

BULLETIN

of the

AMERICAN

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January, 1966

No. 1

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Albert M. Sutton, Editor

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PULSATILLAS IN THE WILD AND IN OUR ROCK GARDENS

JOS. STAREK, *Prague, Czechoslovakia*

One of the local most popular and showy native flowers is undoubtedly *Pulsatilla* (Pasque flower)—Ranunculaceae. Some species and subspecies of *Pulsatilla* appear nearly in every country of the Northern hemisphere, but it is said that European pulsatillas have specially interesting colour forms of this genus. Most species and varieties are in violet and blue. Other colours appearing in this genus are sky-blue, rose, red, brick-red, brown, white, creamy-white, and yellow. Main native species in Czechoslovakia are:—*P. alpina*, *P. vernalis*, *P. patens*, *P. grandis*, *P. halleri* ssp. *slavica*, and *P. pratensis* with a number of varieties. Some of them grow in light forests, meadows, and others on hills, rocks and mountains. Stalks, leaves, and roots have some medicinal properties in limited quantities, — otherwise this plant is stated as poisonous.

In the eastern part of our country, in semi-mountainous areas of Slovakia, some widely spread species are deep-violet, so deep that village people use blossoms of this plant for painting of boiled eggs, which is an old custom for the celebration of Easter holidays. (They boil eggs in peels of onion to paint them yellow and rust, in green-rye to make them green and in flowers of *Pulsatilla* to paint them blue and violet.)

All species are absolutely hardy and most of them endure hot and dry periods in summer. I have seen some lovely forms in Slovakian mountains on extremely severe places, with frosty winds in winter and unbearable heat in summer. The silver-white fur on the buds, stems, and other parts of the plant was always very rich. It is excellent protection of very early flowers against regular night frosts and against evaporation during strong mid-day solar activity in the mountains. Horticultural experts measured the temperature inside the buds and found that it was six to nine degrees higher than the temperature outside.

Due to the general popularity and the specific importance of the genus *Pulsatilla*, all species in the wild are protected by the law for the protection of wild plants in Czechoslovakia. This law includes more than one hundred genera and species of natives appearing in this country. Some of them are endemic plants. The law prohibits any removal of them from their natural places, and the cutting of flowers or leaves. An exception in this law has been made only for employees of scientific institutions, like botanical gardens and for some plantsmen. Fortunately the fine genus *Pulsatilla* produces seed abundantly, and it is

possible to collect some. It would be really unreasonable to try to remove this plant from the wild, especially when we know that roots of all *pulsatilas* are rather long.

Our most beautiful *Pulsatilla*, an endemic plant from the Carpathian mountain and semi-mountain areas, with largest flowers is *P. halleri* ssp. *slavica*. It is the earliest of this genus, and starts flowering, with suitable weather, already in the second half of March, when day weather is often sunny and warm enough, but nights are round five degrees below zero. Often it is flowering with *Bellidiastrum michelii* (syn. *Aster bellidiastrum*), *Adonis vernalis*, etc. A single plant has two to ten flowers in the wild, but on a suitable place in the rock garden it is not unusual to see older plants with eighty to one hundred flowers. Period of flowering is from three to four weeks. Flowers open broadly on sunny days and shut in cloudy weather and in the evenings. The diameter of a single flower of *P. halleri* ssp. *slavica* is sometimes more than ten cm. (four inches). The colour is violet, though some of them are light or deep violet, with a large yellow tassel of styles. The combination of these two colours makes it very decorative indeed. Leaves develop during or after flowering and with seed heads they still keep the reputation of a very decorative plant. The height of a flowering plant is five to ten cm. according to the location. With ripening the seed stem elongates to about fifteen to twenty cm. or more. *Pulsatilla halleri* ssp. *slavica* (Reuss) and *Pulsatilla grandis* (Wenderoth) possess special horticultural value.



Pulsatilla patens

Dr. Jan Triska

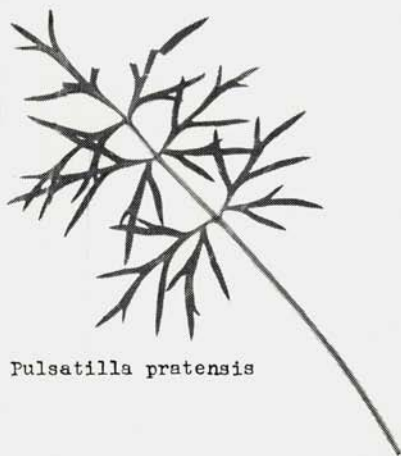
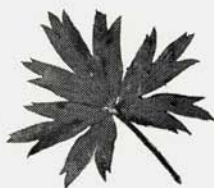


Pulsatilla pratensis ssp. *nigricans* var. *ochroleuca* in bud Dr. Jan Triska

P. grandis (syn. *P. vulgaris* ssp. *grandis* Zambels) is lower, with smaller flowers and blossoms two weeks later than *P. halleri* ssp. *slavica*. Some local plantsmen mention already *P. grandis*, *P. grandis* var. *alba*, and *P. grandis* var. *rubra*. *Pulsatilla vulgaris*, *P. grandis*, and *P. halleri* are in close relationship and produce many natural hybrids.

Pulsatillas are propagated usually by seed. Only some exclusive garden hybrids are divided, but this way of propagation of this plant is sometimes difficult, because older ones have usually a single strong root. Fortunately, many a wildling from seed is more beautiful for rock gardens than some cultivated varieties.

Best germination of *Pulsatilla* seed is shortly after collecting it, but I have had also a good experience with sowing them in autumn or early spring. Three years ago I raised a number of nice varieties of *P. grandis* from seed delivered by Pearce Seed Co., Moorestown, N. J., which I sowed in February and obtained excellent germination. I had believed that they would be different from ours, but unfortunately they were perhaps also from Europe. So I think that proper storage of seed between collecting and sowing influences substantially this seed germination.

*Pulsatilla grandis**Pulsatilla halleri* ssp. *slavica**Pulsatilla pratensis**Pulsatilla patens*

When sowing a limited quantity of seed, the best way is to prick every seed separately into the soil about five to eight mm. deep and it was recommended to me by an old gardener not to cut off the "ripe styles", "the furry appendix of seed", which is from two to five cm. long. These appendixes are very useful in the wild as a self-propelling system which enables the seed in dry weather to travel for many miles, and in wet weather they help the seed to bore into the soil, like a screw. When sown in summer, shortly after collecting, the seed germinate during three to six weeks and by fall we grow nice plants and have the advantage of one year in comparison with planting the next spring. Young seedlings are either planted directly into their permanent place or cultivated in narrow, deep pots and then transplanted. The most suitable time for planting is in the early spring. About two-year seedlings flower for the first time, but they reach their full decorative value in the third year, when the plants are properly developed.

The sunny and well-drained place in the rock garden is the best one for this plant. We grow them in the neighborhood of some prairie grasses, with *Adonis vernalis*, *Draba aizoon*, *Iris pumila*, *Alyssum montanum*, *A. saxatile*, *Crocus*, etc. The soil should be light and some species prefer it slightly alcalic or acid. Those alcalic-liking appear in the wild on sunny hills and mountains in a mixture of natural humus and small limestone gravels. Plantsmen use $\frac{1}{2}$ of slightly alcalic turfy soil, $\frac{1}{4}$ of soft peat, and $\frac{1}{4}$ of river sand. The latter (acid-liking) are in peaty and sandy soil in light forests and meadows and flower also in semi-shady places. Pulsatillas grow slowly, but steadily and no manure can accelerate their growth—it can only kill them.

During the last few years I have gained some good experience with the forcing of *P. halleri* ssp. *slavica*, by a simple method. When we grow a few plants in pots in the garden, we can dig them out from snow in January, and by placing them behind the window of some unheated room, or very cold alpine-house it is quite enough to produce a number of nice flowers at an unusual time—a time when we dream about the forthcoming season.



Pulsatilla pratensis ssp. *nigricans*

THE VIEWS OF A NEW MEMBER

ELIZABETH PETERSON, *Seattle, Wash.*

Our distinguished president, in the last *Bulletin*, speculated on just what the American Rock Garden Society means to its members and what purpose the *Bulletin* should serve. I feel an immediate urge to respond with my own feelings and those expressed in conversations with other members.

First and foremost, the *Bulletin* (to me) means KNOWLEDGE. We want knowledge of plants, geology, ecology, and just plain bugs that eat the plants. We want to enjoy descriptions and pictures of the gardens of others, as a continual source of inspiration and a means whereby we can sometimes solve problems posed by certain indifferent areas of our own.

However, life is too short to disperse one's personality and the contents of the *Bulletin* over too wide an area. Let us concentrate on horticulture. If there are members who wish reports of who attended what, who served and who poured, there are organizations to supply these desires. If they wish to see their names frequently in print, the society pages of the news media can render such service. Certainly it is vital to see the names of our new members, but this is handled adequately by the membership list and the excellent "Welcome! New Members" column.

As has often been printed before, we do want to see names, but names under the titles of articles and connected with items in the Interchange column. In this regard, I can say that I wallowed in an inferiority complex before attempting an article — but I made it! I felt I had reached the first rung of the ladder to exciting new experiences. This proved to be true. I acquired confidence in my ability to communicate. I obtained more information about plants and gardening, and have entered into inspiring, lovable correspondence with those whom I would otherwise not have met. In the *Bulletin* please tell us about the surroundings in your state, the weather problems, the flowers in your garden and what you have done with them. If you can write a letter to a relative you can write well enough for the *Bulletin*! Our editor is there to help if you feel your English is not the best.

The forming of more local groups is of inestimable value; and here one reaps a harvest far in excess of what one sows. It is here that older members should go out of their way to welcome the new people and invest them with their enthusiasm; and the newcomers might remind themselves to put a tentative best foot forward. Becoming acquainted in a room full of strangers is not always easy, but one of the best ways yet known is to volunteer one's services. People who sit quietly in a corner miss all the fun.

As for public relations, we do not want to attract to our Society a group of selfish, envious, trophy-chasing competitors. We do want publicity as an erudite, happy group who can inform the increasing number of small property owners of the lovely, low-growing landscape material; preserve plants in their native haunts; propagate and distribute those adaptable to new surroundings, and one which can provide joyous expeditions through the gardens of others and through God's great out-of-doors.

Insofar as competitive shows are concerned, this is surely, is it not, the quickest way to discourage members who wish to learn about and grow *plants*? Competition is so keen in America that heart attacks increase and our mental institutions overflow. We need cooperation and restful stimulation (if there is such a thing), and the thrill of widening horizons. There simply isn't time to compete when we have such abundant, radiant plant material to collect, understand, propagate, and share.

Finally, may I say this? The American Rock Garden Society is the first organization I have found in which I have seen no back-biting, no scrambling for personal honor; only an ardent cooperation of friendly members in a creative experience; people who can make the magnificent outdoor experience an even more sparkling one. I pen these comments as a fairly new member who wants the Society to live up to my first high expectations. Please, PLEASE, let us retain our high standards!

TASMANIA'S CRADLE MOUNTAIN RESERVE

MARK WOLFHAGEN, *Ross, Tasmania*

Although not high, the Tasmanian Mountains give a feeling of grandeur altogether disproportionate to their size. This is largely due to the fact that the mountains are dolerite cores that have been left by water and glacial erosion in the distant past. They stand perhaps 2,000 feet above their upper valleys, which fall steeply themselves into gorges for perhaps another 2,000 feet down to heavily timbered country of beech and eucalypt which provides the State with a substantial hardwood industry.

The upper valleys are steep-sided from glacial action and often partially blocked at their lower ends by glacial dump. This, coupled with a rainfall of 80 to 120 inches, makes these valleys very wet and often studded with small lakes and tarns, generally surrounded by pencil pines (*Athrotaxis cupressoides*), a very shapely small tree, eventually reaching 60 to 70 feet, but taking 800 years to reach maturity.

