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Bellevue, Washington

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Allium Notes

Part I

Mark McDonough
Bellevue, Washington

Drawings by the author.

I am drawn to the wildflower attitude assumed by most alliums I see, admiring their quiet existence and restrained flamboyance. At the same time I can be amused and amazed by the more lavish oddities that nature has conjured up, adding spice to an otherwise understated genus.

I parallel my interest with that of fritillaria enthusiasts, similarly admiring subtle variations of form and texture, intrigues with an endless array of stars, trumpets, saucers, and bells that characterize the "Ornamental onion," sometimes of fritillarian muted tones, defying definition, and appeal. Alliums offer the added attraction of neatly wrapped bud

packages, the buds breaking free from their congested confinement in a variety of fascinating modes, giving birth to freshly expanding blooms.

Alliums are not for everyone. Most gardeners grow a few flowering onions, thinking of them as pleasant enough plants, but few will become enraptured with the genus as I have. In the larger scheme of landscape gardening, some species have undisputed value, yet many are too modestly structured to effect great impact. Rather, onions are plants of finer proportion, effective in small rock garden associations or grown singly as potted specimens, deserving of intimate inspection. Those taking the

time to closely observe the flowering cycle of an allium will be rewarded and potentially captivated by the intricacies of diverse detail. Even the more stalwart beauties of intrinsic landscape value such as the regal *Allium giganteum*, while stunning at a distance, are remarkable floral structures of equal fascination at close hand.

The genus *Allium* is very large, containing approximately six hundred species found throughout the northern hemisphere. The largest concentration of species occurs in the U.S.S.R., with two hundred twenty-six taxa described, followed by other centers of development such as the Near East, Afghanistan, Iran, Turkey, Europe, North Africa, the Far East, Japan, and the U.S.A. In North America a few species push the range northward to Alaska and south to central Mexico, while in the Old World, alliums may be found in Siberia, and as far south as Ethiopia and Somalia in Africa.

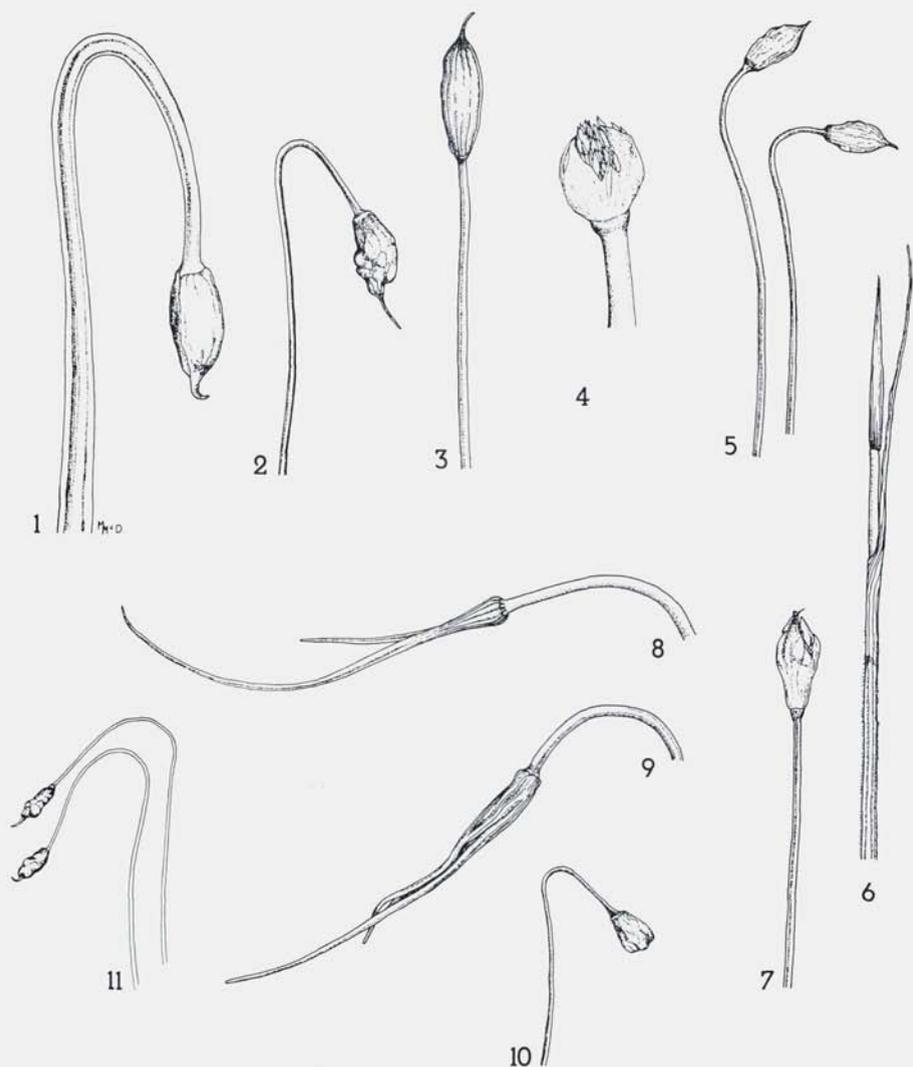
It is generalized that no true allium grows in the southern hemisphere, but a couple of exceptions should be noted here. *Allium dregeanum* is somewhat of a puzzle, accepted by some authors as a spontaneous endemic of South Africa. However, others believe this to represent an early introduction of one of the cultivated onions to which it is closely related, and that through time and isolation, genetic modifications have rendered a distinct taxon. This may be a reasonable conclusion as onions have been introduced into cultivation throughout the world for centuries.

Also puzzling is Sampson Clay's brief description of the yellow *A. bonariense* found in Patagonia. *Index Kewensis* reports that *A. bonariense* is native to Argentina, yet I have found no additional information to substan-

tiate its existence. In South America, the genus *Nothoscordum* replaces *Allium*, and perhaps this mysterious "onion" belongs, in fact, to that genus.

I sense that alliums are becoming more popular these days as seed of the rarer sorts are quickly snapped up in the seed exchanges. It's about time that more interest be shed on this genus, as for too long it has been overshadowed by more exuberant genera. Partly to blame for the allium's relative unpopularity is the bad habit of a few species to reproduce with ridiculous abandon. Unfortunately a few bad apples (or in this case — bad onions) have spoiled the barrel. Also of significant blame, is the scarcity of information regarding alliums in popular horticultural literature. Typically only a handful of species are given coverage, if at all, in the various references that rock gardeners use. The information can be found, however, by those who are willing to search through university libraries and herbaria. But this is a task for only the most crazed allium nuts. Meanwhile the average gardener is sadly left behind, frustrated with scant bits of dubious information.

I think we can lay to rest Reginald Farrer's scorn for the genus as being the sole cause for allium anonymity in horticulture. While opening his passage on *Allium* in his *The English Rock Garden* on a rather discouraging note, he continues to describe glowingly some of the species he was aware of at that time, and seems in fact to be quite enthralled with several. Farrer's memorable passage on *Fritillaria*, passing the bulk of the species off as "stinking bells of dingy chocolate and greenish tones," has done little to daunt the affections of many alpine plant enthusiasts, and the genus has enjoyed a place of honor



Allium Buds: 1. *A. cernuum*, 2. *A. cernuum* var. *obtusum*, 3. *A. acuminatum*, 4. *A. christophii*, 5. *A. cyathophorum* var. *farreri*, 6. *A. species* Mac. and W. 5866 Turkey, 7. *A. moly*, 8. *A. olympicum*, 9. *A. tchaihatchewii* Mac. and W. 5766, 10. *A. rubens*, 11. *A. cyaneum*.

in the world of rock gardening despite it all.

I think too we can put to rest the silly notion that alliums should be avoided in the garden lest it reek an "odious stink" capable of offending

all who dare approach these vile weeds. The onion smell will not be noticed unless one bruises a plant or steps on it. In my opinion, you should not be treading on the plant in the first place. Even when handling

the plants and bulbs in repotting, the onion scent is hardly noticed in most species, not detectable at all (even if pinched) in two major sections of the genus, with only a relative few being strongly odoriferous. In fact, it is surprising to learn that most alliums, when in flower, are quite sweetly scented with a few richly perfumed indeed. Those that do smell of onion are not, in my opinion, offensive, but rather remindful of the piquant aroma associated with a well seasoned meal. I enjoy a daily summer routine of sniffing about in my garden, perhaps catching the sweet yet mild oniony fragrance exuded by a particular allium, when its nectar is secreted on a warm sunny day, and then to pinch a Turkish origanum for its heady aroma, or rub the scaly backside of a lepidote rhododendron leaf to release its rich spicy scent. The dimension of scent is one poorly appreciated in the garden.

There are other plants that we commonly grow that are far more hideously endowed with evil emissions than onions. *Polemonium pauciflorum*, while a most attractive plant with its long dangling tubes of tarnished yellow suspended among sticky dissected foliage, stinks of skunk so strongly on warm days, permeating the surrounding air, to severely detract from its value. Some of the teucriums are pleasingly aromatic. *Teucrium marum* on the other hand, is truly bizarre smelling, offensive to some, and incidentally of feline aphrodisiac qualities that far surpasses the annual catnip sold in stores. *Teucrium massilense* also smells rather bad in my opinion. The revered codonopsis with their beautifully marked lanterns are best observed and not touched, as some emit a disagreeable fetid or skunky odor when handled. There are other bad-smellers such as

a few aroids and fritillarias, but I welcome all such scented plants in my garden, whether disagreeable or not, as it is an integral characteristic of plants, which unfortunately many pass over as subordinate to the more obvious features of a plant.

Alliums are herbs with sheathing leaf bases, and bulbous or rhizomatous rootstocks. All wild species are perennial, some having the curious habit of totally replacing their bulbs annually, with new bulbs formed beside the decaying void of the old bulbs. The rootstock is protected with fibrous or membranous bulb coats (tunics), an important diagnostic feature. The flower buds are enveloped in a protective sheath, which eventually splits to allow the blooms to expand. The sheath structure is similarly important to aid in species identification.

Height varies from spectacular five foot giants like *A. giganteum*, displaying nature's exuberance with fanciful geometric constructions, down to the subtle solitude of *A. monanthum*, a single flowered pixie of wooded mountain slopes in Japan. Flower color, while predominantly shades of pink, mauve, and white, run the full gamut of possibilities from true blue to deep purple, pale greenish yellow, soft butter yellow, or lemon, shining chrome yellow, pure and unblemished, or tinged with rosy pink, pleasing biscuit tan, or odd shades of green and brownish yellow, greyed lavers, maroon and almost pure black, and any combination thereof. Flowering starts in late winter, continues throughout spring and summer, and persists into late autumn.

Allium blooms are typically composed of six-parted perianth segments (tepals), each having a central mid-vein or nerve that is thickened and colored differently, or more intensely

than the flower, though sometimes the nerve may not be conspicuous at all. The tepals are free all the way to the base (not united into a tube as in the genus *Brodiaea*). There are six stamens which surround the superior ovary which can vary considerably in structure and color, again serving as an important diagnostic feature.

The foliage can be hollow or solid, and variously shaped in cross-section, being either glabrous or scabrid to some degree, less commonly hairy. The leaves can be broad and waxy, perhaps stained with color, or thin and wispy with filiform fineness. Occasionally a dusty or silvery powder (bloom) is conspicuous on the herbage, as well as the floral parts. The three parted seed capsules hold varying quantities of predominantly black seeds, usually flat flakes or thicker angular wedges and less commonly rounded pellets.

Having such a large global distribution it is hard to generalize about alliums. While some grow under desert conditions, flowering and setting seed quickly, then going dormant for yet another year; others can be found in swamps or woodland settings, thus having an entirely different growth cycle. Logically it would follow that dryland types require a summer baking, but experience in cultivation prove that such generalizations are not always reliable. I grow several Turkish onions for example that go dormant for only a few weeks after flowering, quickly renewing growth, which remains ever-green all winter, enjoying uninterrupted yet moderate moisture.

Many alliums are very easy to cultivate in light well-drained soil in sunny locations with no effort. But a significant number require special conditions for success, while others are

downright difficult. If in doubt, give an allium a very sandy compost in full sun, and you're probably heading in the right direction. Further cultural information will be noted under the individual species descriptions.

Propagation can be achieved by seed, dividing the rootstock of gregarious types, separating and replanting the small bulblets (increase bulbs) formed around the parent bulb of some species, or by planting the bulbils found in the inflorescence of bulbiferous onions. Many alliums grow quickly, blooming the second year from seed, whereas others may require more than five years to reach flowering size.

While allium seeds are capable of germinating like cress, frequently they are slow and erratic in germination. Stratification is undoubtedly helpful, although not entirely necessary. Quite good germination will result during periods of low temperatures and abundant moisture such as in spring and fall. I sow allium seed in late summer and early autumn, finding that a high percentage germinate within a couple of months. Seedlings are kept in a coldframe or forced under lights in a cool basement or enclosure. Ungerminated flats are left outside to receive rain, snow, and freezing weather, with a good chance seedlings will appear in spring. Earlier sowings can be successful too, but seem only to germinate after a long soaking rain.

When sowing seeds in a sterile sandy medium, I cover the seed more thickly than I would with other seed. The crook-necked seedlings that appear with too shallow a cover are often incapable of freeing themselves from their cumbersome seed husk, languishing about with the root unable to grab hold of the soil below.

If left in seed pots for too long,

the seedlings will stop growing and retreat into dormancy. Should this occur, keep evenly moist until growth renews as dormant seedlings are too young to resist much dryness. It is better, however, to transplant the seedlings before dormancy, carefully separating and knocking off the soil, then replanting in an enriched sandy compost. It is fun to see how the tiny bulbs have started to form. Once transplanted, growth should be fairly vigorous.

There are only a few problems that may be encountered. Watering of dryland species can be tricky, as moisture is necessary to prevent desiccation, but of course, too much water can be fatal. When potting on seedlings or newly received bulbs, it is important to set the bulb at the proper depth. With seedlings, note the original depth of the newly formed bulbs, as some will be surprisingly deep-seated, while others may be content with remaining close to the surface. Planted too shallowly or too deeply, a seedling will either perish or struggle to attain its proper depth.

Onion maggots can potentially cause severe damage. Dusting the soil with Diazanone is advisable as a precautionary measure if many alliums will be grown. Nematodes can infest the underside of bulbs among the mass of decaying roots after the plant has gone dormant, particularly if the soil has been kept too moist. I repot my more prized alliums yearly, inspecting for nematodes by washing the soil off and removing the brown decaying roots, being careful not to injure the living fleshy white roots if present, dipping in a mild Diazanone-water solution if the pests are present, and repotting in fresh soil.

