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Contributing Editors

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Harry G. Healy

Lilium Hansonii

A Few Unusual Loniceras

BY MARY G. HENRY

I have 31 species of *Lonicera* and the first one to bloom is always *L. tenuipes*. Even before *L. fragrantissima's* little cream colored flowers let loose their sweet fragrance, the first balmy days of late winter or early spring, a few blossoms, bright pink in color, are already decorating the bare gray branches of *L. tenuipes*. This past season it bore a scattered bloom at Christmas time, while *L. fragrantissima* did not do as much until a month later.

Of course this winter having been so unusually mild, caused these shrubs as well as many others to open their flowers exceptionally soon.

However, *L. tenuipes* is unquestionably an extremely early flowering shrub. Its native home is Japan, and it was first cultivated in 1915. My plant came to me from the Arnold Arboretum about six years ago. It began its life in a city back yard. It is rather a dwarf, slow growing plant compared to many other *loniceras*, and is now only 4½ feet tall and 4 feet broad. It blooms, however, when very young, and has never yet failed to provide its main crop of flowers in March or early April, but before this in February or even January opens a few blossoms on mild days. So far it has produced very few of its red fruits, but it is easily propagated from cuttings.

The little flower buds are formed in autumn and begin to swell before winter is half over. Frost rarely harms the buds, but although the open flowers will stand considerable freezing sometimes they do get destroyed. They are a pretty shade of bright

pink, and when in full bloom the bush looks, from a short distance, as if someone had thrown a pink veil over the branches.

Although entirely hardy here, I think a little farther south *L. tenuipes* would be even more valuable, and then it could open its flowers when it seems to want to in early, or midwinter and there would be no severe weather to spoil its prettiness.

Lonicera Maximowiczii sachalinensis is another attractive shrub that is always much admired. This one came from Korea and was first cultivated in 1917. It also was a gift from the Arnold Arboretum in 1926. It is a slightly faster grower, being now 4½ feet tall and 5 feet broad. Although of an entirely different type it is just as high class a shrub. Its pretty deep crimson flowers borne in pairs, are generously produced about the fifth of May. They are well set off by the ample rich green foliage, as are also its bright red berries later on.

Neither of these shrubs are what is commonly termed "showy" from a distance, but both are exceedingly pretty and refined, as well as being unusual.

L. gracilis is another early flowering shrub, usually coming into bloom shortly after *L. Standishii* about April first. Japan is its home, from whence it came in 1907. It is entirely hardy, easily pleased and has pretty little pink flowers, good foliage and ornamental red fruit. I have had this one four years. It is of medium growth.

Lonicera involucrata, although a native American and first brought into cultivation in 1880, is still rather a

rare shrub in gardens. I brought my plant of this from the Canadian Rockies four years ago. I well remember the day I first saw this shrub. It was near the edge of Emerald Lake and I, being unfamiliar with it, mistook, at first sight, the fruit for the flower. Anyhow, I soon saw my mistake and its extraordinary and attractive appearance impressed me mightily. The round, very shiny inky black berry was surrounded by rich crimson colored bracts, forming a most effective combination. The leaves are unusually large and rather bold looking, but the small cream colored flowers are entirely inconspicuous. In the var. *serotina*, however, the flowers are an improvement on those of the type, being considerably larger and tinged with scarlet.

Lonicera angustifolia has its native home in Kashmir. The Royal Botanic Garden, Edinburgh, kindly supplied me with seed of this *Lonicera*, which I planted February, 1930. This spring it bloomed at the age of 2 years and 3 months. It is 2½ feet high. The slim green leaves and very pretty little pink flowers make this shrub more than ordinarily dainty. It seems to be entirely hardy. But it is as yet too early to say much more about it.

L. Maackii podocarpa is not now very new, but is one of the best hardy shrubs and is particularly handsome in the autumn with its showy red fruits.

L. M. erubescens has larger and prettier flowers which are shaded with pink.

The leaves of these two *Loniceras*

remain attractive until very late autumn. They are both large, very fast growing shrubs, but do not become coarse, and have a good habit of becoming broader than tall.

My *L. M. podocarpa* is about 12 feet tall and 21 feet broad, and was planted about 12 years ago.

Lonicera quinquelocularis is worth planting for its interesting white, semi-transparent fruits.

L. syringantha and its variety *Wolfii* are both pretty shrubs with very pleasantly fragrant, pale purple flowers, and graceful small foliage.

L. nitida is a beautiful little bush with exceedingly handsome evergreen foliage. The little leaves are only about ½ inch long and are of a glossy, deep green. This *Lonicera* may be called "doubtfully hardy," but seems happy here with the shelter of a wall.

