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COVER: *Papaver alboroseum*, painting by Tanya Harvey, Lowell, Oregon (see "About the Artist," p. 65).

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ROCK GARDEN *Quarterly*

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Special Issue: Alaska

Map by Louise Parsons

Plants of the Chugach Mountains

Jaime Rodriguez

The Chugach Range is part of the Pacific Coastal Mountain Ecoregion, which extends from the Pacific Northwest into Southeast Alaska and out through the Alaska Peninsula (north of Cook Inlet) to the Aleutian island chain. The Chugach Range is part of a southern arc that lies between the islands of Southeast Alaska and the Kenai Mountains (the Kenai Peninsula extends south of Cook Inlet). The name "Chugach" comes from the native people of the region, a subgroup of the Pacific Eskimo or Alutiiq (not to be confused with Aleut) people.

The Chugach Range is 250 miles long and 60 miles wide (about 400 by 95 km). It extends from Knik Arm and Turnagain Arm of Cook Inlet on the west, to the Bering Glacier, Tana Glacier, and Tana River on the east (accessible from the Richardson Highway), and to the Matanuska, Copper, and Chitina rivers on the north (accessible from the Glenn Highway). To the south, the mountains rise out of the Pacific Ocean and Prince William Sound. The two highways mentioned run parallel to the rivers and coincide with the boundaries of the range.

Geological formation of the Chugach Range occurred primarily from the late Jurassic to the Cretaceous. The rocks consist primarily of deep-water sedimentary sequences of graywacke, siltstone, slate, sandstone, and conglomerates, interbedded with volcanic basalts and detritus, mildly metamorphosed. Some parts of the northern Chugach are Paleozoic, composed of metamorphosed, dark volcanic lavas and associated volcanic sedimentary rocks, with local shallow-water sedimentary rocks. South of the Matanuska River, these are largely covered by Tertiary sedimentary rocks. All are Pennsylvanian to Permian in age.

During the most recent ice age, 10,000 years ago, and the great ice age 30,000 years ago, the Chugach Range was completely glaciated. The retreating glaciers left characteristic flat glacier floodplains and U-shaped valleys covered with moraine and drift. On the southern, coastal edge of the range, most peaks higher than 3500 feet (1050 m) are permanently snowcapped. Farther north and inland, the permanent snowline rises to 5000–6000 feet (1500–1800 m), except where glaciers descend lower. Most of the southern, coastal area of the Chugach Range is free of permafrost except for a few isolated masses. At higher elevations, particularly in the northern half of the range, there are more numerous isolated masses of permafrost.

The Chugach Range contains two notable parks. The Chugach National Forest, covering 5,900,000 acres, is the second largest U.S. national forest. Chugach State Park, though much smaller at 495,204 acres, affords accessible pristine wilderness and spectacular alpine scenery just minutes from downtown Anchorage. Numerous trails are maintained within the park systems, including several historical ones like the Johnson and Iditarod/Crow Pass trails. The highest elevation in the range is at Mount Marcus Baker, 13,176 feet (4050 m).

The Southcentral region of Alaska, which includes the Chugach Range, has a total land area of 45.4 million acres, nearly half of which (20.9 million acres) is classified as alpine tundra or barren ground. The vegetation types found in the Chugach Mountains can be divided into the nine broad categories discussed in detail in the following sections.

Species distribution and abundance within each system and in transition zones varies considerably as a result of local soil, climate, and other conditions. There is much overlap, and some plants are found in nearly all systems, such as *Cornus canadensis*. The maritime alpine tundra has very different plants than those of inland mountaintops. *Geum calthifolium, Saxifraga ferruginea,* and *Phyllodoce aleutica* are rare in the Cook Inlet area but form large colonies at Thompson Pass on the eastern edge of the Chugach Range; *Cassiope lycopodioides* and *Saxifraga mertensiana* are also found there.

Curiously, the Chugach Range has not yet been botanized thoroughly. Most botanists coming to Alaska seem to have traveled through Anchorage on their way to the more enticing back country of the Alaska and Brooks ranges. The accessibility of the Chugach made it too easy to overlook. Many parts of the range lie along well-developed road systems, and there are numerous well-traveled trails, making parts of the Chugach among Alaska's most visited areas.

Though the Chugach Range is a vast region, many mountaintops are accessible by road. Visitors to Alaska during the 2002 NARGS annual meeting will be treated to bus rides of less than an hour that will allow them to step off the bus or van directly onto alpine tundra. Peak bloom times vary, depending on the amount of snow and the spring temperatures, but generally the Chugach Range alpine plants are peaking in June. The theme for this annual meeting is "Tundra Magic," and when you see the plants, you will understand why.

Coastal Western Hemlock, Sitka Spruce Forest

This ecological system is an extension of the Pacific Northwest temperate rainforest. Timberline averages around 2000 feet (600 m) from Prince William Sound to Cook Inlet, but it is very low (500 ft./150 m) near Portage Pass. On Kodiak Island and farther west on the Alaska Peninsula, timberline is nearly at sea level.

This forest thrives in high rainfall, high humidity, and cool temperatures, generally in areas without permafrost. The forest canopy is composed of Sitka spruce (*Picea sitchensis*), western and mountain hemlocks (*Tsuga heterophylla,*

T. mertensiana), Alaska or yellow cedar (*Chamaecyparis nootkatensis*), balsam poplar (*Populus balsamifera* subsp. *balsamifera*), and black cottonwood (*Populus balsamifera* subsp. *trichocarpa*). The underbrush consists of Sitka alder (*Alnus crispa* subsp. *sinuata*), devil's club (*Echinopanax horridum*), salmonberry (*Rubus spectabilis*), various willows (*Salix* spp.), Pacific red elder (*Sambucus racemosa* subsp. *pubens*), *Menziesia ferruginea*, copperbush (*Cladothamnus pyrolaeflorus*), and various blueberries and huckleberries (*Vaccinium* spp.). The forest floor is carpeted with abundant mosses, ferns, lichens, and fungi.

Bottomland Spruce, Poplar Forest

This tall, relatively dense vegetation type occurs mostly on level to nearly level floodplains, low river terraces, and more deeply thawing south-facing slopes, usually at elevations below 1000 feet (300 m). Balsam poplar and black cottonwood are joined by white and black spruces (*Picea glauca, P. mariana*), Alaska paper birch (*Betula papyrifera* subsp. *humilis*), and quaking aspen (*Populus tremuloides*). The understory is a diverse mix of alders, willows, and roses. Other common shrubs include Labrador tea (*Ledum palustre* subsp. *groenlandicum*), raspberry (*Rubus idaeus*), blueberries and huckleberries, bearberry (*Arctostaphylos uva-ursi*), serviceberry (*Amelanchier alnifolia*), and highbush cranberry (*Viburnum edule*). Common species at ground level are the grass *Calamagrostis canadensis*, fireweed (*Epilobium angustifolium*), horsetail (*Equisetum*), *Pyrola* species, and several ferns—wood fern (*Dryopteris dilatata*), oak fern (*Gymnocarpium dryopteris*), and lady fern (*Athyrium filix-femina*).

Upland Spruce, Hardwood Forest

This forest resembles the former, with nearly identical inventories of trees and shrubs, adding lingonberry or lowbush cranberry (*Vaccinium vitis-idaea* subsp. *minus*; photo, p. 34) and several currants (*Ribes* spp.). Because of extensive burns during the past 100 years, large areas of this system are found in interior valleys in the Gulf of Alaska subregion, and on the more deeply thawed, well-drained, south-facing slopes at lower to mid elevations and on benchlands in the Cook Inlet subregion. This timbered zone extends from near sea level at Eklutna to more than 3500 feet (1100 m) in the eastern part of the region. Soils supporting the dominant species are well-drained, shallow to moderately deep, gravelly loams and silt loams. Black spruce grows on sites with poor drainage and high water table, often indicating the presence of permafrost. After fires, the succession of birch, followed by willow and then aspen, produces rich moose browse. Isolated colonies of the fairy slipper orchid (*Calypso bulbosa*) are protected treasures. Other orchids may also be found, though scarce, including *Cypripedium guttatum, C. passerinum*, *Amerorchis rotundifolia*, and *Goodyera repens*.

Lowland Spruce, Hardwood Forest

This is a dense to open lowland forest of evergreen and deciduous trees, usually on areas of shallow peat, glacial deposits, outwash plains, and north-facing slopes. The upper valleys of the Copper and Susitna rivers sustain extensive stands. Notable additions to the flora include dwarf birch (*Betula nana* subsp. *exilis*) and crowberry (*Empetrum nigrum*).

High Brush

The dominant species in this system are dense-growing willows and alders. It occurs between beach and forest, between treeline and alpine tundra, in avalanche paths through forests, on floodplains, and in old forest burn areas. The thickets, called "bear brush" by locals because of what one may encounter in them, grow 5–15 feet (1.7–5 m) tall. Other shrubs common in this system are devil's club, soapberry (*Shepherdia canadensis*), Alaska spirea (*Spiraea beauverdiana*), salmonberry and dogwood (*Cornus stolonifera*). Typical herbaceous species include fescues, yarrow, lupine (*Lupinus nootkatensis*), Jacob's ladder (*Polemonium* spp.), and fragile fern (*Cystopteris fragilis* subsp. *fragilis*).

Low Brush Muskeg, Bog

In this system, found in wet, flat basins where conditions are too moist for tree growth, dwarf shrubs dominate over a mat of sedges (*Carex*), rushes (*Juncus*), mosses, and lichens. Ponds and standing water are often present on the peaty substrate. Two different subtypes of this system exist in Southcentral Alaska. In Coastal Muskeg, western hemlock may be scattered over the drier portions, as seen in some drainages bordering upper Cook Inlet. In the interior bogs of the boreal forests, black spruce is the only tree present, often with large patches of cottongrass (*Eriophorum* spp.). These bogs occur primarily in the Matanuska and Copper River valleys. Other common shrubs here are bog cranberry (*Oxycoccus microcarpus*), resin birch (*Betula glandulosa*), bog rosemary (*Andromeda polifolia*), and the low Labrador tea (*Ledum palustre* subsp. *decumbens*). Though difficult to traverse, this habitat contains much of botanical interest, as well as a wealth of bird life.

Wet Tundra

This type occupies tidal flats and areas of little topographic relief near sea level, mainly on the Copper River Delta and on numerous small deltas of upper Cook Inlet. The dominant vegetation is sedges and cottongrass, usually as a mat rather than tussocks. A few woody and herbaceous plants grow on drier sites above the

water table. Rooted aquatic plants occur along shorelines and in shallow lakes. Common species include *Potentilla fruticosa*, the grasses *Arctophila fulva* and *Elymus arenarius*, bur reeds (*Sparganium* spp.), and mare's tail (*Hippuris* spp.). *Iris setosa* and *Smilacina stellata* can be found at Eklutna Flats. Birders are likely to be far more interested than botanizers are in this ecological zone.

Alpine Meadow

This low-growing vegetation community usually forms a complete ground cover and is extremely productive during the growing season. Its composition varies from almost continuous cottongrass, with a sparse growth of sedges and dwarf shrubs, to stands where dwarf shrubs dominate. Many herbaceous perennials are common, including *Geranium erianthum, Epilobium latifolium*, *Valeriana sitchensis*, *Myosotis alpestris* subsp. *asiatica*, *Mertensia paniculata*, *Arnica* spp., *Gentiana* spp., *Ranunculus* spp., *Anemone* spp., *Senecio triangularis*, and *Veratrum viride*. Several orchids may be found, including *Platanthera dilatata* and *Spiranthes romanzoffiana*. This is where the rock gardener's enthusiasm will rise abruptly; however, it can be difficult to capture the lush, colorful effect of these meadows on film.

Alpine Tundra and Barren Ground

This type is composed mostly of low mat-forming plants, both herbaceous and shrubby, and is typically found on rock and rubble of mountains above 2500 feet (800 m). It occurs on all the higher mountains of the region, usually above forest and brush systems. Plant growth here is extremely slow. Many choice plants of interest to rock gardeners grow here: for instance, *Phyllodoce* spp., *Cassiope stelleriana*, *C. tetragona*, and *Silene acaulis*. Several charming dwarf willows abound, including *Salix arctica* (photo, p. 37), *S. reticulata* (photo, p. 36), *S. rotundifolia*, *S. phlebophylla*, and many natural hybrids. There are almost too many treasures to list. *Loiseluria procumbens* (p. 35) and *Dryas octopetala* are common. Vast fields host a patchwork of tiny plants, including *Campanula lasiocarpa, Primula cuneifolia* (p. 42), *Pedicularis lanata* (p. 39), *Diapensia lapponica* (p. 35), *Luetkea pectinata, Oxytropis nigrescens* (p. 44), *Astragalus umbellatus* (p. 44), *Claytonia sarmentosa,* and *Lloydia serotina*. Upland birds and rodents busily feed on insects and vegetation—and this spring, at least, the fauna will also include many humans kneeling and aiming long camera lenses at the gemlike plants.

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Plants of Denali National Park

Verna Pratt

As I was making my first visit to what was then called McKinley National Park, now Denali National Park and Preserve, I vowed that it would be my last. In 1968, the trip from Anchorage to the national park was 425 miles of narrow, winding road with continuous frost heaves and rough sections of gravel full of holes and protruding rocks. Once in the park, though, I enjoyed it immensely.

The scenery was magnificent, and the plant life held many treasures new to me, since I had just moved to Alaska from the coast of Massachusetts. The only local Alaskan wildflower book for beginners at that time was Louise Potter's *Roadside Flowers of Alaska,* illustrated with excellent line drawings. I misidentified many plants but photographed frantically to help me track them down later. This was overoptimistic: for instance, one mystery was a white, 8-petaled flower, but the only leaves visible in my photo were those of *Salix reticulata.* Not until two years later did I identify it as *Dryas integrifolia.*

A well-constructed, more direct highway from Anchorage to Fairbanks has now reduced the journey from Anchorage to Denali Park to a more reasonable 230 miles and less than 5 hours of driving. The downside is that this once remote area soon became a traffic jam, and most of the wild animals sought refuge deeper in the wilderness. This forced the National Park Service to restrict most vehicular traffic to park shuttle buses. After this change, we often stopped on our way to Fairbanks to botanize near the park entrance, but we seldom went into the park because it was difficult to get a seat on the bus at short notice. (For information on riding the Denali shuttle buses, see the note at the end of this article.)

In early summer, the wet tundra near the park entrance is filled with small moisture-loving alpines: rich violet *Cardamine purpurea,* the spikes of *Polygonum bistorta* subsp. *plumosum,* and brilliant yellow *Saxifraga hirculus.* The lovely lilac-like aroma of *Parrya nudicaulis* rivals that of the *Rhododendron lapponicum* (photo, p. 45) that covers the nearby slopes. On the roadside, the hard-packed gravel sprouts cushions of *Saxifraga oppositifolia* that bloom almost as soon as the snow melts. The farther we stray from the roadway, the more exciting it becomes. One

south-facing slope is covered with buns of *Potentilla uniflora* (photo. p. 41), *Pulsatilla patens* (known as "crocus" in Alaska for its goblet form and early flowering; photo, p. 46), and *Oxytropis viscida*, a choice alpine pea. None of these, however, lures me on like the bright blue flowers of *Eritrichium splendens* (photo, p. 43), an Alaskan endemic. Higher up on the slope of Mount Healy, we find *Arenaria chamissonis* and *Potentilla biflora* (photo, p. 41). It became my obsession to photograph these plants, learn their names, and grow them.