Here in the Pacific Northwest, slugs pose a serious problem. Surprisingly slugs have quite an appetite for

onions, a threat to young seedlings, species with soft flaccid leaves, and particularly to those alliums that have persistent evergreen leaf buds that poke their succulent noses just above the soil, such as the western American *A. brevistylum*. Aphids are also a mild nuisance, but easily controlled on alliums.

Compared to other genera, alliums are relatively problem free, only requiring an understanding of their cultural needs in conjunction with their growth cycle. More could be said about alliums, but let us proceed to a description of the species suitable for your garden.

Blue-Flowered Onions

While there are only a handful of blue-flowered onions among the ranks, considerable confusion exists among them, and rarely have I seen them correctly identified in gardens. Usually, however, *Allium cyaneum* can be obtained true-to-name, a refined alpine species indigenous to western China (see illustration). This is a variable entity, as evidenced in Reginald Farrer's concluding remarks in *The English Rock Garden* appendix.

Several clones are found in cultivation, but all are charming miniatures providing late summer bloom in troughs or small scale rock gardens. Usually encountered is the dwarf form, only growing three to six inches tall, although specimens reaching twelve inches are not uncommon. A mature plant forms dense grassy tussocks of thin foliage, overtopped in August with delicate sprays of cobalt blue starcups with long exerted stamens, the latter an important diagnostic characteristic. The individual flowers are held erect to semi-nodding, each tepal with a central nerve of dark green or black. The anthers are generally simple, entire, and not

toothed, another characteristic with which to separate the other blue species.

The gregarious bulbs of *A. cyaneum* are in actuality enlarged leaf bases attached to short perennial rhizomes, the rhizomes achieving the same food storage function as a true bulb. Other alliums exhibit similar rhizomatous tendencies, and as such are placed in the genus subdivision Rhizirideum.

Allium cyaneum is sometimes passed off as *A. caeruleum*, *A. sikkimense*, and *A. beesianum*, among others. Varietal names are attached to forms of *A. cyaneum*, but according to very recent comprehensive treatment of the genus in China by Xu Jie-Mei published in *Flora Reipublicae Popularis Sinicae*, Tomus 14, no varieties are recognized. There are several other Chinese onions, but only *A. sikkimense* and *A. beesianum* are in cultivation.

Allium sikkimense grows at very high altitudes on steep slopes and cliffs in Sikkim, and is very similar to *A. cyaneum*. The plant ranges from four to sixteen inches with the flowers coming in several shades of blue. It may be distinguished from *A. cyaneum* by virtue of its stamens being shorter than the tepals, the inner tepals having a fine denticulate edge and the inner three stamens or all six stamens having a dilated (broadened) base. Over the years the geographical variants *Allium tibeticum* and *A. kansuense* have been tenuously recognized as separate species, although never adequately differentiated, thus remaining obscure in botanical opinion and hopelessly confused in our gardens. But as suggested by noted allium expert William T. Stearn, and as now confirmed by Xu Jie-Mei, both these so-called species are reduced to synonymy with

Allium sikkimense: a most welcome simplification. *Allium sikkimense* and its synonyms are inevitably replaced by *A. cyanthophorum* var. *farreri* in the horticultural world, another Chinese species that I'll discuss later.

Allium beesianum is perhaps the best of the blues, having much larger narrowly campanulate blooms of pure deep blue. Obtaining correctly labelled seed is the only difficulty with this easy-going beauty. I refer readers to the photograph published in the A.G.S. Bulletin, Vol. 50, No. 4, page 273, for comparison. The nodding flowers are valuable for their late summer and early autumn appearance, certainly among the most beautiful of flowering onions.

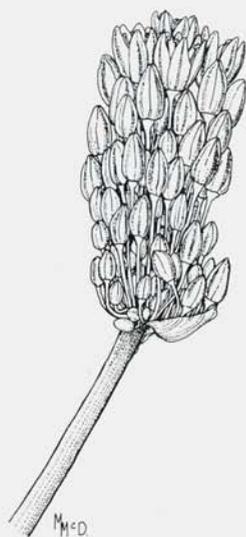
All of these Chinese species prefer fairly moist situations in sun or partial shade, doing well in a rich scree. *Allium beesianum* likes more shade than the others.

A commercially available onion is *A. caeruleum* sold by Dutch bulb companies under its synonym: *A. azureum*. This is a handsome plant of salt marshes is steppe mountain zones of S.E. Russia. As described by Vvedenskii in the *Flora of the U.S.S.R.*, plants can vary from six to twenty four inches tall, although those in cultivation tend toward the latter dimension. Many alliums seem to encompass a similar broad spectrum of variable plant stature. Early in the season, dense one to two inch balls of bright azure blue flowers with conspicuously dark blue nerves, are held aloft on slender stems. All of the forms I have grown produced a few sessile bulbils in the flower head (var. *bulbilliferum*). Shortly after flowering, the plants go dormant and seem indifferent to moisture or dryness during their rest, therefore an easy doer in the garden. Viable seed is plentiful, so it is advisable to re-

move the dried heads if self sown seedlings are not wanted.

Allium caesium occurs in the same habitat as *A. caeruleum*, and where populations mingle, hybrids are known to occur, being one of the few reported instances of hybridity among alliums. *Allium caesium* can similarly vary in stature and flower color (from blue to white). The two species are often confused, and can be distinguished from each other by difference in foliage and the stamens. In *A. caeruleum*, the leaves are narrow and triquetrous (three-sided) whereas in *A. caesium* these are semi-cylindric and hollow. The inner filaments of *A. caesium* are dilated or toothed above two thirds the length of the filaments, but below half the filaments length in *A. caeruleum*.

Of forms that I am familiar with, *A. caesium* is a coarser plant than *A. caeruleum*, with untidy flopping foliage that is mostly wilted by anthesis. More than compensating,



"Bud column" of *Allium caesium*

however, are the beautiful spherical heads, up to three and a half inches across, densely packed with soft milky blue flowers, strikingly nerved with deep navy blue. The flowers exude a strong sweet fragrance that on warm sunny days can be detected several feet away, perhaps the provocative attraction accounting for multitudes of ants, bees, and butterflies that linger among the blooms.

The inflorescence is remarkable in the bud stage, as the buds are crammed together into a fastigiate column much taller than wide, but eventually opening out into a rounded head with light blue pedicels of equal length. After flowering, all energy is drawn back into bulbs, the aerial portion of the plants becoming dry, eventually dehiscing from the bulb, but not before setting prodigious amounts of seed. The bulbs may be totally dried off at this time, although it is not really necessary, and by autumn, with the slightest hint of moisture, the plants start growing again with foliage persisting throughout the winter. In Massachusetts the plants behaved differently. Not content with a summer rest, flowering continued well into fall and winter, seeming unperturbed by snow and ice.

Allium caesium does have one annoying habit. The bulbs grow very close to the surface, even becoming totally exposed and rolling about — no doubt a natural reproductive mechanism — necessitating an annual late summer ritual of gathering up the mature bulbs and younger bulblets that have pushed their way to the surface, and resetting into the planting bed, covering the bulbs with a couple inches of soil. It is worth a little extra effort to grow a sizable clump of this unique onion for its sweet powder-blue blooms produced during the heat of summer.

Both *A. caeruleum* and *A. caesium* are useful for their long stemmed dried seed heads, attractive for dried floral arrangements. If picked before the heads have become dry, the blue color will last indefinitely, although they will be somewhat paler. Also, both species have the curious habit of producing odd heads of bloom poking out at ground level, sprouting from the side of a tall flower stem.

A third species closely related to *A. caesium* is *A. caesioides*, a N. W. Himalayan plant of Afghanistan and India. This taxon has only recently been described. I have never seen the plant nor do I believe it is in cultivation.

The only other true blue onions I know by name only, hoping someday to make their acquaintance. *Allium hierochuntianum* is a Palestinian species described as an early-blooming dwarf of desert regions, with filiform hollow leaves, and dense heads of blue. *Allium wernieum*, a name that I've been unable to trace so far, is casually mentioned in alpine gardening literature as a dwarf blue-flowered species. There are additional Chinese onions donning the color blue, but as they are not in cultivation, nor likely to become so until botanical exchange is accelerated, I will not mention their names here. Other species of purplish and mauve hues are sometimes exaggerated as being "blue," but only those that I have mentioned are truly blue as far as I'm aware. The color blue is relatively rare in the genus *Allium*. A greater number of alliums have yellow flowers, and I will speak of these next.

Yellow-Flowered Onions

Perhaps the best known of the yellow-flowered onions is *Allium moly*, a species for which ominous

warnings abound, although exaggerated in my opinion. Preferring shaded exposures in the mountains of Spain and France, plants similarly treated in the garden will make a bold splash of color in late spring.

One or two greyish leaves per bulb appear, each leaf being rather broad and mildly striated. The neat herbage makes an attractive foil for the upright brilliant yellow flowers. All parts of the flower including the ovary, filaments and anthers, are of the same golden color, with the exception that the back of the tepals show a faint diffuse green nerve, although only barely noticeable while the bud is unopened. The fully expanded blooms are surprisingly glossy and reflective, particularly noticeable on sunny days, this quality reminiscent of the gleaming of buttercup blooms. Grown in open shade in poor, dry, sandy soil, plants will retain a dwarf habit of six inches or so, and feel less inclined to invade the rest of the garden. After flowering the plants go completely underground without a trace until the following spring. Bulbs are commonly and inexpensively offered in nursery centers every fall.

Allium moly (*luteum*) is sold by bulb companies and featured in fall bulb catalogs, but is nothing more than typical *Allium moly*. The epithet "luteum" is amusingly redundant as well as invalid. The type species is so deeply colored that this catalog invention has no meaning. But regardless of its attached name, the "golden garlic" is always a pleasing plant worthy of cultivation.

Allium flavum is a widespread European species that I would not be without for its June and July display of frenetic yellow bursts. Having a large geographical distribution, the plants exhibit considerable variation. Dwarf mountain forms have been

given varietal names such as "var. *nanum*", "var. *minus*", and others, but currently these are not accepted as valid names. However, horticulturally, it is important to maintain these names at least in quotation marks to separate them from less desirable tall forms.

In the best specimens, the wiry leaves are glaucous and the twelve inch stocky stems are thoroughly powdered with a silvery "bloom." The buds are enveloped in a beautifully veined silvery spathe, each of the two spathe segments bearing a very long leaf-like appendage or "beak"



Three aspects of *Allium flavum* flower, from left to right: Spathe opens to allow upright buds to spill out. Spathe segments bend downward and upright buds open and droop as pedicels elongate and become flexuous. In full flower the spathe segments are lax, some buds are yet to open and remain upright, some flowers have been fertilized and are now becoming erect as seed pods start to form.

at its apex, one being much longer than the other. The buds expand into a haphazard explosion of small waxy lemon yellow bells with protruding stamens, the umbel skewered with the persistent dried and twisted spathe segments. The flowers of certain specimens have a mild yet distinct fragrance reminiscent of gardenia. Plants prefer sandy soil in full sun, and are ideal for providing summer color in hot and dry spots less conducive to other plants. Self sown seedlings are a definite problem, but if the spent blooms are removed, or the plants placed where they will be in competition with other vigorous plants, such as in the alpine pasture, then no difficulties should ensue.

The dwarf forms can be somewhat inconsistent, becoming larger if grown in better soils. Generally the mountain forms tend to be more slender, shorter, often having prostrate stems at first then becoming erect to bear the blooms. Usually the flowers are of a paler butter-yellow tone, a color that I find pleasingly complementary when used in association with other small scale plants. Starved in a dry scree or trough, the dwarf variants of *A. flavum* have a definite charm.

A variant with yellow rosy tinged flowers is named *A. flavum* var. *tauricum*. I shudder to mention this as there is considerable debate regarding the status of this taxon, the discussions bringing into the picture such species as *A. pulchellum* and *A. pseudoflavum*.

Allium flavum does have affinities to *A. pulchellum*, now correctly *A. carinatum* ssp. *pulchellum* according to William T. Stearn's revision of the genus in Europe, published in *Flora Europaea*. As this comprehensive treatment is the first of its kind in over a century, it should be regarded as the latest authoritative text applic-

able to allium nomenclature in the geographical area covered by the revision. The archaic name *Allium flavum pumilum roseum*, still appearing in seed lists, should be laid to rest forever, with plants bearing this name representing dwarf mountain forms of *A. carinatum* ssp. *pulchellum*. These diminished plants are virtually identical to *A. flavum*, except for the bright pink of the flowers. More will be said about this later.

Allium condensatum sneaks in here with flowers of translucent greenish yellow. This is a tall plant from Siberia and the Far East, a species reportedly used as food by native peoples. In June and July the sturdy stems may exceed three feet, bearing at their summit small dense globes of short petalled flowers with a sweet yet oniony smell. While of some interest to the alliumaniac, many gardeners will consider it trash, unworthy of garden space.

Lastly I should mention a delightful miniature onion from Turkey, still under a MacPhail and Watson collection number (Mac. & W. 5855). I examined blooming plants at the U.B.C. Rock Garden that were a mere three inches tall, displaying a loose nodding umbel of exquisite soft yellow bells with exerted violet stamens; a pastel combination to delight any bulb enthusiast. We will have to wait for the impending Flora of Turkey volume on monocotyledons to find its identity. My lone two year old seedling is alive and well, and with luck, may bloom next summer.

Few of the remaining yellow-flowered species are in cultivation. While a few boast bright yellow flowers, most are pale yellow, yellowish, greenish yellow, or stained with another color. One that can claim deep yellow flowers is *Allium coryi*, an endemic of a few counties in Texas,

and the only yellow-flowered American species. The habit is dwarf, bearing heads of brightly colored bells, sometimes tinged with red, indicating potential garden value. *Allium scorzonerifolium* (syn. *A. stramineum*) is occasionally cultivated, but is considered invasive on account of the presence of bulbils in the inflorescence. This species hails from Spain and Portugal, and we can only hope that one day the non-bulbiferous variety (var. *xericiense*) will be collected and introduced. Renowned plant explorer Joseph Rock writes of *Allium chrysanthum* from

S. E. Tibet as having heads of golden yellow, but unfortunately this plant is not in cultivation. Admiral Paul Furse collected the Afghan endemic *A. cucullatum*, a compact species with many-flowered heads of an unusual golden yellow-brown, tinged with purple. This desirable plant is precariously in cultivation in England, but is proving to be very difficult to grow. By now, it should become evident that there lurks considerable untapped horticultural potential within the genus *Allium*.

