or colder areas of the Northern Hemisphere. In North America it is found most abundantly in the West, from Alaska to Baja California, extending east to New Mexico in the south and to Ontario and Quebec in the north; in the Rocky Mountain states, in northern Michigan, with a disjunct occurrence reported is Nebraska. It does not generally occur in the central and eastern United States except as an introduced species. Only one reference to this fern in the Southern Hemisphere was encountered—a suggestion that the same or a similar fern occurs in Chile.

The habitat is described as cliffs and rock slopes, usually at upper to middle altitudes, but descending to lower elevations in northern latitudes and near the coast. In Oregon, for example, it is found in the mountains, in suitable rocky habitats near the coast, and is very abundant in parts of the Columbia River Gorge, east of Portland at elevations of less than 200 feet. In these habitats it is often growing in full or partial sun, with extreme drainage provided by moss-covered rocks or talus slopes. Although the moisture supply may become quite low during the late summer, it apparently survives because of its high altitude or coastal type of habitat. The Parsley Fern is considered to be definitely lime-hating.

Aside from its well-known resemblance to parsley, *C. crispa* may be described as densely tufted; bright yellowish green in color; fresh and crisp looking. The rhizome is short, ascending, compactly branched, loaded with old stipe bases and scales, and often includes old dead portions. The leaves are conspicuously dimorphic. Figure 2 shows the difference between the sterile and fertile leaves, but it is misleading because both types had to be pressed out flat for drawing. The fertile leaves actually form a somewhat loosely cylindrical and disorganized upright mass which is held well above the more evenly formed sterile leaves. By early fall the fertile leaves are rich brown, contrasting with the still fresh green mass of the sterile foliage.

In Figure 1, a few fertile leaves, still green, are indistinctly visible on the right side of the clump. The characteristic appearance of the Parsley Fern is due largely to the thick, hard texture of the leaves, the small and sharp serrations on the pinnae margins, the conspicuous grooved veins of foliage, and the carriage of the leaf segments in a horizontal plane. The light brown hyaline spores are produced abundantly in sori which nearly cover the undersides of the fertile pinnae.

Plant height varies from 3 inches to 6 or more, with the fertile leaves extending to 8 or 9 inches. The clumps may reach as much as 6 to 8 inches in diameter at the base and still be essentially all living, or portions may die out on one side, especially under a severe stress from too much sun or drought.

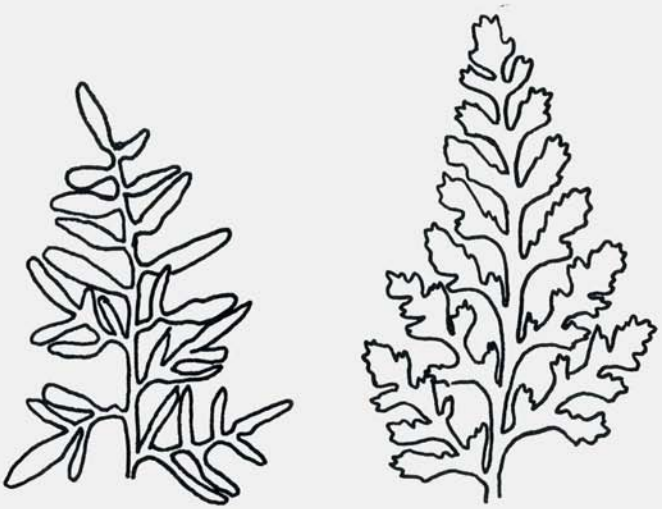

Figure 2—Leaf drawings of the dimorphic leaves of the Parsley Fern. Left—the tip portion of the fertile leaf, right—a similar part of a sterile leaf.

James R. Baggett

In my own garden, the Parsley Fern has proven easy and permanent in a variety of exposures. Most of them are in rocks where there is full sun for about half of the day in midsummer. One plant, in nearly full sun all day, has shown some damage as partial death of the crown. Several are doing well on a slight slope, but these as well as those in the rocks are planted in a gritty, peaty mix with strong drainage characteristics. The garden never gets very dry, but the temperatures do rise to near or over a hundred degrees occasionally, and in 1972 there were about ten days with temperatures of over one hundred and reaching 107 degrees. The Parsley Ferns came through in fine condition, though partial shade is still a logical recommendation in hot climates. Give this fern as much sun as it will tolerate in your garden, so that it will remain short and compact.

Feeding does not seem critical in keeping it going as it seems to be with some small ferns, though it helps in establishment. If growth or color is inadequate to suit you, or if the clumps seem to decline and die out in parts, then careful feeding would be advisable. No lime should be given, and in limestone soil areas it may be necessary to counteract the lime or avoid contact with lime-bearing media.

Propagation of *C. crispa* is moderately easy by division. Though I have not raised it from spores, I would predict it would be easy, based on its cultural adaptability.

* * * * *

A NEW MEMBER WRITES—"Thank you for your prompt letter with application enclosed. Our check is in the mail to Mr. Mulloy. The American Rock Garden Society offers just the things which interest us the most and we are happy to have found out about it."

IN SEARCH OF *ACIPHYLLA*

JAMES R. LE COMTE, *Ashburton, New Zealand*

For several years now, the dwarf-growing species of *Aciphylla* have interested me greatly; several have grown successfully in my garden and some have flowered. Although it is quite an achievement to flower these plants, their chief allure lies in their perfect symmetry of needle-sharp leaves; each species having a different form. They are not merely ideal for the rock garden—they are perfect for it!

As it is my hope to write more notes on this genus as progress is made, there is no need to dwell over much, at this stage, on the undoubted charms of this elusive and seldom grown genus. Rather, I would give some notes on my collecting.

Not a great deal of information (in layman's language) is available* for identification purposes and it seems to me that some notes on the subject could be of assistance to the enthusiast, even if all it does is stir up some knowledgeable person to action.

Obviously, the first need was to assemble all the species, grow them in the garden, flower them and then write articles on the different characteristics of each and their cultivation requirements.

The "first catch your hare" part, appealed to me most as trips into the mountains are always interesting and a good excuse for a few days off, but it was easier said than done. Some species are rare and of very localized and inaccessible habitat and the genus is spread over the South Island of New Zealand, with three species in the North Island, two in Stewart Island, one on Chatham Islands and one in Australia.

The Genus Aciphylla Oliver 1955, recognizes 39 species; 38 confined to New Zealand, and of these at least 24 would be valuable additions to the rock garden. A small start has been made; 7 species were already growing contentedly for me, but more specimens of these were also required so as to be sure of having male and female plants.

I had set my sights on *Aciphylla congesta* and *A. crosby-smithii* and by means of much inquiring, had the data on where they could be found growing together. This was 'a difficult to get at area' in the deep south of the South Island and on the first venture there with Paul Palomino the weather turned quite nasty and chased us out of the mountains. Toward the end of February, with a long hot spell of weather over the whole country, I set off with friend Greg Hooker.

