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Falls Village, Connecticut

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Arisaemas

H. Lincoln Foster
Falls Village Connecticut
Drawings by **Laura Louise Foster**

The fossil record of herbaceous plants is meagre, primarily because their soft structures are not readily preserved. Therefore we cannot say much about the sequence of development in the extraordinary variation of plant form and flowering design among the angiosperms, the modern plants with seeds in an enclosed ovary. So far as we know comparatively rapid diversity was the story when land plants and insects proliferated together during the Cretaceous.

We cannot say, for instance, whether plants like arisaemas and others in the Arum Family, with their sex organs arranged on a spadix enclosed in a leafy spathe are more primitive than plants with stamens and pistil exposed within a

corolla of showy petals. Somehow they look more primitive, but that is only because we are most accustomed to think of flowers in the familiar pattern of the petunia, rose or lily.

Plants in the Arum Family, the Araceae, have their own kind of architectural elegance, some of them such as calla and lysichitum are even considered beautiful. Though most of the arisaemas, the jack-in-the-pulpit plants, are rather demurely plain, others are strikingly handsome. In fact some in my garden, when in flower, attract almost universal attention and admiration. This is especially true of *A. sikokianum* and *A. candidissimum*, but even the less flamboyant members of the genus attract

notice by intricacies of pattern and structure.

I suspect that the general feeling about them is that they are rather quaint, in the sense that they are skillfully wrought. Some are startling by virtue of intricate patterns of color on the leaf, spathe, or stem; others are curiously decorated by long appendages on the spadix, on the tip of the spathe, and occasionally on the tips of the leaflets.

The purpose of these long frequently threadlike appendages is obscure. We are taught that all such features serve an adaptive role and as they have evolved help the plant survive. These filaments may carry scents undetected by the human nostril but alluring to insects useful in pollination. Since most are associated with species from areas of monsoon rains these threads may act as water spouts. I suspect, however, that they are merely expressions of a natural exuberance I seem to detect in many plants. They appear endlessly to diversify and experiment until the exuberant modification becomes lethal in its extremity.

However this may be, the genus *Arisaema* is a vast one. There are about 150 species, chiefly in tropical and temperate Eastern Asia with a few in Africa and North America. Depending on the taxonomist consulted there are up to forty species in Japan alone. With their widespread distribution and variation of form, they all share some common generic characteristics. They all arise from a depressed-globose tuber, the tuber tending to be more onion shaped and pointed in youth, but shortening and splaying at the hips with age. A few even become so spread out that they become rhizomatous. This underground storage organ is primarily starchy and might serve as a source for human food except for the heavy lacing of poisonous alkaloids and spicules of calcium oxalate.

One name for our American arisaemas is Indian Turnip. It is unclear whether the Indians actually ate the tubers or whether they were given this pejorative name by the white settlers because they looked so edible but weren't and were therefore assigned to a benighted people. It is reported that though they are not made edible even by boiling in a succession of waters, they may be rendered harmless by some months of drying.

Since our interest is more horticultural than culinary, we turn from the root to the flower. The flower, as we have indicated, is composed of a central fleshy column, the spadix, enclosed within a spathe, the cylindrical leafy tube that flares in various ways to make a hood over or a flag above the spadix.

Surrounding the spadix in discreet zones develop the sex organs. Around the lower portion are female ovaries with receptive stigmas, and in the ring above are the male stamens. This would appear to be an ideal arrangement for ready pollination and assured seed development. But, as with other plants, there are strategies to assure a mixing of genetic material. Most arisaema species tend to abort either the male or female organs on a particular plant to enhance cross pollination. Hence most are designated as dioecious, that is they have functioning male and female parts on separate plants.

The arisaemas play interesting games with this arrangement, however. Studies made both in America and Japan have demonstrated that at one stage in its life history an individual tuber will produce a flower that carries viable male organs only, at another stage carries functional female organs only, but may, indeed, sometimes be hermaphroditic with both sexes functional. So much for women's-lib and male chauvinism!

When, either with insect help from

plant to plant or from rare self pollination, the ovaries are fertilized, there is developed near the base of the spadix a cone-shaped cluster of berry-like fruits containing one to five seeds. As the spathe withers away and these fruits swell they slowly change from a shining green to a gleaming red. Where the fruit clusters are carried aloft on tall stems they frequently grow too heavy for the stalk and are swayed earthward even before they fully ripen. Those species that carry their flowers near the ground on stout stems present in autumn a marvelous display of a fiery red cone of berries — an exciting ornament in the landscape of the dying year.

These appetizing looking fruits are as heavily laden with poisons and mouth tingling spicules as are the tubers. They cling for a long time, avoided by birds and rodents, until various soil and airborne agents of decomposition break down the outer coat. Thus the seed will frequently lie moist and cool for spring germination right where the fruit cone has fallen and we find a tight cluster of single leaved seedlings in the spring fighting for dominance. At other times late foraging ants will carry off the partially fermented berries, or rodents and birds are tempted to disperse the seeds, or the heaving of moist soils with the help of gravity spread them about during the winter.

If you would grow these seeds for your own delight, collect and leave them in their fleshy wrappings until ready to sow. I find that soaking the berries in water for a few days breaks down the pulp, which can then be readily separated from the seeds. If the seeds are sowed immediately and given a warm temperature they will germinate in short order. If seeds are stored dry for any length of time germination may be delayed up to two years.

One year I sowed fresh seed of *A.*

sikokianum in December under lights in the basement. They sprouted quickly and grew well until late April when the small plants all withered. On inspection I found that each had developed a small onion-like tuber, quite viable looking. I put these in moist peat in a sealed plastic bag. This went into the butter-saver compartment in the door of the refrigerator for two months. The tubers were then planted in humusy soil in a small plastic flat, about one inch below the surface and about one inch apart. They all soon sent up new vigorous plants, completing by fall two years growth in one. They bloomed after another full year in the garden. Under normal conditions it takes from four to six years from seed to flowering.

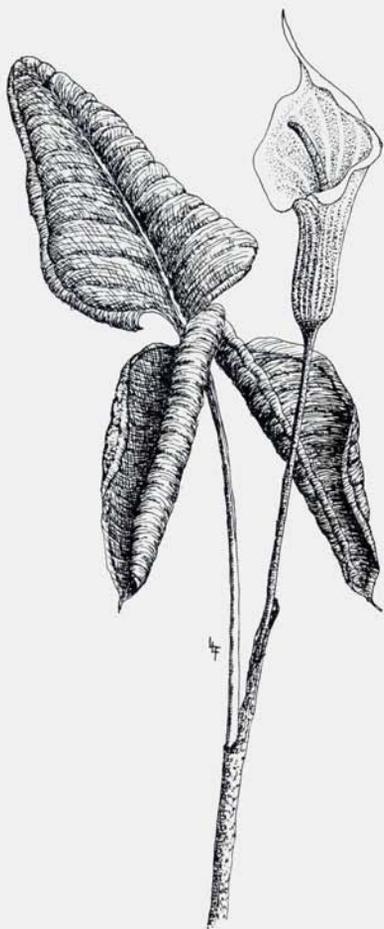
I have since tried this procedure with a couple of Chinese species without the same results, probably because I tried to hasten the process at one stage or another.

The tubers of some *Arisaema* species have not been easy for me to grow in pots. When potted up in the fall and carried over in the alpine house tubers of *A. sikokianum* and *A. candidissimum* did not appear in the spring. In fact they had rotted. I suspect I watered them too consistently, under the impression that because many grow naturally in really moist situations they could not stand a dry soil in winter. Now, if I plan to carry over in pots new tubers, either received as gifts in a dormant state, or doubtfully hardy ones grown from seed, I keep them just barely moist through the winter, and preferably in a situation just a bit above freezing.

Though, as I have indicated, many species do grow in moist to swampy conditions in nature, they will thrive even better, I think, in rich woodland soil even on the dryish side under high shade. It is possible that many are found in wet spots because that's the preferred situa-

tion for seed germination.

Here are some of the species of arisaemas that I have grown with a few comments about each, arranged alphabetically for convenience.



Arisaema candidissimum

A. atrorubens

This is our common jack-in-the-pulpit with a wide distribution in rich woodlands of eastern North America. The broad spathe arches horizontally well

above the spadix and may be solid green or deep reddish purple, variously striped. The large leaves, from one to three on each plant, are generally composed of three leaflets, but in especially vigorous plants may carry up to five leaflets. The heavy cone of glistening, large, red berries is a prominent feature of the autumn garden. The tuber will multiply by offsets.

A. candidissimum

This species from western China is one of the handsomest in the genus. Rather late coming up in the spring, it rapidly develops a single large, heavily veined, three-parted leaf, each segment rounded and overlapping its neighbors. Simultaneously, on a separate shoot, is unfurled a great shell-like erect spathe of a diaphanous white suffused with pink and frequently with deeper pink ribs running from broad base to acutely pointed tip. Some forms tend to have the spathe tinted with pale green in combination with the pink, others are pure white. Against this showy backdrop stands the erect, blunt, reddish purple spadix. Because the tuber is marginally hardy in severe climate areas, it is suggested that it be planted about four inches deep and mulched for the winter. As it grows on rocky banks in open sites in its native home, this species does not want a heavy wet soil or deep shade.

A. consanguineum

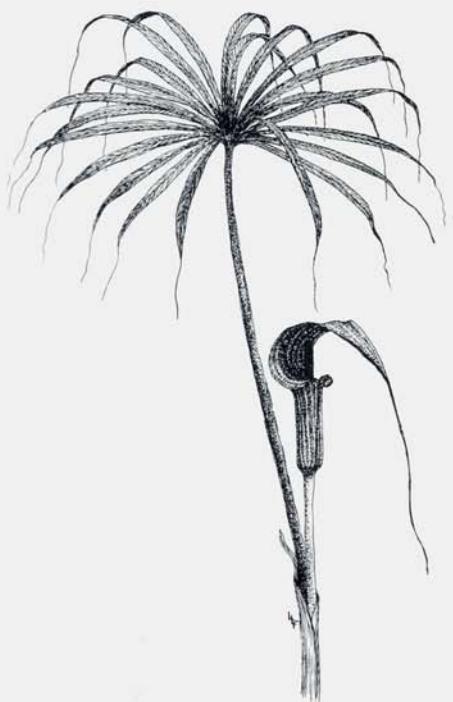
This, I think, was the first arisaema I grew from seed, probably at least ten years ago. I can't remember how many seeds I got from one of the exchanges, but I have only a solitary plant. Coming from temperate eastern Asia and Yunnan, it is described in the Royal Horticultural Society Dictionary as "nearly hardy." Mine is planted near a rock and very close to a path in the upper woods garden under tall white pines in com-

pany with other arisaemas. Every year I fear that it is never going to show above ground or that it has been stepped on by someone plunging off the path to get a closer look at the blooming arisaemas behind it. But so far each year it has thrust up, about the last week in June, an asparagus-like spear that then shoots at an astonishing rate. Within a week it has erected a slender mottled stalk three to four feet high. At the tip it unfurls a startling umbrella-like, solitary leaf, deeply slit into long narrow segments elegantly pleated down the center. The literature describes the segments as ten to twenty-one in number. Last year mine displayed twenty-six leaflets. At the tip of each leaflet is a long threadlike appendage. Just below this intricate leaf is a short side shoot bearing a rather small but typical flower, composed of a concealed spadix and a narrow mottled spathe, here distinguished by a long thread-like appendage at the tip, which sweeps down almost to the ground. So tall and slender is the whole plant that if it sets a crop of seed it becomes top heavy and flops to the ground. I have a friend who planted his right at the base of a dwarf rhododendron and urges it to grow up through the branches for support.

For many years my plant produced only a leaf, like a pinwheel on a tall staff. For the past three it has flowered, and perhaps next year the tuber will split up and send up a clump of small, more juvenile plants.