(To be continued)

Careful With Those Plant Names

Mark McDonough believes that the plant mentioned and pictured in Pam Harper's article "Southeastern Sun and Sand" (Vol. 41, No. 3) as *Allium thunbergii* 'Ozoke' should be called *A. thunbergii* 'Ozawa'. This allium was originally imported from Japan by George Schenk, owner of "The Wild Garden" in Kirkland, Washington and he named it 'Ozawa' for the man who had selected it in Japan. Unfortunately it has been widely dispersed by nurseries and among gardeners under the misnomer, 'Ozoke'. The label on this plant should be changed to read 'Ozawa'.

The moral of this story is to be sure to check the names of your plants and the correct spelling prior to passing them on as plants or seed. This applies particularly to nurseries, which should take special pains to make sure the plants they sell are correctly named. Misnaming plants compounds confusion and spreads misinformation. This applies to us all. If you later discover you made an error in the name of a plant you passed on, try to correct it.

In T. Paul Maslin's article "Some Fall Blooming Bulbs" (Vol. 41, No. 1) one of the alliums described in that article was named *Allium jeneum*. When questioned by Mark McDonough, who exchanged plants and seeds with Paul and who could find no reference to this species, Paul Maslin checked his records and found he had obtained it from the Moscow Botanic Garden under a name that appeared to read *Allium yeneum*. As there were no references to that species either in any of the literature, Paul sent a detailed description of his plant to Mark. This description exactly matched *Allium cyaneum* and sure enough when the two plants were placed side by side Paul Maslin's "Allium jeneum and/or yeneum" was a twin of *Allium cyaneum*. Looking at the two names it is easy to see how it might be possible to misread a carelessly handwritten cyaneum as yeneum or jeneum.

The moral of this tale of misidentification is that we should print or type plant names clearly on labels and seed envelopes. §

An Oaxacan Journal

Part I

The View from La Casita (Rhodochiton Volubile Country)

Francis H. Cabot
Cold Spring, New York

Picture by the author

The state of Oaxaca [*pronounced Wahahka*] lies astride the Continental Divide west of the Isthmus of Tehuantepec. Northeast of the capital city the high humid mountains drop off to the hot lowlands of Vera Cruz. The temperate rain forests of the Atlantic slope of the Sierra are a paradise for a botanical collector. Deep ravines and precipitous slopes everywhere form barriers to travel.

— Paraphrased from Introduction to Bentham's
Plantae Hartwegianae, Roger McVaugh.

Boone Hallberg's Vivero Rancho Teja (Nursery Ranch) is perched at 7200 feet on the slopes of the Sierra de Juarez in a clearing in the pine forests that commands sweeping panoramic views from the clouds hovering over the northern faces of Cerro Malacate to the east to the Sierra de San Felipe which looms to the west and separates the valley of the Rio Grande from the valley of Oaxaca, a mere twenty-five miles as the crow flies but a tortuous hour and a half's drive to this most charming of Mexican colonial cities.

Directly in front of "La Casita", Boone's guest house, and framed by undulating pine covered promontories, stretch ridge after ridge of cordillera etched against the startlingly blue Oaxacan sky, their green slopes highlighted here and there by Indian villages. Two kilometers below the ranch on what must be one of the worst "new" roads in the world (it

lasted just long enough for its recent inauguration by the President and was built as a political retirement favor to the then Governor of Oaxaca who hailed from neighboring Xiqui) lie the towns of Ixtlan and Guelatao, the former boasting three colonial churches in varying degrees of disrepair and the latter the proud fact that Benito Juarez, the founder of modern Mexico, was born there.

Ixtlan and Guelatao lie on Route 178, the main road north from Oaxaca to the Vera Cruz coast, which provides the motorized tourist with one of the few chances to see alpine vegetation and a proper rain forest in Mexico. The road winds up to the 9500 foot ridge of Cerro Pelon and then plunges like an interminably writhing serpent for two hours down the precipitous north face of the mountain through cloud and rain forests that extend the entire distance down to sea level. In the space of



View of Sierra Juarez from La Casita

three hours, a curious and interested tourist can first see alpine gentians and the most diverse of ericaceous scrub replete with myriad varieties of gaultherias, vaccinium, pernettya, symplocos, and ilex and then descend from pine forests (that include *P. ayacahuite* among the fifteen pinus species that grow on the ridge) through oak forests adorned with ferns down into a temperate rain forest with begonias, orchids and tree ferns fighting for their piece of the action and finally through a precipitous tropical jungle into the banana belt below, complete with thatched villages and a lushness of vegetation that makes Douannier Rousseau seem pallid by comparison. In 1839 Henri Guillaume Galeotti, a Belgian botanist and plant hunter, described the botanical paradise in these deep ravines and precipitous slopes dropping from the high humid mountains to the tropical lowlands as a "region d'une fertilité admirable et d'une beauté presque incomparable" characterized by "une foule d'orchidees".

Route 178 is the only paved road through the Oaxacan hinterland for miles in any direction and to see the vegetation properly, especially in the remote Chinantla to the east where the Central American rain forest flora reaches its northernmost limit (and where Galeotti and other 19th Century plant explorers such as Hartweg and Liebmann found a profusion of new and rare plants, many of them local endemics and many which have never been collected again), one has to use shanks mare or at best a mule or donkey. An expedition to this fascinating area, where there are surely new species awaiting discovery is an operation best performed by botanists familiar with the Central American flora and with the time and resources to make an extended exploration of the hinterland. The gradual extension of dirt roads that is slowly but surely taking place will greatly simplify access to the Chinantla in the coming years. By the same token the destruction of the forests by logging and the invariably unfavor-

able impact of the modern world on the Indian way of life will unfortunately do much to destroy the unspoiled beauty that exists today.

The southeastern corner of the Chinantla is dominated by Cerro Zempoaltepetl which rises over 11,000 feet and is the highest peak of the northern Oaxacan mountains. After our first visit to the Hallberg Casita in January, 1980, we had sent Boone a photograph of *Weldenia candida* along with Farrer's mouth watering description in the hopes that he might find it in his travels. That May Boone wrote that he had climbed Zempoaltepetl on May 1 and found that the summit was a carpet of weldenia interspersed with *Tigridia seleriana*, a tiny, choice, blue-flowered species. Since one could drive to a point within four hours walk from the summit, it was definitely an attainable goal and we looked forward to a visit.

The road to Zempoaltepetl is the same road that now leads to Villa Alta, the jumping off place for the Chinantla hinterland. In January, 1981, Boone took us to Villa Alta before the road was finished so that we could see the profusion of plants on the trail winding down from 8500 to 4500 feet.

What looked like a three hour drive and a four hour walk turned into a six hour drive and a seven hour walk, making for rather a long day. To reach what appeared to be just over the mountains surrounding the Casita one has to drive back to Oaxaca then east to Mitla and then on a tortuous, rutted, rocky, bumpy road over a series of mountain ridges and a pass at the base of Zempoaltepetl to the point where the road ended and the trail to Villa Alta began.

Despite the unexpectedly long walk, the vegetation and the views, at least during the daylight hours, were total-

ly absorbing. *Rhodochiton volubile*, a colorful, luxuriant and charming endemic climber discovered by Baron Karwinski in 1829 was growing at 8500 feet twining among shrubs and low trees in the cool shade of the cloud forest. Karwinski, a Bavarian, spent the years 1827-1832 collecting objects of "natural history" in Mexico on behalf of the Russian government. The Munich Botanic Garden received Karwinski's rhodochiton seed and within five years it was offered for sale in an English nursery. While we have found rhodochiton growing throughout the region *at the edge of cloud forests* or in the cool shade of water courses between 7100 and 8600 feet, there have been very few subsequent collections for herbaria and, as far as we can tell, no further introductions of the plant. The rhodochiton collected above Villa Alta is thriving in a cool greenhouse in Cold Spring, N. Y. and is being spread around (for the asking) among institutions and growers who are interested in it. In Victorian times, according to Martyn Rix, the plant was used in exotic summer-bedding schemes, trained on a trellis and, presumably, wintered over in a cool greenhouse in all but the mildest climates. It propagates easily from cuttings at any time of the year and one or more plants have bloomed under glass in Cold Spring every month of the year with one plant blooming from February through August. The timing of initial blossom appears to be related to the degree of shade, with the February bloomer placed in direct sunlight the previous fall. A monotypic genus of the Scrophulariaceae very close to *Lophospermum*, the flowers are striking and distinctive with reddish-mauve campanulate calyces appearing intermittently in the alternate leaf axils along

the twining stems (The Oaxacans call it "la campanita") from which extraordinary two and a half inch long, dark purple, phallic corollas emerge, ultimately developing a trumpet shape with four decorative large white anthers highlighted against the five petals forming the bell that surrounds the dark trumpet's mouth. The calyces persist long after the corolla is spent and encase attractive two-lobed, bun or crown-shaped seed pods. The leaf colour appears to vary directly with the degree of shade and/or the temperature from a light yellowish green in full sun to a dark purplish mauve in deep shade and the coolest conditions. The underside of the leaf is tinged purplish-mauve. The extended flowering period means that one finds all stages of the flower on the vine at the same time from the delicate, emerging, little bells to the three inch bicolored extravaganza then back to the campanulate calyx with only the slender pistil stalk emerging from it and finally the seed pod, swelling until it completely fills its bell-shaped hood (chiton is the greek for cloak) and gradually turning from the colour of the calyx to the dried pod that remains once the calyces shrivel up. To date only autumn blossoms have set seed under glass and we have yet to try to emulate the Victorians. (We have a supply of seed including some harvested in the wild in November 1982 at 8500 feet for interested readers).

Tree ferns grow amongst the rhodochiton, becoming taller as one loses elevation. *Epidendrum vitellinum* with its bright orange or vermillion flowers grows on the tree trunks in dense shade. Other orchids abound in bewildering variety together with a voluptuous, large-leaved begonia and a myriad of ferns. Throughout there is a plethora of attractive flower-

ing trees, shrubs and vines mostly with glossy leaves and unfamiliar names such as *Befaria*, *Weinmannia*, *Bomarea*, *Drymis*, *Bouvardia*, *Cestrum*, *Cloranthus*, *Deppea*, *Hoffmania*, *Psychotria*, *Rondeletia*, *Suttonica* and others that are thoroughly unfamiliar to our uninitiated eyes. Next we pass through a zone dripping with bromeliads and, closer to Villa Alta on the path, find a fascinating creeper with lapis lazuli fruits the size of almonds, set atop it, which Rupert Barneby has identified as *Coccyocypselum hirsutum*. But then night falls and we stumble on for three hours in the darkness down to the comforts of Villa Alta where Boone expects to find lodging.

As it turned out, it was just as well there were no lodgings for it was New Year's Eve and every house in Villa Alta was full. We later learned that Boone, injured to a lifetime among the Zapotecs, slept quite comfortably as long as he could find a dry spot of ground or concrete porch on which to lay his thin straw petate. Fortunately an amiable and rather tipsy gentleman (it was after all by now 11 p.m. on New Year's Eve) offered us the shelter of his store, which was blessed not only with plastic chairs which could be lined up so as to form a narrow bed but even with a brand new double bed replete with plastic-covered mattress, which the Cabots, known to be sybarites, were kindly given for the night. So finally, well-exercised and bone-tired, we collapsed and awaited the arms of Morpheus.

But then it was New Year's Eve and Villa Alta is the principal town of a district to which it gives its name. At midnight the Villa Alta district band, the pride of that hilly region, which unbeknown to us had assembled on the local square right outside

our window, struck up a rousing version of *The Monkey Wrapped his Tail Around the Flagpole*, (The Washington Post March) by John Philip Sousa and proceeded to play every piece in its repertoire, some several times over until the first blush of dawn silhouetted the pine on the serrated ridges to the east and the church bells and roosters took over the celebration of the very new year. After giggling helplessly when the band began to play and the audience, which for some reason was seated outside the store windows, cheered, we enjoyed a few occasional moments of fitful sleep, I think.

"Botanicus verus," said the great Linnaeus, "desudabit in augendo amabilem scientiam" ("the true botanist will sweat in advancing his beloved science"). Such were our thoughts as we staggered wearily into the dawn facing the prospect of a very long uphill walk. Several drunks were still slowly weaving in and out of the columns on the porch of the municipal building that adjoined our store and we were warmly greeted by the prisoners in the local jail in this same building who had had an al fresco, if barred, ringside seat for the festivities. "Had we enjoyed the music? They had loved it!"

"Oh yes, it was wonderful."

But the early morning light and the early colonial buildings (Villa Alta is a very old town) and a delicious breakfast in a thatched hut where the patronne was doing in a guajolote (Mexican turkey) for the New Year's Feast, was wonderful and, in some magical fashion, Boone and his son, Oscar, found a local by the name of Bonifacio Bautista who undertook to provide a mule to haul our packs and collections and, to her great relief, Anne up the mountain.

Villa Alta is perched at the head of

a tributary valley that runs into the valley of the Rio Cajonos. The view denied us the night before was spectacular with the green jungles of the Chinantla just over the mountains bordering the right side of the valley and the higher range that ends in Cerro Pelon and the rain forest on the left. Bonifacio was eager to take us into the Chinantla, mule and all. That's where the plants, especially the orchids and ferns were *truly* fabulous. But that, a week's trip in itself, would have to wait.

In fact, there was no time to do more than reconnoiter the base of Zempoaltepetl if we were to get back to the Casita before 10 pm. Boone pointed out Tlahuitoltepec, the town where he usually spent the night before climbing to the summit. That May the town chief had very kindly allowed them to sleep comfortably in the municipal hall (we had visions of a room with chairs and tables and no matted bed). Tlahuitoltepec was a Mixe town (pronounced Mee-Hey). This was Mixe country and Zempoaltepetl was their sacred mountain. So plans were laid for a future trip to find *Weldenia* and other treasures at the higher altitudes and we gritted our teeth for the bumpy ride back to Mitla. After a refreshing dinner in Dario Quero's hacienda turned posada (he claims to have invented the Margarita but with mescal rather than Tequila: in any event it helped!) the two hour drive back to the Casita, which once had seemed both demanding and terrifying, was now child's play.

The Casita, though simplicity itself, felt like the grandest and most luxurious of haciendas, and from its ample terrace, one could just separate the sweeping line of the cordillera from the night sky with the twinkling lights of Capulalpan and Lachatao,

perched on ridges across the valley, lending the element of scale to the

vast and starlit mountainscape.
(To be continued)

Exploding Some Hardiness Myths

Sonia Lowzow
Lakeside, Arizona

Until four years ago, most of my gardening was done in the desert Southwest, an area where *Primula malacoides* was a winter annual, my favorite landscape tree was *Laurus nobilis* and a severe winter caused enough die-back on the bougainvilleas so that some of the bloom was lost.

