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C. R. Worth, Editor

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GARDENS OF THE HIGH SKYLINE

EDITH HARDIN ENGLISH, *Seattle, Wash.*

NATURAL ALPINE GARDENS occur in many parts of the world, their elevation above sea level being associated rather closely with their degree of latitude and the amount of precipitation available at their particular location. In the tropics an elevation of 15,000 feet or more is commonly required to offer suitable alpine habitats. In the Arctic region alpine plants abound at sea level. Here in the State of Washington where we enjoy the neighborliness of five major volcanic cones and countless lesser, non-volcanic peaks of the Cascade, Olympic and Wenatchee Ranges, alpine plants grow in pleasing assortments at elevations of 5,500 to 8,500 feet or more.

The geological circumstances under which each peak came into being has a very definite bearing on the type of plants that *can* grow on each particular mountain. The Wenatchee Range, for instance, includes serpentine formation which is tolerated by some plants, rejected by others. Precipitous Mt. Stuart, with an elevation of 9,470 feet, and majestic Mt. Shuksan, of 9,038 feet, as well as many other peaks, are of uplifted granite. We learn to look for certain plants on granitic formation. Our most recently formed volcano, Mt. St. Helens, rising 9,671 feet in height, has pumice slopes and serenely handsome Fujisan form. The plants that occur on St. Helens are the ones that find it possible to exist under its particular set of somewhat trying conditions.

Our four other major mountains—Rainier, towering to 14,408 feet, Adams to 12,307, Baker to 10,750 and Glacier Peak to 10,528 feet — all have aged sufficiently to have undergone considerable erosion, resulting in an abundance of rock out-croppings, high ridges, cliffs, scree slopes, rock shelves, cirques and occasional plateaus that offer appropriate habitats for alpine plants.

The great continental glaciers had much to do with the distribution of alpine plants in the northern portion of Washington. A long time ago certain plants may have grown continuously from one peak to another. With the progress of the devastating ice mass all plant life was destroyed in the areas that served as glacial troughs. Only those individual plants survived which happened to be

growing at elevations above the ice flow. Today we see quite effectively the over-all picture when we make distribution maps of certain alpine plants and find them growing on isolated peaks.

When ascending any of our high mountains we travel through the colorful Hudsonian meadows where plant life is abundant. There the slender, almost formal, spires of the subalpine fir, *Abies lasiocarpa*, and the more informal, shaggy-foliaged, mountain hemlock, *Tsuga mertensiana*, form a perfect backdrop for the lavish floral display.

After climbing through this zone and on up to tree line, a certain feeling of aloneness is experienced. This feeling is of wilderness quality and perhaps is most satisfactorily explained as being just the opposite of loneliness. Above all else it is the diminishing stature of the trees that tells us we are entering one of the types of true wilderness. Here scattered individuals of subalpine fir and mountain hemlock occur but they are sparse, dwarfed, gnarled and rheumatic-looking. The few trees that have challenged the elements by pushing up to this high country develop a ruggedness of character that tells of the wind-torture they have endured. Always their fingers point with unmistakable evidence at the direction taken by the prevailing wind. Upon close study their twisted forms offer a classical type of beauty that calls forth the utmost of heartfelt admiration. Theirs is a hard life but it is a good life.

Three other arboreal subjects also reach the upper limits of tree life: *Pinus albicaulis*, the white-barked pine, *Larix lyallii*, the little-known Lyall's Larch, and occasionally *Chamaecyparis nootkatensis*, the Alaska cedar. At the last outposts, just as far as toe-holds allow, these trees become mere creeping shrub-like growths with trunks no larger than one's wrist, yet hundreds of years old. Their wood is laid down in such thin, tight annual rings that it is flint-hard. The twigs are so obsessed with the stubborn intention of holding out against everything that they do not bend readily in our fingers.

When ascending a great peak, as Mt. Rainier, we experience a certain reluctance as we leave the very last of these tree-friends behind and struggle on up to the barren rocks and snow above. Upon descending the mountain, foot-weary, we welcome, in turn, the much-needed uplift of strength and spirit that comes with our encounter with these same substantial tree-growth. Not only do these lone white-barked pines offer reliable hand-holds; they give a definite sense of security that comes of being in the presence of stalwart entities.

Here on wind-swept ridges or high plateaus, generally between 6,000 and 8,000 feet elevation, are to be found the most fascinating natural gardens of all that we have encountered — those of the arctic-alpine zone.

Certain advantages are enjoyed by the plants that inhabit these seemingly bleak, chilly heights. In the early turn of the season that marks what we might call "spring" in the high country, there suddenly comes a day when the bright sunshine causes every snowbank and slippery slope to start melting. It is not a gradual process — it comes with urgency. Snow water runs everywhere. Not in spite of it but because they have adapted themselves to this condition, the sturdy little alpine plants break through, often right through the snow. *Saxifraga tolmiei* may have two inches of icy water surging and swirling about its three-inch stems, nevertheless at the top of each stem will be a well-developed dainty white blossom. Later in the season the same scree slope will bake in the intense sunshine and become as dry as powder, yet the saxifrage not only will live, it will thrive. *Castilleja rupicola* may bloom in full splendor only to have a fresh snow-storm batten it down to earth again. Quickly, the next day, the snow may melt and the paint brush and its host-plant will go about the business of growing, just as if nothing had happened. After all, with only a brief eight to ten weeks in which

to put forth herbage, display their efflorescence, mature seeds and cast these precious seeds to the ever-present winds, no time can be lost in recovering from so minor a catastrophe as an overnight snow-storm.

The facetious thought often presents itself that if we could arrange for one or two weeks' supply of ice water to run rampant over the alpiners in our lowland gardens, just about the time that the plants are pushing through the ground, we would see more contented plants.

Good drainage, so sought after in our gardens, is certainly not difficult to find in the mountains. Usually everything that is not up, is down. Little pocket pools do occur, just small, reflecting gems of water caught behind a rock when the runoff washed the terrain. Seed of *Penstemon rupicola* that blows into these pocket pools will be lost. That which lodges in a crevice of a perpendicular cliff or in the crack of a broken, sloping rock will make itself comfortably at home. This observation gives us a very important clue concerning the preference of this species as to location in our gardens. Its foliage needs to be kept clean; its roots need cracks between large rocks. It is happiest in full sunshine with generous rock surface over which to spread its lovely glaucous foliage and cherry-red flowers.

The sunshine that beams down upon mountain gardens is very different from that which we receive at sea level. Here, smoke, dust and fog tend to screen out much of the ultra violet part of the spectrum. At 8,000 feet elevation and on up to the tops of the mountains the burning power of full, open sunshine is most intense. Without suitable protection a person's skin actually burns painfully as well as dangerously. However, the plants that grow so contentedly in these high natural gardens are adapted to this intensity of light and apparently miss it when we transplant them to sea level. *Erigeron aureus*, growing in the alpine zone, has flowers of purest, clean gold. In our home gardens its blossoms are usually of golden chartreuse. It may be the difference in the quality of light that causes the change of color.

One of the distinct advantages that high mountain plants have is that of freedom from weeds. Every plant present is a part of the alpine community. Space is big and competition is not a serious factor. There is room for all the kinds of plants that succeed in adapting themselves to this habitat. With no tall trees present there is no shade except that provided by cliffs or jutting rocks. With so little shade there is no lush, weedy growth of foliage. The herbage developed here must involve compact substantiality.

As we stop to look with rapt attention at the wondrous collection of alpiners growing on these high slopes with such enthusiasm and zest for life, we pause to think: These are the plants we like! This is the way a garden should look!

If it is early morning each neat little plant of *Lupinus lyallii* charms us by holding a single drop of dew right in the center of each palmately compound leaf. *Polemonium elegans*, even though it suffers herbaceous degradation because of the mephitic character of its Jacob's ladder foliage, nevertheless offers the most exquisite of blue flowers against a background of fissured scoria. *Spraguea multi-ceps* spreads both its foliage and its rosy or creamy pussy-paw flowers flat against the well-drained pumice. *Mimulus tilingii* edges every alpine rill with its golden monkey flowers. As we look we are impressed by the fact that so many of these plants are mere miniature species of genera that are represented by taller growing species in the lowlands. A wee goldenrod, *Solidago bellidifolia*, the diminutive *Aster pulchellus*, and the attractive little *Smelowskia calycina* which represents quite daintily the usually coarse *Cruciferae*, all illustrate the fact that low, compact plants are better adapted to survival in this region than their taller sisters would be.

A natural garden at this height includes now and then a bit of grass, a wisp or two of *Carex* and even plants of *Polygonum*. All lend themselves as necessary parts of the over-all picture. Instead of taking possession of everything in sight as lowland polygonums would do, *P. newberryi* forms neat mats that late in summer offer delightful foliage color off across the alpine slopes. Patches of tiny willows, including *Salix cascadenis* and *S. nivalis* form intriguing alpine gardens all by themselves, complete with generous-sized pussies on two or three-inch, upright growth. In the fall the willow leaves turn an intense gold that blends well with their magnificent setting. At home our taller willows would be intolerable in an alpine planting. Here in the real alpine gardens the mountain willows definitely are an asset.

It is helpful in understanding alpine plants to note that some kinds, such as *Synthyris lanuginosa* which spreads its woolly-white foliage in neat rosettes over high shaly slopes, set their flower buds for the next year by the first of August. By October the plants and their promising buds are fully covered by snow and thus are assured protection as well as a resting period. In our lowland gardens in Seattle where we seldom have snow, such plants suffer greatly when their flower buds are subjected, in turn, to periods of wet, sloshy weather, dry freezing or bright winter sunshine. Without the long period of even-temperated dormancy, plants of early-bud-setting habit tend to bloom abnormally or not at all.

When going to the high country to see such plants as the various species of *Draba*, *Anemone* and *Synthyris* in bloom it is often necessary to go so early that while in the mountain meadows we must struggle through goodly depth of snow and on up equally snowy slopes before reaching the high alpine ridges that have been blown bare and open at an amazingly early date. Even though the temperature may be chilly, these ridge-dwelling plants send forth their blossoms at a time when most persons have not yet felt the compelling urge to go to the mountains to search for plants. This early blooming period also makes the collection of seed of such plants difficult. The seed often has ripened and dispersed long before the Hudsonian zone below them is free of snow and conducive to travel.