A. draconium

Here we return to eastern North America. This species, colloquially called Green Dragon, is readily distinguished from other American species both in leaf and flower. Here the solitary leaf is composed of five to fifteen fan-like leaflets. The flower is made up of a rather pinched green spathe and a curious spadix that extends its green tapering tip

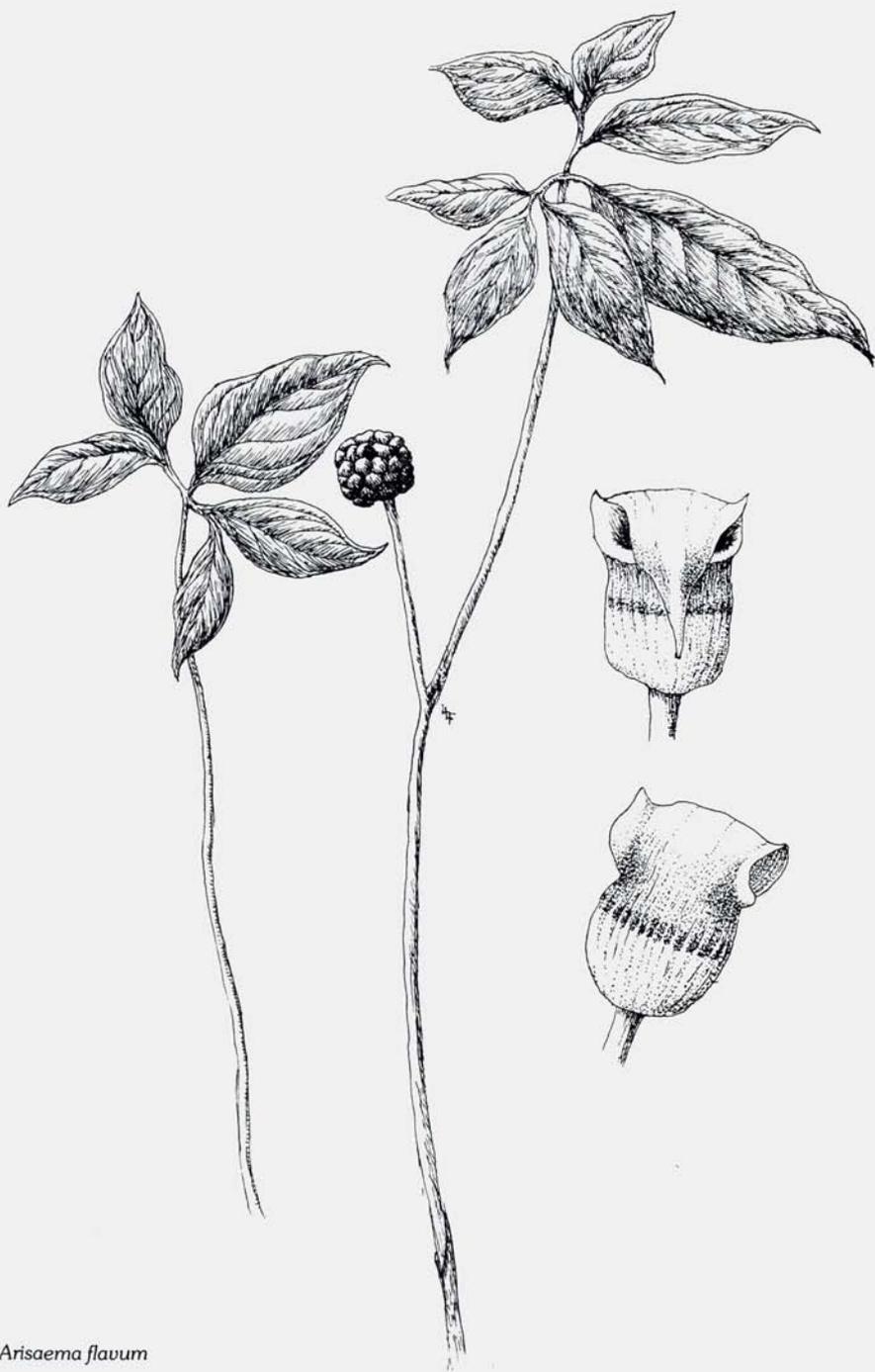


Arisaema consanguineum

well beyond the spathe and shoots skyward. The spadix in this species is frequently hermaphroditic. The Green Dragon has a generally Southeast distribution and is found most commonly in flood-plain areas.

A. flavum

So far as I can discover this is the runt of the litter. The plant, growing from a small tuber, is about eight to ten inches tall with one or two leaves pedately divided into five or more divisions. As these leaves unfurl the curious blossom looks like a small blinking owl atop the green peduncle. The bisexual spadix is totally concealed within the spathe, which is squat and ovoid without a tubular elongation before forming the hood-like blade, which narrows to a prominent



Arisaema flavum

point and bends down against the base. The hood is yellow while the ovoid base is banded yellow and dark purple. The owl-like effect is produced by the globose spathe forming a body; the pointed tip of the hood forms the beak and the half-shut eyes are formed by the two dark hollows below the two ear-like flares where the spathe bends abruptly downward. The color in the flowers, I gather from reading, is variable from plant to plant, frequently with no yellow pigment apparent.

This species, found from Afghanistan through the Himalaya to western China, is borderline hardy. I lost my earliest seedlings by premature and shallow planting. Three year old tubers buried three to four inches deep under high pine shade have survived our most severe winter.

A. ringens

This species, from Japan and Korea, is readily distinguished from others, primarily by the pair of tripartite green leaves of a lustrous, thick, waxy texture, each leaflet with an abrupt, sharp point. The cobra-like inflorescence on a short stalk is also distinctive. The strongly ridged spathe is greenish or purple with a short tube. Instead of ending in the more usual point at its apex, the deeply curved hood carries a dark purple, rippled extension that hangs down across the opening like a curtain. This species also tries one's patience by its tardy appearance in the spring, sometimes as late as the first of July.

A. robustum

Some years ago I received from a friend in Japan a plump apple sized tuber



Arisaema ringens

of this species late in the winter. At that time I had no alpine house and it was impossible to plant the tuber outdoors. I potted it up and kept it gently watered in a cool end of the living room against a pair of north-facing French doors. Within two weeks it began to grow, and once begun it grew like a stalk of corn on a hot July night. You could daily perceive its climb from mullion to mullion of the door. It finally expanded a five-foliolate leaf and a rather undistinguished, typical inflorescence, rather insignificant looking aloft the three foot high, thick, shining, almost black main stem. It has had a checkered career since. Planted out its first summer in a moistish spot under an oak tree in the upper garden, it retired underground in appropriate fashion. The next spring, perhaps triggered by its domestic treatment, it pushed its eager shoot with the first fake whisper of spring and was, of course, frozen to a pulp. I thought that was the end of *A. robustum*. The following spring it reappeared only slightly later and was again frozen. The third spring was more favorable and it sent up a majestic ebony stem, flowered and set fruit, which was nipped off by a deer while still green. Since then it has split its bulb and produced a clump of non-flowering, shorter plants. I should get around to digging them up and giving them fresh soil. A small grove of *A. robustum* might be rather impressive.

A. sikokianum

This species, strictly Japanese in distribution, is in my estimation the most glorious of the genus, *A. candidissimum* notwithstanding. In fact it is named by some Japanese botanists *A. magnificum*. In every respect it declares its beauty, from the elegant silver markings on the leaves and the flamboyant spathe to the ivory drumstick of the spadix. It is not very tall, only about twelve inches the first year of its bloom, and rather delicate in appear-

ance, though it becomes taller and more robust as it puts on years. The spathe is a deep eggplant purple, lightly striped with green on the outside, its interior lined with white porcelain. The blade does not bend over, but stands erect with a jaunty flare to reveal the knobbed white spadix standing proudly within. As the inflorescence ages, the white lining of the spathe becomes suffused with pink as though tinted by the deep purple dye of the outside and the blade becomes limp and folds forward to conceal the berries forming inside. Though these would undoubtedly turn scarlet outdoors if allowed to remain on the plant, they ripen so slowly that I have always picked off the cone of fruit, sometimes as late as November, while they are still green and allow them to ripen indoors in a warm place. (See cover picture.)

A. stewardsonii

This rarely encountered eastern North American species is tardy to spring into growth and resides in really wet, unfrequented swamps and bogs. It resembles our common species in growth habit and shape of flower and is distinguished, not only by its lateness, but by the prominently corrugated conformation of its spathe with the highly raised ridges a sparkling white against the green to purple background. I have found in the garden that it will grow in sites far drier than those of its native home and it is prone to rather rapid production of tuber offsets. It has not set seed in the garden.

A. thunbergii* var. *urashima

Like others in the genus this Japanese taxon suffers at the hands of the Nippon taxonomists. Messers. Hara and Makino at one time assigned it varietal status under *A. thunbergii*. At yet another time Messers. Hara and Nakai created a separate genus *Flagellarisaema* with species *urashima* attached. Most recently, in my

available literature, Mr. Owhi accepts it on Mr. Hara's authority as a separate species: *A. urashima*. Take your choice.

Whatever its status, this arisaema is something unique. It is a squat plant as I grow it, with a solitary leaf of many leaflets. The bronze to reddish purple spathe is handsome with a long tail-like point. What makes it startling is the flagellate tip of the spadix, which snakes out across the ground for 40 to 60 centimeters. That's a thin worm one and a half to two feet long. Quite something to see in any garden.

A. triphyllum

We end with a technical difference. For years the primary species of American jack-in-the-pulpit was known as *A. triphyllum* and for years I supposed this was the accepted name. Even such an estimated botanist as W.H. Camp, when

he was doing his paper on "Sex in *Arisaema Triphyllum*" back in the 1920's, considered it the primary species. The plants he dealt with would now be assigned to *A. atropurpureum*. This species, *A. triphyllum* (of three leaves) tends to be smaller, with distinction in the leaflet shape and in the tube of the spathe. It is essentially coastal eastern North America in distribution. For garden effect hardly to be differentiated from *A. atropurpureum*.

There are many more species of this bewitching genus, which I am either growing from seed or for which I long. Subsequent reports may follow. Better still grow them yourself and reach out for more and more of these grotesque but beautiful denizens for the shady rock garden. §

Sex and Size in *Arisaema*

John J. Wurdack
Beltsville, Maryland

Sex changes in individual plants of two of our native Jack-in-the-Pulpits, *A. triphyllum* and *A. dracontium*, have been well documented, the most recent article being that of Ewing and Klein (Torreya, Jan. — Mar. 1982). *Arisaema triphyllum* is also functionally self-sterile, with staminate flowers in monoecious plants maturing well before the pistillate ones; young (staminate) plants usually have only one leaf.

In the *Flora of the Hassan District, Karnataka, India* (1976), Nicolson had the following note: "Most species of *Arisaema* are paradioecious, young plants producing only staminate flowers and older plants producing pistillate

flowers. *Arisaema flavum* Schott of northwestern India across Arabia is completely monoecious. *Arisaema tortuosum* is intermediate, all inflorescences reported being either purely staminate or monoecious, never purely pistillate (Kew Bull. 349. 1933)." A Japanese botanist, Nakai, coined the term "paradioecious." Some notes of Barnes included another twist in Indian *Arisaema*; *A. leschenaultii* plants showed slightly over one-half having the right edge of the spathe overlapping the left (not sex-linked) and the remainder with the left edge over the right, while in *A. tortuosum* twenty-two of twenty-eight plants had the right edge over the left.

Less abundant is the literature on increase of inflorescence size with plant age in Araceae. For about twelve years, *Amorphophallus rivieri* has been grown in Beltsville; the species is hardy with protection in the lower Potomac Valley region. Inflorescences range from two feet to six feet in height, depending on corn size.

Thanks to Harold Epstein, *Arisaema sikokianum* has been growing in Beltsville for about eight years, the original two plants being a seedling and one of flowering size. The larger plant never set seed until two years ago when the smaller (staminate) plant first flowered

and was used in pollination. The large (pistillate) plant finally produced a head of fertile seeds, then died. Our smaller (and now pistillate in 1981 and 1982) plant the last two years again failed to set seed. However, from a part of the deceased plant's seeds, a small crop of seedlings was grown in 1981. In the spring of 1982, two of these juveniles (of six seedlings), both about eight inches tall from ground to spathe tip, have flowered; both have two leaves. The older (pistillate) plant is now twenty-six inches tall. Now more notes are needed from other aroidophiles on the esoterica of sex, age, and spathe overlap. §

Note On Clematis Germination

Pam Harper, Seaford, Virginia, sends along a note from her friend Anne Harvey of Kitchener, Ontario about her new method of germinating the seed of clematis, which Pam feels is worth passing on:

I just re-read a letter of yours in which you mentioned that you could never germinate *Cl. macropetala*. Well, you have plenty of company, but this year I tried a new method for germinating clematis seed and it works.

I put the clematis seed in a small, clean plastic bag in which I have placed a small amount of damp (*not wet*) peat moss or sifted sphagnum moss and a little sharp sand (more moss than sand.) Sphagnum moss works better as the other packs after a little while. It depends on how much seed one has, but I use two to three heaping tablespoons of the moss. Then I seal the top of the bag and put it in the refrigerator (*not the freezer*) at about 40°F. for two to three months. *Cl. macropetala* usually takes about three

months.

Check the bag often because some species start to germinate right there in the 'fridge. I have had tremendous success with this method this year with all sorts of clematis seeds I could never germinate before. Some seed bags I put in a warm place (my dining room is a good spot) after the cold treatment. Some don't need this. *Cl. texensis* does not need the cold treatment. With this method *Cl. verticillaris* germinated very well.

When the sprouts appear in the seed bags, I put them up in individual, usually styrofoam, cups with holes punched in the bottom for drainage. One can write the name of the plant and the date and other information right on the cup.

I don't think I will ever bother going back to sowing clematis seeds in containers again and have them sitting around for months, even a year or sometimes two years. It gets a bit crowded in the fridge at times if you have a lot of seeds in there. But it works! §

Pioneer in a Dry Walden

Picture a landscape of rolling, mustard colored hills with only portions of a dusty road visible under a cloudless blue sky. It is hot and you wonder if you are lost until, on a fence post, a weathered sign proclaims "Prairie Gem Ranch." Off in the distance is a smudge of dark green. It is only then that you realize that these are the first trees you have seen in miles.

The oasis disappears as you descend the rutted road. You carefully follow the twists and turns and quite suddenly find yourself at a cluster of small buildings. One side is bounded by a small orchard whose trees are heavy with fruit, and the other by spacious gardens and nursery beds. As you step out of the car the silence is truly deafening. Only the wind makes a soft sweeping sound that takes away your words.

Strangely incongruous, a picket fence gate with a high arched trellis leads into the garden. Flowers are blooming and hundreds of cacti of fantastic shapes are arranged in gardens or neat rows. Yet just outside the fence the short, yellow grass waves in the wind as far as the eye can see. The contrast is striking and the mystery compelling — how was all this accomplished?

Claude Barr, a spare man of 93, has been collecting and growing the almost unknown, but intriguingly beautiful, wildflowers of the Great Plains for fully half his long life. What is more, he has been doing it in one of the most hostile environments on earth. Searing heat in summer is replaced by bitter cold in winter. There is always a wind that intensifies the harsh effects of both heat and cold on plants and people as well. The

soil is heavy clay — hard as rock when dry and sticky "gumbo" when wet. In this part of South Dakota no grains are planted. The farmers learned long ago not to wear out plows and tractors trying to till the soil. Only cattle harvest the prairie grass.