Consequently, when I moved to the mountains of east-central Arizona, I was very wary of the possibility of frost damage. Acquaintances here sounded dire warnings of winter lows of -20 degrees F. and the books were full of notations like "HH", "dies to the ground at +20 degrees F." etc. I dared to plant out none but the hardiest species, carefully mulched my dwarf rhododendrons and others of their ilk, lifted all questionably hardy plants to overwinter in the greenhouse and worried and worried.

Then I discovered that the extreme lows occur very seldom, that -20 degrees F. is something that can happen perhaps once in fifteen or twenty years and that it then usually occurs in midwinter when an insulating snow blanket is present, often up to two feet deep. I further discovered that hardiness determinations are frequently based on the area where some plants, but not others, of a particular species are found. A case in point is that of *Commelina diathifolia*, which all the reference materials describe as "half-hardy". This lovely little plant

(and it truly is lovely, when growing in full sun at high altitudes — low and tight and blue, blue, blue) grows here in the White Mountains at an altitude of over 9,000 feet, where the winter lows are commonly -25 degrees F. (albeit with good and continuous snow cover). And what about *Dodocatheon ellisiae*, which Sally Walker found at 8,000 feet and which was once mistakenly listed as occurring at 800 feet and was therefore assumed to be very questionably hardy?

Finally, my eyes were really opened to this entire question when I made another trip to Denver. At the Botanic Gardens, Panayoti Callas assured me that I really was seeing *Campanula isophylla* and that, no, he didn't lift them for the winter and that, yes, they had survived a winter of -28 degrees F. (Brr. Even colder than here).

I returned from that trip determined to take another, more careful, look around. I had quite a few rooted cuttings of *C. isophylla* and its forms, *alba* and 'Mayi', a little flat of *Mentha requienii* that had never been happy with its winter sojourn in the greenhouse, some plants of *Convolvulus mauritanicus*, a little clump of *Arenaria balearica*, many plants of *Centaureum scillioides* and an extra plant of a sarcococca that I believe is *S. humilis*. Out they all went. I retained a few plants of most of these in the greenhouse for insurance. I even

went so far as to cover a tender pleione (sp. ign.) with a bushel-sized pot of dry peat and to plant out a pot-full of *Sprekelia formosissima*, also well-mulched.

At the date of this writing (February 25th), our first real thaw of the season (of three days, with night temperatures above freezing and day temperatures in the low sixties) is just about over and another snow storm is due in this weekend. Today, I made a brief check of the screes and peat beds. The campanulas have a little touch of green at their bases; the convolvulus is starting to grow, as is the arenaria; the centaureiums have remained evergreen (I had previously found this species completely perennial — all my plants are from seeds sown in 1979); the sarcococca looks completely untouched by frost as does the *Mentha requienii*. I gingerly lifted the bushel of dry peat from the pleione and found a tiny green shoot just at ground level. I also pulled away a little of the mulch from around the sprekelias and they, too, are starting

to grow. On the last two, the mulches were carefully replaced, since we have at least another two months of frost waiting in the wings.

During this winter, our lowest temperatures were -8 degrees F. with snow cover and +5 degrees F. without, which is a fairly typical range for this area.

It is so pleasing to be able to add all these plants to those that one would normally expect to be able to grow here in a mountain garden. And what a relief to free all that extra greenhouse space. At one time I had twenty six-inch pots of *Campanula isophylla alba* hanging from the rafters. I now wonder only how many more "HH" plants will be found able to survive our winters.

The moral of this tale, of course, is not to accept hardiness ratings at face value — EXPERIMENT! But do hold back a plant or two of each species in a protected area; the others might not survive that "once in twenty years" low. §

Saxifraga caespitosa 'Cape Breton Island'

Dr. C. William Nixon
Randolf, Massachusetts

Photographed by the author

About sixteen years ago, in 1967 to the best of my recollection, I was given a most interesting and attractive saxifrage that had been collected shortly before along the coastline of Cape Breton Island in Canada. I have grown it ever since and have given it to countless other rock gardeners. It has been interesting to observe that, without exception, a visiting gardener will zero in on this plant and want

it. I understand that Siskiyou Rare Plant Nursery now has it so perhaps it will be offered for sale to the general public in the near future.

This plant was determined to be *Saxifraga caespitosa* in one of its many forms, this one particularly lovely. Because of its distinct form and garden worthiness, I propose the cultivar name 'Cape Breton Island.' Indeed, it has been labelled that

throughout all these years in my own garden.



Saxifraga caespitosa 'Cape Breton Island'

Saxifraga caespitosa 'Cape Breton Island' has vivid green rosettes, the leaves of which are less generally cut and fringed than many of the forms of this species that I have seen. In cool weather, which the plant likes, it makes masses of compact rosettes that may become an inch or more in diameter. The interesting appear-

ance of the rosettes is likely due to the arrangement and great variation of the individual rosette leaves. The basal are all entire and uncut, a simple leaf blade. As one approaches the center of the rosette, however, the leaves become variously indented to give two lobes, equal or unequal, deeply or shallowly notched. Still further toward the apex they become increasingly notched into three, four or five, sometimes more, lobes. Basal leaves are largest and tend to frame the upper portions of the rosette, giving the unique appearance that is so typical of this cultivar. Like its close relatives, however, this plant tends to brown in the center of the clump in warmer or hot weather, its only serious drawback. Flowers are basically similar to those of other forms of this species, the color being pink upon opening, fading with age to near white. The real beauty and charm of this cultivar lies in the color and shape of the rosettes. It is easily propagated from cuttings at almost any time of year.

In summary: *S. caespitosa* 'Cape Breton Island' is a cultivar well worth acquiring and growing. I hope it will become a mainstay in rock gardens around the world. §

Congratulations

Carla Teune, whose serialized journal about her trip into the mountains in western Sichuan Province in China you have enjoyed in the pages of the Bulletin for the past year, has recently been appointed curator of the University Botanic Garden in Leiden, The Netherlands. She is the first woman to be so honored in that country. Our congratulations and best wishes to Carla in her new job.

Ed Lohbrunner and His Garden

George Nation with Ed Lohbrunner
Victoria, British Columbia

I had wanted to write about Ed Lohbrunner's latest rock garden, feeling that I would have a great excuse to find out how to grow plants as well as he did while asking questions for this article. He had recently retired and rebuilt a large rock garden. What are a famous nurseryman's personal choices when he no longer has to think about his market? Does he stay with old favorites or seek out the new? All these questions were in my mind, but the more time I spent with Ed and his wife Ethel around their kitchen table, the more I knew the story that had to be told was about their early days and their contribution to the alpine gardens of England and North America.

Like so many of the greatest nurserymen his interest in plants took him and Ethel to the places where rock garden plants come from. Their journeys over a period of fifty years took them all over North America plus trips to Japan and Europe. He went to areas of Northern British Columbia and the Yukon that had never been botanized before he went there in the early 1930's.

Readers who were at the Port Angeles Study Weekend will no doubt remember some of these stories as many of them were taken from a tape of his talk at the meeting. One lovely one was about his mother's prowess as a gardener and how she grew peanuts on Vancouver Island.

"... If only I had kept up with them," he said, "I might have become President of Canada!"

One of his early fascinations was

with lilies. He told how he sent \$10 to Yokohama for an assortment of lily and iris seed only to receive one pound of *Iris kaempferi* and half a pound of *Lilium auratum*.

An early venture in horticulture was in water lilies. He had been building garden pools after his job as a radio repairman folded in the early thirties. He quickly discovered that there was no supply of water lilies in the Pacific Northwest and before long he was in the business of water gardens, offering fifty different varieties of water lilies.

He likes to tell of his earliest collecting trips on Vancouver Island, not too far away, up on the Forbidden Plateau with a friend and Ethel. Ethel showed her stamina by out-climbing and out-walking Ed's friend and helping to find *Lewisia pygmaea*, which had seldom been seen before in this part of the world. Even now Hitchcock and Cronquist in their *Flora of the Pacific Northwest* do not admit that this plant grows on Vancouver Island. The Lohbrunners first found it up on Mount Albert Edward, a 7000 foot giant by local standards. That is one of the joys of local mountains — tree line is at 4500 feet more or less, compared to about 7500 feet in the Southern Canadian Rockies, and around 13,000 feet near Denver, Colorado.

Ed was always a great trader and one of his early sources of plants was the local nursery operated by Messrs. Preece and Nicholls. They were glad to give him plants in exchange for loads of composted

leaves, which he obtained from under the stands of Garry Oak that abound around Victoria. Archie Nicholls was his companion on one of these early expeditions into the fjord like country of Alice Arm up near Alaska. Here he found pyrolas and clintonias growing lushly in the woodland areas, while sand bars in the rivers were covered with acres of *Dryas drummondii* and the lovely dwarf fireweed *Epilobium latifolium*. They climbed Mount McGrath, which is some 6000 feet and found "acres and acres of *Cassiope stelleriana*" with flowers that he measured as being over half an inch in diameter. This is about double the usual size for this easily recognized cassiope. It is the only one in the Northwestern part of the continent with terminal flowers. Growing with *Gentiana glauca* and *Anemone narcissiflora* he found an interesting variety of *Aconitum delphinifolium* with the typical midnight blue colour, but dwarfier and with flowers far larger than described in the manuals.

On the same trip to the Alice Arm country, while walking along a telegraph trail over sphagnum tundra, they found growing together *Drosera rotundifolia* and *Drosera anglica*. The latter, which was much more abundant, has on its leaves bronzy red hairs, each equipped with a round drop of "honey" used to catch no-see-ums. In the setting sun Ed described the tundra as "looking like a world of burnished copper studded with millions of sparkling diamonds." Among the drosera were *Habenaria dilatata* growing about ten inches in height. As these orchids are usually two to three feet tall, it appears that he found yet another interesting new form.

His companion on the trip, Archie Nicholls, taught Ed the first rules of

collecting: 1. Small plants usually survive; 2. Cuttings mostly survive; 3. Take lots of dry sphagnum moss; 4. Always keep an eye open for different forms; 5. Don't overlook the mosses and ferns and willows.

Dry moss brings up another of Ed's favorite stories about the time he asked a friend to send him several bushels of sphagnum by boat. He was surprised at the amount of the freight bill until he realized that the friend had sent the moss dripping from the bog. Sphagnum holds over sixteen times its weight in water. On the same trip they came across a grotto covered with both the local and circumboreal aspleniums - *A. trichomanes* larger and with reddish brown rachis, and *A. viride* slightly smaller and with a greenish rachis. Both are excellent garden plants especially *A. viride*, which is about six inches tall.

In 1936 Ed and his brother Joe went on a four month trip in the Yukon and Alaska. They started at Skagway and went by train to Whitehorse where they bought a sixteen foot wooden boat. In this they travelled about 1000 miles down the Yukon River, which flows Northwest to the Bering Sea. At Dawson, one of their many stops while drifting down the Yukon, they enquired for someone who was a wildflower expert. They were taken to Mr. Berton, father of Pierre Berton, a well known Canadian author. He took them across the river in a boat to see the finest stand of *Cypripedium guttatum* and *passerinum* that Ed had ever seen. The *Cypripedium guttatum* extended about half a mile and were "as thick as a clump of Lily-of-the-Valley." The *C. passerinum* were in smaller clumps interspersed throughout the magnificent show of *C. guttatum*.

This last mentioned is quite a rare orchid and was not encountered again on their lengthy trip. Its principal distinguishing marks are large purple blotches on the flowers while the lateral petals look as if they have been cut off with a pair of nail scissors. . . (ovate tapering to blunt apex) according to Eric Hulten's *Flora of Alaska*.

Near the Alaska border they went up into the Ogilvie Mountains which mark the divide between the Yukon River system flowing to the Pacific and the Mackenzie River's tributaries that finish up in the Beaufort Sea. They think they were the first people to go into the area because when they asked a local trader how to get there his reply was, "You can't. I've lived here since 1906 and nobody has been up there since I've been here except in the winter when you can get up on the frozen river." This was the Tatonduk River, which, near its junction with the Yukon, was surrounded with tens of thousands of *Cypripedium passerinum*"... thick as dandelions around here in the spring." This is a limestone range and they were interested to find, in peaty pockets in the limestone, ericaceous plants such as cassiopes and *Rhododendron lapponicum*. Up high on rocky ledges they found *Myosotis alpestris* about ten inches tall and the color a glorious vivid blue. Of note was the fact that where these forget-me-nots were growing in Dahl sheep droppings on a three foot wide ledge, they were twice as tall.

On the very highest ridges they came on *Douglasia arctica*. The flowers sit down tightly on the bun, which is tiny and very tight. It differs from the other two Alaskan douglasias, in that its leaves are glabrous above, but more visibly different in the lack of stems for the flowers and these are

few in number — two or three compared to many on *D. ochotensis* and *D. gormani*. At Circle, Alaska, near the Arctic Circle they sold the boat for six cans of milk which helped to sustain them on their journey overland to Eagle Summit, Fairbanks and eventually back to the sea at Valdez.

Before going down to Fairbanks they went to Eagle Summit where they saw eritrichum which at that time was *E. aretioides*. This was especially interesting to Ed and his brother because the King of the Alps doesn't grow in British Columbia while it or its half brothers grow in some variety in Alaska and the Southern Rockies. According to Dr. William A. Weber, on whose authority I have dropped the "i" before the "um", this species originates in Asia and is quite distinct from *E. nanum* of the Alps. Another plant they saw on Eagle Summit was *Campanula lasiocarpa*, which also can be found on both sides of the Bering Sea. This is a lovely dwarf about six inches tall, which is suitable for a trough. According to the panelists at the First Interim International Rock Garden Conference it may bloom itself to death, but is readily replenished by its abundant seed. Ed notes that the reference was to the Japanese form. The plant near Eagle Summit is quite different although called *C. lasiocarpa* by botanists.

After Eagle Summit, Ed and his brother made their way down to the coast at Valdez where they encountered *Primula egaliksensis*, the Greenland Primrose, growing in the tide flats. This genus differs from many other Alaskans in that it doesn't cross the Bering Sea, but instead extends eastward around the top of North America to Greenland. In Volume 32 of the A.R.G.S. Bulletin Mr. P.J. Cotterill tells of finding them at Church-

ill, Manitoba: ". . . where the mud-flats had given way to somewhat drier ground scattered with boulders and willow scrub, the white flowers of *Primula egaliksensis* seemed suddenly to appear all over the grass, like stars coming out in the sky."

The two brothers had some difficulty getting home because by this time the ships heading south were booked up, so they took the law into their own hands and stowed away for the voyage to Seattle.