Lonicera Korolkowi floribunda is one of the most handsome of all shrubs.

Most first class nurserymen carry it in stock now, so it cannot be considered rare, but it is so beautiful that those who have only space for half a dozen shrubs should include this one. Its pretty, pale blue green leaves are almost hidden from sight about May 25th, by the myriads of flowers which cover the bush at that time. These are of an exquisite shade of pure rose pink.

It started life with me on my Maryland farm, where it grew for two years before being moved to its present position, where it has been for five years. It is 7 feet tall and has a spread of 13 feet. This shrub is one of my most precious possessions.



L. A. Guernsey

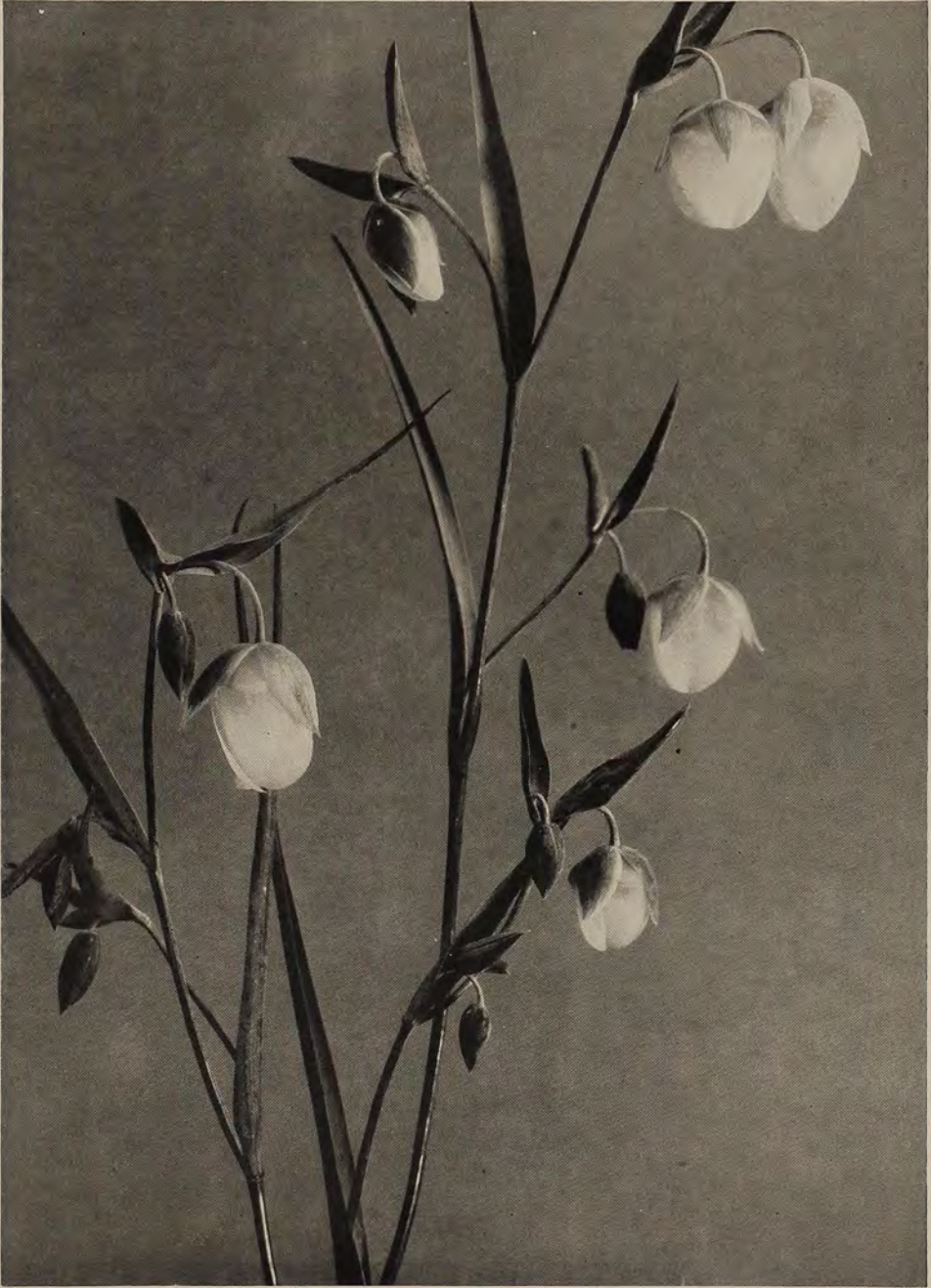
Calochortus amabilis

The series of portraits that follow were taken from flowers grown in the east and show the varied types of flower in the genus.