Claude lived much of his life here in a sod house that is now only a low spot near a single pine tree. His father homesteaded the land and for fifty years Claude was a farmer too. Many men that age look toward retirement, but in the depths of the Depression what was there to retire to?

One hot day in the Thirties when he had gone to town, he was so thirsty — yet didn't have a nickel for a glass of soda pop — he vowed that he would do something to earn cash money.

Always he had loved the wildflowers that were abundant on the virgin prairie and had learned their names. So when the lavender cups of the first Pasque Flowers emerged next spring, he got out his old camera, took a black and white picture, and sold it to a national magazine for twenty dollars. A reader in Texas remembered the prairies purple with Pasque Flowers in her home state of South Dakota and asked if Claude would send her a dozen plants. Soon others asked for these beautiful prairie natives and gradually Mr. Barr gave up the cows and concentrated on growing prairie wildflowers.

Only a small mail order business in plants grew, but without electricity, telephone, or a well he faced many obstacles those years. Without warning, his wife became an invalid and he cared for her

for thirty years, sometimes ill himself, before she died.

Yet always he kept expanding his knowledge and love of plants. Botanists, naturalists, and plantsmen and women began corresponding with him, marveling at his wisdom and education. He studied everything he could about accurate identification of his "prairie gems." Often he would hike or drive many miles a day, his keen eyes sweeping rocky outcrops all over the Great Plains for new, more beautiful plants to learn about or to bring back and grow in his garden-nursery.

In a climate where rainfall is so scant, it would seem imperative that a dependable source of water be available. But since the heavy clay made digging a well an impossibility, Mr. Barr "made do" with only water collected in a cistern from the roof of his small home. Sometimes only a teacupful could be spared for a choice plant.

However, the plants cooperated and thrived, their heritage of perseverance over adversity matching his own. Many prairie plants have thickened, fleshy roots. Thus, when blazing sun burns their tops and there is not water, they can safely rest beneath the soil and wait a year — or two — for moisture. Even the normally shade-loving violet has adapted to life on the Great Plains and has roots like long white thongs. For a few short weeks in spring, leaves and bright yellow flowers make a great show, seeds are set, then the top disappears for another year.

Even the soil has at last given way to Claude's determined ministrations. Since as it dries, the cracks in the clay sometimes run two or three feet deep, he collects sand from the river bottom and fills the cracks with that. Gradually the gumbo has given way to a more porous soil and plants grow better.

But the crowning achievement of his

life will be a book, soon to be published, about these unusual plants and the swiftly vanishing virgin prairies that nurture them. Not only will it catalog where each is found for the botanists among us, but tell gardeners how to grow these often strikingly beautiful plants.

People come from all over the world down these dusty roads to meet this unique pioneer who loves the prairie and its plants.

Betty Ann Mech
Minneapolis, Minnesota



Claude A. Barr

Betty Ann Mech

Claude Barr's eagerly awaited book, *Jewels of the Plains* is, at long last, to be published in April, 1983 by The University of Minnesota Press. It has been worth waiting for.

Sadly, Claude himself was unable to wait to see this culmination of his long life of devoted love for the prairie gems. He died at the age of 95 on July 21, 1982. But he has left behind a legacy that will be treasured over the years — this book we can all enjoy and learn from. It is his best memorial.

Claude Barr was born near Bentonville, Arkansas and spent the first few years of his childhood on his family's farm there. His memories of these years are not fond as his family was "starved out of Arkansas" by high mortgage payments and the infinitesimal return on their farm produce — selling eggs for as low as three cents a dozen. However it was here he first discovered the enchanting world of wild growing plants — ". . . the fragrance of many flowers and fruits and the taste of wild grapes, persimmon, Mayapples, black and red haws, pawpaws — in fact, the taste of everything which was tastable and many things which were not." — And it was here, at the age of ten, that he made his first garden, successfully transplanting some of the wildflowers he had come to love into the "spring yard."

Shortly thereafter the family moved to St. Louis and after graduation from high school Claude was offered a very modest scholarship at Drake University in Des Moines, Iowa. Though times were hard and money to eke out his scholarship was difficult to come by, it never occurred to Claude not to finish and in 1914, at the age of 26, he received his A.B. degree with majors in English, Greek and public speaking.

While still an undergraduate Claude had heard that land was available in east-

ern South Dakota for homesteading and, as his family was anxious to leave St. Louis, he and his father went out to South Dakota and each filed a claim on 160 acres, this being the traditional acreage allowed for a family or individual.

On this dry upland of alkaline gumbo soil Claude's family, along with many another homesteader, started farming, but the recurrent years of drought and the recalcitrant soil, unsuited to corn or wheat, discouraged them and one by one the Barr's neighbors gave up, abandoned their farms in despair, and left. Deserted by their friends, their funds getting low and having reached their sixties, Claude's parents did not know which way to turn. They became more and more despondent, so Claude, giving up a graduate scholarship at Harvard University where he had hoped to study for the ministry, returned to South Dakota with his new wife, Kate Dean, to help his parents. Once home, Claude decided to raise cattle for which he judged the land best suited. But life was hard and Kate died. In time Claude remarried and with his second wife, Jeanette, they made a home for themselves and his aging parents on the homestead.

Though he continued to run cattle on his ranch until 1963, over the days and years Claude became more and more enthralled by the wildflowers that bespangled the apparently bleak prairie and slowly he learned how to bring them home and make them thrive in his yard and garden. In addition he bought a camera, took a mail order course in writing and began to photograph the prairie plants and compose articles about them. These he sent to horticultural magazines. Some were accepted and brought in a few requests for prairie plants. Bit by bit he found he was in the plant business.

This new world of garden writing brought him into contact with Mrs. C.I. DeBevois of Greens Farms, Connecticut

and they soon became correspondents. She encouraged him to send her a list of the plants he had available so she could include it in with the mailing of her own nursery catalog. She also sent him books about plants and gave him invaluable hints about selecting, conditioning, packaging and mailing his offerings, and she urged him to join the newly fledged American Rock Garden Society of which she was one of the founders. He did and in 1935 he sent out his own nursery catalog and started advertising Prairie Gem Ranch in horticultural publications. His new business took up more and more of what time he could spare from his ranch chores and cut into his writing time; however, when the ARGS Bulletin was launched, he wrote many articles for its pages and he began to have a dream about writing a book about the little known plants of the prairie.

But the years slipped by, every moment taken up with caring for his cattle, getting in winter fodder, keeping up his fences, and finding, growing and propagating plants for his increasingly important and thriving nursery business. In addition his wife became a chronic invalid and he spent much of his time caring for her.

It was not until a year after his wife's death at the age of 70 in 1962 that he finally decided to give up cattle ranching. By then Claude himself was 75 and he realized that if he was going to write a book he'd better begin. Reluctantly he sold his 144 head of cattle and most of his 1,485 acres of land to a friend whose holdings adjoined his and started the lonely business of writing, though for a number of years he continued his nursery business in order to bring in some cash income. He also traveled extensively over the country he planned to cover in his book: from Saskatchewan into Texas and from the Rocky Mountains to beyond the Missouri, exploring

the terrain and the time of bloom and the habitat requirements of the plants about which he was writing. In addition he spent considerable time going to Laramie, 230 miles from his ranch, to study in the Aven Nelson Herbarium at the University of Wyoming.

He also took advantage of his new freedom from ranching to make annual trips to meetings of the American Rock Garden Society, of which he was now a director, and visit friends and gardens in the East.

In 1958 he had been awarded the John Robertson Memorial Medal by the South Dakota Horticultural Society for his work in calling attention to and disseminating the plants of the prairies. In 1965 he was presented with the ARGS Award of Merit for his "study of the native flora and [his] contributions to rock and alpine gardening." This was followed in 1973 by the Edgar T. Wherry Award.

Yet even when he was home, Claude did not spend all his time working on his book. In addition to his nursery business, he had for many years kept up a voluminous correspondence with gardening friends and botanists interested in the prairie plants and this he continued to do, and many of these letter-friends soon found their way to Prairie Gem Ranch where Claude delighted in taking them out on long trips into the prairies to see for themselves the floral treasure to be found there.

Claude had many devoted friends; his warm letters, enthusiasm, natural old-fashioned courtesy, slow wit, and quizzical pixie smile endeared him to everyone who had contact with him. All who met him loved him and respected his self-effacing, hardwon knowledge of prairie plants. His was a truly gentle spirit.

Though his voice now is stilled, those who knew him and those who will meet him for the first time in his book will, as

they browse through its pages, hear in their minds Claude's unique intonation as he talks of the Great Plains and the fabulous plants he loved and knew so well.

The following are a few samplings found in Claude Barr's *Jewels of the Plains* while it was yet in typescript.

— L.L.F.

• • •

Anemone caroliniana. Whence the name? I find no published record crediting this flower to Carolina. On the contrary, its range extends from central midland states westward to the 3,000-foot contour in South Dakota and Nebraska and Kansas. And in this higher, drier country, on its favorite rich loam untouched by the plow, *A. caroliniana* spreads its jewel-like blossoms over pastures, golf courses, cemeteries, and reserves. The unfenced, "unimproved" 320 acres, where I walked in May amid untold thousands of these brave and dainty flowers, were bordered on one side by a hard-surfaced road, on the opposite by a thriving field of wheat.

In this chance refuge, the competitor-protectors of the anemone were low forage plants, mainly buffalo-grass, blue grama, and some small sedges. The land lay nearly level, held against serious erosion by the sparse turf; but in the near distance a limestone-tipped tepee butte told the story that in an earlier age the general level here stood higher than at present. The flowers, by no means omnipresent, followed some sort of colony pattern and were mostly white, but here and there appeared a smaller colony in magnetic sapphire-blue. There were none in any low place. From other areas, blues in various lighter tones, some with white eye, and some rarer pinks have come to my garden. Flowers of eight to twenty sepals in daisy pattern, four inches or so above ground, develop from a small tuber or rhizome an inch or two

down. This half-inch or shorter, delicate structure is the vital part of the plant; in the dormant period, from seed ripening until fall, all other parts including roots are absent. During lush spring growth, thick, short stolons are sent out horizontally from the rhizome each to form a new rhizome at its tip, thus slowly developing a colony. Leaves return with fall moisture to remain all winter, and their welfare insures good flowering. *A. caroliniana* is surely one of the world's prime treasures.

• • •

Astragalus barrii, Barr orophaca, red orophaca. Twenty to thirty miles to the southeast from the Black Hills and as many miles short of the Pine Ridge escarpment, lie scattered limestone-capped buttes, remnants of badland formation, which stand above the gumbo clays and shales of the lower ground. On a carefree, balmy sunlit morning in May, I was descending, by a well-worn cattle trail, one of those happy hunting grounds where no discerning botanist had ever trod at that season. As the ground steepened, away from the turfy crest and among isolated tufts of grass and tumbled blocks of limestone, tufts and buns and small cushions of the familiar *Astragalus gilviflorus* appeared. I stepped slowly, attempting to savor the beauty of every assembled mass of glinting white blossoms; then suddenly I stopped. Just ahead, scattered among the white-flowered plants and with more and more farther down the slope in harsher badland clay, until the white left off entirely, were seemingly the same little tufts and cushions smothered in soft silvery rose.

The small, triparted leaves of the two plants were not at once distinguishable. But in the strange new plant, the blossoms were borne, two or three to the tiny scape, or stem, just above the foliage, while the white blossoms of *A. gilviflorus*

were stemless, single in the leaf axils, and gained their place in the sun mainly by virtue of lengthened banner petals.

At first the new plant was identified for me as *Astragalus tridactylicus*, a species of southeastern Wyoming and northern Colorado. I had in my possession, however, a pressed specimen sent from Montana by a garden correspondent, Mrs. Winnie Considine, and I later discovered the red orophaca on three other badland buttes in my own corner of South Dakota. Then it was learned that specimens of the unnamed or misnamed plant, from northern Wyoming and southeastern Montana, were available in herbaria, and Ripley and Barneby found still another station in Montana. Rupert Barneby distinguished the new species from *A. tridactylicus*, and by his courtesy it became *Astragalus barrii*, as recorded in his monograph of the genus *Astragalus* (*Atlas of North American Astragalus*, Part I and II, 1964).

Clematis columbiana is a low vine with long-stalked, triparted leaves, clambering over bushes, the base of the plant usually shaded. The light blue to lavender flowers are of *Atragene* type. The principal stronghold of the species is in the Rockies, but it maintains colonial footing more than one hundred and fifty miles out on the Canadian plains, in the Cypress Hills. My seeing it there was one of those bits of luck which come to the inveterate plant hunter. Ascending a north slope, from Battle Creek, I had stepped out from the road to look closely at a wide patch of *Viola rugulosa*, under light conifer shade. Up the slope, hovering just below eye-level, three lovely flowers of the clematis reached out, face upward, to invite admiration. Description cannot convey their character, grace, and refinement. The sepals, two and two opposite, forming a simple cross, were centered by a brush of pale yellowish sta-

mens. Moments were spent in rapt attention. Without seeking the vine's footing, or identifying the supporting shrubbery, I remembered the call of the road and turned from the rare clematis presence with a sigh.

Delphinium virescens, frequent in the Plains and to the east, is a tall, spindling, white-flowered species which impresses one as just recovering from a mud-splattering storm.