To my husband, Carl S. English, Jr. we are indebted for various pertinent bits of information concerning native alpenes, gleaned on his early trips to these high ridges. For instance, in the Mt. Baker country, in May, it was his good fortune to find *Anemone parviflora*, this constituting the first known collection of this lovely little plant in the State of Washington. Normally it is found in more northerly regions, extending throughout Alaska all the way to the Arctic Ocean. On several trips he has returned with the very attractive but seldom seen flowering specimens of the various *Draba* species. Because they bloom so early, these interesting alpenes of the mustard family much more commonly are seen with only the remains of already opened, dry seed pods. Such a condition does not in any way do justice to these appealing alpine subjects. In the Olympic Mountains the early-blooming *Synthyris lanuginosa* was observed as having intensely violet-blue flowers instead of white as was believed by botanists for years and so stated in publication. Very likely the persons writing the descriptions had, unfortunately, seen only dead flowers or too well-dried specimens.

Winter protection is of the utmost for alpenes in the wild. About the last week in September or early part of October the snow blanket is spread generously over the entire landscape. During the winter months the snowfall continues and accumulates to a great depth. Safely tucked away the plants rest in that deep white sleep until the day in the mountain's brief spring when the slopes suddenly awaken and the impelling necessity of striving upward again takes possession of all living things in the wild alpine garden.

HIGH DIVIDE IN THE OLYMPIC MOUNTAINS

ALBERT M. SUTTON, *Seattle, Wash.*

THESE IS an ascending land of green enchantment that extends from the blue restlessness that is the Pacific Ocean to the snowy immobility of the interior mountain ranges that dominate the Olympic Peninsula in Washington State. It is a westward-facing land where sunsets are often brilliant and sometimes of a soul-searching loneliness; a land where twilight lingers long into the summer night; a land of lush lowlands, densely wooded foothills and of slashing valleys that penetrate the high country and give definition to the many peaks and ranges.

Restful is this verdant land, where sometimes the many greens of the intricately patterned landscape blend into a quiet mosaic, and there is excitement, too, when the changing light shatters this restful picture and the various tones of green are thrown into sharp contrast. It is then that alders, willows and cottonwoods, nourished by flowing waters, mark shining ribbons of light green that lace through the conifers' dark stand, and in the valleys below, where cattle graze, close-cropped meadows are as a chain of emeralds stretching away into the hills.

Relief from all this verdure is found in occasional glimpses of blue lakes and in the silver gleam of rushing water where a river escapes, for a moment, from the forest's dark embrace. Lakes and streams are abundant in this land for there is no closed season on the southwest winds that find their strength far out in the ocean and, mindful of their never-ending obligation to 'keep Washington green,' drive the moisture-laden clouds landward to unload their damp cargo on a grateful land. Sometimes, during the summer, the high-flying clouds meet atmospheric resistance over the high Olympics and stall there to be overridden by other clouds hurrying in from the ocean until the entire area is blanketed with a solid overcast that denies passage to the sun's rays. The result is a land drenched with gloom and an unseasonable coolness for days at a time. Occasionally this lowering overcast adds to the unpleasantness below by sweeping the region with violent rain squalls or soaking it with a steady day-long drizzle.

But when the weather is fine in this fascinating country there is such a sweet-temperedness in the atmosphere that the fortunate visitor is flooded with a sense of well-being that is both exhilarating and soothing. It is the anticipation of experiencing this uplift of spirit that calls us back year after year despite several wettings we have endured in some of our recent encounters with this land where Jupiter Pluvius holds sway.

Early in the year Eileen and I (Eileen is my wife without whom I would not care to venture into the mountains) made plans to join Brian and Margaret Mulligan in an attempt to outwit the rain god and explore more of his favorite domain in the hope of catching him napping high on Mt. Olympus with his watering pot empty. We planned to go to High Divide in August where none of us had been before, for a ten day's outing and to take friends from the East with us. These friends were Edith Grimes and Dr. Ralph Earle who live out in the Atlantic Ocean on the island of Vinalhaven, off the coast of Maine. This was to be Edith's first visit to the West Coast. For many years she had watched the sun emerge from the Atlantic in golden splendor and spread a shining path to her home on the island and often she had dreamed of the day she might see the fiery disk quench its flame in the western ocean after its long leap over the continent. Her dream was soon to come true.

The four of us were to meet the Mulligans at the forest camp at the end of the Sol Duc River road on the western slope of the Olympics. This camp has been

carved out of the wilderness and is rough, sometimes damp and always beautiful. Great naked tree trunks tower into the sky and the high-flung branches form a sheltering canopy overhead. The trees are spaced far enough apart to allow for roomy camping with undershrubs, mostly vine maple, *Acer circinatum* and *Corylus californica*, the hazelnut, so plentiful that a certain amount of privacy is assured. These shrubs are interspersed with tall sword ferns, *Polystichum munitum*, and the more delicate lady ferns, *Athyrium filix-femina*, so that each camp spot becomes a leafy bower.

We arrived at the camp late in the afternoon and searched for our friends. We found them busy with their evening chores. Margaret had chicken on the fire and Brian was gathering fuel as we drove up amid shouted greetings. Edith and Eileen helped Margaret with the cooking while the rest of us busied ourselves about the camp. The night promised to be fine so the tent was not pitched. It is difficult to concentrate on camp duties when the air is filled with the aroma of frying chicken and camp coffee, especially when the air itself is the fresh ocean-washed air that has replaced some of its salty tang with the fragrance that only massed conifers can give. We were but a scant thirty miles from the ocean as the southwest wind blows, and even nearer to the Strait of Juan de Fuca to the north, and in all that stretch of country the winds pass through and over countless conifers; spruce, cedar, pine, hemlock and Douglas and true fir. It is no wonder that the wind carries a resinous fragrance.

Dusk, gentle herald of approaching night, was already gathering the daylight that yet remained under the great trees into his shadowy embrace and in that lovely hour of tranquillity we sat down to our evening meal. All about us was the soft blending of light and dark and as the shadows deepened a companionable silence fell on our little group. A light at our table at such an hour would have been sacrilege. The lights of the cooking fires scattered about the camp, however, did not intrude, for the flickering flames set the shadows dancing among the trees and in watching them drowsiness settled over us. Very soon we sought our sleeping bags and amid the subdued sounds common to all wooded camp grounds after dark, we found sleep and dreamed not of the ordeal that the morrow was to bring.

Next morning we drove back a mile or so to a huge rough-built barn in a clearing hewn out of the forest. The barn had weathered to a driftwood gray and was in a state of disrepair. Many of the hand-hewn shakes that formed the roof had yielded to the playfulness of some boisterous gale and in their one moment of freedom had danced and whirled their abandoned way back to the forest from whence they came. At the barn we were cheerfully greeted by Mr. and Mrs. Peterson who had agreed to pack our gear in to Heart Lake shelter cabin where we planned to make our headquarters. Then came an hectic hour in which we unloaded our cars, gave into the Petersons' keeping those heavy and bulky items which the horses were to carry and then organized our own individual packs from what was left.

Our small expedition had not been organized on an austerity basis nor was luxury the keynote. Nevertheless, our packs were heavy and although we started first we knew the horses would overtake us before we reached Heart Lake. We did not hurry, however, as we wished to enjoy every mile of the trail. The first few miles were through deep forest and not overly steep. By keeping our eyes open for the many surprises that reward those who roam our deep woods; by marveling at the lushness of the growth about us; by exchanging impressions when we rested and by giving ourselves completely to the mood of the forest, which was somber although not depressing, we were able to make good progress and not think too much about the drag of our heavy packs.

We did not leave the trail to explore the woods for the little lady slippers that we knew should be hiding somewhere in the mossy expanse that is the forest floor. This dainty orchid, *Calypto bulbosa*, is ever a precious find and when found its robust fragrance should be enjoyed with discretion for it is like a heavy incense. Our devotion to the trail brought its own reward for several times we came upon small colonies of that most beautiful of the pyrolas, *Moneses uniflora*. Intimate groupings of these elfin plants graced the deep moss of trailside banks at eye level where one could best observe the cameo-like beauty of their alabaster flowers which are carried so demurely that one might suspect them of wishing to escape notice. However, one might also suspect that this demureness is sheer affectation for these innocent sprites attract one's attention with a far-reaching perfume, delicate and teasing. Almost no one ever passes this pyrola without stopping to admire and many remain awhile to pay homage to its perfection.

The morning was gray and during the first hour on the trail the sun had broken through the overcast occasionally to shed its feeble rays on us. Later we noticed cloud fragments sifting in among the tree tops and soon it started to mist. At first this cooling moisture was welcome for we were somewhat heated from our trail trudging. Our thoughts turned naturally to rain forests, which are one of the wonders of Western Washington. Much has been written about them; about the giant trees, ferns and always the moss; of ancient maples, *Acer macrophyllum*, grotesque yet somehow beautiful with their gnarled wide-spreading branches and leaning trunks completely clothed in shaggy robes of bronzy-green moss, mostly *Neckera menziesii* and *Camptothecium lutescens*. Out of the moss on the trunks appear little sprays of licorice fern, *Polypodium vulgare*. We have read of the conditions of soil, moisture and temperature that have combined to make the rain forest possible. And brought to our attention has been the majesty of the many-pillared sylvan temple; the awful sublimity of the silent forest in the half light of noon has been stressed and so has the swift and frightening darkness that steals in and erases the great buttressed tree trunks from sight, one by one, even as the hurrying sun is yet riding its summer range in the northwest. But it is the solitude and the silence and the lushness and the enormity of the trees that are mostly emphasized.

