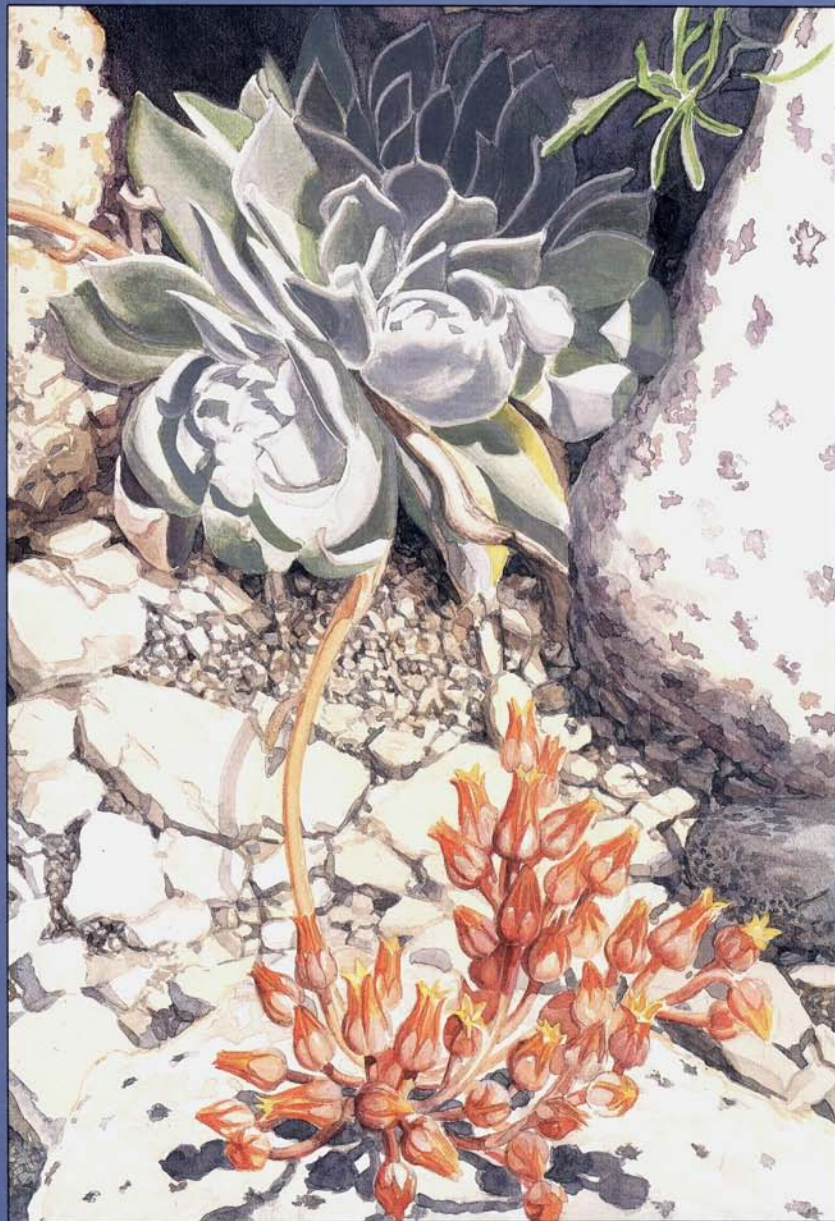


ROCK GARDEN



QUARTERLY

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WINTER 1996

COVER: *Dudleya cymosa*

by Paul Martin of Golden, Colorado

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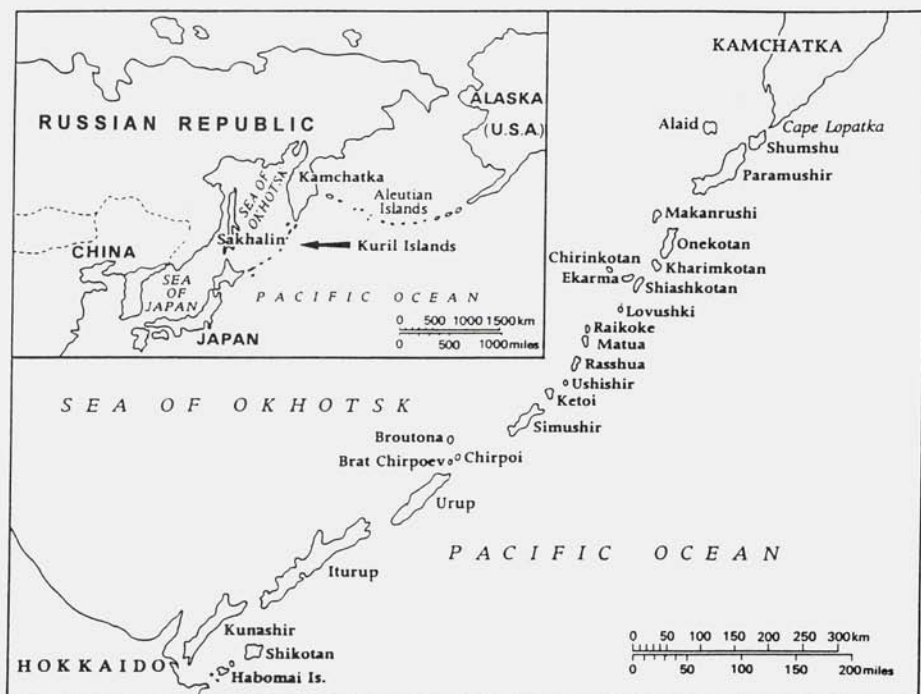
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INTERNATIONAL



KURIL ISLAND

PROJECT

KURIL ISLAND ADVENTURE

by Katie Sauter

For a decade I dreamt of exploring the Kuril Archipelago, a string of islands that connects the north end of Japan to the southern tip of Russia's Kamtchatka Peninsula. To me the Kuril Islands seemed as remote and pristine a place as one could hope to find in temperate regions today, a vast unknown to be discovered as naturalists in the last century "discovered" other frontiers. Of military importance to Russia and partially claimed by Japan, the islands remain highly inaccessible to the casual visitor. Thus, I could hardly contain my excitement when I was invited to accompany, as translator and photographer, the International Kuril Island Project (IKIP) expedition in August of 1995. With the additional help of a generous grant from NARGS I was able to indulge in my photography habit to the limit, free to photograph anything and everything I saw.

IKIP is the brainchild of Dr. Theodore W. Pietsch of the University of Washington's Burke Museum and is funded by the National Science Foundation (NSF). Dr. Pietsch assembled a group of American scientists and students in the fields of botany,

entomology, arachnology, malacology, ichthyology, and mammalogy. He joined similar groups from the University of Hokkaido, Japan, and the Far Eastern branch of the Russian Academy of Sciences to augment collections of the flora and fauna of the Kuril Islands. IKIP will collect on all of the islands in the archipelago over a five-year period. The 1995 expedition, aboard the Russian research vessel "Professor Bogorov," visited the middle islands of Urup, Chirpoi, Simushir, Ketoi, Ushishir and Rasshua.

Urup and Simushir are the farthest south and the largest of the islands we visited; we spent most of our time exploring them. Like all the Kuril Islands, they are of volcanic origin, with great conical hills rising at intervals along their lengths. We stopped at several different points on Urup and Simushir. Three of them support small military outposts, but the other places were as remote as one could possibly hope for. The coastline of both islands was characterized by low cliffs rising out of the sea for miles, punctuated here and there by long stretches of sandy or rocky beach where the coast was slightly indented to form a bay.

We put to shore on these beaches and for the most part met with a solid wall of high meadow reaching clear to the tops of nearby ridges. Many of the bays had streams or rivers flowing into them, and climbing up along these water courses was often the most practicable path into the interior. At the south end of Urup low alder or birch trees usually ran up along the streams and clustered in more sheltered areas on the inner slopes of the ridges, but elsewhere in the south and continuing north the lower slopes were solid high meadows rolling as far as the eye could see.

These meadows contained, in addition to prodigious quantities of a particularly obnoxious kind of biting fly, several species of grasses, sedges, and umbellifers (one of which caused our skin to break out in blisters), stinging nettles, and unwavering stands of

Sedum roseum



bamboo which blocked even the most determined effort to pass through. One easily recalls the lure of the rock garden when one is perched on a slippery hillside surrounded by this 5'-high, defiant meadow and being slowly consumed by clouds of insects.

However, when on occasion we were fortunate enough to rise above this torturous vegetation, as was increasingly possible as we moved north, we were rewarded with much more appealing vistas underfoot. On the higher plateaus an unlikely collection of plants began to appear beneath the tall meadow, which gradually faded almost away. This assortment included an almost continuous mat of *Empetrum nigrum* interspersed with a wide variety of mosses, one of them a bright crimson; various species of *Vaccinium*, some in delicious fruit; and a host of other miniature circumboreal

species I happily recognized from home, including *Maianthemum dilatatum* and *Linnaea borealis*. Scattered across on the spongy ground were species of *Campanula*, *Geranium*, *Swertia*, *Pedicularis*, *Halenia*, orchids, tiger lilies, and many other flowers offering a brilliant array of color to further reward the eye. *Sedum roseum* appeared here and there, and at the southern tip of Urup a small juniper joined the understory. Also at the southern tip, the *Empetrum* meadow never quite managed to break loose from the taller grass meadow, but the farther north (or higher) we went, the more it gained the upper hand until at Rasshua, the island farthest north on our itinerary, the grasses constituted a much smaller part of the flora. The *Empetrum* meadow was everywhere interrupted by



Malaya Bay, Simushir

photo, Katie Sauter

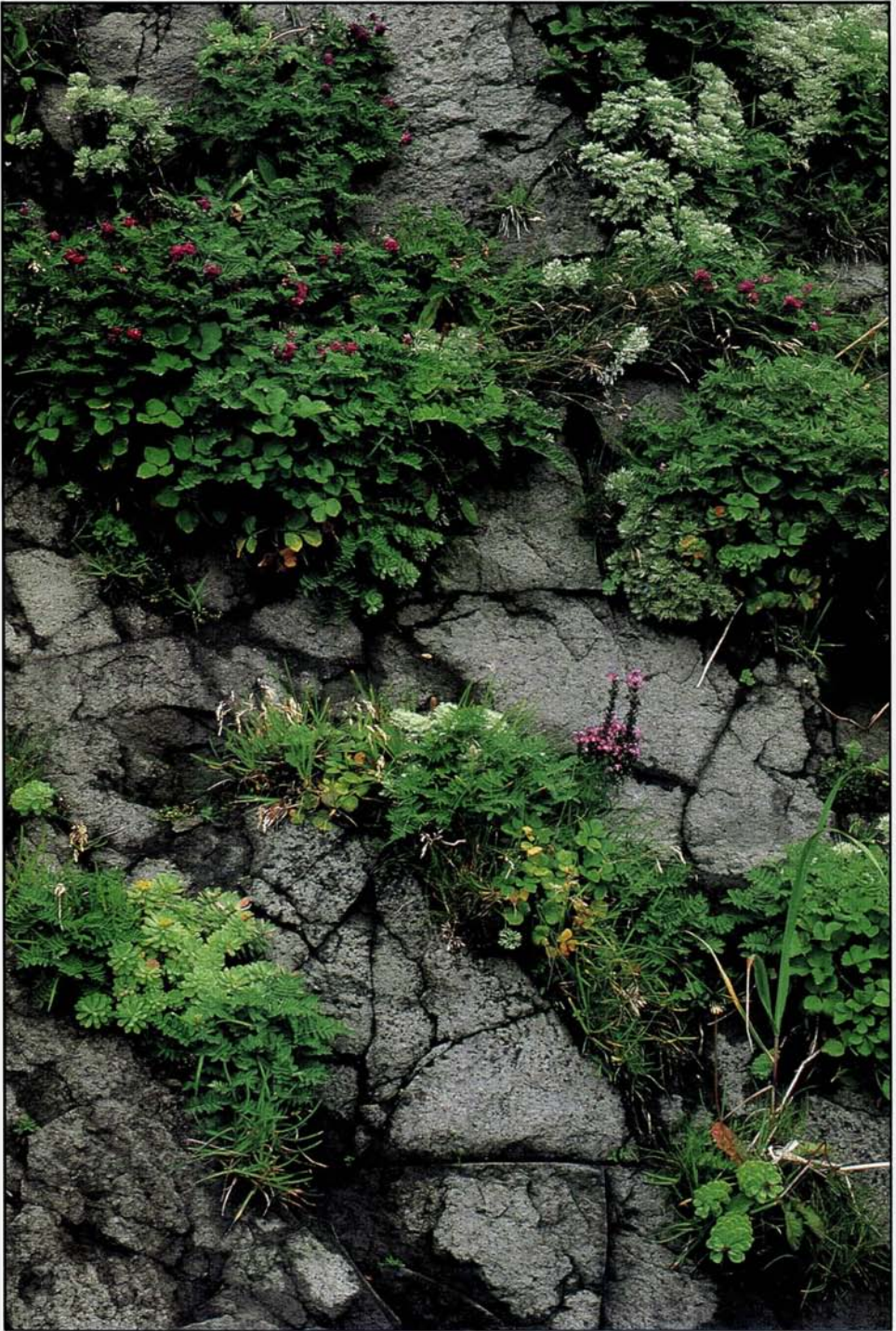


Kitoboy'naya Bay, Simushir

Anaphalis margaritacea, *Campanula* sp., on Ketoi

photos, Katie Sauter





Barkhatny Bay, Urup

photo, Katie Sauter

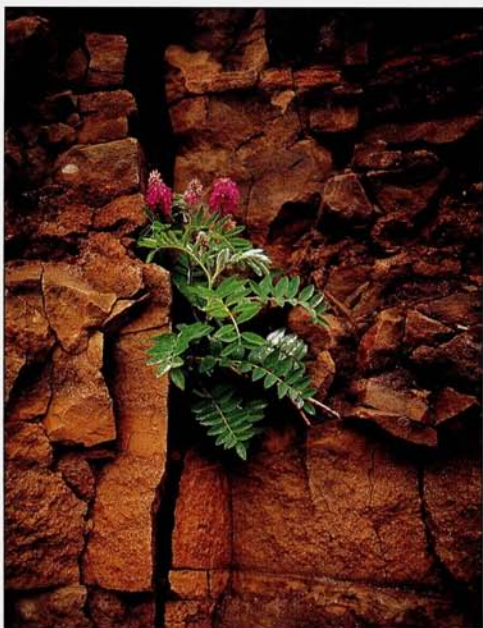


Swertia tetrapetala on Simushir

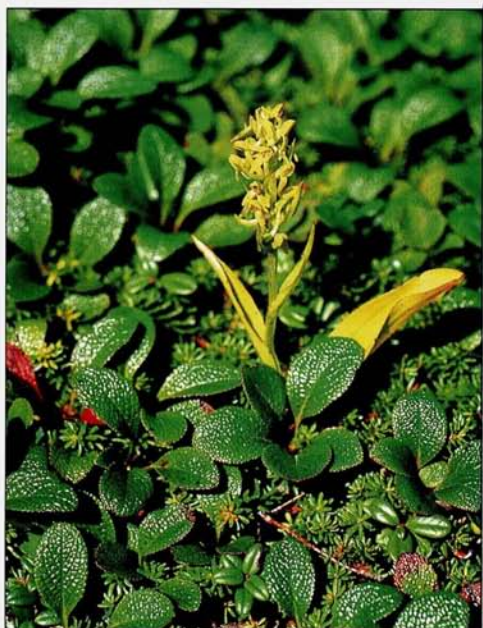


Caryophyllaceae species on Kunashir

Lathyrus sp., at Otkryty Bay, Urup



Orchid on Chirpoi photos, Katie Sauter



small lakes of low shrubs. *Pinus pumila* was the most common species, but with *Alnus maximowiczii* and *Sorbus sambucifolia* as frequent companions. These were 3-4' high on average in the south, and wading through them was complicated at best, but they were of shrinking stature to the north until with a decent sense of balance you could walk right over the tops of them.

Wandering through the *Empetrum* fields became my goal at every stop, although often the obstacles were daunting. In addition to the dreaded tall meadows and thick patches of *Pinus pumila* we encountered thickets of huge-leaved *Petasites* well over our heads in height, steep, wet bluffs of rotten rock oozing with slippery algae, and once an army outpost that forbade us to climb above the shore in its vicinity. Fortunately, when climbing was simply not feasible, the rocks and cliffs near the shore often proved to be nearly as interesting botanically. Most of the cliffs supported a limited collection of species that remained more or less consistent throughout the central islands. The most ubiquitous of these were *Chrysanthemum arcticum*, a couple members of the Caryophyllaceae, a few grasses, and *Sedum roseum*, which has inserted itself into a surprising number of habitats on the islands. Also found at various stops were, among other things, species of *Lathyrus*, *Campanula*, and *Papaver*.