Dodecatheon pulchellus — (the Latin masculine ending "us" is here used in simple agreement with the Greek masculine "on" of *Dodecatheon*.) . . .

The year around, our shooting-stars react to the vagaries of the weather, growing quickly and flowering by early May in a headlong spring or later, if snow and cold hold unseasonably. They wither and close shop for the year without flowering if moisture fails. After the year's fruitions they sidestep the heated hours of summer by going completely underground. There they remain until the warmth and probable abundant moisture of another spring invite a hopeful return. The shallow subsurface retreat is a safe haven? Oh, yes! Though the last perceptible vestige of moisture may vanish from the horizon of the roots in an exhausting drought, and the facile plant members react correspondingly until only discolored and brittle traces of crown and spreading roots remain, within 48 hours after rain the normal, fresh, white turgidity of good health is recovered. This sleight-of-hand trick of survival does not, indeed, distinguish *D. pulchellus* from other dodecatheons. What does set it apart is the ability of the Plains strains to spring back to full performance and to sprinkle or wash shaded slopes, open hillsides, and treeless ridge tops with sparkling color — this with an average rainfall of under 15 inches.

• • •
Eritrichium. Forget-me-not.

For the beginner every plant needs definition. To the well-versed, the name forget-me-not brings to mind the tiny and dainty, intensely blue flowers of *Myosotis*. Only the widely read, or those who have had the fortune to explore in high alpine flower fields, will recognize the name *Eritrichium*. In far northwestern Montana there is a little valley, miles away from the mountains; at an elevation of around 4,000 feet, where nature has prepared an unbelievably wide garden spot in casual view, lying as smooth and level and suited for a fine farm as any land could, but so completely rock-filled as to rate unproductive even for pasture. Little grass or other forage grows there. This river flood plain is entirely surfaced and filled to a depth, measurable in the road ditches, with coarse and fine gravel, sand and silt, and small imbedded cobbles and boulders. Apparently no one claims this ground; there are no fences. It continues as an unencroached, made-to-order habitat for the hardly known dwarf forget-me-not, *Eritrichium howardii*. There it has occupied acre upon acre in an unbroken sheet of blue, until the color dims in the distance.

This species is a close replica of that high alpine that Farrer, with unbounded enthusiasm, called "the Crowned King of the Alps, the Herald of Heaven, Woolly-hair the Dwarf." Something for the fortunate to see, but not for the general run of gardeners, nor even the greenest of "green thumbs" to grow. The plants themselves are so exacting that no gardener, so far, has been able to put together a workable substitute for their natural environment. So, about mid-June, see these matchless miles of one of the most wonderful blue flowers the world affords — if you can; and leave them in their inviolate seclusion. Otherwise, as Farrer mourned, the flow-

ers will "have to sit content in the admiration of marmots."

• • •
Haplopappus is an intriguing name — used to be *Aplopappus*. A revision harking back to the Greek a-aspirate brought in the "hatch" sound and elevated the backwoods pronunciation to *Haplopappus*. "Haps," some delighted gardener will be calling them. "Happy-pappies" might do for a pet name.

• • •
Lesquerella. Bladder-pod.

From the vast and weedy Mustard Family, a few species of *Lesquerella* and *Physaria* are to be considered as appealing rock garden prospects, because of their novel and distinctive form and fine color. The most compact and diminutive is *Lesquerella alpina*. In full flower it is a startling solid gold tuft or bun, dropped by chance on solid, gray or brown rock. At times it appears as the sole occupant of the almost invisible fissures in which the roots find anchorage. Around the flower-mass a slight fringe of narrow, gray leaves may show. The crowded, cruciform florets seem to have pushed and shoved in their exuberant effort to all upstage at the same moment.

• • •
Phacelia.

As a rather rare plant, *Phacelia leucophylla* haunts the badlands of North Dakota and other rough places . . . It has a conspicuous silver-white rosette of broad, elliptic, ribbed leaves; a stiff stem with smaller leaves, to 15 inches or so; and neat, uncoiling racemes of narrow-tubed florets of a hue as indefinable in its neutral lavender as the shadow of a vanished hope.

• • •
Rydberg's *Potentilla divisa*, now regarded as a variety [of *P. concinna*], appears in early spring in abundant silver fur and retains a conspicuous grayness throughout the season. At flowering in

April or early May, the plant is a close mat of leaves, which is studded with a double handful of pirate's gold.

• • •
Solidago. Goldenrod.

Goldenrods naturally separate themselves into two classes, those which are to be admired at a distance and those which may safely, or with minimum care, be enjoyed in the garden. §

Rock Gardening on a City Lot

Bozidar Berginc
West Allis, Wisconsin

Shortly after I settled in Wisconsin I missed the mountains and their flowers. One day I received a packet of *Leontopodium alpinum* seeds from my mother in Slovenia, from which I grew one plant. This was the beginning of my rock gardening. A few years later I unexpectedly learned of the American Rock Garden Society and became a member. Bulletins, books, seeds, and newly grown plants followed.

The space on a city lot is limited and soon I realized that I had room for only the smallest plants. These are the most demanding, but will thrive if provided with suitable conditions. Those conditions are best met on a northern slope, but our lot is almost flat. I had only a two-foot bank facing directly south above the driveway. My first attempt began here.

After the preliminary work of removing clay, providing drainage, composing alpine soil, and bringing in rocks, construction began. Great emphasis was put on creating micro-climates: a large rock placed to the west would protect a plant from the hot afternoon sun, then a lower rock to the east, where the cushion plant would sprawl, and finally a rock to the south, an inch or so higher than the easterly rock, to keep the soil and root run cool. Such a pattern can be repeated, but the sizes of rocks have to vary to

avoid monotony. In my case the rocks were set in the ground vertically, tightly one behind the other with the greater portion of them set deeply in the soil. That type of construction created lots of crevices, little ledges, and miniature terraces, which face southeast even though the real exposure of the bank is essentially to the south. Of course, you cannot entirely prevent having some strictly southern or southwestern exposures. Although my bank did not possess an ideal exposure, certain plants do thrive surprisingly well.

Some members of Campanulaceae took possession of the southerly and southwestern exposures, but were discarded when they were too tall or invasive. Some became permanent occupants. *C. garganica*, *C. tridentata*, *C. portenschlagiana*, *C. aucheri*, and *C. waldesteiniana*. *C. allionii* developed into a nice clump, then flowered itself to death the next year. *C. fragilis* shows a few blossoms every year, but is less than happy in its surroundings, while *C. arvatica* survives cold Wisconsin winters only on the side of the house foundation and is a rather meager performer. *Campanula rainieri* was given a choice southeasterly spot and was a delight for two years, then perished in the hot, humid summer. A few species of *Edraianthus*

were also introduced. *E. pumilio* is one of my favorites, but is as susceptible to hot summer days as *C. raineri*. I will try both again in scree-like conditions.

The Cruciferae are well represented, with drabas occupying narrow ledges and wedge-shaped spaces between rocks where they remain in tight cushions; *Thlaspi rotundifolium* also does well here. *Aubrieta* carpets a ledge. A large rock with a southerly or southwestern exposure provides a background and an ideal setting for *Aethionema grandiflorum* and *Schivereckia podolica*. *Hutchinsia alpina* was happier with a southeasterly exposure on a wide ledge where it grew into a dense rug. Recently introduced *Alyssum cuneifolium*, seed for which was provided by our friends from Czechoslovakia, is very promising and is making dwarf mats of silver.

Members of the Rosaceae are well suited to a sunny part of the garden. Here *Dryas octopetala*, *D. drummondii*, and the lately introduced *Dryas octopetala* var. *hookeriana*, are always happy even on the hottest summer days. *Potentilla megalantha* (distributed as *Potentilla fragiformis*), *P. nevadensis*, and *P. yema* are also suitable for a hot sunny spot. I must mention that *Cotoneaster apiculata*, which was planted against the side of a concrete stoop, has, with a little help from anchors, covered the bare ugliness and with its red fruit decorates the stoop, sometimes till the holidays.

Most members of Caryophyllaceae are at home in full sun. I am not sure my dianthus grown from seed are true to their names, so I will omit listing them. The mat-forming varieties, with silvery grey foliage, cover the ledges nicely and spill downward, presentable even when not in bloom. *Saponaria ocymoides* was soon discarded because of its robust growth, but *S. ocymoides* 'Rubra Compacta', by some regarded as a hybrid, is a

delight in the garden. *S. caespitosa* is a permanent resident, but *Saponaria pumilio* is more susceptible to August rains, and would probably appreciate scree conditions. *Arenaria grandiflora*, with its spreading mat and large white flowers, makes a nice contrast to *S. ocymoides* 'Rubra Compacta', while *Arenaria tetraquetra* fits in the tightest sunny crevices.

Geranium dalmaticum must be mentioned as a very permanent perennial for hot environments. *G. cinerium* ssp. *subcaulescens* is also one of the best. *G. sanguineum* 'Lancastriense' spread too quickly, encroaching on its neighbors, and therefore was discarded.

All of the garden was now planted except the choicest spots or micro-climates, which were saved for my favorites. A spot facing southeast seems to be ideal for *Gentiana acaulis*. The rocks are set tightly together. When planting such plants among rocks I find it best to make a hole with a narrow spatula or dibble deep enough so the roots can be inserted without crimping them; if the hole is not big enough, shake off the soil, insert the roots into the hole and then pour soil that is only slightly damp alongside them. Firm the soil well with your fingers — alpine plants dislike loose planting. It is of great importance that the plants are set deep enough. After planting, gently lift the rosettes or cushion, if necessary with a pencil-like tool, and mulch beneath with good sized pebbles. Water thoroughly. If water disappears quickly, it's a sign of good drainage, which is very important.

Such a garden can be watered daily on hot summer days without clogging the soil. The soil remains airy and the tiny roots quickly penetrate deeply alongside the rocks. Similar spots were found for *Gentiana clusii*, *G. dinarica*, *G. verna*, *G. verna angulosa*, *Campanula raineri*, *Dianthus alpinus*, *D. glacialis*, *D. neglecta*.

tus, and others.

Planting is done early in spring when the frost is gone and the soil warms up a little. The plants prosper nicely till mid-June when the temperature and humidity rise. Then, even happy plants suddenly appear tired and the ever-so-carefully selected site does not give them what they have in their natural habitat; they will miss thin, cool mountain air, cold heavy dews, and intensive sunlight. The weather from mid-June through August is nearly intolerable for alpinists, therefore they need our help. Soil must never become parched. Even though I have an underground pipe for watering, I prefer to use a garden hose with a soft watering-can-like spray attachment. In our climate it is best to water late in the evening (9 - 10 p.m.) The plants are watered sparingly every evening to simulate dew, and if there is no rain I water thoroughly once a week. When sprinkling for a dew effect I move several times quickly from one end of the garden to the other to ensure that each rock absorbs as much water as possible. When this water evaporates the following day in the hot sun, it will keep the environment cool for at least part of the day.

In my experimenting with *Gentiana verna* and *G. verna angulosa*, I also tried a continuous watering system. The plants were planted in a ledge-like setting with a background rock rising several inches above the rock set in front of them. Copper tubing was connected to our water system and fitted on the other end with a tiny needle-valve adjusted to a few drops per minute. This dripped water on the large rock behind the gentians. The rock was limestone of low density with some tiny cracks. With the help of a

toothpick, a single rosette seedling of *Saxifraga paniculata baldensis* was inserted into one of these cracks along with a few fibers of sphagnum moss. The gentians and inserted saxifrage prospered for four years; the saxifrage grew into a six-inch cushion, and the gentians bloomed every spring. For accompaniment I planted *Festuca ovina glauca* close by.

Gentiana acaulis bloomed sparingly; the best display had about one dozen blossoms. A division of the plant did not take, probably because of hot weather shortly after the division. *Gentiana clusii* has been in the same location for five or six years and performed like *G. acaulis*, except in 1980, when it covered itself with forty-eight blossoms. The following year it had three blossoms. *Gentiana dinarica*, supposedly the best bloomer, does not perform that well for me, a few flowers at a time is the most it has produced. It seems that long Indian Summers entice the gentians to bud and usually these buds, if developed to a certain degree, do not produce flowers the next spring. All you can count in the spring are the calyces.

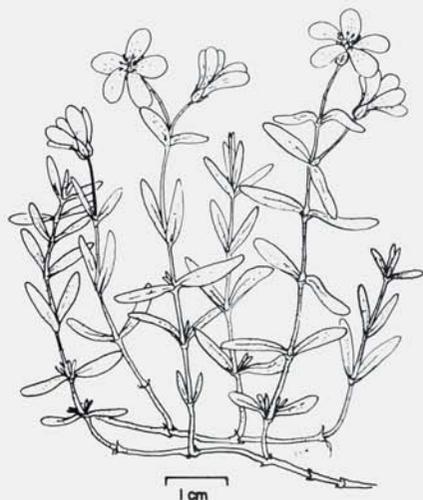
This was my first attempt at rock gardening. Great anticipation followed by some disappointments, but also by many happy moments of success gave me the enthusiasm to build another garden at the rear of our home. Here I took advantage of a large oak, which is situated southeast of the garden and shades it for part of the day. This new garden offered me further possibilities: saxifragas, douglasias, papavers, ramondas, primulas, soldanellas, androsaces, all of which are my new interests. §

The Worthy Sandworts

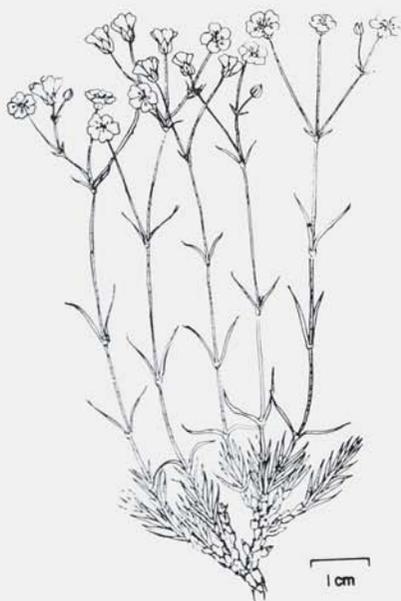
Geoffrey Charlesworth
South Sandisfield, Massachusetts

Drawings by Carol Ann Kearns
Princeton, New Jersey

Every year the seed list contains a dozen or so arenarias and many of these are well worth growing, forming very attractive buns, tufts, or mats. A few have longer foliage or flower stalks and contrive to look like compact grassy clumps. All except one of them are white and even *A. purpurascens*, the one exception, is only faintly pinkish — at least the flowers on the plant I grew were not a robust pink. But white, of course, is a very good foil for the exuberance of the early June display, which is when arenarias are at their best and they are a sound group of whites to take over as the arabis and early iberis fade out.