I think possibly the best way to describe the most spectacular plants is to simulate a climb up to the mountain top from one of these upper valleys and to note what we see on the way. Naturally there are many more plants than described; to try to take in all plants would be far too confusing. Something to remember in this description is that a northeastern aspect here is equivalent to a southwestern aspect in the Northern Hemisphere.

We will start at a mountain lake at 3,000 feet elevation. The terrain at the head of the lake slopes steeply upward to the foot of Cradle Mountain (5,100 feet). Around the lake, which is held by a glacial dump, is mainly button grass, not a very interesting plant, but of an attractive bronze-green colour which dominates most of the valley floors of the region.

On the banks which rise above the low water table are to be found bottle brush (*Melaleuca* spp.) with quite an attractive mauve flower in the characteristic shape, but rather an untidy scrubby bush about three feet high. At a lower level we come across one of the more attractive plants, *Boronia rhomboidea*, a wiry plant about one foot high with roundish leaves of an interesting reddish-green, which when crushed smell pleasantly of turpentine. It has terminal flowers, either singly or a few together at the ends of the branches, each flower like a waxy star, white inside with a pink reverse. Although the flowers are barely one-third inch across, the plant makes a very pleasing sight en masse, flowering mainly in spring and summer.

Advancing up the valley on the left or northern facing slope, we have a very sparse growth of cider gum (eucalypt) only eight to ten feet high growing out of very rocky soil. One of the gems of this drier slope is the guinea flower (*Hibbertia angustifolia*), a very prostrate plant which drapes itself over rocks and scree and has golden flowers about one inch across, flat on top of the plant. It is a spring and summer flowerer, but if the season is kind, it will flower on into the autumn. In association grows another of the *Boronias* (*B. citriodora*),

a rather taller shrub of about two feet, the leaves pinnate and dark green with a strong smell of lemon when crushed. It is a more abundant flowerer than *B. rhomboidea*, and the flowers seem larger.

River Rose (*Bauera rubioides*), although rather a lax grower, can make the lower slopes into a sheet of white, scrambling over rocks and logs. The flowers are very reminiscent of those of the Tea Tree (*Leptospermum*). They are up to one half inch across and are saucer-shaped. This plant is one of our representatives of the Saxifrage family.

Sparsely scattered through the undergrowth is one of our most showy natives, *Blandfordia marginata*, or Christmas Bells, one of the Lily family, arising from a sheathing, grassy base to a flower stem one or two feet high, topped by eight to ten drooping bells one and one-half inches long, of scarlet edged with lemon-yellow, looking quite out of place in the scraggly undergrowth.

Turning to the southern slope, we find it heavily timbered with evergreen beech (*Nothofagus cunninghamii*), one of the large timber trees at a lower altitude. This forest is most interesting, mainly through its complete lack of undergrowth and a canopy of dense foliage. Everything is wringing wet. The only inhabitants of this primeval atmosphere are mosses and a few ferns and fungi. In odd gullies running into this forest we find our only native deciduous tree (*Nothofagus gunnii*) growing here to its ultimate height of twenty feet. At higher altitudes it becomes a dense congested shrub known to most bush walkers as Tangle-foot. At other breaks in this forest we come across the Giant Grass Tree (*Richea pandanifolia*), a member of the *Epacaris* family, with a tuft of leaves three to four feet long at the top of a bare eight-foot stem.

When we start to climb to the steep head of the valley at about 3,800 feet, we leave the tree line and come across some of the lower altitude plants now growing much more dwarfed and generally more floriferous. *Richea scoparia*, growing at lower levels, is six feet high, but above the tree line is usually only about two feet. It has spikes of bell-shaped, rather fleshy, small flowers in white, pink, red, yellow, or orange; the leaves tightly packed on stems alternately, hard serrated and recurved, giving it the common name of Ram's Horn Richea.

Scattered in more open aspects we find the Mountain Rocket (*Bellendena montana*), a very attractive shrub of about two feet with rather leathery leaves, spatulate, ending in three equal lobes. This is one of the local members of the *Protea* family. The flowers are in rather dense terminals, white, and reminiscent of a horse's tail. These flowers ripen into flat membranous seed, which in late autumn turn a most dramatic scarlet.

At about 4,000 feet and above we start on the cushion moss family, of which there are four or five species, most with impossible names, and belonging to three separate genera. They range from sage to bright green, are often intermingled, and grow some three to four feet across though only two to three inches high, and so dense and hard that they will support a person's weight, hardly leaving a mark. Each rosette of these plants is only one-quarter inch across.

At the steep valley head we come into country locally known as "ploughed fields." Large dolerite blocks were lying in a jumble, ranging from perhaps 200 to 300 pounds to twenty to thirty tons, usually fallen from jagged cliffs above. On these cliffs are the steep clefts where small quantities of soil have collected, and where we find some of the smaller plants of more interest to alpine gardeners. One of the more robust plants is the Mountain Lily (*Milligania longifolia*) growing in a tufted form of sheathed, grassy leaves like a pineapple top, with a long arching spray of creamy flowers with red throats. On the steep, gritty slopes grow numerous small herbs. One is a native raspberry (*Rubus gunnianus*) with oak-shaped leaves similar in form to *Dryas octopetala*, and the typical

flower of the *Rubus* family, but it lies flat on the ground. Another is *Cardamine hirsuta*, a charming little white-flowered crucifer, although unfortunately only an annual.

Growing in clefts and raising dainty heads of white, five-lobed flowers with lavender throats, are plants of Eyebright (*Euphrasia brownii*). In association with these there are numerous members of the daisy family, which defy classification by an amateur, but which are none the less very attractive both in foliage and in flower. Equally attractive are the fascinating white and yellow everlasting.

HEPATICAS

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

Like Wordsworth's Lucy, "Fair as a star, when only one is shining in the sky," the early blooms of hepatica have the stage to themselves. Invidious as I have always considered Wordsworth's lines to Lucy, it is certainly true that the hepatica calls to itself every merited attention by leading the parade of spring blossoms and by gleaming "among the untrodden ways beside the Springs of Dove," without rival.

There on the forest floor, generally on a slope, with a mixture of deciduous trees above, in the pure light of early spring, suddenly the blossoms burst into bloom amidst the dun and dreary fallen leaves, with barely a sprig of green to compete.

It is not entirely, I think, sentimental associations with the first warm ambient air or the tingle of unobtrusive but noted bird-song that win our affection to the translucent loveliness of the "Liverleaf in bloom." It is a thoroughly admirable plant.

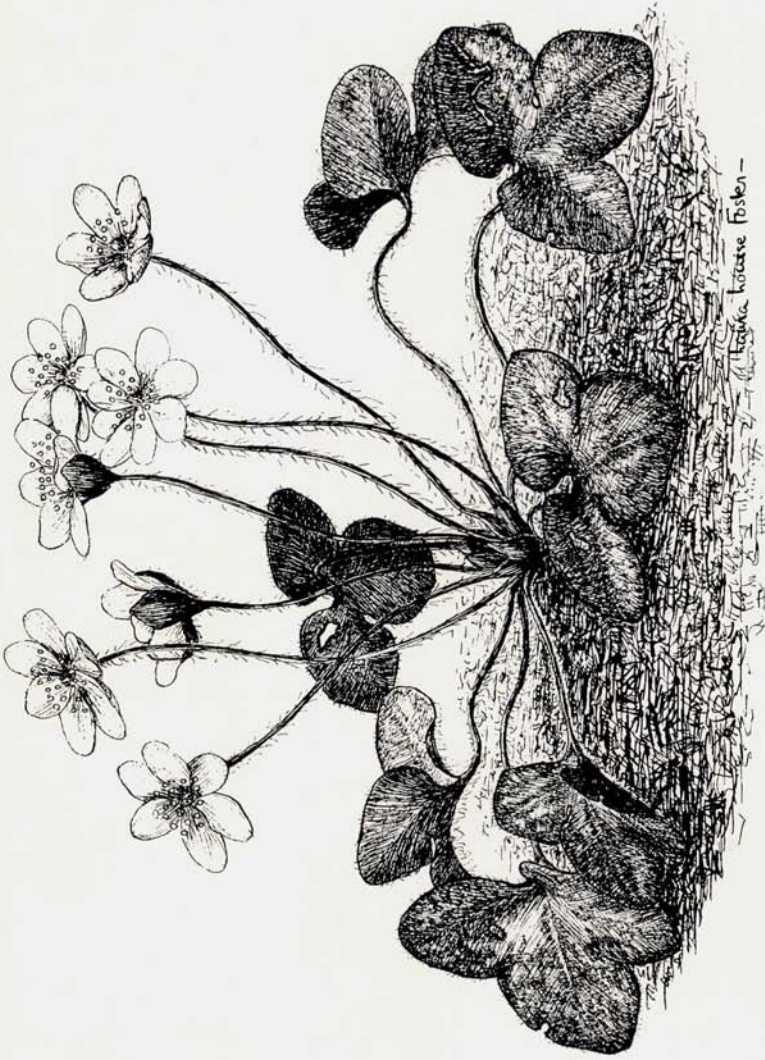
Mr. Fred Lape, member of ARGS and director of the George Landis Arboretum in Esperance, N. Y., has caught the magic of hepaticas in the spring in the following poem quoted by permission of the author from his book, *A Bunch of Flowers*.

HEPATICAS

Spring returns first to the south sides of woodlots, where the trees warm their feet all day in sunshine, and robins coming in flocks scatter the dried leaves, digging for grubs. Here the first soft maple buds spread their red plumes; warblers flit in the branches; where frost has split the bark, the sap runs in a dark stain, and flies buzz around and settle.

Below on the hummocks of warming earth, hepaticas open: blue flowers and white flowers, and the dark pink ones that flower pickers are always looking so hard to find. The air is sweet with their smell; their tiny faces turn to the sun, follow the sun from east to west all day as children follow day long the steps of one they love; and when light dims under the leafless trees, they close their petals as children their hands in sleep.

In America, this genus of Ranunculaceae is separated into two species on the basis of leaf shape: *H. americana* with three rounded lobes to the leaf-blade, each lobe usually broader than long; *H. acutiloba* with the three leaf-lobes ending in a point and generally longer than broad. Occasionally the two species (if they are separable genetically) intergrade in areas where the two grow close together. Puzzling intergrades certainly exist under circumstances where the two extremes are recognizable and contiguous.



Hepatica americana (Sometimes known as *H. triloba* var. *americana*)—

$\frac{3}{4}$ life size.

There are a few rather non-scientific differences, at least between the extremes of the two species. *H. americana* generally has shorter, more hairy flowering scapes. The leaves are not often more than tri-partite, whereas in *H. acutiloba*, subdivisions of the three lobes are not uncommon. The flower color in *H. americana* is generally in shades of blue, or white, while *H. acutiloba* tends away from blue to white and pink. At least these are casual observations in northwestern Connecticut. The texture and color of the foliage in *H. acutiloba*, despite variety in lobing, is uniformly shiny, coriaceous, and unmottled. In *H. americana*, the hairier leaves may vary considerably in size at maturity, with actual pygmies consistently growing as local clones. Likewise mottling of the leaves may occur in *H. americana*. In both species the flowers open before the new leaves uncurl their soft green, but the old leaves usually persist.

There seems to be no difference in the blooming season of the two species and since both will thrive in identical sites in the garden, even a mixed planting of the two will bring a very early display of bright blossoms of varied hues. The cup-like flowers open in the late morning, gradually dilating until they are almost flat. They move with the sunlight, even in shady corners, and close by evening. Shade is their preferred site in nature. In rich soil full of leafmold, they may be grown in positions that receive up to fifty percent full sun. In fact, in open sites, if the soil is not parched and is enriched with old manure, the plants will assume massive proportions with myriad blossoms on long stems.