Alnus maximowiczii

The next island on our itinerary was Rasshua, farthest north of the trip, just about parallel with Seattle. Instead of being long and narrow like Urup and Simushir, it is an oval shape. With a little effort you can walk across it and back in one day. The routine was beginning to get a little old—up at 7:00 a.m., eat at 7:45, hit the boat at 9:00 for a trip to shore. We dragged a bit getting to the boat. However, once on shore things changed. First—foxes! Brave foxes who have no experience with humans, walking down the shore, skirting camp, curiously dragging away people's coats and bags and searching for bits of food. Once we were all on shore and had our fill of proximity to curious foxes, we set out *en masse* for the lake that was suppos-

edly just on the other side of the ridge above the beach. Getting up to the ridge was, as usual, a bit of a challenge. First we waded through a couple hundred yards of *Petasites*. Once through that we had about a quarter mile of hand-and-foot scrambling up a very steep slope. Dragging my camera gear up was excuse enough for me to rest frequently—to look at the family of four white-tailed sea-eagles steadfastly occupying the nearby cliffs, to photograph the view down the island, to marvel at the *Rhododendron camtschaticum* (photo, p. 13) blooming underfoot. By the time I reached the top I was out of breath, but my sense of wonder quickly overpowered all else. What a place! A broad, gentle slope swept up to the ridgetop, and the higher hills disappeared into low clouds. And for a change the inviting slope wasn't merely so from a distance (becoming upon close examination a high impenetrable meadow belching forth huge clouds of those horrid flies) but was actually almost alpine—low mosses and lichens and small flowers perched upon spongy sphagnum, making every step a pleasure. In clumps throughout were the low *Pinus pumila* bushes, while *Alnus* and *Salix* species sat flattened against the ground by the harsh environment of a small island in a big sea. A beautiful groundcone, a species of *Boschniakia*, adorned the upper slope in a few places among the low *Alnus*. Most of my compatriots were disappearing over the distant ridge toward where the lake was, and I determined to join them. This proved very difficult, however, since every few feet I would be captured by another image in urgent need of being photographed. While wading through the low pines was considerably easier than forging paths through the same species in less stunted states (or even tall meadows), the

way was much eased by the appearance of what must have been a road long ago. The road cut through the bushes in a straight line up to the ridge, which was covered with soft sphagnum moss and awash with blooming flowers—heaven for rock gardeners. Poking up everywhere were the bright blues, yellows, pinks, and whites of *Geranium*, *Gentiana*, *Campanula*, *Pyrola*, *Cornus*, *Halenia*, *Iris*, *Swertia*, *Hypericum*, and *Pedicularis*, to name a few.

Eventually I reached the ridgetop and looked far down into the caldera—a sweeping grass meadow (mercifully short grass, and free of biting insects) with two lakes in the center. I had taken so long to reach the lakes that the collectors of insects, mollusks, and the like had already had their fill of the caldera and were heading back up to the ridge. I spent about half an hour photographing the lakes and the marshy meadows around them before heading back up myself—the high ridge was just too enticing. It was also deep in fog by the time I climbed back up out of the caldera. Paying the weather no heed I wandered joyfully until I had to head slithering back down to the beach to meet everyone for the boat back to the ship. As often happened, I felt that we spent too little time on Rasshua and was sad to leave, but the biggest wonders still lay ahead—the small islands of Ketoi, Chirpoi and Ushishir.

Immediately south of Rasshua, Ushishir actually consists of two islands connected by a barely submerged finger of land. The south island, Yankicha, is famed for having the most stunning scenery of the Kurils, although the species richness of this small island devoid of fresh water is quite low. Yankicha is an old volcano, long since dormant, its crater sunk below sea level. The resulting

bay, Kraternaya Bay, is ringed by a tall, steep, meadow-clad ridge, knife-edged to the east and gently sloping to the sea on the north and west sides. The middle of the bay contains two tiny islets, lending further artistry to the scene. At the far eastern corner of the bay lie bubbling, sulfurous hot springs, the last vestiges of volcanic activity. A long scramble up the steep meadow at the north side of the bay rewards one with an incredible view back out over the bay and to the Pacific Ocean on one side and to the Sea of Okhotsk on the other. Or so they say—we were plagued with unfortunate weather and made the climb in thick fog, lingering on top in hopes that the sun would prevail and reveal the view to us. This did not happen, so we contented ourselves with wandering the meadows atop the ridge, encountering arctic foxes and nesting sea birds, and napping on the soft, spongy mats of *Calamagrostis* and *Empetrum*.

Ketoi rises straight out of the sea, with towering cliffs leading to jagged peaks above. The very top cradles a deep lake over 700 meters above the ocean surface. Access is impossible for all except rock climbers and helicopters. We satisfied ourselves with exploring the bases of the cliffs, which sport the most spectacular waterfalls of the archipelago. From the ship at Cape Storozheva we could see several tall waterfalls plummeting down the north face of the island, including Kaskad Waterfall, the tallest in the archipelago at over 90' high. Another one in particular intrigued me though, a thin stream falling over the opening of a shallow cave quite a way up from the beach. After a wet landing I struck out for it, at first bushwhacking uphill until the bushes (alder, pine, and mountain ash) whacked back, and then retreating to the stream bed. I

might have made it to the waterfall had it not been for an ill-fated desire not to soak my feet (the walk back through wet grass took care of that); the conversations I overheard on the walkie-talkies saying the weather was turning, and perhaps they would fetch us back to the ship early; and frequent stops to photograph the scenery, the stream, and the few flowers blooming on the banks (primarily campanulas). I abandoned my ascent at a picturesque and difficult spot where two boulders surrounded by *Petasites* flanked a deep pool in the stream and returned to the beach ahead of the approaching storm.

Chirpoi, the smallest island visited by our expedition, lies just to the south of Simushir and is one of the two Chorniye Brat'ya, or "Black Brothers." It also has the most active volcano we saw, with great clouds of steam pouring out of a sulfur-yellow crater and holes in the barren slope below. We landed at Peschanaya Bay, the only bay on the island, and had to our right a low hill and in front of us a pass barely above the level of the sea leading inland a few hundred yards to the other side of the island. To our left a gentle slope led up from the sandy beach to the base of the nearest conical hill, which in turn blocked our view of the steaming, bare volcano beyond. At the far left end of the bay was a "rock forest," an amazing plateau of wild, globular mounds and pillars of lava, recently ejected from the volcano and frozen in action by colliding with the cold sea. The meadow of the lowest slopes ran uphill and petered out in vast expanses of *Empetrum* mixed with the usual mosses and *Vaccinium* species. We explored this island on one of the few gorgeously sunny days of the expedition and found pure joy lying on the *Empetrum*-covered slopes, feasting on several types of berries, and discovering tiny orchids sprouting

from the depths of the mat. Up where the vegetation met the descending rock slopes of the nearest hill we found a gem, a single, blooming *Penstemon frutescens* with delicately colored, lavender flowers. It was perched on a windy ridge overlooking the lava plateau, and we eagerly descended to the lava in hopes of finding more treasure among the green-clad pillars. The same mixture of matted species filled the spaces between the columns and marched up their sides, but we found very little in the way of flowers. We did find that the enticing, spongy carpet underfoot was not as solid as it seemed, and after a close call of nearly falling completely through into a deep hole, we were forced to abandon the lava forest. That was just as well, because as soon as we had climbed carefully down from the plateau, the ship started signaling wildly, telling us to hurry back since a typhoon was swooping down on us.

With few exceptions, the vegetation of the treeless central Kuril Islands is essentially uniform, changing slightly with variations in altitude, aspect, and advancing latitudes. The southern islands, however, are very different. The 1995 IKIP expedition did not concentrate collecting efforts on Kunashir and Iturup for a number of reasons, one being that they are claimed by Japan, and the Japanese participants were not able to go to shore. The main reason, however, was that a preliminary expedition in 1994 collected on the islands, and another expedition is scheduled in 1998. However, since these islands lie between our take-off point on Hokkaido, Japan, and the central islands, and since they have a few small towns on them, we stopped to go through customs and to take on water and supplies. The biogeography here is entirely different, and the diversity is much greater, due primari-

ly to the much larger size of the two islands and to their very close proximity to Japan. Lshir and Iturup are entirely forested. The canopy trees are pine, spruce, and fir, with numerous broad-leaved species mixed in, including *Quercus mongolica*, which I recognized from mainland Russia. The understory is often dominated by vast stands of bamboo (*Sasa kurilensis*)...but then, the southern islands are another expedition, another tale for another time.

Six weeks on the central islands barely whetted my appetite for exploration, and I'm left with a hope that I'll be able to go again someday, to return with more stories and more pictures. Until then, my thanks to everyone in the North American Rock Garden Society for helping me attain this dream, to Panayoti Kelaidis in particular, who suggested I apply for the NARGS grant, and to Sarah Gage, manager of the herbarium at the University of Washington and botanist of the expedition, without whom most of the plants in this article would remain unidentified.

Katherine Sauter has a BA in Russian and an MS in forestry and has spent nearly three years living and working in various parts of the former Soviet Union, mostly in the Russian Far East. She sometimes works as a freelance photographer, during and in between working as a biologist, conservationist and Russian translator. Her parents, Hans and Lyn Sauter, are longtime members of NARGS.



Rhododendron camtschaticum (pp. 10, 18)

photo, Katie Sauter



Iris setosa on Rasshua (p. 18)



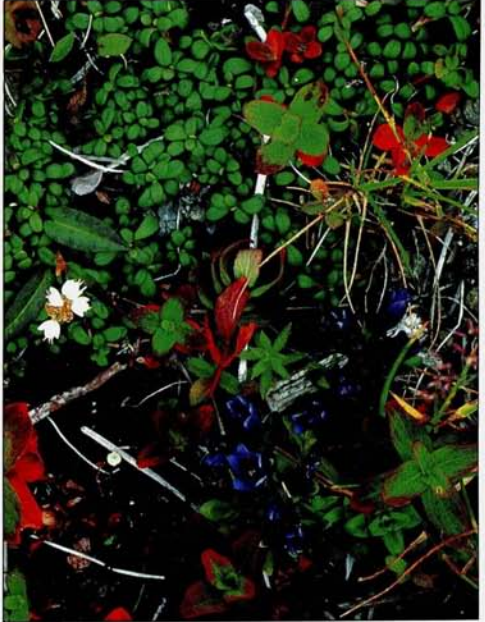
Mertensia asiatica and *Honkenya peploides*

Mertensia asiatica and *Honkenya peploides*
on Urup



Gentiana sp.
on Rasshua

photos, Katie Sauter





Kitoboynaya Bay, Simushir

photos, Katie Sauter

Potentilla sp., Otkryty Bay, Urup





Kraternaya Bay, Ushishir (p. 11)

on the Stochny River, Ketoi

photos, Katie Sauter



SAKHALIN IN BLOOM

VIEW FROM RUSSIA

by Vladimir Safonov

When you come to Sakhalin or the Kuril Islands by plane, your first feeling is that you are entering a large, wild place, its green mountains covered with forests and dissected by numerous small rivers and streams (over 10,000 are recorded). These low mountains seem more attractive than frightening. You can see from the first moments how rich and original is the local wildlife, and there is a sense of impatience—then you find yourself absorbed in it. These feelings are definite and grow stronger each time you rendezvous with Mother Nature in her local garb, your first impressions of these plants and animals unforgettable. Your memories of Her will visit you again and again when you return home.

Sakhalin is much the largest of the Pacific islands of Russia—over 589 miles long and 16-100 miles wide. The 56 Kuril Islands stretch southward for 750 miles from the southern tip almost to Hokkaido, in northernmost Japan. These represent an almost perfect cline of climate and ecology from subarctic Kamtchatka (very similar to Alaska) to warm temperate Japan in the south. Rather like Australia or the United

States, for that matter, Sakhalin was so distant from Europe that it was initially settled by convicts and political exiles from European Russia. The master of brevity, Anton Chekhov, was so inspired by the people and landscape of this region that he wrote his longest prose work about it.

Perhaps the most amusing season is the Sakhalinean springtime, late in April here, when all wildlife is awakening after a long winter sleep under thick snow cover. The first flower to appear is coltsfoot (*Petasites amplus*), whose large, greenish-yellow blooms adorn the ridges above each drainage as well as many small, sunny hills of the fields and forests. Then a brave dwarf anemone (*Anemone raddeana*) raises its large, semi-double, white flowers on slender stems. Bright golden-yellow flowers of *Adonis amurensis*, along with pretty, sky-blue *Corydalis ambigua* and yellow *C. speciosa*, follow them on the edges of the forests in May. Numerous white, fragrant flowers of the local white arum (*Lysichiton camtschatcense*) are blooming at the same time in the depth of moist forests and in streams. The arum is accompanied by a very showy, golden-yellow

marsh marigold (*Caltha fistulosa*), together creating impressive flower beds. They are truly heroic flowers, frozen at night but living on and blooming vibrantly the following day. Beautiful *Pulsatilla* species can be seen in the meadows of the middle islands of Sakhalin.

In June various anemones (8 species), violets (16 species), dandelions (16 species), and many other plants are in full bloom. They adorn all the landscapes with bright, varied spots of color. The graceful, wild, pink peony (*Paeonia japonica*) is the main attractive plant in mountain forests in June. In open spots the peonies are almost obscured by the many maroon spikes of an orchid (*Orchis aristata*). You can also encounter the famous, large-flowered orchid, *Cypripedium macranthum*, in the moist, hidden cranies of the mountain slopes. In the forests, moisture-rich areas are filled with white-flowered wake robins (*Trillium camschatcense*), which form edible, greenish-yellow, soft seed boxes ("berries") in August.

Meadows and birch forests are adorned with golden-yellow, perfumed flowers of the local daylily (*Hemerocallis middendorffii*) and lily-of-the-valley (*Convallaria keiskei*) with its pearly-white florets. Beautiful, orange-yellow flowers of *Trollius chinensis* and *T. pulcher* are so lovely on the terraces of the seashore and in damp mountain meadows.

Rocks and screes are covered with lavender patches of the pretty *Aquilegia flabellata* and the graceful *Veronica schmidtii* along with white carpets of *Draba* (*D. kurilense* in South Sakhalin and on the Kuril Islands, or *D. sachalinensis* in central Sakhalin). The famous *Mikakea integrifolia* (a noble relative of *Pulsatilla*) can be found in bloom in eastern Sakhalinean mountains—and nowhere else in the

world. It is a true bluebird of florists and rock gardeners, scoring 95 of 100 possible on the decorative scale. Another high mountain treasure is a little bleeding heart, *Dicentra peregrina*, whose rating is even higher. Its folk name, "the mountain queen," is justified. Fifty local species of compact perennials are very ornamental in bloom. Some grow at low altitudes; others are high mountain residents.

Very colorful rhododendrons (*Rhododendron aureum*, *R. camtschaticum*, photo, p. 13) are often found on Sakhalin, and a striking species (*R. brachycarpum*=*R. fouriei* var. *roseum*) can be met on the South Kurils only. I would rank it as 92/100.

From June through July irises come to their blooming phase. They are *Iris setosa*, *I. maackii*, and *I. laevigata* on Sakhalin, along with the incomparable *I. ensata* on the South Kurils (it's a wild parent of the famous Japanese iris).

In the same season, the graceful *Lilium medeoloides* (or *L. debile*) bears its fragrant orange flowers in forests, while the showy Sakhalinean lily (*L. sakhalinense*) is no rarity on seashore terraces and in the open valley meadows. A very ancient lily, *L. glehnii* (= *Cardiocrinum glehnii*), is a member of a relictual subgroup living in Himalaya and Japan. Its shining, wide, heart-shaped leaves and striking spikes of nicely fragrant, greenish-white flowers on strong stems up to 2 m high are very effective. This local botanical treasure scores 94 with me. No one can resist the beauty of this plant met in mass along a moist place near a mountain stream. What a pity that this noble plant can bloom once in its life and then must die. But it may be saved to bloom again next year, if its flower spike is cut off early, as its daughter bulbs will then accumulate enough food and grow into the autumn.

Another unusual, attractive, relic is *Macropodium pterocarpum* of the cabbage family (Brassicaceae), which lives in similar conditions in the mesic forests of central Sakhalin. In July its stout stems bear many most graceful, pink flowers with narrow petals and long, bright-colored stamens. In contrast to *Lilium glehnii*, it is known to be easy in cultivation, although it is doubtful that anybody has this exotic treasure in a garden today.

Deep blue spikes of *Gentiana axilliflora* and the bright violet ones of *Lobelia sessiliflora* and *Aconitum sachalinensis* adorn damp meadows from August through September, whereas the golden yellow sunflowers of *Arnica sachalinensis* cover the hillsides, as if small pieces of the sun had fallen among the light-green foliage.

Seashores and sandy terraces are covered sometimes with the beautiful bells of *Adenophora triphylla* (= *A. kurilensis*). Nice, low carpets of *Ammondenia peploides* and *Lagotis glauca* together with greenish-white ones of *Artemisia schmidtiana* and *A. stelleriana* may fairly adorn these habitats the whole summer through.

It is impossible to paint adequate portraits of all 250 ornamental species of local plants. It is better just to see them once than to read about them here in brief notes.

There are many useful plants here in Sakhalin as well. They are of culinary, nutritional, and medical interest. The famous *limonnik* (*Schizandra chinensis*), aralias (*A. elata* and *A. schmidtii*), *Eleutherococcus senticosus*, and the hardy kiwi-fruit (*Actinidia kolomikta*) are widespread in the South. They are officially recognized by the medicine authorities. Still more plants known to folk medicine grow in local forests, meadows, and boggy places. More than 20 species bear edible berries; some are unique in their pop-

ularity and therapeutic value—for instance, the *krasnika*, *Vaccinium praestans*, is prescribed to patients with high blood pressure.

Flavorful wild onions (*Allium ochotense*, *A. maximoviczii*, etc.), rich in vitamin C, are beloved additions to the local culinary palette.

Only one of the local wild species of sorrel (of 13 described) is used in cooking, whereas two of the genus *Polygonum* (*P. sachalinensis* and *P. weyrichii*) are good food sources (used in soups, jams, compotes, etc.) due to their rich vitamin C contents and sour taste.

The richest sources of the vitamin are local wild roses (*R. acicularis*, *R. amblyotis*, *R. rugosa* and *R. marrettii*). The large hips of *R. rugosa* make very desirable jam. Both rich in vitamin C and aromatic is the jam of the green berries of *Actinidia kolomikta*, and homemade wines produced from them are unsurpassed in their aroma.

Have you ever tried any of the various dishes made of Sakhalinean ferns? If never, try them during your visit to our islands. Made of young leaves of some ferns, these dishes vary, but in all cases they are delicious, resembling a mushroom in flavor. Leaves of *Petasites amplus* picked in June have a similar taste. The giant-leaved plant is widespread in the South.

A seashore plant, *Ligusticum hultenii* (Umbelliferae), adds a pleasant flavor to any fish dish, especially soups. Tender, sweet leaves and stems of the *morianka* (*Ammondenia peploides*) are a valuable find for an inventive cook, too. Its flavor is likened to that of crab meat. Thus, it was called "crab meat cress," and it is rich in vitamin C, also.