As time went on, we gradually ventured into Denali Park and explored the first 14 miles of its single public road. Travel beyond that point is normally limited to buses. The area near the entrance is dry woodland, like much of central interior Alaska. *Betula papyrifera* (paper birch) and *Populus tremuloides* (quaking aspen) tower over ground-covering *Linnaea borealis* (twinflower) and *Cornus canadensis* (bunchberry). Many species here range through the Yukon Territory of Canada and down into the Rocky Mountains. Although this area appears dry, afternoon showers are frequent, with spectacular rainbows.

The next 13 miles of road passes through alternating habitats. The wet willow thickets of *Salix barclayi* and *Salix pulchra* are easy to overlook, but if you have the time, there are some pleasing plants there. Stands of thin *Picea glauca* form black spruce "taiga," a Russian word for this type of boreal forest. The rocky riverbeds provide good access to the mountains. Many members of the pea family can be found among these rocks, but the predominant species is *Dryas integrifolia*. The dry brushy banks throughout the park are covered with an upright shrub, *Shepherdia canadensis*; although the flowers are insignificant, these shrubs are impressive in August when the small red berries are ripe. It is common to see grizzly bears feeding on them, though humans find them almost inedible. (It is unwise to hike through dense shrubs in bear country, especially in the park, where the grizzly population is dense and fearless. Attacks on humans are rare, however, because the Park Service sets rigid rules for people's behavior around the animals.)

The spot on this public-access road that tempts us most is Mount Savage. The wet tundra near the base of the mountain is full of wonderful plants; here I first saw *Pedicularis oederi* (photo, p. 43) and *Gentiana algida*. This was also where I first started cataloging all the plants I was seeing and realized that visitors needed a book on the flowers of Denali National Park. Most of the more than 300,000 people who visit the park each year come to see Mount McKinley and the wildlife, but they gasp with appreciation at the sight of *Silene acaulis* and *Claytonia scammaniana*.

The park rangers agreed with me, so in the summer of 1992 we were able to obtain a special road driving permit to travel on our own farther into the park. That summer, I spent every other week there. My eagerness and my dog-eared copy of Hultén's *Flora of Alaska* helped to guide me, and I had a great time exploring all the areas into which I felt a tourist might venture. With the road permit, I was able to discover many treasures beyond where the average visitor explores; however, passengers on park buses do have the option of getting off at will to explore the tundra, then returning on the first passing bus with a free seat. There

is much more to see than is visible from a bus; you will experience Denali at its best on foot.

While you are waiting to board a bus, explore Savage Mountain or Mount Margaret (across the river from Savage Mountain). Mount Margaret is frequently referred to as "Primrose Ridge"; a large wet area on its top is home to *Primula tschuktschorum* var. *arctica* (photo, p. 42), found in very few areas in the park and a delight to see. Few people manage to photograph the entire plant at once because it is necessary to lie on the cold, wet ground to do so. The ridge has many other wonderful species. Rocky outcrops conceal the largest population of *Saxifraga eschscholtzii* (photo, p. 40) that I have ever seen. Its resistance to predators is probably attributable to the way its tightly compressed gray-woolly rosettes blend with the crumbling rocks and lichens. This area also holds many plants commonly seen in the Chugach Mountains of south central Alaska, since the geology is the same—metamorphic rock consisting mostly of granite, schist, and gneiss. The rocky surface near the top of the ridge is carpeted with *Diapensia lapponica* and *Loiseleuria procumbens* (photos, p. 35) and is probably at its best in late June. There are several approaches to this ridge. The best route is to walk up the road until you can easily get through the brush and onto the tundra. The brushy areas near the river are much deeper and harder to penetrate than you might think. This is also a great place to see Dall sheep rams; Dall sheep are common in the Park, but the rams usually stay at higher elevations and are seldom seen except from a distance.

The next 20 miles of road winds through excellent moose habitat—brushy tundra and poplar or spruce woodland. *Arctostaphylos rubra* (alpine bearberry; photo, p. 34) carpets the ground and colors the forest with its bright red leaves in August. Crafty red foxes trot nonchalantly by the buses with their catch of the day; the roadway is an easy path back to their dens. Sandstone cliffs rise from riverbeds as the geology changes. For the next 50 miles, the scenery changes rapidly. Elevation gain is rapid, and low tundra plants grow close to the roadside. Rocky creeks lined with *Salix alaxensis* wind high into the mountains, the silvery leaves shimmering in the breeze. Colorful igneous rocks replace crumbling black granites. Cathedral Mountain's gradual slopes with their patches of *Eritrichium aretioides* quickly become steep scree. Angular chunks of volcanic rock are dotted with lemon-yellow *Papaver alaskanum* (photo, p. 38) and the fuzzy rosettes of *Smelowskia borealis*. (Elsewhere you may find a white alpine poppy, *P. mcconnellii*; photo, p. 38.) Scree plants are easily seen from the rocky creek beds, but these usually end in closed canyons with very steep scree slopes. For a true wilderness experience, cross the stream near the west end of the mountain and approach the summit from the south side.

Beyond this point, many mountainsides are covered with *Rhododendron lapponicum* in late June (photo, p. 45). Species of *Ranunculus* and *Anemone* appear soon after the snow melts and can be seen throughout the summer as the melt continues in different areas. Shifting gravel bars in the larger "braided" rivers are covered with *Hedysarum mackenzii* and *H. alpinum*. Small mounds of *Crepis nana* (photo, p. 45) and *Astragalus nutzotinensis* take hold next to more stable

rocks. More important, *Dryas drummondii* and willow (*Salix*) species help bind the gravelly banks.

The steep climb to Polychrome Overlook displays constantly changing, gouged cliffs with bright-colored flowers. *Claytonia scammaniana* and *Saxifraga oppositifolia* appear suddenly, clinging to the yellow and orange rocks. Steep banks slide down to the broad, braided rivers below. The vistas from this high perch are breathtaking. This is a good place to get off the bus for a while and botanize, since the lovely *Douglasia gormannii* can be found in the bare screes near the shelter.

The tundra from Polychrome to Eielson Visitor Center is easy to explore. There are large expanses of *Salix barrattiana, a* knee-high shrub with thick silvery leaves and large pink catkins in early June; though rare in Alaska, it is very common in the park. The more adventurous can climb farther up the ridges. Those visiting early in the season may find *Synthyris borealis* and *Douglasia gormannii,* while those arriving later may find the scree slopes splashed with spectacular, deep blue *Delphinium brachycentrum.*

Over the crest of Stony Hill, Mount McKinley suddenly looms—if it is not shrouded in clouds, a common disappointment—and is constantly visible until the road passes Wonder Lake. All the buses stop at Eielson Visitor Center, and few people can resist exploring there. The vegetation along the widened and trampled paths is now being restored. A hike up Thorofare Ridge, just across the road from Eielson Visitor Center; has something for everyone. The gentle slopes are covered with mats of *Dryas,* dwarf *Salix* species, and *Oxytropis nigrescens,* a choice cushion pea (photo, p. 44). Meadows full of *Myosotis alpestris* subsp. *asiatica* (Alaska's state flower), *Mertensia paniculata,* and *Dodecatheon frigidum* fill every depression. Robust hikers should take the time to climb up to the ridge. The scree-strewn slope has a well-worn trail and hosts many wonderful sun-loving species. *Senecio resedifolius, S. fuscatus,* and *Taraxacum carneocoloratum* seem to glow against bright-colored rocks. This mountain has a wet habitat area on top, with *Primula tschuktschorum* and *Claytonia acutifolia.*

Although thunderstorms are frequent here (don't start up a trail if the clouds are too threatening), these south-facing slopes are relatively hot and dry, and plants bloom early on them. The flowering starts on south slopes in late May, while some north-facing valleys still have wonderful floral displays into late August, when *Betula glandulosa* and *Arctostaphylos alpina* paint the mountainsides with brilliant red and orange.

Just around the bend from Eielson Visitor Center, the terrain changes rapidly. The road parallels Thorofare River, which is lined with damp willow thickets and many "kettle ponds," snowmelt ponds without inlet or outlet streams which retain water because of underlying permafrost. Beavers are very active here, but they have to work long hours to gather branches for their dams; there are few trees nearby, and it is difficult to make a dam with little twigs.

Eventually, Wonder Lake comes into view. This large lake formed when glacial ice from the Muldrow Glacier was left behind as it receded. From 1954 to 1957, the glacier surged forward as much as 1100 feet in one day, but it has now

become a receding glacier again. Beyond this point is the old Kantishna Mining District, where three lodges are operated as private inholdings within the park. Gold mining is no longer allowed. and all mining operations have been purchased by the National Park Service. Some buildings are being restored as historical landmarks, and the land too is being restored. The geology of this region is again crumbling granite, quartzite, and schist, and much of the vegetation is similar to that of south central Alaska.

Note: Arranging your visit

The great variety of habitats and plant species makes Denali a must for visitors to Alaska. It is accessible by car or train from Anchorage or Fairbanks. The tourist season is a short three months in the summer. Make hotel reservations well in advance, and expect prices to be high; tent cabins are much cheaper, and there are also some good B&Bs in Healy, about 12 miles north of the park entrance. To arrange bus travel in the park ahead of time, write to Denali National Park and Preserve, P.O. Box 9, Denali Park, AK 99755, or check on their website at <http://www.gov.dena>. Because of the large number of package tourists who use up the shuttle seats (and rarely get off to look at the plants!), individual travelers may have trouble getting tickets without waiting a day or more; arriving at the ticket office very early is your best bet.

Verna Pratt and her husband, Frank Pratt, operate Alaskakrafts in Anchorage. A founding member of the Alaska chapter, Verna is the author of several Alaskan wild plant guides (see "An Alaska Plant-hunter's Bookshelf" in this issue), illustrated with Frank's and her color photos and published by Alaskakrafts. She will be a featured speaker at the NARGS national meeting in Anchorage in June 2002 and will guide an Alpine Garden Society post-conference tour.

Valley of the Boykinia

Rick Lupp

Over the past ten years, I have made many trips to different areas of Alaska, lured by the state's fantastically varied and beautiful flora as well as by its incredible scenery. The overpowering sense of being in a vast wild area that shows very little imprint of man is unmatched in any other region of the United States that I have experienced. This sense of wildness is another great element in the power that draws me to return to Alaska again and again.

I most recently returned to Alaska in early July 2001. In the company of two friends from Anchorage, I set off to see a part of eastern Alaska that I had visited only briefly in the past and wanted to explore and botanize in greater detail. The highlight of this trip turned out to be a tiny valley tucked up against the south flank of the Alaska Range, which includes the highest peak in North America, Denali or Mount McKinley.

The beginning of this valley lies about 1000 feet (320 meters) above the point where the Delta River cuts through the Alaska Range, approximately 50 miles (75 km) north of Paxson, Alaska. It is accessible from the main highway only by a steep, narrow track that was cut to reach an unimproved mining claim staked along a little raging torrent of a creek, which over the years has carved the valley out of the mountain's flank.

The north side of the valley is framed by an almost vertical rock face that towers several thousand feet above the creek; it features numerous layers of sedimentary rock, some with small fossils of ancient sea life. The small peak that forms the south side of the valley rises sharply to about 3300 feet (1100 m) and is mostly covered with a scree formed from small, sharp metamorphic rock, which in most places has built up a layer of rich humus 6–8 inches (15–20 cm) deep, supporting a wide variety of plants. The floor of the valley is covered with a thick growth of a medium-sized shrubby willow, *Salix glauca* subsp. *acutifolia*, except for a narrow band of rock rubble, gravel, and sand along the creek. This narrow open band is home to a number of fine plants, including a very compact form of *Dryas drummondii*, *Erigeron eriocephalus*—a cushion composite covered with a fine whitish pubescence and bearing 1-inch-wide, soft violet blooms on short stems—and three fine *Astragalus* species, two of them stoloniferous.

The choicest of these three *Astragalus* species is *A. nutzotinensis*, a small, sprawling plant with beautiful, large pink to rose-purple blooms and striking reddish seed pods that form into a semicircle as they ripen. Another plant we found extremely attractive is *Astragulus umbellatus* (photo, p. 44), which is strongly stoloniferous. It is usually described as having small yellow blooms, but the form in this valley has rather large bright yellow flowers with a prominent white edge around each petal, held over mats of small, pinnate, bright green foliage. The overall appearance of this plant is very appealing. Another surprising fact about it is that, according to Hultén's *Flora of Alaska*, the roots are edible and were used as food by the local Native people. *Astragalus alpinus* subsp. *alpinus* is quite abundant along the creek, forming thick mats of small pinnate foliage covered with many short stems bearing masses of smallish blue-violet blooms, a pleasing show. The seed pods of this species are small and reflexed.

We were able to access the steep slopes of the peak on the south side of the valley via an area of scree that extends most of the way down the peak to the valley floor. Even from our campsite along the creek, we could see large patches of white all along the slopes of this peak. As soon as we had reached sufficient elevation to get above the almost impenetrable masses of *Salix glauca*, we headed right over to the closest of these white patches and found the largest colony of *Boykinia richardsonii* (photo, p. 36) that I have ever come across in my travels in Alaska. The colonies of this Alaskan endemic that I had previously seen generally consisted of several dozen plants growing in small, scattered swales of humus-rich soil in steep, rocky sites. On this slope, however, there are thousands of plants. At the lowest part of the slope, just above the willow brush, the boykinias are about 3 feet (1 meter) high, holding dozens of perfect, 1-inch-wide, star-shaped blooms of pure white with deep maroon sepals. This spectacular member of the Saxifragaceae is an unforgettable sight even when seen in small colonies, and this incredible population now ranks as perhaps the finest floral display that I have ever seen in Alaska. Another unusual feature of this population was the way the plants slowly but steadily decreased in size as we ascended the peak, until near the top, they were no more than 5 to 6 inches (10–12 cm) in height, bearing only a few blooms, though still of perfect form and color.

I have tried on several occasions to grow this plant from seed at my nursery near Mount Rainier, Washington, but I have never been able to get it to flowering size before the young plants were destroyed by slugs, no matter how much slug bait I applied around them. A different predator finds them irresistible in Alaska: they are a favorite food item for bears.

Many other fine plants share this slope with the boykinias. *Diapensia lapponica* subsp. *obovata* (photo, p. 35) forms tight little buns scattered all about the slope, intermingling with small mats of *Loiseleuria procumbens* (photo, p. 35) with its tiny, hard green leaves and masses of very small pink, cup-shaped, star-like blooms. Several *Saxifraga* species make their homes here. *Saxifraga oppositifolia* in both violet-purple and pink forms are tucked behind rocks and on cool slopes with northern or eastern exposures. *Saxifraga eschscholtzii* (photo, p. 40) forms its tight little silver buns of minute rosettes in sunny, more exposed areas, and

S. bronchialis subsp. *funstonii,* bearing soft yellow blooms with orange spots, is quite widespread on the slope. My friend Doug Tryck found a very attractive form of this species that had richer yellow blooms lacking spots, and with each petal edged in white.

The genus *Dryas* is common in Alaska, well represented by species and subspecies. *Dryas drummondii* grows along the floor of the valley in open gravelly areas; its cousin *D. octopetala* covers great expanses of the upper slopes, offering a beautiful display of very large white blooms on 3-inch (7.5-cm) stems. The bumblebees had obviously been at work here: I found a form of *D.* × *suendermannii,* a natural hybrid of *D. octopetala* and *D. drummondii,* growing among the mats of *D. octopetala.* This form of *D.* × *suendermannii* is quite different from any I know of in cultivation. It has very small, dark-green foliage which is heavily toothed, and blooms of a rich, creamy yellow which start out as very small deep yellow buds and open to small, deep yellow cup-like blooms before expanding. Cuttings have rooted at my nursery, and we hope to have this unusual plant available in a few years.