When grown in sizable groups, the hepaticas are a delight at all seasons. The leaves are evergreen, firm textured and elegantly proportioned. As fall approaches, the polished green of the foliage assumes warm tints of ox-blood and dark wine. The shape and autumn color were once thought, in fact, to be the Creator's mark upon them as fitting cure for complaints of the liver. For centuries, which we look back on as less pragmatic than our own, plants and their study could be justified only as they were thought to be practically useful to man. Now, thankfully, we can accept hepaticas and such as existing in their own being, beautiful and irrelevant in nature. We bring them into the garden, balm not so much for a crippled liver as for the impoverished spirit.

Nor are we limited to the two American species, varied as they are. In Europe there are likewise two species: *H. triloba (nobilis)* and *H. transilvanica (angulosa)*. The former, which may also be listed as *Anemone hepatica*, is hardly to be distinguished from the American species, coming very close to an intermediate between our two species. This one ranges in all the temperate European woods, into parts of Asia and on around the globe to America (some botanists classify *H. americana* as a variety of *H. triloba (nobilis)*). But there are wide gaps in Asia and western America.

In the Near East appears the other species, *H. transilvanica (angulosa)*. These can be readily distinguished by the leaves, which have each shallow, broad lobe pinked at the tip into a series of blunt notches. The notable clone *H. × media* 'Ballard's var.' or *H. ballardii* is vigorous in foliage and has large sky-blue flowers. It is purported to be a hybrid of the two European species.

It is possible to suggest, however, that this horticultural clone is merely a selection of *H. transilvanica (angulosa)*, which it more nearly resembles. Moreover, it is possible that all hepaticas are but variants of a single circumpolar species with local variations of leaf pattern. Color variations in the blossom are abundant in nature, more so, perhaps, in one "species" than another, or one locality than another. Soil preferences indicated in some botany books where, for instance, *H. acutiloba* is assigned to calcareous soils and *H. americana* to acid soils do not appear to stand up in the wild in northwestern Connecticut and are of no significance in the garden.

Color forms have been recognized and selected and vegetatively propagated, as have multi-sepaled and double forms. Others have been selected for size of blossom or shape, size, and color of foliage. Desirable as all of these are for garden purposes, the hepaticas are not so frequently seen in cultivation as they deserve, and there are many questions about them that are not answered in the available horticultural literature.

For instance, is there chromosome difference among so-called species? What is the soil pH tolerance of the European and American hepaticas? What is the best time to divide plants of desirable forms which can be reproduced only vegetatively? Is there any other method of vegetative reproduction beside the slow method of division (divisible not more than every other year under normal growing condition)? How long do seeds take to germinate?

This last question is one that baffles me on the basis of personal experience. I do know that hepatica seed falls green and remarkably soon after flowering. I do know also that young plants, with only the two oval cotyledons apparent, are found around mature plants in nature at various times: from early spring to late summer. Yet I have not had sowed seeds germinate in pots, flats, or open ground. Fresh green seed has been sowed. Some has been subjected to artificial freezing. But so far not a plumule.

I would be happy to hear about experiences of other gardeners with hepatica seed.

The search for desirable forms in the wild is not only a pleasant springtime enterprise (if rock gardeners can ever be torn away from the garden in spring), but may also result in the introduction of unrecorded forms before our changing environment snuffs them out. So far as I can discover no fully double forms of the American species have been listed. Pale blues, whites, and pale pinks of varying flower size are to be found in any considerable patch of hepaticas. The back cover of the Cranbrook Institute of Science *News Letter* for April 1958 shows colored pictures of ninety variants in one woodlot in Oakland County, Michigan.

Good strong clear blues, real pinks, and pure whites of substance and size are all to be sought; and, of course, the illusive true doubles. If found, these are all quite easy to transplant in full flower. Merely put them in a woody site with a rich, well-drained soil; water them well at transplanting. If they measure up as outstanding when grown side by side with the best, treasure them, divide them, share them.

It has taken ten years to build up a stock and introduce into the gardens of friends *H. acutiloba* "Millstream Pink." This is a vigorous plant with large blossoms of vivid, deep pink, an outstanding individual in any collection. Distributed now into many gardens, this solitary plant, found after long search amidst hosts of plants in many sites, will perhaps persist in cultivation. It might have been destroyed in the wild!

USE OF SEMI-MIST SYSTEM IN SOUTH-EASTERN PENNSYLVANIA

LEE M. RADEN, *Chester Springs, Pa.*

After the painful experience of having to watch my choice alpiners wither and die during the droughts of 1962 and 1963, I thought perhaps the time had come to switch to a cactus garden and become a customer of Claude Barr's. But then, as any genuine gardener knows, challenge is our very bread! So I decided to face the problem "head-on," so to speak, by installing a semi-mist system, using shrubby heads every six, eight, or ten feet, depending on the terrain. Not only has this turned out to be the garden's (and the gardener's) salvation, but it has

also resulted in an absolute explosion of plant growth and produced outstanding winter and summer hardiness for most plants.

The gardens at "Schytte on Pickering" are situated on a sheltered hillside, three hundred feet above sea level, facing the south. They begin at the top of a four-foot dry wall composed of native limestone. Plants trickle in and out of the dry wall at will and since the initiation of the "mist program", seed themselves freely in the most fantastic places.

I use two types of mulch—wood chips and small granite chippings. These are distributed where a plant requires either one type or the other, making up a patchwork quilt of granite chippings and wood chips, with complete disregard for sun-lovers and shade-lovers, as we have sun, sun, sun, with the exception of some light shading by Norway pines in a few spots.

The important factor being that all areas are covered. The mist system heads are in some instances placed almost on the ground, or—as in the case of azaleas—three to four feet above the ground. At the present time I have fifteen heads operating. They are fed by one and one-half inch plastic pipe from a centrifugal pump delivering 1,500 gallons of water per hour.

During the heat of July and August, watering is done for about two hours every other day. Contrary to popular consensus, I can mist in the morning or in the afternoon, in the evening, during sunlight, or during cloudiness—it just does not seem to matter! What counts is the marvelous drainage through our sandy loam and the use of some kind of mulch. I have never noticed mildew or sunburning on wet leaves.

Plants that formerly sulked showed renewed vigor in just one year and now bloom profusely. I refer to *Saxifraga*, *Campanula*, *Dianthus*, *Androsace*, dwarf rhododendren, dwarf conifers, *Arenaria*, *Armeria*, *Draba*, *Cyclamen*, *Epi-medium*, *Linaria*, and *Genista*, to mention only a few.

I know, of course, that not everyone has such an abundant water supply at their disposal; however, this should not present a problem because these mist heads can just as well be fed through a three-quarter inch hose from any available source of water, and it should still be possible to duplicate my results.

In addition to healthy and vigorous plants, this watering will reward you with an extra bonus—numerous seedlings of hard-to-germinate plants will soon pop up all over your garden, probably so much so that you will have difficulties trying to decide which ones are weeds. I attribute this to the gentle, evenly moist conditions prevailing under the mulch.

TWO LATE-BLOOMING SEDUMS

ROBERT M. SENIOR, *Cincinnati, Ohio*

The most attractive Sedums that we grow in our rock garden are *Sedum cauticola* and *S. sieboldii*. They are perfectly hardy in a light soil, in full sun. Moreover they bloom when the rock garden is almost devoid of flowers. This year *S. cauticola* started blooming about the end of September, and *S. sieboldii* about two weeks later.

Both of these plants have leafy, unbranched, drooping stems arising from the base, that are about six inches long, with masses of rose-colored flowers terminating the stems. Even when they are not in bloom, they cannot be mistaken for each other, since *S. cauticola* has opposite pairs of stem leaves that are almost round and which narrow at the base into a very short petiole, whereas *S. sieboldii* has stem leaves in whorls of three, and are sessile. Moreover the color of the leaves is different; those of *S. cauticola* of a dull grayish-green color; those of *S. sieboldii* are lighter colored, with brownish margins. The flowers of both plants

are rose-colored, but those of the latter are just a trifle brighter, and might be described as rose-pink.

About forty years ago, R. L. Praeger, an Irishman, wrote a monograph on this genus, entitled, *An Account of the Genus Sedum, as Found in Cultivation*. This book was profusely illustrated, and today is still widely consulted by those interested in this genus. Apparently he was the first botanist to describe *S. cauticola*.

During the last few years a Swedish botanist, Harald Froderstrom, has published a book, written in English, entitled, *The Genus Sedum*. At the end of the book he has worked out a key to all the species that he described. This book we consulted to see what he had to say about the two species above mentioned. Much to our surprise, whereas Praeger had given them specific rank, Froderstrom classed them as subspecies under *Sedum telephium*, a plant that I had always thought of as having stout, erect, leafy stems that in no way resembles either *S. cauticola* or *S. sieboldii*. At any rate, he calls the one *S. telephium* ssp. *alboroseum* f. *cauticulum*. As for *S. sieboldii*, he drops that name entirely, and simply calls it *S. telephium* ssp. *alboroseum*.

It is very unlikely that we amateur gardeners are going to adopt Froderstrom's classification. Moreover, in future catalogues of nurserymen, I feel confident that these plants will still be listed as *S. cauticola* and *S. sieboldii*.

FOR THE FIRST TIME IN BELANSKY TATRAS

OLGA DUCHACOVA, *Prague, Czechoslovakia*

(Editor's Note)—This article is published here as received from the author, with a minimum of editing.

I suppose that some of you know Czechoslovakia as a small socialistic country behind the Iron Curtain, which is true, but I am not sure if you are aware that this small republic in the heart of Europe is a country full of attraction. Perhaps this sounds like an advertisement of Cedok, a Czech Travel Bureau, but it is true, believe it or not. The natural face of my country is very charming and varied, and what is important for us alpine plant lovers, there are lots of mountain ranges, the highest and most interesting of which are High Tatras in Slovakia, the eastern part of Czechoslovakia.

This impressive granite massif towers up to the sky from the lowlands quite suddenly and its wild ragged peaks are nearly 3,000 meters high. Everybody who comes for the first time in this mountain kingdom gets lost—because he must come again and never is tired of its immense beauty.

The northern range of the High Tatras is called Belansky Tatras and is rather different from the High Tatras, being composed of limestone, and this gives Belansky Tatras a typical dolomite appearance. They are gay and romantic and striking with the whiteness of their rocks that contrasts in such a lovely way with their emerald meadows and forests. The northern basins are a real botanical Eldorado. The beauty and the large number of plants growing here on a comparatively small area is quite unique in Europe. Nature is here nearly intact in its beauty thanks to the fact that there are nearly no chalets or hotels or funiculars, so that Belansky Tatras are not as much visited as the granite High Tatras. Of course, all the area of the Belansky Tatras is a strict natural reservation (The Tatras National Park), and this is very important because it protects this beautiful corner against the destructive hand of a man!

Belansky Tatras are best accessible from Zdiar, a typical Carpathian wooden village, very picturesque and long, framed with a lovely mosaic of the long strips

of fields and meadows. Perhaps I should say for your information that you can get to Ždiar by bus from Tatranska Lomnica, a busy center of High Tatras, and this is about ten hours trip by the express train from Prague, the capital of Czechoslovakia. In Ždiar you can get a room quite easily, but of course you must not demand any luxury—this you would find in hotels of Tatranska Lomnica. Our room in Ždiar had running water and even central heating, and we could use freely our electric cooker. Most fascinating was the view from our window or from the nice wooden balcony we had in front of our window. Just from the bed we could see the magnificent panorama of Belansky Tatras and this was a sight to see! Just when we arrived there was a fresh snowfall on the peaks—it was the beginning of August—and they were glimmering in the sunshine like diamonds. Later the weather improved and we experienced more sun than we wished. All the tours and climbings we did were most exciting and we were lucky to find not only the summer flowering plants but also most of the spring flora where the snow fields had only recently disappeared. The curiosity of Belansky Tatras are so-called dip-streams and it was just there where we could find many of the spring "shift" flowers. It was a pure beauty to see the groups of *Trollius europaeus*, *Anemone narcissiflora*, *Pulsatilla alba (albana)*, *Gentiana verna*, *Primula elatior*, *Soldanella carpatica*, etc., some pressed to a rock and some residing gracefully in the grass. Only *Gentiana verna*, *Primula auricula* and crocuses (*heuffelianus*) on the meadows were already finished.