Be careful, as some plants are poisonous. The most dangerous are 12 species of the genus *Aconitum*—so colorful in August. Some plants of the

Umbelliferae are worthy of special care. For example, *Heracleum dulce*, a giant, can cause serious sunburn when the leaf juice contacts the skin on sunny days.

Forests of the islands are rich in ornamental trees and shrubs. There are several maples (*Acer pictum*, *A. ukurunduense*) that are very colorful in autumn; numerous willows; some attractive cherries (*Cerasus sachalinensis*, *C. kurilensis*, *C. maximowiczii*). The former is especially nice in June with its large, pink flowers; it is a wild parent of the northern Japanese group of famous sakura cultivars. Also extremely attractive is a local bird-cherry (*Prunus* (syn. *Padus*) *ssiori*) with its long racemes of large, white flowers in June, whereas its sister, *P. asiaticum*, is very similar to the ordinary birdcherry.

Five species of *Euonymus*, or burning bush, are widespread in the South. They are also colorful in autumn, when they are covered with many bright seed capsules and pink or yellow foliage. Red-leaved bushes of highbush bilberry (*Vaccinium smallii*) are overloaded with black, juicy berries in September. Wild hydrangeas (a bushy species, *H. paniculata*, and a vine, *H. petiolaris*) are strikingly beautiful with large caps of

white flowers from August through September, whereas their cousin, the highbush cranberry *Viburnum furcatum*, is their substitute in June.

Several vines of subtropical origin are also colorful from July through September on the southern Kuril Islands. The best are *Actinidia kolomikta*, with large, white spots on its leaves; *Schizandra chinensis*; and *Schizophragma hydrangeoides*.

There is no need to talk about the deciduous *Magnolia obovata*, native to the same islands, or the local apple, *Malus sachalinensis*. It would be better to see them in full bloom, and then you will remember them forever.

Come and enjoy wild nature here in Sakhalin, so beautiful in every season. You might also introduce some plants typical of the Kuril flora into your home garden by contacting The Columbine Project, Abonement Box 32, Yuzhno-Sakhalinsk, 693002, Russia.

This is the intended first chapter of a guide to the Sakhalin area by Vladimir Safonov. Safonov is a botanist and rare plant enthusiast and NARGS' only Russian member.

Photo below, *Ledum palustre*, by Katie Sauter



List of Notable Plants from the Kuril Islands

Adapted from the *List of the Families and Species of Vascular Plants of the Kurile Islands* by V. Yu. Barkalov, Institute of Biology and Soil Sciences, Far Eastern Branch, Russian Academy of Sciences, Vladivostok. The interested reader might also like to consult the *Flora of Kamtchatka and the Adjacent Islands*, by Eric Hulten, Kongl. Svenska Vetensk. Acad. Handl. 5, 1-2 and 8, 1-2, Stockholm.

[Editor's note: The following list includes only those taxa that have been positively identified with definite localities in the Kuril Islands. Another 48 families of vascular plants, as well as 125 more genera and 1055 additional species have been collected in this area, but these have not all been verified as yet. Note also, Kurile and Kuril are both acceptable spellings.]

PTERIDOPHYTA

<i>Athyriopsis japonica</i>	Kunashir	rare
<i>Athyrium americanum</i>	Shumshu, Paramushir	
<i>Athyrium filix-femina</i>	widely distributed	
<i>Athyrium vidalii</i>	Iturup, Kunashir	
<i>Athyrium yokoscense</i>	Kunashir, Shikotan	
<i>Blechnum nipponicum</i>	Iturup, Kunashir	rare
<i>Botrychium boreale</i>	Shumashu, Paramushir	rare
<i>Botrychium lunaria</i>	widely distributed	
<i>Coniogramme intermedia</i>	Kunashir, Shikotan	rare
<i>Cryptogramma crispata</i>	Kunashir, Shikotan	rare
<i>Diplazium complanatum</i>	widely distributed	
<i>Isoetes asiatica</i>	Sumshu, Paramushir, Onekotan	
<i>Lacosteopsis orientalis</i>	Iturup	rare
<i>Leptorhynchium miqueliana</i>	Kunashir	rare
<i>Lycopodium annotinum</i>	widely distributed	
<i>Mecodium wrightii</i>	Iturup, Kunashir, Shikotan, Zeljony	rare
<i>Ophioglossum alaskanum</i>	Shikotan	near hot springs, rare
<i>Plagiogyria matsumurana</i>	Urup, Iturup	rare
<i>Pleopeltis thunbergiana</i>	Kunashir	rare
<i>Selaginella selaginoides</i>	widely distributed	

GYMNOSPERMS

<i>Abies sachalinensis</i>	Iturup, Kunashir, Shikotan	
<i>Juniperus sargentii</i>	southern Kurils	
<i>Picea ajanensis</i>	Iturup, Kunashir, Shikotan	
<i>Picea glehnii</i>	Iturup, Kunashir, Shikotan	
<i>Pinus pumila</i>	everywhere except Atlasova and Shikotan	
<i>Taxus cuspidata</i>	central and southern Kurils	

DICOTYLEDONS (BY FAMILY)

MAGNOLIACEAE		
<i>Magnolia hypoleuca</i>	Kunashir	rare
SCHIZANDRACEAE		
<i>Schizandra chinensis</i>	Iturup, Kunashir, Shikotan	

CHLORANTHACEAE		
<i>Chloranthus serratus</i>	Kunashir	rare
BERBERIDACEAE		
<i>Caulophyllum robustum</i>	Kunashir	rare
<i>Diphylaea grayi</i>	Iturup, Kunashir	rare
RANUNCULACEAE		
<i>Aconitum kunasilense</i>	Iturup, Kunashir	endemic
<i>Aconitum maximum</i>	widely distributed	
<i>Adonis ramosa</i>	Kunashir	rare
<i>Aquilegia flabellata</i>	southern Kurils	
<i>Delphinium brachicentrum</i>	Shumshu, Paramushir	
<i>Ranunculus eschscholtzii</i>	Paramushir	
<i>Ranunculus monophyllum</i>	Shumshu, Paramushir	
<i>Ranunculus nivalis</i>	Paramushir	rare
<i>Ranunculus pygmaeus</i>	Shumshu, Paramushir	
<i>Ranunculus sulphureus</i>	Shumshu, Paramushir	
<i>Thalictrum alpinum</i>	Shumshu, Paramushir, southern Kurils (?)	
PAPAVERACEAE		
<i>Corydalis arctica</i>	Paramushir	rare
<i>Dicentra peregrina</i>	Iturup, Kunashir	
<i>Papaver alboroseum</i>	Atlasova, Paramushir, Onekotan	
DAPHNIPHYLLACEAE		
<i>Daphniphyllum humile</i>	Iturup, Kunashir	
URTICACEAE		
<i>Boehmeria tricuspis</i>	Kunashir	rare
<i>Laportea bulbifera</i>	Kunashir	
FAGACEAE		
<i>Quercus dentata</i>	Kunashir	
BETULACEAE		
<i>Alnus maximowiczii</i>	Rasshua	
<i>Betula ermanii</i>	widely distributed	
<i>Betula exilis</i>	Atlasova, Shumshu, Paramushir, Onekotan, Shishkotan (?)	
<i>Betula maximowicziana</i>	Kunashir	
<i>Betula paramushirensis</i>	Paramushir	endemic
JUGLANDACEAE		
<i>Juglans ailanthifolia</i>	Kunashir	rare
CARYOPHYLLACEAE		
<i>Arenaria merckiioides</i>	Iturup	
<i>Cerastium aleuticum</i>	Shumshu, Paramushir	
<i>Cerastium beeringianum</i>	Paramushir	
<i>Dianthus repens</i>	Urup	
<i>Gastrolychnis apetala</i>	Paramushir	
? <i>Minuartia arctica</i>	Iturup	
? <i>Minuartia minutiflora</i>	Atlasova, Paramushir, Onekotan	
POLYGONACEAE		
<i>Aconogonon ajanense</i>	Iturup, Kunashir	
<i>Aconogonon pseudoajanense</i>	Iturup	endemic
<i>Aconogonon weyrichii</i>	southern Kurils	widely distributed
<i>Koenigia islandica</i>	Shumshu, Paramushir	
<i>Polygonum viviparum</i>	?	
<i>Reynoutria sachalinensis</i>	southern Kurils	widely distributed
<i>Rumex arcticus</i>	Shumshu, Paramushir	rare

<i>Rumex madajo</i>	Kunashir	
PLUMBAGINACEAE		
<i>Armeria maritima</i>	Shumshu, Paramushir	
PAEONIACEAE		
<i>Paeonia obovata</i>	Kunashir, Shikotan	
<i>Paeonia oreogeton</i>	Shikotan	rare
CLUSIACEAE		
<i>Hypericum yesoense</i>	Kunashir, Shikotan	
<i>Triadenum japonicum</i>	Kunashir	rare
CUCURBITACEAE		
<i>Gymnostemma pentaphyllum</i>	Kunashir	
BRASSICACEAE		
<i>Cardamine bellidifolia</i>	Paramushir	
<i>Cardamine schinziana</i>	Kunashir	
<i>Draba hyperborea</i>	Rasshua, Ushishir, Ketoi, Iturup	
<i>Eutrema japonicum</i>	Kunashir	
<i>Parrya nudicaulis</i>	Atlasova, Shumshu, Paramushir, Urup	
<i>Subularia aquatica</i>	Shumshu, Paramushir	rare
SALICACEAE		
<i>Salix chammissonis</i>	Shumshu, Paramushir	
<i>Salix kurilensis</i>	common on the central and northern Kurils	
<i>Salix polaris</i>	Shumshu, Paramushir	
<i>Salix udensis</i>	widely distributed	
ACTINIDIACEAE		
<i>Actinidia arguta</i>	Kunashir	rare
<i>Actinidia polygama</i>	Kunashir	rare
ERICACEAE		
<i>Arctericia nana</i>	widely distributed	
<i>Arctous alpinus</i>	*	
<i>Eubotryoides grayana</i>	Iturup, Kunashir, Shikotan	widely distributed
<i>Gaultheria miqueliana</i>	Paramushir(?), Ketoi, Simushir, Urup, Kunashir	
<i>Ledum palustre</i>	*	
<i>Monotropastrum globosum</i>	Kunashir	
<i>Phyllodoce aleutica</i>	common the the central and northern Kurils	
<i>Pyrola</i> sp.	Rasshua	
<i>Rhododendron brachycarpum</i>	Iturup, Kunashir	
<i>Rhododendron tschonosckii</i>	Kunashir	rare
EMPETRACEAE		
<i>Empetrum nigrum</i>	*	
PRIMULACEAE		
<i>Cortusa sachalinensis</i>	Shikotan	rare
<i>Primula nutans</i>	?	
<i>Primula tschuktschorum</i>	Shumshu, Paramushir	
TILIACEAE		
<i>Tilia maximowicziana</i>	Kunashir	rare
HYDRANGEACEAE		
<i>Hydrangea petiolaris</i>	common the the southern Kurils	
<i>Schizophragma hydrangeoides</i>	Kunashir	
SAXIFRAGACEAE		
<i>Parnassia fimbriata</i> (?)	*	
<i>Saxifraga fortunei</i>	Iturup, Kunashir, Shikotan	
<i>Saxifraga hyperborea</i>	Atlasova, Shumshu, Paramushir	

*actually seen on Katie Sauter's expedition

<i>Saxifraga idzurcei</i>	widely distributed	
<i>Saxifraga sachalinensis</i>	Kunashir, Shikotan	
CRASSULACEAE		
<i>Orostachys aggregata</i>	Kunashir	
<i>Rhodiola isididae</i>	Iturup, Kunashir	
<i>Rhodiola (Sedum) roseum</i>	*	
ROSACEAE		
<i>Cerasus kurilensis</i>	Urup, Iturup, Kunashir; widely distributed	
<i>Crataegus chlorosarca</i>	Kunashir	
<i>Dryas ajanensis</i>	Iturup, Shikotan	
<i>Filipendula kamtschatica</i>	widely distributed	
<i>Malus sachalinensis</i>	Iturup, Kunashir	
<i>Micromeles alnifolia</i>	Kunashir	
<i>Padus ssiori</i>	Iturup, Kunashir, Shikotan	
<i>Parageum calthifolium</i>	widely distributed	
<i>Potentilla dickinsii</i>	Kunashir	
<i>Potentilla megalantha</i>	widely distributed	
<i>Potentilla prostrata</i>	Shikotan	
<i>Potentilla vulcanicola</i>	Atlasova, Paramushir	
<i>Pentaphylloides fruticosus</i>	Shumshu, Paramushir, Kunashir, Shikotan	
<i>Rosa rugosa</i>	widely distributed	
<i>Rubus mesogaeus</i>	Kunashir	
<i>Rubus pedatus</i>	Iturup, Kunashir	
<i>Rubus pseudojaponicus</i>	Kunashir	
<i>Rubus stellatus(?)</i>	Shumshu	
<i>Sanguisorba officinalis</i>	Paramushir	
<i>Sorbus sambucifolia</i>	widely distributed	
FABACEAE		
<i>Maackia amurensis</i>	Shikotan	
<i>Astragalus alpinus</i>	Paramushir	
<i>Astragalus frigidus</i>	Shumshu, Paramushir	
<i>Astragalus japonicus</i>	Urup, Iturup, Kunashir	
<i>Astragalus kawakamii</i>	Iturup	
<i>Oxytropis exserta</i>	Paramushir	
<i>Oxytropis kunashirensis</i>	Kunashir	endemic
<i>Oxytropis revoluta</i>	Atlasova, Shumshu, Paramushir	widely distributed
<i>Oxytropis hidakomontana (?)</i>	Shikotan	
<i>Oxytropis itona</i>	Urup	endemic
<i>Oxytropis rishiriensis (?)</i>	Iturup	
ONAGRACEAE		
<i>Chamerion latifolium</i>	Shumshu, Paramushir, Urup	
<i>Epilobium fauriei</i>	Shimushir, Iturup, Kunashir	
RUTACEAE		
<i>Phellodendron sachalinense</i>	Iturup, Kunashir, Shikotan	
<i>Skimmia repens</i>	Urup, Iturup, Kunashir	
ANACARDIACEAE		
<i>Rhus orientalis</i>	southern Kurils	
<i>Rhus trichocarpa</i>	southern Kurils	
ACERACEAE		
<i>Acer japonicum</i>	Kunashir	
<i>Acer tschonoskii</i>	Iturup	
CORNACEAE		

<i>Cornus suecica</i>	*	
<i>Bothrocaryum controversum</i>	Kunashir	rare
ARALIACEAE		
<i>Aralia cordata</i>	southern Kurils	
<i>Aralia elata</i>	Iturup, Kunashir, Shikotan	
<i>Kalopanax septemlobus</i>	Iturup, Kunashir	
APIACEAE		
<i>Angelica ursina</i>	Kunashir	
<i>Bupleurum triradiatum</i>	Kunashir, Shikotan	
<i>Cryptotaenia japonica</i>	Kunashir	
<i>Hydrocotyle ramiflora</i>	Iturup, Kunashir	
<i>Sanicula chinensis</i>	Kunashir	
AQUIFOLIACEAE		
<i>Ilex crenata</i>	southern Kurils	
<i>Ilex rugosa</i>	everywhere, but rare on the northern Kurils	
<i>Ilex sugerokii</i>	Iturup, Kunashir	
CELASTRACEAE		
<i>Euonymus elata</i>	Urup, Iturup, Kunashir	
<i>Euonymus oxyphylla</i>	Kunashir	
<i>Euonymus sieboldiana</i>	Iturup, Kunashir	
VITACEAE		
<i>Vitis cognetie</i>	southern Kurils	
RUBIACEAE		
<i>Mitchella undulata</i>	Iturup, Urup	
ASCLEPIADACEAE		
<i>Cyanchum caudatum</i>	Kunashir, Shikotan	
<i>Metaplexis japonica</i>	Kunashir	
GENTIANACEAE		
<i>Gentiana glauca</i>	Shumshu, Paramushir, Urup	
<i>Gentiana jamesii</i>	Iturup	
<i>Gentiana nipponica</i>	widely distributed	
<i>Gentiana yedoensis</i>	*	
<i>Halenia geniculata</i>	*	
<i>Swertia tetrapetala</i>	*	
<i>Tripterospermum japonicum</i>	Iturup, Urup	
MENYANTHACEAE		
<i>Fauria crista-galli</i>	Iturup	
OLEACEAE		
<i>Fraxinus lanuginosa</i>	Kunashir	
<i>Ligustrum yezoense</i>	Iturup, Kunashir	
CAPRIFOLIACEAE		
<i>Lonicera glehnii</i>	Iturup, Kunashir	
<i>Viburnum furcatum</i>	Urup, Iturup, Kunashir	
<i>Viburnum wrightii</i>	Urup, Iturup, Kunashir	
<i>Weigela middendorffiana</i>	everywhere, rare on the northern Kurils (only Onekotan)	
ADOXACEAE		
<i>Adoxa insularis</i>	Kunashir	
VALERIANACEAE		
<i>Patrinia gibbosa</i>	Kunashir	
CONVOLVULACEAE		
<i>Calystegia soldanella</i>	Urup, Iturup, Kunashir	
POLEMONIACEAE		