L. A. Guernsey

Calochortus amoenus



L. A. Guernsey

Calochortus albus
1/2 natural size



L. A. Guernsey

Calochortus pulchellus



L. A. Guernsey

Calochortus Maweanus major
1/2 natural size



L. A. Guernsey

Calochortus Benthami



L. A. Guernsey

Calochortus Maweanus roseus



L. A. Guernsey

Calochortus Howellii



L. A. Guernsey

Calochortus luteus citrinus

$\frac{1}{2}$ natural size



L. A. Guernsey

Calochortus catalinae



L. A. Guernsey

Calochortus luteus
 $\frac{1}{2}$ natural size



L. A. Guernsey

White form of Calochortus venustus
Eldorado Strain



L. A. Guernsey

Rosy lilac form of Calochortus venustus

Eldorado Strain



L. A. Guernsey

Calochortus nitidus
2/3 natural size



L. A. Guernsey

Calochortus Gunnisonii

Reminiscent of the London Conifer Conference

BY A. D. SLAVIN

Horticulturist, Bureau of Parks, Rochester, N. Y.

It is quite safe to say that one of the most important contributions to modern horticulture in recent years was the Conifer Conference, which was sponsored by the Royal Horticultural Society of London, last November. English gardeners with the wealth of material at their disposal as well as their experience, much of which came to them through their predecessors, for gardening is an old profession in the British Isles, have, for some time, found it beneficial to segregate occasionally certain groups of plant material and discuss individually all phases both scientific and practical pertaining to them. Such was the purpose of the recent conference which had to do with coniferous material. It was the third of its kind held in conjunction with this particular group of plants in the last thirty-five years.

At this conference practically every species, variety, and form of conifer which permits of cultivation in the British Isles was either discussed or exhibited in some specimen form. Having had the honor to be present as an official guest of the Society, it was my privilege to observe the complete workings of the meeting. Above all else, I feel that my greatest impression was received by the vivid interest which the public demonstrated in their desire to learn about and obtain material of recent development. Proof of this interest was later found in many fine private gardens which I visited at the conclusion of the conference.

To correct a common fallacy, it may be said that gardening in England is not limited to the wealthy classes, but is almost national in its aspect.

The conference or symposium, as it might be termed, lasted three days and consisted of two main features. Papers devoted to scientific and practical developments were presented during the first and second days. A most complete exhibition of conifers was also held on the second day and completed the programme on the third and last day. The papers which were given in the new lecture room of the Society were well chosen and received with much approval. The subject matter, whether scientific or practical in outline was so presented that the audience, after the meetings had closed, went away not only pleased with what they had heard but with information which they could appreciate regardless of their personal knowledge of the subject. Furthermore, both the theorist and the practical expert offered their presentation in such a manner that neither failed to understand the other. In the course of these discussions, it was interesting to note the esteem which the English people have for horticulture in America. Many of our garden publications are well received in England, and while there I was often questioned regarding material cultivated in the United States, but which is not as yet present or may be impossible to grow in European gardens. Without doubt, the most commonly discussed question was that of nomen-

clature. This phase of plant work has always been well cared for in Europe. Therefore, it can be easily seen that some discomfort must arise in throwing aside old well-known names which have held, in many cases, since the plants have been known in cultivation and accepting a series of new names set forth at the 1925 Botanical Congress. Mr. W. Dallimore, of the Royal Botanical Gardens, Kew, is most worthy of praise for his endeavors to place these rules in common use. In this country credit is due Mr. Alfred Rehder, of the Arnold Arboretum, who was the first to incorporate the new nomenclature in a cultivated flora of the United States.

The exhibition of conifers which made up the second part of the conference was, at least to the casual onlooker, the larger and perhaps the more instructive feature of the gathering. To say it was large is saying little; its instructive character was of immense value, especially to those who wished to obtain aid in correcting names. The material was placed in the Exhibition Hall of Royal Horticultural Hall and filled all available space. The exhibits consisted of both living plants and cut specimens showing wood, bark, foliage and fruit characteristics. As all the material on the floor was judged for awards, the exhibits were separated into professional and amateur classes. However, due to the large collections of excellent material shown by both classes, it was nearly impossible to distinguish one class from the other except by the labels of the exhibitors. The largest contribution of living evergreens was that of the Marquis of Headfort, who brought more than one hundred different specimens across the Irish Channel from his home at Kells, County Down, Ireland. This exhibit

consisted of material averaging more than eighteen feet tall and received first honors in the amateur class. The commercial exhibit of E. L. Hillier & Sons, Winchester, was awarded the first prize in its class. It is interesting to note that this firm offers a larger assortment of conifers to the trade than is to be found in any of the pineta in America.