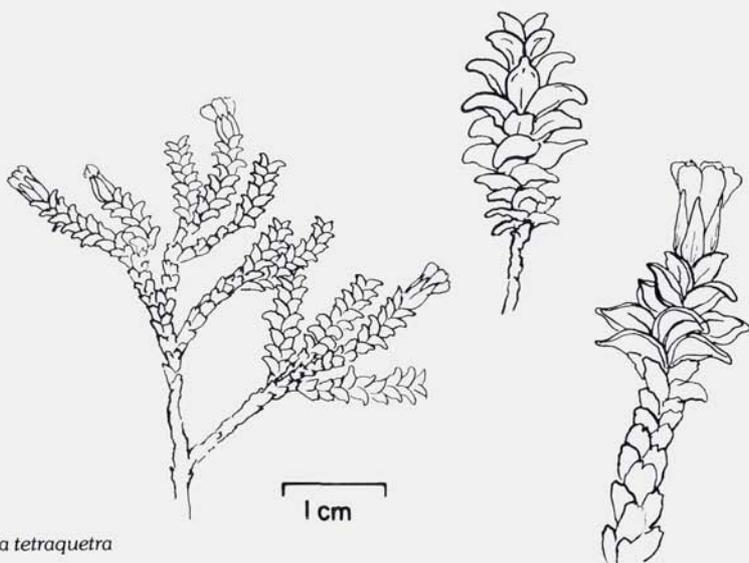
Arenaria montana



Arenaria kingii

Perhaps the showiest of them all is *A. montana* with *A. grandiflora* running it a close second. These are both beautiful mats of glowing white with the theatrical impact of *Phlox subulata*. *A. montana* is a little unreliable, one of those plants you think you have forever and then, suddenly it leaves you, but *A. grandiflora* is reliable enough and not aggressive. It needs, however, a good foot of space to perform at its best.

Taller than these two are *A. graminifolia*, *A. longifolia*, and *A. kingii*. These are the grassy ones; every year I



Arenaria tetraquetra

pull out *A. graminifolia* before the flowers form under the illusion that it is an overlooked weed, so labels are essential and any other warning signal you can tolerate which might enable you to resist the urge to pull. As a mature plant it forms a large clump (a foot across) of small grassy tufts. *A. kingii* has a grassy look by virtue of the tall clump of flower stalks, the leaves being about two or three inches long and the stalks a foot; I never feel inclined to attack it. *Arenaria longifolia* is somewhere between the two in appearance.

Then there are several sandworts which form quite elegant buns. *A. austriaca* is a good one and so is *A. norvegica*. The latter forms tight rounded mounds, only three inches across, of leathery shiny leaves and may be an annual but will deposit its babies very close by in August and has excellent manners. Even showier is *A. tetraquetra*, with hard interesting "square" leaves arranged like an upside-down pagoda though it produces very few flowers. People take it to plant shows now and then, but it is quite

easy to grow in a sunny spot and is easy to divide. You can also propagate it by inserting quite small cuttings in perlite. September would be a good time for this. A much tighter form of this species is *A. tetraquetra granatensis*. This plant has the same austere look as *Gypsophila aretioides* or *Draba imbricata*. It has even fewer flowers than the type plant, but the leaf shape becomes a pattern written on the dome and it is a very choice plant for the raised bed.

Arenaria is sometimes split into a number of genera with *Minuartia*, *Alsina*, and *Cherleria* as alternative names. *Arenaria caespitosa* (more correctly known as *A. verna caespitosa*) may frequently be found listed as *Minuartia*. This is a plant that verges on the aggressive, but is attractive in the way it forms lumpy mounds like the rolling green hills of Vermont. There is a yellow form, *aurea*, which has some garden value though not really better than the normal fresh green type. Both are studded with typical five petalled white stars in June.

Arenarias with needlelike leaves in-

clude *A. obtusiloba*, which forms a tight mat; *A. sedoides*, which has slightly longer needles and comes from the outer Hebrides; and *A. laricifolia* with leaves between the two. This latter sandwort looks well falling down a hot bank or snuggling between two stones on a wall. *A. groenlandica* should also be grown for its association with the mountain tops of New York and New England. You can find seed, as I did, by driving to the summit of Whiteface mountain near Lake Placid, N.Y.

A. purpurascens prefers a moist location, which may explain why I lose mine after one season. So does *A. balearica*, which has tiny emerald leaves and forms exquisite mats of brilliant green. Unfortunately it is not thoroughly hardy for me and I shall keep it protected in winter, leaving only a few experimental plants to brave the rigors of a Massachusetts winter. Unfortunately, for those who can grow it outside, it has the reputation of being a beautiful but uncontrollable weed.



Arenaria groenlandica

If next year's seed list contains *A. erinacia*, *A. capillaris formosa*, *A. cephalotes* or a whole host of others, I'll be requesting two or three new species of this very varied genus and I advise you to do the same. §

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Most rock gardeners, if they had any choice in the matter, would prefer to have a gently undulating landscape of several acres with a nice, rugged, natural ledge facing north (preferably two with a small streamlet running between them), backed by a few tallish evergreen trees of interesting shapes silhouetted against a distant view of snow-capped mountains. Alas, most of us have to settle for far less: a small plot as flat as a billiard table, frequently occupied for the most part by a largish maple, hemlock or spruce, and with a rather too intimate view of the back of the neighbor's garage, perhaps embellished by their offsprings' partially dismantled car or cars. Yet how often, it is the gardener with just such problems who grows perfect alpines in an enchanting miniature landscape.

1982 Annual Meeting — Colorado

Photographs by Trevor Cole, Ottawa, Ontario, Canada



Lunch break at Summit Lake, Mt. Evans



Typical Pose — Bob Way of Kennett Square, Pa. examining *Claytonia megarrhiza* on top of Pikes Peak (14,114 ft.)



At about 11,000 ft. on the M. Walter Pesman Trail in Mt. Goliath Natural Area on Mount Evans



A morning at the Alpine – Rock Garden, Denver Botanic Gardens

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Six Years Past the Interim Event

Roy Davidson
Seattle, Washington

Although it is now far past the proper time for any "addenda" to the Report of the 1976 Interim International Rock Garden Plant Conference, certain pertinent information may still be of interest to those who were or were not in attendance, and to plantsmen in general. The formal program as it was presented came off almost precisely as outlined in ARG'S Bulletin 34:26, half a year ahead of the event, and the Report, as published, concisely reflected what were termed the "sessions," from I through XII (the closing salmon barbecue luncheon, courtesy of the government of British Columbia), as well as certain pre-sessions, inter-sessions and post-sessions, as the electives were termed. Such of these as Mt. Rainier and gardens visited were included when material was submitted. Tours before and after were not part of the conference *per se* and were not therefore included.

More on gardens has been published. Mrs. Free wrote of how her charming scree and woodland developed (ARG'S 37:133), complementing very nicely the photo of it in the Report. "Lakewold," the Wagner garden was featured in *Pacific Horticulture*, Spring 1979 and on the cover, and again in *Town & Country*, June 1980. Thomas Church, its designer, felt it to be one of his most satisfying commissions.

Only for lack of space were the papers of Dr. Barksdale and Mrs. Witt not reprinted from the Program Booklet,

where they appeared as preparatory material to the Mt. Rainier trek. The Report then, in itself, is not a total reflection of the conference, and should be used along with the Program Booklet (which also contained thumbnail biographies of participants) and the geographic plants lists publication prepared by the co-sponsoring AGCBC to elucidate their splendid trough displays; this last is available from that organization.

The program committee had accumulated much other material (in various states of preparation) much of it destined never to reach an audience because of limitations of time and space. Certain of the subjects could only be treated visually: some of the displays were accorded coverage in the Report while others got no mention; all were acknowledged in the Program Booklet, which also included brief biographical notes of participants. One suggestion destined to remain unused was a list of American plants recognized with awards in Britain, and another similar list that documented promising newly described taxa of the decade. While the first of these is of certain very definite value, the second was frankly only a wish-list, for who can possibly guess the garden worth of a plant from a dry remnant? As an example, *Geranium toquimense* (1974) (said to be nearest to *G. marginale* of SE Utah) is of a meritorious genus and sounds attractive enough in its own right: silvered cut leaves and magenta-red flowers; a

published line-drawing depicted a subject of charming scale, but all that has been seen of it high in central Nevada falls way short of expectation, and so far as is known it has not been brought into cultivation. Surely up there somewhere is that exceptional one, a good "crimson," or a pink or even a white?

Quite on the other hand the newly described *Douglasia idahoense* (1981) can only be top-flight, but is it growable? This had been known for some forty years in herbaria and is only now verified as being one of a small number of relict species of the granitic Idaho batholith that includes *Synthyris platycarpa*, *Waldsteinia idahoensis*, *Dasynotus daubenmirei* and the recently described *Saxifraga bryophora* var. *tobiasiae*. There may be still others yet unfound in this wildest part of the West.

Two excellent papers that did not find audience in the actual proceedings enhanced the Report considerably, those of John Watson and Fritz Kummert, neither of whom was able to be in attendance. To correct one very slight error, the paper prepared by Don Humphrey and John Wurdach was given by Dr. Wurdach, these gentlemen acting on behalf of the Potomac Chapter as acknowledged in the Program Booklet; both were present. Two proposals that never got to the presentation stage were mentioned in the proceedings; *Eriogonum* became a Bulletin subject (ARGS 34:168) and in declining the committee's invitation to present *Astragalus*, Rupert Barneby (without peer as their world authority) wrote he felt it unrealistic and unfair to taunt the aspiring gardener with such "sumptuous visions of spun-sugar confections shimmering on the high western deserts" on the grounds they are ungrowable (once said too of *Dionysias* and certain others equally exacting).

Name changes are of two sorts; there

are the milestones and then there are the millstones, stemming of course from two quite different motivations. The first are those that correct old errors and we should rejoice over them, but the second are not so welcome, since they deal with matters subject to both interpretation and judgment. There is no way to resolve many of this sort and they hang around our necks until time decides their acceptance or rejection; if not found workable and useful, they are forgotten. A prime example here has to do with *Douglasias*: we Americans still call them *Douglasias*; we've always been aware they are precariously close to being *Androsaces* (p. 78). Another of these millstones has to do with *Eritrichium*. We are of course aware that the one and only true "King of the Alps" is the European *E. nanum*, but there are Americans which duplicate that. We might follow Hitchcock (*Vasc. Pl. Pac. NW*) who says those of the Rocky Mountains "may constitute the weak variety *elongatum*," while those of Alaska may be referred to var. *aretioides*. Therefore all those indexed in the report (except as under *E. howardii*) belong within the *E. nanum* complex. Incidentally, one of the items on the Awards List was *E. howardii*: PC 1973. One of the welcome name changes has to do with the little five-finger maidenhair that traces back to the introduction of the late Carl English (pp. 204 and 209) now to be known as *Adiantum pedatum* ssp *subpumilum* (1978). Other fern name changes include *Polystichum lemmonii* for *P. mohrioides* (pp. 206 and 213) and *Dryopteris expansa* for *D. austriaca* (p. 211).

Following are other miscellaneous notations which for reference purposes might be penned into the index or appropriate margins of the Report, from *Phlox* to *Finale*. Should *Phlox* 'Chattahoochee' prove to be hybrid, then its

correct name would be *P. x glutinosa* 'Chattahoochee' (p. 5). It was given the R.H.S. AM 1976. The Maslin's rediscovery of *Phlox lutea* and other color forms within the "nana complex" in northern Mexico probably represents the most important plant introduction of the decade. (ARGS 37:62 with color illustrations.)

Trilliums have been getting considerable attention as reflected in our own Bulletin (35:3; 38:4; 39:2 & 3) and most of the taxonomic change is fairly evident with some revision and several new taxa described. We can hope these are all milestones. Credit for conceiving and mounting the Castilleja display should be accorded to Jeanne Gardiner and Frances Roberson (p. 27) and it may comfort those interested in the penstemon cultivars to know they are documented in the publications of the American Penstemon Society, which may also be a source for seed and/or plants, the now historic 'Evroy White' from Mt. St. Helens included. Clarence Elliott thought his 'Six Hills Hybrid' had arisen from *rupicola x scouleri* (p. 38).