<i>Polemonium boreale</i>	Shumshu, Paramushir, Onekotan	
BORAGINACEAE		
<i>Allocarya orientalis</i>	Shumshu, Paramushir	
<i>Eritrichium villosum</i>	Shumshu	
<i>Mertensia pterocarpa</i>	Onekotan, Shiashkotan, Urup, Iturup, Kunashir, Shikotan	endemic
<i>Mertensia pubescens</i>	Shumshu, Paramushir, Onekotan	
VERBENACEAE		
<i>Phryma asiatica</i>	Kunashir	rare
LAMIACEAE		
<i>Ajuga shikotanensis</i>	Shikotan	
<i>Nepeta subsessilis</i>	Kunashir	rare
<i>Teucrium japonicum</i>	Kunashir	rare
<i>Thymus japonicus</i>	Kunashir	rare
CALLITRICHACEAE		
<i>Callitriche hermaphroditica</i>	Shumshu, Iturup	
SOLANACEAE		
<i>Solanum megacarpum</i>	Iturup, Kunashir, Shikotan	
SCROPHULARIACEAE		
<i>Linaria japonica</i>	*	
<i>Mimulus inflatus</i>	Kunashir	rare
<i>Mimulus sessilifolius</i>	Kunashir	rare
<i>Pedicularis adunca</i>	Shumshu, Paramushir	
<i>Pedicularis capitata</i>	Shumshu, Paramushir	
<i>Pedicularis pallasi</i>	northern Kurils	
<i>Pedicularis schistostegia</i>	Atlasova (?), southern Kurils	
<i>Penstemon frutescens</i>	Chirpoi	
<i>Scrophularia grayana</i>	Iturup, Kunashir, Shikotan	
<i>Veronica grandiflora</i>	northern Kurils	
<i>Veronica schmidtiana</i>	Iturup, Kunashir, Shikotan	
LENTIBULARIACEAE		
<i>Pinguicula villosa</i>	Shikotan	
CAMPANULACEAE		
<i>Campanula</i> spp.		
ASTERACEAE		
<i>Artemisia borealis</i>	Atlasova	
<i>Artemisia furcata</i>	Shumshu, Paramushir	
<i>Artemisia glomerata</i>	Atlasova, Paramushir, Onekotan	
<i>Artemisia japonica</i>	Iturup, Kunashir	
<i>Artemisia unalaskensis</i>	widely distributed	
<i>Carpesium triste</i>	Kunashir	
<i>Cirsium charkeviczii</i>	Kunashir, Shikotan	endemic (?)
<i>Crepis hokkaidoensis</i>	Iturup, Shikotan	
<i>Erigeron humilis</i>	Paramushir	
<i>Erigeron peregrinus</i>	Paramushir	
<i>Erigeron schikotanensis</i>	Kunashir, Shikotan; endemic	
<i>Ixeridium kurilense</i>	Kunashir	endemic
<i>Leontopodium kurilense</i>	Iturup, Shikotan	
<i>Pterocypsela elata</i>	Iturup, Kunashir	
<i>Saussurea fauriei</i>	Kunashir, Shikotan	
<i>Saussurea kurilensis</i>	Simushir, Urup, Iturup	endemic
<i>Saussurea nuda</i>	Atlasova, Shumshu, Paramushir	

<i>Saussurea oxydonta</i>	Shumshu, Paramushir	
<i>Saussurea riederi</i>	widely distributed	
<i>Senecio cannabifolius</i>	widely distributed	
<i>Senecio pseudoarnica</i>	widely distributed	
<i>Tanacetum boreale</i>	Urup	
<i>Taraxacum camtschaticum</i>	Shumshu	
<i>Taraxacum ketoense</i>	Shumshu	
<i>Taraxacum kojimae</i>	Paramushir	endemic
<i>Taraxacum miyabei</i>	Iturup	
<i>Taraxacum perlataenscens</i>	widely distributed	
<i>Taraxacum shikotanense</i>	widely distributed	
<i>Taraxacum vulcanorum</i>	Iturup, Kunashir	endemic
<i>Tephrosieris kawakamii</i>	Shikotan	rare

MONOCOTYLEDONS (BY FAMILY)

ZANNICHELLIACEAE		
<i>Zannichellia repens</i>	Shumshu	rare
ZOSTERACEAE		
<i>Phyllospadix iwatensis</i>	Simushir, Urup, Iturup, Kunashir, Shikotan	
COLCHICACEAE		
<i>Metanarthecium luteoviride</i>	Iturup, Kunashir	
<i>Tofieldia okuboi</i>	Iturup	
LILIACEAE		
<i>Cardiocrinum glehnii</i>	Iturup, Kunashir	
<i>Erythronium japonicum</i>	Urup, Kunashir	
<i>Gagea hiensis</i>	Kunashir	
<i>Lilium debile</i>	widely distributed	
<i>Lilium lancifolium</i>	Kunashir	introduced
<i>Lilium medeoloides</i>	*	
<i>Lloydia triflora</i>	Shumshu, Paramushir, Iturup	
HEMEROCALLIDACEAE		
<i>Hemerocallis yezoensis</i>	Kunashir	rare
ASPARAGACEAE		
<i>Disporum sessile</i>	Kunashir	
IRIDACEAE		
<i>Iris ensata</i>	Kunashir	
<i>Iris setosa</i>	*	
TRILLIACEAE		
<i>Paris hexaphylla</i>	Kunashir	
<i>Trillium camtschaticum</i>	widely distributed	
DIOSCOREACEAE		
<i>Dioscorea batatas</i>	Kunashir	
ORCHIDACEAE		
<i>Amitostigma kinoshitae</i>	Kunashir	
<i>Cephalanthera longibracteata</i>	Kunashir	
<i>Cremastra variabilis</i>	Kunashir	
<i>Cypripedium macranthon</i>	Shumshu, Ketoi, Simushir, Urup, Iturup, Shikotan	
<i>Dactyloctenium ringens</i>	Iturup, Kunashir, Shikotan	
<i>Eleorchis japonica</i>	Kunashir	
<i>Gastrodia elata</i>	Iturup, Kunashir	rare
<i>Hammarbya paludosa</i>	Paramushir, Kunashir	

<i>Liparis kumokiri</i>	Kunashir	
<i>Myrmechis japonica</i>	Iturup, Kunashir	rare
<i>Neottia asiatica</i>	Kunashir	rare
<i>Neottianthe cucullata</i>	Kunashir, Shikotan	
<i>Pogonia japonica</i>	Kunashir, Shikotan	
<i>Tulotis ussuriensis</i>	Iturup	rare
JUNCACEAE		
<i>Juncus biglumis</i>	Shumshu, Onekotan	
<i>Juncus jokoscensis</i>	southern Kurils	
CYPERACEAE		
<i>Carex capillaris</i>	Shumshu, Paramushir	
<i>Carex dissitiflora</i>	southern Kurils	
<i>Carex incisa</i>	Kunashir, Shikotan	
<i>Carex insanae</i>	Kunashir	rare
<i>Carex japonica</i>	Kunashir	
<i>Carex livida</i>	Shumshu, Paramushir, Onekotan, Ketoi, Iturup, Kunashir	
<i>Carex laxa</i>	Sumshu, Paramushir, Iturup, Kunashir, Shikotan	rare
<i>Carex pluriflora</i>	Paramushir, Onekotan	
<i>Carex williamsii</i>	Paramushir	rare
<i>Eleocharis margaritacea</i>	Paramushir	
<i>Eriophorum scheuchzeri</i>	Shumshu, Paramushir, Ketoi	
POACEAE		
<i>Agrostis alascana</i>	Shumshu, Paramushir	
<i>Alopecurus steinegeri</i>	Paramushir	
<i>Brachypodium kurilense</i>	southern Kurils	
<i>Calamagrostis deschampsoides</i>	Paramushir	
<i>Calamagrostis litwinowii</i>	Paramushir	
<i>Elymus kurilensis</i>	Kunashir, Shikotan (?)	
<i>Elymus villosulus</i>	Atlasova, Simushir	
<i>Elymus woroschilowii</i>	Kunashir, Shikotan	
<i>Festuca altaica</i>	Paramushir	
<i>Festuca brevissima</i>	Paramushir	rare
<i>Glyceria ischyronaura</i>	Iturup, Kunashir	
<i>Hierochloe pauciflora</i>	Paramushir	
<i>Hordeum brachyantherum</i>	Paramushir, Iturup	
<i>Molinia japonica</i>	Kunashir, Iturup	
<i>Neomolinia japonica</i>	Kunashir (?)	
<i>Poa neosachalinensis</i>	Iturup, Shikotan (?)	
<i>Poa pauciflora</i>	Paramushir, Iturup	
<i>Poa platyantha</i>	Atlasova, Paramushir, Urup, Shikotan (?)	
<i>Poa radula</i>	central and southern Kurils	
<i>Poa shumshuensis</i>	Shumshu, Paramushir	
<i>Poa sublanata</i>	Atlasova, Shumshu, Onekotan	
<i>Poa trivialiformis</i>	Paramushir, Onekotan	
<i>Poa turneri</i>	Onekotan	
<i>Sasa kurilensis</i>	central and southern Kurils	

*species seen on Katie Sauter's expedition

MOUNTAINS OF TURKEY

TO MT OLYMPUS AND BEYOND

by Phyllis Gustafson

Trabzon, on the Black Sea in eastern Turkey, is a cosmopolitan city made up of people fleeing religious persecution and political uprisings. Founded in 746 B.C. on a small table of land above a natural harbor, it is also the entrance to the Pontic Alps.

Trabzon was still sleeping early on Saturday morning, September 11, 1994, as we worked our way along the main street looking for the road that led up Zigana Pass. After a full week of travel from Sedlonov, in the Czech Republic, Bonnie Brunkow, Curator at Leach Botanic Garden, Portland, Oregon, and I were on our way to fulfill a dream. Josef Halda and his wife Jarmila Haldova were taking us to one of their favorite plant areas. This was to be their eighth trip up Zigana Pass, and it turned out to be the driest. We turned south, and almost at once we were driving in a deep valley with small farms and hazelnut orchards running vertically up the hills. As high as we could see yet another farm was carved out of the forest of spruce, silver fir, and pine. Cows or sheep were in the all the fields. The gardens were full of vegetables, including cabbages as large as any we had ever seen. Here

at the edge of the Pontic Caucasus the green landscape was a real contrast to the brown Turkish landscape that we had been crossing for the last few days. Even though it was harvest time, it felt and looked like spring, these seaward slopes being inundated with moisture-laden air the year around. The mountains rise so steeply that 25 miles from the sea you can climb to above 10,000'.

As we drove up the winding but very good road and the valley got deeper, I idly wondered how the people got from their homes through the steep hills to the road to move their crops. Suddenly I was brought back from my speculations: there near the road was a field filled with bright pink. We rounded the corner, and there was another field with heads of pink blowing in the breeze, and above the house yet another field was spotted with white. The farm family gave us permission to walk in their fields. They were very busy moving their manure pile from in front of the house (where they had shoveled it out from the barn, which is the lower level of the house) to the garden below. Now we knew how the cabbages got so big!

The pink was *Colchicum speciosum* (photo, p. 34). The color of the untes-sellated petals varied from bulb to bulb, and we had to peek at each one. The variation in shading and petal shape kept our cameras quite busy. Then it was up to the higher pasture with the white *Crocus vallicola*. Each flower was a pristine challis, remarkably identical shape and size from one plant to the next. The tip of each petal had a little ear sticking up and slightly twisted, most comical in effect. *Crocus vallicola* is somewhat smaller than the 11.5" *Colchicum*, with a cup 4" wide. We were to see many more open meadows of these two bulbs, usually blooming together. The *Colchicum* is an easy garden plant, as it seems to tolerate a wide range of soils. The crocus seems to be more unusual in cultivation. It always grew in the more porous granitic soils, so maybe it requires similar treatment in the garden. Also in the area were dried flowers of *Crocus scharojanii*. This is a very beautiful, deep-yellow-flowering species that blooms in August.

The villages became sparse as we drove to the alpine meadows above 10,000' on Kalkanli Dag. Here the sheep and cow herds roam the rounded mountain tops and graze them heavily, but there are plants left in the outcrops at the edges. These sometimes steep, rotting granite cliffs make for unsure footing for man and beast. As we carefully worked our way along, we found a remarkable number of plants. Cushions of *Draba polytricha*, hard and tight, the size of a penny, but with a few late flowers, were nestled in the crevices of wet rocks. A close look-alike, *Androsace villosa*, was also there but very dormant. The monocarpic *Sedum pilosum*, with rich wine-red flowers, is a beauty, while *S. spurium* looks much more interesting here than in my garden. The large, hard

cushions of *Saxifraga kolenatiana* hung in the most vertical rocks contrasting with *Asplenium viride*. At the top of the cliffs a most interesting community of plants is rooted into the turf. *Gentiana verna* was not in flower, but we did find the lavender-pink flowers of *Gentianella caucasia*. Such a nice little plant, I'm sure it would be used more in the garden if it were longer-lived. *Arenaria caucasica*, *Geranium cinerascens*, and *Scabiosa lucida* were all found with some late blooms among leaves of *Achemilla mollis*. *Campanula tridentata* with reduced foliage and the usual huge, single bell held just above the leaves is gorgeous. *Jurinella moschus* ssp. *pinnatisecta* (photo, p. 36), with fleshy, dissected leaves and very fragrant, huge, pink, stemless flowers, grows mostly on sandy slopes. All are easy garden plants with much merit.

This was the first time in eight trips that Josef and Jarmila did not find it raining. The unseasonably dry summer resulted in much less bloom. However, as we carefully walked down a near-vertical, west-facing scree among all the moving, skillet-sized rock I suddenly came across *Campanula stevenii* ssp. *stevenii* and ssp. *beauverdiana* in full bloom. Rooted tightly to soil somewhere underneath, these were like islands in a river of sliding rock. Then below me Jarmila was calling something. As fast as I could move I headed—slowly—to where she had found something special. Special, that's the word for *Lamium armenum*. The pure cotton-white of the 2" flower with its big hood held above all this sea of brown rock was fantastic. For me, it was the highlight of the whole trip. I suddenly wanted to fly across the huge valleys and explore all the visible scree on the nearby mountains. Here, as far as I could see, were the peaks of the western end of the Pontic Alps. They seemed to go on forever.

The Pontic Alps, also called the Little Caucasus, are a series of alpine peaks near the northeastern corner of Turkey. They are the southwestern extension of the Caucasus range and share a similar climate and flora. With four major massifs, this range is the largest true alpine area in Turkey. The valleys are trough-shaped, and the tops of the mountains are rounded, indicating the work of glaciers. While there has been much exploration near the roads, the area is so large and so inaccessible (except by foot) that there is still a chance that new species may be found.

Along treeline in open areas *Daphne glomerata*, with a few of its creamy-colored flowers still looking good, grew in small thickets in the tall grasses, together with late-blooming *Gentiana septemfida*. On the lower slopes *Rhododendron ponticum* (= *Azalea pontica*) and *R. luteum* are the predominant plants in a very different plant community. This is an area that should be visited in the spring when the slopes glow from the pink and yellow of the two rhododendrons. In the peaty undercover along the small streams are *Primula longipes*, a *nivalis* type, and *P. macrocalyx*. The 2'-tall, dry heads held no seed for us. The foliage of some lily, probably *Lilium ponticum*, and of some orchids were also evident. Soft and delicate, *Lycopodium selago* grows in the soft, damp loam with tiny *Cyclamen parviflorum*. This *Cyclamen*, rarest of the genus, has very dark green leaves with red undersides and grows under the shrubs or open wet screes. On the open, western slopes in rough grasses unpalatable to the goats and sheep, the flowers were not grazed. We found *Gentiana pyrenaica*, blooming rich-blue everywhere on moist meadows. Sticking up like pastel flags, *Scabiosa caucasica*, over 12" tall, dotted the meadow with pale laven-

der. Looking in the heavy grass at the last yellow flowers of *Helianthemum alpestre*, I suddenly saw the huge, clear yellow, pansy flower of *Viola altaica*. Soon afterward we found a blue one as well. Both were clear-colored with dark bee guidelines and over 2" across and opened flat in the grasses. In the open mixed forest of silver fir, spruce and pine an occasional *Gentiana asclepiadea* with some terminal bloom would stand above the rhododendrons and other shrubs. We also found the last shocking orange-red flowers on a large *Geum coccineum*. Under a stand of *Pinus silvestris* in granite rocks the large leaves of *Cyclamen coum* ssp. *caucasicum* were everywhere. The corms of this, the biggest form of *C. coum*, were up to 6" across. The leaves of each plant were shaped and marbled slightly different, creating an array of variation. We looked very closely at the plants and saw that they were full of buds, waiting for spring. As we crossed the divide we left the damp forests and were once again in the dry interior.

Our next mountain stop was Erciyes Dag, which lies almost in the center of Turkey only 16 miles southwest of Kayseri, the capital of Cappadocia. Erciyes is an extinct volcano, composed mostly of andesite, which rises suddenly from the flat Anatolian plateau to 12,850'. As we drove out of the city on a windy afternoon the mountain loomed over all, and we stopped to get our one photo just before storm clouds covered the peak. The only way to get onto the mountain from this side is at a ski area. It was very dry, and the wind at times blew the dry pumice-like volcanic soil into our eyes. That didn't stop me from seeing the undulating landscape, dominated for as far as I could see with *Daphne oleoides* ssp. *kurdica*. This shrub averaged 2-3.5' tall. As we wandered

up the side of the mountain, we looked very hard for seed, but each of us found only one or two. *Androsace villosa* ssp. *congesta* was on a little rocky outcrop, and we were able to collect some seed. The plant was less than 0.25" high and completely dormant. *Asperula sin-tensisii*, a pink-blooming little cushion, grew on steep rocks. Growing very close to it was an equally small plant, this one *Draba bruniifolia*.

Campanula saxifraga, together with dark purple-violet blooming *Geranium subcaulescens*, inhabited steep gravelly slopes. *Silene argaea*, a pink-flowered endemic, grew here on rocks and snowfields. *Draba cappadocica* is a beautiful cushion, a yellow-flowered plant on subalpine rocks (photo, p. 34). Huge, dense, green-leaved cushions of *Acantholimon ulicinum* with pink, stemless flowers were everywhere on steep slopes, mixed with bluish-leaved shrublets of an *Astragalus* in the *Tragacantha* group. Bright yellow-flowered *Erysimum kotschyianum* was much bigger here than the plants we saw later on Ala Dag. Tiny white- or pink-blooming *Dianthus zedebaueri* formed tight, small cushions. There was an occasional rose bush, less than 2' tall, with large red hips pointing straight up.

As we left we drove on an old road made of cobble stones cut from granite. What a very rough ride! Once on modern roads, it was a fast trip south to our main destination.