It was decided to visit the Old Man Range first and with a hired Land Rover we drove up that mountain to over 5,000 ft., early on a lovely clear, fine morning. To list all the plants that grow on the Old Man would just about fill the *Bulletin* but the feature of this mountain is the tundra area, with acres and acres of tight, hard cushion plants. Many genera are represented there in their tiniest forms and the area is quite unique.

The first areas of interest we came to were sphagnum bogs which were covered with the blooms of *Gentiana bellidifolia* and *Euphrasia zelandica,* both tiny plants but showy because of their mass. The bogs are usually

saturated and quaking but the long spell of dry weather had dried them out enough to allow the Land Rover to be driven over them.

Once on the summit, the really beautiful *Myosotis pulvinaris* with its tight cushions of green, covered with silvery hairs is everywhere, as are the silvery mounds of *Celmisia sessiliflora.* Mats of *Cotula goyenii, Gnaphalium mackayi, Raoulia grandiflora, Dracophyllum muscoides, D. pronum* and *Hectorella caespitosa* intermingled freely for miles, along with the small hard green domes of *Pygmaea thomsonii* and *Phyllachne rubra* and the wider mats of *Phyllachne colensoi* and *Drapetes lyallii.* The laxer *Drapetes dieffenbachii* were also prevalent. Some lovely silvery hybrids of *Celmisia sessiliflora* were found, the other parents probably being *CC. lyallii, laricifolia* and *coriacea* (bronze form).

Some areas seem to be covered with *Celmisia ramulosa* var. *tuberculata,* in fact the deep green mounds stretched as far as one could see. This species is surely one of the most unusual of the genus, with its small deep green leaves set closely along the stems and interpersed with white tomentum, giving the plant an almost whipcord appearance from a short distance away.

But Aciphyllas were our goal and the first species located was *A. hectori* which forms small clumps of rosettes from 2-4 inches high among the tussocks and grasses. This is a neat-growing small species and the 6-9 inch inflorescence does not appear every year. The male flower spike is the showiest and this is the general rule with Aciphyllas. Nearby we found several plants of *A. kirkii* which is most easily described (for meantime anyway) as an elongated *A. hectori.* The hard thick leaves are upright and about 6-8 inches long, but the flower stem is 24-30 inches high—rather tall for the rock garden when in flower but in leaf only it is a worthy addition.

The day was now very warm and just perfect for plant hunting so we drove a few miles along the top to a known stand of *Aciphylla simplex.* If rock gardeners were able to see a growing plant of this beauty they would not rest until it grew in their gardens. The leaves are a beautiful bronze, about 1½-2 inches long and arranged in a small close rosette. As the plant grows, more rosettes are added until they are tightly crowded together and forming a perfect symmetrical dome of burnished bronze. The female plant has rounded, fluffy, cream-colored flowers on 2-4 inch stems which protrude from all over the mound, whereas the male flowers are frothy little creamy plumes, almost sessile, and what a sight they make, sitting all over the bronze mound. There was no flowering on *A. simplex* this season on Old Man, but 71/72 was a good year and I collected a lot of seed which was sent to several Alpine Societies. To those who have germinated it—treasure it!

This species grows mostly in rocky places but the roots are down in the moisture which is always present in the mountains, and can be cultivated in any position (except scorching sun) provided a cool root run can be given.

Late in the afternoon we decided we had had a perfect day and headed down the mountain to Alexandra where we camped the night. The next morning we spent washing the soil off the plants and packing them in moss because we would not be home for a few days and they would sweat too much in plastic bags in the car, in the hot weather. Then on southward!

Another night in a camping ground and an early start next morning

into the haunt of the Aciphyllas we had traveled so far to see.

We left the car at a high saddle and climbed steadily through tussocks and snowgrasses that were still dripping wet with dew. Predominant plant at this stage was *Celmisia lanceolata* (which had flowered and set seed since my last visit) interspersed with clumps of *C. petrei* which had not flowered this season. The vegetation was lush which reminded us of the very heavy rainfall that this area enjoyed, and several plants of *Anisotome haastii, Celmisia traversii, C. verbascifolia* (plus hybrids of the latter two) were scattered among the tussocks. There had been little or no flowering on these plants.

Along one of the ridges were several pretty blue tarns (small lakes) and later, when we were higher up, they made a very picturesque sight; many blue jewels set in the tawny gold of the tussocks. It was to these tarns that we were drawn, to seek out the tiny plants that often grow around the edges, and sure enough, there were mats of Coprosmas and mat-forming Dracophyllums. The most exciting find was large patches of the tiny *Astelia linearis* var. *novae zealandae* and many of the female plants bore the bright red berries down in the center of the tufts of leaves. The berries are quite large for the size of the plant and never fail to draw attention and admiration.

There were many firm green mats of *Phyllachne colensoi* and away from the tarns we found several different *Celmisia* species such as *C. bonplandii, C. du-rietzii, C. gracilenta, C. laricifolia, C. lyallii, C. viscosa, C. walkeri* and the beautiful silver *C. coriacea* var. *stricta.*

By this time it was a decidedly warm day and with a clear blue sky the mountains all around us provided a wonderful sight but the desire to just sit down and drink it all in had to be suppressed. It was a case of onward and upward to the Aciphyllas. On the way to a leading ridge we found the flat silky rosettes of *Ourisia sessilifolia* which may have been var. *splendens* but there were no flowers present. We were becoming hungry but we were determined not to eat until we had found what we were looking for and so it was good luck that we came across our first plants of *Aciphylla crosby-smithii* near the top of the ridge. None were in flower but the rosettes are beautiful in themselves, being a bronzy green, from 3-5 inches across, and in some cases many rosettes form domes 2-3 feet across and about 6 inches high. The leaflets are quite hard and quite sharply pointed —to be handled carefully.

Flushed with success and the hunger pangs abated we moved on higher and found the ridge abounding in plants. *Ranunculus buchananii* was plentiful, so was a *Haastia sp.* and then we came upon wide mats of the beautiful silver *Celmisia hectori.* What a lovely plant this is! Here and there were mounds of *Celmisia ramulosa* which differs from var. *tuberculata* by the latter having the nodes much closer together and less white tomentum showing.

Cotula goyenii was there; also *Craspedia* species, *Drapetes lyallii, Leucogenes grandiceps, Pygmaea ciliolata* (var. *fiordensis?*) and many other little gems. We were awed by the sight of many mounds of *Hectorella caespitosa*—venerable plants these, and perfect in shape and composition. Some were 8 inches across or more, and as they are slow growing it must have

taken quite a number of years to reach that state. In some cases the main roots were exposed for a short distance by erosion and they were quite hard and about 1 inch or so thick.

Leucogenes grandiceps straggled around near the rocks; not a good form; because this species can be a good mound of silver.