We had time to think of these things as we pressed up the steepening path. Yes, the trees were large, some even huge, their tapering trunks clear of branches to such a height that the leafy crowns were hidden in the mist. Of the six of us Brian was the most interested in the trees and the most observant. Many times he pointed out especially fine specimens and that would be a good excuse for a rest and a discussion. He observed that we were no longer in the rain forest. The real rain forest, he told us, did not extend quite so far inland and the Sitka spruce, *Picea sitchensis*, the dominant tree of the foggy coastal plain, the home of the rain forest, we had left a few miles behind. We could remember seeing many spruce trees as we drove up the Sol Duc. The great conifers surrounding us now as we struggled upward were mostly Douglas fir, *Pseudotsuga taxifolia*, western hemlock, *Tsuga heterophylla*, and *Thuja plicata*, the western red cedar.

However, it was not the trees as individuals that claimed my own thoughts although I was not insensible to their magnificence. I was conscious, rather, of the vastness of the arboreal army through which we passed. Countless tree soldiers, rooted in the soil, stand at attention, rank upon irregular rank, immaculately clad in their close-fitting uniforms of russet-brown. They form an immobile militia guarding the approaches to the mountain fastnesses. They protect the lesser dwellers at their feet and hold at bay the ravaging forces that are destroying our land areas through soil erosion. Straight and tall they stand in silence and in dignity. They fear only fire, man, certain insects and the end of their days. True,

some are now faltering from age or honorable wounds and must lean on steadfast comrades for support. And there are the fallen! Their tour of duty is over and they lie in honor among the ferns. Moss lies deep over them and hides the slow disintegration that returns them to the soil for its enrichment. Even in death they serve.

To be a great tree! It is a tree's destiny to remain stationary throughout the long years from sprouthood to the final day when the forest resounds to the mighty crash that proclaims its passing. But during its lifetime a tree knows the night wind in its gentler moods and the gale in its fury. It scans the heavens all night and ponders each star in its orbital flight. To be a great tree is to bathe in golden light all day and by night to gather darkness for a pillow. A tree endures the chilling blast of bitter storms and winter's weight of clinging snow. A tree lives with the whispered song of the summer breeze and with the song of the thrush as well. A tree is gentle and true to its nature and loves the rain as it falls, and the mist. Because of its love of life a tree must sometimes battle to survive and may crowd unto death those neighboring trees less vigorous—but never with malice nor in anger.

A tree lives with nature and by nature and when trees congregate to form great forests, as they have done in our western land, it is that nature has wrought yet another monument to record God's goodness to man and it should be man's duty and great privilege to cherish and protect it; to use it and love it and share it with all creatures who find such forests their natural home. The Druids in olden times venerated their oak groves in Britain and Armorica. Should we do less than revere the vast forests where our noble conifers gather? The answer is "no," but all men are not agreed. Some would destroy these mighty forests where each tree stands alone, patient and vulnerable, in its appointed place, giving no offense, defending itself not at all, stoical under attack and without hate. How dare man, for need or for greed, raise his hand against a tree?

The mist turned into a drizzle, which is a heavier falling mist that means business. We put on our new white ponchos, made of plastic and very light, and pulled the built-in hoods over our heads. These ponchos were put on right over our packs so that from a distance we must have looked like a company of hump-backed ghosts laboring up the sorry trail. Our luncheon was a damp affair. We stood under the doubtful shelter of a large hemlock and munched moist sandwiches. Food, rest and Ralph's droll stories of life in Vinalhaven revived our spirits and we started on again. Then Old Jupe really went to work on us. It began to pour. No mist or drizzle this but a hard pelting rain that set the trees dripping, bent the water-laden shrubs down over the trail which turned into a slippery trough or a rivulet of rushing water depending on the degree of slope. It became difficult to retain one's footing and many were the tumbles, and the clean ponchos became mud-splashed and our feet said goodbye to dryness.

We were gaining altitude and the forest was thinning as we came to a sizable snowslide across the trail. While contemplating this confused tangle of snow and uprooted trees we were overtaken by horses. Out of the forest and the rain they came, splashing across a furious little stream. On the lead horse rode Mrs. Peterson, with the father of all ten-gallon hats set squarely on her head. The rim was so wide that not a drop of the water dripping from its perimeter touched her on its way to the ground. The horses stumbled out of the stream and came to a halt. Each one's halter rope was tied to the tail of the horse ahead so there were no stragglers.

We scouted a way across the slide for the horses and found the trail again and they went on ahead. We were within a couple of miles of Heart Lake shelter and were hopeful of soon being out of the rain. How vain our hopes were was

revealed to us somewhat later when rounding a steep curve we came upon Minnie (Mrs. Peterson) and the horses. They occupied the only level spot in sight. The horses stood fetlock deep in mud with rain running off their sagging rumps which they had turned to the sharp wind just arisen. Their tails, wet and scraggly, were blowing against their sides and their heads hung low. Poor horses! Minnie sat there on her horse, hunched up under the protection of her great hat. There was a worried look on her face. It seemed that Bridge Creek, just ahead, was now Bridgeless Creek. The heavy rain had turned this little jump-over brook with steep sides into a torrent. With the bridge gone and boulders grinding noisily in the stream bed, horses could not pass, especially when a guy wire from the bridge was whipping about beneath the raging waters.

There was nothing to do but unload the horses, send Minnie homeward ere darkness caught her on the trail, and make camp as best we could. So we unloaded, stowing our food, gear and clothing under two large tarpaulins in a confused mess from which escaped oranges, sardine tins and other choice items to float away on the water flowing down the trail or sink in the mud. Minnie wished us good luck and departed. We were alone. It was a low moment. The rain beat on us, the wind tore at our ponchos, the trees dripped and water squished in our shoes. Can you think of a more miserable situation? Miles in the wilderness, isolated, without shelter, wet and cold, clouds pressing down on us, the steady drumming of the rain in our ears and darkness fast approaching. It is no wonder that we hated Old Jupe.

So six sodden humans, in desperation, set about to make a temporary home on that bleak hillside. By full darkness much had been accomplished. Two tents had been pitched on sloping ground, the food and gear had been stored under cover, nearly dry sleeping bags had been laid out in the tents. Despite the scarcity and the wetness of fuel we had been fortified with a meal; not very well cooked, not very hot and lacking in quantity but, nevertheless, a meal. The soothing sound of rain on the tent lulled us to sleep.

Next morning the weather had improved although it was misty and there was still the threat of rain. After a good breakfast we found a way over the creek which had subsided somewhat. Ralph was the daring one who got across first and then helped the rest. That day and the next we moved most of our things to the small shelter cabin, leaving a few items in the pup tent on the hillside. It took many trips to make the move for although the distance was not great, the packs were heavy and the trail difficult. It led over snow in many places, through stretches of mud and up sharp but short grades. Most of the food and extra equipment was stored in the shelter, which became the home of the Mulligans. The rest of us scooped a corner out of a snowbank, pitched a big tent in the lee of the shelter and dug a ditch across the front of it to keep the melting snow away from the sleeping bags. By the time our new camping arrangements had been completed we were all weary but happy to be settled.

Low clouds greeted us next morning in spite of the promise given by a starlit night. Soon after breakfast the sun shone for a while and we felt more cheerful and took time to examine our surroundings. The open side of the shelter faced west and looked out over snow covered meadows to a steep hillside quite heavily timbered. In the other direction the ground sloped downward in a series of irregular terraces, heather-covered and free of snow, to a snow-fed stream roaring along in a troughlike depression. Beyond this hidden stream a broad hillside rose up steeply to form a ragged skyline. On this hillside were scattered groves of alpine trees, open spaces with rocky outcrops and oddly shaped snow fields. We named this long ridge Bearsong Mountain for reasons that will appear later. Our greatest interest, of course, was in High Divide which was uphill and to the



Albert M. Sutton

Bearsong Mountain, snow-covered in August.

south. We could see much of the divide from the shelter.

Rough terrain led upward, mostly covered with snow which should not have been there so late in August. Normally this rough slope should have been a great flower-strewn subalpine meadow. But now, as we looked at High Divide, we saw nothing but snow with occasional rocky patches, black islands in a white sea, and at the top a long line of dark conifers marching along the nearly level skyline and silhouetted against leaden clouds. We knew from the map that beyond those trees and across the great trench of the Hoh River was Mt. Olympus with its many peaks and wonderful glaciers.

Before noon Brian and Margaret set out to explore High Divide while the rest of us remained at camp where there was much of interest. In the middle of the afternoon, we, too, started for the divide. We hiked over snow and rock and about half way up came to Heart Lake. It was mostly covered with snow and ice and only a small bit of water could be seen, blue against the white of a steep snowbank on the far side. Some readers may wonder about so much snow in August at a bit less than 5000 feet. This elevation in the Olympics would be normally within the limits of the Hudsonian zone but because of the retarded season it was more like the Arctic-alpine as far as snow conditions were concerned. It should be remembered that an altitude of 5000 feet in the Olympics is comparable with twice that in the Colorado Rockies for the same month.

From the lake we soon came to the line of trees along the divide. The snow ended abruptly at this line and the ground fell away sharply to the south all along the ridge and kept on falling until it reached the Hoh River some 4000 feet below. We looked for Mt. Olympus and could catch fleeting glimpses of it through the rapidly shifting clouds. We watched this changing scene for a long time and saw all of the mountain but never all of it at the same time. What we did see made us long for a clear day. We became chilled so turned westward along the ridge. We had our choice of walking in timber or on snow and the snow was easier. Some of the snowbanks were strenuous to climb and we were

soon warm again. We left the snow to explore a rolling meadow which had a southwest exposure and there we found Margaret and Brian looking down into Seven Lakes Basin, a large mountain park of much charm tucked in between the High Divide and Bogachiel Peak. We had planned to spend a day enjoying both the park and the peak but this was not the year. Too much snow and not enough flowers.