Sallie Allen would credit Barry N. Starling for the artwork (p. 46) and she informs us that the "kalmi-oddity" (p. 47) has now been named *x Phylliopsis hillieri* (the "x" ahead of the binomial indicating a generic hybrid). It got an AM 1976. *Townsendia montana* (p. 62) we're advised is now to be known as *T. alpigena* Piper. (see *Madrono* 22:401) The good form of the little annual evening primrose (p. 80) is *Oenothera andina* var. *hilgardii*; flower of the type form is of no consequence (ARGS 31:63). We are still vexed with the millstone *Sisyrinchium* "macounii alba" (p. 86) for what is in reality a most exceptional albino form of *S. bellum*; pity it was never named for the exceptional lady who found it, Lester Rowntree (ARGS 35:67).

Anybody interested in the Pine Bar-

rens ought to study Harshberger's report, available through the ARGS-PHS Library Service. The shale barrens was written of in some detail by Humphrey in the Bulletin (ARGS 28:47) while the Wurdachs wrote of the granitic flat-rocks flora of the Southeast (ARGS 36:53). These further references give a little more detail of plants and environment, elucidating the edaphic series. (pp. 126-163) Since pumice-ash has been recently spewed out by Mt. St. Helens, it may be of timely interest to read of newly described taxa that have been evolved on the ancient ash deposits of Mt. Mazama as they have lain on the arid Owyhee Basin of southeastern Oregon (*Madrono* 24:224 and *Brittonia* 33:3).

As we thumb through the Report we note how frequently hybrids are referred to in wild populations as well as among cultivated bed-fellows, in addition to those of mankind's making. Dr. Kruckeberg modestly did not speak of his own work with *Silene* (ARGS 19:1). Mention of *x Phylliopsis*, an all-American coming back to us from its origin in England (the "Kalmi-oddity") brings to mind a couple of other similar bi-generic happenstances, both arising in France: *x Heucherella* (*Heuchera x Tiarella*) and *x Solidaster* (*Solidago x Aster*). Plants very similar to *x Solidaster lutea* have been reported in the central-eastern prairies of Canada where *Aster ptarmicoides* occurs with several species of *Solidago* (see *Canadian Naturalist*, 1969). The Rigidella-Tigridia cross (p. 103) was not made originally in England, but rather at Berkeley by the late Dr. Elwood Molesed in the course of his monographic study of Tigridia.

Other hybrid inferences include a statement that Delphinium hybrids are not common in nature (p. 178). They are difficult for man as well. We do have the half-American one called 'Pink Sensation' which arose in Holland between the

Eurasian *D. elatum* and the American *D. nudicaule*, given an Award of Merit in 1941 as *D. x ruysii*. It is exported in large numbers to fill the demand for a pink delphinium, propagated vegetatively as it is sterile. It is not well known, however, that an amateur breeder in eastern Washington, Axel Samuelson offered delphinium hybrids in "rock garden sizes" of several seed strains during the 40s and 50s. Called "West o' the Rockies" strains, these are documented in Delphinium Society publications. He used only native Americans and was caught up in the stumbling block of sterility, which hindered reaching the ideal: large flowered, fertile and red. Those lovely ones he did have could only be increased vegetatively and they were all lost with his death some years ago. It might be worthwhile for someone to study his methods and remake the crosses, at least those which did give fertile seed.

We had hoped for the conference to have a display of the summer-flowering half-American hybrids of *Dicentra* bred by the late Dr. Marion Ownbey using Asian *D. peregrina* with our own sorts. Due to his untimely death the prior autumn, this display did not materialize. The one in best distribution (from *D. nevadensis* x *D. peregrina*) has been given a PC award in England (1973) as *Dicentra* x 'Tsuneschige Rokujo' (p. 248).

There is some confusion in the references to a couple of conifers: *Picea glauca* 'Albertiana Conica' (according to one authority) is correct for the Alberta Spruce, (*P. glauca* 'Conica' on p. 190), which in transcription from tape came out "*P. alba geana conica*" elsewhere. No two authorities agree on many conifer names, and all these refer to the same plant. The second consternation has to do with the Cambridge redwood, *Sequoia sempervirens* 'Prostrata' (pp.

192 & 214); however the name 'Cantab' is now accepted as correct for the back-sport form, when the "dwarf" has produced a strong erect bole, as it has done on several occasions. As a further complication, the plant in its dwarf form was given an AM in 1953 when shown as *S. sempervirens* 'Nana Pendula' (see Journal RHS, Jan. 1979).

Further delays would have resulted from any effort to index the colored photographs into the general reference, and it is a small matter of time to prepare such a one for quick referral. The pink *Mimulus* (following pp. 70 & 310 in the Andes trough) is the one John Watson mentions (p. 114) and insofar as is known it is an unidentified hybrid, easily grown and increased vegetatively. Somehow the *Pyrola* of the Wenatchees (p. 310) came to be identified as *Chimaphila*; it is most likely *P. dentata* which grows profusely there in a dry conifer association with *Douglasia*, strange as it seems.

There is not a single reference in the entire proceedings to two of the more characteristic western American genera, *Yucca* and *Zauschneria*. To round out the alphabet, Richard Kleinboehl has only recently contributed on the former (ARGS 39:177) while the latter was subject to a recently published monograph recognizing seven taxa, quite a contrast to the prior study which submerged them all within a single species of *Epilobium*! The Bulletin plans to treat this autumn flowering genus soon, as presently grown in the Denver rock garden collection.

Of course by this time everybody will have well read their Report of the Interim Conference. The universal consensus is that what we have here goes far beyond being any mere "report," that it surely stands as a major reference on the subject of American plants for rock gardens, due in large part to the editorial care and

expertise which brought it to us, to say nothing of the patience and persistence. Perhaps these few explanations and references to further reading will be an incentive to those who do not have it on their shelves to do something about that.

The Report of the First Interim International Rock Garden Plant Conference, Alpines of the Americas, is available from the ARGS Bookstore. If you don't already have it, you'd better get a copy; it's a book you will treasure. — Ed. §

Amo, Amas, Amat Rock Gardening

Charles Gordon Post
Aurora, New York

When one responds late to the siren call of the rock garden and memory begins to play its tell-tale tricks, it is necessary to gird one's loins and stand manfully in the presence of the experienced and erudite gardener — especially an erudite one — and learn, aware that there is no royal road to anything worth knowing including terminology.

As that good soul, the bearded Foster, patiently guided me on a tour of his garden he pointed out plants of great beauty and interest, indicating them by their Latin names with such ease one wondered if he did not read Terence and Plautus for pleasure and Cicero for instruction — and in the original tongue. The two Bills, Hamilton and Dilger of Ithaca, not to speak of Virginia Briggs of *Meconopsis* fame, also spout Latin as though it had come to them with their mother's milk.

Fortunate is he who can do so.

Now Latin was not my best subject in prep school. My career from *Fabulae Faciles* to the *Commentaries* started well enough but ended with the teacher remarking that my translations, though adequate, would never have been recognized by Caesar (a hackneyed remark

probably made at least once in his life by every teacher of Latin, past and present).

But I have great respect for Latin as the universal language of horticulturists and I know the importance of terminology. Thus, sadly, as I drove away from a pleasant hour with Mr. Foster, pondering upon what I had seen and heard, I found that I could recall vividly the flowers; as for some of the genera and the species, alas, wrack my brain as I would, I could not remember them.

One becomes plagued with doubts as to one's capacity to remember the precise terms and keep straight in one's mind the distinctions between *Gentiana acaulis* and *Gentiana verna*, between *Ranunculus anemenoides* (now *Callianthemum anemenoides* — Ed) and *Ranunculus adoneus*.

Of course, there are reasons why terminology is important. As L.H. Bailey writes: "if the plant-lover wishes to have accurate stabilized names for his plants he must be sure that his plants are the ones to which the names apply." Several years ago I bought what the seller told me was *Sedum spathulifolium*; the plant turned out to be a species of *Chrysanthemum*. It is a matter of identification.

The common names may be good enough but the common names do not lend themselves to "method," to organization, or to science. With a command of the proper names attached to the proper plants there comes an added dimension to the enjoyment of the rock garden. So one keeps plugging away at the terminology, wanting to learn, forgetting and relearning, and finally realizing the satisfaction of noting and identifying such plants as *Pulsatilla alpina* var. *sulphurea* and *Draba bryoides imbricata*. When one masters the terminology one begins to be a sophisticated rock gardener.

This effort is wholly worthwhile; but the reader does not have to be reminded that it is the *flower* that counts. As Shakespeare had it: a rose "by any other name would smell as sweet."

Like a love of music or art or literature, gardening (for me rock gardening) is one

of those inner resources which are so important to those of us who have passed the traditional threescore and ten years. "Men who have no inner resources for a good and happy life find every age burdensome." Thus spake that noble Roman, Cicero. And Cicero knew the pleasures of agriculture, of getting one's hands in the soil, of watching things grow, and returning to the earth what we have borrowed to produce, not only ourselves, but the miracles of form and color with which the earth abounds.

The above quotation is from a magnificent essay entitled *On Old Age*. Cicero had this to say, too (as best I remember it): "I come now to the pleasures of rock gardening in which I find incredible delight. To these old age is no impediment and in them I think a man makes the nearest approach to the life of the sage."

Think of that! A sage!§

Old Newspapers

Though as far as I know no one has discovered a use for the junk mail that pours into the house daily, there are a number of uses for old newsprint other than as a starter for fires. It is an excellent way of clearing a patch of ground of weeds. First mow down the weeds and grass and then cover the site to be cleared with ten to twelve layers of old newsprint, overlapping each group about halfway over the one next to it. Soak thoroughly and cover with a layer of woodchips or other heavy mulch to weight down the paper and conceal it. Leave it in situ for at least two months so it can smother and kill the weeds beneath, after which holes can be punched through it for planting purposes. After a few years the newspaper will decompose and add organic matter to the soil.

When making an artificial bog or pool by lining a hollow with plastic sheeting, first lay down a thick layer of newsprint and soak it with water. This forms a protective layer under the plastic to prevent its being punctured by sharp stones, root tips or sticks when filled with wet peat or water.

A really heavy layer of old newspapers makes an excellent base under woodchips for a path across soggy ground. It will have to be renewed periodically as it decomposes. §

Some Fall Blooming Bulbs

T. Paul Maslin

Boulder, Colorado

Photograph by the author

My concept of a good garden is to have something interesting in it every day of the year. Such elements as flowers, berries, pods, foliage, bark, shrubs, snow catchments come to mind easily and these can be supplemented with walks and walls, good rock arrangements, constructions of various sorts such as ponds and streams, arbors and fences and garden sculpture. I am not sure I would go so far as to have a parade of plaster ducks on the lawn or a bevy of colorful gnomes peering out of a cove or a giant cement toadstool or two, but I might. The strongest urge is to have some color, preferably seasonal so that the garden will change as the months go by. In temperate zones this is easy enough in the spring and summer but becomes increasingly difficult as autumn passes and winter comes. Nevertheless a good show can be arranged. I find that in the dead of winter a single unexpected flower can be more dramatic than a spectacular flower lost in the blaze of summer glory.

Here in Colorado we are still on a horticultural frontier. We read of a plant with a description accompanied by the deceptive word "hardy" but have no idea how it will do for us. So gardening is a continuous process of experimentation made more difficult because there are so few of us to carry on a sort of cooperative learning process. But some of the things we are learning seem incredible. Some plants considered difficult elsewhere

grow here with spectacular ease; and some which do well in Denver or Colorado Springs hardly survive in Boulder at all. One facet of my trial and error approach to gardening has been to find bulbous plants, other than the wonderful array of spring bloomers, which do well in the fall.

I have always enjoyed the flowering onions and recklessly try any I can lay my hands on. So far the fifty odd species I am growing are doing well although many of them have little merit, and some are vicious weeds, propagating themselves with abandon by seeds, bulblets in the umbel that replace the flowers, or underground flake-like offsets that separate far too easily from the mother bulb. And a few of them are very good late summer bulbs, interesting and showy. *Allium pulchellum* while a bit tall for the rock garden, 18 to 24 inches, is one of the best. It is not as late as some of the others, but its bright reddish violet color and copious blooms make it very choice. Furthermore the curious manner of blooming adds to its charms. The umbel is surrounded by a sheath that is drawn out into an upright filament four or five times the height of the umbel. This sheath splits and the developing buds emerge from one side, reaching up as they grow. As the buds open, the pedicels bend down, lowering the bright purple flowers. As the flowers die, the developing pods are raised among the buds making room for a succession of flowers below.

This process continues for several weeks but even after the flowering is over the seed heads retain a lot of color, and if picked at the peak of flowering they retain their color when dried and make fine material for winter bouquets. There is an albino form of this which seems a little less vigorous and also a semi-dwarf that has been given the varietal name of *valdensium*.

Another species, *Allium senescens*, while not so showy is very attractive and more suitable for the rock garden. The form I am growing is supposedly *A. s. glaucum* but may be the dwarf variety *petraeum*. In any event its sickle-shaped leaves, some five inches long, tend to spiral clockwise around the clump giving it an additional twist of interest. The flowers form hemispherical umbels on six inch scapes and are a pale lavender pink. The nominal species is said to bloom in June but the form I am growing flowers in late August or early September.

I am also growing three species from western China. They are not very vigorous but are especially nice because they are blue. *A. beesianum* is the tallest of these with spherical umbels of bright blue flowers on sixteen inch scapes in August. *A. kansuensis* and *cyaneum* are much shorter. The hemispherical umbels of *kansuensis* tend to droop. *A. cyaneum* is more delicate and has fewer flowers but they are a much more brilliant blue. It also is from Kansu and was one of Farrer's good finds. Both species bloom late in the fall.