The cut specimens which made up the second section of the exhibit were arranged on a series of tables and screens which encircled the Hall on three sides. Some idea of the amount of material present may be obtained by stating that if the tables were set in a single line, they would extend over a distance of seven hundred feet. This section was, to my mind, the most valuable adjunct of the exhibition. Despite the enormous amount of material, every specimen was checked for correctness of name and, in many cases, a complete determination was carried out in order to obtain this end. The result was a complete indoor pinetum where the public might check their own collection for correct nomenclature or select a list of desirable for future planting. The name cards on each specimen supplied not only the name but also provided for such data as the size of the specimen, its age, and where it was growing.

The photographic collection completed the exhibition. More than four thousand photographs of conifers, both in their native state and in cultivation, from all parts of the world, were shown. From this country, the Arnold Arboretum sent more than two hundred photographs selected mainly from material which had been photographed by the late Dr. E. H. Wilson in Japan and China; the Bureau of Parks, Rochester, N. Y., contributed

358 photographs taken in their pineta as well as a duplicate collection of colored lantern slides which I used to supplement a paper I had the honor to present, on "Some Cultivated Conifers of the United States."

At the conclusion of the conference, it was my pleasure to visit many of the places where the exhibits had been grown, and it was then easy to understand why England has such a wealth of material in cultivation. The care and study given to garden work is immediately seen. The treatment of the soil is a perpetual undertaking, and its complete renovation about every two years by the application of natural fertilizers, acid or lime condiments and the like accompanied by trenching to a depth of often more than two feet, is a common practice. The study given to the proper arrangement of plants is a feature too often disregarded by gardeners in this country. In England, where so many exotic plants are grown, it has long been discovered necessary to so place material that it may be left to develop under conditions closely approximating its native environment. The result is that one sees many single specimens in out of the way places where they may have the protection or other

conditions necessary to their success. While such arrangements often remove the plant from an outstanding position in the landscape, it is, nevertheless, where the owner may take pride in its possession and obtain pleasure from the result of his labor.

Horticultural methods used in England have long since proven their value; and the added appreciation and developments which our English friends have brought about by specialized group studies are well worth the consideration of American gardeners. As time goes on more and more of these methods will be adopted in this country. In the matter of coniferous material, it is encouraging to know that at the present time plans are being formulated among the conifer enthusiasts in the United States for the organization of a permanent society to be devoted entirely to that group of plant material. Such endeavors are to be given all possible aid, and it is to be hoped that the result will be fashioned somewhat after the ideas of the British organizations. In establishing such undertakings, it is to our benefit that we can follow the tried and proven methods of successful institutions rather than to be obliged to work blindly into the future.

Campanulas for the Rock Garden

By ROBERT M. SENIOR

The family of Campanulaceae is a very large one, and includes a great number of most attractive plants suitable for the rock garden. The best known genera in this family are the *Adenophora*, *Campanula*, *Codonopsis*, *Cyananthus*, *Edraianthus*, *Jasione*, *Phyteuma*, *Platycodon*, and *Wahlenbergia*. By far the largest genus is that of the *Campanulas*, which embraces some 250 species.

Nearly all of these groups are herbaceous, and have the following characteristics in common—namely, a milky juice, calyx tube united with the ovary, one pistil, corolla monopetalous, and nearly always 5-lobed; calyx lobes as many as those of the corolla, and alternate with them. Leaves usually alternate; seeds small.

As a matter of reference, I have drawn up a resume of the chief characteristics of those genera that are particularly interesting to rock gardeners, and have underlined the characteristics that might first attract any one studying these plants.

Jasione.

Small flowers in a head.

Calyx 5-parted.

Corolla deeply 5-parted, the lobes *linear-lanceolate*.

Stamens 5: anthers united at the base, free above.

Capsule dehiscing by two terminal pores.

Edraianthus.

Linear leaves.

Flowers larger than Jasione—in a head.

Corolla 5-parted, tubular-campanulate.

Style 2 or 3 parted.

Capsule dehisces at top of calyx tube—the empty, dry capsule and flower stem lasting a long time.

Wahlenbergia.

Because of some similarity, this and *Edraianthus* are occasionally grouped together. Generally the cluster-headed species are classed as *Edraianthus* and those producing their flowers singly are placed under *Wahlenbergia*.

Calyx 5-parted.

Corolla 5-parted, with linear lobes *at first cohering*, and later separating from base to apex. (One exception.)