Two very fine dwarf willows grace the slope. *Salix reticulata* subsp. *reticulata* var. *gigantifolia* (photo, p. 36) forms a thick groundcover over large areas. This may be the loveliest of all the prostrate, trailing willows in Alaska. It has beautiful deep-green, obovate, net-veined foliage which measures almost 60 mm (about 2 inches) in diameter and forms masses of very beautiful blond-colored trunks and twigs. I have tried growing plants from cuttings of this form a number of times, but I have never succeeded in rooting a single piece. The other dwarf willow on the slope is *S. phlebophylla,* which forms dense mats of small obovate, acute, shiny green foliage with noticeable veining. This plant is easily recognized by the fact that it holds its old, skeletonized leaves on the lower branches for several years, a feature that does not add to its otherwise pleasing appearance.

All in all, this is a unique little valley. I think that the fact that it is tucked right up against the south flank of the Alaska Range positions the valley to receive much more rainfall than most of the surrounding area, and this may account for the fact that *Boykinia* thrives to such a degree in this spot. Whatever the reason, I will never forget this valley and the magnificent display I was privileged to see on its slopes.

Rick Lupp is the proprietor of Mt. Tahoma Nursery in Graham, Washington.

Botanizing around Fairbanks

Jane McGary

Visitors to Alaska tend to arrive in Anchorage, by air or by sea, and many penetrate no farther into the state's vast interior than Denali National Park. A short way by rail or road beyond Denali, however, lies the city of Fairbanks, where the plant-loving visitor can stay in comfort while exploring a wide variety of accessible habitats. I arrived in Fairbanks in 1973, and soon, with the aid of Louise Potter's *Roadside Flowers of Alaska*, I had identified more than 120 species within half a mile of my cabin. When I had earned enough to make two major purchases—a pickup truck and Eric Hultén's *Flora of Alaska*—I was able to explore much more widely. I encourage anyone who has a few days to spend in the Fairbanks area, especially with a vehicle, to visit at least some of the plant areas described below. Peak flowering occurs in the lowlands around the town in June, and at higher elevations in early July.

Fairbanks is situated on the plain of the Tanana River. Many of the habitats are similar to those described in Jaime Rodriguez's article in this issue, but because the climate here features much less precipitation and much colder temperatures than in coastal Alaska, the trees are generally smaller and narrower and the forest undergrowth sparse. The wet lowlands appear unpromising to the plant-hunter, but many flowering species grow among the willows, alders, spruce, and larch. *Iris setosa* subsp. *interior*, a tall, showy form, inhabits roadside ditches but does not demand truly wet conditions in the garden. *Castilleja pallida* may accompany the iris. True aquatics include yellow *Utricularia intermedia* and maroon *Potentilla palustris*, and the larger circumboreal species *Calla palustris* and *Nuphar polysepalum*. Several species of cottongrass (*Eriophorum*) grow in damp swales—also a good place to find orchids such as *Spiranthes romanzoffiana*. On the sides of sedge hummocks you can find (and, later in the season, harvest) the cloudberry, *Rubus chamaemorus*. In the margin between wetland and woodland you can see *Parnassia palustris* and members of the Pyrolaceae: *Pyrola secunda* and *P. asarifolia*, and *Moneses uniflora*, which tends to grow in deeper shade. *Epilobium latifolium*, the very showy dwarf fireweed, grows in river gravels but also along roadsides; it is a low-growing relative of the ubiquitous fireweed (*E. angustifolium*).

Meadows, natural or mown, and grassy roadsides are brightened by tall perennials, some of them good choices for the garden border. *Polemonium acutiflorum* is a typical tall Jacob's-ladder. The "bluebell" here is *Mertensia paniculata*, smaller-flowered than the Virginia bluebell but more richly colored. *Delphinium glaucum* and *Aconitum delphinifolium* (the form here is a tall one) both have deep blue flowers and can grow in light woodlands as well as meadows. The lovely wild rose common on roadsides is *Rosa acicularis*.

Much of the area is forested; especially lovely are the birch woodlands, which turn gold in fall. Small understory flowers include the pyrolas, *Linnaea borealis*, *Trientalis europaea, Viola epipsila, Cornus canadensis,* and *Galium boreale.*

Everywhere there is a wealth of fruiting shrubs and subshrubs, much exploited by humans. The delicious "blueberry" here is *Vaccinium uliginosum.* A raspberry, *Rubus idaeus,* is equally coveted. More interesting to the rock gardener is *Vaccinium vitis-idaea* (photo, p. 34), the lingonberry, known in Alaska as "lowbush cranberry"; some of the tiniest forms known can be seen at higher elevations around Fairbanks. *Rubus chamaemorus* is a delicacy all around the Subarctic; less known is *R. arcticus*, the nagoonberry, a creeping herbaceous plant of grassy forest margins, with small, very richly flavored fruits. Also present are three species of *Arctostaphylos, A. uva-ursi* (kinnikinnik), *A. rubra*, and *A. alpina*.

The rock gardener, however, is drawn to the heights, and a two-hour drive north of Fairbanks into the White Mountains offers the choicest botanizing for alpine enthusiasts. Take the well-maintained gravel Steese Highway toward Central and Circle Hot Springs (the latter is a pleasant resort). Eighty-five miles from Fairbanks is Twelvemile Summit, with a signed parking area at the roadside. Below the parking area is rocky "alpine lawn" studded with *Oxytropis* species, *Papaver macounii*, and *Polygonum viviparum*. Across the road is a trailhead, the southern terminus of the Pinnell Mountain Trail, one of the few maintained trails in this region; it extends 27 miles to the other trailhead at Eagle Summit, so expect to camp out at least one night if you want to hike it all. The first two miles or so, however, offer ample thrills for the plant-lover.

Plank walkways have been constructed through the wettest parts near the trailhead to preserve the vegetation from hikers (they don't preserve it from ATV idiots, who, however, have been known to return to the parking area to find their truck tires flat). In the wetter spots you can see *Myosotis alpestris,* the curious blue-green, closed *Gentiana glauca*, and two plants that are, remarkably, also found in the Himalayas: soft yellow *Pedicularis oederi* (photo, p. 43) and bright blue *Lagotis glauca*. Where small rocks rise above the tundra, they may be capped with hard cushions of *Diapensia lapponica* (photo, p. 35), which seem to keep the roots in the moist soil and the foliage dry on the rocks. All the flowers pop up from a dense mat of alpine tundra vegetation made up of lichens, mosses, dwarf willows such as *Salix reticulata*, and subshrubs, including *Dryas octopetala, Andromeda polifolia,* and *Cassiope tetragona*.

When you have explored the Twelvemile area to your satisfaction—I hope you still have some film left—you can move on to Eagle Summit (elev. 3624 feet, about 1100 meters; photo, p. 33), about 22 miles farther up the road. You may

wish to stop about midway and scramble up the bluffs beside the road, where you will find large expanses of "rocky pasture" almost exclusively populated with very reduced plants of *Salix* spp., *Dryas, Minuartia,* and *Diapensia*. At Eagle Summit a parking area and trailhead are visible on the low side of the road, but the most interesting plants, again, are across on the high side. The rocky summit itself is a popular place for Fairbanks residents to spend the summer solstice, since the midnight sun can be viewed from this elevation; as a result, beer cans are often prominent among the flora there, along with species common to dry, rocky outcrops, such as *Potentilla uniflora* (photo, p. 41) and *Saxifraga tricuspidata*.

The slope that rises above and parallel to the road is a fine place to view *Eritrichium aretioides*; you may be startled to find it flowering in little runnels of meltwater instead of the severe scree it inhabits farther south. Tiny plants of *Rhododendron lapponicum* (photo, p. 45) raise their purple flowers barely above the level of the moss. *Saxifraga oppositifolia* grows near the summit, and *S. bronchialis* subsp. *funstonii* can be seen amid the shady rocks of meltwater channels. Where the scree is more open, find *Silene acaulis* and *Loiseleuria procumbens* (photo, p. 35), as well as *Diapensia*.

The population of *Dryas* here is predominantly *D. octopetala,* though *D. integrifolia* may be present in moister sites; *D. drummondii* is a plant of drier sites, especially river gravel floodplains and old roadbeds. Carolyn Parker writes that "the crossing of the various *Dryas* taxa is uncertain and only speculated, not shown experimentally," so the visitor may not have the option of throwing up her hands and muttering "hybrid swarm."

In moist depressions, look for showy *Geum rossii*, familiar to Rocky Mountain residents at much higher elevations. Interesting pea-family members here are *Oxytropis nigrescens* (photo, p. 44), *O. scammaniana* (this is the type locality), *Astragalus alpinus,* and *A. umbellatus*. There are two anemones, circumboreal *Anemone narcissiflora* and *A. richardsonii*. The delightful compact lupine is *Lupinus arcticus* (photo, p. 34).

After combing this slope, you can walk up to the summit directly or along a jeep road where *Silene apetala* and *Crepis nana* (photo, p. 45) grow in charming tufts. Later in the season, *Campanula lasiocarpa* flutters its bright blue bells on wiry stems only 2–3 inches (5–7 cm) tall. Cross over the ridge and climb down the steep, slightly terraced slope on the north side to find a different plant community where cool, moist conditions apparently prevail later into the summer. *Dodecatheon frigidum* is prominent here, along with the crucifer *Parrya nudicaulis,* which seems almost too showy and fragrant to be an alpine. Pale yellow *Papaver macounii* trembles above the turf, and the handsome woolly *Pedicularis lanata* (photo, p. 39) can be spotted, as well as several less showy louseworts. If you arrive here very early, you may see pale blue *Corydalis pauciflora*, though I have never found it.

Birders will also enjoy a visit to this area, where the Golden Plover and Rock Ptarmigan nest in summer; one often sees the ptarmigans with their young scurrying and bouncing across the tundra. I have only once seen a grizzly here, and fortunately, it was on the other side of the valley. Caribou are sometimes present,

and foxes are not uncommon. A word of warning: violent summer thunderstorms are common in this area, generally in the afternoon, so do *not* venture onto the upper slopes if clouds are threatening. Perhaps the most frightening experience I have ever had was being caught out on Twelvemile Summit with lightning bolts striking around me and huge hailstones pelting down; in this situation, the only thing to do is lie flat and try to keep breathing.

If you have more time in Fairbanks after finding all these plants, I suggest a visit to the excellent University of Alaska Museum. A good selection of books on regional natural history can be found in the museum shop and in the University Bookstore on the lower part of the campus; Gulliver's Bookstore, at the base of the hill on which the campus is situated, is another excellent source of Alaskana. A short walk from the museum is the Georgeson Botanical Garden at the university's Experimental Farm, a must for plant-loving visitors. It contains collections of both Alaskan and Russian species.

Acknowledgment: I would like to thank Carolyn Parker of the University of Alaska, Fairbanks, for providing the photographs that accompany this article and offering helpful comments and revisions; however, any errors that remain are my responsibility. The photos are a preview of the presentation Parker will give at the 2002 NARGS national meeting.

Jane McGary, editor of the *Rock Garden Quarterly*, was editor at the Alaska Native Language Center, University of Alaska, Fairbanks, from 1975 to 1984.

Some Plants of the Bering Sea Coast

Verna Pratt and Jane McGary

Nome is the largest community on the Seward Peninsula, which extends from the Alaskan mainland toward Bering Strait and Asia. The portion of the Bering Sea south of Nome is called Norton Sound. The town's buildings are clustered in a small area, constantly battered by storms but protected by a sea wall. There are expansive, sandy beaches, once the site of a great gold rush and still worked by a few hardy prospectors. Most people today hear of Nome only in connection with the Iditarod sled dog race, which finishes here in late winter. Besides tourism and fishing, a major economic activity is reindeer herding. The native people are Inupiat Eskimos; many Siberian Yupik Eskimos have also moved here from St. Lawrence Island in Bering Strait.

Summer on the Bering Sea coast is short and cool, with frequent rains and plenty of mosquitoes. Despite the harsh conditions, plant life is rich, with several endemic species. There are no forests immediately around Nome, but there is some low tree growth a bit to the east. Common habitats include gravel ridges, river plains, rocky outcrops, peaty alpine meadows, rocky pasture, and willow scrub.

The beaches are a perfect habitat for *Mertensia maritima* with its pale blue or white flowers, as well as the curious *Honckenya peploides* and several showy composites, including *Aster sibiricus* and *Chrysanthemum arcticum*. The beds of streams that flow into the sound are rich in species of *Ranunculus, Saxifraga,* and *Primula*. Especially showy are colonies of *Iris setosa*, present here in particularly large-flowered, rich-colored forms.

Anvil Mountain, barely 500 feet above sea level and only 4 miles from Nome, holds alpine treasures. Tiny *Primula borealis* is scattered all over the slopes, while wet areas feature white-flowered *Claytonia acutifolia* and *C. tuberosa*.

You can rent a vehicle from the local office of the Native corporation and explore the three roads leading out of Nome. The road heading west along the shore to Teller passes dry alpine habitats with breathtaking colonies of *Rhododendron camtschaticum* (photo, p. 33). Other choice plants in this habitat are *Potentilla biflora* (p. 41) and *Papaver macounii. Potentilla elegans* is less showy in flower than *P. biflora*, but its tiny, congested buns make it even more appealing to the alpine plant addict.

The coastal road in the other direction goes to Council, where the "Train to Nowhere" rests among marshes of *Hippuris tetraphylla* and the pleasing white *Ranunculus pallasii*. This is a favorite summer fishing area for Nome residents, who smoke-dry the still plentiful salmon for winter use. As you head out of Nome, watch for a barn on the inland side of the road with "Reindeer" painted on it in large letters. Just east of this is an extensive gravel ridge that looks barren from a distance, but if you explore it, you will find many interesting plants, including two wonderful endemics. *Artemisia senjavinensis* (photo, p. 40) can be mistaken for an *Eritrichium* when out of flower, so woolly and silvery are its congested rosettes (for discussion of growing it, see Jim Fox's article in this issue). The rare *Papaver walpolei* is perhaps the smallest of all poppies, a minute gray rosette of three-lobed leaves with little yellow or white flowers on wiry stems.

The third road, the Taylor Highway, runs north to the middle of the peninsula through many different habitats, including the Kigluaik Mountains. Once you get into the mountains, away from the scattered homesteads, you can stop almost anywhere to botanize. (There are no grizzlies in this area, but you may be lucky enough to see a musk ox.) At about mile 30, there are fine expanses of *Rhododendron camtschaticum* subsp. *glandulosum*, barely one inch tall, with 2-inch flowers fluttering about the leaves. Mingling with it are mats of *Salix polaris* (photo, p. 37), a particularly tiny willow with a showy red inflorescence. Just a mile and a half past this site is a wonderful tundra area full of *Primula tschuktschorum* var. *tschuktschorum* (photo, p. 42).

Exploring the mountain slopes in this area can be very rewarding. There are alpine meadows dotted with rich blue *Aconitum delphinifolium* and white *Lloydia serotina*. On screes, you can't miss *Silene acaulis* and *Saxifraga oppositifolia*, but also search for the woolly mats of *Saxifraga eschscholtzii* (photo, p. 40). Here and elsewhere in the area, you will find more plants on the lower and middle slopes; the rocky summits are rather barren.