There were evidences of spring in the meadow, however, and with that we were content. The trees that lined up along the ridge were *Abies lasiocarpa* and *Tsuga mertensiana*, both beautiful alpine trees beloved by all who know them. In the meadow *Lupinus subalpinus* enlivened the landscape with its lovely blue. Near the trees several clumps of *Xerophyllum tenax*, bear grass, lifted their many-flowered heads above the lupine. As usual *Polygonum bistortoides*, in great numbers among the grass, waved their little white brushes on long wiry stems in a fanciful ballet to music too delicate for us to hear. Here and there *Pedicularis racemosa* splashed the meadow with rose and added warmth to the scene. We were about to leave when we noticed that the clouds were lifting above the Hoh's valley. By moving a bit to the west around the hilly shoulder of the meadow we found that we could see the full length of the valley and out into the ocean. Gray and black clouds were scuffling about overhead but had risen high enough to expose the long uneven skyline of the successive ridges that make up the far side of the valley. A shining channel of clear sky, tawny and luminous, caught between the dark silhouette of the distant ridges and the darker clouds above led one's gaze down the slanting valley into the sea. Water and sky blended so that one could not distinguish the horizon. We watched the play of light on sea and sky for some time until we began to feel that loneliness that comes from too long a contemplation of nature's stupendous artistry.

On the way back to camp we had great sport glissading down the steeper snowbanks. This was a new sport for Edith and she was fearful at first, but with Ralph's help and instruction she was soon enjoying the hilarious fun. We arrived at camp ahead of a rain squall after what we considered our best day so far.

The next few days went rapidly. There was good weather and bad and every night the stars blazed in the sky and there was no cloud in sight. But each dawn the heavens were blotted out and daylight was slow in coming. Low clouds drifted up our little valley and sometimes chilled us with their vaporous breath. At time the high overcast would explode into a thousand fragments, each fragment a cloud, each cloud a changing shape that raced across the sky, urged on by unheard winds that rode the upper air. There were moments when we reveled in warm sunshine and other moments when the ground-racing shadows of clouds overtook us and the sun was but a pale disk in the sky and its warmth a feeble thing.

They were good days. In camp there was entertaining talk, much laughter, unusual meals, half-humorous grumblings about the weather, hillside entertainment and wet feet. Always, except when we slept, our feet were wet. We had not come equipped for constant tramping in snow, mud and snow water. In the morning, once our feet were wet, it was no trick at all to keep them wet all day. Before retiring we would give them a vigorous rubbing, stuff our shoes with newspaper and make sure of dry woolen socks for morning. We could, at least, start the day dry shod. Regardless of this condition and the cold and dampness we were subjected to during our stay at High Divide, there was never a sneeze or a cough. Our collective health remained excellent.

Our cooking arrangements were primitive. We had grouped stones about two folding grills we had brought with us and the fuel we collected was never dry. The ladies were marvels at serving hot meals under such conditions. Our dining

room was the outdoors, weather permitting. We sat on the hummocky heather knobs behind the shelter and while eating were, many times, entertained by the native black bears. They were not the usual camp-invading bears known to tourists but were animals completely natural in their own environment. The stage was the broad hillside of Bearsong Mountain, so named for the old song "The bear went over the mountain".

Is it proper to say that bears graze or browse? Anyway, that is what they seemed to do. Sometimes there were as many as six of them scattered about the hillside at one time. There was even a cub. With the binoculars we could watch their every move. One big fellow, in attempting to cross a steep but narrow snow-filled gully, lost his footing. He spun about out of control and once went head over tail in an ursine somersault. Frantically he thrashed his legs about as he tried to save himself from the rocks below. His claws ripped the snow and sent up clouds of snow spray. With a last desperate effort he regained his feet long enough to reach bare ground. He was back on the side he started from.

While in camp and not occupied with the usual chores there were many things to keep us busy. Brian made entries in his notebook; Margaret was adept at drying socks; Edith wrote letters and Ralph kept us entertained with his discourses on many subjects. One gray morning the tent people, awaking early and finding no immediate need for arising, were regaled with an account of a Vinalhaven episode in which Ralph essayed to cook and serve a suckling pig for some festive occasion. It seemed that the pig was too long for the platter he planned to serve it on, so, surgeonlike, he operated. He removed a section of several inches from the middle and then sewed the two ends together to make a shorter shoat. Gales of laughter from the 'Mulligan home' next door attested to the success of the story. It had not been known that they were awake.

To get water for the camp we had to tramp over slowly melting snow to a busy little rill, newly born of the snow, which, after dashing noisily for a few yards, stopped to dally a bit and spread out over a level spot to form a small boggy place. Around the edges were sheets of dark green and white where *Caltha biflora* made the most of ideal conditions and *Erythronium montanum* gave itself airy graces where the ground had thrown off its blanket of white. To get water was a chore we liked.

When we packed up from our first camp we had noticed a long talus slope leading up to interesting cliffs. One morning we took our lunch and started out to explore this spot. To reach it we had to go down trail and cross a stream. In the small meadow through which the stream flowed we spread out to take a plant census. We had already made our way through little thickets of *Rhododendron albiflorum*. There were excited shouts back and forth as new plants were found. Edith noted a small hardhack close to the water's edge which we knew to be *Spiraea densiflora* from its rosy flat-topped corymbs. On the other side *Mimulus lewisii* carried on the rose motif with clustered monkey flowers held well above the splashing water of the stony stream. Eileen called us over to see how the white faces of *Claytonia asarifolia* betrayed the course of a tiny rill that wandered about the meadow on its way to the stream. While Margaret was examining a dainty mitella with pinnately three to five parted petals which proved to be *Mitella pentandra* I thought I had found the same flower but a closer look revealed mine to me *M. breweri*. The petals were similar but in Margaret's flower the stamens were opposite the petals while in the other they were alternate with them.

By this time Ralph was across the stream and as we followed he commented on *Erythronium grandiflorum* var. *pallidum*. These fine yellow Olympic erythroniums have white anthers instead of the reddish-purple ones usual in the

species. As we were in a rush to start up the slope we didn't stop to identify the asters, erigerons and paint brushes that adorned the meadow. We broke through a grouping of alpine firs, crossed snow and began to climb. It was hard going but worth it. More of the common plants were seen such as arnica, epilobium and senecio. In the exposed places were *Lilium columbianum* and neat *Delphinium glareosum*. An occasional alpine fir spread its petticoat over the talus and in its shade we found *Hydrophyllum congestum* and not far away blue *Mertensia paniculata*.

While the rest were working their arduous way up to the cliffs I chanced upon a lovely little fern haven. Several large rocks had become wedged together to form a crescent over which spread the leafy branches of a dwarfed mountain ash, *Sorbus occidentalis*, in the shade of which grew several clumps of *Cryptogramma acrostichoides* intermingled with what I thought to be *Cystopteris fragilis*. In among the parsley ferns were tucked several rosy sorrels, *Oxyria digyna*, to add a bit of color to the fern garden. I had to hurry and at that I was the last to reach the cliff.

Brian was pointing out one of the Olympic's beautiful endemics. It was *Petrophytum hendersonii* growing on the almost vertical cliffs. Every crack in the rock was ornamented with crisp rosettes of dark green leaves studded with tight little bundles of creamy-white spiraea flowers carried well above the foliage on curving stems. The cliff face, as a whole, was a great tapestry in which the weathered texture of the rock and its many harmonizing tones of gray and tan, brightened by a casual scattering of orange lichen, served as a rich background for the bold tracery of crack and crevice so beautifully embellished with the lively green garlands of this rock-loving spiraea. We have seen other cliffs in other parts of the Olympics as delightfully adorned with *Campanula piperi*, another endemic.

Eileen had worked along the base of the cliff and discovered a bit of enchantment where rock, fern, moss and the clean, silver and green foliaged *Luina hypoleuca* had combined to create an ideal setting for an unusual and lovely picture. Here dwelt a single *Campanula rotundifolia*, which in the Olympics is a well-mannered plant with large flowers on six inch stems. What thrilled us was that this bluebell was not blue but pure white. One's thoughts turned immediately to plant royalty. Here, indeed, was a queen of purity and grace enthroned in regal splendor. One must be ever on the lookout in the Olympics for these lovely albino forms.

We had luncheon here and then started upward following the base of the cliff. We admired healthy clumps of *Saxifraga caespitosa* nestled in the crevices and the light blue of *Polemonium pulcherrimum* with neat feathery foliage. The going became steeper and tougher as we had to struggle over the close-packed exposed roots of fir, hemlock and mountain cedar, *Chamaecyparis nootkatensis*, in a compact grove of trees surprisingly large for such an altitude. We went over the top of this low mountain and back to camp in a drenching rain.

On a day of gold and white and blue, of fewer clouds than usual and those flying at great heights, we made our way up to High Divide again. Surely this time we would really see Mt. Olympus! We saw it but so quickly does the weather change that when we reached the divide the gold was gone and in its place was gray. The great sprawling multi-peaked mountain was there for us to see but behind and above it were solid gray clouds. Fleeting bands of sunshine, freed for a moment by the shifting clouds high overhead, would light up parts of the mountain, sometimes passing across the great transversing White Glacier, lying just under the topmost peaks, and again illuminating the Blue Glacier in its tremendous cirque. Through the glasses the awful cracks in the ice falls leading

from the White to the Blue Glacier were visible. In the still air we could hear the roar of the Hoh far below but we could not see it. We went eastward along the ridge toward Mt. Carrie which we could not visit because of excessive snow. We found a wonderful display of heather in full bloom at the base of the trees lining the ridge where the exposure was to the south. *Phyllodoce empetriformis* is our native pink heather and in this location the pink was especially clear and deep and the flowers large.

As I watched the play of light on Mt. Olympus I thought again of the lavishness with which Nature provides beauty for man's enjoyment and his need. Man is born with many needs of which the need for beauty is far from the least. How hard he strives to satisfy most of these needs and how often he neglects beauty or accepts substitutes that satiate but do not satisfy. He is constantly in the presence of beauty in many of its forms, especially when in wilderness areas, and he has but to open his mind and heart in recognition of it to find satisfaction of this need. Too often the effort is too much for him. He may be in the right place at the right time but the beauty about him fails to reach him. His senses are deadened to anything but the synthetic and makeshift delights with which he attempts to satisfy his needs.