Some eighteen years later Ed and Ethel went back to Alaska with Mrs. A.C.U. Berry, founder of the famous Berry Gardens in Portland, Oregon. They went back to Eagle Summit and were shown the newly discovered *Claytonia scammaniana*. This is a very rare plant, which has only been reported from a dozen or so stations, mostly up high, in Alaska and the Yukon. Ed maintains it is a lovely pink while the *Flora of Alaska* describes it in no uncertain terms as "deeply purple-coloured." The three of them then flew over to Mayo in northern British Columbia, but three inches of snow in mid-August discouraged them from any more collecting, so they headed back to Alaska and the Yukon. On the White Pass summit they stayed the night in a railroad section house. The plants were wonderful. Cassiope in variety, phyllodoce, and *Dodecatheon frigidum*, but the weather was gloomy, typically; apparently there had only been three days all season without rain.

This trip, like most of Ed's trips, was for collecting, and he commented that he had little success with far northern plants. He attributes this to our difficulty in providing long winter rest and, in summer, twenty-four hours of daylight with temperatures up to 93 F.

Ed and Ethel went on many trips with Mrs. Berry and Ed remembers with particular fondness trips to her favorite Oregon alps: the Wallawas. Located in the northeastern corner of the state, they are sufficiently separated from the Coast mountains and the Rockies to have some fascinating endemics. One of these, Mrs. Berry called Cookie — *Primula cusickiana*.

In Vol. 23, p. 103 of the A.R.G.S. Bulletin, Mrs. Berry tells how she first found it in abundance. "After walking all morning, we were ready to give up and have lunch when all of a sudden there came a breeze with a most heavenly perfume. We dropped everything and ran over the top of the hill, and there sticking up on tufts of grass was a *P. cusickiana*. We even found an albino and a rose coloured form." She goes on to say, she wishes she had left them there because she was never very successful in growing these plants. On other trips with Mrs. Berry they found *Primula suffrutescens*, which she called Stuffy, in the High Sierras of California. Then there was Tricky — *Eritrichum howardii*, which they found in Montana.

Another expedition with Mrs. Berry was with Marcel LePiniec to North Umqua in Oregon. Here *Kalmiopsis leachiana* was found growing in south facing perpendicular cliffs and from that visit the N. Umqua form was introduced as *Kalmiopsis leachiana* 'Marcel Lepiniec Form.' The plant that was collected had been torn loose from the rocks by frost action and was found lying on the ground. Cut in three, Ed's portion is still growing in his garden in peaty soil north of a large rock.

During these expeditions Ed was looking for parent plants for his nursery, which started in 1929. He also used his collected plants for

exchange. At that time he could seldom afford to buy plants, so he wrote all the greats in alpine gardening, such as Dr. Guiseppe, offering them alpines from North America in exchange for European and Asiatic plants. Many of Ed's plants were introduced in Great Britain and, on the other hand, a number of European and Asiatic plants were introduced to North America as a result of Ed's initiative. During his fifty or so years as a nurseryman, not only did he thoroughly cover the Northwest, but he also made collecting trips to Ontario, Quebec, New England, and even the Midwest, to add to his range of plants. His visits to Europe and Japan helped to expand his catalog even further.

A walk around Ed's garden brings a wealth of memories of plants that he introduced: *Penstemon rupicola alba* appeared in the garden of Mrs. Biggerstaff Wilson, a well known Victorian gardener. This was the first white *P. rupicola* in cultivation. Another variety he introduced is *Narcissus* 'Ethel,' which appeared in their garden between a planting of *N. watieri*, a snow white endemic from the Taurus mountains, and yellow *N. rupicola*. The flowers of *N. 'Ethel'* resemble those of *N. watieri*, but are a soft lemon yellow.

Ed grows his special bulbs in one gallon black plastic pots buried in the rock garden. This provides some protection from mice and pheasants and also stops the bulb and its offsets from burrowing down to China.

Another of his introductions is *Daphne cneorum* 'Leila Haynes.' This lovely variety was found by Mrs. Haynes of Haynes, British Columbia in the Alps and thanks to Lohbrunner Nursery, is now to be found all over Europe and North America. He mentioned that he lost his best plant

last winter to emphasize the importance of propagating this species to replace losses. This led me to remark that the rows of four inch pots outside the greenhouse didn't seem to jibe with his contention that he really has retired. At that Ethel said "You should see inside the greenhouse!" There I found about sixty feet of bench full of newly potted up cuttings or pots full of cuttings waiting to acquire roots. He says they are there to move to his new house and also as trade material to replace losses. My theory is that after fifty-three years in the nursery business he just can't stop.

The last time he retired he built a whole new rock garden. One section runs from the house to the greenhouse about thirty feet long facing south and the other about fifteen feet high curves around the south west corner of the house. This part provides north slopes and some shade from a tree for his *Saxifraga oppositifolia* and Kabschias which he has in great variety. Many are new acquisitions from a friend of Jim Lecomte, who in a letter from Czechoslovakia said, "My friend Jim Lecomte in New Zealand has informed me that you have *Pleione forrestii*. I have been trying to obtain one for some time, I can offer you Kabshia saxifrages in exchange." Ed sent a *P. forrestii* and in return received thirty different Kabschia saxifrages and a *Daphne arbuscula*. Some of the kabschias weren't happy in the south facing bed so he dug them up and they are now potted and ready to move to his new house on part of the old nursery garden.

This move is only a quarter of a mile, but it is necessary because he sold his land to a developer and, I think a bulldozer is about to level the greenhouses, rock gardens, house

and all. The new house is on a rocky rise, which will have glorious views of the snow capped Olympic Mountains and ample room for yet another rock garden.

Dr. Lohbrunner, to use his proper title, received an honorary degree in recognition of his contribution to horticulture. Even more fittingly the University of British Columbia named its alpine garden the E.H. Lohbrunner Alpine Garden.

To end this story I asked him which of his plants he most cherished. There was a *Cyclamen graecum*, which he described as the last of the Mohicans — there used to be five and now only one is left. Then there is an enormous *Leiophyllum buxifolium* v. *prostratum*, which sometimes appears at our spring shows. It is hard to imagine a more perfect plant. Another plant with a

style and a memory attached to it is *Rhodothamnus chamaecistus*, which he brought back from Austria in 1967. In its homeland it grows in limestone crevices, but is quite happy in Victoria in a peat bed with limestone chips.

The peat bed is full of interest with seven kinds of cassiope including a very large and very healthy *C. wardii*. It too appears at our shows from time to time.

As well as collecting plants Ed has also collected botanical books. One special prize is Gray's *Hardy Bulbs* which he traded for \$15 worth of bulbs. It is available in London at the rare book stores for \$400.

And finally we came across A.T. Johnson's *A Woodland Garden*, which says of Ed Lohbrunner: "that keen grower of good plants and most skillful of exporters". §

Whatever Happened to *Sedum Nuttallianum*?

Ron L. Evans
London, England

*"They seek him here, they seek him there,
Those Frenchies seek him everywhere.
Is he in Heaven, is he in Hell?
That d-d elusive Pimpernel?"*

Not that *Sedum nuttallianum* should be so d-d elusive. According to the late Dr. Clausen, the expert on North American sedums, where it does grow it grows in "vast numbers." Nevertheless, despite enquiries over the years I have not yet traced anyone who has come across it, much less had it in cultivation. Maybe the latter is not very surprising, as the plant is an annual and perhaps not much "garden-worthy." Possibly those

who have seen it during flowering time have not recognized it, or have not been all that interested. Whatever the reason, *S. nuttallianum* remains one of the very few North American sedums which I have so far not managed to capture for my collection, and any dedicated collector will understand what a tribulation it is to be left with a vacant space. Clausen, of course, found it in the wild and cultivated it; but that was

in 1949 - 1968. Presumably it had then been growing there for a few thousand years, and presumably it still is.

In its apparent elusiveness *S. nuttallianum* resembles *S. villosum* in the British Isles, where it is a "native." But *S. villosum*, one hears, does not grow in "vast quantities," but sparsely in very localised sites, and not with little competition from other vegetation as *S. nuttallianum* is said to do but amongst turf and other small plants wherein it may snuggle undetected save by prayer and long searching. It also is probably an annual and so unlikely to be recognised except during its flowering period, which in the very variable climate of Great Britain could easily be a month earlier or later than the one prescribed for it by botanists. So unless one has (which one has not) a pin-pointed location such as "154 paces S. S.W. of Farmer Giles' cowshed under the second boulder on the left" finding *S. villosum* is more a matter of luck than extensive and prolonged search.

S. villosum is reported to occur in its localized habitats — round the Mediterranean basin and along the European litoral as far as Iceland and Greenland. Clausen found it around the Gulf of St. Lawrence, it having possibly set forth on an ice-floe from Greenland. I had my evanescent plant from Iceland; but in Great Britain the only precisely known habitat seems to be the Ben Lawers Nature Reserve in East Scotland — where, I fancy, it is guarded night and day by two men with shotguns, like the ospreys. Some dark night, maybe, a little critter will stealthily crawl up and eat it, and that will be the end of conservation.

However, to get back to *S. nuttallianum*. To paraphrase Clausen's



Sedum nuttallianum

lengthy description, it can grow as a single little runt of a plant about 1/4 inch high with a single flower to a bushy great monster of 7 inches with one hundred and seventy flowers, — which is a big help for a start. I should judge, however, that the normal height is about 3 inches, with an erect stem branching from the base. The fleshy, terete or somewhat sausage-shaped leaves, about 1/4 inch long, would be alternately arranged "lanceolate-elliptic or oblong", and "pale- or bluish-green". As these leaves are said to wither at flowering time one would find either the leaves or the flowers, but seldom both together, which is not an uncommon attribute of annual sedums. From the drawing, the inflorescence would be two-forked, with a flower in the fork and the stemless flowers arranged along them.

As to the flowers, these would be the usual five-pointed stars with the petals free to the base, and yellow. Sepals are unequal and the carpels "greenish-yellow", erect in flower and spreading in fruit.

Clausen describes *S. nuttallianum*

as growing in large patches in shallow soil on sandstone, and in open woods of oak or red cedar, where it prefers the shadier spots. He cites southwest Missouri and northwest Arkansas in general, on the southern and western Ozark Plateaus and the central and southern Osage Plains. More particularly he mentions the area round Everton in Dade County, Missouri, "on the western side of Jordan Creek south of the road from Everton to Antioch Church", and also Shoal Creek "about three quarter mile southwest of Joplin, Newton County, Missouri".

So if any Missouri members are in the habit of patrolling these areas during April to June, which is said to be the plant's flowering period, and happen to notice something similar to the above perhaps they could collect some flower-heads for me. (I never attempt to separate the dust of sedum seed from other dust around it).

Who knows, the seed might germinate. And the seedlings might survive and transplant, and the plants might flower, and the flowers in their turn might produce viable seed.

I suppose all wild plants must need consent to live with man and grow in his gardens. Their natural habitat and climate has for so long been specialized to their particular requirements that they must be carefully nursed before they can adapt themselves to novel and possibly adverse conditions. It is, however, remarkable how relatively soon, having once been persuaded to adapt, the offspring of so many different species can flourish and abound in a new environment and with such little alteration in their original character. It is perhaps somewhat different with annuals, which could pop up and flower before they have quite realized where they have been transposed to. But, again their seed may not be viable. The only course is to do as nature does — propagate as many as possible and select the strongest. I should rather like to try to experiment with *S. nuttallianum*, though the nearest oak is in my neighbor's garden, and I have not noticed any red cedars in the vicinity. §

Drawing taken from Steyermark's
Flora of Missouri

Folded Paper Seed-Packets

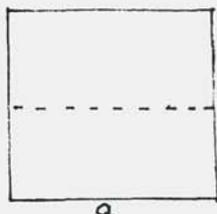
Wayne Kittredge
North Reading, Massachusetts

For those interested in trying their hands at making folded paper seed-packets here are three different designs from easy to more complicated. Square or very nearly square pieces of paper work best for all three designs.

Quick and Easy

The first one shown is quick and easy and well suited for emergency use in the field. It can be made from sheets torn off a small rectangular pad or from a notebook. Even sheets of toilet paper can be used in a pinch, though somewhat stiffer paper is much more satisfactory. These packets hold together rather well as long as they are not jostled too much. They are best carried right side up in the breast pocket of a shirt or the small back pocket of a

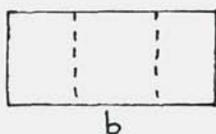
pair of pants. A small piece of sticky tape or a paper clip to hold down the flap will make them more secure.



- a. Fold paper in half lengthwise.



- c. The seeds are put in the back compartment.



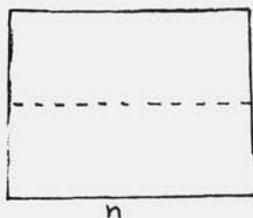
- b. Fold folded sheet into thirds (approximate).



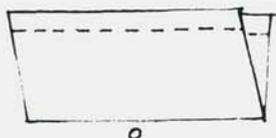
- d. Fold over at least 1/2 inch of open top to close, pressing crease firmly with back or edge of thumb nail.

Classic Origami

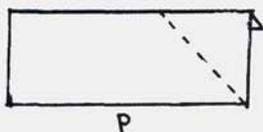
The classical Japanese origami seed packet takes a bit of practice to make, but is very secure. It is best made of paper that is not too flimsy. Onion skin, manifold paper, or lightweight typewriter paper work fine. Even crisp newsprint will do. A piece the size of a quarter page of typewriter paper folds to a packet $1\frac{3}{4}$ inches square. Half a sheet makes a $3\frac{1}{2}$ by $4\frac{1}{2}$ inch packet. Unless you have dexterous fingers it is easier to start with the larger size sheet. Be sure to press the creases well with edge or back of thumb nail. It is best, if possible, to work on a hard flat surface. It is easier to complete the packet, folding both ends, and then reopen it to put in seeds than to fold the second end from scratch after the packet already has seeds in it. This type of packet, if properly folded of good quality letter paper, might even go through the mails without an outside envelope, particularly if the two little tabs at the bottom were folded over to the back and secured with pieces of tape, though it might be wise to put a strip of tape over the edges of the seam also.



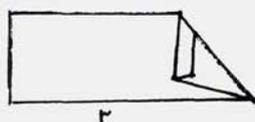
- n. Fold paper in half lengthwise.



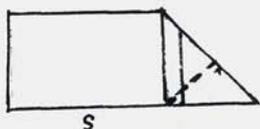
- o. Fold over upper open edges $\frac{1}{2}$ to $\frac{3}{4}$ inch to make seam, pressing crease firmly.