High up in the moraines, there every boulder was a unique rock garden, being crowded with a lot of alpine, some charmingly arranged in the cracks. There were quite miniature helianthemums (*H. alpestre*), *Dryas octopetala*, *Pinguicula alpina*, *Minuartia sedoides*, *Saxifraga aizoon*, *S. caesia*, *Sedum atratum* and *S. alpestre*, *Ranunculus alpestris*, *Veronica aphylla*, *Androsace chamaejasme*, *Campanula pusilla*, *Cerastium lanatum*, *Petrocallis pyrenaica* (very rare), *Draba aizoides* and *D. tomentosa*, *Gentiana nivalis*, *Minuartia gerardii*, *Myosotis alpestris*, *Sempervivum soboliferum*, *Thymus sudeticus*, *Silene acaulis*, etc.

How wonderful it was to see a lot of *Leontopodium alpinum* together with *Aster alpinus* and *Gypsophila repens* on the steep rocks and cliffs. On the grassy slopes there was again a kingdom of *Pedicularis oederi* and *P. verticillata*, *Astragalus alpinus*, *A. frigidus*, and *A. norvegicus*, a beautiful *Oxytropis halleri*, *Hedysarum obscurum*, *Gentiana punctata*, *Dianthus superbus*. *D. praecox* we saw high up on the rocks. There were some places where granite mixes with the limestone so that we could admire also such plants as *Campanula alpina*, *Primula minima*, *Geum reptans*, *Dianthus glacialis*, *Gentiana frigida*, *Chrysanthemum alpinum*, *Salix reticulata*, *S. herbacea*, etc. It would be a long line of names if I should name all the plants we saw and identified. Some we didn't know at all. Other lovely plants are *Cortusa matthioli*, *Doronicum clusii*, *Papaver alpinum*, *Saxifraga oppositifolia*, *S. retusa*, *S. bryoides*, etc. I don't dare to describe them all because it would take too much space in the *Bulletin*.

The meadows at lower altitudes were full of the delightful *Gladiolus imbricatus* and *Lilium martagon*, and in the woods there were groups of *Cypripedium calceolus*, the most beautiful of our wild orchids. The meadows displayed a wonderful palette of colors from which the purple-blue of *Campanula glomerata* was perhaps the most striking. Another fascinating feature were the trees, giants hundreds of years old. The most noble of them is the rare *Pinus combra* that climbs to high altitudes and is conspicuous with its stately figure. And when I saw the meter-thick layers of first quality humus all about, I got quite mad of it and wished we had a private helicopter to carry a lot of it home where I am still in shortage of this valuable soil ingredient. The same was true with the stones! They were simply wonderful, and when I thought of our ugly granite at home I was

full of envy. Well, the climbing was sometimes rather strenuous, but it was well worth our trouble—the grand views and the wonderful abundance of flowers together with the beautiful scenery and the divine quiet was our best reward! Two months have passed now since our stay in Belansky Tatras, but we still feel the strange magic of these unforgettable mountains and are eagerly looking forward to our next visit!

INTERCHANGE

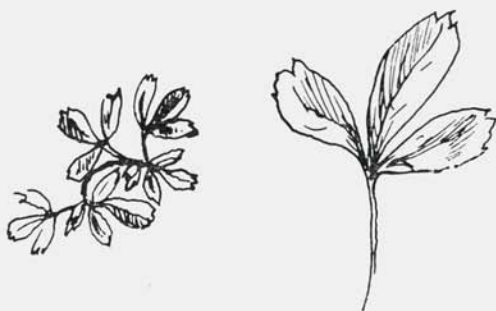
CALYCOCARPUM LYONII — Information concerning this plant is wanted by Mr. T. S. Shinn, 11 Rosewood Ave., N. C. 28801. Even more than information, seed or a plant of this species is earnestly desired for a very special reason. John Lyon was a botanist who explored in this country and when he died on Sept. 14, 1814 he was buried in the western part of North Carolina where a headstone was erected through the donations of his friends in Edinburgh, Scotland. Now, a project for the care and beautification of his burial place is being sponsored by the Asheville-Biltmore Botanical Association. They wish to use plants either named for Lyon or associated with his explorations, hence their desire to obtain *Calyccarpum lyonii*, a vine, to plant at the base of a pine tree already growing behind the headstone. This plant is also known as Cupseed and is a member of the Moonseed family. Please help in this matter if you can.

CORYDALIS SOLIDA (BULBOSA) — In the October *Bulletin* Mr. Robert M. Senior, Cincinnati, Ohio, asked for the experiences of others with this plant. Mrs. Dorothy H. Stanley, 22 Bridge St., Bar Harbor, Maine 04609, has this to say, "*Corydalis bulbosa*, now called *C. solida*, I have had for twenty years, or more, and it has always disappeared after blooming. No doubt Mr. Senior's bulbs have increased! Mine have spread all over the garden, due to being taken up in some soil, apparently at a time when they were dormant. Since this time I have found it perfectly possible to disturb these plants when they are visible, and I have transplanted many bulbs in my own garden, and given many away to friends. I like this plant—it is apparently very hardy and almost indestructible." Her comments on other *Corydalis* species mentioned by Mr. Senior are interesting. She wrote, "*C. sempervirens* is native here, and in my garden is a biennial, but seeds itself. *C. lutea* is certainly a 'spreading' species. My original plants have now spread into many open spaces. It is the longest blooming perennial that I know of, as here it is in bloom from May until freeze-up, constantly. *C. cheilanthifolia* I also have. I like the leaves and the original rosettes, but do not care too much for the bloom. This, and *C. lutea* I raise from seed, easily. I keep watching for seed of *C. cashmeriana*, which I have long wanted. All in all, I think the various species of *Corydalis* are most satisfactory plants, and well worth growing." Perhaps someone will be able to send Mrs. Stanley seeds of *C. cashmeriana*.

POTENTILLA TRIDENTATA (A REPENS FORM) — Mrs. Doretta Klaber, Quakertown, Pa. has written of a real "find". She writes, "In the July number of the *Bulletin*, Mr. Osborne wrote of *Potentilla tridentata minor*—a 'break' which has produced a plant one half the size of the usual form. What was my surprise when visiting a friend's garden recently to see a *Potentilla tridentata* not one half the size, but much smaller—a repens form—with the same glossy foliage and toothing at the ends of the leaflets. The accompanying drawing shows the difference in size between the two plants.

"Upon inquiry, I learned that this creeping form was found on top of a high hill, about 2000 feet altitude in the Monadnock region of New Hampshire. It covered acres, growing in rock crevices with apparently little soil. The flowers, each about three eighths of an inch in diameter rise only a bit above the foliage,

which turns brilliantly in the fall. My friend prefers to remain nameless, but he will try to collect seeds for the Society when he is able to. He gave me a piece of the plant which I shall nurse along and distribute when I have enough to do so. It seems to be a find."



Potentilla tridentata (a repens form) and *P. tridentata*

Doretta Klaber

FROM CZECHOSLOVAKIA — Excerpts from letters from Mrs. Olga Duchacova, of Prague, Czechoslovakia to our Society's president and to the editor: "It is just a year since I became a member of your Society. I am extremely happy that I could enjoy your excellent *Bulletin*—reading them is for me more thrilling than the best detective stories. I feel very much privileged in my membership because, as you can see from the membership list, there are only three members from Czechoslovakia, though there are many experienced rock gardeners who would be glad, as I am, to be members of your friendly Society." In another letter she wrote, "I should be very happy to have contact with some enthusiastic rock gardeners in America and exchange friendly correspondence, experience, and seeds. Your American plants are not too well known here (except for Lewisias, Penstemons, Phlox, and Trilliums), and it would be interesting to know more about them." Mrs. Duchacova's address is Na Trebesine No. 52, Prague 10, Czechoslovakia.

KALMIOPSIS LEACHIANA — In the September, 1965 *Journal of the Scottish Rock Garden Club* appeared photographs of *Kalmiopsis leachiana* 'M. Le Piniec' and *K. l.* 'Umpqua Valley Form.' "It has been my understanding that the two names are synonymous. I have heard both names used for the same plant here in Seattle. Can anyone shed some light upon this? Are there two named varieties?" These questions are asked by Mrs. Sallie D. Allen, 17845 47th Place N.E., Seattle, Wash.

PYXIDANTHERA BARBULATA — Mrs. Allen had asked Maj. Gen. D. M. Murray-Lyon what to do to make this plant flower. He answered, "This is what I entered on this plant's filing card. No. 1. 5" pot, leaf mould over drainage, then $\frac{1}{2}$ & $\frac{1}{2}$ leaf mould and coarse sand thinning off upwards to pure sand. It was in the greenhouse (thermostat set at 38 degrees F.) That plant was in a turf. No. 2 had it roots more or less free of soil and loose, it was treated in the same way in a 4" pot with its own loose soil immediately round its roots. The two spent the winter in the greenhouse and both pots stood in saucers in which I kept about $\frac{1}{4}$ - $\frac{1}{2}$ " of water. No. 2 flowered in the greenhouse in April, and No. 1 outside in July, actually a few flowers still out (July 24). Today I put in half a dozen cuttings and I am now keeping my fingers crossed."

NOTES FROM THE NORTHWEST

SALLIE D. ALLEN, *Seattle, Wash.*

NOT TO BE FORGOTTEN: — How much we can learn from a garden tour; new plant material, new and interesting theories put into practice, plant associations not previously considered, and getting to better know one another by sharing a fascinating common interest. Combine this with the pleasure of a fine June morning, a sweeping view of Puget Sound and the Olympic Mountains, three acres of garden to explore from woodland to warm western exposure, the generous hospitality of a delightful hostess, and you have all the ingredients for an experience not to be forgotten.

To reach the Pendleton Miller home in the Highlands, a picturesque residential area in a northwestern section of Seattle, one drives through winding roads bordered by naturalized native plant material such as *Gaultheria shallon*, *Vaccinium ovatum*, *Pachistima myrsinites*, and *Mahonia Aquifolium* in drifts beneath Douglas fir, maples and dogwood. Large rhododendrons are nicely associated with the natives. Because so few such beautiful areas remain, it is heart-warming to see an entire community that obviously had approached its area landscaping problem with intelligence by foregoing modern advances. Through property control it had been possible to maintain the continued existence of woodland along winding roads, free of sidewalks, street lighting, etc.

From the road, the Miller driveway sweeps down through their woodland to their charming home, curves in an arc, going upward to the road at the other extreme of the property. In the woodland are large conifers and a considerable collection of species rhododendrons with underplantings of such difficult plants as our native pipsissewa, *Chimaphila umbellata*, pyrola species, *Epigaea repens* and *E. asiatica*, lycopodiums, schizocodons, and so many other wonderful shade-loving plants.