The Ala Dag Range is the loftiest massif in the Toros chain in south central Turkey. Josef first came here on a mountain climbing expedition to Afghanistan in 1967. In the 20-plus years since, he has returned again and again, drawn by the many endemics. Because the central part of the massif is so inaccessible, there are still many new plants both undescribed and not yet known in cultivation. Although

more and more alpine enthusiasts visit the area, there is still a rich store of desirable plants of the highest peaks that deserve to be introduced to cultivation.

Suddenly visible as we drove across the agriculturally productive plains were the huge mountains contained in a 75-square-mile area. Ala Dag is made up mostly of dolomitic limestone and marbles stained red and black and carved into brutal peaks, sinks, and gorges. The highest peak in this massif is Demirkazik at 12,322', our destination. The mostly naked rocks and the changing weather and light create sensational images. It is interesting that the climate here is so similar to ours in Oregon. The summers are very dry and hot, but the winters are wet. Of course, as you get up into the alpine zone, there is more moisture all year from the weather that all big mountains make for themselves. Clouds form over high peaks and produce rain that may not fall in the lowlands.

We set out about 8 a.m. on September 21, and it was already hot as we climbed the first hill towards a spring. It was surprising to find wonderful plants in such a hot, dry-looking landscape. Stopping for a rest at about 5,700', we leaned on a large limestone rock, which proved to be the back side of a cave. It was obviously used occasionally as shelter by shepherds and their flocks. Inside the edge of the cave, hanging vertically, were pads of *Asperula pontica* as soft as goose down and close to a foot across. How they lived upside-down in the rocks with all the sheep manure below their heads instead of at their feet is a wonder. On the cool side of the outcrops we found the more common *Saxifraga kotchyi* as green as spring and with an occasional, creamy-colored flower. Showing its love of this porous

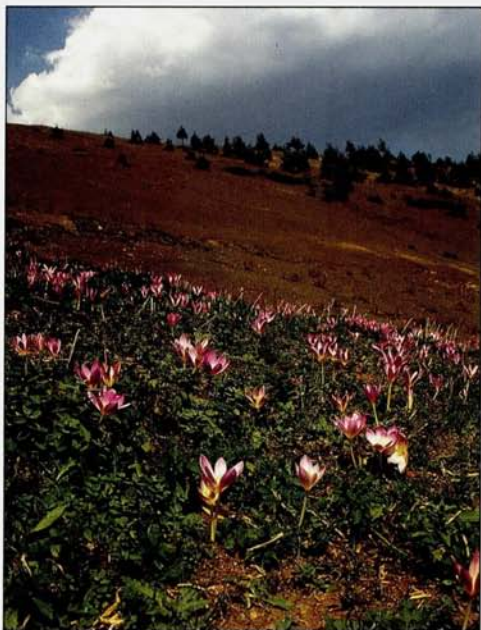


Saxifraga sempervivum and *Arabis bryoides* on Mt. Olympus (p. 40)

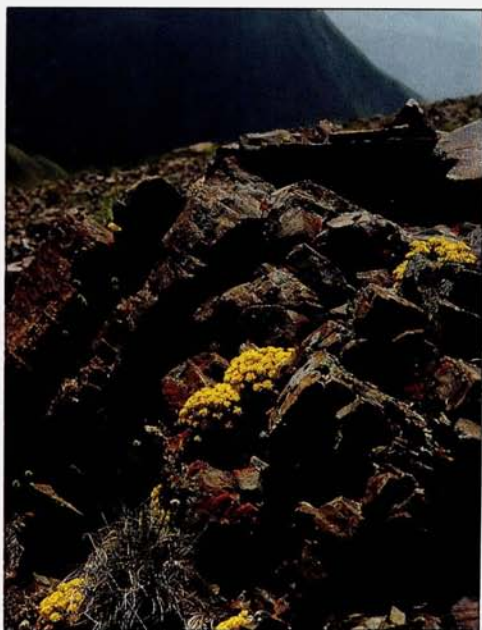
Aubrieta gracilis on Mt. Olympus (p. 40)

photos, Josef Halda





Colchicum speciosum on Zigana Pass (p. 30)
photo, Phyllis Gustafson



Draba cappadocica (p. 32)
photo, Josef Halda

Centaurea pindicola on Mt. Olympus
photo, Josef Halda



Jankaea heldrichii on Mt. Olympus (p. 40)
photo, Josef Halda





Draba acaulis on Ala Dag (p. 38)

photos, Josef Halda

Alyssum handellii on Mt. Olympus (p. 40)





Convolvulus assyricus on Ala Dag

photos, Josef Halda

Jurinella moschus ssp. *pinnatisectus* (p. 30)



limestone was a species of *Asplenium* in perfect health. Along the path the dominant plants were huge bushes of *Acantholimon ulicinum* ssp. *ulicinum*. There were other *Acantholimon* species as well. Also occurring in the same community was *Onobrychis cornuta*, a round shrub up to 18" across and 8" or 10" high with flowers from deep pink to bright rose. Among the scrub a few light lavender flowers of *Crocus zonatus* were blooming. *Pterocephalus pinardii* with clear, pale pink flowers was nice to see. A member of the Dipsacaceae, it is closely related to scabiosa but more shrub-like. It grew in the open areas between the acantholimons. This small, woody perennial is only 3-5" high and blooms most of the summer. By midmorning we arrived at the spring, an important stopping point where three paths come together on this otherwise dry side of the mountain.

The sky looked very black ahead of us, while up around the peak swirled storm clouds. As we walked we entered an ever tighter valley, coming to an obstruction at 8,200' which forced us to climb up and through the huge rocks. Descending down the northeast side, we came upon *Omphalodes luciliae* var. *cilicica* filling the seams. The deep, gray-green color of the leaves was in great contrast to the tan limestone. Although we did not see any of its sky-blue flowers, the whole colony was wonderful to see as it stretched out across the rock faces far beyond even our camera lens.

We dropped down to a tiny valley with a mostly dry (at this time of the year) stream. The ground was covered with hail from the recently passed storm. We were lucky! We stopped at another spring, this one very small with icy cold water, where I spotted something bright yellow. It glowed as if beckoning me forward. This was my

first encounter with *Ajuga chamaepitys*. *Ajuga chamaepitys* is widespread in Turkey and the Balkans. This particularly small subspecies forms tiny mats on the ground with extremely hairy, three-lobed leaves and huge, bright yellow flowers. *Ajuga* is a member of the Labiatae, which includes *Salvia* and *Teucrium*. *Ajuga's* similar flower is fascinating with the bottom limb of the corolla is three-lobed, the central lobe notched and huge, mocking the lips of a pouting child. It is said that this species is a short-lived perennial. This was an outstanding plant of the trip.

From Josef's seed I have been growing the tiny *Convolvulus compactus*, only one-half inch tall with glistening, silver-haired leaves, so it was a treat to see the foliage here. It blooms with large, white flowers in spring. *Convolvulus assyricus*, a tiny shrublet with linear leaves that have long hairs, produces big, rose-colored flowers. It sure would have been great to find it in bloom. *Scorzonera sericea* creates tight, silvery cushions with stemless, golden-yellow flowers. They all grew on gravelly slopes in full sun. We spotted *Centaurea chrysantha* with felted white leaves in a rosette on the rocks but did not see the yellow flowers in the spiny heads. This is possible to grow in the crevice garden at home. Also in the area were the easy garden plant *Centaurea cappadocica* (with green leaves and deep yellow flowers), and the almost-green-flowering *Fumaria viridis*.

We continued until we were in a huge cirque between the multiple peaks of Demerkazik. Here on a flat plateau at 9,500' we camped for the night. I awoke in the night to the sound of breathing and movement outside the tent but thought it was just one of the tent mates out for nature's call. In the morning we woke up to the sound of rock falling off the sides of

the nearest walls. Josef said the rock falls were caused by the ibex, and Jarmila insisted that it was the ibex that had visited us during the night. We could hear this shy goat-like animal, which looks like a deer with a huge rack of horns, all morning, but they never came close enough for us to see. It is said that where there are ibex, there are mountain cats. I chose not to think about that.

We walked up to the head of the valley to a small lake that was very low and had no vegetation around it at all. The other three decided to climb to the peaks while I investigated a hill below. "My hill" was a more or less stable scree with some interesting plants, including some nice pads of *Aethionema oppositifolium*. This old garden friend, a member of the mustard family, blooms with the earliest crocus, producing a small umbel of lavender flowers held in the pocket of the top two round, fleshy, sessile leaves. The leaves are attached so tightly to the thin, tan stems that leaves cannot be removed without tearing the stem to shreds. Therefore, cuttings, which root readily, are stuck with leaves attached. Here high in the mountains of southern Turkey it grows in tight mats, the leaves a metallic, glaucous green. The intensely silver-gray, silky leaves of *Potentilla pulvinaris* caught my eye on steep sunny rocks together with tight cushions of *Draba acaulis* (photo, p. 35). Some of the plants had a silky fluff of a seed head as well. *Asyneuma campanuloides*, a member of the campanula family, was in full bloom on 8-10" stems. The petals of the deep purple flowers are long and thin and look like shredded ribbon. For me the beauty of this plant was only in its rarity! There were other plants not in flower, including the tiny *Veronica caespitosa* var. *caespitosa* and *Erysimum kotschyianum*.

Up on the peaks the "group of three" did find *Erysimum kotschyianum* in flower. This is the truly identified plant that grows in single tufts with long, thin leaves and large, fragrant, yellow flowers on short stems. (Thanks to Josef, this plant is now in cultivation in the US. For many years we were growing the European, mat-forming plant, *E. helveticum*, as *E. kotschyianum*.) They also found a white-flowered *Anthemis* and *Oxytropis boissieri* with a head of pink, pea-like flowers in silky, fern-like leaves. A few seed capsules of *Fritillaria aurea* were found. Just as Josef hoped, there was still some bloom on the *Lamium eriocephalum*, another member of the Labiatae. The tiny stems are stacked with hairy leaves with the hooded flowers sticking out at odd angles much like a rosulate violet. The flowers are huge, white-and-raspberry pink with patches of darker pink on the lip. Jarmila brought down a single flower to serve as a model for her drawing and to show me. It was the most beautiful of all the flowers we found on the trip.

As we retreated off the mountain we again ogled the *Omphalodes luciliae* var. *cilicica* in the seams on the huge wall. Below the spring we traversed a deep gorge, negotiating huge stepping stones and small scree. A small trickle of water ran in the rocks, and birds were roused by our scramble. Then we noticed that the *Omphalodes* was still with us, and a few seeds and an occasional sky-blue flower were found. Also in the walls of this gorge was *Pelargonium endlicherianum*. This plant with fragrant, purple-pink flowers should be hardy in my garden at home. After two hours we had almost reached the road when we came upon a group of young mountain climbers with all manner of ropes and gear, practicing technical moves on a couple

of vertical walls. They looked us over, four scruffy-looking duffers with packs and cameras. If they had only known that we had been in places almost as vertical with no ropes, just to see the flowers!

Olymbos in Greece was our last mountain destination. What is referred to as Mt. Olympus in English is actually a mountain system renowned since ancient times. There are several summits, but the massif is perhaps too small to be called a range. The whole is referred to as *Olymbos* in Greece, and I will use that term here, mentioning some of the peaks, all of which bear their own names. As we drove along the Aegean Sea, so incredibly blue, the haze of moist air kept us from seeing our destination. We turned inland, and three miles up a steep road came to Litochoron, a small city that is a mix of modern tourist hotels and old village homes. From Litochoron the road goes 11.5 miles to Prioni. At 2,300' above the sea, Prioni is a parking lot with a small restaurant. It was full of Sunday afternoon visitors who were eating and using the fresh spring water that is piped to a basin at one side. The very steep climb from Prioni to Katafygion A took me about three hours. Just above Prioni *Colchicum sibthorpii* was in bloom with the petals of light rose-purple obviously tessellated with deeper color and held on 6-9", slender, white tubes. I was so sorry to see them all picked or trampled by the visitors and vowed to take a picture on the return trip. It was too dark, and I did not get one then, either. I must return!

In the woods were the distinct leaves of *Cyclamen hederifolium* with the usual pink flowers. Hanging on a tree right along the trail was the biggest *Hedera helix* any of us had ever seen. Higher in the rocks we found *Saxifraga grisebachii* with its large,

attractive rosettes of foliage. As we progressed up the mountain we saw a half dozen different species of *Geranium*, but on the rocks above 6,000' was the beautiful *G. sub-caulescens* in a rich, wine-red with a large, black patch in the center. Katafygion A at 8,200' sits in an open forest of *Pinus heldreichii*. The huge, old trees have very thick bark, cracked into a pattern of small patches. Katafygion A is a hostel with good food and clean, warm beds. The most pleasant tea was served, made from the leaves of *Geranium macrorrhizum*. It is worth growing the plant in your garden just to have this lovely drink.

Monday morning it was sunny and warm as we started our climb of Mytikas. At 9,515' this is the tallest peak on the massif and the Balkan Peninsula. *Olymbos* is limestone and marble with a low rainfall, making moisture from fog important to the plant life. The alpine zone is dry and sunny in the summer with only thunderstorms. The snow cover usually comes in the last part of October. Above treeline the high alpine scree fields are inviting; here are found the endemic and rare species. I was able to take pictures of the following even in September: *Aethionema saxatile*, *Anthyllis vulneraria* ssp. *pulchella*, and two very beautiful ferns, *Asplenium ruta-muraria* and *Ceterach officinarum*.

On somewhat stable screes were *Carlina acaulis* ssp. *simplex*; and the evergreen candytuft, *Iberis semper-virens*; and *Linum tenuifolium*, the charming pink flax with huge, up-facing flowers on small, lax plants lying on the ground. *Orobanche amethystea* was a knockout, the whole plant a dark red-purple. It was found in small plant communities with *Chamaecytisus polytrichus* (= *C. demissus*) and the mat-forming *Veronica thessalica*. Some other early bloomers are *Gentiana verna* ssp.

balcanica with deep, pure blue flowers and the endemic *Alyssum handellii* with gray, hairy leaves and very large, golden-yellow flowers (photo, p. 35). Another endemic to the limestone screes was the densely hairy *Cerastium theophrasti*. The usual white chickweed flowers are very large and reflexed wide open. As we came closer to the summit there were plants of the small, tight Balkan endemic, *Aubrieta gracilis*, which has rosy-pink flowers (photo, p. 33). In some large rocks, sitting all alone, I found a single plant of *Cardamine carmosa* in full bloom! In the cracked rocks just below the summit *Campanula oreadum* was so conspicuous with its huge, deep blue bell flowers held just above the rosette of leaves, that we all photographed it numerous times.

We found *Omphalodes luciliae* ssp. *luciliae* in the crevices between huge rocks as we climbed the chimney to the very top. Suddenly there we were on the Mytikas, at the meeting place of the gods. While Jarmila drew Zeus' portrait for him in the summit book, the rest of us looked at peaks in every direction.

Soon we were on our way to the smaller peak, Skala. As we worked our way through the vertical rock and small screes, *Saxifraga spruneri* with its dense mats of hairy rosettes kept us company. We noted a few plants of *Saxifraga scardica*, *S. sempervivum* ssp. *stenophylla*, and the mossy *S. moschata*. We also noticed the tiny, hard cushions of *Arabis bryoides* (photo, p. 33) and one of my favorite flowers in the garden, *Edraianthus graminifolius*. As we moved down the hill, in the grassy hummocks I found *Viola heterophylla* ssp. *graeca* still in flower. This population of *Linaria alpina*, so small and rich purple-blue, is abundant in one area and is sometimes separated as var. *olympica*. Creeping in the screes were

the light, pinkish-lilac, pansy-type flowers of *Viola striis-notata* with grayish leaves. The flowering stems elongate through tiny crevices and then open with huge flowers. The flowers look like the gods just threw them across the rocks!

There are about six species of *Ranunculus* in the Olymbos Massif, but only one is an alpine: *R. brevifolius*. The bright yellow flowers are huge for the very short stems that arise from the soil before the small group of basal leaves. These bloom shortly after snow melt, and you must go down into one of the depressions where the snow lies late to see them blooming in the late summer. Also blooming in these low scree areas is the beautiful *Corydalis parnassica* with pale lavender flowers.

Two plants that are the hallmark of Olymbos and the love of all alpine gardeners are *Viola delphinatha* and *Jankaea heldreichii*. We found both! It was a thrill to find these endemics even though neither were in flower. We first spotted *Jankaea heldreichii* at about 2,400' in a ravine on the north side of the mountains (photo, p. 34). It grows in fine, dark humus in shaded crevices of limestone. Josef said that he had been all around the large rocks and that *Jankaea* was abundant all the way up these cool valleys. This member of the Gesneriaceae grows in a rosette with entire leaves covered with soft, silver-gray hairs. The flowering stems arise from the center of the rosette with nodding, wide, bell-shaped, lilac flowers. We saw them long after the flowers were gone for the year, and almost all were dormant—very dormant, with the leaves dried and curled and looking quite near death.

Viola delphinatha grows in Bulgaria and Greece in crevices on limestone rocks from 5000'-8000'. We immediately recognized the linear leaves on the unbranched stems coming from a

woody base when we saw the plants along the trail. How I would have loved to see even one blossom! Held out horizontally from the foliage on slender stems, the bloom is a good-sized, rich pink flower with a long, slender, curved spur.

On the way back to the Czech Republic, the Haldas had another treat in store for us. We stopped in Slovakia in the Muran hills to see *Daphne arbuscula*. The walk up the hill toward a ruined castle was very pleasant in the warm, late afternoon in dappled shade. After reaching the castle on top of the hill we walked around to the cliffs on the northeast side. There on the vertical cliffs were huge mounds of the deep-green-leaved *Daphne arbuscula*. Of course, the plants had bloomed in the spring, but Josef assured us that there are many shades of pink to lavender in the colony. This, and

another colony about ten miles away, are the only natural sites of this plant. We had our pictures taken showing how much bigger the shrubs are than our heads. Also growing in these cliffs are *Primula auricula*, *Saxifraga paniculata*, *Pulsatilla slavica*, *Jovibarba hirta*, *Carex firma*, *Gentiana rochellii*, and more.