Because of the short growing season, a trip to Nome should be timed carefully. The first week of July is usually the peak of flowering, though Verna Pratt has found it ideal as early as June 25. There are several (expensive) flights a day to and from Anchorage, and simple but adequate lodging and food. Because of the limited services, make arrangements well in advance. On the Internet, check <www.alaska.net/~nome> for visitor information.

The Beautiful and the Unobtainable

Growing Alaska Alpines "Outside"

Jim Fox

Before showing slides of Alaskan alpine plants to groups of rock gardeners, I tell them to look carefully, because this will be the best they'll ever see an Alaskan alpine "outside"—the Alaskan shorthand for the United States south of Alaska. Moving a plant, whether by seed, cutting, or rooted specimen, from a latitude of 62° or 70° north to below 45° north is a serious shock to a set of genes evolved over thousands of years in response to short, cool summers with intense, nearly continuous sunlight, and long, dark, profoundly cold winters. Even when I tried to grow plants from Nome at Palmer (just northeast of Anchorage), I had limited success; plants that grew well didn't flower well, if at all.

Since moving to Seattle four years ago, I have grown few Alaskan alpines, being too busy exploring the plants from other parts of the world that I couldn't grow up north. However, I've visited many gardens and talked to people in Washington and elsewhere in the U.S., Canada, and Europe who have tried Alaskan alpines, and a few patterns have appeared that I'll discuss here. I am particularly indebted to Rick Lupp of Mt. Tahoma Nursery in Graham, Washington, south of Seattle, who has visited Alaska several times in search of alpines and has much practical experience in trying to grow them here. He has come to many of the same conclusions I have. (It's always nice to quote as an authority someone who agrees with you.) His experiences and ideas enrich these notes.

The patterns that have emerged from my experience and observations are these. The farther north the origin of a plant, the harder it is to get it to bloom or even to grow to the south. Seed offers the best chance for success. Cool temperatures, even if provided by bright shade, are highly desirable. Consistent winter dormancy is important but not crucial for survival. Slugs are a severe threat to plants evolved in a slugless environment, which includes most of interior Alaska, the mountain ranges, and the Bering and Arctic coasts. An alpine house or a frame helps, with very good air circulation. The Goteborg Botanical Garden in Sweden uses a large fan to direct strong air over the alpine house beds.

When you select a species to try, it is important to know the area it comes from, since some ecological areas offer better "hardiness" than others. In my opinion (I have lots of them), there are essentially six ecological regions, or plant

zones, in Alaska to consider: the Aleutian Islands and Kodiak Island, which are wet, cool, and windy; South Central Alaska, including much of Cook Inlet and Prince William Sound, mostly temperate and forested, but also with tidal and river flats and high mountains; Southeastern Alaska, or the Panhandle, which extends from eastern Prince William Sound, east and south through Juneau and Sitka, to British Columbia—very wet, with limited snow at sea level, fjords, and high glacier-bearing mountains; Interior Alaska and the Alaska Range, including Denali, a region of extreme, dry winter cold and dry summer heat; the Seward Peninsula, which has remnants of the Bering Land Bridge flora and some Russian Far East flora; and finally, the North Slope, from the Brooks Range north to the Arctic Ocean, where the plants are generally tiny alpine or tundra species.

Although many species are found in many or all of these areas, those from the southern and wetter areas perform best farther south. Rick Lupp and I agree that the areas with the most potential are the Aleutians, Kodiak Island, South Central, and the Panhandle. Unfortunately, the best—that is, the most coveted—plants come from the mountains of the Interior, the Seward Peninsula, and the North Slope: little treasures from the genera *Douglasia, Androsace, Campanula, Claytonia, Gentiana*, and *Erigeron*. These plants are used to extremely long summer days with intense light and cool temperatures, and long, dark winters buried beneath dry, insulating snow—the very conditions no slug could endure.

Over the years, I and other Alaskans have sent cuttings and plants from our gardens to people around the world who have had limited success growing them on. Most of the plants that survived were grown from seed, especially if wild-collected. The genetic variation in a batch of seed may allow for one or two seedlings that will do better in garden conditions and form the foundation for an adapted local strain. For instance, Stanley Ashmore of Palmer, Alaska, planted hundreds of thousands of *Meconopsis* seed over a decade. The few surviving seedlings bloomed, their seed was planted, and the process repeated until Stanley had several hardy strains. It's much more difficult to get thousands (or even dozens) of seeds of *Douglasia ochotensis*, but the idea is the same. Perhaps the Alaska Chapter should be encouraged to mount a seed expedition to the Alaskan wilds.

As a rule, a soil mix containing a large proportion of grit to peat—that is, a lean compost—produces the best results. The plants need food, which can come from organic or chemical fertilizer, but few need a lot. Rick Lupp uses 9 parts sand, 5 parts peat, and 4 parts pumice as his standard mix. In Washington, I use a mix of 4 parts pumice to 1 part manufactured potting soil containing rotted organic matter, peat, and perlite. In Alaska, I used a similar mix at a ratio of 2:1 because the weather was drier there.

It is difficult to give specific advice on growing any alpine plant to a group with such diverse membership and geography; but starting from seed, especially from the southern extreme of a species's range, using a lean mix, providing cool temperatures and lots of light, and keeping slugs at bay, brings you much closer to success. In the end, however, there is one surefire bit of advice: go to Alaska and take pictures.

Ericaceous shrubs

The group that offers the best chances of success, according to Rick and others, is the Ericaceae, followed by shrubs in general. I first saw *Ledum palustre* cultivated in Sallie Allen's garden in Seattle, a floriferous clone, compact and not leggy like the Alaskan wildling. She grew it with *Vaccinium* and *Gaultheria* under evergreen trees to avert hot sun. A piece of this form now grows in Alaska, and it deserves a cultivar name if it doesn't already have one.

Cassiopes do well in Rick's cool, humid garden, though he says they grow slowly and flower less than in the wild. Gardeners in Scotland do better with them, being farther north and cooler. *Loiseleuria procumbens* (photo, p. 35) from Alaska grows well in several Seattle gardens and alpine houses but blooms sparingly; European clones of the species flower much better. *Vaccinium* species from Kodiak are known to bloom and grow well farther south, though not as well as *V. vitis-idaea* 'Minus'; however, the even tinier forms from Interior Alaska grow without ever blooming.

Rhododendron lapponicum (photo, p. 45) survives, but I have no reports of its flowering here. In Alaska, I grew it quite well in a soil with added sand and pea gravel and very little peat. Its blooming habit was extremely odd: prolific flowering on one-half of the plant several weeks after the other side produced a few blooms. *Rhododendron camtschaticum* has two subspecies: subsp. *glandulosum* (photo, p. 24), found around Nome and in the Russian Far East, and subsp. *camtschaticum* along the Aleutians and on Kodiak and in a few other southern localities. The latter is the one in cultivation; I know of no cultivated plants of subsp. *glandulosum*, which is a runner, a shorter plant with large flowers opening flat or slightly reflexed. The growable subsp. *camtschaticum* produced the coveted white form, which derived from a single plant found on Kodiak Island and put into the green-fingered hands of Aline Strutz, who sent out thousands of seeds around the world until various strains became established in North America and Europe. Grown in a gritty, peaty soil in cool conditions, this variety and its parent subspecies will grow well, albeit slowly, and form a charming shrubby plant with large, slightly cupped flowers.

Even the temperamental *Diapensia lapponica* (photo, p. 35) settles down to southern living when grown from seed, though Henrik Zetterlund told me he was also able to root cuttings. Reports of a pink form are many; however, I watched a colony north of Palmer for several years that showed pink when I discovered it, but the color wasn't stable—simply a result of cold, hard rain during flowering, which appeared to bruise the petals and make them blush.

Other shrubs

"Dryas are pretty darn good growers," according to Rick Lupp. Why shouldn't they be? The genus is so widespread, it has to be adaptable. It's a symbol of the Scottish Rock Garden Club. Then why should you bother with the Alaskan

ones? Well, there are many fine forms in Alaska, including natural hybrids of the three species there, and dryas is easily grown from seed or cuttings. I found many different forms and hybrids in every mountain range and glacial stream I explored: plants with tiny dentate leaves, and others with large silvery foliage; some with flowers of 10 to 20 petals, and even a true double, spotted in Nome by Jerry McEwen; flowers of cream, beige, or white, but none yellow, though Rick recently found a distinct wild form of *D.* × *suendermannii*. His experience with the "argentea" (silver-leafed) form of *D. octopetala* is that it roots with some trouble and grows on, but doesn't bloom. From his plants of *D. integrifolia*, he has distributed lots of seed, though the blooms are sparse in cultivation. *D. drummondii* does well for him.

I've sent out cuttings, and some plants, of various hybrids and forms of willows gathered from around the state, but only Alaskans and other high-latitude gardeners could root them and grow them on. Elsewhere, it was clear that the summer heat was too much for the cuttings, sending their metabolic rates sky high and fatally exhausting them before sufficient roots could form. Rick tried seed, too, but the seedlings were too tiny and expired once temperatures went above 70°F for any length of time. However, plants that had been rooted and established in Alaska survived quite well when sent elsewhere. Rick found that *Salix reticulata* (photo, p. 36) forms and hybrids performed best for him in Washington. Unidentified willows with tiny reticulated leaves that I grew and sent to New Hampshire survived, no doubt because of the cooler temperatures. The tiny, widespread *S. rotundifolia* and *S. polaris* (photo, p. 37) survive but do not grow well for Rick. There are enough exquisite hybrids in Alaska to raise willow lust in almost any gardener. (For more details, see the forum "Dwarf Willows" in this issue.)

Betula nana, a circumpolar dwarf birch, does too well in Washington, becoming anything but *nana*, though a tiny clone Rick found in the interior has remained small when grown in a pot in bright shade. Birches, like willows, have few morals when it comes to cross-pollination; this can be fun for the gardener interested in new forms and shapes, but not for the purist with a rigid sense of species. Several beautiful hybrids result from natural crosses between the dwarf and tree birches.

Herbaceous perennials

More mixed in form and performance are the flowering perennial herbs. One of the most appealing is *Campanula lasiocarpa* 'Talkeetna', a form Rick selected and sold for many years. It won prizes at many UK shows but is very difficult to keep happy, and often even hard to bloom. At Mt. Tahoma Nursery, slugs and heat waves eventually killed off this clone. In Alaska, I didn't keep the species—it kept me. Once in the rock garden, it spread with abandon, swamping other choice plants and, I suspect, any slug that dared get close. I did find a semi-double and a pale blue form, and I've seen a photo of a white one. The tinier *C. uniflora* didn't

succeed for Rick either; even in Alaskan gardens it has been a shy bloomer. With *Campanula rotundifolia* you'll have no trouble; even slugs don't like it. There are many lovely forms of *C. rotundifolia* in Alaska: purple-blue to pure white flowers, shallow, wide bells or huge, long ones, or tiny, numerous ones. It is easily grown from seed or small divisions. Then there is *C. dasyantha* (syn. *C. chamissonis*); primarily an Asian plant but found in the Aleutians, it has large, tubular purple flowers and a vigorous habit. The real treasure among Alaskan campanulas is *C. aurita*. I found it on the road to Eagle in far eastern Alaska, little clumps in rich screes with flower stems to 5 inches (12 cm) tall, topped by purple-blue, wide-open, 5-spoked, somewhat reflexed flowers. It grew well in a rich gritty soil for several years in Alaska, though no one outside the state has reported success with the seedlings or plants I sent them—not even in Sweden, where they should have grown well.

Parrya nudicaulis, grown from seed, flowers very well for Rick, though, oddly, it's not as fragrant in Washington as it is in Alaska. He grows this relatively large, showy lavender-white crucifer in his standard alpine mix, though it inhabits moist peaty humus in Alaska.

Of the many Alaskan saxifrages Rick has tried, only *Saxifraga bronchialis* subsp. *funstonii* has done well. The Alaskan forms of *S. oppositifolia*, though tiny, dense, and floriferous up north, resent the heat of the south. The European forms are better performers, as is *Silene acaulis* from the Alps. Rick did produce a blooming clone of *Silene acaulis* called 'White Rabbit' from seed of 'Chickaloon', a vigorous, long-blooming white form I grew in Alaska. Again, the leaner the soil, the tighter the growth and the better the flowering.

Gentians from anywhere provoke sighs of delight and wails of frustration. Alaskan gentians are no exception: vulnerable to slug predation, heat exhaustion, and a bad winter's sleep from freezes and thaws. The exquisite *G. platypetala* survives in alpine houses in a gritty mix in Washington—and it blooms! *Claytonia acutifolia* will survive in similar conditions for a short period, but *Claytonia scammaniana* is the finest of the spring beauties. Large, deep rose-pink flowers on short stems sit above little deciduous, succulent leaves. I grew this plant for several years from seed received from Aline Strutz. It was a prolific little gem until it suddenly died one year, every plant and all the seedlings, in every garden, as a species of bamboo does.

The American Primrose Society's Alaska chapter operates from the foothills of Southeast Alaska, so I hope its members will soon be putting seed from the Alaska species into seed exchanges. Rick says *Primula nutans* is growable in Washington, and it is beautiful. It is a smallish plant, 3 or 4 inches (7–10 cm) tall, with large pale pink or white flowers; it appreciates a gritty, peaty soil. It grows by the thousands in the wet river flats of the Nome River where it empties into the Bering Sea. Farther inland on the Seward Peninsula, along cold, mucky hummock banks of little ditches, I found *P. tschuktschorum* var. *tschuktschorum* (photo, p. 42), which produces its flowers around the top of the stalk. It didn't grow well in my garden, though I have read reports of it growing in England and have seen it on seedlists. The photos and descriptions of those plants, however, appear to

be of the similar variety *arctica*, which has a much wider and more southerly distribution, reaching the Aleutian Islands and southern Kamchatka.

I've noticed that many of the plants shown to me in Europe as Alaskan didn't look like the species I'd seen in the wild. Upon questioning, I learned that every one of these plants originated in Japan or southern parts of the Russian Far East. They are probably better adapted to lower light intensities, less drastic photoperiod changes, and warmer winters. In Alaska we look for climates similar to ours and to the most northerly populations when we are exploring for new families and genera to try; those gardening farther south should look to the most southern populations of Alaskan genera for the greatest potential for success.

Primula cuneifolia is a good example of a Japanese population that does better. For years, I tried to grow the Alaskan subspecies, with poor results. Seed from Japan, however, grew and flowered extremely well for me for many years in Alaska, as it has for growers farther south.

A primula relative, *Dodecatheon pulchellum,* ranges south to Oregon and the Rockies. Many of its varied clones survive in Lower 48 gardens if protected from slugs. A fine form with narrow, corkscrew-like petals that I found was still growing in the garden of the Palmer Visitors Center Garden in 1997. All the shooting stars like a good garden soil; *D. frigidum* prefers a gritty alpine mix and does well for Rick, but isn't easy, he reports.

Growing with the shooting stars in the wild is *Iris setosa*, which can be counted as a success story in good garden soil if kept cool and moist. In the wild, flower color ranges from white to blackish purple, with every shade of blue or purple imaginable, and with white, yellow, or black signal spots. The plant commonly grown as *Iris setosa* "nana" and properly known as *I. setosa* var. *canadensis* (and improperly known as *I. hookeri*) is the Atlantic coastal form and quite distinct.