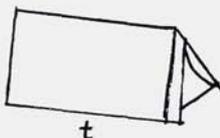
p. Turn folded paper over so flap of seam is at back.



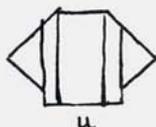
r. Fold top corner of seamed edge forward and down so it is flush with bottom edge. Press crease.



s. Fold bottom corner of same end forward and up so it exactly covers formerly folded corner. Press crease firmly.



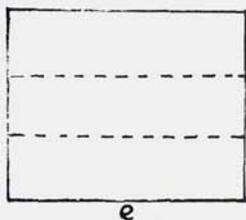
t. Lift tip of this corner and slip it under the edge of folded flap. Gently but firmly maneuver the tip into corner of flap until edge is secured under flap. This can be tricky at first try.



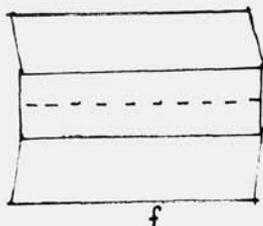
u. Reverse partially folded packet keeping flap at top back and fold other end in same manner to close packet. To open, pull out one of the corners that is tucked under the flap and unfold that end. Refold that end after filling packet with seeds. You'll find it easier to fold this second time.

Compromise Packet

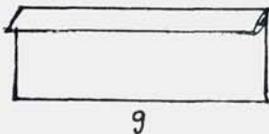
Though not as attractive looking, this packet is not as fussy to fold and is just as secure as the classic origami packet described above. It is best made from a square or nearly square piece of paper that is not too flimsy. As is true of the classic origami packet, it is best to completely finish this packet and then reopen to fill with seed than to fold it closed originally with the seed inside.



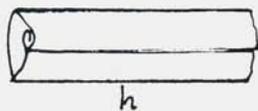
e. Fold paper in thirds (approximately) lengthwise to form creases.



f. Open flat and fold in half lengthwise.



- g. Fold edges of open top forward and down for about 1/2 inch. Then fold over again to make a double-folded seam.



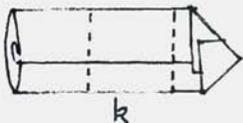
- h. By placing fingers of both hands inside open ends while thumbs are holding down folded seam, shape the folded paper into a tube with the seam approximately opposite the crease made when folding the sheet in half. The first creases made by folding the sheet in thirds facilitate this process.



- i. Flatten tube with seam approximately centered. Fold down top corner of one end. It need not come to bottom edge of flattened tube, but should come down more than half-way to bottom edge.



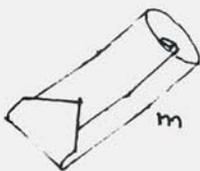
- j. Fold up bottom corner of same end so slanting edges of point are exactly even.



- k. Fold over open end so its end comes about 1/4 to 1/2 inch below bottom edges of folds in pointed end. Fold over pointed end so crease is just beyond end of previously folded open end.



- l. Raise pointed end slightly and insert it into open end. Push it in to crease across base of point if possible so it does not slip out too easily. Press packet flat.



- m. To open, pull pointed end out of open end. When filling hold tube upright with open end up and pointed end partly folded up to prevent seeds from descending into this end. Seeds should be in center section of tube as much as possible. Reclose by inserting pointed end as before.

Seed Requested

Anne D. Toumey of 2710 Cole Rd., Wexford, PA 15090 would very much like seed of the little annual, six inch, blue daisy *Charieis heterophylla*, also known as *Kaulfussia amelloides* or *Amellus annuus*. Perhaps one of our members can help her out.

A Peat Garden in Newfoundland

Bernard S. Jackson
Manager and Naturalist
Oxen Pond Botanic Park
St. John's, Newfoundland

Photographs by the author

We started the construction of our peat beds in the summer of 1975, four years after a small experiment into the durability of peat blocks under our climatic conditions. Here on the Avalon Peninsula of Newfoundland we experience an excessive amount of rain and an extended season of freezing and thawing temperatures. We have an annual precipitation surplus of forty inches which always causes our soil to enter the winter period in a saturated condition. It is not unusual to see sections of the soil surface held aloft on sheets of ice crystals up to three inches in height. Needless to say, this can play havoc with young plants and even with some of those that are considered well established. Despite such problems there would appear a great potential in our area for producing plants in a peat or woodland growing medium. Our trials in the Oxen Pond Botanic Park are confirming this assumption.

Our trials suggest that in order to grow plants successfully in a peat bed under our conditions, the following practical steps should be taken: Firstly, the bed must be raised to some extent to allow a fast and thorough drainage. Of course we all know that a peat bed must not be allowed to dry out; in this area, however, there is such a short period

of the year when this could happen that a regular and careful check on the situation will indicate when sprinklers are required to bring up the soil moisture and atmospheric humidity. We have now installed underground piping (which must be drained every fall) to facilitate watering and to eliminate the time spent laying out foot after foot of hose and the danger of multiple hoses tripping up elderly visitors, thus causing undesirable publicity. We are, after all, a public garden.

Our next consideration is to use a growing medium that will remain as stable as possible under the stress of repeated freezing and thawing, erratic snow cover, sudden winter rains, ice storms and long periods under a cover of cold snow-slush. I cannot recall ever reading of or seeing a peat bed where the growing medium does not contain at least some soil. Ours is completely without soil. The reasons for this are that reasonably good soil is scarce and the little that is available is of a clayey nature and terribly unstable under our weather conditions.

We started off with a mixture of approximately fifty-fifty shredded peat and coarse sand with some well decomposed leaf-mold incorporated into the top three inches. This proved suitable for plants such as the heathers

and dwarf Rhododendrons but too frugal for Trilliums and Shooting Stars (*Dodecatheon* sp). We have now set up a bed with a growing medium of 63% shredded sphagnum peat, 25% leaf mold (mainly maple) and 12% coarse sand. This mixture was all hand mixed in the back of a pick up truck. We have found that mixing in situ is unreliable. Due to the slope of the bed this mixture varies in depth from approximately 12 to 36 inches. We have found that too much sand draws the sun, (in our occasional good summer) heating up the bed and burning out the organic matter.

Our next concern was to use a peat block that would not readily disintegrate. Rightly or wrongly, I believe that the more orthodox peat block (a twelve inch or 30.5 centimetre cube) would prove unsuitable so we have therefore used blocks approximately two feet long, by fifteen inches wide and fifteen inches deep. Such blocks are decidedly heavy and one needs a strong back and an active friend to get them positioned. Because we are particularly interested in our native plants we do not cut off the surface layer of ericaceous vegetation since the growing roots of these plants help maintain block solidity. This vegetation is, however, sheared down to ground level, thus encouraging a dwarfer, more compact carpeting. Individual plants that show promise are left unshaped but are judiciously pruned when necessary. Such plants include *Ledum groenlandicum*, *Kalmia angustifolia*, *K. polifolia*, *Rhododendron canadense*, and *Chamaedaphne calyculata*. Incidentally, these species make useful specimen shrubs. We also have a white Rhodora (*Rhododendron canadense* forma *albiflorum*) and the rare white Bog Laurel (*Kalmia polifolia* forma



Kalmia polifolia forma *leucantha*

leucantha) propagated from wild stock. We have not yet found the wild white *Kalmia angustifolia* but collected a very nice intermediate colour phase this past summer.

Our older peat bed is set in a slight hollow and receives very little shade because the surrounding trees have gradually all blown down and the new young growth is not yet tall enough to cast shade. We have found that our climate is such that many of the plants usually associated with shade actually do quite well in the open. This is an important consideration since it means that it is still worth trying shade loving plants even though shade is not readily available. Unfortunately a small area of the bed sits in a frost pocket so one can really only grow some of the hardiest species there.

Late frosts are a nuisance especial-

ly when they follow a premature warm spell. *Astilbe simplicifolia*, one of my personal favourites, suffers dreadfully under such conditions. It can bounce back after having its young foliage burnt off once, but cannot stand it if the replacement foliage gets the same treatment. So far we have found it unusual for our summer to extend long enough to allow such plants as *Astilbe chinensis* var. *pumila* or *Polygonum vacciniifolium* to bloom, though maybe this is caused more by the lateness of our spring than by our short summer. Certainly *Cyananthus lobatus* flowers later, putting on a fine show for an extended period.

Newfoundland rarely experiences a windless day. Our wind not only drives the flower photographers almost rabid but blows the leaves off the larger leaved Rhododendrons and the decorative berries off such plants as *Actaea rubra* and *A.r.* forma *neglecta*. The latter forms dense, showy, compact clumps for us, which are eagerly sought after by the nature photographers. We have erected a traditional Newfoundland "quiggly" fence to slow down the worst of the wind. Incidentally this fence is made by weaving the eight to twelve foot stems of freshly cut young black spruce or balsam fir trees in an upright position through a three railed post and rail fence. No nails are used and I can assure you it would take a strong cow or a very determined small boy to get past it.

Our area is one of the few parts of Canada where rhododendrons thrive reasonably well. My personal opinion, however, is that the larger species and cultivars require too much maintenance against ice storms and such to be worth the effort. It is the dwarfier forms that show the most potential. We have ten or a dozen types under

trial including our own native *Rhododendron lapponicum*, collected in the wild. I personally have a soft spot for the heart-shaped leaves of *R. williamsianum*. The leaves of *R. camtschaticum* are very sensitive to frost but the young wood does not appear to be adversely affected.

Some of the heaths and heathers grow exceptionally well for us especially the cultivars of *Calluna vulgaris*, *Erica carnea* and *E. tetralix*. *Erica cinerea* gets cut back but recovers after pruning; *E. vagans*, however, does not survive in our area. Many visitors are surprised to see the Connemara Heath (*Daboecia cantabrica*) in our beds. Indeed, one visiting Irish horticulturist was so delighted that he sent us cuttings of the cultivar 'Alba'. The one we grow, *D.c.* 'Praegerae', has large purple bell-shaped flower, but does require a deep, reliable snow cover to maintain a healthy, robust appearance.

The Yellow Lady Slipper (*Cypripedium calceolus* var. *parviflorum*) and the Showy Lady Slipper (*Cypripedium reginae*) grow very well without shade in our original sand and peat mixture. Ten years ago I found a lovely pure white phase of the latter species growing with more usual ones of its kind at the side of a public highway. Unfortunately, it has since been destroyed and I now wish I had collected it for safe keeping in the Park. We also have the Purple Fringed Orchid (*Platanthera grandiflora*), Ladies Tresses (*Spiranthes romanoffiana*) and the unusual *Cypripedium calceolus* var. *planipetalum*. The latter should more correctly be grown in a limy soil. Though they do flower in our peat bed the plants are not as robust as those in the wild.

Very few types of primula have been grown locally so we are presently experimenting with this group. *Primula juliae*, *P. veris* and *P. den-*

ticulata grow well, but *P. auricula* is more difficult. The native *P. laurentiana*, does well but is short-lived both in the peat bed and the rock garden. In Newfoundland this plant is found growing on limestone, but nevertheless has done well in a peat-sand mixture for four or five consecutive years. *P. mistassinica* in Newfoundland is found amongst grass on moist sand adjacent to the sea. It flowers well in the peat bed but, like *P. laurentiana*, is short lived. *P. egaliksensis* and *P. stricta*, are also in the Farinosa Section, native to the Province of Newfoundland and Labrador, but so far we have not tried growing them.

Until recently I have been fertilizing our oldest peat beds with a very light dusting of a complete commercial fertilizer with a non-limestone base. I have also been topdressing with a thin

covering of well rotted maple leaf mold. Though most of the plants appear to thrive under this treatment, plants such as Trilliums, Shooting Star and Primula have not. These plants are now being tried in our woodland bed for comparison. The medium in this bed is made up mainly of shredded peat but with varying amounts of sand, leaf mold, well decomposed animal manure with clay soil incorporated. The top few inches of the bed are raised above the ground level and it is hoped that the mixture will drain sufficiently to deter the adverse effects of our weather. In the peat beds we are now experimenting with a top dressing of fifty percent sieved leaf mold and fifty percent commercially composted sheep manure, in lieu of the commercial chemical fertilizer previously used.



Sanguinaria canadensis forma *multiplex* in peat bed

A plant that is doing extremely well in the old peat bed is the Alpine Azalea (*Loiseleuria procumbens*). Our specimen, gathered in the wild when small, is steadily increasing in size and blooms profusely. It is one of our most treasured plants. Three plants of our native Trailing Arbutus (*Epigaea repens* L.) also thrive, without shade, in our sand and peat mixture. They were collected from an open site a number of years ago and though their leaves are paler than others we have in shade, they nevertheless flower far more profusely.

None of our peat beds are given a winter protection of spruce boughs or such. Since they are in a slight hollow they usually get a fairly decent depth of snow cover. Also, because of their location, they usually warm up a little earlier in the spring. This latter fact may or may not be a blessing because, as mentioned earlier, early tender young growth is easily nipped by late frosts.

One of the main problems encountered in gardening in our part of the world lies in the difficulty of acquiring any plant other than the general run of annual bedding plants and such. Specialist nurseries are non-existent, whilst purchasing plants across the border is fraught with all sorts of pitfalls. Fortunately the Park's horticulturist recently spent some time with Mr. Alfred Evans in the Edinburgh Royal Botanic Garden and brought back cuttings of a good selection of hard-to-get *Ericaceae*. Though it was a very poor time to take cuttings, quite a few have rooted. We are now looking forward to planting them in their permanent sites.

A few other interesting plants that flower well in our peat bed include, *Erythronium tuolumnense* "Pagoda", *Sanguinaria canadensis* forma *multiplex*, *Anemone blanda* "Bridesmaid",

Zigadenus nuttallii, *Gentiana acaulis*, *G. asclepiadea*, *Jeffersonia dubia*, *Platycodon grandiflorum*, *Polygala chamaebuxus* and *P.c.* var. *purpurea*.

Naturally we are particularly interested in our own, beautiful natives. *Clintonia borealis* has a charm and simplicity that can be used to good advantage, but we must be careful of the spreading habits of the lovely little *Cornus canadensis*, *Maianthemum canadense*, and *Trientalis borealis*. These are best planted in an informal woodland bed where they can romp at will. Our only native trillium, *T. cernuum* makes nice compact clumps with shy, nodding flowers, whereas *Iris setosa* makes compact clumps bursting with large, colourful blooms. *Arctostaphylos uva-ursi* forms a beautifully textured ground cover but the deciduous *A. alpina* provides a more appealing fall colouring. *Anemone canadensis*, which, believe it or not, is extremely rare in Newfoundland, grows better in our old peat bed than in any other medium we have tried. The stems withstand our incessant wind and the clear, white flowers persist for an extended period. Our visitors love it, but unfortunately its thick, spreading mattress of roots will quickly take over such a favourable site.