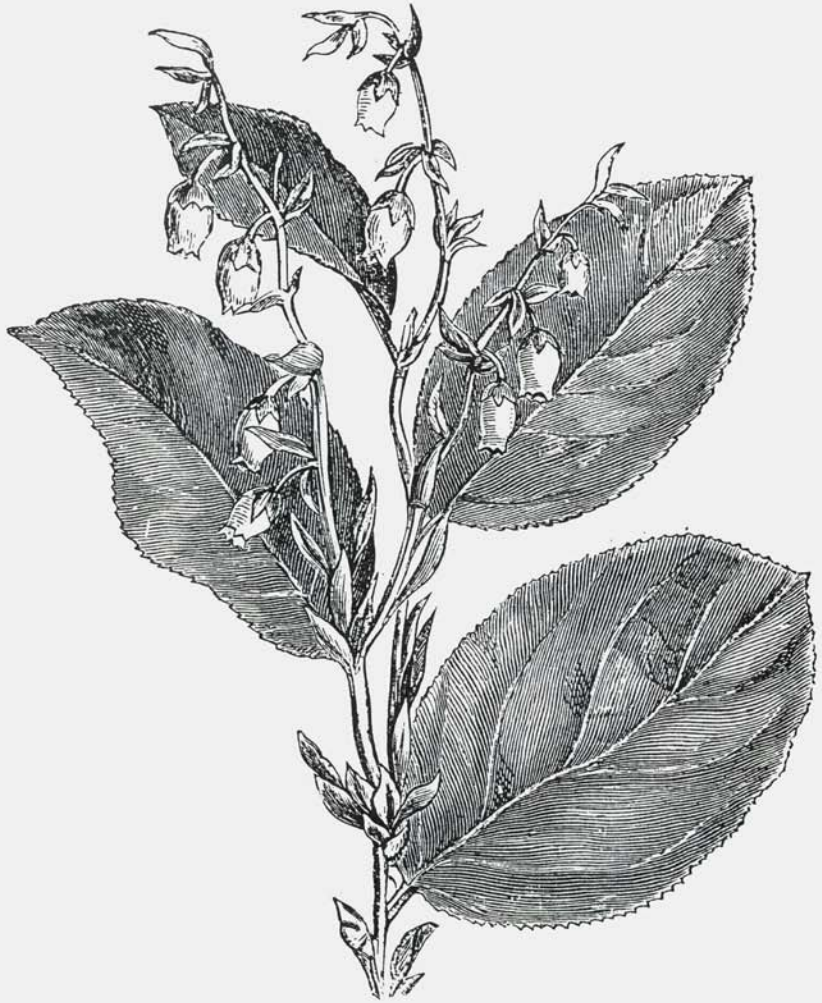
One more surprise yet! On the way by the Fatra Mountains we stopped to see *Cyclamen fatrense* on site. It grows in an area about 40 km square on slopes in open beech forest. Then it was a fast trip back to Sedlonov.

To spend a month visiting some of the most floriferous, rich mountains in the world was a dream come true. Thank you, Jarmila and Josef for inviting us to go along on your summer vacation. For me, it was the trip of a lifetime!

Photos by Josef Halda and Phyllis Gustafson.

Phyllis Gustafson gardens in Central Point, Oregon. Her special interests include crevice gardening, plants resistant to summer drought, and propagation.





Gaultheria shallon

from *The Illustrated Dictionary of Gardening, A Practical and Scientific Encyclopaedia of Horticulture for Gardeners and Botanists*, edited by George Nicholson. The American Agriculturalist: New York. 1887

GAULTHERIAS

NATIVE TO TEMPERATE NORTH AMERICA

by Arthur P. Dome

The gaultherias native to temperate North America are fast becoming more popular as garden plants wherever one can provide the environment that will let them thrive. Of the several hundred *Gaultheria* species that have been identified in the world, there are only five indigenous to our continent. Four of these species are quite low-growing plants, whereas the shrubby *Gaultheria shallon* has been known to grow well over 10' tall. Once established and happy, these ever-green plants can spread quite fast by underground stolons. Gaultherias enhance the beauty and interest of the garden, especially in the late summer and fall when they are covered with bright red, black, or white fruit.

Gaultherias make good companions for other ericaceous plants, as their requirements are generally the same. All want an evenly moist, well-drained soil with a good deal of humus and an acid pH, and they need protection from the hot sun of afternoon and early evening. The low species may make an excellent groundcover under large rhododendrons, *Pieris*, *Kalmia*, etc.

When you add these to your garden, start with a location that is as weed-free as possible, especially for the prostrate species. If weeds, such as oxalis, clover, and pearlwort, get established in mats of gaultheria, it is almost impossible to get them out. There are with only two alternatives for weed control. Either pull out weed seedlings as they germinate, before they can get their roots down deep, or you will be forced to dig up weeds and *Gaultheria*, to start over again.

Gaultherias are quite hardy if you meet their individual environmental requirements. Like other plants, they are subject to damage or death from untimely extremes of temperature, light, and water. The minimum winter temperature zone numbers here are taken from *Hortus Third*, but note that for the most part they suggest that the plants would not even be hardy in their native homes! Plants found far north in the mountains may not survive a lowland winter without snow farther south; the skills of the gardener are called for in growing these plants beyond the suggested climatic range.

Gaultheria shallon and *G. procumbens* can do quite well out in open areas, once established, as long as they are not allowed to dry out. *Gaultheria hispidula*, *G. humifusa*, *G. ovatifolia* need to have soil that is well drained but always damp or



moist, and they languish in exposures that stay hot for a very long period of time.

Propagation can be seed or cuttings, using your favorite medium for ericaceous plants. Or you can pot up underground stolons that have developed sufficient feeder roots. Please leave plants growing in the wild right there, where they can be enjoyed by others. Gaultherias are very difficult to transplant. In most areas one can gather seed and cuttings when the time is right. Also, more and more specialty nurseries are growing these little jewels in pots, allowing gardeners to acquire and transplant them very satisfactorily.

Gaultheria hispidula (photo, p. 46; *Chiogenes hispidula*) ranges from British Columbia and Washington across to Newfoundland and Labrador, south to Michigan and North Carolina. Close attention must be paid to its garden environment to succeed with it. One finds it most happy in wet but well drained, cool, shaded areas and in peat bog conditions. Duplicate these conditions in the garden as far as possible. This species is entirely prostrate or creeping in habit. The leaves are very tiny, usually about one quarter to one third of an inch long. The flowers are white, campanulate, and solitary in the leaf axils and appear May through July. The fruit is very interesting, larger than one would expect of such a tiny plant. The "berries" are white with little bristles all over the surface. Zone 4.

Gaultheria humifusa (photo, p. 45) inhabits British Columbia and Alberta, south to northern California and Colorado. It can be found in cool, wet, moist conditions above timberline. These same conditions should be duplicated as much as possible in the lowland garden, and the plant should be protected from hot afternoon and evening sun. It is a low-growing, sprawling plant that can reach 4" high with leaves 0.5-1.0" long. It has solitary, campanulate, white to



Gaultheria humifusa (pp. 43, 44, 49)
photos, Arthur Dome

Gaultheria shallon (pp. 43, 50)





Gaultheria hispidula (pp. 43, 44)

photos, Arthur Dome





Gaultheria procumbens (pp. 43, 49)

photos, Arthur Dome





Gaultheria ovatifolia (pp. 43, 49)

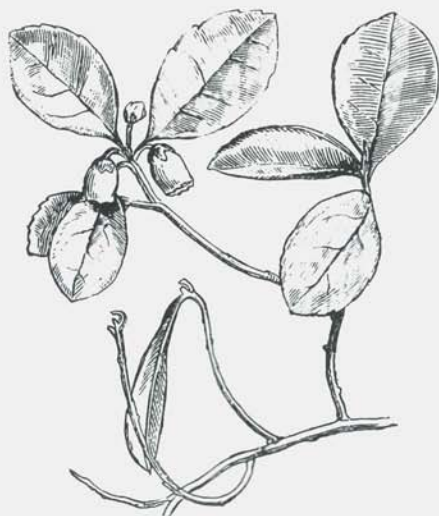
photos, Arthur Dome



light pink flowers that appear in the axils of the leaves. The red calyx lobes really enhance the flowers. This species blooms June through August and produces scarlet fruit in late summer and autumn. *Gaultheria humifusa* is usually covered with snow in winter in its wild home, so it may be a good idea to protect it in the garden. It is considered hardy to zone 6.

Gaultheria ovatifolia (photo, p. 45) can be found from southern British Columbia down into northern California, and east into Idaho. It grows at the edge of conifer forests and in cool, moist, subalpine conditions. The campanulate, solitary, white to pink flowers appear in the axils of the leaves from June through August. Bright red fruits may be seen from late summer into autumn. Here again, to have it thrive in your garden, strive to imitate its native environment. Keep it out of late-day sun. This species makes an interesting plant in a trough or other planter on a cool patio. Zone 6.

Gaultheria procumbens (photo, p. 47) is of eastern North American origin, ranging from Newfoundland and Manitoba south to Georgia, Alabama, and west to Minnesota. It may be found in wooded areas along the coast, at edges of bogs, or in woodlands. It is a creeping plant that reaches 4-8" in height, with leaves 1.5-2.0" long. The urn-shaped flowers are usually solitary in the axils of the leaves, or they may be borne in short racemes on some individual plants. The flowers can vary from white to pink and are produced June through August. The bright red fruit is very showy from late summer through the fall. I've seen plantings in the Northwest that were out in the open, full sun and yet flowered and fruited well. However, in these conditions the foliage isn't its usual dark green color, nor are the leaves as large as usual. Zone 4.



Gaultheria procumbens

from *The Illustrated Dictionary of Gardening, A Practical and Scientific Encyclopaedia of Horticulture for Gardeners and Botanists*, edited by George Nicholson. The American Agriculturalist: New York. 1887

Gaultheria shallon (photo, p. 45) ranges from southern Alaska and British Columbia south to California west of the Cascade Mountains. It is found in forests, at the edge of forests, and in open areas nearby. It usually grows 2-6' tall but can be seen more than twice that tall in old stands where it has ideal conditions. The leaves, dark green, 2-4" long, and borne on sturdy branches, are used by many florists. The urn-shaped flowers vary from white to very deep pink. They are borne from April through July on long, one-sided racemes originating in the axils of the leaves, from April through July. The black fruit matures in late summer and early fall.

Gaultheria shallon (photo, p. 45) is a very versatile plant that does well in moist areas as well as dry ones, once established. In the home garden, it is ideal as a background for smaller plants preferring acid soil. Its neat, full, usually upright growth makes it ideal for small, informal hedges. It has also been used in many highway beautification programs west of the Cascade Mountains. Once established, it can become quite aggressive, but with a pair of pruners and a shovel to dig out wandering underground stolons, there should be no problem in restraining it. Zone 6.

References

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Arthur P. Dome gardens in Seattle, Washington. He has a special interest in ericaceous plants. Photo below, *Gaultheria procumbens*, by the author.



Cyclamen

For Minnesota Gardens

by Karen Schellinger

As I wandered through my woodland last fall, I was amazed at how well the species cyclamen I had planted over the years were growing. Some had leaves as large as those sold by florists for indoor use. My hardy woodland cyclamen were started from ARGS seed in February of 1989. Some germinated right away, some not until late summer of 1989. Now their green leaves are beautifully marbled with many variations of pattern. Some have predominantly white markings, the silver striking in the shadows of the shaded woodland.

The first time I saw cyclamen grown in a garden in this country was in Oregon. It was spring in the Cecil Smith Park gardens, and the plants covered the ground under azaleas and among woodland plants.

I had to try some at home, even if I do garden in zone 4! I immediately asked some experienced Minnesota Chapter members if they had been able to grow cyclamen outside. The answer was yes!

Since then I have successfully grown *C. hederifolium*, *C. purpurascens* and *C. fatrense* from seed. (Josef Halda discovered this last cyclamen in the

wild in the Czech Republic and says it is a separate species, not a subspecies of *C. purpurascens*; other experts disagree. I am not bothered by this puzzle; I just enjoy the plant!)

Cyclamen coum is also said to be hardy. Although I have tried it from seed, I'm not sure I have the correct plant. My seed was from an exchange, and authentic identification of donated seed listed on any society's seed list can be questionable. Mother Nature may have created a hybrid that doesn't resemble the original plant, or the original plant was not what the donor thought it was.

Of these hardy species, all but *C. coum* bloom in late summer or early fall. *Cyclamen coum* blooms in late spring or early summer. I have yet to see flowers at that time, so either I don't have this species yet, or it did not survive the winter here, or it simply hasn't reached a blooming size. I have now ordered seed of *C. coum* from a reliable source.

Zdenek Zvolanek, who spoke at one of our meetings, mentioned that *Cyclamen parviflorum* should also be hardy here, as it grows high in the mountains of Turkey. It has been



likened to a dwarf *C. coum*. In yet another trial of a desirable plant whose hardiness is uncertain, I purchased a tuber of it in the fall of 1994 from Potterton and Martin of England, who ship to the United States. It was planted on the shady side of my new rock garden, but 1995 brought no sign of life, so I will try again in a more protected location.

Cyclamen leaves remain evergreen over the winter under the cover of fallen leaves. The next growing season, new leaves develop, and pink or white flowers are produced for quite a long time in spring and early summer, or late summer and early fall, depending on the species. Some of the species are scented, although you may need to get down on your knees to catch the fragrance of the little shooting-star blooms. The easiest cyclamen to grow outdoors is *C. hederifolium*. It is able to withstand severe cold and is less particular about soil conditions and light than *C. coum* and *C. purpurascens*.

All cyclamen grow from tubers that undergo a period of dormancy alter-

nating with a period of growth and flowering, these periods varying for the different species. Many tubers become depressed or flattened on top as they mature. This is particularly true of *C. hederifolium*, whose tubers can reach 9" in diameter. In most species the tubers are rounded and more or less symmetrical, but in *C. purpurascens* and *C. purpurascens* ssp. *fatrense* the tuber is knobby and misshapen, becoming more so with age.

I bought tubers of *C. purpurascens* ssp. *fatrense* a few years ago, and they were indeed very elongated and misshapen. I planted them in various places in my woodland garden. I shared two tubers with friends on the West Coast. Some individual plants have thrived, and some only just survive. Obviously, they have preferences. Josef Halda, in an article for the American Primrose Society (*APS Bulletin* Vol 46:3), said that the tubers of *C. fatrense* can be sliced like potatoes for propagation. I, however, do not have enough to feel I could risk such a procedure.

Most species should be planted with the top of the tuber just under the surface of the soil according to Wilson. I think in Minnesota we need more soil over the tuber to protect from winter cold, so I plant my cyclamen 3"-4" deep.

As with any plant, to succeed in cultivation it is well to imitate growing conditions in the wild. I have learned much from the well-written book, *The Genus Cyclamen*, by Christopher Grey-Wilson and from the publications of the Cyclamen Society of England. Duplicating conditions in the wild means providing "...a warm dry bank; sloping leaf-mould in light deciduous woodland or at the edge of a woodland, among conifer roots, though not in dense shade; a dry patch at the foot of a wall or fence." (C. Grey-Wilson) My happiest cyclamen are on an east slope under a large oak, with the hill rising above protecting the plants from the cold blast of winter's northwest wind. This is my favorite woodland garden, where I have planted my treasures.

All species must have quick draining soil. They tolerate clay or heavy soils, although they may prefer to grow on a steep slope in such soils. Cyclamen are not fussy as to soil pH as long as the drainage is good, but the ideal soil is slightly alkaline. Wilson recommends working bone meal or well-rotted cow manure into the surface of the soil in early autumn. In my rich, 4'-deep topsoil formed from years of leaves composted by Mother Nature, I don't need to add a thing. However, I do work bone meal in around the plants to give them an extra treat.

Good light in dappled shade is essential for growth, along with protection from any hot sun and some protection from strong winds. Cyclamen do not mind root competi-

tion; they may even prefer it, as the roots of the other plants remove moisture from the soil, thus preventing the cyclamen tubers from rotting.

Growing from Seed

I couldn't wait to try cyclamen from seed: that is the most cost-efficient way to get a number of plants at once. Growing from seed is also a good way to get to know a plant's needs, and it teaches you to be consistently observant. To start cyclamen from seed does not require much labor or talent but may require patience. Seed is available from several plant societies, so just look for the hardy species mentioned above. The ideal time to sow seed is immediately after the seed capsules open. In most cases this means in July, August, or September. This is the time at which seeds have maximum viability.

Any well-drained, sterile soil mix is fine. Sow the seeds about 1" apart and then cover with damp, finely sifted, sterile mix. Water by standing the pot in a few inches of water until the surface of the soil becomes moist, or use a watering can with a fine rose. A fine layer of grit on the surface of the pot will allow more air to reach the seeds and prevent the growth of mosses and liverwort.

If the seeds are planted far enough apart they can be grown on for a year or even 18 months without disturbance. Premature pricking out may cause breakage of the first seedling root or cause a growth check. Keep the pots in a shady place and do not let them dry out.

The seeds I have planted were all received in the months of January or February, and so they were in a dormant state and did not germinate right away when planted. For not-so-fresh seed of this type, place the seed in hand-hot water with a little liquid

dish soap added and leave it for 24 hours. Drain off the water and repeat the procedure, then sow immediately. This method causes the seed to absorb moisture and removes germination inhibitors.

On germinating, the seed first produces a single fine root, which then develops a swelling just below the seed and forms a tiny tuber. Next a stalk forms between seed and tuber and as it elongates this develops into an inverting U-shape, which forces its way "elbow first" through the compost. Finally the stalk straightens and pulls the seed coat into the air. Thus, the first appearance of the seedling above ground may be several weeks after germination.