Time spent in the wilderness does not always fill a man's need for beauty. He may gaze at a tremendous landscape or at an exquisite flower but nothing of beauty registers for he is too busy looking for a place in which to carve his initials. He may hear the liquid notes of a hermit thrush in the quiet of evening but he does not thrill to it for he is too busy listening to the gurgle of the beverage he is guzzling. The air he breathes may be laden with the heavenly aroma of wild strawberries ripening in the sun but their sweet fragrance is lost to him for he has insulated himself in a cloud of tobacco smoke. His hand may pass over the warm smoothness of a sun-drenched glaciated rock but it means nothing to him for he feels only the stock of the rifle he clutches. He, too often, is not looking for beauty. In the gratification of his desires he becomes a destroyer instead. Should there not be some way to awaken him?

On the next to the last day Eileen and Ralph and I explored Bearsong Mountain. We climbed to the lowest point in the skyline and because of the steepness of the slope and a recent rain everything was slippery, even where the snow was gone and the ground was covered with solid mats of heather, huckleberry, *Vaccinium deliciosum*, and sometimes *Cassiope mertensiana* with its white heathery blossoms. On the way up we saw *Veronica alpina* and *V. cusickii*, *Valeriana sitchensis* and *Potentilla fruticosa*, none yet in full bloom. We almost missed a little pool just above a grove with a tiny waterfall plunging into it from a melting snow field. At the foot of the fall lived several lovely plants of *Parnassia fimbriata*. Where the water drained away from the pool were small rushes and sedges and in the mud the tracks of bears. This must have been one of their drinking places. Along the edges were *Caltha leptosepala* and in the surrounding meadow *Ranunculus eschscholtzii* displayed its shining yellow. Among the boulders *Lutkea pectinata* had just started to send up its creamy spikes.

After a scramble we reached the summit of the ridge at its lowest elevation and looked down into another valley. We followed the ridge to the left toward the highest point. This was really a ridge. Some places the sides fell away so steeply that we used utmost care. Other parts of it broadened and became rocky scalable cliffs. From below one would not expect any plant life on the ridge and so we were delighted to find a veritable flower garden along its entire length. We were sorry that the others had not made the hard climb. We found several bedding places where animals had taken their ease. From the hair lying about we were sure elk had lain there. We picked a safe place and ate our lunch. We

watched a large bear below us. He was shambling about on a bare hillside opposite us. He wandered about for a while and then headed straight for us. When he was part way up our slope and we were thinking of retreat he seemed to lose his interest in traveling. He stopped, looked all around, then sat down on a patch of snow and gave himself a very thorough scratching. His antics entertained us all through luncheon. We started on again toward the summit and were surprised to find a scattering of *Lewisia columbiana*, the first any of us had ever seen in the Olympics.

Soon the razor edge of the ridge lost its keenness and broadened into a jumble of disintegrating rocks forming a perfect, mile-high rock garden, replete with cliffs, crevices, screens, tiny meadows, sun and shade and shifting shadows. (Yes, the sun did shine while we were there). Here plants could find situations and exposures best suited to them and thereafter flourish according to their kind. As we climbed up to this exciting place we saw silhouetted against the blue sky the fragile tracery of *Heuchera glabra*, growing airily on a bare rock face seen in profile. On closer inspection we found many choice crevice dwellers. *Saxifraga bronchialis* var. *austromontana*, a tiny plant for such a long name, spread its cushions in conspicuous spots and from the rather prickly rosettes arose the white flowers on two inch stems. Each blossom had its quota of maroon spots on the petals. Keeping company with this saxifrage was *Erigeron trifidus* with informal tufts of divided leaves and flowers of soft lavender.

Other chink and crevice residents were waiting for us to notice them. There was that prim little fern, *Polypodium hesperium* and below it in the sun *Arenaria verna* played around in the little coves of sandy soil. Loveliest of all was *Potentilla villosa*, enthroned in its own tiny niche, so gay flowered, so gray and silver foliated and so silky. Large light purple flowers of *Penstemon menziesii* looked up at us from their small-leaved mats and there was an abundance of *Sedum divergens* scattered about. Its compact clusters of fat, beady leaves were most attractive.

We turned to watch the sun on Mt. Olympus and it was difficult to return to the flowers. We were higher than High Divide and for the first time had an unobstructed view of the snowy peak. There were no clouds or trees between us. The sun was bright upon it. I believe that the Blue and the White Glaciers, as seen from Bearsong Mountain in full sun, are more interesting and more beautiful than any of the glaciers on Mt. Rainier. A brisk breeze came up over the ridge bearing us a chill message from distant snow fields which broke the spell of Olympus and sent us scurrying to the shelter of the rocks. Our retreat was slowed by our desire to inflict the least possible damage to the plant life about us.

It may well be that the measure of a person's appreciation and love for nature is the carefulness with which he makes his way through forest and over mountain. Does he leave a trail of profanation and destruction? Can his progress through the wild places be traced by the trampled flowers, the broken branches and the torn moss left in his wake? Does he leave every beauty spot defiled with the debris of his constant eating, drinking and smoking? Does his path bear mute testimony to his mania for cutting and shooting, for mutilation and defacement? All these are the unmistakable signs of a nature insensate; of one long past thoughtlessness; of one steeped in selfishness and one in which the need for beauty is unfelt and the existence of beauty denied.

Or, does he pass through the land as a shadow passes, disturbing nothing, taking nothing; leaving behind the same beauty that he found; unsullied beauty that another may enjoy should he pass that way?

The open spaces between the great rock fragments of Bearsong Mountain's disintegrating summit were scatter-rugged with *Phlox diffusa* and it was these

pink floral islands that we were side-stepping as we hurried out of the wind. Another and deeper pink delighted us where *Douglasia laevigata* luxuriated in the loose rubble, where drainage was sharp, and where no searching shadow, other than cloud shadow, could reach to dull into nothingness the sun's precious light. Once in Eastern Washington at low elevation beside a well used path we came upon a single grape fern. It was the only one we had ever seen so our surprise can be imagined when on this rocky skyline we stumbled upon a lone plant of *Botrychium lanceolatum*. No other could we find and we wondered at its solitary habit.

Gentiana calycosa has always been known to us as the bog gentian which we associate with lake shores, meadows and other damp places. We have seen it on steep mountain slopes but there have always been snow fields above whose melting furnished the necessary constant moisture. To find a gentian on Bear-song's 5000 foot summit was astonishing. There were large clumps of it in full flower, so loaded with fine open blue blossoms that they made vivid splashes of color on the bare, almost vertical cliffs where the exposure was to the south. As far as we could find out these plants were *Gentiana calycosa*, the bog gentian, growing in riotous abandon in scant soil pockets, with no evidence of a sustained moisture supply, on an almost bare cliff. It was difficult for us to make ourselves believe that this plant was *Gentiana calycosa*.

While we were discussing this gentian Ralph was sweeping the ridges to the northeast of us with the binoculars and discovered a herd of Roosevelt elk. Some were lying on snowbanks, others were grazing in the alpine meadows and still others roamed about, sometimes disappearing in the alpine groves and sometimes emerging from them. We counted at least fifty of the beautiful creatures and there must have been more that we could not see. It was a fitting climax for a fine day.

All too quickly Sunday came. This was the day we were to be packed out. At the appointed time and place Minnie and the horses arrived and we were there to meet them. The trip back to our cars was uneventful. We had dinner near Port Angeles where they served Dungeness crab. Before midnight we were home.

We now knew High Divide as it was in a very retarded summer. We had taken the bad weather in stride, made the best of adverse situations and found a great deal of pleasure in what was an interesting and sometimes exciting experience. Some of us will return in some more normal summer and explore Seven Lakes Basin and Mt. Carrie. Or we may hike up the long Hoh Valley and venture on Mt. Olympus itself.

It is a wonderful thing that the paths of six people can meet and merge for a time and that the people, some from a far distant place and not all known to each other, can live their lives together in harmony, amid unusual surroundings and apart from the world. For a short time we were a self-governing social group, bound by common interests, receiving inspiration from the same sources and living by the laws of courtesy and mutual respect. We had banded together to seek the beneficence of nature where nature is yet unspoiled. Among the great trees of the forest and in contemplation of far-flung grandeur of mountain and vale, mounting tensions of the workaday world are relieved, hope of eventual peace returns, and inner strength is stored against its need in the continuing battle that is life.

Now nature has ministered unto us. We return strong and unafraid to face whatever may come. The wild land and the storm clouds, the sun's erratic shining and the shifting shadows were part of it; the trees and rills and the belated flowers were also a part; snow, rain and wind and the starry heavens at night made their contributions; keen air, campfire smoke and the eagle soaring alone, and the wild animals on their hillsides added zest; all to the end that

six people might re-enter their normal world and face their responsibilities with renewed courage.

Too soon the unity of this group is broken and each goes his way. The paths diverge and perhaps they may never meet again but as long as life continues the memory of the days at High Divide will be cherished.

We have passed through the forest and made our way over the mountain. We have disturbed nothing. We have taken nothing. The wilderness is as it was before our coming and it is our prayer that it may ever remain as it is now, a refuge to which man may repair in the time of his need.

FERNS AND THE ROCK GARDEN

NEILL D. HALL, *Seattle, Wash.*

Why are ferns so seldom featured in our rock gardens? Some of the most beautiful settings encountered in our Western high country are created by drifts of the various ferns suitable for rock garden use.

Most of the Northwestern ferns that would be suitable for rock garden culture are found growing in an accumulation of leaf mold at the base of huge rocks or in well drained pockets in broken masses of rock. *Asplenium trichomanes*, commonly called the maidenhair spleenwort, is a little evergreen fellow with black stemmed fronds about four inches long. This plant will appreciate a cool shaded pocket of leaf mold. *Asplenium viride* is of similar stature but it has green stemmed fronds.

Cryptogramma crispum, commonly called the parsley fern, is found in drier localities and will grow in full sun. It is about eight inches high with the fertile fronds extending above the sterile fronds.

Polystichum lemmonii is a dwarf sword fern about eight inches high in my garden but is larger in its native habitat. It would do credit to any rock garden.

A highly favored and very delightful fern is *Gymnocarpium dryopteris*, or oak fern. This fern grows in the virgin forest under the Douglas fir, and spreads by an underground rhizome. In time it will form a delightful ground cover. This fern propagates easily by breaking up the rhizomes into small clumps.