A number of dwarf native shrubs are ideal for the peat bed if grown in an open situation as specimen plants. Those already mentioned in another context, such as *Ledum groenlandicum*, *Kalmia angustifolia*, *K. polifolia*, *Rhododendron canadense*, and *Chamaedaphne calyculata* are ideal. *Vaccinium angustifolium* V. *uliginosum*, *Gaylussacia dumosa* and *Andromeda glaucophylla* are also useful.

We suffer very little damage from disease or animal pests, which is fortunate, doubly so since the Park is also a nature reserve where chemical

controls are frowned upon. The only artificial control we use is to keep some slug pellets tucked away in suitable locations. On one occasion we had a large moose walk over the beds, driving a number of plants deep below the surface with its large hooves. Actually its feet did not do anywhere near the damage now being done by the feet of those Park visitors pinching plants.

It is unfortunate that the staff in

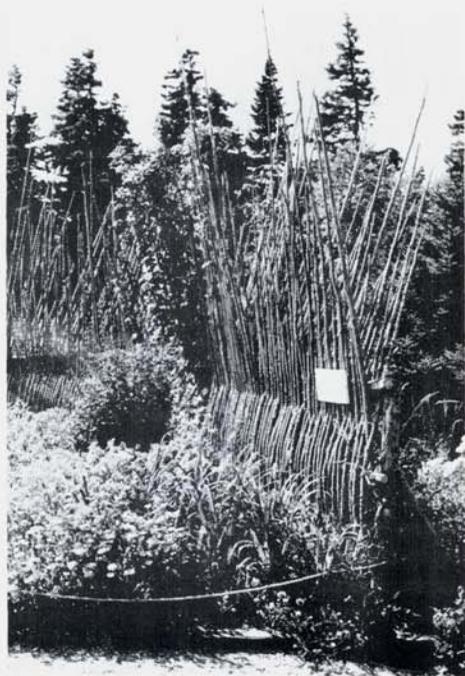
public gardens have to resort to wires and fences and alarm systems to protect their exhibits. The very small minority are expert at spoiling things for the vast majority of visitors who simply want to look and who appreciate every little thing that is done for them. Those of you who can hide away and potter around in some green and quite private spot, count your blessings!§

Quiggly Fence

A quiggly fence is made of younger spruce or fir with a stem diameter of one to two inches and a length of between six and twelve feet. They are cut down while thinning out natural forest regeneration and must be used while still green and sappy; if you store them too long they become dry and are extremely difficult, if not impossible, to weave through the three cross bars of the post and rail fence. We remove all the branches, but leave the stem from the butt up to where it thins to about a half inch. I have seen the stem peeled before weaving, but we do not bother, believing it looks more natural to leave the bark on. Some people cut the top of the fence off level at about four feet, but the traditional way and the way we do it is to leave them uncut. By mixing short ones with longer ones, you come up with a fairly tall, even looking structure. Humulus, convolvulus, and lonicera climb these fences quite readily and soften the overall appearance. If you look carefully, you'll see how some humulus has grown to the top of the fence in the center of the picture.

If the butts of the fir and spruce stems are raised off the ground slightly they will last longer, but if they are poked into the ground they are

firmer though inclined to rot at the bottom. The posts are set about eight feet apart. The top rail is about four feet off the ground, the bottom rail about six inches above the ground. The three cross rails are nailed (galvanized nails) to the posts, which are about eight feet apart. These should be of black spruce or



Quiggly Fence

larch, not fir because it rots too easily. If we had cedar or locust we would use that. The old timers used to cut holes in the posts and fit the rails into them (similar to a mortise and tenon joint) — much neater and

no nails. The photograph gives you the general idea. I have seen Mountain Alder (*Alnus crispa*) sticks used instead of spruce and fir and guess one could use whatever saplings are available. §

— B.S.J.

Rare Find in Ontario - Albino Northeastern Columbine

James L. Hodgins
Toronto Canada

The white-flowered form of *Aquilegia canadensis* was first described by Homer D. House in 1923. Its full scientific name is *Aquilegia canadensis* L. forma *albiflora* House. According to M.L. Fernald in the eighth edition of *Gray's Manual of Botany* (1950), this albino is "very rare" in eastern North America, which is the general range for the typical red-orange form of this species.

The first recorded sighting of this rare albino form for Ontario and possibly Canada was made on June 3, 1983 at the Greenwood Conservation Area in Durham Regional Municipality, Ontario by James L. Hodgins and Z. Zichmanis. This particular specimen was growing at the base of a west-facing valley slope, which was covered with mixed deciduous forest. The plant was growing at the edge of the forest, between it and the flood plain of the east side of Duffin Creek. The overstory consisted of *Thuja occidentalis*, *Ulmus americana*, and *Fraxinus americana*. Our white-flowered plant was growing among other *Aquilegia canadensis* of the typical red-orange color, along with *Rhamnus* sp., *Solidago* sp., *Glecoma hederacea*, *Tussilago farfara*, *Ranunculus acris*, *Aster macrophyllus*, *Solanum* sp.,

Erigeron sp., *Arctium* sp., *Nepeta cataria*, *Matteuccia struthiopteris*, and *Equisetum arvense*. The soil was sandy, with stones, and there was a thin layer of forest litter on top of it.

The white columbine had three separate stems, which were contiguous at the base, possibly emerging from the same root. It was about twenty-nine inches tall and had eleven flowers and two buds, but no fruits when first seen. However abundant seed was collected about four weeks later for horticultural purposes. The perianths of the flowers were pure white, but the vegetative portions appeared typical in every way.

Three color photographs of the plant were taken and later examined and the species and form verified by J. S. Pringle of the Royal Botanical Gardens in Hamilton, Ontario, who, in a personal communication with the author, said that very few species normally having petals and/or sepals in the scarlet to yellow range ever have white flowers, as contrasted with those in the Cardinal Flower red to blue range. The photographs have been deposited at the herbarium at the Royal Ontario Museum in Toronto. The plant was left in situ.

Among Hot Rocks

Zdenek Zvolanek
Prague, Czechoslovakia

Drawing by the author

As I write this at the end of May, 1982, we have temperatures of about 30 degrees C. My rock garden is situated in a rather dry area with a maximum precipitation of 400 mm. per year, twenty-five kilometers south of Prague at an altitude of 220 meters. Some superb North American plants play an important role in this informal garden. Last year I constructed a small scree here in front of one of our native rocks of diabase especially to grow the famous *Aquilegia jonesii*. Thanks to Mr. Hans Asmus of Wisconsin I have a number of seedlings of this temperamental columbine, some of which germinated in situ in various sections of my rock garden.

The scree is a good two feet deep,

only partly below the level of the surrounding terrain, and is filled with a mixture of a poor soil and limestone grit. The sharp slope of the scree faces exactly south. The young seedlings were transplanted directly into this scree about the end of May, 1981. In this way I made a colony of thirty plants of *Aquilegia jonesii* altogether. Here, they underwent all the hot and dry days of our summer and survived with no trouble our very terrible winter without any protection. Of course, I was full of joy and loved to see their dense cushions of velvety, bluish-gray leaves with three large flowers with their short spurs on three of the one year old plants in the last week in March 1982.

The ripening of their seed pods took



quite a while longer. It was not until the end of May (following an unusually cold April) that I was able to gather the seed. One plump pod contained 110 seeds, so at least I need have no fear about future progeny. Last year I collected two pods from my two pot grown plants and seed from them germinated this year in April.

My alpine partner, Mr. Rudolf Zeman, has successfully transplanted seedlings from the seed pan into pots when they had only cotyledons. We have also transplanted seedlings with their first true leaves, but their roots in the light seed sowing mixture are by then up to 10 cm. long and it is not easy to fit them into small pots. Indeed, all the plants that I grow in the usual English way - in pots - are too restricted.

Aquilegia jonesii is a superb plant for open south-facing limestone screes; in such sites they take with a smile long hot periods with no artificial watering and the unusually colored buns of lacy leaves are highly decorative in spring and summer. At the moment my robust inhabitants of the scree are only thirteen months old and I am waiting for more flowers next March, because full success with a delightful alpine plant depends mainly on its good bloom.

In the same hot scree the silvery-gray leaved androsace from the Wenatchee Mountains, *Douglasia nivalis* var. *dentata*, is also happy. This April the plant flowered richly with its typical dark wine-red flowers with black-purple eye. I admire the very large, stemless, light violet flower heads of *Townsendia rothrockii* in association with the aquilegia and the douglasia. I was pleasantly surprised by *Zauschneria villosa* as I had lost many plants of *Z. cana* during past winters. *Zauschneria villosa*, on the

other hand, a prostrate greenish herbaceous plant with a long blooming period of large light red flowers, has survived severe frosts to -16 degrees C. with no snow cover. Because of its underground stolons, this plant, though only 5 cm. high, forms a dense carpet that wishes a large space, so the plant has been placed quite a distance from the neighborhood of *Aquilegia jonesii*.

A similar plant, but with more silvery-gray leaves and slower growth, is *Zauschneria septentrionalis*. My young specimen also survived the bad winter with the help of the underground portions of the plant. This North American corner of my rock garden was completed with *Silene hookeri*, *Haplopappus acaulis*, *Sisyrinchium douglasii*, *Anemone multifida*, *Phlox diffusa* and a fairly old *Abies concolor* 'Compacta'.

Nearly all my garden is exposed to scorching sun. Unfortunately I can water only from time to time because I am only there for some weekends and the source of water is rain running off our roof into two reservoirs. In addition to the North American plants already mentioned I grow a number of others perfectly here and I appreciate their courage and beauty. *Erigeron linearis* carries its yellow flowers on seven centimeter high stems over a firm cushion of narrow grayish leaves. *Penstemon davidsonii* ssp. *menziesii* forma *microphyllus* is a real small gem, especially when its pygmy stems with miniature, red-brown leaves that hug the hot ground are set with nice purplish flowers. The plant, including the flowers is 4 cm. high. I raised it from a seed from an exchange. *Oenothera fremontii*, though not a dwarf plant, such as, for example, *Saxifraga ferdinandi-coburgii*, is much better suited to a rock garden than the larger *O. missou-*

riensis, and I like it.

The small phloxes are giving me the greatest pleasure. Some of the Scotch hybrids are charming in the difficult conditions of this garden. For example: *Phlox* 'Red Admiral', which is dark red with a darker eye and roundish petals; *Phlox* 'Crackerjack' of a most intense carmine color on a compact mound; *Phlox* 'Lilac Queen', lavender-violet blossoms in profusion on a thirty centimeter wide mat. *Phlox* 'Purple Cushion' has also proved its qualities in this hot spot. I think that the above phlox have as part of their makeup *Phlox diffusa*. (I have some taxons of this phlox from wild collected seed and these flower in cool lilac colors or pure white, but never with the same rich colors as the named cultivars.)

It may be that *Phlox caespitosa* gave its chromosomes to others of Jack Drake's group of hybrids. *Phlox* 'Apollo' is a superb cushion form with stemless, dark violet flowers about 10 mm. in diameter. *Phlox* 'J. Hibberston' has larger, dark lavender-lilac flowers and *Phlox* 'Concorde' is proud of its three toned petals of good size (reddish-violet with a gray eye.) They all want a cooler run for their roots and a better supply of water than my other cultivars so I must plant them between larger stones or in half-shady spots. My very nicest plant is *Phlox* 'Iceberg' with a very light lavender blossom and perfectly formed triangular petals. This looks as though it might be a selected form of *Phlox caespitosa*, but I have no wild material for comparison. Similar conditions suit *Phlox alyssifolia* ssp. *abditata*, a pretty, shrubby plant with larger lilac-white flowers and sharply pointed, longer leaves with ciliate hairs, and also a plant I received as *Phlox douglasii* ssp. *hendersonii*, which has cream white flowers and forms an

ideal dwarf mound.

Phlox peckii has been unhappy with me for four years. It was probably placed in too scorching a site and I cannot root it from cuttings. The plant gave me only one small, dark flower with longer than usual hairs, but I admire the tiny, wooly leaves on narrow shoots coming from the woody branches. I would like to move it to a cooler place with semi-shady conditions where my best white flowered shrub of *Penstemon rupicola alba* is now placed.

What a pity that I only have one pygmy plant of *Eriogonum gracilipes*, which I raised from the seed sent in by Mrs. Margaret Williams. This shrub is planted in full sun in a crevice in order to get it to flower. This is a native of the White Mountains of California. The flowers change their color from dark yellow to red-orange as they age.

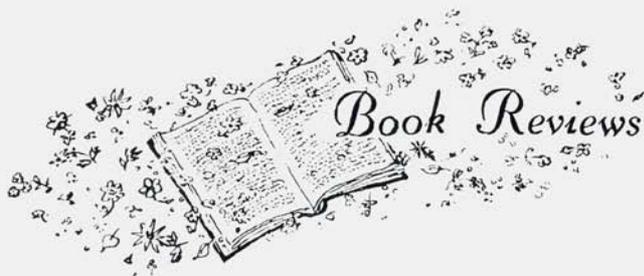
Polemonium viscosum I keep in a semishaded area near a large tree where there is more underground moisture available. Here it grows fifteen centimeters tall and I love its crowded heads of violet-blue flowers. *Polemonium brandegei* survives better in drier conditions and, for me, has creamy yellow flowers of good size. In the same shady corner is planted *Phlox nivalis* 'Red Wings'. This may be a form or a hybrid of this fine eastern American species. Every year it impresses me with a wealth of huge, shining carmine flowers with a darker eye.

As all of us do, I have had my own sad failures with new plants. I planted them directly into the rock garden instead of carefully trying them in a cool alpine box or frame. So the imperial *Phlox lutea* flowered for one summer with two times four large flowers and was killed during its second winter. I apologize for

this to Mr. Panayoti Callas, who sent me three seeds.