The stinking or chocolate lily, *Fritillaria camschatcensis*, grows in the same areas as the dodecatheon and iris and can do well in the garden if kept moist. I never saw a yellow one in Alaska (I traced all reports of these to clones or seed from Japan), but I do have clones that are greenish tan, and a yellow-tinted "buckskin" color. These clones produce similar flowers from seed. A well-drained mix of 1:1 pumice and compost keeps it happy in pots in Washington, as long as slugs are strictly excluded.

The lovely blue *Geranium erianthum* has done fine in well-drained garden soil, but most of the plants I've seen are not of Alaskan origin, except Rick's. I found a good variegated form called *G. erianthum* 'Master McEwen'. Its leaves are chartreuse with light orange edges, especially pronounced in the spring. So far, it has passed on this coloration to several hybrids with other geranium species. The flowers are the typical mauve-blue.

The Alaska arnicas are sometimes called "arctic sunflowers." They are growable outside the state but are slug magnets, even on high shelves in alpine houses. Another good doer and slug attractant is *Boykinia richardsonii* (photo, p. 36), which Rick discusses in detail in his article in this issue. It germinates readily in a peaty-gritty soil and grows well if kept cool and moist.

Tiny alpines

Oxytropis can succeed as alpine house plants and in sand beds, but all the alpine species of this genus are reportedly hard to grow well. If you succeed with them, you should do well with other Alaskans.

The quintessential alpine jewel, for me, is the shrubby *Artemisia senjavinensis*, a bun of tiny silver rosettes from the Seward Peninsula, where it grows on almost pure gravels (photo, p. 40). It grows well for Rick and for David Hale in Portland, Oregon, in a gritty mix in the alpine house. Rick recently divided plants grown from seed and took cuttings, with little success. Cuttings I distributed from my Alaskan plants similarly failed.

Eritrichium aretioides is a good doer, especially when compared to the Rocky Mountain *E. nanum*, though it doesn't bloom as well as the latter. I admit to limited success growing any eritrichiums, and content myself with wild sightings of its various color forms around Eagle Summit in interior Alaska (see "Botanizing around Fairbanks" in this issue).

By now you have probably begun to notice the same pattern I have: many Alaskan alpines grow decently but flower sparingly. With that in mind, I'll turn to the most coveted plant in Alaska, judging by the requests for it Alaskans receive: *Douglasia ochotensis*. I have one piece of advice: fly to Point Hope on the Arctic Ocean coast of Alaska, and take a picture of it in bloom. The number of blooms recorded on cultivated plants totals four—two in Alaska, and two in Britain. Seed is rarely available, but it does germinate well and grows slowly into tiny, tiny buns that slugs love. Rick has "had 50 to 60 odd plants over time and lost them all," a candid admission we should all profit from. No botanic garden has publicly announced flowering it, not even Kew with its refrigerated bed and high-intensity lights. Rick's advice is to grow *Douglasia montana* instead, a lovely plant that actually blooms.

Near cousins of the douglasias are the androsaces. There are several species in Alaska with tiny flowers on long stems. The attractive exception is *Androsace chamaejasme* subsp. *lehmanniana*, of circumboreal but spotty distribution, which does fairly well for Rick in the open scree and in a sand bed, if it doesn't get too hot. It is also an excellent alpine house plant.

Orchids

I have found *Cypripedium guttatum* in the alpine regions of Interior Alaska as well as the forests of Southcentral. It also grows along the Aleutians into the Russian Far East and Japan, and into China. In Alaska it grows quite well in gardens, spreading by underground stolons and persisting in tall grasses for decades. In the wild it inhabits both dry wooded slopes and peat bogs in full sun. It is prone to fungal attack in more southern climes, but this is rarely fatal; the plants are most affected as they near natural dormancy. Steve Doonan says he has had success in the garden by giving the cypripediums a little extra nitrogen in a dilute

solution. This matches what I've seen in Alaska with *C. passerinum*, which is extremely difficult in cultivation. Near Palmer, I was shown a huge population that had sprung up on an old gravel logging road a few years after fungi had appeared in the road. Along the road edges grew *Populus tremuloides*, which is a nitrogen-fixer, as were the fungi. One or two nursery labs are now producing flask-grown seedlings of many *Cypripedium* species, so it is becoming economically and morally defensible to attempt these otherwise forbidden beauties.

Jim Fox, an avid horticulturist born and raised in Alaska, currently works at a nursery in Medina, Washington, and consults and lectures on garden design. He is also involved in the production of a historical documentary on the 1935 founding of his home town, Palmer.

Two New Alaskan Gardens

An enthusiasm for rock gardening has seized Alaskans, much as it did residents of the Rocky Mountains two or three decades ago. Where the climate is too extreme to imitate the lush shrubberies and herbaceous borders of the English garden, skilled growers learn to exploit the advantages of their region rather than bemoaning its limitations. The two gardens described here can be viewed during the 2002 NARGS annual meeting in Anchorage.

The Lund Garden

Florene Carney

In comparison with the better-known gardens of the world, Alaskan gardens are in their infancy, but that youth has been a positive force in the creation of outstanding rock gardens at latitude 61° North. Although much of what they do is experimental, Alaskan gardeners and designers have a wealth of information to draw from, and they do their homework. The garden of Dr. Greg Lund and his wife, Shelly, is a fine example.

To arriving visitors, the Lund home looks like any attractive, well-kept house and yard, but as we walk around to the back, it quickly becomes evident that this isn't just another back yard. The vista across the water to the distant Chugach Range is breathtaking. In the foreground, framed between two areas of woodland and dropping down to the lagoon, is a huge, beautifully designed rock garden forming a gently curving bowl. Strategically placed stepping stones lead us down between large boulders along a pathway to a central patio furnished with a table and benches. At this vantage point, we are surrounded by rock garden; we can choose to go on to the bottom, step into a boat, and row out on the lagoon to view the garden from a distance, or to take one of the paths leading to the woods or other garden areas.

Shelly was not an accomplished gardener when she started this project in 1998, but she is an apt pupil. Designed and built by Nancy and Al Williams, who

do excavating and landscaping, this garden will stand the test of time; neither deep frost, pounding rain, nor moose tramping through will compromise the integrity of the design. Shelly says she is in awe of the ability of the Williams team to bring in very large rocks, work on a steep bank, and make the result look natural, using a track-hoe to lift and place the rocks with precision. The pathways look like they have been there since the beginning of time.

Shelly and Greg are originally from Utah and were used to a manicured look in their garden, but they are thrilled with the more natural look they have achieved in this rock garden. The designer has wisely chosen the initial plants to be the backbone of a long-term plan. Starting with the hardy *Campanula rotundifolia*, which grows on rocky cliffs near the coast of Cook Inlet, the garden team chose the hardiest plants they could find. Other plants native to Alaska include *Pulsatilla patens* (photo, p. 31), *Myosotis alpestris, Papaver alboroseum,* and *Veronica grandiflora*. Lewisias are scattered about, including the lovely *Lewisia tweedyi*, which has proven to be a hardy cold-weather survivor; if deadheaded after the first bloom, it will put on a fall show that is only a little less exciting than the first. *Penstemon fruticosus, Arabis caucasica, Saxifraga paniculata,* and *Dianthus deltoides* are tucked in among the rocks. Along the paths, several varieties of thyme will soon fill in and give off a heady fragrance for passersby. Several varieties of juniper; *Pinus mugo, P. pumilio, P. aristata*, and a couple of dwarf blue spruce are scattered about to give winter color and textural interest all year. This is a vibrant, youthful garden built with longevity in mind and will only improve with age.

The Carney Garden

JAIME RODRIGUEZ

In 1998, Doug and Florene Carney acquired an exceptional piece of land where they built a pleasant house—and a spectacular garden. The site features a short slope that faces east-southeast; the whole property faces south, with a magnificent view of the Chugach Range. From the back porch, the rock garden is obscured from view. It isn't until we walk over the sweep of lawn that the majesty of the mountain range in the distance reveals itself to be mirrored by a rock garden that rivals those of many botanical gardens.

Thirty feet deep and one hundred feet long (about 10 by 30 m), with many large boulders that had to be placed with heavy equipment, the garden includes a stone stairway and scree, all leading to a large water feature at the south end. The pond started out smaller, but the sandy gravel glacial deposit that underlies it kept collapsing during excavation. This was serendipitous, because a larger water feature and falls were necessary to balance the size of the rocks and the mountains in the distance. Near the pond is an experimental planting of heathers (*Calluna vulgaris*), including 'Wickwar Flame' and 'Dark Beauty'.

One of the most beautiful plantings in this garden is the river *of Phlox subulata* that flows down the steps (photo, p. 48). This plant has been difficult elsewhere

in south central Alaska and here offers an example of how well plants can survive with proper drainage. There is a growing collection of gentians, including *G. septemfida*, *G. acaulis*, and *G. sino-ornata*. Androsaces are scattered throughout the garden, along with campanulas such as *C. rotundifolia*, *C. punctata* var. *hondoensis*, *C. portenschlagiana*, *C. poscharskyana*, *C. incurva*, and *C. barbata* (both blue and white). One mystery is the great variety of unnamed saxifrages, some forming dense mats and several making perfect buns. To keep winter interest going, the tiny evergreen *Picea glauca* 'Jean's Dilly' and *Juniper horizontalis* 'Mother Lode' can be seen peeking through when the snow isn't too deep. Plants native to Alaska include *Saxifraga oppositifolia, Silene acaulis, Dodecatheon pulchellum, Polemonium pulcherrimum*, and *Potentilla uniflora*.

In the past three years, the garden has been carefully nurtured to have something blooming during the entire summer season. Starting with the drabas, arabis, and thlaspi in late April to a glorious show of phlox, androsace, lewisia, pulsatilla, and saxifrages in early June, it flowers on until the snow falls on *Gentiana sino-ornata*, which looks for all the world like a tropical fish flashing through white foam. There is always something to catch your eye.

Florene also has a clever way to label her plants. She uses a paint pen to write the name on a small, flat river-washed cobblestone, then seals it with clear varnish. These little markers blend in perfectly with the pea gravel mulch, making the information available without detracting from the appearance of the garden. When Panayoti Kelaidis visited in 1999 and saw the Carney garden, he commented, "You folks are raising the bar." I think you'll agree.

A rich scree community covers Eagle Summit, north of Fairbanks (p. 17). (Carolyn Parker)

Rhododendron camtschaticum subsp. *glandulosum* forms large colonies on the Seward Peninsula; shown here at mile 30 on the Taylor Highway, inland from Nome (pp. 20, 24). (Verna Pratt)

Lupinus arcticus in the Yukon-Tanana uplands (p. 18). (Carolyn Parker)

An autumn portrait of mingled dwarf shrubs, including *Vaccinium uliginosum* with blue fruits, *Vaccinium vitis-idaea* with evergreen foliage and persistent red fruits, and *Arctostaphylos rubra*, which colors brilliant red and has translucent red fruits. (Frank Pratt)

Diapensia lapponica on Mount Margaret, Denali National Park (pp. 7, 10, 14, 17, 24). (Frank Pratt)

Loiseleuria procumbens has a circumpolar range and is common in Alaskan mountains (pp. 7, 10, 14, 18, 24). (Verna Pratt)

Boykinia richardsonii, a large member of the saxifrage family endemic to Alaska, forms stately colonies in steep drainage channels and moist meadows (pp. 14, 27). (Carolyn Parker)

Salix reticulata, interior Alaskan form (pp. 7, 15, 25). (Rick Lupp)

Salix arctica, one of a multitude of dwarf willows found in Alaska (p. 7). (Verna Pratt)

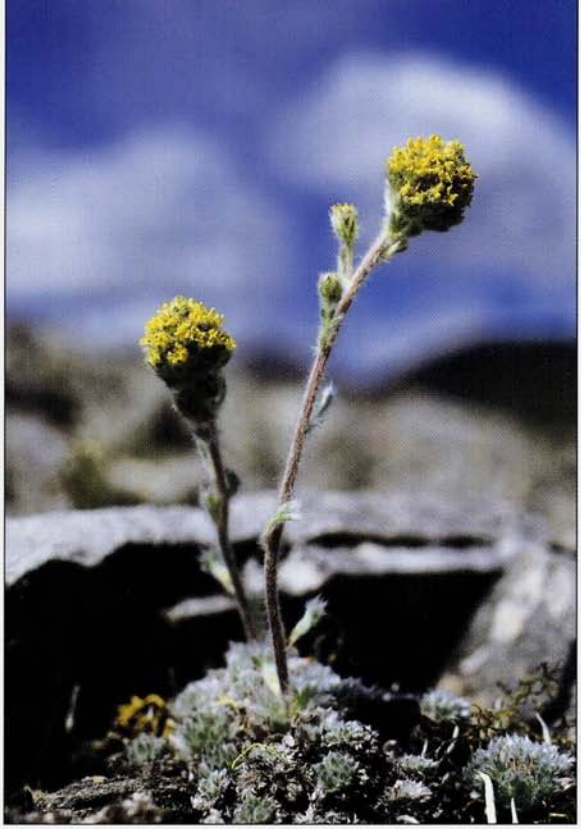
Salix polaris subsp. *pseudopolaris* near Nome (pp. 21, 25). (Rick Lupp)

Papaver alaskanum (syn. *P. radicatum* subsp. *alaskanum*) in Denali National Park (pp. 10, 57). (Verna Pratt)

Papaver mcconnellii (syn. *P. denali*) in the Alaska Range (p. 10). (Carolyn Parker)

Anemone parviflora, a beautiful alpine windflower. (Frank Pratt)

Pedicularis lanata, a widespread plant of alpine meadows (pp. 7, 18). (Frank Pratt)



Artemisia senjavinensis, an exquisite miniature endemic near Nome (pp. 21, 28). (Frank Pratt)

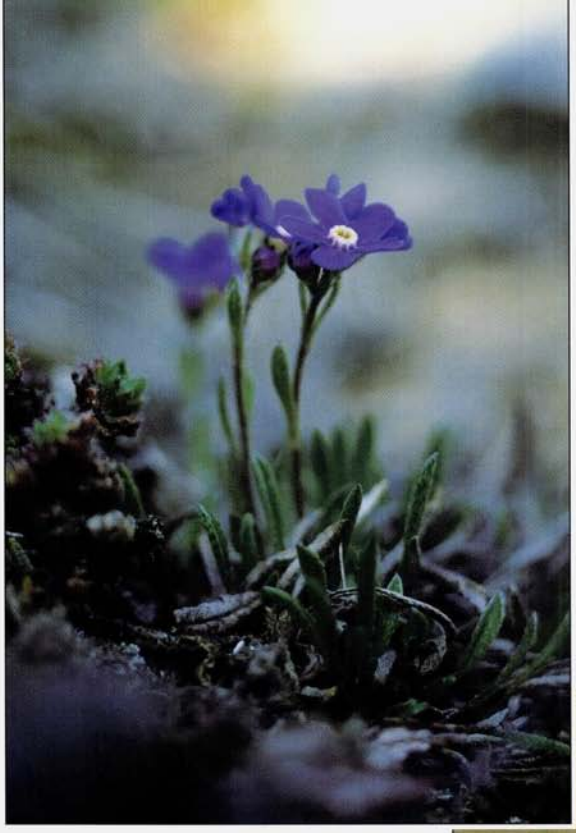
Saxifraga eschscholzii, shown here in Denali National Park, is one of the most unusual members of its genus (pp. 10, 14, 21). (Verna Pratt)