Rather than list and describe the actual plant material, an almost impossible task in this magnificent garden, made up of rare treasures, large and small, the writer will attempt to convey some of Mrs. Miller's methods and theories of gardening about which she feels very strongly. First, the composition of the soil in woodland and sunny gardens alike is rotted wood incorporated into the existing acid sandy loam. Mrs. Miller told me that she has never found a plant that does not thrive in rotted wood. Moss-covered logs abound throughout the garden, lending a lovely, natural, untouched feeling to the entire setting. Several years ago a thrilling discovery was made in the woodland section. Where *Kalmiopsis leachiana* was originally planted as a specimen plant, it was found that a companion had volunteered. It was *Monotropa uniflora*, the curious Indian pipe, its waxy white stems bending at the tips, bearing nodding, white, campanulate flowers. Its blooming season is July and August, after which the stems straighten as the seed capsules ripen and the entire plant blackens. During this visit to the Miller's garden, we noted with excitement two more emerging clumps in other parts of the woodland. When such a plant as *monotropa* will grow and increase, could rotted wood and logs be the solution to the successful cultivation of *Monesea uniflora* and *Calypso bulbosa*?

Mrs. Miller believes that plants thrive on association. Instead of planting a single plant, she feels that three to six (or more) of a kind respond more readily to garden conditions. We saw the shrubby, little *Jasminum parkeri*, for example, not one but many, forming its own little community. To many of us it was known only as an intriguing description in books, said to be a charming miniature to six inches, yellow flowers in summer, and strongly recommended for the

sunny rock garden. This is a garden of never ending surprises and delights for the visitor. Around each bend in the path a new discovery can be made, such as a grouping of the rare, little *Forsythia bronxensis*, which will perhaps attain a height of ten inches, or a colony of *Pellaea brachyptera*, with six-inch blue-green fronds, curiously formed to resemble little conifers. Plantings of interesting ferns, both large and small, for sun or shade, may be found throughout the garden. The pellaes are among the most unusual ferns (and most difficult). The Bird's foot fern, *P. mucronata (ornithopus)* has blue-green, needle-like pinnae, grows six to twelve inches in height and enjoys a sunny spot in the rock garden. Discovering the genus *Pellaea* opens the door to a whole new world of interest and future exploration.

Another type of association is extremely important, Mrs. Miller feels, that of ground covers and larger shrubs being mutually beneficial to each other. An intermingling of root systems into a dense network provides protection against abnormally cold weather, retention of natural moisture during summer months, and a dense thicket to hinder the germination of weed seed. Thus there is a minimum of upkeep, even with the utilization of choice plant material. Another important consideration is that this thick turf of matted root systems cannot be penetrated by moles, shrews, and mice. Instead the mole runways are well below the soil surface, and rather than being a hinderance, can serve the useful purpose of aerating the soil and providing sharp drainage.

To illustrate this type of association, bordering the woodland is a large, warm, sloping area where numerous *Rhododendron hirsutum*, *R. ferrugineum* and others are planted. Massed beneath may be found *Gaultheria shallon*, *Mahonia repens*, *M. pumila*, *Gaylussacia brachycera*, *Vaccinium vitis-idaea minus*, *Gaultheria miqueliana*, and others. The individual character of each grouping of sub-shrubs, leaf texture, shape, size, and color created irregular undulating effects. The further interest, later in the season, is in the masses of white, red, blue-black, and black fruit, and finally the fall coloring of the foliage. To complete the picture, log rounds are used as steps, forming winding accesses to any part of the slope, and are joined by paths covered with ground fir bark.

This particular section of the garden cannot be left without reference made to a very rare treasure, a tiny oak, *Quercus chrysolepis nana*. There are three of them, which after some fifteen years have attained but twelve inches in height, the small holly-like leaves bright green. In spring, when the new growth is a warm bronze in contrast to the green of the old foliage, the effect is particularly charming. These were obtained from a southern Oregon nurseryman, who had carefully selected them from a number of seedlings. There is tremendous variation in oaks, which are of special interest to Mrs. Miller, as seen by the number she grows. Her collection comprises some twenty-two species, both large and small. Among the dwarfs are *Q. sadleriana*, *Q. vaccinifolia*, and the oak-like *Lithocarpus densiflora* var. *echinoides*, the latter perhaps the most variable of the shrubby oaks. One of the beauties of these shrubs is the downy, pink new growth, and with maturity, the acorns. Each one would stand as an aristocrat in any rock garden large enough to accommodate it. In time they can attain five feet, and as much across, so with age they would not be suitable for a miniature garden.

On the east side of the house, where little morning sun is received, is a planting of *Asarum caudatum*, our wild ginger, lush and healthy with deep green, heart-shaped leaves. In open pockets of rotted wood grow *Vaccinium oxycoccus*, tiny rhododendron species and a very special member of the Ericaceae family, *Rhodothamnus chamaecistus*, difficult and so seldom seen here. Its minute rhododendron-like foliage looked very healthy, giving promise for a future of a display of rosy flowers with prominent maroon stamens. Here, the little ground pine,

Lycopodium obscurum, makes itself quite at home, the rhizomes creeping underground, forking, and here and there sending up a single stalk, from which many little, dense branches grow, giving the image of an elfin planting of pine trees. Difficult as these clubmosses are to grow, they respond well to damp shade and rotted wood.

On the west side of the house, which receives the full heat of the day, and the reflected heat from Puget Sound, one finds mass plantings of *Galax aphylla*, the heart-shaped, dentate leaves a glossy red. The foliage is somewhat smaller, and the plants more compact, when grown in this exposure. These dense mats serve as insulation for the not too hardy *Gaultheria wardii*, whose dark blue fruits are so beautifully conspicuous. During our worst winters, when elsewhere *G. wardii* has been killed entirely, the most these suffered was being cut to the ground, to come again from the roots in the spring.

Of the many dwarf conifers, perhaps the most unusual was one that many of us did not know existed, *Pseudotsuga taxifolia nana*. We of the Pacific Northwest are intimately familiar with the Douglas fir, but few of us knew of a dwarf variety. It is not just a pocket edition of our native conifer which can grow to two hundred feet in height and fifteen feet in diameter. *P. t. nana* forms a mound about four inches high. These plants, perhaps twenty-five years of age had attained a width of not more than ten inches. Curiously the foliage is not necessarily in miniature; there does not seem to be a central trunk, nor a tree-like leader, just a mound of branches with fresh green needles — AN ABSOLUTE GEM FOR THE ROCK GARDEN!

The fifty Northwest Unit members who had gathered for this garden tour, paused briefly on the attractive terrace to partake of the wonderful refreshments provided by our hostess. One member, who has a fascinating garden, remarked, "I'm going home and start all over!" This was indeed a garden that reflects rare taste for exceptionally fine plant material, a real love and talent for growing it, and an artistic sense for creating an over-all picture of great beauty. I wonder how many went home to look critically at their own gardens, and for a few days could not feel the same emotion about what is seen. I know I did. But then this passes, and all falls into proper perspective. We renew our enthusiasm, our vigor, we have new ideas to incorporate into our own gardens, new theories to try out under the conditions we have to give them, the knowledge of new plants unknown to us before. We can reflect upon this experience and feel the warmth of strengthened friendships. All of these are the bountiful gifts bestowed upon us by this garden tour.

OFFICERS FOR 1966—

<i>Chairman</i>	MR. H. H. MILLER
<i>Vice-Chairman in Charge of Program</i>	MRS. A. R. KRUCKEBERG
<i>Hostess Chairman</i>	MRS. RALSEY S. PETERSON
<i>Secretary-Treasurer</i>	MRS. I. R. BUNKER
<i>Corresponding Secretary</i>	MRS. RODNEY B. ALLEN

PENSTEMON PROFUSION: — Did you know that there are some 225 known species of penstemon, all but one native to North America, and most of them are from the west? Mr. Roy Davidson demonstrated his intimate knowledge of the genus in the wild and a keen interest in their garden culture in a lecture entitled, "Some Shrubby Penstemons — Illustrated." He has traveled extensively to the mountains and deserts of the west to study and observe the "shrubbies" in their native habitat. The nature of these plants is to freely hybridize, producing swarms in a wide range between the species, and creating a

difficult problem for the taxonomist, which would have been discouraging to a less dedicated plantsman. Mr. Davidson's devotion to his research could be clearly seen by his enthusiasm and the information he imparted.

The requirements for the cultivation of shrubby penstemons are lean soil, good drainage, full sun, and an uncrowded situation. An extremely interesting point was made, a lesson learned from nature. One of the disheartening things about attempting these showy plants is that they appear to be so short-lived in the garden, a situation Mr. Davidson attributes partly to overcrowding. He contends that penstemons, by nature, will give up and die rather than battle one another or other plants for supremacy in the garden. He pointed out that when we observe them in the wild, most species do not grow in competition with other plants. They grow in colonies, but even here they appear as individual specimens, with considerable space between each plant. Once this observation is pointed out, it is interesting to revisit "Penstemon Country" with eyes a bit more observant and a keener insight into the character of these plants.

GARDEN, PICNIC AND SONG: — Nearly one hundred people, members and their families, gathered for our annual potluck picnic at the home of Dr. and Mrs. A. R. Kruckeberg. The threatening weather that had persisted throughout the day failed to discourage anyone. Prior to the feast, the children gathered in the lower acreage for a baseball game, and the parents used the opportunity to explore the upper garden. To the left of the driveway as the house is approached, may be seen a true alpine garden, warm in exposure, with interesting rocky outcrops. Bordering the rock garden and against the fence are fine specimens of *Ceanothus impressus* 'Puget Blue'. This is an upright ceanothus that in many gardens has suffered considerably from our last winter's six to eight degrees above temperatures. It is fast growing, develops a heavy trunk with intertwined branches, and has crisp, small, evergreen leaves. The inflorescence consists of puffs of a wonderful dark blue, created by numerous tiny flowers in dense racemes.

A large rock placement remains vividly in memory, where species penstemon grow in exactly the same setting as found in the wild. A sizable planting of *P. davidsonii* hugged the warm rock, spilling over as if to survey the beauty of its kin, *P. cardwellii*, at the base of the outcrop. Small ferns, as described by Dr. Kruckeberg in his *Bulletin* article, July 1965, were beautifully associated with the rock throughout the garden and very much at home in their environment.

The mention of a thistle in the garden probably will not bring forth a flood of tender emotion in the reader, however if you have never seen *Carlina acaulis*, do not judge harshly. It is the most startling and fascinating plant imaginable. The descriptive comparison that comes to mind is a typical cartoon drawing of the sun. The flower, or "sun" is six inches across, stemless, and yellow. The leaves, long, narrow with wavy margins ending in a point, fan out at regular intervals to form the sun's "rays." The plant measures fourteen inches across, the entire thing flat, tightly hugging the ground—an amazing sight. As the expression goes, "You have to see it to believe it."

Dr. Kruckeberg grows a number of *Hebe* species, many of which he has grown from seed. Because of their ease of culture, the wide range of interest in habit and form, variation in leaf color, they are extremely satisfactory for landscaping purposes, in the rock garden and elsewhere. They have acquired the reputation of being somewhat tender (as unfortunately many New Zealand shrubs have), however the hebes came through last winter exceptionally well, without even the protective benefit of snow cover. In fact they fared far better than many others considered "reliably hardy." One of the most curious of the

species is *H. cupressoides nana*, upright growing to about four inches, with the tiny leaves so arranged on densely growing branches as to resemble a miniature forest of conifers.

After a sumptuous fare, the entire group sat around an outdoor fire singing to the accompaniment of a strumming guitar. We discovered unknown talents among our members as we listened to the singing and playing of our host, Art Kruckeberg, Don Normark, whose photographic ability is well-known, and fourteen year old Elaine Read. This was indeed a pleasant finale; flickering firelight, the gentle harmony of old folk songs, and some new, in the twilight of a summer evening.