Several years ago I got another September blooming species from Dr. Lionel J. Bacon and later once again from Panayoti Callas. The scapes are about fifteen inches tall topped by a spherical, loose umbel of about thirty white flowers. So far I have not been able to identify this vigorous form. It resembles *A. neapolitanum*, one of the few reportedly tender species, but it is taller,

the flowers smaller and unscented. Aside from being showy and very late in flowering it is a menace because it self-sows so readily.

Another delicate onion which blooms in September has thread-like leaves and scapes and is only eight inches tall. It is *Allium jeneurn*. This is another species for which I can find no listing. I was permitted to collect seed of this in the Moscow Botanical Garden in 1976. The pale lavender flowers are few in number and make up a loose umbel about an inch and a half in diameter.

One of the longest continually flowering onions is *A. schoenoprasum*, far better known as chives. Its tubular leaves and fourteen-inch scapes form a dense clump with attractive deep purple flowers. These are produced continuously until frost if they are dead-headed.

The jewel of the autumn-flowering species is unquestionably *A. thunbergii*. I have never seen it offered in catalogs nor mentioned in bulb books, encyclopedias or dictionaries. But it is listed in Hortus Third as a Japanese species. Anita Kistler, that great disseminator of alpine goodies, gave me my starting seed. Like chives it has rhizomatous roots rather than bulbs, which in time form large clumps. The scapes are about ten inches tall, each bearing a one and a half inch umbel of rich purple flowers with the orange stamens greatly exerted to give the head a lacy, fuzzy look. The umbels develop very slowly so that the attractive buds are in evidence for well over a month before they flower late in September. In fact they bloom so late here that the seed never matures although they certainly try. Year after year I find them crushed to the ground under a heavy burden of snow still fresh but pathetically eager to perform.

The word *colchicum* to many gardeners is practically synonymous with autumn. There are at least fifty species in

the genus, a good proportion of which are fall blooming. A great many species closely resemble each other and often are so variable that it can be difficult to separate one from another. Most of them grow in the Near East and around the eastern end of the Mediterranean. Very few of them are commercially available. I have been growing the lilac-rose and the white form of *Colchicum autumnale* for years. This rather small-flowered species produces about three flowers in succession per bulb, then waits until spring to produce a cluster of strapped-shaped leaves about a foot long. The bulbs increase with time but produce fewer and fewer flowers as they become crowded. Frequent dividing is the answer. The leaves of this form are a minor nuisance, occupying too much space and insidiously crowding out more virtuous plants, leaving a bare spot when the leaves die out in mid-summer. This behaviour is typical of the autumn flowering species and is at its worst in the magnificent and very showy *C. speciosum*. This and *C. giganteum* have the largest flowers in the genus. *C. speciosum* is a highly variable form, producing bunches of flowers which stand as high as ten inches or more. A number of clones, ranging in color from white through pinks to an intense purple-red, have been named. It is a difficult plant to use because the dense mass of large leaves it produces in the spring and summer completely swamp out lesser fry around it.

One of the loveliest of the large-flowered forms is the hybrid 'Water Lily', a double. It produces more bright mauve flowers than *speciosum* and the flowers are smaller, but the numerous narrow segments give a stunning effect. I have another hybrid, one of those that keep appearing and disappearing from cultivation. I think it is 'Disraeli' but its label has been lost for years. I have grown other hybrids such as 'Lilac Wonder' and

'Violet Queen' but they are no longer with me. Surprisingly colchicums pick very well considering that what is picked is only the perianth tube.

The autumn flowering crocuses do not do well here and never form the large masses so many of the spring flowering forms do. The large flowered *C. speciosus* is my best performer. I am growing what I believe is the beautiful blue variety 'Oxonion' and the white 'Albus'. These flower erratically for nearly two months. Sometimes a week or more will pass before a bulb will produce its next flower. The result is rather pleasing because sometimes after a light snow a final flower will appear to cheer me on for the grim winter so near at hand. I have also tried the following species, none of which have flowered: *C. goulemyi*, *salzmannii*, *sativus*, *stellaris* and *zonatus*. The latter produces a great bluster of leaves and multiplies prodigiously, but nary a flower.

The only hardy fall-blooming cyclamen I have grown is *Cyclamen hederaefolium*. It is nowhere near as vigorous as plants I have seen in England, but it is so lovely that I cherish it in spite of its grudging behaviour. As I teasingly tell my farming friends (those who grow vegetables) a beet the size of a button is a failure, but a petunia that produces a single flower is a success. My *hederaefolium* have only a few pink flowers late in September. But then they produce an array of startling ivy-shaped leaves beautifully patterned with various shades of green. These persist through the harshest weather deep into spring.

There are two autumn flowering snowflakes, the white *Leucojum autumnale*, about nine inches tall, and *L. roseum* from Corsica with pink flowers and about four inches tall. I have tried *L. autumnale* from seed which duly flowered but do not know yet whether it will survive our winters. They are not showy

but perhaps a cluster of them would be a nice addition to the garden. *L. roseum* is on order.

While *Lycoris squamigera* is rather large for a rock garden it is so spectacular that it is worth finding a sunny remote spot, preferably on the lee side of a large rock or a wall where autumn blown leaves can accumulate and form a deep mulch. The foliage of *Lycoris*, like *Colchicum*, is overwhelming. They finally die down in mid-summer leaving an empty spot. Then late in the summer the thick naked scapes spring from the ground to carry umbels of large, sweetly scented, pink, lily-like trumpets. This brief magnificent show makes the whole tedious procedure worthwhile. These 'Pink Naked Ladies' are reportedly not hardy here but I have grown them off and on for years. My original stock came from a large unattended clump in a Fort Collins backyard which is in zone four. I am also growing *Lycoris sprengeri* which is very similar to *squamigera* but the sepals are tipped with blue.

A most unusual early autumn bloomer is *Oxalis lobata*. It begins the year with a modest production of trifoliate leaves, each leaflet being cleft to the petiole. Two of these leaflets are creased so that half the leaflet is horizontally disposed to lie in the same plane as the third uncreased leaflet. The other half of the creased leaflets are held as blades perpendicular to the plane of the four half-leaflets below, thus making a most un-oxalic leaf. By the end of June this foliage disappears only to reappear in September, now accompanied by brilliant yellow flowers about a half inch in diameter on two-inch scapes. There is a continuous succession of these, sometimes halted for a few days by a sharp frost only to continue deep into our Indian Summer.

Schizostylis coccinia is also too large for a rock garden, and presumably too



Oxalis lobata

tender to survive here. But several summers ago I rashly tried it, and sure enough it did not flower. But the following spring I found shoots of it emerging from a tangle of aster roots and that fall it flowered. The fleshy roots form an underground mat from which grass-like leaves shoot up to about fourteen inches. From among these, somewhat gladiolus-like scapes arise and produce a succession of coppery pink flowers. It has flowered every year since.

One final species should be mentioned, *Sternbergia lutea*. Its crocus-like flowers appear in September and are a brilliant yellow. The species is a little disappointing though because the flower production is very undependable here; out of a clump of a dozen bulbs perhaps only one will produce a flower. In contrast to this the slopes of the rock garden at the Longwood Gardens are spangled with great quantities of bloom in September.

I am sure there are numerous other species waiting to be "discovered". Some I already know about, but have not yet tried, are *Galanthis reginae olgae* and *Zephyranthes candida*. As I learn about these and others, they shall have their turn. §

Trillium Cousins

Edith Dusek
Graham, Washington
Photographs by the author

Some plants, such as roses and composites, are blessed with cousins by the dozens; not so with the trilliums. They have but one related genus in Europe and Asia and two in the United States.

Paris, the sole relative in Europe, seems to be best known in its species, *quadrifolia*, a rather self-effacing plant

not particularly guaranteed to bring its relations as a whole to the average gardener's attention. Other species spread into Asia as far afield as Taiwan. In the Himalayas they are said to be represented by species more closely allied to the trilliums. Whether the Taiwanese *P. arisanensis* might be considered the pick



Scoliopus bigelovii



Scoliopus hallii

of the litter, I am unprepared to say for I have yet to meet all of the species in this genus. Suffice it so say, that if the general run of plants match the photo of the plant, which I have seen, this species will amply repay any gardener's efforts to obtain it and make it feel at home.

In this country we have two related genera. The monotypic *Medeola virginica*, commonly known as Cucumber Root, is found in the East. It too might be classed among the demure plants whose charms are discovered only upon close inspection. Close-up photography discloses an intricacy of form not obvious to the casual stroller along the garden path.

The Far West can claim to a genus of its own, *Scoliopus*. It is represented by *S. bigelovii* in California and *S. hallii* in southern Oregon. The former is encoun-

tered occasionally in the literature, while the latter is rarely mentioned at all, even by botanists. Neither can match the flamboyance of some of our western trilliums, nor do they resemble trilliums at first glance. The most obvious difference is, that unlike *Trillium*, *Paris*, and *Medeola*, which all produce a whirl of leaves or bracts atop the stem, *Scoliopus* leaves are produced at ground level.

They resemble each other in being early risers and retiring quickly to bed once their above ground tour of duty is finished. Of the two, *S. bigelovii* is the larger. It forms masses of closely ranked leaves held more or less erect by close proximity to each other. The leaves are conspicuously marked with irregular dark spots so that they have a nice impact as foliage plants. In contrast the

plain green leaves of *S. hallii* are placed nearly flat on the ground. Though this makes the plant less showy, it does help to bring the flowers, on their couple of inches of stem, to one's attention. The flowers of *S. bigelovii* do not overtop the leaves by much.

In both species the flowers are subtly marked in greens, yellows, and browns. The most obvious difference between them is that while *S. bigelovii* merely reflexes the petals, *S. hallii* gets carried away in this direction and each petal assumes a complete downward curl.

It has been said that scoliopus are cursed with bad breath. This may be true, but as one cursed with a sensitivity to irritating odors, I must confess that thus far I have been totally unaware of the genus's failing in this respect. It is quite possible that these are another of those plants which release scent only under certain conditions and only people who make a practice of poking their noses into places best reserved for insects will become aware of this aspect of the genus. It is also possible that those who have noticed this aspect of scoliopus are those that grow them

under glass. At one time I had occasion to confine a number of plants of *Campanula rotundifolia* for a brief period. It is stoutly maintained that this species is completely devoid of scent, yet as my captives warmed in the sunny confines of the propagating house, they filled the air with a most delicious aroma. It is entirely possible that scoliopus might respond in a similar, if not so delightful, manner.

For some years *S. hallii* has grown in a dryish spot in my deciduous woods. It did not increase appreciably but returned faithfully each spring with little help on my part, thus suggesting that it should not be rated among the more difficult plants. This prompted me to plant a more recently acquired *S. bigelovii* in a similar situation. Soon thereafter a visiting authority on all these related genera gazed at the site with tactfully raised eyebrows and commented that he had seen these plants massed in a seeping wet area in California. He suggested that the edge of my bog might be more suitable. Both species were removed to this site. It remains to be seen how the plants will respond to these new conditions. §

In Search of Darling Tony

**Lola Gardener, Pistol River and
Veva Stansell, Gold Beach, Oregon**
Photographs by Marguerite Metzger

In September of 1978 my friend Veva Stansell was given the assignment by the U.S. Fish and Wildlife Service of surveying *Darlingtonia californica* for locations, ecological needs, average population size, extent of trade and threats to their

existence. I pled to go and she said I could help. We spent so much time in the hills that year we were accused of meeting someone named Tony — darling Tony — out in the woods somewhere.

Darlingtonia californica goes by a

number of common names: Cobra Orchid or Cobra Lily, California Pitcher Plant, and Fly-catcher. The latter seems to fit the plant best, but it is by no means limited to catching flies. In one bog we discovered moths about two inches long solidly packed inside the tubular leaves. It is said that even a mouse may enter a leaning leaf. Ben, my husband, observed Yellow-jackets flying in and out; the only insect we know that accepts "Tony's" dinner invitation without ending up in the soup.

The hollow tube-like leaf of the Fly-catcher enlarges upward, with one side curving over to form a hood. The opening into this tube is up under the hood where two appendages, sometimes described as a forked tongue, are attached. Insects are attracted to the leaf by the nectar glands present on the appen-

dages and also on the main portion of the leaf. When an insect enters the opening, it tends to fly upward into the hood, which is checkered with a pattern of opaque green (or red in sunny places) and translucent flecks, sometimes referred to as fenestrations or little windows. Inside the hood the insect will waste energy trying to escape toward the light, until exhausted it lands on the slippery interior of the tube. Here it is prevented from climbing out by downward slanting hairs and eventually it slips down into a reservoir of secreted liquid pooled in the base of the tube where it joins the carcasses of other creatures which are being broken down by bacterial action.

The leaves can be as tall as three feet or as short as one inch. Even seedlings show the beginning of a hood, at first flattened, but soon expanding to form the



Darlingtonia californica

egg-shaped cowl. The plants grow in crowns or rosettes with the hoods twisting to face away from the center. The numerous, clustered crowns seem to come mainly from stolons rather than being individually seeded plants, though seed germination is not difficult.

The nodding flowers have five greenish-yellow sepals, each about one and a quarter to three inches long. These shade the five shorter petals, maroon or purple in color, which touch their tips together. Near the tips the edges of the petals are inrolled, so as to form five symmetrical slots giving entrance between the adjoining petals to the stamens and pistil within. In seed the bracteate scape straightens and the obovoid capsule, one to two inches long, stands erect.