Potentilla uniflora is found in dry, rocky sites (pp. 9, 18). (Frank Pratt)

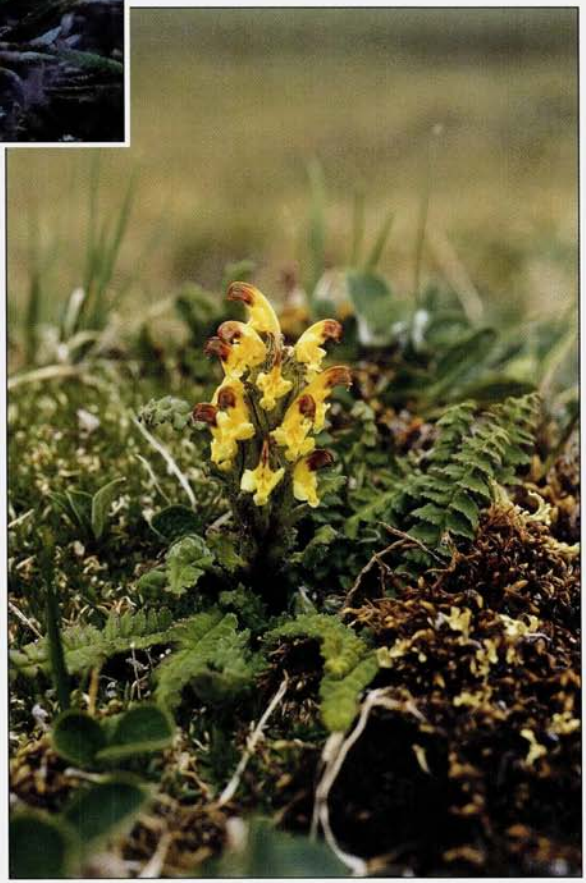
Potentilla biflora on Anvil Mountain near Nome (pp. 9, 20). (Verna Pratt)

Primula cuneifolia pops up where the soil is wet in early spring (p. 7). (Verna Pratt)

Primula tschuktschorum on Mount Margaret, Denali National Park (pp. 10, 21, 26). (Verna Pratt)



Eritrichium splendens on Mount Healy in the Alaska Range (p. 9). (Frank Pratt)



Pedicularis oederi, shown here near the Savage River, grows in Alaska and also in the Himalayas (pp. 9, 17). (Verna Pratt)

Oxytropis nigrescens, a choice cushion plant with dense, hairy leaves (pp. 7, 11, 18). (Frank Pratt)

Astragalus umbellatus, a showy stoloniferous pea of gravelly places (pp. 7, 14). (Verna Pratt)

Rhododendron lapponicum in Denali National Park (pp. 8, 10, 18, 24). (Verna Pratt)

Crepis nana, a pioneer plant of gravelly sites (pp. 10, 18). (Verna Pratt)

Pulsatilla patens is one of the first flowers of spring in Alaska and is easily grown in gardens (pp. 8, 31). (Verna Pratt)

Senecio skottsbergii from the Patagonian Andes has adapted to life in Alaska (p. 50). (Rhonda Williams)

Above: Alpines cluster around a massive boulder in the Williams garden (p. 50). (Rhonda Williams) *Right:* Flourishing plants in the Williams rock garden (p. 50). (Rhonda Williams)

Phloxes cascade beside stone steps in the Carney garden (p. 31). (Florene Carney)

Daphne kosaninii in the garden (p. 57). (Anna Leggatt)

Living with an Alaskan Rock Gardener

Jeff Williams

"Honey, I know what we're going do with that area in the back yard!" When I heard Rhonda, my wife, announce this, something told me to duck and run for cover—but I replied, "What area?" In retrospect, I see that my life changed at that moment.

Change is constant; it is definite; it is the way of life in our world (and our back yard). When my bride informed me that a rock garden was "going into that area," I immediately reverted to early childhood and babbled, "What? Why? When?" When I realized that this wasn't going to go my way, I may even have sat down on the ground and had an old-fashioned temper tantrum. Then came denial, refusals, excuses, and the dragging out of the project. Only when I had exhausted all known husbandly diversionary tactics did we start to build our first rock garden.

The initial phase was tedious, exhausting, and stressful. I couldn't believe I was doing chain-gang work—lifting, shoveling, prying, wrestling, and busting a large pile of damn rocks. Then something unexplainable happened: I started to enjoy the results of my labors. I found that I appreciated the challenge of turning that pile of rocks into a living, breathing thing of beauty.

And then I was hooked! Today, I freely admit to anyone that I am obsessed with the building of rock gardens. I can't drive down a road without subconsciously keeping an eye out for a "special" rock, especially one that I can get. And if I *can* get it, I have it. I am so obsessed that my kids look for rocks, too, just to divert my attention. They swear that the expression "Strong back, weak mind" was invented for me. When I watch an adventure show on TV, I'm not looking at the actors or the action . . . I'm looking at the rock formations in the background. Pretty sad, isn't it?

I've learned many lessons about rock gardening over the years. I now look to see where the backhoe is before I even think about moving around on the rock garden. One day, I charged up a small mound to see how the placement of a particular rock looked from the other side, and I ran straight into the bucket of the backhoe and knocked myself out. When I came to, my tearful family told me I had smacked into this unforgiving object, collapsed, rolled down the hill, and lay

there twitching like an earthworm. It took me a while to realize that their tears arose from the entertainment value of my mishap; I wasn't sure which hurt me more—the goose egg or my dented pride.

I am so obsessed with rocks that I purchased eighteen large boulders for our eighteenth wedding anniversary. I had them dropped off on the special day and told Rhonda, "Happy anniversary, honey! Our marriage is on the rocks!" I assure you that she beamed: the world's largest diamond could not have induced the joy that she got from that load of rocks!

That may leave you wondering which of us is more obsessed. I caught her one day on all fours in her rock garden, plucking out weeds with a pair of tweezers. I've seen this sweet, mild-mannered lady transformed into a snarling warrior in seconds when an unsuspecting child, or dog, or (God forbid) a moose wandered into the rock garden. As for the person who went into her garden and dug out some of her plants . . . I'm deeply thankful that I wasn't that person.

We eventually sold the property where we had worked so hard to develop this garden. (The buyers chose it mainly because the wife loved the rock garden so much.) As soon as we moved to our new homesite, we started over. On our nineteenth anniversary, I had thirty-two boulders dropped off, with the announcement, "Our marriage is still on the rocks, but now I'm paid up until 2013!"

We began our new garden in June 2000. We were fortunate to have several large boulders on the site. I spent at least an hour digging one beauty, five or six feet in diameter, out of the woods and moving it across the property. The backhoe was clearly outmatched by this monster. After spending some time trying to finesse it, I simply had to make it happen. I backed my machine up fifteen or twenty feet and charged the boulder, ramming it from below and rolling it over. On one run, I missed and ended up on top of the rock, backhoe and all. It made a hell of a noise. Nursery customers came streaming out of the greenhouse, running for their cars as I was trying to negotiate the narrow route between the house and the parking lot. I'd like them to know it's safe to come back now—the rocks are in place, and the rented backhoe has been returned.

We have had a nursery producing and retailing general garden plants for some time. In 2000, Rhonda participated in the Alaska Chapter's China expedition, which brought back seed of many perennials, including rock garden plants from both high and low elevations. You might think it's even more unusual to find plants from South America in Alaska, but Rhonda combed through the seedlists of Anita Flores and John Watson to find Patagonian alpines from high altitudes with long, cold winters and strong winds.

Rhonda adds, "*Junellia toninii* F&W 9332 flowered the first year from seed with pinkish-white blossoms. The list described it as a bronze-leafed shrublet, but the color here has been soft green—maybe next year it will show the coloration. The foliage is spearlike and I had to use tweezers to harvest the seed to avoid bloodletting. My favorite plant from this list was *Senecio skottsbergii* F&W 9295 (photo, p. 46), a dwarf southern Patagonian 12–15 cm tall, covered with miniature yellow bottle-brush blossoms that attracted every butterfly around and set an amazing amount of seed. Another good one is *Senecio australandicus* F&W

9350—silky silver pads and yellow blooms, slower-growing than the former and probably a good pan or trough plant." By October 2001, the temperature had already dipped to –5 °F (–20 °C), so it will be interesting to see what makes it in the open.

We're now building a greenhouse devoted to alpines, which should be in service by spring 2002. We have also undertaken a large, ambitious rock garden project that will be under construction for some time (photos, p. 47). By the end of the 2001 construction season, I think we had moved in nearly 400 tons of material. "Strong back, weak mind," remember? We're hoping to have much of this project completed before the NARGS national meeting in June, and Rhonda plans an extensive display of alpines. We sincerely hope that many of you can come to Alaska next spring: there is a lot to see here, and I could certainly use some help with the rocks.

Jeff and Rhonda Williams operate Recluse Gardens, a greenhouse business on the Parks Highway in Wasilla, about an hour north of Anchorage, Alaska. They offer alpine plants from around the world.

Dwarf Willows

Compiled by the editor

When the annual meeting in Alaska was being planned, Verna Pratt asked me if I would be a tour guide. I demurred, thinking to myself, "If I did, I would have some group member who wanted me to identify all the willows." Eric Hultén's *Flora of Alaska* (see the booklist in this issue) lists 56 species and subspecies of willows, about half of which can be considered dwarf shrubs. Plant-loving visitors will be surprised by how attractive these are, especially in late spring, when the inflorescences of many species are quite noticeable, often tinted red or yellow. Since no rock gardener can see a good plant in the wild without wondering whether he or she can grow it in the garden, I've compiled the following comments from a discussion last year on the Internet rock gardening forum Alpine-L.

Identifying willows, unless you are familiar with local species, depends on close examination of the capsules, adult leaves, and specimens of the twigs. When Rick Lupp, David and Donna Hale, and I visited Alaska's Seward Peninsula, we spent a long time in the evening at a table in our hotel, poring over samples with a hand lens before deciding on what we had found. Fortunately, the inventory of species in a given locality is likely to be small, so tour participants should have an easier time of it, with plant lists in hand and guides who are more confident than the compiler of this article. Growing them may be more difficult, as the comments below suggest.

Responding to a query about good willows for the temperate rock garden, John Grimshaw, a botanist who has a garden in England (he rates his area to USDA Zones 8–9) and is presently working in the Netherlands, wrote: "I am very fond of the male form of *Salix apoda*, which is small rather than dwarf. It makes arching shoots up to about 15 cm (6 inches) long each year and these bear quite large silky catkins in early spring, which erupt into yellow as the anthers break. My plant is in the peat bed and is about 20 years old, but only approximately 45 cm across by 30 cm tall (18 by 12 inches), with minimal pruning—which sounds odd, when I say that new shoots are 15 cm long, but somehow both seem to be true. It is a very open shrublet and lots of bulbs grow between the shoots—*Fritillaria camschatcensis*, *Narcissus triandrus*, *Corydalis solida*, and *Crocus vernus*, for exam-

ple. The leaves are very dull and frankly willowish, unlike some of the very nicely veined or hairy leaves of some dwarf species, but they are not obtrusive.

"Propagation is easy from winter hardwood cuttings taken before the sap starts to flow, and semi-ripe softwood cuttings would probably work in a propagator in summer, although I've not tried it with *S. apoda*.

"Male willows have the best spring catkins, but the females may bear very attractive fruits later in the year. The best I have seen was *S. calyculata* in the Himalaya, which has rock-hugging branchlets and glossy green leaves, with conspicuous red fruits. I have never seen it in cultivation, and presumably male plants would also be needed in order to obtain fruits."

One of those confident guides will be Jaime Rodriguez, whose synopsis of Anchorage-area plant communities opens this issue. He wrote: "We have an abundance of wonderful alpine willows native to Alaska that are all lovely in a rock garden. *Salix reticulata, S. phlebophylla, S. arctica, S. rotundifolia*, and *S. polaris* are the most common, and where they grow together, there are some attractive natural hybrids.

"My experience has been that they are all quite easy from cuttings, just like any willow, but are a major challenge from seed. Willow seed must be sown immediately on harvesting. It doesn't tolerate even a few days of dry storage. If you collect it damp and refrigerate the seed, you might stretch the viability to a week or two. Germination usually occurs within a week. If it hasn't, you might as well try again with new seed.

"I have one *Salix rotundifolia* that I grew from seed. I must have sown a thousand seeds; four germinated, and one survived. The survivor germinated about three weeks before frost; it had cotyledons and stem about 1 millimeter tall and wide—nearly microscopic. It put out one true leaf, and then a resting bud. This little nothing of a seedling then survived an Alaskan winter in a 3-inch plastic pot. The following summer, it grew two branches with a total of four true leaves. The plant was now 0.5 cm across and tall. I transplanted it into a piece of pumice I had brought home from the NARGS Annual Meeting in Eugene, Oregon. It lived there on my porch all last winter. This summer each branch grew a branch. The plant is now facing its third winter and is about 3 cm across and 3 cm tall. No one who sees it thinks it is anything special, but perhaps no plant in my garden gives me more personal pleasure.

"I hadn't considered grafting these willows. Most potential root or stem stocks are so much more vigorous than the tiny alpines that it could be a major maintenance challenge to keep the adventitious branches trimmed. However, I imagine most of the alpine species, grafted onto a standard stem, would create a weeping effect that would be very interesting. The idea is a launching pad for all sorts of inspiration, if you have the patience of a bonsai master. A Lilliputian espalier would give whole new meaning to a knot garden."

Rick Lupp, proprietor of Mt. Tahoma Nursery and a frequent plant explorer in Alaska (see "Valley of the Boykinia" in this issue), has taken a practical interest in

dwarf willows: "*Salix* are a great favorite of mine when it comes to small shrubs. My nursery offers *Salix arbuscula, S.* × *boydii, S. crenata* (a new introduction from China by Diana Reeck of Collector's Nursery), *S. lapponum, S. repens, S. retusa,* and an Alaskan form of *S. reticulata* that I selected for ease of cultivation at lower latitudes. *Salix helvetica* also sometimes appears on my list. I'm growing several other species that I haven't yet identified. Species that I'm growing and hope to offer before too long include *Salix nivalis* (a local form from the Cascades), *S. serpyllifolia, S. rotundifolia* subsp. *dodgeana* (syn. *S. dodgeana* subsp. *rotundifolia*), and *S. arctica* var. *petraea*.

"I take most of my willow cuttings in May, using new wood. The 'take' on these cuttings runs almost 100%. Cuttings taken from June to August also root well, but not as well as the May cuttings. I root my plants in simple flats with a clear plastic dome cover. I do not use bottom heat or rooting hormones.

"The plants grow best for me in cool sites where they get good morning sun but shade from the hotter afternoon sun. They like a well-drained mix with enough humus that they do not ever dry out. Their cultivation requirements are much the same as fall-flowering species of *Gentiana*."

Another specialist nurseryman responding to the discussion was Herman van Beusekom of the Netherlands. He comments: "Many dwarf willows form very attractive rock garden shrubs, but real dwarf forms are not commonly available, unfortunately, apart than from *Salix reticulata*, *S. retusa*, and *S. serpyllifolia*. *Salix herbacea* is easy to propagate, but I find *S. polaris* very difficult to root. I have never tried grafting any *Salix*.