PLANT HUNTING AND SEED COLLECTING:—Both summer and fall field trips were in the general area of Mt. Rainier, the first to Crystal Mountain, delightful on a warm July day, but fairly uneventful from the standpoint of unusual finds in the way of plant material. The top of Crystal Mountain may be reached by a two-stage ski lift, which terminates at the site of a chalet where simple refreshments may be purchased. To the west the view of Mt. Rainier is most spectacular, and one feels he can just reach across the intervening valley and touch its snowy heights. Concern was felt during the entire day as we watched the wafts of smoke billowing from within Mt. Rainier National Park, where a forest fire was burning out of control. Similarly to the east another uncontrolled fire steadily emitted more smoke as the day progressed. Periodically fire fighters were discharged from airplanes into the latter otherwise completely inaccessible area of high ridges and deep ravines.

The fall field trip was several miles, as the crow flies, to the south, where we gathered at the portal of Chinook Pass. This outing was solely for the purpose of seed collecting. The seeds collected will be sent to the ARGS Seed Exchange, the University of Washington Arboretum and several overseas seed distribution organizations. A few days before this September 18th trip, snow had been reported at Chinook Pass, elevation 5440 feet, however in place of the expected blanket of snow, we found hoarfrost. On some of the steeper rocky banks where early in the season gay little falls cascade from above, the flow in September had been reduced to a trickle, which had frozen into long-fingered icicles. It was cloudy until afternoon, the air nippy but invigorating.

The first seed collected was that of an erythronium species, either *E. grandiflorum*, our bright, pure yellow Glacier lily, as it is usually called, or *E. montanum*, the beautiful white Avalanche lily. Both species bloom in the mountains in springtime as the snow is melting and until shortly after it has left the ground. *E. grandiflorum* is quite easy going in the garden, though we can never achieve nature's mass plantings as we see them in the wild. Lovely *E. montanum* is said to be impossible to transplant from the wild, so the only possibility of growing it is from seed. In a dry stream of sandy silt grew sheets of the tiny *Saxifraga tolmiei*, alone, with no companion plants in its immediate area. The small sedum-like leaves are closely packed to form dense evergreen mounds. What a precious pet this would be for the rock garden if we could only discover how to tame this wildling. Seeds were collected and will be distributed in the hope that someone will learn its secret, and share it with us.

The native heathers, which are common throughout our mountains, couldn't have been any more beautiful than those we found. Usually one finds extensive meadows of *Phyllodoce empetriformis* and *Cassiope mertensiana* where one very large mature plant runs into another. In bloom, this makes a wonderful display, but the older foliage browns and dies off, especially noticeable before or after flowering. Here, these heather gardens are quite different, smallish plants, grow-

ing as individuals with fresh, lush foliage. Tiny seedlings could be found here and there at the foot of the small rocks that studded the gardens. *Cassiope (Harri-manella) stelleriana* was noted by a few, interesting because Mt. Rainier is the southern limit of the species in North America. Although not truly a rarity in Washington, it can easily be overlooked because of its diminutive size, and because it somewhat resembles the lycopodiums. Unlike most of the other cassiopes, *C. stelleriana* has spreading leaves, rather than overlapping ones, and the flowers are borne singly at the tips of the branches. It grows happily in the garden, forming dainty mats, however it is very shy flowering.

Always to be enjoyed and admired in the mountains are the beautiful trees, the scenic groupings, and often the gnarled, twisted forms of individual trees. The alpine fir, *Abies lasiocarpa*, much sought after and utilized by landscape architects, easily adapts itself to the garden and retains its symmetrical, narrow, spire-like form. *Tsuga mertensiana*, our mountain hemlock, twiggy in appearance, has a blue-green cast, and is also easy to cultivate. Our five-needle, white-bark pine, *Pinus albicaulis*, found above 4500 feet, is attractive in its irregular form, and its branches of dense clusters of short needles. When collected, they often linger and die, or those that do survive are susceptible to the pine rust, thus are seldom seen in gardens. Seldom are seed caught in time, as they seem to be elegant fare for small animals. Perhaps if the tiniest seedling found in the wild, were carefully dug with quantities of soil, planted in the rock garden in a sunny, open situation, and a few mythical words spoken in its behalf, *perhaps it might* succeed.

One of the delights of a late trip to the mountains is the splendor of the vivid fall coloring. *Vaccinium deliciosum* set the hillsides aflame with wave after wave of bright to deep red. Although it is of easy garden culture, it unfortunately does not take on the autumn brilliance in captivity. The delicious blue-black fruits were collected with zesty pleasure and some did manage to find their way into the seed packets. We learned later of an adventure experienced by some of our members. Several of the group lingered longer than the rest, one to climb a hillside to collect more huckleberries.

Those who remained below, intent on their discoveries, realized their companion was missing. They looked up to see her crouched in the *V. deliciosum* patch, deeply absorbed in her collecting. Above her, also deeply absorbed in collecting the same prize, was a fine specimen of *Ursus americanus*, oblivious to the invasion of his rightful domain.

THE SMALL IRIS

DORETTA KLABER, Quakertown, Pa.

When the winds of March are whistling through our gardens we are thrilled by the flowering of the small bulbous iris which withstand the weather with surprising fortitude. They are so early, so interesting, and comparatively inexpensive that I haven't been able to resist having a few of them each year, even though they have not proved very long-lived here.

They are usually referred to as the "reticulata group" (net-veined bulbs), but this seems to be stretching a point. When you look at the four illustrated their wide differences are apparent, and not all of the bulbs are reticulated.

Iris reticulata, from the Caucasus, is perhaps the best known, with its narrow-petaled purple flowers that smell of violets. It grows six to eight inches high, its bluish-green, reedy leaves 4-sided. They start low, and like most iris, increase in height considerably after the blossoms fade. *Iris reticulata* has several varieties. The only one of them that I have grown is I. r. 'Cantab', a soft blue

emphasized by deep blue velvet with an orange ridge at the end of the falls. The whole plant is somewhat smaller than *I. reticulata*.

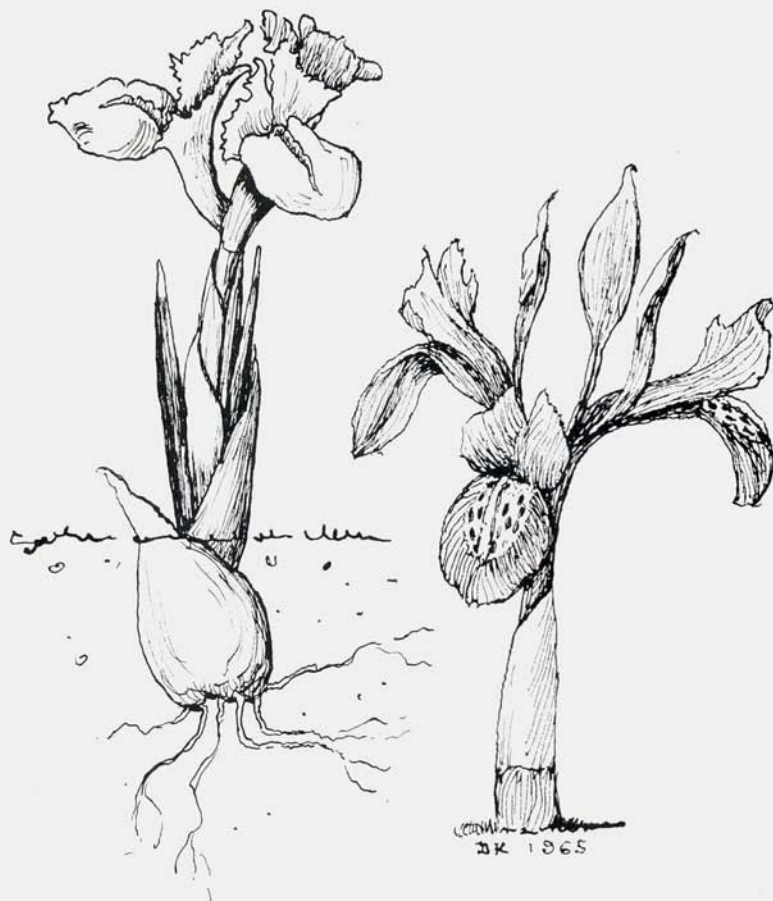
Contrasting pleasantly with *I. r.* 'Cantab' is deep yellow *Iris danfordiae* from Asia Minor, the 4-angled leaves being the only resemblance to the above.

Iris bakeriana and *Iris histrioides* are also from Asia Minor. *Iris bakeriana* is a clear light blue with purple and white decorations, the leaves cylindrical. *I. histrioides*, again with 4-angled leaves, is a uniform soft lavender-violet with a yellow ridge and purple spots on a light ground.

All these early bulbs need good drainage, but will grow and bloom in half-shade as well as in sun.



Iris reticulata and *I. bakeriana*—natural size



Iris danfordiae and *I. histrioides*—natural size

Doretta Klaber

THE BIRD'S EYE PRIMROSES

ALICE HILLS BAYLOR, *Johnson, Vermont*

The beloved members of the Farinosae group in the Primula family are called "Bird's Eye" because the flowers, which include pink, lilac, yellow, and white, have a distinct yellow eye. They are found growing in their native habitats in many parts of the Northern Hemisphere: Scotland, England, the mountain meadows of southern Europe, the lowlands of Labrador, British Columbia, the Grand Canyon; and I have collected one member, *Primula mistassinica*, from the limestone bluffs in northern Illinois, and in the moraine above Lake Willoughby, in Vermont. The familiar members of this group of primroses have one characteristic with which most of us associate them; heavy farina on the underside of the foliage. This gives the plant a silver lining, with the upper leaf surface green and shining.

The best effects obtained from this group are by planting en masse or in drifts. This is easily accomplished as all come easily from seed. The seeds may be planted in a cold frame in fall, lightly sprinkled with sand, or in a flat indoors in February or March. At SKY HOOK we plant in February, allowing the flats

to have a week outside covered with snow. They are brought in and given the hot water treatment. Germination begins in about ten days and then the flats are placed under fluorescent lights on benches in the cool basement. When the seedlings are very small, in first leaf, they are planted into peat pots in a mixture of three fourths humus and one part clean sand. The flats of pots are left under fluorescent lights until April when they are moved to our cool plant room. By June the roots may be showing through the pots, and planting outside is facilitated by simply sinking the pots into the prepared beds so the roots are not disturbed.

The roots of all the *Farinosae* group are extremely fine and care must be taken in handling. Humus is the most important element for their success. A mulch of stone chips is used to keep the farina-coated foliage from being earth splashed in a heavy rain.

Primula farinosa, the type species, was first discovered by Clusius in 1583 in the mountains near Vienna. Later it was also collected from the Pyrenees and European Alps, and is the "Meadow Beauty" of Great Britain. The rosette is about five inches across and the scapes four inches high, bearing five to ten pink or white flowers. "Moist meadow banks" is the description of its native home; a condition difficult to duplicate in one's garden. It is best grown in a raised location with quantities of humus incorporated in the soil and a top dressing of stone chips in a location that is normally moist, or where it can be kept watered.

P. frondosa is a beautiful miniature from the Balkan mountain bogs. It is very much like *P. farinosa* except that it is larger in all respects. The foliage is broader but shorter, glabrous above and thickly coated with farina beneath. The flowers are larger and a deeper pink. The winter buds, heavily coated, are formed in autumn. It enjoys a moist, gravelly soil for good drainage. *P. farinosa* and *P. frondosa* are perhaps the most commonly known and the most widely grown. They are unfortunately not very long-lived and need to be replenished by seed.

P. modesta is a true miniature and, from my experience, the most satisfactory of the tribe. In 1958, the late Harold Rugg, of Dartmouth, gave me seed of *P. modesta* that had been sent to him from India. There are today many plants in my garden that were germinated from that seed. Its native home is on the Japanese islands of Hokkaido, Honshu, and Shikoku where it is found growing in alpine and subalpine gravel ravines. When the snow melts here in early spring, I eagerly watch the winter buds of *P. modesta*, for they appear as wads of white cotton on the gravel top dressing. The foliage quickly unfolds into a rosette three inches across, heavily powdered with golden farina on the underside of the leaves. The three-inch scape bears umbels of five to eight half-inch pink flowers with a distinct yellow eye. It is an excellent seed bearer, but there is no need to reseed as the plants should be divided every two or three years to insure a permanent supply. The flowers last a long time, and when the plants are out of bloom they give a fine appearance to the area in which they are planted.