And here at last was *Aciphylla congesta* with its very neat rosettes of deep green leaves which are much softer than those of *A. crosby-smithii. A. congesta* is quite distinct as the leaf sheath is purple, giving the center of the rosette a distinctly dark purple appearance. Some of this same colour appears on the leaf tips thus creating a thin circle of colour. The rosettes are small—about 3 inches across and form mats rather than mounds and the beauty of one particular mat cannot be described adequately, one can but try. Greg drew my attention to a bank about 3 feet high, the face of which was completely covered with the flat rosettes of *A. congesta;* each one symmetrically placed in relation to its neighbors. The whole was perfect and the colour quite impressive, making this the most beautiful Aciphylla I had yet seen and if all this wasn't enough, a wide tight silvery mat of *Celmisia hectori* surrounded the mat of Aciphylla—the deep green and shining silver made a remarkable contrast that was captured on colour film to be enjoyed for many years.

Reluctantly we had to make our way back although there was a lot of the mountains yet to botanise, but time marches on and so must we. On the way back to the car we found *Aciphylla lyallii* growing among the grass and tussocks. The grass-like leaves of this species are quite inconspicuous at first but soon we found lots of them though none were in flower as was the case of all the Aciphyllas we had seen today. I had seen *A. lyallii* in flower last year and the inflorescence would be 12-18 inches high, but it would not be regarded as a good garden plant; more a collector's item.

We returned to the car tired but very contented. We had experienced another perfect plant hunter's day. A long drive lay ahead of us to my friend's home near Gore and we arrived late at night. The welcome, as always, was very warm even if the hour was late and we sat talking plants non-stop until 2 in the morning. Greg and I were really on our way home but when friend Ian Spence asked if we had a spare day we did a rapid stocktake of the position, and when he told us he knew of a place where four different dwarf Aciphyllas grew, we decided that we definitely had a spare day. So to bed and up again at 6 A. M.—just four hours sleep—keep that in mind!

An early breakfast and away we went in Ian's Toyota 4-wheel drive, to a remote spot of the Eyre Mountains south of Lake Wakatipu. After leaving the truck we scrambled upriver through a narrow gorge for several miles, crossing and recrossing the river countless times, then up a steep boulder chute onto a flat which held a small lake. We saw then what lay ahead of us—a very steep climb which seemed endless from where we stood. The mountainside was literally dotted with a magnificent Aciphylla, but not one you would put in your garden unless it was to keep burglars out. It was easily the most fearsome plant I have seen and the specimens varied from 2½ feet high to more than 5 feet without the inflorescence. The 5 foot plants were about the same or more across and composed of multitudes of

sword-like leaves, each with a wicked sharp point. A female plant was the only one we saw in flower and the inflorescence rose to 7 feet from a 2 foot 6 inch plant. The species was *Aciphylla horrida*—very aptly named! Here also were plenty of what was once *A. cuthbertiana* but has been lumped in with *A. lyallii*. It had simple leaves 1½-2 feet tall which usually bend and droop because of their narrow length. It certainly seems far removed from the *A. lyallii* we had previously met up with and to say the species is very variable would seem to be stretching things a bit far. Perhaps it may yet enjoy specific rank. The mountainside was covered with tall snowgrasses and their shed leaves made a very slippery mat underfoot, so much so that one must clutch at the grasses to help haul oneself up, but it was essential to keep the eyes open—for to grab an *Aciphylla horrida* was to nurse one's hand for quite a while. I was the oldest in the party by at least 15 years, and two mountains in 48 hours with 4 hours sleep was taking its toll—my legs went awfully rubbery and so under the guise of botanising, I had frequent spells. Eventually, I caught up with my companions who were resting by the dwarf Aciphyllas we had come to see.

The gem, of course, as far as I was concerned, was *A. spedenii,* another small neat rosette type of 3-4 inches across with a distinct bluish gray colouring, especially in the center of the rosette and each leaf segment had a pink tip, making this species easily distinguished from others. Obviously, a little gem for the rock garden, as is *A. similis* which was growing nearby. The latter is a little larger, probably 5 inches high. Neither of these species was in flower which was a pity as photos were wanted of them in flower.

Not far away, in a damp place, were wide mats of *A. pinnatifida* which multiplies freely by creeping underground stolons; the only species that does this as far as I know. It is also the only species of the genus with pinnatifid leaves, i.e. that the leaf segments are not joined onto the midrib as in other species, and they are not opposite. The leaves are an olive green with yellow midribs and the plant is very handsome, indeed.

But here at last were some flowers; male ones only, but what a show! At this, my inexperienced stage of this project, I find it difficult to describe the inflorescence which is very striking with the deep orange colour of the bract sheaths, but line drawings with future articles will help.

The other *Aciphylla* species on this mountain was *A. simplex* which has been mentioned earlier, but this was growing higher up.

Now our attention could be turned to other plants and two were especially worth mentioning. On steep semi-stable clay screes were several plants of a *Ranunculus* species unknown to us. The leaves which were clustered in a near vertical position, were quite dark in color and only rising about 1-2 inches above the ground level. Flowering was over but fruit was setting.

The other was *Raoulia buchananii;* the southernmost 'vegetable sheep.' This species is quite green in colour in contrast to *RR. eximia, bryoides* and *mammilaris* which have a bluish appearance. It would make a valuable addition to any garden.

The long, steep, sliding trip down was taken carefully to dodge the big 'Spaniards' (Aciphyllas) and splashing through the narrow gorge was very soothing on tired feet. What a relief to reach the Toyota, get a hot drink from the thermos and have a bite to eat. What a day! ! !

In four days we had been on three mountains and seen an incredible wealth of plants and only a fraction of them have been mentioned here, mainly because of my bad memory plus the fact that the *Bulletin* would not hold it all.

*Footnote for page 1—A book on New Zealand native plants is due to be released about September this year and from preliminary reports this book may make the identification of plants much simpler. The author is Dr. Mark of the University of Otago and the book is beautifully illustrated with colored line drawings, by Miss Nancy Adams, whose work is well known.

ARISARUM, AGAIN

BERNARD HARKNESS, *Geneva, N. Y.*

In sequence of the October 1961, July 1962 and April 1965 issues of the *Bulletin* of the ARGS, there has been mention of the genus *Arisarum*. In the first instance, R. Ginns, contributed an excellent notice of the many aroids (of the family, Araceae) that add novelty to the gardens of England. *Arisarum proboscideum* is described as having, "amusing flowers which look like a flock of mice burrowing in the ground with their tails waving in the air."

In July 1962, I reported from Rochester on several aroids grown there and mentioned that an Arisarum from Portugal was under trial.

The third reference is a letter to the editor from Mrs. Edward W. Hutmire which is the inspiration for this long-delayed answer to her well-taken question: "Was the Arisarum from Portugal hardy?" For all these years the answer has been in doubt. To be sure there were leaves in the right spot of the right shape but they disappeared so early each summer that their reappearance seemed doubtful. This year the doubts have been resolved as some time between May 12, when several ARGS members visited the Castle Garden on their way to the Annual Meeting, and June 14 when I inspected the garden again, there flourished two little mice-flowers hidden beneath the spinach-like foliage. This seems to be a rather long time to wait for flowers and I expect more careful attention to culture would be rewarded with earlier maturity. However, it seems established that in the Mediterranean Arisarum there is hidden hardiness in cultivation far wide of its provenance. Both *A. proboscideum* and *A. vulgare*, the Friar's Cowl (see the colour plate in *Flowers of the Mediterranean* by O. Polunin and A. Huxley), are worthy of trial.