"Here are a few other recommended *Salix*. *S. lilliputia* is a very dwarf one; my plant is still young, but it might be the smallest of all. *S.* × *boydii* is a beauty with gray, hairy leaves. It grows to 40 cm (15 inches) tall and stays compact. *S.* × *finnmarchica* is a natural cross between *S. myrtilloides* and *S. repens*; if you can keep it from layering itself, it stays small. There are several forms of *S. lanata* around; maybe you can find a small one. *S.* × *onychiophylla* is a cross between *S. herbacea* and *S. reticulata* that stays small enough for our purposes. *S. lindleyana* is a small, layering willow with red catkins in spring; again, if you can control the rooting stems, it is highly desirable."

Several of these writers noted the necessity to prune dwarf willows to keep them in bounds in the rock garden. Because these plants respond well to pruning (they experience natural pruning by herbivores in the wild), they can be good container plants. *Salix* × *boydii* is a popular container plant as a "natural bonsai" (I have one here). Lawrence Thomas, a NARGS member who maintains a remarkably varied collection of plants on a balcony high above the streets of Manhattan, writes: "I'm growing *Salix serpyllifolia*, a European willow allied to *S. retusa*, in a small watermelon-sized boulder of pumice that has been hollowed out. The willow clings to the exterior contour of the container and has pretty much covered it. It is deciduous, so not much to look at in winter other than its latticework of stems, but it puts on a wonderful show during spring and summer.

"I also grow a Japanese species, *S. melanostachys*, that is naturally a larger shrub [in the garden, it attains 4 feet high and more in diameter]. Mine, however, has been artificially bonsai'd by being kept in the same 6-inch pot for some years. It is lovely early in spring, with lustrous black catkins feathered with gold."

Sources

Among advertisers in this issue, dwarf willows are regularly offered by Mt. Tahoma Nursery and Siskiyou Rare Plant Nursery.

Plant Portraits

Papaver alboroseum

PAIGE WOODWARD, Chilliwack, British Columbia

Papaver alboroseum Hultén, the poppy on the cover of this issue, is easy to grow even (or perhaps especially) in the rain, although its tender apricot petals and its dense rosette of cut, hairy, blue-green leaves look vulnerable to *Botrytis* attack. This treasure, 10–15 cm (4–6 inches) tall in bloom, is often called the "Portage poppy" because its best-known site is the gravel outwash below the Portage Glacier near Anchorage, Alaska. In fact, it grows in scattered rocky, snowmelt sites at elevations from sea level to 2000 meters (6500 feet) across the full arc of Beringia, from northern British Columbia through Alaska and the Aleutians to Kamchatka and the Russian Far East.

Jim Fox of Bellevue, Washington, formerly of Palmer, Alaska, writes: "Twenty-five years ago, it was believed to be extremely rare and was on Alaska's endangered species list. A few seeds found their way into the garden of Lenore Hedla of Anchorage, and from there to seed exchanges. It grew so well in most gardens that it was hard to understand why it was rare in the wild. The answer came in the 1980s, when botanists working with oil companies exploring the state found it on countless mountaintops."

I didn't know about its wide distribution when I transplanted my first *P. alboroseum* seedlings to our rock garden several years ago. We are in southwestern British Columbia, in a rainswept region with temperatures classified as USDA Zone 6. Lacking persistent snow, I wanted to protect my poppies in the winter-dry section of the garden, under a translucent roof, but there wasn't room. Instead, they were condemned to three seasons of rain in a scree on one of the lesser slopes. They took it, and came back for more. The secret is that the site is mineral, gritty, and porous: water-receiving, yet well drained and well aerated. It is also caressed (sometimes blasted) by wind. These conditions suit many tundra and alpine plants, including *P. alboroseum*. Its silky flowers, delicate as a baby's blush, open in early June here and continue for several weeks. A second, briefer flowering surprised us this year in August.

A handsome companion plant on our scree is the Alaska poppy, *P. radicatum* subsp. *alaskanum* (Hultén) J. P. Anderson (syn. *P. alaskanum*; photo, p. 38), which has flowers of pale lime-yellow. It starts to bloom in July and just keeps on sending up new buds. It's the same height as the Portage poppy but a little coarser in other respects, with hairy leaves more blue-gray than blue-green. It is native to central and western Alaska and is closely related to the species some authorities distinguish as *P. polare* and *P. kluanense;* the *Flora of North America* considers them all subspecies of the circumboreal *P. radicatum.*

With us, *P. radicatum* subsp. *alaskanum* is biennial while *P. alboroseum* is a short-lived perennial; our oldest *P. alboroseum* is four years old. Germination is said to require light. Some sources suggest that no cold period is required; I cannot comment, since these poppies are among the many plants we sow in autumn, for convenience. The seed often appears in seed exchange lists. With us, germination of both species is staggered over at least two years, the longest we hold our seed pots. We surface-sow both species on a very gritty mix topped with more grit and leave them out all winter. *P. radicatum* germinates copiously in April and May and often blooms the first year; another handful of seedlings appears a year later. *P. alboroseum,* by contrast, germinates sparingly both years and doesn't bloom until its second year. Because their taproots are fragile, seedlings must be pricked out very young or not at all. Safer still is to sow seed directly into the rock garden. Both species self-sow happily.

The scree where our two poppies grow together is slightly acid. I thought acidity might be important, but last year we sowed *P. radicatum* subsp. *alaskanum* on a new alkaline scree that is strewn with tufa, and it is thriving there. In the third week of October, one apparently dozing *P. radicatum* there suddenly opened two final lime-yellow flowers, electrifying against the hot-pink blooms of an equally defiant *Penstemon richardsonii.* We plan to test *P. alboroseum* on calcium-rich soils now, too.

Toward autumn these poppies get chaffy under their mounded rosettes; this rarely shows. The chaff provides insulation, but if there is no snow, the plant's top melts away. In spring, just when I think all is lost, bristly blue leaves shoulder out of the gravel and a new cycle begins.

Source

Plants of *Papaver alboroseum* are available from Paige Woodward's nursery near Vancouver, B.C.: Pacific Rim Native Plant Nursery, 44305 Old Orchard Rd., Chilliwack, B.C. V2R 1A9. Web site, <http://www.hillkeep.ca>

Daphne kosaninii

Anna Leggatt, East York, Ontario

Daphne kosaninii is an ideal small shrub for the rock garden, forming a dense low dome (photo, p. XX). My eight-year-old plant is 11 inches (28 cm) high and 20

inches (50 cm) across, and it may eventually become 15 inches (37.5 cm) tall, though the *AGS Encyclopaedia of Alpines* states that it can grow even taller. The leaves, mid-green with a slight blue tinge, are oblanceolate in shape and are around 3/4-inch long and 1/4-inch wide (2 × 0.5 cm).

The numerous flowers are pinkish and narrowly funnel-shaped. In bud, they look as if they could entirely hide the foliage when they open, but this is deceptive. I thought I had missed the climax of bloom the first two or three years I had my plant. At last, I was at home, and I found I had seen it all: *Daphne kosaninii* never opens completely. I have not detected any scent, and there is no second flowering like we see with certain other daphnes.

I keep this daphne for its fruit. It sets a large quantity of glowing bright orange berries (about 0.8 cm long) which last for about 3 weeks. It looks like a fat little Christmas tree with tiny ovoid lanterns. The berries fall off at a touch and are often carried away by chipmunks.

This daphne is easy to grow from seed and self-seeds vigorously. I find many germinating seedlings in the early spring. These should be transplanted quickly because they will not survive in the leaf litter and poor light under the parent plant. The survival rate for transplants is good if they are moved at the first-leaf stage. However, great care is needed when one-year-old plants are placed in the rock garden.

I grow my specimen in a scree bed of about 2 feet (60 cm) of sand and gravel above a clay base. I suspect the roots are down in the clay. A low juniper, planted to the south, shades the soil. Unfortunately, my daphne is growing too large for its spot, and I will try cutting it back. The other daphnes do not mind this, disproving the warnings in many gardening books.

Daphne kosaninii is native to Bulgaria and is part of the *D. oleoides* group. It is hardy to at least USDA Zone 4a (winter minima around –30°F/–35°C).

Seed of this species (and other freely fruiting daphnes) is often available from the NARGS seed exchange, and several Czech sources offer wild collected seed (see this issue's advertising section for a number of these collectors). It may germinate the first year, or it may wait until the second, with seedlings appearing in early spring; several months of moist chilling after planting facilitates germination.

Sources

Seneca Hill Perennials, 3712 Co. Rte. 57, Oswego, NY 13126
Mt. Tahoma Nursery, 28111 112th Ave E., Graham, WA 98338
Wrightman Alpines, R.R. #3, Kerwood, Ontario N0M 2B0

Books

An Alaskan Plant-hunter's Bookshelf

Whether you are visiting Alaska with an organized tour or planning your own itinerary, the following books will help you find and identify the hundreds of plant species you will see. If you cannot find them through mail order or Internet suppliers, most can be purchased at Anchorage bookstores, especially the downtown Book Cache. Those driving through Canada can shop at Mac's Fireweed Bookstore in Whitehorse. For more detailed information, visit the University of Alaska Herbarium website <www.uaf.edu/museum/herb/index.html>; go to "handouts" and then to "useful references." The site also contains a link to the Alaska Rare Plant Field Guide. For items available from the NARGS Book Service, see p. 78 of this issue.

Floras

Eric Hultén, *Flora of Alaska and Neighboring Territories: A Manual of the Vascular Plants.* Stanford, Calif.: Stanford University Press, 1968. A beautifully conceived and produced botanical reference book with clear line drawings, habitat descriptions, and regional and circumboreal distribution maps for every species. Inevitably, some of the nomenclature is now out of date, and many more localities have been documented since Hultén's work; however, any serious plant-hunter visiting Alaska should try to obtain this book, which is still in print.

William Cody, *Flora of the Yukon Territory.* Ottawa: NRC Research Press, 1996. Useful in interior and northern Alaska as well as in the Yukon.

Leslie Viereck and Elbert Little. *Alaska Trees and Shrubs.* Juneau, Alaska: U.S. Forest Service. An excellent supplement to Hultén for botanically competent readers particularly interested in woody plants. Includes keys, line drawings, and range maps.

Popular Plant Guides

Alaska Magazine. *Alaska-Yukon Wild Flower Guide.* Seattle: Alaska Northwest Publishing. 179 color photos plus line drawings, arranged by plant families; includes some species from remote areas as well as roadside ones.

Verna E. Pratt. *Field Guide to Alaskan Wildflowers.* Anchorage: Alaskakrafts. A guide for the novice, with 248 color photos arranged by flower color.

Verna E. Pratt. *Wildflowers along the Alaska Highway.* Anchorage: Alaskakrafts. Useful guide for drivers on the Alaska (Alcan) Highway; 497 color photos, arranged by flower color.

Verna E. Pratt. *Wildflowers of Denali National Park.* Anchorage: Alaskakrafts. Especially for visitors to Denali National Park and Preserve; 410 color photos, arranged by flower color.

Jim Pojar and Andy Mackinnon. *Plants of the Pacific Northwest Coast.* Lone Pine Publishing. An excellent guide to coastal species of southeast and south central Alaska, though very few alpine species are included; many small color photos and some line drawings.

Edible and Medicinal Plants, Ethnobotany

Alaska Magazine. *Alaska Wild Berry Guide and Cook Book.* Seattle: Alaska Northwest Publishing. A good guidebook to berries, including recipes; 89 color photos.

Verna E. Pratt. *Alaska's Wild Berries.* Anchorage: Alaskakrafts, 7446 E. 20th Ave., Anchorage, AK 99504. A pocket-sized manual with 111 color photos of both fruits and flowers.

Eleanor Viereck. *Alaska's Wilderness Medicines.* Seattle: Alaska Northwest Publishing. Excellent book for those interested in medicinal uses of plants. Line drawings.

Janice Schofield. *Discovering Wild Plants.* Seattle: Alaska Northwest Books. A good large-format book on plants and their uses, with 190 color photos plus line drawings.

Priscilla Russell Kari. *Tanaina Plantlore—Dena'ina K'et'una.* Anchorage: U.S. National Park Service, Alaska Region. A good book on plant use and lore among the Dena'ina, the Athabaskan people native to the Cook Inlet region, with 95 color photos plus line drawings.

Ann Garibaldi, *Medicinal Flora of Alaska Natives.* Anchorage: Alaska Natural Heritage Program, 1999. Line drawings and a good reference section.

Maps and Travel Guides

The Milepost. An extremely detailed guide to attractions, activities, roads, and businesses in Alaska and along the access highways through Canada, updated

annually by the publishers, Vernon Publications. To order, call 1-800-726-4707.

Alaska Atlas and Gazetteer. DeLorme Mapping, P.O. Box 298, Freeport, ME 04032; tel. 207-865-4171. One of DeLorme's series of topographical atlases, the constant companions of North American plant-hunters. The roadless areas of Alaska are, however, depicted at a very large scale, so additional maps will be needed by those traveling in the bush, and the maps show many "towns" that have not been inhabited for half a century.

Conner, Cathy and O'Haire, Daniel. 1993. *Roadside Geology of Alaska.* Mountain Press Publishing Company, Missoula, MT, USA.

Saxifrages from Scratch: A Saxifrage Society Guide by Malcolm McGregor. Hutton, UK: Saxifrage Society, 2001. Paperback, 46 pp., 9 color photos, line drawings. Available from The Saxifrage Society, 16 Mill St., Hutton, near Drifield, East Yorkshire YO25 9PU, England, for $10 in US currency (postage included).

Reviewed by Rex Murfitt, Victoria, B.C.

This little book is an introduction to the saxifrage garden and is aimed directly at the gardener with little or no previous understanding of this wonderful group of plants. It opens with an overview of the popular types of saxifrages grown by rock gardeners, arranging them in groups with commonsense titles, and then describes the typical characteristics of each group, with suggestions for possible uses and cultural preferences. The headings are nonbotanical and are generally accepted in current publications. For example, "Dwarf Cushion Saxifrage" summons up an instant picture and is easier to handle than the formal "Porphyrion" or the older "Kabschia" Saxifrages. "Mossy Saxifrages" and "Silver Saxifrages" are both quite descriptive, and many will recognize a "London Pride Saxifrage."

Several pages are devoted to practical applications, suggesting a range of garden conditions where saxifrages may be used, such as shady places, open borders, and even the lawn. McGregor's suggestions for suitable saxifrages create tantalizing mental images—at least, they did for me. The classic homes for saxifrages, of course, are the raised beds, troughs, tufa, and pots in the alpine house, and these are dealt with in some detail.

Other sections address methods of propagation, including seed and cuttings. Composts, soils, and a useful summary of diseases follow. Another section explains the current system of the botanical classification.

Many individual plant descriptions are provided, headed "The World's Best Saxifrages" and subgrouped as "Saxifrages for Beginners," "All Time Favorites," and "Newer Varieties." Some of us will find these lists of plants tempting and perhaps a little frustrating, since many of the plants are not readily available to us in North America.

The list of recommended reading is excellent, representing the best of recent publications. The illustrations certainly do the job they are intended to do, showing representatives of each saxifrage group, but I always want more, though knowing full well the expense.

Readers should keep in mind that the book was written in England, and, as the author acknowledges, growing conditions will not be the same in different countries. Nevertheless, this is an excellent introduction to the world of saxifrages and will be a solid foundation for those first venturing down the wonderful road into it.