Polypodium vulgare is a fern which also spreads from a rhizome, but its rhizome is on the surface of the ground. This small fern, about eight inches high, is commonly found in one of two locations: either on the trunk of the big leaf maple, *Acer macrophyllum*, or in the crevices of vertical rock faces. It is nearly evergreen as the new fronds replace the old ones in the spring.

Many of the Northwestern ferns, if not all of them, may be propagated from spores. This can be successfully done with a mixture of peat moss and sand placed in a flat and soaked with boiling water, then covered with a pane of glass. After it has cooled, plant the spores on the surface of the soil mixture and place the flat in a shaded location. A temperature of forty-five to sixty degrees Fahrenheit should be maintained. In a matter of a month or so the shields will form on the moist surface and a few months later they should be ready to transplant to another flat composed of some compost or shredded leaf mold added to the mixture of peat moss and sand. After the first transplanting the small plants will soon be ready to transplant again, or to set in a sheltered spot in the garden. Anyone who has propagated plants from seed should try their hand with fern spores. You will have some delightful surprises in store for you.

A FEW FAVORITE ROCK PLANTS

EDITH HARDIN ENGLISH *and* CARL S. ENGLISH, JR.

Polystichum lemmonii

THIS attractive little fern seems to prefer serpentine formations in the mountains of the Pacific Northwest. In its native habitat it grows in full sunshine, sometimes on open slopes that, early in the season, are quite moist with melting snow but during the summer are very dry. Other times it is seen growing at the base of boulders, hugging tightly and adapting its growth to the contour of the rocks.

Part of the charm of this neat little fern is found in the full-bodied form of its primly upright fronds, the pinnate being crowded to the extent that the fronds have depth as well as width.



Edith Hardin English

Lewisia tweedyi
in the Wenatchee
Mountains.

Lewisia tweedyi.

Endemic to the Wenatchee Mountains and nearby regions, *Lewisia tweedyi* is one of the plants that is tolerant of serpentine formation but also grows happily on granite cliffs. Its large flowers present a delightful range of color from almost creamy white to yellow, delicate apricot and apricot-pink. The foliage is fleshy, requiring a location offering good drainage. It is interesting to note that in its native habitat some of the most handsome big plants are found growing well back in the shade of pine trees, the pine needles forming a fertile mulch about these thriving individuals. *L. tweedyi* is undoubtedly one of the most handsome species of this genus but one which has very exacting requirements.

Claytonia nivalis.

Tap-rooted and resembling a lewisia in appearance, *Claytonia nivalis* is an exceedingly handsome representative of this genus. Its numerous basal leaves are fleshy and attractively edged with rose. The flowers are bright rose and borne in abundance. A real rock lover, this plant is found wedged into tight rock crevices or sometimes on loose talus slopes.

This lovely plant was named by Carl S. English, Jr. He gave it the specific name, *nivalis*, in recognition of its snowy habitat.

Anemone occidentalis.

The western windflower is a plant that most everyone knows and admires. In the mountains of both the Cascade and Olympic Ranges it blooms as soon as it can push its fuzzy stems and large, creamy flowers up through the snow. Soon the much-divided foliage develops. Seemingly in a twinkling the stems elongate and in place of the flowers come the large, silver-green seed heads with their plumed tails. Stretching in drifts off across the mountain slopes they make an interesting display of drum major caps.



Edith Hardin English

Anemone occidentalis
at home in the
Cascade Mountains.



Carl S. English, Jr.

Viola fletti growing on Mt. Angeles in the Olympic Mountains.

Viola fletti

Far from our usual concept of violets as shy, retiring little herbs, *Viola fletti* boldly chose for its native home the high, wind-swept crags of the Olympic Mountains. Endemic to the Olympics, this sturdy little alpine frequently grows in narrow, half-shaded crevices, giving the impression that it has been stuffed into these small spaces. It seems to prefer north or east exposures. Its leaves are substantial, reniforme, prominently veined and quite reddish on the under surface.

The flowers are rosy violet with a bit of yellow and dark reddish purple lines at the bases of the petals.

Viola flettii was first collected on July 20, 1897 by Prof. J. B. Flett in whose honor it was named by Prof. C. V. Piper. Prof. Flett, of Scottish descent, was an enthusiastic plant explorer, collector, teacher and later Park Naturalist at Mount Rainier National Park. To him we are indebted for the discovery of a number of native plants.

Dodecatheon dentatum

Native to the Wenatchee Mountains and the Columbia River Gorge, *Dodecatheon dentatum*, with its lovely white flowers and basal rosette of large, toothed leaves, is one of the most attractive of all our native shooting stars. In the Wenatchees it is sometimes seen growing contentedly beside a quiet stream, its blossoms nodding and reflected in the water. In the Columbia River Gorge it inhabits the high, spray-washed cliffs in the regions of waterfalls.



Edith Hardin English
Dodecatheon dentatum,
a cultivated plant.

Romanzoffia sitchensis

Near where the water ouzel makes its nest behind a dashing waterfall we look for the spray-loving *Romanzoffia sitchensis*. Sometimes we also find it growing on moist, shady cliffs. Its leaves are thin, kidney-shaped and handsomely scalloped, their appearance seeming far too fragile for their rather hazardous habitat. Its dainty, white flowers are borne in cymes.



Edith Hardin English

Campanula piperi, forma *sovereigniana*, growing in a garden.

Campanula piperi forma *sovereigniana*

The Olympic Mountains have become famous for the lovely rock plants that are limited in distribution to this area. Among such plants *Campanula piperi* with its softly-toothed, little leaves and violet-blue bells has long been a favorite. On both the warm south slopes and on shady north exposures of rock outcroppings it is seen clinging tightly in the seams of the rocks.

On August 6, 1937, it was the good fortune of Mr. and Mrs. Harry E. Sovereign to find a small colony of a lovely albino form of *C. Piperi* in the Olympic Mountains. The pure whiteness of the flowers together with the delicacy of the lighter green foliage makes the albino form even more exquisitely charming than the species. The name, *Campanula piperi*, forma *sovereigniana* was given by Edith Hardin English, in honor of Harry E. and Ruby L. C. Sovereign. A more handsome namesake would be hard to find.

ROLAND G. GAMWELL

Roland Greene Gamwell, a past vice-president of the American Rock Garden Society, passed away recently at his home in Bellingham, Washington, at the age of 95. He was well known to older members of the Society in the East as well as in the Northwest for his visits to meetings in New York, his address at an annual meeting, and his writings, especially on *Lewisias*.

A pioneer settler in Bellingham, he was active in the development of the city and participated in many community activities and clubs. His love for roses was well known, and he was always in demand as a judge at many of the shows in the West. He maintained an extensive rose planting at his home, where many rare and unusual roses are still in wonderful condition despite their age.

Many remember him as a partner in the firm of Eddie and Gamwell, which dealt in alpine and rock plants, Japanese iris and roses. Many plants now not in common cultivation were on their list. Mr. Gamwell was also very much interested in the development of city parks, and spent much time in planning and planting them. — LARRY LACLAIR.

DRYLAND ROCK GARDENS

JEAN WITT, *Seattle, Wash.*

MOST PEOPLE THINK of natural rock gardens as being primarily alpine features, and the Pacific Northwest has its share of these. Not so well known, however, are the spring-blooming wild rock gardens of the arid regions east of the Cascades. The summer tourist may wonder how anything could possibly grow on the bare brown rock and the sun-scorched hills, but the springtime traveler will find the Upper Sonoran and Arid Transition Zones gay with wild flowers. They are plants to be enjoyed, for the most part, in the wild—most of them have not found their way into cultivation, whether because of their desert background or because they simply have not been tried, I do not know. From April into early June, trips into Central Washington will be rewarding; and area with similar floras are found in eastern Oregon and southern Idaho.

Outstanding spring rock gardens carpet the high bare ridges of Yakima and Kittitas Counties in Washington, and extend both north and south along the east slope of the Cascades. Spring also brings a short-lived brilliance to the scab-rock country of the Columbia Basin further east, where ancient glacial melt waters carved the Grand Coulee and scoured miles of basalt flows into buttes, potholes, and smaller coulees.

The Saddle Mountains east of Ellensburg, Washington, on U.S. Highway 10, have fine displays of *Penstemon gairdneri*, low mats of greyish needle-like foliage and open-faced lavender flowers. *Pediocactus simpsoni*, its satiny magenta flowers surmounting clusters of spiny croquet balls, shares the rock-strewn slopes with cut-leaved, orange-flowered *Balsamorhiza hookeri*, reminiscent of gazanias. Several other balsamorhizas, known aptly but not accurately as "sunflowers", turn the sagebrush hills golden in the spring. Lupines grow in profusion, many species, large and small; the same species blue in one place and white in another, while other species shade off to rose and purple. One of my fondest recollections of those rocky flower slopes is of a lomatium with coppery red flowers in the distinct compound umbels of the genus, above feathery blue-green glaucous foliage.

The lomatiums, or desert parsleys, are a numerous clan in the sagebrush regions. One little white flowered fellow with conspicuous black anthers is known as "Pepper and Salt", and is one of the first spring flowers in the scab-rock. Other species have pale yellow, greenish, or bright yellow flowers; one of the brightest, *Lomatium grayi*, common in rocky dry creek bottoms, unfortunately is so aromatic of foliage that its color is not properly appreciated. Another species, occurring on rocky outcrops near Yakima, has large umbels of almost velvety brown, and foliage so finely dissected as to suggest ferns. Perhaps the umbel as a flower shape brings to mind chiefly weeds, but the smaller lomatiums would, I think, lend delightful form and texture to our home rockeries.

Some of the most colorful rock gardens we have found were in nearly flat, dry water-courses on Bickleton Ridge in Klickitat County, Washington. Here were *Trifolium macrocephalum*, the big-headed clover, its two inch balls of rosy ivory waving over the seven- to nine-parted leaves — one of our most unusual desert flowers; and the desert pansy, *Viola trinervata*, with fragrant bicolored flowers, the upper pair of petals velvety purple, the lower three lavender. With them grew vivid blue delphineums, often large flowered for their short stature; white or rose mats of phloxes; tufts of pale lavender or white erigerons, and other tufts of golden yellow composites. *Penstemon gairdneri* was here as blue

as the delphineums. Other inhabitants of that and similar slopes were white or green flowered castillejas and several members of the pea family, including one astragalus with fascinating spirally curved pods.