One other aroid growing in New York State should be mentioned. Mr. Ginns describes the English native, *Arum masculatum*, and mentions Lords and Ladies and Cuckoo-pint from the multitude of local names given to it. Incidental to one of his trips to England, the noted American botanist, Asa Gray, is reputed to have brought back to his friends, the Roots, of Clinton, New York the original plants that have remained ever since on the wooded slope of the area now known as The Root Glen, a preserve administered by Hamilton College. This plant of sufficient importance to have had a book devoted to it in the Collins New Naturalist series, *Lords and Ladies* by Cecil T. Prime, has never been fully appreciated in this country for its adaptability to naturalistic gardening.

GAULTHERIA VERSUS CHIOGENES

RUPERT BARNEBY, *New York, N. Y.*

The question raised in the *Bulletin* (Vol. 31, No. 1, p.15) about the correct botanical name for Creeping Snowberry cannot be answered unless the question itself is reformulated. In a nomenclatural sense, *Chiogenes hispidula* and *Gaultheria hispidula* are equally correct, each being in full accord with the letter and spirit of the law of Botanical Nomenclature. Preference for one name over the other is entirely a matter of *taxonomic opinion,* which will vary according to emphasis laid on morphological similarities and differences and, ultimately, on a biological interpretation of these.

At the generic level, *Chiogenes* differs from *Gaultheria* as represented by our eastern Checkerberry *(G. procumbens)* or western Salal *(G. shallon)* in having the calyx and ovary partly fused. As a result the ovary is technically termed semi-inferior, thereby approaching the condition seen in *Vaccinium,* where the seed-vessel, which comes to table as blueberry or cranberry, stands wholly below the apparent calyx-lobes. Judged from this narrow viewpoint, the difference between the two genera is small but real. However, *Gaultheria* is a genus of about 200 species dispersed around the periphery of the Pacific Ocean, and the members familiar to gardeners in the Northern Hemisphere are only a fraction of those known, the hardier ones, moreover, only outliers of the clan. An informed opinion of the differences between *Chiogenes* and *Gaultheria* depends on a knowledge of the whole spectrum of variation, the sort of knowledge that only a few specialists working in the largest botanical institutions are ever likely to acquire.

During the past fifty years the opinion of the few truly informed students of *Ericaceae* has crystalized into a conviction that *Chiogenes* is no more than a slightly marginal or odd-ball *Gaultheria,* some other species of which show partial fusion between the ovary and calyx.

The three principal modern floras covering the range of *G. hispidula* (*Fernald, Gray's Manual* ed. 8, 1950; Gleason, *New Britton & Brown Illustrated Flora,* 1952; Hitchcock *et al., Vascular Plants of the Pacific Northwest*) are unanimous on the point, and the prestigious Seventh Edition of Willis's *Dictionary of Flowering Plants* (ed. Airy-Shaw, 1966) simply states "*Chiogenes* = Gaultheria." Clearly there is a strong tide of opinion in favor of *Gaultheria hispidula,* not *Chiogenes hispidula* for Moxie. Besides our *G. hispidula* there is only one other known *Chiogenes,* the very similar *C. japonica,* which Sleumer, world authority on *Ericaceae* of the old world, has likewise transferred to *Gaultheria.*

A habit is a habit, and people develop strong antipathies toward changes of name, the dissociation of a familiar word from a known object, especially when near or dear, being perceived as painful. Inertia in face of change, often supported by sentiment, ensures on all sides a second life, if not indeed a sort of immortality, to ideas which lost their stuffing years, perhaps centuries ago, like the antique Mesopotamian nonsense handed out daily, in the name of "science," by Hollywood astrologers. One cannot expect the

name *Chiogenes hispidula* to disappear from speech or literature any faster or more surely than one can foresee the people of New York City abandoning the term Sixth Avenue for Avenue of the Americas.

This durable, and as we have seen, perfectly *correct* name for Snowberry is current among many persons of intelligence, and those who prefer it to *Gaultheria hispidula* are at liberty to use it. Indeed they will be in good company doing so, for Ohwi, in *Flora of Japan* (English Ed., 1965) persists in calling the Nippon Snowberry *Chiogenes japonica.* But among botanists Ohwi must appear as a lonely holdout, like that marine on Okinawa, in a battle that was decided years ago.

In summary, *Gaultheria hispidula* and *Chiogenes hispidula* are equally correct. But the former is vastly preferred in the light of contemporary knowledge.

ROCK GARDEN PLANTS ON CHINA – A REVIEW

ÁSKELL LÖVE, *Boulder, Colorado*

Botanical art simplifies the identification of plants, but it also makes it possible for the lovers of flowers to enjoy and admire the beauty of the living world at times when it is at rest or when they are in places where plants do not grow. Most such art is printed in books, some beautify the walls of our homes, and sometimes botanical art enhances the pleasure of handling even things of everyday importance.

A recent work of botanical art connected with practical subjects will please and interest lovers of rock gardens, because it is based on the beauty of alpine plants. Around last Christmas the famous Norwegian Poragrund Porcelain Factory marketed the first of two sets of six coffee cups with saucers and plates in fine bone china. The coffee set is a prize-winning design by the outstanding designer, Tias Eckhoff, but on it are paintings of the common arctic-alpine species, *Betula nana, Loiseleuria procumbens, Potentilla crantzii, Ranunculus glacialis, Saxifraga oppositifolia,* and *Veronica fruticans* made after Norwegian mountain populations by the famous botanical artist, Dagny Tande Lid.

Although there are available many fine sets of cups and dinnerware with flower designs, I hope I will not offend their artists, past or present, if I dare to claim that this one is in the top class, not only because of the gentle and modern design of the cups, saucers and plates, but especially because of the quality of the paintings and the great success with which they have been transferred onto porcelain so that the flowers are not only natural but even look as if they were still alive. An unusual feature that enhances the value of the set is that scientifically important information on the origin and certain characteristics of each plant is given on the bottom of the plates, in Norwegian and English, of course with the correct Latin name of each taxon.

There are many artists and technical craftsmen who make adequate illustrations of plants, and several have succeeded in making drawings useful for manuals and other botanical publications. But it is apparently not in the

Fine China with a *Potentilla crantzii* design

Erling J. Egbertsen (Copyright)

power of nature to produce more than a very few outstanding artists per generation, for here as in other elite fields many are called but few are chosen. Botanists interested in arctic-alpine plants have long realized that Dagny Tande Lid is one of these few, since she has illustrated more flora manuals from various parts of the world than anyone before her. Some of the nicest flower postal stamps are from her hand, and so are also numerous illustrations known to Scandinavians and others. The fine arctic-alpine flower china is another of these works that lovers of mountain plants everywhere will want to secure for their homes, because it is of the same high quality as the famous but restricted Flora danica porcelain and will at once become a period piece that collectors still look for. It is expensive and still in short supply because of the great demand at home, but in America it can be ordered through the following import stores:

Norwegian Silver Corporation, 114 East 57th St., New York, N. Y. 10022

Fisher, Bruce & Co., 219-221 Market St., Philadelphia, Pa.