A Year in Our Gardens: Letters by Nancy Goodwin and Allen Lacy. Chapel Hill, N.C.: University of North Carolina Press, 2001. 207 pages including index. Hardcover $27.50

Reviewed by BOBBY J. WARD, Raleigh, North Carolina

"Elizabeth Lawrence's *Gardens in Winter* was the first book to open my eyes and mind to all that we might grow here in Zone 7A at this time of year," writes Nancy Goodwin in a midwinter letter to Allen Lacy, recounting how she discovered the Lawrence book thirty years ago in a secondhand bookstore and went on to find and grow all the plants mentioned in it. When Goodwin and her husband, Craufurd, later moved to historic Montrose in Hillsborough, North Carolina, she had the space, the quality of soil, terraced woodlands, and the undaunted enthusiasm to begin installing new gardens. In 1984, she opened Montrose, a mail-order nursery specializing in cyclamen grown from seed. In the mid-1980s, Lacy learned of Montrose, and he and Nancy discovered they had similar interests in gardening and music, mutual friends, and their education at Duke University. Thus began a friendship carried on through telephone calls, visits, and correspondence.

In *A Year in Our Gardens*, a collection of letters between Goodwin and Lacy in 1998, we learn that Lacy, publisher of the newsletter *Homeground*, gardens with his wife Hella on a small, sandy plot of former farmland in southern New Jersey in Linwood. Now a part of suburbia, the Lacy garden (100 by 155 feet) is enclosed from street traffic. It holds many perennials and annuals, including hedges and shade-loving plants, in association with decks and pergolas and container gardens. Though the two gardens are vastly different, they have two features in common: their owners love gardening, and their locations are horticulturally in the same USDA zone.

This zonal similarity intrigued Nancy, so she proposed to Allen a year's worth of planned correspondence between them as a way of learning how each gardener copes with seasonal changes at different locations. *A Year in Our Gardens* records what plants are blooming, dying, or suffering in their gardens, the seasons they love and hate (Nancy likes winter, Allen does not), their special plant interests (hellebores, cyclamen, and bulbs for Nancy; lilacs, mock oranges,

hostas, and greenhouse tropicals for Allen), and their gardening styles (Nancy refuses to irrigate; Allen must water frequently on his sandy soil). A typical entry concerns the loss of the great white oak in the circle garden at Montrose. Nancy eloquently describes the sawdust on nearby plants: "The tree removers arrived early this morning with an enormous crane, a bucket truck, one large dump trunk, and several pickup trucks. . . . They cut large branches and ground up the small limb wood. They carried the chippings to our leaf pile, and we will spread it on paths through the woods garden. . . . I can't think of a more wonderful tree than that oak. I hope it will be a good year for acorns. The shade-loving plants now have full sun, but tonight they also have a covering of sawdust. . . . I hope [a new oak] will be as straight and beautiful as the one we grieve over tonight."

Allen's terror of being caught in a thunderstorm and the counterpoint of delight in getting home to find a night-blooming cereus opening is wonderfully described. Later, recalling that he often hears gardeners say they want an "English garden," he responds that the Lacy First Rule of Gardening is this: "You have to garden where you are, not somewhere else."

A Year in Our Gardens is a chronicle of two gardens and two gardeners, different but alike. The gardening narrative is connected throughout by musings on friendship, music, personal health and death, and the major events in life that need boundaries, which Goodwin ponders poignantly when she says, "One boundary that has thus far only a beginning is gardening."

The Illustrated Rhododendron: Their classification portrayed through the artwork of Curtis's Botanical Magazine by Pat Halliday. Richmond, Surrey, UK: Royal Botanic Gardens, Kew, 2001. ISBN 1-900347-99-7. 274 pages, 120 color illustrations, 4 line drawings, 8¼" x 11¾, hardcover. North American distribution by Timber Press, Portland, Oregon. £49.95, US $69.95.

Reviewed by JAY LUNN, Hillsboro, Oregon

Before her retirement in 1990, author Pat Halliday worked in the Herbarium at Kew for more than 40 years. For much of that time she was involved in the study of rhododendrons and performed all the identification work of that genus for Kew. Unquestionably, she knows rhododendrons.

The author undertakes to demonstrate the classification of the genus *Rhododendron* as proposed by the Royal Botanic Garden, Edinburgh, using illustrations taken primarily from the two-century run of *Curtis's Botanical Magazine*. The book contains 121 plates, representing all subgenera, sections, and series in *Rhododendron*. This genus contains some 850 species native to the Northern Hemisphere (plus a smaller number in the Southern Hemisphere), many of which are in cultivation. Akin to the format used in the *Botanical Magazine*, Halliday has provided text accompanying each plate giving an account of the introduction of the species into cultivation, its history, distribution in the wild, habi-

tat, relationships to other species, and classification. The text also contains some details about cultivation, but plainly this is for British conditions and of somewhat limited value to North American growers.

The sequence in which the species are illustrated demonstrates the revised classification of *Rhododendron* that has resulted from studies undertaken at the Royal Botanic Garden, Edinburgh, a classification that is now generally accepted by the horticultural world. Not every subsection had been illustrated for the *Botanical Magazine* or the *Kew Magazine*; some plates were too poor or were unavailable, and line drawings had to be substituted for species that were not in cultivation or for which no live material could be obtained. In a few sections where there were no suitable illustrations, modern paintings were produced by artists whose work has been published in *Curtis's*.

During the first 160 years of *Curtis's*, the prints were produced by either engraving or lithography and then hand-colored by teams working from a specimen plate colored by the original artist. Understandably, there is some variation in color of the plates from different sets of the magazine as a result of different hands, wear and tear, or the aging process on library shelves. The original watercolors for many of these illustrations are held in the archives at Kew. In almost all cases, the original painting rather than the published engraving or lithograph has been reproduced, and each is accompanied by an updated text. In the past 212 years, well over 300 illustrations of rhododendrons have been published in *Curtis's Botanical Magazine*. With the publication of this book, Kew has made some of these fine illustrations available to a wider public.

Walter Hood Fitch executed more than 2800 plates for the *Botanical Magazine* from 1834 to 1878, of which 55 depict rhododendron species. Twenty-eight of his illustrations are included in this book. Although his artwork is superbly done, it pales in comparison to the exquisite, more recent renderings (1921–1973) of Lilian Snelling. Thirty-nine of her beautiful drawings appear here. Unfortunately, the illustrations of North American species included do not fare well when compared to the majority of the others. Although the incorporation of four black-and-white line drawings is understandable, they appear out of place. The inclusion of text and plates for three hybrids is not quite understandable, even though the art is choice.

Some of the illustrations had been executed for the *Botanical Magazine* but had never been published for some reason, while others were drawn specifically for this publication. It is difficult to distinguish between new illustrations from those published earlier. Since this book has much to do with art, it would be worthwhile to know about this, as well as to have more information about the fifteen artists represented.

The cost of publishing a book with an abundance of colored illustrations is necessarily great, so the price of this one is no surprise. If you are interested in both botanical art and the genus *Rhododendron*, then this is probably a book for you. You will find the text interesting and the art work appealing. However, those who are not enthusiasts on either topic may choose to invest their book budget elsewhere.

About this year's cover artist: Tanya Harvey

The covers for the 2002 volume of the *Quarterly* will feature watercolor and colored pencil paintings by Tanya Harvey, who lives and gardens in the foothills of the Cascade Mountains near Eugene, Oregon. She is an active member of the Emerald Chapter of NARGS. Originally from New England, Tanya moved to the Pacific Northwest ten years ago. With its mild climate, tall forests, and natural mountain rock gardens, she finds it the ideal place to discover wildflower and wildlife models for her artwork in the garden and in nature. She also does craftwork and graphic design. Her line of note cards includes the images featured on our covers. To see more of her work, visit her website <http://TanyaHarvey.home.att.net/>, or contact her at <Wild.Iris@worldnet.att.net> or at 40237 Reuben Leigh Road, Lowell, OR 97452-9712.

Special Issue on Alaska

In 1977, I joined NARGS as one of a literal handful of five Alaskan members. The other rock gardeners lived far from my home near Fairbanks, so I began my first rock garden in something of an information vacuum. I had Lincoln Foster's *Rock Gardening* and the NARGS mail-order lending library, as well as this journal, then the *ARGS Bulletin*. Everything I read came either from England or from the U.S. Northeast, which then dominated horticultural publishing even more thoroughly than it does now. As a result, I never realized that I lived in a place where great things could be accomplished in rock and alpine gardening. My first rock garden, thus, contained only species native to interior Alaska—not that bad, since the inventory included *Diapensia lapponica* and *Eritrichium aretioides*—and though I contributed dutifully to the NARGS Seed Exchange, I never requested anything from it. Exposed only to literature informed by the pernicious USDA climate zone ratings (the origin of vast horticultural misunderstanding), I assumed that anything not rated Zone 1 would not survive in my garden.

Only after I moved to Oregon and struggled to maintain true alpines did I realize that I had missed my chance. Under winter-long snow cover, particularly the "dry" snow of Fairbanks that does not thaw and refreeze during winter, plants from the world's highest regions may have thrived; they would also have enjoyed the relatively cool, thunderstorm-refreshed summers, even though my lack of running water would have limited irrigation.

Not until the 1990s did rock gardening really gain momentum in Alaska. The center of interest today is around Alaska's largest city, Anchorage, where the maritime-influenced climate is milder than in the interior, but cool and snowy enough to be hospitable to alpine and subalpine plants from many of the world's mountain regions. Members of Alaska's burgeoning NARGS chapter are experimenting furiously and often with startling success. Those who attend the first NARGS annual national meeting held in the far north will be amazed at what they see.

The main reason most NARGS and AGS members will travel to Alaska in June 2002, however, is to see the vast wealth of Alaska's native flora. This special

issue is an introduction to it, with articles on areas covered by the meeting's tours and also on places beyond the Anchorage area that will tempt visitors later in the growing season. With this issue, some references from the list in the "Books" section, and plenty of mosquito repellent, a visitor should be able to botanize Alaska with great satisfaction.

Finally, I cannot resist passing on a few bits of information gleaned from my other professional field that every visitor should know. (1) "Alaska" does not mean "the great land"; it is derived from an Aleut word meaning "mainland," and the form "Alyeska" is not original, but Russianized. (2) "Denali" (formerly McKinley) does not mean "the great one"; it means "the tall one," literally "the one that extends upward." (3) There is no "ancient Indian legend" that Mt. Susitna, visible from Anchorage, is "a Sleeping Lady"; the story was made up by a white writer. If you learn these things, as well as the difference between an *Eritrichium* and a *Myosotis*, you will be paragons of knowledge and taste among Alaskan tourists—as long as you eschew a visit to the Malemute Saloon.

NARGS Coming Events

Eastern Winter Study Weekend: "Noah's Ark: Conserving Plant Diversity," January 25–27, Falls Church, Virginia. Host: Potomac Valley Chapter. Contact: Alice Nicolson, 3435 S. 8th St., Alexandria VA 22204 <taxonomy@aol.com>

Western Winter Study Weekend: "Weekend in the Siskiyous," February 22–24, Medford, Oregon. Host: Siskiyou Chapter. Contact: Ruby Reed, 310 Brandon St., Central Point OR 97502 <lmrareed@connpoint.net>

2002 NARGS Annual Meeting featuring field trips to the mountains of Alaska, June 11–14, Anchorage, Alaska. Host: Alaska Chapter. Contact: Frank Pratt, 7446 E. 20th Ave., Anchorage AK 99504-3429 <akkrafts@alaskakrafts.com>

NARGS Annual Meeting
June 11-14, 2002

Sheraton Anchorage Hotel
Anchorage, Alaska

Hosted by the Alaska Chapter
www.args.org

Join us for amazing walks on the tundra in the Chugach Mountains, just 45 minutes from downtown Anchorage. See alpine plants at their best at less than 3000 feet elevation. Enjoy plant, book, and art sales and displays. Local speakers will introduce you to arctic tundra and alpine plants from Alaska and beyond: Siberia, Beringia, the Alaska, Brooks, and Chugach mountains, and more. Stay longer and see summer flowering peak as the solstice approaches. Registration brochure included with winter 2002 Quarterly.

Registrar---Frank G. Pratt---(Email---webmaster@args.org)
Tel-(907) 333-8212, Fax-(907) 333-4989

Wildflowers of the World

CHINA

NORTH-WEST SICHUAN PROVINCE

MAY, 2002 (Limit 16 people)

Join us as we travel to a region that few, since Ernest Wilson, have seen.The remote and mountainous regions of Sichuan. The snow peaks of Jiuzhaigou National Park, Tibetan villages, Wolong Panda Reserve and the mountains,valleys and waterfalls of Siguniang Shan are all on our itinerary as we search for meconopsis, daphnes, primulas and a plethora of other rarities.

Post or pre-trip optional extensions to the Yangtse Gorges and Mount Omei

SOUTH AFRICA

DRAKENSBERG MOUNTAINS

JANUARY 2003 (Limit 16 people)

South Africa's hardiest plants grow in the Drakensberg Mountains. Begin your exploration at the renowned Sani Pass, then on to Naude's Nek and the Republic's highest mountain, Ben MacDhuie. Travel through Lesotho, "Kingdom in the Sky', and end at the lofty untouched grasslands of Witsieshoek and Sentinel Peak, full of orchids, kniphofias, gladiolus - all perhaps hardy!

TURKEY

SITES AND FLOWERS

APRIL 2003 (Limit 16 people)

Turkey, at the crossroads of history, is also a botanist's paradise. In April, along the Lycean coast and in the Taurus Mountains crocuses, anemones and orchids will be in bloom, and ancient archaeological sites shelter perennials among their ruins.

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N·A·R·G·S BOOK SERVICE

Alaskan plant references for the Annual Meeting

The following three paperback books by Verna and Frank Pratt feature:

- arrangement by flower color
- many color photos
- plant lists for selected areas by botanical name

Wildflowers Along the Alaska Highway: A Roadside Guide. 223 pp. $16.00

Wildflowers of Denali National Park. 166 pp. $12.00

Field Guide to Alaskan Wildflowers. 136 pp., bloom time chart $13.00

Eric Hultén, *Flora of Alaska and Neighboring Territories: A Manual of Vascular Plants.* 1,016 pp., Stanford University Press $80.00

Cathy Connor & Daniel O'Haire, *Roadside Geology of Alaska.* 250pp., Mountain Press, b&w photos, maps $13.00

New Books of Interest

*Armitage's Manual of Annuals, Biennials and Half-Hardy Perennials** by Allan Armitage. 604 pp., 125 color photos, 107 drawings, Timber Press. $32.00

*Insects and Gardens** by Lisa Grissell. 346 pp., 105 color photos, Timber Press $24.00

*A Greater Perfection: The Story of the Gardens of Quatre Vents** by Francis H. Cabot. 328 pp., color photos, W.W. Norton $60.00

The Prairie Rock Garden by Donna Balzer, 176 pp., color photos, plant list, Red Deer Press $12.00

Bulbs of North America, edited by Jane McGary. 312 pp., 101 color photos, NARGS/Timber Press (price includes shipping) $27.00

N·A·R·G·S BOOK SERVICE

Back issues of the Rock Garden Quarterly *(all postpaid)*

50 Year Index to the bulletin of the American Rock Garden Society, Vols. 1–50 (1943–1992) $2.00

1951–1989 ..... $1.50 ea.

1990–1998 ..... $5.00 ea.

1999–2001 ..... $7.00 ea.

(some issues not available—inquiries welcome)

Non-book items (all postpaid)

NARGS pin (enameled with dodecatheon in center) $5.00

NARGS cloth patch (black background, approx. 4" × 2" oval) $5.00

NARGS patch and pin $9.00

Glassine envelopes (4 cm × 7 cm) ..... $3.00 per 100 / $25 per 1000

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