In the scab-rock country moisture collects in all the low places. They will be yellow in April with *Ranunculus glaberrimus*, the first spring buttercup. The buttercups are soon joined by orchid-colored sisyrinchiums, or grass widows, and mertensias with clusters of tiny sky-blue bells on four-inch stems. Lithophragmas, tiny stars of pinkish-white on delicate dark red stems, are among the first flowers to bloom in cracks in the cliffs. In some of the rocky areas near Wilbur, dodecatheons with unusually large flowers cover wide areas early in the season, not only in all the shades of pink and rose, but also in a clear white with prominent black anthers. There will be *Fritillaria pudica* too, the delightful little yellow bell, never very numerous, and given to pining away in coastal gardens. Later, rocky buttes in this same area are gay with tufts of the pinkish-purple or white cruciferous flowers of phoenicaulis, and sometimes with fragrant white or rose colored wild onions, which fare better in cultivation than does the yellow bell. Best known of the scab-rock plants, perhaps, is *Lewisia rediviva*, the bitter-root, with its many-petaled pink or white flowers blooming gaily on the bare rock, like small misplaced water lilies.

As summer comes on, the last survivors of the drought are often on the talus slopes at the foot of the basalt cliffs— such things as eriogonums, their fluffy cream or yellow umbels sometimes turning pinkish and drying like everlasting; and scutellarias whose racemes of blue-purple skullcaps might be mistaken for penstemons. The delicate magenta-colored staghorn blooms of annual clarkia color dry roadsides and buttes in June.

Long after everything else is gone, one rugged fellow, *Penstemon richardsoni*, blooms from crevices in road cuts, and on canyon walls, with airy sprays of rosy flowers, sometimes as late as October. Oddly enough, this plant takes kindly to cultivation, even in much wetter western Washington. Perhaps in time we will succeed in persuading some of the others to join it.

A FAVORITE NOOK IN THE WENATCHEES

ROBERT C. PUTNAM, *Kirkland, Wash.*

ONE OF MY FAVORITE PLACES in the mountains is a small meadow at the base of a huge talus slope near the headwaters of Beverly Creek in the Wenatchee Mountains. This meadow is miniature in scale: a few springs bubble out of the earth, making small rivulets and pools bordered with fat clumps of *Gentiana calycosa* and *Dodecatheon jeffreyi*. At the edge of the meadow are the little haystacks of the Pika, or Mountain Hare, that makes his home in the talus and harvests the meadow vegetation.

Nearby is a serpentine scree with *Eriogonum compositum*, the alpine lady fern, *Athyrium americanum*, and a mint, *Monardella nervosa*, keeping each other company. Also nearby, on cliff sides, are *Polemonium elegans* and the lace fern, *Cheliantes gracillima*. In various rocky situations in this same area are found *Douglasia dentata*, *Penstemon rupicola*, *Phlox diffusa*, *Erigeron aureus* and *Polystichum lemmoni*.

This is a place in which to rest and to plan for the rest of the day. It has taken five hours to get here. One looks at the massive rock above and knows that he too has been reduced to proper scale and can be on his way.

CASSIOPE AND PHYLLODOCE

SALLIE D. ALLEN, *Seattle, Wash.*

FROM MID-JULY through August, depending upon the weather and the elevation, the native heather may be found in bloom in the sub-alpine meadows from Mt. Adams, the southernmost peak in the Washington Cascades, to Mt. Baker at the northern extreme. Once you have been captivated by the charm of these small, evergreen treasures of the Ericaceae family, you will want to collect and grow each species and variety you are able to find.

One of the most beautiful natural heather gardens may be seen from the highway to Mt. Baker Lodge, which winds through 'Heather Meadows', extending from an elevation of about 3500 ft. to 5000 ft., two miles beyond the lodge. At the lower end of the meadow you see *Phyllodoce empetriformis* in varying shades of rosy purple, above needle-like bright green foliage. It is a much branched shrub from one to two feet tall, growing in such abundance that it is breathtaking, extending on either side of the road as far as the eye can see. As you drive on and up there are drifts of *Cassiope mertensiana* intermixed with the phyllodoce. The cassiope foliage is a somber green, the tiny leaves closely imbricated, similar to that of *Calluna vulgaris*. The creamy white bells appear singly on a thin pedicel, toward the end of the branches.

You drive through about five miles of this enchanting garden, landscaped as only nature can do, with a cheerful little stream artistically meandering through well placed alpine fir growing as single specimens or in attractive clumps, the heather forming mats beneath. As you climb higher the plants are but miniatures of those seen below, until at the end of the road they are no more than three inches high. The bloom is not dwarfed however, the bells looking almost too large for the tiny shrubs. It was there that I noted a variation in the cassiope, making two plants growing side by side look quite different. The flower of one plant had a four parted corolla, green calyx and stem, while the other had a five parted corolla, and an almost mahogany colored calyx and stem, the latter giving each flower a distinct tiny frame.

Around Twin Lakes, in the Mt. Baker National Forest, *Cassiope mertensiana* grows in great profusion. The plants vary in size from small compact ones six inches high and as wide (looking for all the world as if they had been nursery grown) to large mats several feet across. When in full bloom it is a glorious sight in a very picturesque setting.

Our cream mountain heath, *Phyllodoce glanduliflora*, is an extremely attractive foliage plant, so I haven't resented the fact that it has not bloomed well for me. The urn shaped flowers are pale yellow, the needle-like leaves shorter and wider than those of *P. empetriformis*. My one plant was collected from the lovely 'Bird Creek Meadows' on the southeast side of Mt. Adams, where it grows above timberline up to about 7000 feet. Although it often occurs with the before mentioned heather, its range is higher. It forms large carpets beneath gnarled alpine trees, each one, twisted by the elements, reminding me of a bonsai dish garden. At this upper limit *P. glanduliflora* reaches out to meet *Kalmia polifolia microphylla*, blooming at the edge of the receding snow.

Phyllodoce intermedia is a natural hybrid between *P. empetriformis* and *P. glanduliflora*. As the name implies, the characteristics are intermediate between the two parents. The flowers are pink.

This summer I discovered the Alaska heath, *Cassiope stelleriana*, which is often placed in the genus *Harrimanella*. It is quite uncommon in Washington,

reported in limited amounts from Mt. Rainier National Park north to Cascade Pass, where I found it forming a carpet under *C. mertensiana*. It is a very small, matted shrub, which does not appear to have a central root system. The minute medium green leaves, one-eighth-inch or less long, stand out (rather than imbricated) from the one- to two-inch stems. The bright red flower buds appear singly at the tip of each stem, opening into an ivory bell, slightly rolled back at the tip and framed by a red calyx. It has the pleasant habit of blooming twice each year.

I have seen only herbarium specimens of *Cassiope saximontana*, which has been collected from the open alpine slopes above 'Tiffany Meadows' on the north-eastern side of the Cascades. In manner of growth it is much like *C. mertensiana*, but may be identified by the grooves on the leaves similar to those of the Arctic species, *C. tetragona*. *C. saximontana* is considered a good rock garden subject and easy to grow. A pink form has been reported, well worth finding to add color variety to a cassiope collection.

Our native heathers have generally the same requirements in cultivation as the other members of the Ericaceae. Not only should they never be allowed to dry out, but they also resent soggy conditions. If planted in peat in well drained, moderately acid soil, in partial shade or filtered sunlight, they should thrive with only an occasional top dressing of leafmold. Commercial fertilizer should be avoided as it causes unnatural growth, which can prove fatal. They enjoy an open situation, that is they do not appreciate being crowded by rampant growing perennials or the close proximity of overhanging branches of larger shrubs. Slugs and insects do not consider these shrubs a tasty dish, a welcome relief for the alpine gardener. In cultivation *C. mertensiana* has a tendency to brown off in the center, a condition that does not seem to affect the bloom. In the wild it may often be found growing out from under a rock, which would indicate that not only does it enjoy the partial shade and dampness afforded by the rock, but also a cool root run. With this in mind I planted one small plant, collected this summer, with its roots running down and under a large rock. So far it has not shown this browning off tendency.

Cuttings taken from mid-June through August root quite quickly in a mixture of sand and peat; however, it has been my experience that after they root, they grow, very slowly, taking almost a year to show any noticeable growth. My propagation methods are the simplest, without the benefit of greenhouse or cold frame. The cuttings are rooted in pots placed in the shade of the house. When rooted they are transplanted to flats in a mixture of sand, peat and leafmold. I don't have the time to give them any special attention so they remain there until they are large enough to be planted in my heather garden or given away to friends. I am trying *C. mertensiana* and *C. stelleriana* from wild collected seed this year in the hope that this will prove a faster method of propagation.

Although I have confined this article to *Cassiope* and *Phyllodoce* found in the Cascade Mountains in the State of Washington, it does not mean that these species are thus confined in nature, as they range from California to Alaska, adding a number of species and varieties to those described herein.

CRYSTAL MOUNTAIN

ALTHA MILLER, *Issaquah, Wash.*

AS I REMEMBER BACK, after many years, Crystal Mountain was one of the most interesting and beautiful places I have had the good fortune to see. It is located in the Wenatchee Mountains above the little village of Liberty. To get there we followed an old mining road up through the woods. As we climbed we noticed scattered plants of *Cypripedium montanum* along the way. Later we left the road and took a trail leading through beautiful red-barked ponderosa pines. At one spot in a clearing to the right of the trail we found a small pine completely surrounded by a large bed of the cypripedium in full bloom, as if someone had made a special sort of garden in the wilderness. It was a sight I shall never forget! In this area we passed through what seemed to be a regular orchid belt, then suddenly they were gone. The next plant we saw growing in quantity was a very attractive low-growing clematis with large flowers ranging from deep blue to lavender.

Soon we left the trail, taking off up a precipitous hill of loose dirt and sliding rocks. At this point I did my climbing on all fours! There were frequent pauses to examine interesting rocks— and to catch our breath. Here we found plants of little *Fritillaria pudica* and of alliums, both out of bloom. Near the top were patches of penstemon, *Lewisia rediviva* and dodecatheon.