Rasmussen Import Co., 2210 Hennepin Avenue, Minneapolis, Minn. 55405

Scan. Am. Imports, 1306 First St., Great Falls, Montana 59405

* * * * *

COLLOMIA LARSENII—Dr. Edgar T. Wherry, our revered Editor Emeritus, comments somewhat as follows: He wrote, after reading Bob Woodward's article on *Collomia larsenii* in the April, 1973 *Bulletin* of the ARGS, "Having made a lifetime study of the family Polemoniaceae—starting with *Polemonium reptans* in a high school botany class in 1901, I was especially interested in an account of its members, particularly in *Collomia larsenii* in the current issue of the *Bulletin*. The problem as to whether this is a species or variety was referred to and deserves clarification. In 1931 I had an opportunity to study this plant on four western mountain peaks—Rainier and Adams in the Cascades of Washington, Angeles in the Olympics and Hood in the Oregon Cascades. I could see the relationship between *C. debilis* and *C. larsenii* only in that both have those 'drunken spaghetti' roots —what a gem of a characterization! In my 1944 review of the genus *Collomia* I had no hesitation in maintaining species distinctness between these two species; but alas! the compilers of recent western floras are taxonomic 'lumpers' and even 'tossers' who seize upon every excuse to reduce rare endemic plants to varietal status or even 'synonymy.' Accordingly, I feel that Mr. Woodward is mistaken in writing that *C. larsenii* is really a variety of . . . *C. debilis*. Those of us familiar with the plants in the field do NOT have to concur with botanists who seemingly are not."

Dr. Wherry mentions a native of western Montana, *Collomia debilis* var. *ipomoea,* with large rose-pink flowers as being worthy of re-discovery and introduction into rock gardens. He closes his remarks with, "Instead of taxonomic quibbling, we need studies as to how these alpines can be grown successfully in lowland rock gardens."

OMNIUM-GATHERUM

A STATISTIC OR TWO AND A QUESTION—Having received the 1973 Membership List, the editor did a bit of line counting and compared the results with the list of two years ago. It showed a net gain in membership for the two-year period of 247, or less than 125 per year. He could not believe it for the interim lists that are published every three months, for the two years, totaled 744. If 744 new members joined and the net gain was only 247 then it must follow that there were 497 dropouts during the same period. Why? It seems that we should do a better job of retaining our members once they are in the fold. Of course, death is a contributing factor, but only to a small extent. Perhaps gift memberships not fully appreciated may be another factor. Is it possible that our Society is too sophisticated or too self-centered to make an effort to retain its members? Is it that not enough attention is paid to individuals at the Chapter level or that some members do not find the Society's activities pleasurable or profitable to them? Would any of our members care to comment or to make suggestions as to why we have so many dropouts? Or to make suggestions as to how the Society can be made so attractive to its total membership that this attrition may be minimized? In a brighter vein it must be recognized that in a total membership figure of 1996, as listed in the 1973 List, the family memberships counted but as one, whereas two persons were involved. So in actual individual memberships we may add some 600 to arrive at the true number of members in the Society, bringing the number to approximately 2600. Anyway we may be glad that the Society is growing. But the question remains —what can be done to halt this unhappy attrition? Comments, please.

AGAIN THE GLIDE WILDFLOWER SHOW—"The Show Must Go On." This old theatrical saying has been well exemplified by this year's showing of wild flowers at Glide, Oregon. The originator and the moving spirit of this annual exhibition, Mrs. Raymond (Reggie) Miller, a Glide resident, had been seriously ill for some time and the loss of her guiding hand was seriously felt by those who were her aids. About two weeks before the show was to open, Mrs. Miller died in a San Francisco hospital. In spite of the shock, preparations for the show went on. It was held as usual but this time as a memorial to Reggie and the word is out that it will continue to be held and become an annual memorial to her. Is this not what could be expected of people devoted to our native plants?

The editor, aided by Harold Miller and Phyllis Myhr, acted as leader of a scheduled field trip to Glide. Some made a three-day trip of it and others did it in two days. Approximately 50 members of the Northwestern Chapter of the ARGS made the trip from Seattle; a 350 mile trip (each way) and were well paid for their time and expense. The Umpqua River part of Oregon, where Glide is and where the Umpqua form of *Kalmiopsis leachiana* is a near resident, was at its most beautiful. From Sutherlin, on Highway 5, where we moteled, the 28 mile drive to Glide over paved country roads that went up and down hill with broad sweeping curves, with the

Umpqua River on one side and the rounded hills on the other, was like driving through Paradise. Solid fields of *Camassia quamash* and *C. leichtlinii,* impossible to distinguish between the species from a moving car, were frequent. Some of these fields were splashes of deep blue, some were white, and once rounding a sweeping curve it seemed as though the road was headed for the shores of a lake. This turned out to be a field of very light blue Camassias shimmering in the soft sunlight. . . . The rounded hills to the north of us were densely wooded across the skyline but quite bare of trees and shrubs on their smooth southern slopes. There was vivid contrast between the conifer's dark green and the blue sky and the soft, light green of new grass on the bare slopes, and the deciduous trees along the road and in the middle distance demurely decked out in new spring leafage. The charm of this lovely countryside was enhanced by occasional and startling glimpses of rounded mounds of *Silene hookeri* or *S. ingramii* (there seemed to be doubt as to which was correct) of a color still being debated—call it shocking pink, carmine, vinous pink or some other educated, guessed-at color —regardless, it was highly visible. Then there were always the river and the farmlands along its banks where many of the fields were dotted with grazing sheep. All this was beautiful and peaceful after so many miles of superhighway driving!

WHY ALL THIS PULLING AND HAULING?—The pure, or should I say, total conservationists are demanding that our rare native flowers and those species that are marked for extinction because of the brutalized progress the world is now enduring, be protected *in toto.* Anyone knowing of the habitat of any of these rare or threatened plants must maintain a strict silence concerning them, lest a ravenous hoard of selfish collectors despoil them. They have a point! Then the gardeners who are most likewise conservation-minded argue that if a garden-desirable plant is known to be threatened, why not let it be collected, studied, propagated and distributed to gardeners wherever the plants have a chance for survival; thus serving two ends; the survival of the species and the pleasure of many gardeners. Actually there are two phases of this problem. First—if the plants are rare but not threatened and second—if the species is marked for extinction because of pending inroads of progress, be it logging, road building, mining, housing projects, grazing, power or dam projects or some other. In the first case perhaps we should side with the pure conservationists and strictly refrain from any action that might possibly pinpoint rare plant locations. In the latter case, where extinction is threatened, let there be organized and controlled collecting ahead of the bulldozers and an orderly dispersal to known good propagators, including nurserymen, in the hope that the particular species may be perpetuated and increased to the point where they become available for gardens in appropriate locations. If we go along with the hypothesis that beautiful plants were put in the world for the pleasure of humanity, it is difficult to see why anyone would object to such collecting. Of course, the question may be raised as to who is to organize, to collect and to disperse. Good sense, love of these natives and a sincere desire for their continued existence on this earth should dictate the proper course to take.