I have let my seedlings grow on in the seedpot until they are the size of a dime, as there is no advantage to pricking them out earlier as you would faster growing plants. Seedlings do not go into summer dormancy. If they are kept shaded, cool, and moist throughout their first summer they will continue to grow. If you provide them with proper conditions,

they will gain an extra six months' growth and reach flowering size a season sooner. Cyclamen appear to do better if the compost is kept slightly moist throughout the summer, even if they are dormant.

The Cyclamen Society suggests transplanting in the fall when the weather is starting to cool and root growth is resuming. I have planted cyclamen out into the garden both in spring and in late summer. I have had them survive the winter in seedling pots under the leaves and snow when I did not get them into the ground in time! I discover more tough plants that way. In Minnesota I would however recommend that seedlings be transplanted in the fall into pots and over-wintered indoors, then planted out in spring. Add grit to the soil mix for good drainage under greenhouse conditions. Cyclamen must have drainage or the tuber will rot.

When I have just had enough of winter, I wander out to my woodland slope to see the cyclamen peeking out from under the cover of fallen oak leaves, greeting the spring—and me.

SEED SOURCES:

NARGS Seed Exchange

The Cyclamen Society, Vic Aspland, 12 Davis Avenue, Tipton, West Midlands, DY48JZ, England. Overseas dues-7f per year

Jim and Jenny Archibald, Bryn Collen, Ffostrasol, Llandyssul, Dyfed, SA 44 Wales

MAIL ORDER NURSERIES

Russell Graham, Purveyor of Plants, 4030 Eagle Crest Rd. NW, Salem, OR 97304.

Catalog: \$2

Hansen Nursery, PO Box 446, Donald, OR 97020. Plant List, SASE

Potterton and Martin, The Cottage Nursery, Moortown Road, Nettleton, Caistor, Lincolnshire, LN7 6HX England. List: 4 international reply coupons

Drawing by Al Stavos

Karen Schellinger has perennial, woodland, and rock gardens, complete with waterfall, in Avon, Minnesota. Her garden mentor and model was her grandmother, who continued to garden even when she could no longer walk, crawling on hands and knees down the rows of her vegetable garden.

Saxifrages

by Josef Starek

Saxifraga is a remarkable genus. Its Latin name is derived from *Saxum*—a rock—and *frangere*—to break—literally meaning rock breakers. [Ed. This was a reference to medicinal use, however, not to geology.] *Lomikamen*, the Czech name for the plant, has the same meaning. This genus has been studied by botanists and taxonomists for centuries. One particular section attracts the attention of gardeners and hybridizers in various parts of the world. Some have chosen saxifrages as the focus of a lifetime's interest. These dedicated plantsmen grow saxifrages in their rock gardens and alpine houses, selecting the most suitable species for crossing. They then collect the delicate, powder-fine seeds, germinate them, and select the best seedlings for vegetative propagation, then name the star plants and have them registered. Several of these collectors and hybridizers belong to a saxifrage club in the Czech Republic. Rather than bringing you the latest news from specialist saxifrage mini-nurseries near Prague, I will recount for you a brief history of the cultivation and hybridization of these living jewels from the high mountains.

The genus *Saxifraga* was named by Linnaeus in 1751 and now includes more than 400 species, some found on each continent except Antarctica and Australia, growing from the lowlands up to the elevations of permanent snow and ice level on the high peaks of the world. Some species are robust, such as the North American *Saxifraga pennsylvanica*, with flowers on stems about 1 m high; others are very small by contrast, such as *S. pulvinaria*, which creeps like moss over rocks. The most closely related genera are *Chrysosplenium*, *Bergenia*, *Tiarella*, and *Peltiphyllum*.

The genus *Saxifraga* has been divided into 14 sections, of which the most attractive from the horticultural point of view is the section *Porphyrium*. According to R.J. Gornall (1988) this comprises three subsections: *Kabschia*, *Engleria*, and *Oppositifolia*.

The name *Kabschia* was favored by rock gardeners for more than a century. Most gardeners have not even noticed any change of name. These plants were always *kabschias* to them. Perhaps for this reason Gornall wisely reverted to the name *Kabschia* from the previously used *Porphyllum*.

Long ago, in 1828, this subsection was named *Porophyllum* by Gaudin. Then in 1967 Engler called it Kabschia. A. Engler and E. Imscher published an outstanding monograph on saxifrages in 1916-1919. Over half a century later, in 1975, G. Hegi published his work on the same subject. It was not available behind the Iron Curtain in the Czech Republic, so all growers and hybridizers of kabschias warmly welcomed the publication of the Czech book *Porophyllum Saxifrages*, written by R. Horny and K.M. Webr, published by the Rock Garden Club in Prague in 1985. This was made possible only with the great cooperation and generous financial sponsorship of Mr. John Byam-Grounds, the third author of the book, who arranged its publication also in English. NARGS was also a financial sponsor. This book is an essential part of every kabschia grower's and admirer's library.

Interest in saxifrages has grown deeper roots in Bohemia (the Czech Republic) than anywhere else in the world. Kasper Maria Sternberk, prominent Czech scientist and founder of the National Museum in Prague, published a classic monograph on *Saxifraga marginata* Sternb. and *S. vandellii* Sternb. in 1810; both are still in cultivation. The first saxifrage, described in 1753 by the Swedish botanist K. Linnaeus and still cultivated in gardens, is *S. burseriana*.

Saxifrages are the most popular of all rock garden plants. It would be hard to imagine a rock garden without a few species or cultivars. Reginald Farrer in his famous work, *The English Rock Garden*, described the kabschia saxifrages as the "dearest jewels of the family." They offer many features of an ideal rock garden: They are true perennials in nature, living perhaps a hundred years or more. They grow slowly and, in good conditions, form

hard, spiny mounds or hummocks, commonly referred to as polsters or cushions, yet quite unlike the soft pillows we use for our comfort. The term "cushion" is more applicable to mossy saxifrages. Their collectors will say that these are among the finest of all rock garden plants.

When I look at the natural beauty of this race of plants from the high mountains, I cannot help but recall and re-read the lines written nearly a half a century ago by leading Scottish rock gardener, Mr. David Livingston: "Kabschia saxifrages fascinate many people by reason of their attractive foliage, symmetry of shape and beauty in bud and flower. Early in the year—January in some cases—the flower buds, like so many little beads, can be seen nestling tight against the foliage. It is with breathless anticipation that one watches the stems rise to an inch or two and the flowers, in their various shades and forms, unfold to display their full beauty. The foliage, in small rosettes or tufts of green or gray, makes firm, compact mounds beautifully symmetrical in shape which are of interest throughout the entire year. They are so neat that it has sometimes been difficult to convince visitors with no knowledge that the plants have not been clipped with shears."

Where they grow in the high mountains, some species of cushion saxifrage are covered by snow for nine months of the year, protecting them from dehydration. They flower as soon as the snow melts, often in June-July. In a few weeks they produce seed and by September-October are again covered in snow.

Saxifrages of the *Porophyrium* section grow only in the high mountains in the southern part of Eurasia from the Pyrenees to the Burmese mountains. In Europe this is between 48°-37° North, in Asia 43°-25° North. About

100 species and natural hybrids have been described so far. The lowest-elevation species occur at 1000 m above sea level, although they rarely may be found as low as at 200 m. These saxifrages grow in wild areas, with full exposure, on bare rocks, in gravel, or among large boulders and rocks. Given good conditions they can thrive down very low in mountain valleys, on isolated rocks. So elevation does not always decisively limit distribution. Some species, notably from the Himalayas, enjoy very wet habitats, growing in wet moss, near mountain streams, at the edge of the permanent snow, or on wet ledges where snow disappears for only a few weeks in late summer.

Most species of saxifrage grow in areas with limestone substrates. Not many species are tolerant of other soils; there are also a few species that will not tolerate alkaline soil. These unusual kinds grow in the Caucasus and Himalayas. The Sino-Himalayan region hosts the greatest number of species of Porophyrium saxifrages, at least 55 species.

Mr. Livingstone has written that cushion saxifrages were known to British gardeners in the middle of the 18th century, perhaps even earlier. These were species collected in the European Alps. Why were these tiny cushion plants from the mountains introduced into lowland gardens? Dr. Horny, author of the book *Porophyllum Saxifrages*, explains: "Cushion saxifrages are among those mountain plants which again and again provoke the desire of man to return to the mountains and experience with them that overwhelming contrast of fragile, delicate, tiny blossoms with the rigid, cold and inhospitable, rocky mountains. So it is not surprising that cushion saxifrages were among the first plants that men tried to transfer to gar-

dens to enrich his ordinary life in the lowlands, or just to remind him of those pleasant and happy moments, when he was high in their habitats in the kingdom of rocks, snow and ice."

The first species of *Saxifraga* cultivated in England, as early as 1825, was *S. diapensioides* (named by Bellardi in 1732) from the western Alps. The next species which found their way into English and German gardens were *S. burseriana* (named by Linnaeus in 1753), *S. marginata* (Sternb., 1822), *S. aretioides* and *S. sancta*.

The first successful hybridizing of these plants took place quite late, at the end of the 19th century. The oldest cultivar of this genus is *S. x boydii* 'Old Britain', found near mother plants *S. burseriana* and *S. aretioides* in the garden of J.B. Boyd in Kelso in Scotland in 1890. Shortly after that Mr. Boyd introduced 'Faldonside' and 'Cherrytrees', named after two of his residences. At almost the same time a yellow hybrid of *S. marginata* and *S. sancta*, named *S. x apiculata*, was discovered at the Berlin Botanical Garden.

At the beginning of this century, intensified, controlled hybridization took place in England and Germany. Outstanding hybridizers included Walter Irving of the Royal Botanic Garden, Kew, England, and Franz Sudermann of Germany. The height of the activity was about 1909. The history of crossing saxifrages is very interesting but too long to cover here. There are at present more than 400 cultivars in rock gardens and alpine houses across the world. Some cultivars have interested gardeners for a hundred years; others disappear after a few years. Happily, new ones with better features keep appearing.

Cushion saxifrages have been cultivated in this country since the 1930s, when large German and British firms introduced their plants into private

Czech gardens and home nurseries. Since then a collection of saxifrages has been established at the Botanic Garden of Charles University in Prague. The names of cultivars and hybrids soon appeared in the local horticultural literature, and they gradually became popular.

World War II of course hindered the cultivation and hybridization of kabschia saxifrages, as it did so many other pursuits. In the 1960s, Dr. K.M. Webr initiated a revision of the nomenclature of all the kabschias cultivated in our country. A group of experts was formed under the leadership of Dr. R. Horny and Dr. Sojak, from the Botany Department of the National Museum in Prague. These men did much work and published their results. Their research was a continuation of Sternberk's 150-year-old traditional studies, and herbarium specimens were collected of all the cultivars, permanently documenting these plants. Living collections of these plants exist at the Botanical Institute of the Czech Academy of Sciences in Prague and at the Agricultural University in Brno.

The experts published articles and later a monograph, giving this genus much publicity in our small country. This led to the establishment of a Saxifraga Club, composed of enthusiasts who cultivated them and collected all available cultivars. A few people started seriously to hybridize again; this work continues to the present.

Very good results in hybridizing saxifrages and selecting new superior cultivars were achieved in the 1970s and 1980s by F. Holenka, M. Kraus, K. Lang, J. Burgel and others. The cultivar *Saxifraga* 'Zlata Praha' ('Golden Prague') with orange flowers, and a number of hybrids of the so-called "Holenka Miracle Group" are among the best cultivars. Included are:

S. 'Galaxie'—a seedling of *S. x boydii* and *S. x anglica*. It makes small, dense cushions. Flowers are large, soft yellow with pink veins. Of exceptional beauty.

S. 'Jupiter'—Same cross as above. Makes a nice domed cushion. Flowers are large and orange-beige, though the color varies with the outdoor temperature at the time buds form. It is a splendid kabschia.

S. 'Saturn'—Same cross as above.

S. 'Vladana'—Same cross, this time made by Mr. M. Kraus (1978). Similar to S. 'Galaxie', but flowers are larger and beige rather than yellow

Holenka's cultivars *Saxifraga x megasae-flora* are called "Pritchard's Monument Group", and include:

S. 'Karel Capek'—*S. x anglica* Winifred x *S. burseriana*.

S. 'Krasava'—Same cross as above. Looks similar to *S. burseriana* although its rosettes are more open and very spiny. The flowers are pale pink, aging to white. Makes a superb pan plant.

These are just a few of the interesting kabschia cultivars which appeared in 1960-70s, but there are many more.

During the same period kabschia saxifrages were so popular here, the late H. Lincoln Foster started his saxifrage hybridization project in North America at his wonderful garden 'Millstream', in Connecticut. He cooperated closely with Czech gardeners. We like to remember the time when hybridization material was transported airmail, soil-free, across the ocean in Christmas parcels disguised as chocolate boxes, to avoid fumigation by customs officials, which killed so many plants along with their putative pathogens.

Linc Foster's project was truly remarkable; he cultivated and selected about 40 new kabschia cultivars in 15 years. Many were outstanding new plants, still cultivated and appreciated by collectors. The most remarkable plants resulted from back crossing *S. x elisabethae* to *S. burseriana*. Creamy pink *S. 'Peach Blossom'* and violet-rosy *S. 'Dwight Ripley'* were exceptional.

Linc's kabschias are real perennials, for they still grow in Czech rock gardens. Proof of many years of American-Czech friendship through gardening is the very attractive Czech garden cultivar by M. Kraus, *S. 'Bohemia'*. One parent is the American *S. 'Dwight Ripley'*, created about 1974 by H.L. Foster, the other parent Czech, *S. x byam groundsii 'Lenka'*, which forms very hard, tight buns. *Saxifraga 'Lenka'* has long-lasting, light yellow flowers. 'Bohemia' is a plant which grows and flowers very well and always attracts attention at exhibitions. Visitors want to buy it on the spot for any price. There are never enough plants to meet the demand, and the waiting list is very long. Its flowers are nicely red in the buds, then after two or three days open to pure orange and in a week become a nice yellow.

Mr. Karel Lang made a great contribution to our new cultivars in 1991—crossing *Saxifraga alberti* x *S. lowndesii* to give *S. x caroliquarti*, a new hybrid, resulting in the cultivar *S. x caroliquarti 'Ivana'*, registered in London in 1992. Lang is now one of our best saxifrage collectors and hybridizers and pursues his hobby most seriously. His latest hybrids are *S. 'Sirius Alfa'* and *S. 'Sirius Beta'* published in 1994. *Saxifraga quadrifaria* was crossed with *S. x grata 'Gratoides'*.

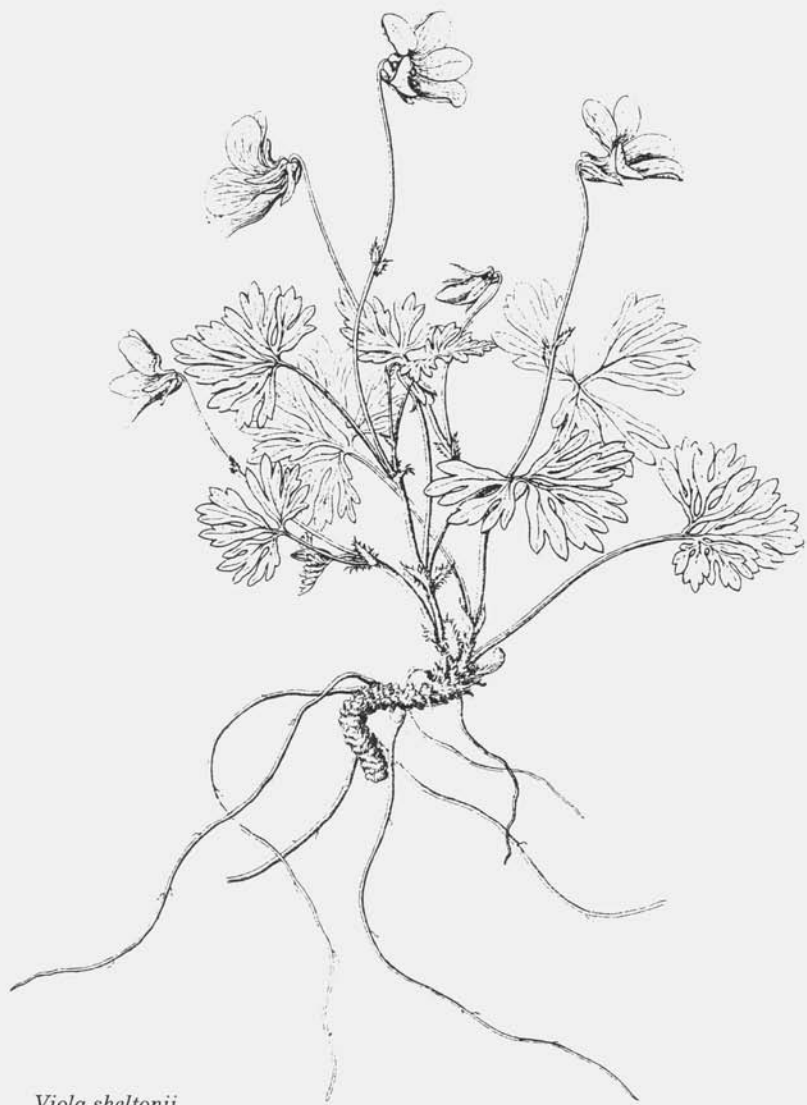
Finally, I must mention some lovely new plants in red shades which Mr. J. Burgel brought to the Prague Saxifrage Exhibition. These plants grow well and

look good, for their parents are superior species from the Himalayas. *Saxifraga poluniniana* x *S. lilacina* = *S. x polulacina*, named by Burgel in 1991. Mr. Burgel raised 50 rather similar seedlings from his cross. He gave them strange names, which made them less popular. This is a subject of contention among the saxifrage collectors in Prague. Are *S. 'Love Me'*, 'Your Kiss', 'Your Day', 'Your Smile', 'Your Song', etc. suitable names for plants? The grower refused to change them, so the editor of the London Saxifrage Group journal settled the matter by calling them all "Your Something!"