The variety of *P. modesta*, *fauriae alba*, is a conversation piece. It is smaller than the type, having only about an inch and a half rosette. The pure white flowers are borne on a one-inch stem. I have it planted on the edge of a raised bed with the soil at least three fourths leaf mold. This little plant hails from the Hokkaido and Kurile Islands, and is perfectly hardy here in Vermont.

P. scotica is a subspecies from northern Scotland and the Orkney Islands, and it is a true miniature. Its leaves are shorter and broader than those of *P. farinosa*, and the scape is shorter and the umbels of flowers are a deeper pink. It is not as amiable as *P. farinosa* and is more difficult to keep as a garden subject. I have heard complaints of seedlings damping off. I believe this is caused by keeping the seedlings in the germinating flats too long. A mild solution of potassium

permanganate will prevent this.

P. darialica is the most robust of this group of miniature primroses and remains in flower for a much longer period of time. The rosette is five to six inches across, the narrow, lanceolate leaves are three to four inches long and heavily coated with white farina beneath. It is a prodigious grower and will exhaust itself with side shoots if not divided every second year. The root system of the majority of the Bird's Eye Primroses is short so that if left alone will absorb all plant food quickly. Quantities of humus should be worked into the soil when new divisions are planted. Division should be done as soon as possible after flowering. *P. darialica*, however, continues to bloom from its first opening in April for six to eight weeks; so it is often July before I divide the plants. So heavily are the undersides of the leaves coated with white farina that, when dividing, the water in which I wash the roots to separate them is milky white.

From China come two members of the Farinosae group; *P. involucrata* and its near relative *P. yargongensis*. The first has pure white flowers on a six-inch stem, which is tall for the three- to four-inch rosette. *P. yargongensis* (syn. *P. wardii*) has lilac flowers. Both demand moisture in a peat soil. I have had *P. involucrata* for several years at the base of my auricula terrace where the fragrant flowers are greatly appreciated. Because the stems are tall and wiry, several plants are needed placed close together to give a pleasing effect.

P. sibirica is similar to the foregoing two and is found in central Asia, Alaska and in the Yukon area. I germinated it in 1959 and had a good stand, but must confess that it lasted only the one blooming season. The flowers are pale lilac and not nearly as lovely as is its cousin *P. yargongensis*.

P. halleri (syn. *longiflora*) is a much taller plant than those we have been discussing. The scape is eight to ten inches high and the umbel of rose-colored flowers is outstanding. (Purple has been mentioned, but all I have ever raised were a lovely rose). In 1959, I had a most beautiful stand of *P. halleri* which I have not been able to duplicate since. The seed I have had since then does not germinate well and those plants I have brought to maturity have not been as lovely as the 1959 stand. This plant can be distinguished from the related species by the longer corolla tube.

P. gemmifera var. *zambalensis* (syn. *chrysopa*), which I germinated in 1958, proved the following year to be a most spectacular primrose with mauve flower heads held on ten- to twelve-inch powdered scapes. Unfortunately it is not long-lived. It was introduced by Kingdon Ward from China and might be a splendid garden primrose if one could reseed it every two years. I have not been able to obtain seed since. The name refers to the bulb-like root. It is very similar to *P. conspersa* which is more delicate and graceful. The rosette of *P. conspersa* is tufted and the underleaves, flower stem, and a portion of the corolla are covered with farina. The scape is unusual for a Farinosae as often it is two-whorled. I have not grown either of these primroses for several years.

P. luteola is the stunning yellow-flowered member of this tribe, and is a most valuable garden subject. The large rosette is eight to ten inches across, the leaves are lanceolate, coarsely dentate, light green, with no farina. Above this rosette rises a stout stalk bearing an umbel of from twelve to eighteen fragrant yellow flowers in July. Blooming at this time of the year is certainly a boon, and this primrose deserves greater popularity. I have found it in no way difficult and to my knowledge have never lost a plant. *P. luteola* is multiplied by division after it has been established by seed. The roots are long and stout for a Bird's Eye. Divided in August after it has bloomed and replanted in an extremely rich soil, in a bed that is raised above the path for drainage, it thrives year after year. There would certainly be a lull in the garden without *P. luteola*. It, like

P. darialica, needs dividing or the side shoots will exhaust the plant. It is put in the auriculate section of this group because of the lack of farina. In this group also belongs the truly treasured *P. rosea*.

To be without the very early brilliant flowers of *P. rosea* in spring would be like having a ring without a jewel! The plants in my garden were germinated twelve years ago, in 1953, which proves its hardiness, permanence and longevity. The neat rosette of dark green foliage is small and undeveloped when the flower stem is thrust up four inches and topped with startlingly brilliant carmine flowers in a bunch of from five to seven. On a steep slope, topped by an apple tree, I have a planting of several hundred to make early spring long remembered. The exposure is northwest, so they have afternoon sun. There is plenty of underground moisture where they are planted en masse in rich leaf mold soil. *P. rosea* is also used for a border for paths where later blooming primroses take over the color parade and where they have morning sun. The variety *grandiflora* is the largest of the roseas with a fully developed rosette of four to five inches and the flowers are the brightest with fringed edges. It seeds in abundance. *P. rosea* 'Petite Pink', my own introduction, is smaller in all respects. The foliage is dainty, being two to three inches long, and the flower stem two to three inches high, topped by fringed, shell pink flowers.

P. kleinii is a cross between *P. rosea grandiflora* and *P. clarkii* made by Peter Klein. It is dainty and the smallest of the clan, and claims here the border of blue auriculas where it is greatly admired. The roseas should be divided every two years or the wiry roots will strangle the plant, causing the center to deteriorate. When I visited Mrs. A. C. U. Berry's garden in Portland, Oregon, she gave me some of her *P. rosea*. I planted them in a separate location along with the white *P. sieboldii* she had also given me. This location proved too shady so I have now moved her roseas which are lighter in color than mine, to edge a planting of blue polyanthus.

The Bird's Eye primroses give flowers from early spring soon after the snow melts until into July when the yellow *P. luteola* blooms. They have endeared themselves to gardeners. Some are difficult to retain long, but can be had by seeding often; others are enduring and only need to be divided to have them remain in the garden. To be without them would be a great loss.

FLIGHT TO THE "LONG WHITE CLOUD"

NEILL HALL, *Seattle, Washington*

Our tour of the South Pacific started from Seattle on January 20. The following morning we stepped down from the plane in the humid, tropical summer of Tahiti.

The roads were lined with the familiar tropical growth. Coconut, banana, and papaya seemed to grow wild; in fact almost everything appeared to be nearly in a wild state, allowed to grow as nature directed. Interspersed with the trees and palms were beautiful bougainvillea, in the usual rosy-purple, as well as a golden form. Hibiscus of many sizes, colors and forms were everywhere.

The botanic garden in Tahiti was well maintained. Most of the plants were identified and a surprising number of shrubs were in full bloom. Various species of acacia, with blossoms ranging from pale yellow to nearly orange and beautifully displayed against pale green foliage, added to the riot of color.

The lawn of the hotel was sprinkled with *Mimosa pudica*. This flower is rosy-purple and the leaves are sensitive, folding tight as soon as they are disturbed.

Tahiti treated us to a variety of weather conditions including a tropical downpour with gale force winds. The small ship that travels between Tahiti

and Moorea would disappear in the trough of the waves and when it nosed into the next comber the whole ship would be engulfed in the spray. Needless to say we cancelled our trip to Moorea.

Our flight soon delivered us to New Zealand. Mount Egmont was the first objective and there we had our first experience with New Zealand bush. Mount Egmont is a volcanic peak on the southwest coast of the North Island. The prevailing winds deposit a generous quantity of rain on these slopes, which coupled with the mild climate, produce an ideal condition for luxuriant native plant life. Tree ferns grow everywhere and aspleniums, polypodiums, and filmy ferns cover the trunks of many of the trees and tree ferns.

Cyathea medullaris, the black tree fern, is reported to reach an ultimate height of fifty feet or more with fronds up to twenty feet long and five feet broad. Many of the tree fern trunks act as nurseries for various epiphytic ferns and flowering plants. The aerial tree fern roots form a matted surface up to two or three feet in diameter. This material does not rot, and Mr. Felix Jury uses these masses of plant material as he would rocks. It is a black, porous material that is ideal for his shade garden. He grows everything from ferns, rhododendrons, and camellias to begonias and bromeliads out of doors. The climate is very mild due to the relatively small land mass and its close proximity to the Tasman Sea.

The visitor to New Zealand will be impressed by his first sight of the roadside bush. *Blechnum capense* dominates almost every bank bordering the roads, trails, and streams of western New Zealand. The sterile fronds are a bright salmon-red, turning to bright green as they mature. These fronds range from a few inches to several feet in length though they average from two to three feet. Many of the fields of New Zealand are bounded with hedgerows. These may be broad-leaved evergreens or coniferous material. The picture from the air is particularly beautiful with the dark green hedgerows framing the light green pastures. The margins of the roadside bordering the hedgerows are taken over by miles of *Pteridium aquilinum* var. *esculentum*, the New Zealand bracken. It is quite attractive with its bronzy colored fronds, but it is just as invasive as the American bracken.

The city of Christchurch on the South Island is a large city that takes an interest in its private home plantings and the landscaping of industrial projects. Competitions are organized and awards given annually for the best home plantings. The homes, in general, were all well maintained. The houses appeared to be freshly painted, surrounded by green lawns with loads of flowers. All in all, it is a beautiful city with the river Avon flowing through an extensive park system.

Our visit to New Zealand was poorly timed for viewing alpine plants in flower, for there it was early fall. Mrs. Theo Laurensen took us to see her garden and the garden of Mrs. Hearn. Our time was far too short for the plants there were to see and we were completely frustrated by the quantity of species with which we were unfamiliar. Anyone planning to visit New Zealand should study their flora before booking passage. There is a good selection of well-edited books available on the flowers and ferns of this wonderful country.

The coach train and bus trips from Christchurch to Fox Glacier were an interesting experience. The train and bus both made stops in the mid-morning and afternoon for tea. This helped break the full day rides. The train trip traversed the Southern Alps but the high country was missed as a five-mile tunnel took us under the true alpine area.

The Fox Glacier area has scenery second to none. Fox and Franz Glaciers extend to practically sea level. This part of the South Island has a very heavy

snowfall, which accounts for the glaciers extending to such a low level and for the greatest glacial movement in the world. The rivers flowing away from the glaciers had large chunks of white ice floating along toward the sea.

This area is a fern paradise. Specimens of *Dicksonia squarrosa* ten to twenty feet high interspersed with *Cyathea smithii* were everywhere. The young fronds of *D. squarrosa* are covered with the dark brown hairs.

Asplenium bulbiferum grew under the tree ferns and the fronds had the characteristic proliferous habit. The New Zealand people call this fern "Hen and Chickens."

Tree trunks or fallen logs were covered with the "Kidney Fern", *Cardiomanes reniforme*. The fronds are kidney-shaped, about three or four inches in diameter, and the young fronds are translucent enough to read printed matter through. The fertile fronds are fringed with dark brown spore cases. Various filmy ferns shared the space on the tree trunks.

Whole hillsides were covered with the evergreen tree called "rata". This is a species of *Metrosideros*. The beauty of the flowers is due to the large masses of red stamens.