PINPOINTING!—A statement that a certain rare plant may be found in the mountains of western Montana, on Vancouver Island, in northern California, on the Atlantic seaboard south of the Potomac River, in the Alps or in the deserts of the Southwest, or any other large area can hardly be considered as "pinpointing." But to say or write that this certain rare alpine can be found ten and a half miles north of Podunk on the right side of the road leading to Punkville where the road first touches the shore of Lake Pothole at about 5,500 feet altitude on Mt. Penthouse and only ten feet off the road might certainly be considered as pinpointing. It is agreed that pinpointing does attest to the intimate knowledge of the writer as to this particular plant but that such statements in print may be disastrous to the existence of this plant under certain circumstances. It is fine to share knowledge concerning plants but make certain that this sharing is not jeopardizing the plants. Other knowledge, such as the successful cultivation of difficult plants, cultural methods gained from your own experiences and like knowledge, should be shared. It is selfish to know something concerning gardening not known to others, to hoard it and perhaps carry it to the grave where this useful knowledge may be lost forever. A good rule for gardeners is to share in all ways possible thus making happy other gardeners and earning happiness for themselves. Yet, do not pinpoint the locations of rare and threatened plants. This is not a hard and fast rule, of course, but good judgment should enter into the matter and be heeded. I wonder—do we all have clear consciences in this matter?

BOOK REVIEWS

LAND ABOVE THE TREES—A GUIDE TO AMERICAN ALPINE TUNDRA by Ann H. Zwinger and Beatrice E. Willard. Harper and Row, New York and London. 1972. 487 pp., over 200 drawings by Ann Zwinger, 45 color photographs, appendix, index. Price $15.00.

BEYOND THE ASPEN GROVE by Ann Zwinger. Random House, New York. 1970. 368 pp., 80 plates of drawings by the author, appendix, index. Price $8.95.

In her more recent book, Ann Zwinger, this time with the cooperation of Beatrice Willard, has carried her enthusiastic and understanding account of mountains into the alpine tundra—the land above the trees. Dr. Willard, one of America's most experienced and best informed authorities on alpine plant ecology, has provided the scientific background. (Dr. Willard, now on President Nixon's Council on Environmental Quality, was the leading mentor in organizing the course on alpine plant ecology described by Dr. Nickou in the July, 1970, issue of the ARGS *Bulletin*.) Mrs. Zwinger, who combines writing skill with artistic ability, has molded this scientific background into a readable, beautifully illustrated, and sound account of mountain tundra ecology. The authors say that the book was written for the novice. Nevertheless, though not intended as a treatise, it does have certain features that will make it exceptionally useful for serious rock gardeners.

No more charming book on the natural history of intermediate elevations in the Colorado Rockies has appeared than Mrs. Zwinger's earlier book *Beyond the Aspen Grove*. It is an account of the mountain retreat of the Zwinger family, forty acres at about 8,300 feet above sea level. An enthusiastic record, the writing is so deceptively entertaining that one is likely to overlook the fact that it is really a scientific account of the ecology of Montane Zone communities. And Mrs. Zwinger's consideration of climatic and adaptive components of the environment, as well as plants and animals of the biotic communities, justifies her use of the term "ecosystems." As a professional ecologist I can say that her use of the term is more appropriate than its use by many professional ecologists.

This tradition of an ecological approach, in a readable, informative and beautifully illustrated book has been carried over into *Land Above the Trees*. Mrs. Zwinger's style is delightful, her figures of speech are particularly apt, and her descriptions of color reflect the trained artist. Gopher mounds left from the melting snow are "gopher eskers . . . crossing and entwining in gopher calligraphy;" the leaflets of *Polemonium viscosum* "smell like an unhappy skunk." For colors, she writes, "a lapis lazuli gentian thumb-tall," "harebell carved from ultramarine," "marshes have a malachite greenness." Her accurate but delicate drawings of alpine plants include, for many species, root systems and fruiting bodies as well as flowers and leaves. Several dozen species are in the beautiful photographs, but the drawings—though lacking color—provide much that is lacking in even the color photographs.

The text is in three parts. Part One, the Alpine World, includes chapters on the alpine environment, adaptations of alpine plants and animals, and the major alpine "ecosystems" (called stand-types by some authors), e.g., krummholz, talus and scree, fellfields, meadows, heath communities. Part Two, Alpine Areas, comprises a series of chapters on major tundra areas of the conterminous United States; Southern Rocky Mountains, Sierra Nevada, White Mountains of California, Southern Cascades, Olympic Mountains, Mt. Washington. In each mountain range, the authors characterize the ecosystems. Though Mrs. Zwinger and Dr. Willard have done field work in every range they describe, the treatment among these areas is, naturally unequal, primarily because they have done much more work in the Rockies than elsewhere. And the accounts are, as might be expected, more complete for flowering plants than for other members of the biota. Part Three, Man and the Tundra, summarizes the general principle, demonstrated so well by Dr. Willard's studies in Rocky Mountain National Park, that recovery of tundra plants following damage is an extremely slow process.

Following the last chapter one finds still another 100 pages: A Comprehensive List of Alpine Plants, a Glossary, a list of References, and an Index. The Index is particularly valuable in its references to both accounts and illustrations of species of alpine plants. The list of References is an ambitious and valuable list, though it omits citations to much pioneer work. The Glossary is of well selected and briefly defined terms, but I must take issue with two definitions. "Ecosystem," in spite of Mrs. Zwinger's good operational definition, is defined as one would define a biotic community; and "timberline" is said to be the upper limit of "marketable trees—not synonymous with treelimit." "Treelimit" may be the better term, but the two

words are synonyms in ecological usage.

Perhaps the most useful part of the book for rock gardeners—especially when used in conjunction with Index, text, and illustrations— is the Comprehensive List of Alpine Plants, a 60-page compendium following the last chapter of the text. From *Achillea lanulosa* to *Zygadenus elegans,* all species of vascular plants recorded from above treelimit in the mountains covered in the text are listed in alphabetic sequence, with tabulated information on color, blooming season, natural habitat, United States, and world distribution. Over 700 species occur on this list. Even if we eliminate grasses and sedges (i.e., 60 species of *Carex*) we are left with long lists under "flower" genera, e.g., *Campanula* 6; *Draba* 25; *Eriogonum* 15; *Gentiana* 11; *Penstemon* 8; *Phlox* 6; but only one *Eritrichium.* The text clearly indicates the conditions under which many species thrive; thus, by using the List and Index together, one can often find more detailed information on growing conditions than is in the tabulated list alone.

In Summary, we have, in this book an extremely readable and informative text, beautifully and functionally illustrated, supplemented by features in an appendix that enormously enhance the value of the book for those interested in the native plants of the alpine tundra.

Gordon Alexander, *Boulder, Colorado*

THE PLANTS OF SOUTHERN NEW JERSEY by Witmer Stone (A Reprint). Quarterman Publishing Co., Inc., Boston. 1972. 944 pp—129 plates. $25.00 postpaid.