Very soon now we can expect some superior new cultivars. A large spectrum of new colors and shades has been produced in Holenka's alpine house. All flowered for the second or third year in February and March of 1994. Many have code numbers; a few have working names and detailed description cards. They are all worth careful study, although only a few will finally receive permanent names and registration.

There are not many saxifrage hybridizers in the United States, are there? Why, I wonder? What do members of our Prague saxifrage group dream about? They would like to produce a cultivar with flowers as red as the stripes of your flag, or with blue flowers—although there has been no sign yet of such a thing—or even a cultivar with double flowers. Much opportunity for adventure and discovery remains in growing these fascinating plants.

Josef Starek gardens in Prague, where he is closely associated with the great plantsman, Frantisek Holenka.



Viola sheltonii
from Reports of Explorations and Surveys to Ascertain the Most Practicable and
Economical Route for a Railroad from the Mississippi River to the Pacific Ocean, 1853-4

For Love of Utah

by Loraine Yeatts

UTAH BECKONS! The Wasatch Chapter of the North American Rock Garden Society is hosting the society's annual meeting at Snowbird, Utah, July 11 to July 14, 1996. To entice us, the Fall issue of the NARGS bulletin was almost entirely devoted to describing the incredible botanical, geologic, and scenic diversity to be discovered within a day's drive of the conference site. From desert drylands to alpine highlands, plants of interest to rock gardeners abound. Many are common and widespread. Some are local endemics restricted to ecological niches that are often threatened by development. All are special and often revered by those of us who are gardeners, photographers, botanists—or untitled.

Will the wildlands of Utah, where many of these treasures abide, be sacrificed to development by July? The answer is emphatically "YES!" if the Utah congressional delegation has its way with its proposed "wilderness elimination legislation," now awaiting action by Congress. My conscience has overwhelmed my disdain of political action and requires me to plead for an immediate attack on the Utah Public

Lands Management Act (H.R. 1745) and S. 884.

Allow me to digress and address our need for wildlands, expansive, untamed, undeveloped, controlled only by the forces of nature and protected by the wisdom of man...us, here and now. Rational arguments point to preserving large tracts of land adjacent to National Parks, Monuments, and Wilderness Areas already designated as national treasures. This could provide buffer areas and corridors to conserve our dwindling biodiversity before losses become irreversible and there is no remaining undeveloped land. Utah Representative Jim Hansen's response: "Wilderness has nothing to do with biology." Thanks to the great affluence and increasing leisure time available in our society, population pressure is already exceeding the carrying capacity of our popular parks and monuments. If additional areas are not designated, use of currently preserved areas will have to be limited, a distasteful option to most people. Much of Utah is acclaimed worldwide for its scenic beauty and geologic uniqueness. Witness the explosion of tourism in

Moab and the Canyonlands. The rest of the world travels here seeking what we have but could so frivolously destroy. Those seeking a wilderness experience must now look elsewhere. Entrenched and addicted to computer screen glare, we are, perhaps, connected to the rest of the world in a kind of sterile dream, but unintentionally disconnected and isolated from our human roots, our link to the biological community which nurtures our development as a caring human race. Wilderness provides an opportunity for escape.

My personal arguments for saving Utah wilderness are largely emotional, somewhat self-serving, and possibly radical, but no more so than the arguments against wilderness presented by those at the opposite end of the radical scale—by short-sighted developers motivated by human greed.

For the past 30 years the canyonlands, desert and plateau portion of southeastern Utah has given me a sense of wonder, renewal, restored optimism and faith in human values, a spirit of adventure and a lust for learning.

Many years ago relicts of the Anasazi culture, so evident in this area, became the focus of a family backpack during the quiet of winter. Crystalline snow dusted the pinyon-juniper pygmy forested landscape, tranquil under winter's icy burden. With nightfall came resonant silence abruptly punctuated by a hair-raising coyote chorus, hours of shivering in inadequate sleeping bags, time to memorize star patterns and commiserate with the the ghosts of Anasazi, hoping for morning sun...soon. Our six-year-old son, Mike, experienced winter hardships that the Anasazi faced on a daily basis. He chipped ice from the stream so we could have water, built a juniper fire for warmth and cooking, discovered remnants of

Anasazi dwellings in southeast facing alcoves, open to the warmth of weak winter sun and protected from the blazing summer sun. An ancient fire stick entertained him for hours as he attempted to ignite grass tinder in the Anasazi way. The trash midden below the alcove was littered with rock tool fragments, handsomely decorated redware, fire-blackened, corrugated, gray, black, and white pottery shards which connected us to the past. Mike, now 34, is an archeologist for the Hopi Nation. These memories and a thousand more, imprinted on my consciousness, require me to beg protection for these special places, a fragile heritage we owe to those who follow.

The so-called wilderness bill presented by Sen. Orin Hatch and Rep. Jim Hansen is a wolf in lamb's clothing. It includes only 1.8 million acres of the 22 million federal acres now managed by Bureau of Land Management, although much more qualifies for wilderness designation. Language in the bill would require the BLM to allow development on all land not specifically designated in the bill. Additionally, these areas could never be considered in the future for wilderness. As Hatch has stated "We have included language that releases all of the BLM's lands, with a few minor exceptions listed in the bill, from any further study of management for wilderness characters or values and return them to the full range of non-wilderness multiple uses." The multiple uses include chaining forested mesatops and replanting with exotic grasses to feed cattle, and subsidizing the antiquated life-style of ranching on government land. This in turn leads to invasions of cheatgrass and other adventive pests after these false meadows have been overgrazed. Oil and gas, mineral, and logging interests all wait poised to leap if this bill passes.

Those who view the scenic areas of Utah as outdoor gymnasias will also have free rein to use their off-road vehicles and mountain bikes without regard to biological values. I question the wisdom of such multiple use.

There is a positive note to be found in the testimony of Sylvia Baca of the U.S. Department of the Interior, presented to the House Natural Resources Committee on June 29, 1995. Here are some significant excerpts: "The Department of the Interior's concerns regarding the bill's (H.R. 1745) provisions include the "hard release" language, insufficient acreage protection, mandated unequal exchanges, automatic approvals of new developments in wilderness, the use and construction of roads in wilderness areas, failure to protect archeological and paleontological resources, and several other issues. Lands designated wilderness under H.R. 1745 would be managed in a manner inconsistent with the mandates of the Wilderness Act...the bill would create the ironic situation that management inside wilderness could be less protective than management of public lands not designated as a wilderness...Given the permanence of the decision, the limited degree of protection this bill would afford to some of America's greatest treasures, and the other problems we have identified, the Interior Department strongly opposes the legislation in its present form and Secretary Babbitt would recommend that the President veto this bill if both houses of Congress pass H.R. 1745 as currently written."

Alarmed by the possibility that this bill could destroy the intent of the Wilderness Protection Act, frustrated by the BLM process for determining and recommending areas for protection, a local Utah citizens' group coalesced to draft a citizens' proposal for the protection of 5.7 million acres.

Mostly remote and roadless, the areas recommended present a more realistic view of what constitutes wilderness and how it should be protected. Rep. Maurice Hinchey of New York has championed the citizen cause by introducing America's Redrock Wilderness Act (H R. 1500). Surveys have determined that 70% of Utah citizens support this bill. Hansen and Hatch are blatantly ignoring the desires of their constituency to promote the special interests of a vocal minority.

Federal lands are a national issue, and it is imperative that we let our state representatives know where we stand. H.R. 1745 has passed the House Resources Committee and will be up for vote in the Senate soon (barring another government shutdown reprieve).

Help SAVE Utah Wilderness! Call or write your senator (The Honorable Senator (name), Washington, DC 20510) to oppose H.R. 1745 / S. 884. Also urge President Clinton (The White House, 1600 Pennsylvania Ave., Washington DC 20500) to veto the Utah Public Lands Management Act of 1995, H.R. 1745 / S. 844, and any other environmentally detrimental bill that reaches his desk. Numbers count, so invite or incite your caring friends to help save our heritage. Environmental organizations such as Southern Utah Wilderness Alliance (SUWA, 1471 South 1100 E., Salt Lake City, Utah 84105-2423) and Great Old Broads for Wilderness (PO Box 4921, Missoula, MT 59806-4921) are waging war on these bills and welcome new supporters.

Then go see and enjoy Utah for yourselves at the NARGS conference in July.

Lorraine Yeatts is a dedicated student of wild places and wild plants, a great speaker, and an expert photographer.

PLANT PORTRAIT

Dudleya cymosa

California holds as unique a position in the imagination of North American horticulturists as Hollywood and Disneyland do for more common folk: such an extravagance, diversity, and such a mild, dreamy climate! How can those of us who experience real seasons dream of growing anything from Lotusland? It is a climate where frost is a curiosity and springtime can last all year. Of course, there are dramatic mountain ranges all over the state, but even at alpine elevations, isotherms are ridiculously mild, the growing season long, and insulating snow accumulates every year to great depths. California is so neatly barricaded with high peaks that home-grown gardeners can hardly be blamed for orienting to their Mediterranean cousins in Eurasia and the Southern Hemisphere—almost forgetting about the rest of North America.

Practically by accident, over the years, I have discovered more and more California herbaceous plants, shrubs, and even trees that grow quite happily in the high, cold steppes of Colorado. Incense cedars, Modoc cypress, Sequoiadendrons and *Quercus vaccinifolia* all grow as lustily in zone 5 of the Rockies as they do in their Zone 7 mountain homes. Obviously, microclimate has something to do with increasing hardiness, or historically these may have been subjected to much colder conditions. But how do you explain the fact that certain coastal plants—*Iris douglasiana* from near Santa Cruz, the stunning *Oxalis oregana* 'Martha Roderick', *Erigeron glaucus*—have prospered and spread and thrived for decades in a continental climate? Rock gardeners have come to realize that plants have much wider climatic plasticity than we initially suspect.

I remember first seeing *Dudleya farinosa* as a child on sea-side cliffs near Monterey. As others have done, I found a piece that had fallen on the beach and was obviously not going to survive as an emergent. I can't feel too guilty that I salvaged it, resurrected it in a cool window, and then put it to a much crueler death-by-freezing the next winter in Colorado. All my suspicions about the delicacy of California plants were confirmed. And yet these pearly, fuzzy, glorified hens and chicks are irresistible to every one (except maybe Californians, who find them rather hum-drum).

First a bank of echeverias at Albert DeMezey's in Victoria, then Victor Reiter's use of them as ground covers prodded my curiosity. I think it was in Harland Hand's garden, where various dudleyas and echeverias are used so artistically, that my determination was raised to fever pitch. It's hard to believe that 10 years ago so few western native plants were available commercially. Year after year I searched seed catalogs, corresponded with botanic gardens: no one grew any high-altitude Crassulaceae in lowland gardens—why bother? And yet both Jepson and Munz's manuals describe a number of species and subspecies of dudleyas at lofty elevations, and Walther has a number of high-altitude echeverias delimited.

Ted Kipping delivered the *coup de grace*: in one of his dazzling slide shows he pictured a glorious form of *Dudleya cymosa* he'd photographed at 6,000' or so in the Sierra Nevada—incredibly powdery white, with glowing orange blossoms. This I had to see. In October of 1992, Sean Hogan, Ted, and I drove to a high slope in Sierra County. How to find a rather small, pale succulent on acres of shining granite? Take Ted. He walked me directly to one, then another, then another: there were dozens scattered among the *Eriogonum lobbii*, *Zauschneria*, deep-rose-purple-flowered *Spraguea umbellata* and huge mounds of *Diplacus bifidus*, all laden with seed. Not suprisingly, all have subsequently grown for many years in Denver. After all, Denver is at a lower elevation at roughly the same latitude. Since then, Ron Ratko (Northwest Native Seed) has offered several other species as well as other subspecies of *D. cymosa* from even higher altitudes, and I have even obtained a form of *Dudleya pauciflora* from northern Baja California that has been unscathed through two winters.

Californians may not be impressed, and some may wonder, do we really need another hen-and-chick look-alike? I say, what plants approach echeverias and dudleyas in powdery glaucousness? There is a quality of luminosity in their yellow, orange, red or pinkish, tubular blossoms I've never found in any other plant. As for me, whenever I stoop to admire those perfect, dusty gray rosettes, even in the depths of Colorado winter, I can almost feel a warm sea breeze brushing on my shoulder.

—Panayoti Kelaidis

BOOK REVIEWS

Rock Garden Plants of North America: An Anthology from the Bulletin of the North American Rock Garden Society, edited by Jane McGary. 1996. Timber Press: Portland Inc.: Oregon. Hard cover, 449 pp., 105 color photos, 11 line drawings. ISBN 0-88192-343-5. Price, \$49.95, NARGS Bookstore \$35 until April 1, 1996, then \$40.

What better way to commemorate the first 50 years of the American Rock Garden Society than this sumptuously illustrated anthology of the best articles from the *Bulletin*? Of course, the Society is now the North American Rock Garden Society and the *Bulletin* is now the *Rock Garden Quarterly*, but what has not changed is the willingness of the stars of the native North American gardeners constellation to impart their knowledge so generously over the years. Reading the list of contributing authors of this carefully edited volume is like reading a *Who's Who* of native plant expertise: Claude Barr, Linc Foster, Edgar T. Wherry, Wayne Roderick, Margaret Williams, Roy Davidson, Panayoti Kelaidis, and many more, over 40 authors altogether.

Dozens of readers across the country were asked to read and review every article of every *Bulletin* heretofore published. The scope was then narrowed to North American native plants and, under the excellent editing of Jane McGary, has grown and been pruned into its final form, presenting much of our native

flora in both the wild and in cultivation. The blend of articles chosen is a satisfying mix of "how to grow," field notes, monographic discussions of specific genera, and "the best of" plant groups, all of them substantive, no nonsense, and without fluff. Also, I might add, without much humor, although, for the most part captivating and entertaining, nonetheless.

The majority of the gorgeous photos were carefully selected specifically for the book from numerous contributors and have not appeared in the *Bulletin*. In addition, many of the articles were updated by the original authors, although this is not always made clear in the publication credit at the end of each article. There is at least one article that is not actually from the *Bulletin* but was published in *Alpines of the Americas: Report of the First Interim International Conference* (1976).

Nomenclature, always a bugaboo, has been treated in an inclusive manner, in which the most current nomenclature has been used according to *A Synonymized Checklist of the Vascular Flora of the United States, Canada and Greenland* (2nd ed., 1994) by John T. Kartesz, but the more familiar name, if it has been recently changed, has also been listed in the text. McGary has actually used a much more complicated, but eminently reasonable, set of criteria for nomenclature, with superb results, but it is too long to elaborate here. Also, metric measurements are given in addition to our stubbornly retained, complicated English system, which should please foreign readers. Some naming is inconsistent. For example, no mention is made of any change to *Mahonia fremontii*, which according to *The Jepson Manual* is now *Berberis higginsiae*, and formerly *Berberis fremontii*, and on p. 174, the new names for *Hymenoxis acaulis* and *Haplopappus acaulis* are not always mentioned. *Eritrichium nanum* still appears, rather than what I thought was the currently accepted *Eritrichium aretioides*. But such small quibbles aside, the treatment of nomenclature is the best that I have seen in any book on rock gardening.

There is, perhaps understandably, a preponderance of articles from the more recent years, and some of the older articles are clearly dated by the references to collecting. The editor has discussed in detail her guiding principles concerning the ethics surrounding this emotionally charged issue in her preface and removed from the articles many of the most glaring references, since they contribute nothing to the furtherance of knowledge. It is a hopeful sign of how much our sensibilities have changed that the issue warrants such sensitive treatment, but those references remaining will, no doubt, still outrage some. A description of prying *Eriogonum thymoides* out of the winter-frozen earth particularly made me blanch, but perhaps the author was referring to transplanting in the garden? Davidson's article on *Eritrichium* is so replete with digging stories and the subsequent demise of the plants that one fervently hopes that readers attend to the preface.

The book has been sensibly divided into regions: Far West, Great Basin and Rocky Mountains, Plains States, Northeast, Southeast and Throughout North America, although, sadly, there has been very little in the *Bulletin* on Canada or Alaska, and, of course, nothing about the alpine regions of Mexico, a situation hopefully to be remedied in the future. But from rock ferns to mostly North American genera such as *Phlox*, *Penstemon*, and *Trillium*, to wholly so, such as *Dodecatheon*, we have here as complete an assemblage of captivating stories of plant discovery and the "secrets" of cultivation as has yet been presented to discerning readers.

—Ernie O'Byrne



NARGS COMING EVENTS

WINTER STUDY WEEKENDS:

Western Winter Study Weekend: March 1-3, 1996

Victoria, British Columbia

ANNUAL MEETING: UTAH FLORA '96

July 10-13, 1996

Snowbird Resort, Wasatch Mountains, Utah

NARGS COMING EVENTS

ANNUAL MEETING



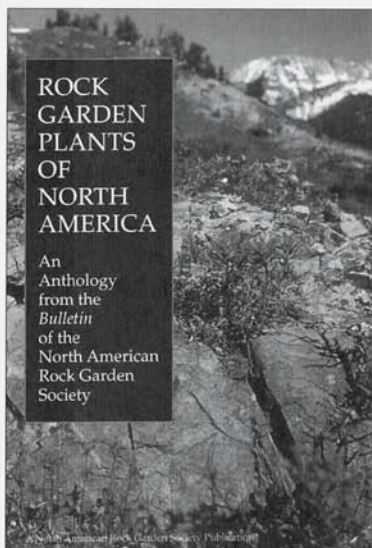
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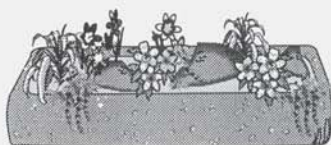


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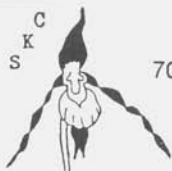
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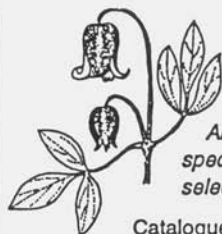
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