Darlingtonias are often associated with sphagnum in the coastal bogs. In the Siskiyou Mountains they seem to prefer a seepage or small stream. Most bogs visited were on a serpentine or peridotite soil base. Serpentine soils have a low nutrient value and the carnivorous nature of the Fly-catcher is advantageous in such an environment. Darlingtonia bogs have been reported from sea level to 7,200 feet elevation, where they are covered with snow in winter. The most northerly location on record is in Tillamook County not far south of the Columbia River. They can be found as far south as the Sierras, across a wide gap in distribution.

One particular Darlingtonia bog in southern Coos County is memorable.

One objective of the survey was to count the average number of plants in each bog visited. Veva had contrived a three foot diameter contraption of black plastic pipe to count the number of crowns in a given space. This particular bog is a sphagnum bog, very deep and very wet. I threw the hoop and we slogged out to the encircled spot and proceeded to count the crowns. Suddenly

Veva called out, "Lola, I'm sinking!" I continued to count, ". . . 23, 24, 25," until I realized she actually was sinking — quite fast and deep. Indeed, we had trouble extricating her and her rubber boots from the clutches of the bog.

Another long remembered trip was guided by my husband, Ben. He used to hunt in an area we call the "Big Pines." It had been twenty-five years since he had been there and Knobcone Pine and manzanitas have a way of growing in very thickly in that many years. We took our nine year old nephew, Troy, with us. We left the car about 11 a.m. with no lunch and arrived back at 4 p.m. The brush was so thick that Ben had to tramp it down to make a trail for us. At one point Troy asked in a wistful voice what we had to eat when we were able to get back to the car. Fortunately Veva had fruit leather in her packsack and there were still huckleberries hanging on the bushes. Coming back was a chore for Troy as his short legs made it impossible for him to climb over the brush; he traveled in jumps, a sort of swimming motion, but with never a word of complaint. Eventually we arrived at the bogs — acres of them. It was well worth the effort. Besides the masses of Darlingtonia, there were hundreds of orchid plants, *Cypripedium califomicum*, in seed and lovely gentians in flower. This bog was probably about twenty acres in extent and we would love to make the trip again. But with LUNCH!

Approximately thirty bogs were visited during our survey and population estimates made in each. Total sites reported from reliable sources and plotted on Quad maps came close to 180. In the Siskiyou, common associated plants included *Ledum glandulosum* ssp. *columbianum*, *Chamaecyparis lawsoniana*, and *Rhododendron occidentale*, especially at the steeper streamhead sites. The highest upslope *Chamaecyparis*

lawsoniana, indicating a moist site, also marks the upper limits of the *Darlingtonia* stands. Sensitive species associated with *Darlingtonia californica* include *Cypripedium californicum*, *Gentiana bisetata*, *Lilium vollmeri*, *Rudbeckia californica* var. *glauca*, and *Viola lanceolata* ssp. *occidentalis*. *Drosera rotundifolia* and *Pinguicula vulgaris*, both carnivorous plants, also occur with *Darlingtonia* in some locations.

Darlingtonia may be raised from seed placed in a pot filled with chopped sphagnum and kept constantly moist. I was also successful with germinating the seeds in a pot of sand kept constantly moist. A small artificial bog with constantly running water and partial shade seems to give the best results for growing the plants. Pot culture may be difficult as the old crown dies and new plants come from underground stolons and thus

need considerable space.

For the future, *Darlingtonia* sites should be watched for mining and collecting activities. Logging seems not to be too serious a threat, as many of the mountain sites are in areas that do not produce good timber. *Darlingtonia* populations seem able to recover from disturbances as long as water supplies are not changed or silted badly. Logging or road building that alters drainage will surely be detrimental.

Maybe by increasing our knowledge about the Fly-catchers and their soggy hideaways we can prevent these cleverly adapted plants from becoming Endangered, Threatened, or Rare. If you are fortunate enough to visit one of these bogs be sure to give our handsome, bald-headed, handlebar-mustached "Darling Tony" a salute for us. §

But Are Those Plants in the Garden?

James L. Jones
Lexington, Mass.

The ritual is a familiar one: each year, in January, on the arrival of a seed list, names of long-coveted plants are exhumed, checked against the offerings in the list and entered with nervous care on the proper form. Before that day has gone by, the dedicated practitioner will have dropped his or her response in the mail.

In a narrow sense this ritual is certainly not an empty one, yielding up in due course a harvest of seeds. But that's only the first step along the way, and until that consignment of seeds is translated into enduring garden plants, somehow brought to increase one-hundredfold, it

all remains in the realm of a mythic rite.

Having noticed that my own garden was not without bare spots despite many years of the seed list ritual, I screwed up my courage to look at the statistics, calculating the percentage of germination by year and by source and, the real kicker, the percentage of these seed-grown plants that were actually doing something useful in my garden or alpine house as of this writing. The varieties considered are all perennials, though some allowance was made for those widely acknowledged to be short-lived.

The compilation showed that I had sown 407 varieties of seed in the course

of four years, received from nine different sources — societies such as ARGS and various commercial seed companies. Germination percentages for the seeds from the different sources ranged from 60% to 82%, averaged over the four years, and were fairly consistent for each source year by year.

The overall percentage for each year also remained fairly constant: 73% in 1977, 58% in 1978, 61% in 1979 and 67% in 1980 for an average germination rate of 65%.

And then I came to the bottom line, the percentage of plants out of all those sown that had come to serve some garden function. Here are the tallies: 1977 — 20%; 1978 — 21%; 1979 — 25%; 1980 — 32%. This painful analysis has told me that a quite dismal one-fifth to one-third of all the varieties of seed that I have sown are all that have won through to grace my garden. That is not a pleasing realization, though made more palat-

able (and reportable) by the upturn in survival seen in the last two years. That is a meaningful improvement by the way, not an artifact caused by an ignominious retreat to easier species.

Results aside I enjoy doing this kind of analysis, and I also expect it to be of specific use. It shows me that in my best year I only got fifty percent of those varieties that germinated successfully past the seedling stage. That then is my major problem, of more concern than sharpening up my germination techniques.

To see the problem is a good boot along the way toward seeing a solution. In my case I will have to face up to the need for taking greater care between the seed-flat stage and the planting-out in the nursery: i.e., transplanting into carefully controlled seedling flats. The corollary to this must be a ruthless limitation on the numbers of each species pricked out for growing on. §

• • • *of Cabbages and Kings* • • •

In the last issue of the Bulletin the reasons for having chapter plant shows were discussed. It might be of some value here to present some of the problems of implementing such shows.

In the first place some chapter members are against having competitive shows. The main reason they give for this is that they are afraid these may cause dissension within the chapter. They feel that introducing competition into the friendly atmosphere of discussing and exchanging alpine plants may somehow detract from the pleasure of rock gardening. This was certainly true in the Connecticut Chapter when the suggestion to have plant shows was first

brought up, and some of the members who first objected to such shows do not bring in plants for exhibit even now, though they do attend the shows and appear to enjoy them.

Another reason given for not having plant shows was a feeling among many members that they didn't have good enough plants for such shows and that they did not wish to be judged by so-called experts who might scoff at their meager offerings. It was not until it was suggested that prizes be awarded by vote of the members present that it was finally agreed to try such a show.

The first show was meager indeed, with only a few rather general classes

and only a bare handful of exhibitors, but enthusiasm has grown and now our shows are quite presentable and there are a substantial number of regular exhibitors though many members bring in only a few occasional plants. However, once these occasional exhibitors have gotten their feet wet and won some recognition for their offerings, they tend to show in more classes more regularly. As far as can be discerned the exhibitors show in a spirit of friendly rivalry and disension has never been obvious, though it is fairly certain that on occasion an exhibitor has been disgruntled when his or her excellent plant is overlooked for a more flamboyant offering. They can, however, always comfort themselves with the thought that the majority of those voting probably didn't know enough to appreciate the rarity, difficulty, or refined beauty of the plant they brought in.

This is undoubtedly the reason why some members of ARGS disapprove of giving awards by vote rather than by a panel of judges. There are, however, several reasons why a general vote has been the more usual method of judging ARGS plant shows. A panel of three qualified judges is not easy to come by. (Three judges are infinitely to be preferred over a single judge, as their individual prejudices for and against certain plants are averaged out and their pooled knowledge is usually more wide ranging than that of a single person who is unlikely to be familiar with every species, or even genera, in the entire exhibit.) At most chapter shows most of those members, who would be considered by the membership as sufficiently knowledgeable to be appointed as judges, are usually showing plants themselves thus automatically disqualifying them. Even if available it is not easy to recruit judges from among the local membership as they are frequently unwilling to place

themselves in a position in which they may be criticized for choosing the "wrong" plants and no one likes to be the target of hard feelings and backbiting.

Another possibility is to import judges. Unfortunately asking the local garden club to supply these is usually very unsatisfactory. Such people, though perhaps well versed in judging, simply do not know the material they are being asked to consider; they are accustomed to judging flower arrangements or classes of tulips, roses, peonies and petunias and are usually at a loss when faced with pot after pot of plants they have seldom if ever seen and know little or nothing about. Their judgements are thus unlikely to be acceptable to either the participants in the show or the rest of the membership. Thus if judges are wanted, this leaves only the option of obtaining these from another ARGS chapter. This too presents difficulties. Distances between chapters can be considerable and very few of us would be willing to spend the time necessary to travel to another chapter's meeting place and back solely for this purpose. The least the inviting chapter should do is to offer to pay travel expenses and this can be hard on the treasury.

A final reason for preferring membership vote rather than by judges takes us back to the beginning of this discussion of plant shows. It is not easy, particularly in the beginning stages, to persuade members of ARGS to show, but they seem to be more willing to do so if they are to be judged by vote of their comrades rather than by "experts."

This brings us back to the premise that the average chapter membership is unable to make sound decisions as to which plants are best in each class. And for the first few years of showing this may be true, yet it is surprising how rapidly these "average members" become more

sophisticated as they examine plants in show after show in order to vote for the best. A brief program every year or two at which standards for showing are discussed and what one should consider when judging help speed up this process. A qualified person, either from within the chapter or invited from outside, can be asked to talk on this subject.

Qualified show judges usually eliminate first any plant that does not fit into the category of the class: thus a dodecatheon, no matter how lovely, does not fit in a class stipulating bulbous, cormous or rhizomatous plants, nor should an *Aquilegia flabellata nana* appear in a three pot class of North American natives. (Class designations should be clearly displayed for all to read.) In a well run show such mis-entries would be pointed out to the exhibitor by a member of the show committee and the misplaced plant would be put in a class in which it does fit, but members of the show committee can miss seeing such things in the rush of setting up the show.

Messy looking plants with dead, slug slimed or insect chewed leaves or, Heaven forbid, those harboring aphids or scale are also quickly cast beyond the pale. An attenuated or lopsided growth habit also counts against an entry.

Flowers, too, when these are present, should be in good condition; faded blossoms and tattered or discolored petals count heavily against an otherwise well grown plant. One below par plant in a multipot class is a mark against the whole entry. A plant with most of its flowers open is usually preferred to one with just a few open blossoms or only buds. Of course, in a class for foliage effect or growth habit flowers should be discounted, counting neither for nor against an entry unless the presence of blossoms actually mars the plant's effectiveness in that particular category or flowers are stipulated for that class.

There are always exceptions to the above strictures, however. A magnificently grown plant of *Kelseya uniflora*, a rock hard mound of gray-green over eighteen inches across, shown at the International Rock Garden Plant Conference in Harrogate, won top honors for best American plant even though its flowers were well past their prime; the judges felt that the superb condition of this plant and the fact that it had blossomed profusely, even though these blossoms had faded at the time the plant was shown, warranted the award to this plant, notoriously difficult to grow and nearly impossible to bloom in cultivation.

Rarity or difficulty of cultivation do not in themselves necessarily make a plant a prize winner unless these qualities are stipulated in the class description; nevertheless, if it becomes necessary to choose between two or more equally well grown entries, the more rare and difficult would have a very definite edge. On the other hand, particularly in a class of mixed genera, a good judge must be careful not to make a judgement on the difficulty or ease of cultivation solely by his own experience in growing it and he must at all times beware of allowing his personal preference for one genus over another to sway his judgement.

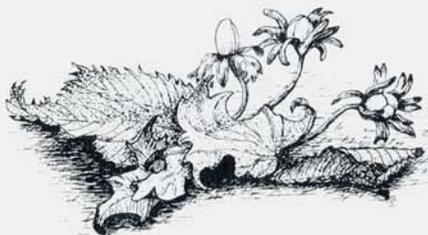
The presentation of the entry can also count either for or against it, though not as heavily as the quality of the plant itself. A clean pot, an easy to read, but not obtrusive label, a suitable surface finish such as gravel or bits of rock around an alpine, or pine needles under a woodland species, all enhance a plant's appearance. However, the pot itself should be considered immaterial. Thus a hypertufa pan or handthrown ceramic pot should be ignored when it comes to judging the entry and, except where clay or plastic is stipulated in the show rules, the material of which the pot is made

should count neither for nor against the entry. After all we are judging the plant not the pot. An exception would be made, however, in a class for "containers planted for effect." In such a class the beauty of the container, how it is "landscaped," and the health and attractiveness of the plants and their suitability to each other should all be considered.

One last point: containers planted for

effect "are not eligible when selecting the best plant in the show as, by their very nature, such containers hold an aggregation of plants, not a single "best plant."

Yes — showing and judging may sound difficult, but it also can be great fun if approached in the right spirit, and it certainly is an excellent way to get to know the less common plants. §



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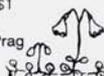
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