This book of almost 1000 pages was originally published in 1911 as Part II of the Annual Report of the New Jersey State Museum for 1910 entitled *The Plants of Southern New Jersey with Especial Reference to the Flora of the Pine Barrens and the Geographic Distribution of the Species.* Over 60 years have elapsed and still interest in the flora of the Pine Barrens persists as attested to by the many articles concerning it that keep appearing in the recent gardening and horticultural publications.

One ARGS member was recently heard to exclaim, "New Jersey Pine Barren plants! What is there left to write about them?" Perhaps he was right! Perhaps it has all been written. Now, in this fine reprint, we may all go back to the original and authentic accounts of the region and its plants as written so long ago by Witmer Stone.

Normally, a book of this type, written over 60 years ago about the plants of a particular area, giving locations where each species had been found, would be outdated due to the changes 60 years of progress had made in the area. In this case, however, as far as the Pine Barrens is concerned, change has been slow and the area is in many instances almost exactly as when Witmer Stone wrote about it.

The book has the following divisions: Foreword by Elizabeth Woodford; Preface as written by Witmer Stone and dated Sept. 1, 1911; Introduction (74 pages in which New Jersey is divided into districts and each described in relation to its plants). When one finishes reading this introduction he finds himself entertained and he has become a Pine Barren enthusiast.

Then there follows a Systematic Catalogue of the "Flowering Plants and Ferns of Southern New Jersey" and a detailed account of their distribution and time of flowering and fruiting—from grape ferns to thistles—all this in accordance with botanical usages. Then comes several pages of Bibliography with works by such botanists and explorers as Muhlenburg, Pursh, Nuttall, Torrey, Harshberger, Conrad, Britton, Redfield and many others listed.

A List of Locations follows—with a map of New Jersey. Each geographical location mentioned as a flower habitat is pinpointed on the map as for example—Whiskey Road B 5 which on the map indicates the vicinity of Camden, across from Philadelphia. Then comes a Glossary, so helpful to beginners; followed by an Index of common and botanical names (genus and species). Finally are all the pages of illustrations (not in color) of plants from Lycopodium to Solidago plus a very few scenic pictures of typical Pine Barrens locations. It is suggested that it would be well to read the full page advertisement in the April 1973 issue of the ARGS *Bulletin* of the Quarterman Publications, Inc.

CHIOGENES OR *GAULTHERIA*, A QUESTION OF GENETIC DEFINITION

ASKELL LOVE and DORIS LOVE, *Boulder, Colorado*

In a recent number of this *Bulletin* a question was raised as to the nomenclatural correctness of the combination *Chiogenes hispidula* or *Gaultheria hispidula*. As a matter of fact, both are nomenclaturally correct, whereas the question is one of generic definition. Since we have done some studies of these groups, we would like to present the following to those interested in this not necessarily academic question.

Botanical taxonomy is based on the classification into categories, of which the most important are family, genus, species, subspecies and variety. Taxonomists have long aimed at an evolutionary concept of these categories, and it is believed on very strong grounds of experience from exact and critical observations and experiments, that all the living world has evolved by linear branching from lower forms and that especially the categories mentioned reflect this process. The science of cytogenetics has been able to unveil some of the methods with which evolution proceeds at the lower levels at least. That has made it possible to formulate more exactly definitions of the species category, which differs from other such units by a strong barrier to reproduction, or what earlier generations called a sterility barrier. To describe these evolutionary processes falls outside the aim of this paper, but the species and its subdivisions have been shown to be clearly natural units.

It is sometimes held that, compared with the species, the genus and higher categories are mere abstractions. But it is significant that the layman identifies living things as belonging to the same genus before experience teaches him to identify species. Linnaeus, himself, was originally concerned with self-evident genera or groups of related species. The Linnaean definition

of a genus as a cluster of species which might have developed from the same prototype is not much different from the evolutionary definition which requires that a natural genus includes only species which have evolved in a linear or branched linear sequence from the same original ancestor. Linnaeus avoided genera that hybridized, and although modern taxonomists allow some crossability, but not miscibility, between the species of a genus, they try to avoid crossability between good genera. From the point of view of evolutionary mechanisms, a genus evolves into a few or many species by a differentiation of the chromosomes without changing the basic number, or by various kinds of polyploidy; the basic number is the lowest number of chromosomes met with in the sex cells of a species of a genus. A new genus, however, is frequently formed by non-multiple changes in the basic number, or by drastic changes in chromosome size and form which create an absolute barrier to crossability with its former relatives and force it into a new linear evolution of species by aid of the ordinary processes of speciation.

Since the size of a genus is without limit, some genera are restricted to a single species, whereas others may have developed hundreds or thousands of species without forming any crossability barrier that would have forced them into a separate generic evolution. Sometimes taxonomists have found it practical to subdivide homogeneous genera, or even to split them into smaller morphologically separable groups which they may even find convenient to call genera although they lack all biological barriers to crossability. As long as it is understood that this is done for convenience only and in the full comprehension of their not being evolutionarily distinct, such a procedure shou'd be permitted, because it is not a sin against evolutionary principles to separate, for the sake of taxonomical expediency, clusters that are otherwise identical. However, it is a violation of the foundations of evolutionary classification if heterogeneity is added to a category, because this is no convenience and may confuse innocent users who expect species and genera and higher categories to be homogeneous and formed by linear evolutionary processes only.

This carries us back to *Chiogenes* and *Gaultheria,* which belong to the family Vacciniaceae that included more than a thousand species and sixteen genera arranged in three tribes. One of these tribes is the Gaultherieae with eight genera, the largest of which is *Gaultheria* with its about 200 species and the smallest *Chiogenes* with only one or two.

The genera *Gaultheria* and *Chiogenes* are distinguished by several good morphological characters among which are the erect leafy stems, 5-merous flowers and the red fruit or capsule surrounded by a fleshy calyx of the former, as contrasted to the prostrate leafy stems, 4-merous flowers, and the white berries of the latter. These differences cause their separation in distinct genera, a procedure accepted by many botanists during the past two centuries. However, the many similarities of these taxa cause others to unite them under the former generic name. Linnaeus, who first described both on the basis of material brought from America by Kalm, included only the species *procumbens* in *Gaultheria* where he placed *hispidula* in the genus *Vaccinium.*

Although recent manuals of American plants place both these Linnaean

species in *Gaultheria,* this is not based on any information additional to that known by the botanists of the last century. However, recent information from cytogenetical investigations of several species of *Gaultheria* and of the American taxon of *Chiogenes* gives a strong support for a generic separation, because they show that the latter genus, or its species, *C. hispidula,* has the chromosome number $2n = 24$ and therefore the basic number $x = 12$ as in *Vaccinium* and related genera, whereas several species of *Gaultheria,* including *G. procumbens,* have $2n = 22$, 44, 66, or 88 chromosomes and the basic number $x = 11$ which is shared in this family only with the mainly southern hemisphere genus *Pernettya.* This is as clear a demonstration as possible that these taxa are distinct genera and have not evolved linearly from the same ancestor. Added to the morphological characters used to identify the taxa, this fundamental distinction strongly supports the conclusion that Linnaeus was right, and also Salisbury, when they placed the American species in different genera. There may even be a reason to suggest that Linnaeus may have been right in regarding *C. hispidula* as at least closely related to *Vaccinium,* and that it has been wrongly placed in the same tribe as *Gaultheria* by later authors using characters of little evolutionary significance.