After going through a long stretch of woods at the top of the hill, we came out on a rounded mound where we found low phlox in many variations of color. Particularly intriguing to me were some with large white flowers with rose centers, also some of pale blue. *Lewisia rediviva* grew here in profusion. The plants thickly covered the slopes, growing in shale rock and very fine soil. The buds and the soil were so nearly the same in color that we had difficulty in distinguishing between the two, and found ourselves walking on the plants part of the time. The color of the flowers ranged from a pure white with rose stamens to a deep rose pink. It seemed strange and incongruous to find a flower like a small delicate waterlily growing at such a high elevation.

The view from this spot was breath-taking. We could see for miles in all directions over the hills lying below us. We were up around 4000 ft., with large flat-topped Table Mountain (6000 ft.) towering above us across the intervening hills.

Lewisia tweedyi with flowers in pinkish apricot shades grew in large groups at the base of rocky outcrops below us. It was an enchanting spot and I have always longed to go back to see whether it really is as beautiful as it appeared to me that day. Perhaps next year? Or maybe the year after?

THE SEED EXCHANGE

As a change in the administration of the Seed Exchange has been proposed by its hard-working director, Dr. A. R. Kruckeberg, and as, up to the time of going to press, no information regarding a final decision in this matter has reached us, it is suggested that members hold their contributions to the Exchange until the arrival of the October *Bulletin*, in which full details will be given.

THE SALMON LA SAC COUNTRY

THELMA CHATFIELD, *Seattle, Wash.*

IN THE FASCINATING Salmon la Sac area, north of Lake Che Elum in eastern Washington, at about 2500 feet elevation we found ourselves in a region of massive rock formations. Some of these were not too difficult to scale if one walked around until gentle slopes or natural footholds presented themselves.

On top of these giant boulders we found a deep carpet of moss which evidently acted as a sponge, holding moisture for that delightful miniature fern, *Chelianthes gracillima*, its six-inch sword-like fronds dark green above and gray green underneath. These followed along the clefts of the rock in full sun, sending out a mat of roots under the protective moss.

One huge rolling formation, like the broad back of a giant prehistoric monster, had not only a nice stand of ferns but a deep crevice full of soft silty soil. In this well-drained spot grew a small twisted *Pinus contorta* which I collected for a bonsai. In lifting it I found several small bulbs, possibly brodiaeas, now tucked in a favored spot in our Seattle garden.

Close to the Cooper River, in full sun, the rock formations carried restrained little grey green mats of a shrubby penstemon. These were not in bloom at the time, July 4, and their neat small foliage was never abundant. They nestled among the rocky ledges, mulched by nature with stone chips and bits of vegetation blown in by the wind.

REPORT OF THE NORTHWEST UNIT

LAURA JEZIK, *Seattle, Wash.*

THE FEBRUARY MEETING was held on the twelfth at the Arboretum clubhouse. Mr. Fred Delkin of Bellevue, Wash., whose catalogue is one of the most interesting I receive, showed us coloured slides of some of the many hardy and some not quite so hardy bulbs he handles. His accompanying discussion displayed his more than casual interest in the rare and unusual in bulbs and corms, and he brought a few blossoms from some of the iris, cyclamen, squills, and others that were in bloom during that month. Mr. Delkin is a collector of natives and a most interesting man to talk with and to listen to. Many of us learned a great deal during this evening and all of us enjoyed it.

On March 12, 1959, our annual plant sale was held. This, our only money raising project, is something that has to be seen to be appreciated. The material to be sold is sometimes breathtaking. Always there are the choice rhododendrons, the primulas, the iris, and bulbous plants among the other alpine, but for some of us the most interesting item is the flat of very rare plants donated each year by Mr. George Schenk. This year he gave one large flat which held thirty-seven varieties and species, including *Ranunculus calandrinoides*, *Boykinia jamesii*, *Veronica bombycina*, *Primula clarkii*, *Cheilanthes tomentosa*, and others. And as in years past, the flat went as a package at the very reasonable price of twenty-three dollars.

But I think that what makes the evening so enjoyable to us all is not so much this excellence of material, as the excellence of the patter of the membership. I have come to believe that several of our sharpest wits practice for days just to be in championship form for our sales.

Our group needs a little description at this point. There are several of what might be called factions among us. There are the Geologists, both profes-

sional and amateur, and the amateur group here comprises a good part of the membership, the Botanists, also both amateur and professional, and the professional class here is divided again among the lumpers and the splitters as is every group of professional Botanists. Then there are the rest of us who are gardeners and lovers of the rare and the beautiful in plants and in scenery. At times these divers groups can and do create situations of humour, and especially do they make the plant sale an enjoyable interlude during which we replenish the empty places in our gardens and in our treasury at the same time. Only at an auction such as this will you find husbands raising their wives' bids, bidders raising their own bids, bidders putting on false whiskers as they bid, and people giving someone a plant after having just heartlessly bid him out of it. And even this writer, who is among the less riotous bidders, can succeed in getting what I want for reasonable prices.

Everyone leaves our auction happy. The auctioneer, who got to wear his comic costume for the evening, the buyers, who have that satisfied feeling of people who have fought the good fight and won, and the donors of the plants, who now have more treasures to fill the places vacated by the things they donated. All members agree that there is almost nothing under the heavens to compare with our annual auction.

The April meeting, on the ninth of that month, featured a round table discussion of gentians by as well qualified a panel as can be found anywhere. Mr. Brian O. Mulligan was the moderator and opened the discussion of the genus in general, introduced each speaker and rounded out the session with his discussion of the Asiatic gentians.

Mr. N. D. Marret described the European species and their hybrids. This brought on the perennial question about *G. acaulis* and whether it will bloom or not. (The answer to this quite simple: it will bloom, and it will not do so.)

Dr. C. L. Hitchcock gave us interesting information and commentary on the Western American species. He displays great skill in giving information in a painless way and with enough light hearted humour thrown in to make you forget you are getting a botany lesson.

Mrs. A. P. Renton discussed the propagation of the gentian and her considerable experience with many of the species, and finally Brian Mulligan discussed the Asian gentians, among which are the most beautiful of them, if it is safe to say any gentian surpasses any other. It was a most enjoyable and informative evening for all of us.

BOOK REVIEWS

Rock Garden Plants: New Ways to Use Them Around Your Home.

By Doretta Klaber, 173 pages. New York: Henry Holt and Co., 1959. \$3.95.

Mrs. Klaber, a landscape architect and horticulturist well known to our readers through her frequent and valuable contributions to the *Bulletin*, has written the first book on rock plants to be published in this country in many years. She has chosen a fresh approach to the subject, proposing that the plants be used not merely in the traditional rock garden, but as doorway plantings and ground covers, and in the crevices of terraces and walls. She might well have gone a step further and suggested that they be grown in narrow raised borders of suitably prepared soil.

The first part of the book describes her home and nursery, Cloud Hill, and indicates the varied uses to which she has put rock plants there, in the dooryard, on the hill and in the woods. A brief chapter on bulbs, in which few specific names are mentioned, is suggestive rather than informative. The following

chapter describes in detail the method (outlined in the *Bulletin* for January, 1958) by which she raises plants from seed, cuttings and division, and (an unusual feature) the nursery beds in which young plants are grown on until ready to take their place in the garden.

Three-quarters of the book is devoted to brief descriptions of about 400 plants, largely the easier and more common species, although a few rarities are included. Gentians and primulas are covered in considerable detail, while saxifrages and several other deserving genera receive very brief treatment. There are a few minor inaccuracies (as in describing the color of *Aquilegia jonesii* as reddish purple), and occasionally the descriptions and cultural comments seem inadequate for the beginner to whom the book is primarily directed. One often has the feeling that Mrs. Klaber is struggling under the handicap of space limitations imposed by the publisher, and that more detailed discussion would be fairer to both plants and author. Line drawings illustrate many of the species, and are in general very good, although a few have not reproduced well. A long list of plants, in order of time of bloom, a brief bibliography and mention of six sources of seed complete the volume.

The book should be of great value to the rock gardener of limited experience, especially as it avoids the old and disproved clichés on exposure and construction which have been handed down from a previous generation, and gives simple instructions applicable to a wide variety of climatic conditions. The advanced gardener will find most interest in the account of Cloud Hill, although in the plant list there should be a few items with which he is unfamiliar.

The Cream of Alpines. By Frank Barker. 86 pages and 6 color plates. London and New York: Thomas Nelson and Sons Ltd., 1958.

The late Frank Barker, one of the most skillful British plantsmen and a partner in the famous Six Hills Nursery, left a great number of notes on plants, of which about fifty have been edited and assembled into the present volume.

The notes are detailed, vivid and informative, giving a clear picture of each plant, its needs and methods of propagation. The range of material is wide, from such familiarities as *Aethionema* 'Warley Hybrid' to *Calceolaria darwini* and *Viola delphinantha*. Regrettably, the drawings are often not good, and the coloring is frequently inaccurate.

Garden Ponds, Fish and Fountains. By A. Lawrence Wells. 192 pages, colored frontispiece, 9 halftone and 49 line illustrations. London and New York: Fred erick Warne & Co., Ltd. Revised edition, 1959. \$1.75.

This inexpensive little book deals concisely with a wide range of subjects: planning, constructing and stocking ponds, of both formal and informal type; fishes for ponds and aquaria, their food, breeding, and ailments; fountains and waterfalls; indoor aquaria; bog and tub gardens; and the aquarist's year.

The author passes rather quickly over details of construction, although all necessary information seems to be included. The plants suggested are interesting, many of them unfamiliar, but the list might well have been extended to include many more showy subjects.

However, the author's primary interest is in the fish, molluscs, and crustaceans with which the ponds and pools are stocked, and here the reviewer is unable to pass critical judgment. He can only say that he found the numerous descriptions fascinating and, to him, enlightening, and that the discussion opened a new field of interest. The book should be well worth its small cost to anyone with the slightest interest in ponds and their inhabitants, and much more to anyone contemplating the construction of a pool.

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