The western portion of the North American continent offers many of the most perfect rock garden plants, but, unfortunately, it is pretty far away for it to be anything but a dim possibility for us from eastern Europe to visit. We must, therefore, be patient and dream our sweet dreams in which hundreds of new plant prospectors and energetic seed collectors search diligently in the best

localities in the western half of North America for those of us who cannot go ourselves. To introduce one really beautiful plant into cultivation (and the best way is to collect good amounts of ripe seed) should be the highest aim for all of us. Thank you, Mr. Asmus, for your sometimes uncomfortable trips into the limestone areas of the Big Horn Mountains. *Aquilegia jonesii* is happily among us now, here in the heart of Europe. §



Handbook of Cultivated Sedums

by R. L. Evans. Science Reveivs, Ltd. Northwood, England and in U.S.A.: Science Reviews, Inc., 707 Foulk Road, Suite 102, Wilmington, DE 19803. \$25.00

In his classic work on the English rock garden, Reginald Farrer summarizes one view of the stonecrops, or genus *Sedum*, by remarking that "this vast race, as a whole, is curiously uninteresting." Clarence Elliott concurs: "As a class they are important in the rock garden and yet I feel neither affection nor enthusiasm for them." Most other writers agree, but in contrast, Chris Brickell, director of the Wisley gardens, describes them as an "unsung but most useful and attractive group of plants." And, difficult as it may be to believe, there exists today a small scattered band of enthusiasts who actually

specialize in collecting, growing, and exchanging the hardy and tender varieties of sedums. Chief among them is Ronald Evans, author of this excellent new handbook of cultivated sedums, who reminds us that "anyone who has a garden is likely to have some type of stonecrop growing in it, and very likely more than one kind. But of all the plants growing therein, it is the stonecrop which is least likely" to be correctly named.

Why are sedums so maligned and so misnamed? Part of the reason, some believe, is that comprehensive, reliable, current information about them has not been available to gardeners. The best previous book on sedums was that written by R. Lloyd Praeger in 1921, but it is now both out-of-date and difficult to obtain, even though it was reprinted in 1967.

Ron Evan's new book is an attempt to fill this void and to offer a

modern gardener's description of a very large genus with a bewildering diversity of forms. Sedums range in height from one and a half inches to well over one and a half feet; in foliage color from pale green to deep mahogany; in floral color from pale blue through white, yellow, pink, and carmine, to deep purple; and in flowering times from early May to late October. Indeed, at least one fanatic has found it possible to build a rock garden composed entirely of sedums.

Another reason why sedums are often shunned is that they are supposed to be absurdly easy to grow, but Evans describes many kinds which are difficult enough to challenge the most skilled.

Long awaited, Evan's handbook surpasses all expectations. It is handsomely produced in a convenient ten by seven inch format with 345 pages and sixteen color plates showing photographs of 206 specimens, including an absolutely smashing *Sedum praealtum* 'Cristatum.' At a price of \$25.00 it is a bargain. Each species or major variety gets a page to itself. The detailed descriptions are based on a thorough study of the literature but are verified and supplemented by Evan's observations of his own plants. There are tips on cultivation and suggestions for horticultural uses for each species. Some sixty pages of general notes are provided, with the section on geographical distribution being particularly outstanding. Americans will find that the pests and diseases which are described are all too familiar, with the exception of the vine-weevil which the author warns is a "menace to be born in mind."

Evans follows Praeger in dividing the genus into seven sections, thus necessitating some hard choices. *Rhodiola* is in. *Orostachys* is firmly

on the border line. *Rosularia* is out and so is *Graptopetalum* (with the curious exception of *G. paraguayense*, now born again under its old name, *Sedum weinbergii*, leaving in limbo such ghostly kin as *G. amethystinum* and *G. filiferum*.) Nomenclature is generally conservative with preference apparently being given to the briefest of the available synonyms, except for a popular plant listed as — take a deep breath — *S. spathulifolium* ssp. *pruinatum* var. *purpureum* Cape Blanco.'

Too much should not be made of differences of opinion on nomenclature. By linking his names with precise descriptions, Evans provides designations which are readily usable by gardeners. At the same time, he offers some basic data for the taxonomists who, it is hoped, will some day revise the entire genus. In any event the book certainly proves its worth as a guide to identification. By using it, I was able in a very brief time to sharply reduce my number of unknowns.

Americans may find some British brand names unfamiliar, and some species are described which are currently unobtainable in this country. On the other hand, a few plants commonly grown here are omitted such as: *SS. burrito*, *lucidum* 'Cristatum,' *platyphyllum*, and *torulosum*; also *Orostachys spinosa*. The description of *S. rubrotinctum* is based on the cultivar, 'Christmas Cheer,' rather than on the type, which has olive-green to deep maroon leaves. The reference on p. 16 to an "alkaline" pH of about 6.5 to 7 is apparently an oversight. While the book is not free of typographical errors, few of them are of serious consequence.

Praeger's book was a landmark, the point of departure for all sub-

sequent studies of sedums. Unquestionably, the Evans handbook now occupies the same position. It will be widely used by scientists, by nurserymen, and by all gardeners who wish to learn more about a fascinating and beautiful, but heretofore mostly neglected, genus of plants.

— David H. Heller

Alpine and Rock Plants

by Will Ingwersen. 1983 J. M. Dent & Sons, Ltd., London. Available through Biblio Distribution Centre, 81 Adams Dr., Totowa, N.J. 07512. \$22.50

Will Ingwersen is one of the premier names in the world of alpine and rock garden plants in all of Europe, of America and even in Iran. He comes to this elevated status not solely by being the son of one of the greats of yesterday, Walter E. Th. Ingwersen, but by virtue of years as a nurseryman in Great Britain, a consort of all the finest horticulturists in that horticultural island, and a moving force in the sanctums of the horticultural world there.

For many years, I feel sure, he has been pressured by the avid horticultural publishers in Great Britain to produce books that could record his extraordinary knowledge and expertise. Finally a few years ago, he produced the *Manual of Alpine Plants*, a thorough catalogue of rock garden plants including many recent introductions. Because of the format he had to condense his comments on individual plants and stick closely to an alphabetical sequence.

In this new book he has been permitted to escape from these re-

straints and freely ramble among his store of reminiscences of plants, people and places. The flavor of the writing is that of a friendly chat with a fellow rock gardener.

On reading the work one has the impression that much of the writing was done in odd moments and then pulled together at a later date. There was apparently very little editorial supervision or revision by the publishers after the submission of the manuscript. This, of course, does enhance the familiar tone of the work, but it leaves the reader sometimes confused.

For instance, at the conclusion of the chapter "Ericaceous Plants" there is this paragraph: "So much for ericaceous plants — with one or two interlopers. Others will doubtless be found on subsequent pages but these are just a few of the *creme de la creme*. As I write I am continually beset by thoughts of plants which I have omitted from their appropriate chapters, but comfort myself with the intention to enthuse about them in due course. A plant which I unforgivably left out of the chapter on aristocrats . . . definitely deserves a few paragraphs, even if only to tempt you to a rarely attainable desire." The "deserved paragraphs" never appear in the book.

There is a handsome eight page spread of color plates in the center of the book, and throughout there are some sensitive line drawings of individual plants by Charles Stitt.

The book is a pleasure to read despite a frequent repetition of cliches and a few less than precise descriptions of plants.

— H.L.F.

. . . of Cabbages and Kings . . .

The following guest editorial was sent in as a possible article by Sonia Lowzow, owner of Fjellgarden in Lakeside, Arizona, who has recently started a new and thriving Arizona Chapter. Her theme seemed more suited to Cabbages and Kings and, though it has been touched on lightly in this column before, it is important and deserves greater comment and, may we hope, further action on the part of our members.

. . .

Out there in the American countryside, there are vast untapped reservoirs of native plants ready and willing to come into our gardens if we will only find them and make a place for them. As a rock garden society, one of our stated aims is to "encourage and promote . . . introduction of new species". I'm sure that actual dissemination of the plants, themselves, is also intended. Where would we, as rock-gardeners, be if the Swiss, for instance, had allowed their native flora to languish in obscurity? But many of us are doing just that with our natives — and they are everywhere. You don't live in an alpine area, you say? An alpine plant, in the broad sense, can be any reasonably hardy plant that will live and thrive in rock garden conditions. The definition can be even further broadened to include so many lovely woodlanders that will establish themselves on the shady verges of the rock garden or under our trees.

There is then, in effect, a mandate to American rock gardeners: Go out and find your native plants. Acquire enough botanical knowledge to at least make a stab at identification. Use one of the readily available local

flower guides or the Flora of your state or area or check out your local herbarium. Collect, preferably, *only* seed or cuttings of your chosen plants. (If they can't be propagated reasonably easily, further distribution will be difficult, anyway.) Bring them home and *grow* them, trying a few in various locations as similar as possible to their native habitats. Don't expect a meadow plant to thrive in lean scree or a scree-dweller to accept the rich humus of the woodland garden. If you have a botanic garden in your area, contact them for information about the plants themselves (nomenclature, and so forth) and about the preferred cultural conditions of each species. If, after a period in your garden, the plants prove amenable to cultivation (are "garden-worthy"), then start the dissemination process. Perhaps you have a friend in a region with dissimilar climatic conditions. Send him some. If they pass the test for garden-worthiness at his place, also, pass them on further. A nursery in your area might welcome an opportunity to bring a really good plant into cultivation or one of our mail-order alpine nurseries might be happy to propagate some especially fine plant they have not previously encountered. Give a few plants to a botanic garden — the word will spread from there. *And* write an article about the plant for the ARGs Bulletin; then we'll all learn about it.

. . .

To Sonia's excellent suggestions it might be added that while you are about it you should collect, whenever possible, seed or cuttings from the sturdiest, most attractive and health-

iest plants in a colony. Cuttings will, of course, grow into plants identical to the parent from which they were taken, but even seed will tend to some extent to pass on in their genetic material the vigor, growth habit, flower color and quality that first attracted you to that particular plant.

Within almost every species there are individuals that carry in their genes features which are attractive to gardeners. It may be an obvious characteristic such as particularly good growth habit, flower color, or leaf texture. Or it may be a quality not so easily recognized such as disease resistance, cold or heat hardiness, or in the case of alpiners, a tolerance for growing conditions at lower elevations. Those with the more obvious attractions are easy for the gardener to select. Mark these plants with a strip of rag or a plastic ribbon and when the seed is ripe, collect it.

Those individuals with less obvious, but perhaps even more valuable characteristics will prove more difficult, if not impossible to identify; but the site where they are growing may give a clue. By collecting seed from wild plants naturally growing near the northern limit of a species' range, plants more cold resistant than normal may result. The further south a population is growing the more likely it is to tolerate warm conditions. Seed collected from individuals growing at altitudes lower than is usually true for that species may harbor resistance to the ills attendant to garden conditions at low elevations.

One of the advantages of growing wild plants from seed is that, by the luck of the draw, a few of the seedlings grown from such collected seed may carry in their genetic material some of these invisible advantageous characteristics and these will survive in your garden whereas their cohorts

will die under the same conditions. If these plants are then grown on for several generations in the less than perfect (from their point of view) growing conditions of your garden, nature itself will kill off those unable to take it, leaving perhaps a few stalwarts to set seed and become the progenitors of a whole new "garden-hardy" population of that particular species and the "impossible plant" will become not only possible but, perhaps, even fairly easy. It has happened before.

Those plants with more obvious attractions such as color and size of blossom will require more personal selection on the part of the gardener if a population with this trait is the goal. As many seeds as possible of the desirable plant or plants should be sown and raised to maturity in groups so that fertilization can take place among them. It may be that a certain amount of selection among the seedlings can take place at this first generation level, but it is wise not to be too ruthless in weeding out the poorer individuals at this point as some gene-carried characteristics may not show up visually in this first batch of seedlings even though the wanted trait may be latent in some of the plants. With the second generation, however, some segregation will probably occur so that the less desirable individuals can be rogued out and discarded before they have the opportunity to pass on their pollen or set seed. Deliberate hand fertilization by the gardener among the better plants may speed the process, but if the less good individuals are removed promptly the bees and butterflies will frequently do a more than adequate job. Occasionally even after several generations of selection, throw-backs to the more typical, less desirable characteristics

of the species will appear and these plants should be weeded out immediately and discarded to prevent contamination of the strain.

Genetic selection by human beings is tricky, however, and not as simple as the above description could lead you to suppose. There is good reason for strictures against close and prolonged inbreeding, but in their eagerness to attain coveted characteristics, breeders may forget or ignore such warnings, sometimes with unfortunate results.

Plants as well as animals may carry in their genetic material incipient debilities. In a wild population, plants which carry too great a burden of such weaknesses are likely to be eliminated by natural selection, or the debility, if not dominant, may be ameliorated in large populations by cross fertilization with plants that do not carry the flaw in their genes. In small populations, however, widespread cross fertilization is limited at best and may actually be discouraged or even prevented by the gardener-breeder, who, in addition coddles the plants and protects them from natural attrition. Thus the weaklings are likely to survive to pass on and con-

centrate the genetic debilities as well as the desirable trait. In addition, characteristics wished for by a horticulturist, such as a certain blossom color or a dwarf growth habit may be genetically linked to such unwanted qualities as weak stems, a susceptibility to certain diseases, or even sterility and it is extremely difficult to divorce the two, so that in selecting for the coveted quality you are also automatically selecting for the unwanted characteristic with sometimes fatal and usually unhappy results.

There are many examples in horticulture and agriculture of both improved and impaired strains of plants caused by selection practiced by breeders; yet, as we become more knowledgeable about the strange world of genetic manipulation, we may learn how to guard against the pitfalls, and in the meanwhile no drastic harm is likely to result from gathering seed of the best wild plants we can find and attempting to raise from them garden-hardy, garden-worthy strains for our enjoyment and that of other gardeners. So gather seeds and cuttings of your native wildings where ye may, and grow them on and disseminate them. §

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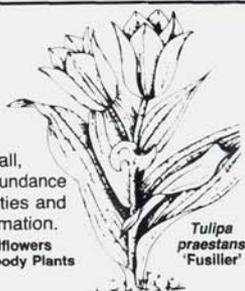
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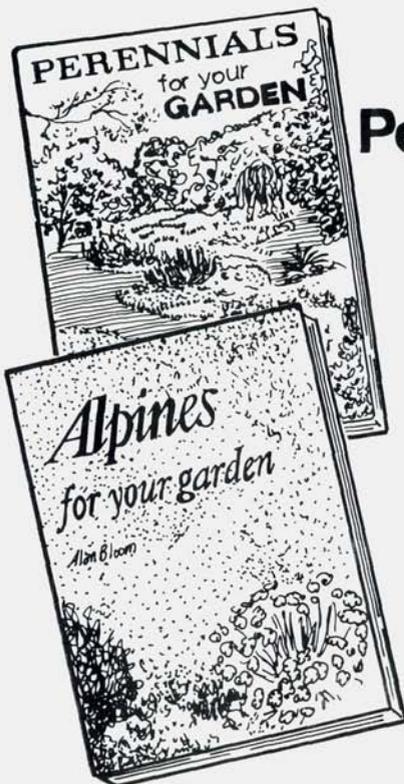
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