Leptopteris superba, commonly called the "Prince of Wales Feather Fern", grows in very moist, shady locations. This fern is one of New Zealand's choicest ferns. The fronds are particularly soft and plummy, and the younger fronds are a translucent, glossy green. The rachis is heavily covered with woolly brown hairs, and the mature fronds become a very dark green.

The day for our departure became cloudy and we were grounded for twenty-four hours, but the following morning we were awakened by the pilot and informed that he would try it at eight o'clock. We walked out to the runway, which I think doubled as a sheep pasture, and boarded the little 185 Cessna. It held three passengers and the pilot. I drew the seat beside the pilot so that I was in a perfect position to view and photograph the surrounding countryside. He circled and took advantage of the updrafts to get the necessary altitude to clear the Alps of the South Island. A very few minutes later we were dropping down to the air field of Mount Cook.

Mats of *Blechnum penna-marina* were found growing up towards the mountain slopes. This little fern probably is protected during the winter by a heavy blanket of snow. It doesn't seem to stand our damp, cold winters in the Pacific Northwest, although some members succeed in carrying it over in sheltered locations. It is well worth experimenting with, as the bronzy colored new sterile fronds are very attractive.

(To be Continued)

VIOLAS

ING. HUBERT MARTIN, *Vienna, Austria*

Translated by Richard Langfelder, of Chappaqua, New York, from *Der Alpengarten*, published at Graz, Austria and reprinted here with the kind permission of the author and the editor of *Der Alpengarten*. To quote from Mr. Langfelder, "Ing. Hubert Martin is today the top man in alpinism. In 1920 he started to rebuild the Belveder Alpengarten in Vienna, where there were only 200 plants left—today there are over 6000 alpinism. He also created the very famous Frohnleiten Alpinum in Styria, Austria. At the Third International Rock Garden Plant Conference in London he delivered an outstanding paper 'The Genus Daphne.' He also manages a large alpine nursery in Schoenhuehel, N. Oe., Austria." (The Editor).

Today I discuss some of the Violet family; among them are the most difficult, the most beautiful plants, and also the weediest. Some rock gardeners will refuse some of my ideas. They will be the extreme ones who will cultivate only native high alpine and will refuse to have many beautiful plants because they are from mountains of other lands. They consider that the very short blooming time of their own natives will justify their own point of view.

For many years I have advocated the opposite viewpoint. In an Alpinum should be kept everything that will grow well, bloom easily and give full satisfaction. I much appreciate the attempts to raise and keep alpinus like *Eritrichium nanum*, *Ranunculus glacialis*, *Androsace glacialis*, etc. In the end they will disappear and one has to go to the mountains to collect them again, and so destroy so many stands of these beautiful plants.

Now as to the genus *Viola*. There are some high alpine violas which will grow in the garden, too, but they are short-lived and therefore must be raised from seed. One of the best is our native *Viola alpina* which grows in limy scree, in rock crevices, and also in short alpine lawns. They can be found in heavy soil as well as in sandy, loamy soil, and their chief enemy is in the heat of the lowlands where most of the rock gardens are situated. *Viola alpina* is the smallest of all alpine violets and it is best to keep it in the scree. More difficult to grow are *V. calcarata*, *V. cenisia*, and the yellow Karawanken violet, *V. zoysii*. The mountains of the Balkans gave us *V. delphinantha*, and there it is purely a rock plant. It is a little shrublet which grows up to eight inches, has small leaves, and at blooming time produces large "longspoon" lilac-red blossoms. It grew in many rock gardens for many years, but has now disappeared. The greatest difficulty is that this violet cannot be propagated (I would say, almost). Nothing can be done with cuttings. I have tried many times and at many times of the year, and even though summer cuttings did root they invariably died during the winter.

Now as to my own very strong *V. delphinantha* plant, which I planted in full sun in a tufa scree, it bloomed abundantly. Last year I found two self-sown seedlings and also collected a few seeds of which I germinated five. These were transplanted to small pots. Again this year I collected some seeds. I have this plant growing with *Leontopodium nivale*, *Ranunculus bilobus*, *Thlaspi limosellifolium*, *Androsace halleri*, and similar plants, and it looks now as though I had found the way to keep this violet, the greatest beauty of all violets, permanently in cultivation, even to multiply it. With natural planting methods we can cultivate *V. biflora* and *V. palustris*. The first is yellow blooming, shade loving on humusy soil, and the other flourishes in the sphagnum bog together with droseras and pinguiculas.

Most of the foreign violets are easy to grow and are already widely distributed. I recall *Viola cornuta* varieties, *V. delphinifolia* with fine split leaves, *V. palmata*, whose leaves are palm-like, the stately *V. eizanensis* from Japan with large white and also lilac blossoms, and the American *V. nuttallii*, yellow in color, which is rare around here. All these mentioned will self-sow if they like their situation, and *V. palmata* can even become a weed. Very good-growing and cushion-forming are the following: all forms of *V. cucullata*, *V. papilionacea* with poplar-like leaves and large beautiful blossoms. These two are good as ground covers in shade and deserve wide distribution.

Even *Viola odorata* deserves a place under shrubs. It is the most fragrant violet. There are some white and some colored hybrids and also some double ones. There are, of course, many more, but I wished first to draw attention to *V. delphinantha* and also to *V. macedonica*, which is regrettably much too little known. It belongs to a group of violets that propagate themselves heavily and bloom from early spring to frost. Even the seedlings start to bloom the same

year. They are only about four inches high and are beautiful with velvet dark lilac blossoms. The older plants grow up to eight inches and I remove them. This requires a little work, but it pays in more blooms. I planted *V. macedonica* together with *Ranunculus satori* and everybody admired the combination. Some success can be had with *V. lutea grandiflora*, planted in screes, and with *V. correvoniana*, and also *V. rothomagensis*. However, our native *V. lutea* is very difficult.

OMNIUM-GATHERUM

Once the Editor asked a member to write an article for the *Bulletin*. This member's answer was to the effect that he would like to oblige, but that "he had long walked in the shadow of great men (horticulturally and botanically speaking)," and that he felt he had nothing to give that could not be better given by these or other "great men." At that time the Editor had not met this member and was unaware that he wore always the cloak of modesty, or that he was so lost in admiration and respect for those who were, or had been, his friends and teachers that his own knowledge and accomplishments had been pushed far into the background; his confidence in himself non-existent, and that truly he walked in the shadow of others.

The Editor's answer, perhaps overlong, was as follows:

"No man walks long in another's shadow lest they, in single file, walk forever facing the sun. To do this they must walk in a circle and the world's work is not done by men who walk in circles. Even so, to face the sun in its daily orbit, that one's shadow may always be cast behind, to the dimming of a follower's luster, requires an end to the march at sundown, and when full night descends there is only the earthly shadow to darken the path. It is then that individual shadows are seen no more and there is no walking in another's shadow.

"What is a shadow, anyway? It is but a darkening of the way, a blocking of the light, a drab carpet moving on the ground, a thing without substance. Only when shadow is considered as shade is it a useful thing. But shadow is being discussed, not shade, and it is time to get down to cases and relate these wandering philosophical remarks to the shadowy statements in your letter.

"It is the light of botanical knowledge that causes the shadows of which you write, and this light shines full on some men because they have long exposed themselves to it. They do cast a long shadow, but it is not for this that they are honored. It is proper that you should honor these men. Honor them for the knowledge they have gained. Even more, honor them for the desire that led them to seek such knowledge, and the long hours of concentrated work which the fulfillment of such a desire entails. Honor them, even love them, for their sharing of such knowledge, and be grateful for the opportunity of associating with some of them.

"The greatest honor, however, that you can show them is to step aside from them and expose yourself to the light so that in time you, too, may cast a long shadow. But the chances are that at that time you will no longer be concerned with shadows, yours or another's. Perhaps you have already arrived and because you have not stepped aside the shadow cast by those you follow is deepened and lengthened by your own. So it will be an event of importance when you do step aside and start sharing your own knowledge and experiences with your fellow members, who likewise are in search of botanical and horticultural knowledge, and it will be a cause of my rejoicing if you will allow the *ARGS Bulletin* to carry your story."

Since then, the Editor and the shadow-walker have become acquainted, twice joined others in plant collecting expeditions, and now it is gratifying to

report that the erstwhile shadow-walker did step out into the sun, is on the way to gaining confidence in himself, has already written two articles that have been printed in the *Bulletin*. Yet this man has retained his humility, and there is a sincerity and a sweetness and an unselfishness in his character that endears him to those privileged to know him. Now the Editor is content to "walk in the shadow" of this gentle, talented, and dedicated plantsman.

Perhaps there are many other "shadow-walkers" within the membership of our Society, did we but know them, who might be induced to step into the sun, forgetting this self-depreciating shadow fantasy, and enrich the *Bulletin*, to the benefit of our members, by sharing their knowledge and experiences.

Knowledge of any particular subject is born of the experiences of innumerable men and women, built up through the ages, commingled, meshed, and massed into what may be termed, at any given moment, total knowledge. Of course, knowledge is ever unstable, gaining additional stature from continual experimentation; gaining or losing as previously assentive hypotheses become factual or not; recovering as new theories are advanced, put to the test, and accepted; expanding as man learns more and more of the laws of nature and the mysteries that have so long baffled him.

Any new knowledge, any small bit gleaned through some individual's experimentation, any new alignment of known facts, brought about by original thinking, that tends to throw light into the obscure corners of the knowledge structure, cannot be channeled into the great reservoir of accumulated knowledge unless brought out into the open and made available to those who are likewise seeking. New knowledge must be shared. Without sharing, once knowledge had been gained, there would have been no human progress in times past, there would be no learned men, no mass intelligence, no books, libraries or universities; nothing but a race of men, yet living in caves, each individual possessed of his own private little bit of new knowledge, holding fast to it, cherishing it, guarding it, lest it become common property with some small loss of fancied advantage to himself. 'Tis well for us now living that early man learned the virtues of sharing among the other virtues it sometimes seems he is still loath to learn—or practice.

Knowledge kept too long locked in the human mind can lose its potency, can curdle, and in the end leave the hoarder empty headed and the world not benefited. Unshared knowledge carried to the grave is tragedy, indeed. When there is no more to learn, or man ceases to search for what there is yet to be learned, the race of man shall perish—and all knowledge with it.

Czechoslovakia is a land where enthusiastic rock gardeners are numerous. This small nation, tucked away in central Europe, behind the Iron Curtain, has led all others in voluntary contributions to the activities of the ARGS during the last three months. There are only three members, yet all three have contributed. What have they contributed? There have been two fine articles sent in, both of which are scheduled to appear in this issue of the *Bulletin*; many fine, clear-cut, black and white, glossy prints of their favorite alpine genus, the *Pulsatillas* (some you will see in this issue); a comprehensive tabulation of this same genus (now being brought up to date and covering a wider range); fascinating and highly informative (horticulturally speaking) correspondence with at least three of our American members (undoubtedly, there are more); herbarium sheets (one in this issue); color slides to the Society's president and a promise of more to follow; seeds already received and more promised for the current Seed Exchange; a listing of 100 plants native to their country that are protected from collection and picking, by law, which includes such choice plants as *Cyclamen europaeum*, *Soldanella*

montana, *Saxifraga oppositifolia*, *Primula minima*, *Anemone narcissiflora*, *Cypripedium calceolus*, *Erica carnea*, and *Campanula barbata*. And don't forget the stamps liberally sprinkled over the envelopes, beautiful stamps of flowers, birds, and mushrooms. Enough!

Just think! Should our members in other overseas lands, Canada and our own United States respond, without solicitation, with the same enthusiasm, and even half the material, what a Bulletin we would have! It would have to be greatly enlarged, brought out monthly, and need, perhaps, a big name editor. If three Czechoslovakian members can take such an active interest in our Society and in the *Bulletin*, what is stopping the other one thousand or more who have contributed nothing, solicited or unsolicited?



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