Although this ought to be a sufficient answer to the question raised, it may be worth mentioning that *Chiogenes* belongs to a group of plants which are called nemoral and grew, in the early Tertiary, near the northern shores of the large continent called Laurasia which later split into North America and Eurasia. These plants dispersed southwards against the northward continental drift and formed separate areas in eastern North America, eastern Asia and sometimes even in southeastern Europe. Many of these species have developed distinct taxa in these areas, and it is often difficult to decide if they are good species or only races of a single species. This has also happened with *Chiogenes.* Botanists still argue if the very rare Japanese and rather common North American taxa would be better placed as subspecific races of a single species rather than as distinct species. That, however, is another story worthy of a special exercise on the effects of the isolation created by continental drift on many of our most beautiful rock garden plants.

* * * * *

THE GEORGE FOREST BOOK—This reprinting of a book published in 1935 by the Scottish Rock Garden Club has been distributed to many ARGS members throughout the United States and elsewhere. This book has been and is still being read with avid interest in the man himself and in the results of his strenuous but much too brief life by those members fortunate enough to possess this book, and they are truly grateful to the SRGC for making its reprinting possible and to Mr. P. J. W. Kilpatrick, the editor of the Club's Journal, for his generous efforts toward sharing this book with so many ARGS members whether or not they were likewise SRGC members. To read this book and the current issue of the Club's Journal (March 13, 1973), in conjunction with each other is a delightful experience as well as an educational one.

ADDENDA FARRERIANA

CLIFTON L. MERRILL, *No. Bath, Maine*

In 1943, appeared "The Book of Naturalists, An Anthology of the Best Natural History," edited by a famous author-naturalist, published by a world-known firm. As usual with works of this kind, it contains representative excerpts from the field; capping each selection is a mini biography of the author. Only one of these thumbnail sketches will concern us here. The reason? Because of the chosen erratum in the nomenclatural equivalent of the type of rock garden Reginald Farrer excoriated collectively as (1) The Almond Pudding Creation; (2) The Dog's Grave of Flat Stones; (3) The Devil's Lapful. The selection which it heads is "Changola" from Farrer's "Eaves of the World."

The offending passage opens; "John Farrer (1880-1920)." "John?" for "Reginald?" What blasphemy! One imagines Farrer, in shock, exclaiming: "Backward reels the battered mind, befalls next what knows who!"

What the irascible Farrer would have said farther to this affront to his identity staggers belief. Suffice it to observe, that by no stretch of the imagination could the recipient of the barrage consider himself the victim of an attack by doves.

We like to think that Heaven has a purgatorial program designed to mollify the all too human passions of those in residence. Doubtless, Farrer has mellowed to a degree from such therapeutic ministrations. Nevertheless, we greatly fear that, in the Hereafter, the erring anthologist will be forced to knock—and wait awhile—at the Gates of the Blest, where Reginald Farrer, safely inside, lolling on his throne, his halo slightly askew, might just view the culprit's predicament with equanimity!

* * * * *

IF YOU INTEND TO VISIT NEW ZEALAND—By all means contact Mr. James Le Comte at No. 2 R. D., Ashburton, N. Z. He is a member of the International Relations Committee of the ARGS of which Sallie D. Allen, of Seattle is the chairman. Jim, whose article, "In Search of Aciphylla" appears elsewhere in this issue, writes, "Anyone interested in the flora of New Zealand should contact me (by airmail certainly) if they intend visiting this country and I would advise them of the best places to visit in the time they have available. I cannot promise guided tours but under some circumstances such tours might be arranged."

* * * * *

MORE ABOUT TRILLIUM FRAGRANCE — Mrs. Edith Dusek of Graham, Wash., a new ARGS member, writes: "As a new member though a wildflower addict for close to 40 years, I was most interested in the article on scent in Trilliums. When curious, one good way to get an answer is to ask the plant. So I did! The result, after sniffing a large number of plants of *Trillium ovatum*, is that some are sweetly fragrant, some on the phooey side and some have no odor at all. It could quite possibly have to do with the number of days a blossom has been open."

FROM THE NEW SEED EXCHANGE DIRECTOR—Dr. Earl E. Ewert sends this message to all those who plan to send seeds to the Exchange, "The ARGS Seed Exchange might better be designated as the Donor's Seed Exchange. No donors—no Seed Exchange! As simple as that, but often forgotten. Many donors send dozens and hundreds of seeds of rare and unusual plants, for which we are all grateful. They send clean seeds labeled clearly, either typewritten or printed and save aged eyes many hours. Because the Seed Booklet, no longer a mere list, must be compiled and sent to the printer, it is necessary to make Nov. 1 the deadline for the receipt of seeds. It is estimated that some 4000 species and varieties will be received. So start early and work late. Thank you all."

* * * * *

BACK VOLUMES OF THE BULLETIN

We have for sale an accumulation of back volumes and individual numbers of the BULLETIN. The available material is listed below.

VOLUME 1 Individual numbers 2 & 6
VOLUME 7 Individual number 4
VOLUME 8 Individual numbers 3, 4 & 5
VOLUME 9 Individual numbers 1, 3, 5 & 6
VOLUME 10 Individual numbers 2, 3 & 4
VOLUME 11 Individual numbers 1, 2 & 4
VOLUME 12 Individual numbers 1, 2, 3 & 4
VOLUME 13 Individual numbers 3 & 4
VOLUME 14 Individual numbers 2, 3 & 4
VOLUME 15 Individual numbers 3 & 4
VOLUME 16 Individual number 3
VOLUME 18 Individual numbers 2, 3 & 4
VOLUME 19 Individual numbers 1 & 4
VOLUME 20 Individual number 2
VOLUME 21 Individual number 3
VOLUME 22 Individual numbers 3 & 4
VOLUME 23 Individual numbers 1, 2 & 4
VOLUME 24 Individual numbers 3 & 4
VOLUME 25 Individual numbers 1, 2, 3 & 4
VOLUME 26 Individual numbers 1, 2, 3 & 4
VOLUME 27 Individual numbers 1, 2 & 4
VOLUME 28 Individual numbers 1, 2 & 4
VOLUME 29 Individual numbers 1, 2, 3 & 4
VOLUME 30 Individual numbers 1, 2 & 3

All individual numbers are one dollar each.

A large accumulation of certain numbers permits us to offer ten different numbers, the Society's selection, for $5.00. (Order the "Bargain Package.")

Postage will be paid by the Society.

Members desiring issues containing articles referred to in the index by volume and page number may obtain the issue, if available, by referring to volume and page number in ordering. Order from the Secretary. *Please make checks payable to* —

American Rock Garden Society
90 Pierpont Road **Waterbury, Conn. 06705**