Rather small, sessile flowers, in a dense head, or somewhat crowded spike.

Capsule of 3, rarely 2 locules, opening on the side of tube.

Platycodon.

Large and broadly cup shaped terminal flowers.

Leaves often opposite, subsessile.

Differs from *campanulas* in that stamens are more dilated at base, and capsule dehisces at top of calyx tube, and not at the side.

Adenophora.

Flowers and capsule nodding.

Calyx and corolla 5-lobed.

A small, but easily distinguishable *disc around base of style*.

Capsule opening toward the base by 3 valves.

Campanulas.

Calyx and corolla 5-parted.

Stamens free.

Hairy style, on which pollen collects: 3-5 parted.

Root leaves generally of different shape from stem leaves.

Capsule dehisces on the side by 3-5

perforations (never on top, as do *Platycodon* and *Edraianthus*.)

After this brief outline of the main characteristics of the various groups embraced under the *campanulaceae*, the rest of this article will be devoted to a description of the most attractive rock plants that are included under the genus *Campanula*. About 50 species are described, every one of which is worthy of a choice place in the rock garden. Some are difficult to raise, but most of them will flourish in a light, well drained soil. A number of them cannot be purchased in this country, but seeds can be secured from European nurserymen, among whom I might mention M. Correvon, Geneva, Switzerland; Clarence Elliott, Stevenage, England, and W. E. Th. Ingwersen, Sharpthorne, England.

One word of caution. Most seeds of campanulas are very small, so when planting, do not cover with much soil; and when watering pots or seed bed, use a fine spray, else the seeds may be washed about, and the percentage of germination considerably reduced.

Finally, the phrase "calyx appendages," which is used in describing some species, possibly requires a word of explanation. Between the calyx lobes—at their juncture, or sinus—one will often find what appears to be reflexed calyx lobes, pressing down against the calyx tube. Anyone attempting to classify the campanulas, should, in fact, always examine the calyx tube to see whether or not these appendages are present. On a *Campanula Medium* (Canterbury Bell), they are so large, that they almost cover the calyx tube; on *Campanula Sarmatica*, they are hardly noticeable. *Allioni*.

Small rosettes of narrow, stiff-hairy, greyish leaves, and a big violet

blue flower on a short stem. Calyx appendages. Moist, well drained soil. Use plenty of rock chips around present crown. A lovely alpine.

Alpina.

Broadly bell-shaped, pale mauve-blue flowers, drooping along an upright stem. Calyx appendages present. Excellent, but short lived. Not easily transplanted, because of tap root. Well drained, gritty soil.

Arvatica.

A tiny plant, with charming purple, starry flowers. Correvon has it growing on a wall of tufa rock, in half shade. It has been raised on a scree, in full sun. Not easy.

Aucheri, bellidifolia, saxifraga, tridentata.

These four species are grouped together, because they have so many characteristics in common. They all have flower stems springing up between the leafy rosettes, each stem bearing one lovely purple bell. In *aucheri*, the bells are downy; in *bellidifolia*, they are smooth on the outside. *Saxifraga* has leaves that are toothed along upper half of their length; *tridentata* has 3-5 tooth like notches crimped into apex of leaf; all have calyx appendages. Scree. Excellent for pots in coldframe, or alpine house.

Barbata.

About 8 inches high. Pale porcelain blue, nodding, bearded flowers. Calyx appendages. Mine grows in light garden soil, shaded from midday sun. With me a biennial, but very worth while.

Barbeyi, garganica, fenestrellata, istriaca.

Allied species, with rather flat, wheel-shaped flowers. *Barbeyi* has darker leaves than *garganica*, and flowers a deeper violet. *Istriaca* has greyer leaves than *garganica*, and



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Campanula alpina

flowers somewhat broader. *Fenestrellata* has thinner stems than *istriaca* or *barbeyi*—has pale lilac flowers, with recurved tips. All first class rock plants, and not difficult.

Caespitosa.

Dwarf, blue, bellshaped flowers, something like *C. pusilla*, but the mouth of flower more contracted than *pusilla*, and it flowers later. Not difficult.

Carnica.

Probably a form of the well known *C. rotundifolia*. Calyx lobes longer than those of *rotundifolia*, and always reflexed. Light, well drained soil.

Carpatica.

Too well known to be described. Many of its varieties such as *Riverslea*, *turbinata* (a diminutive variety), *pelviformis*, are attractive, and not difficult. Light soil; full sun, or half shade.

Cenisia.

Deeply cut, spreading corolla, and recumbent stems. Difficult, but beautiful. Gritty loam. Have mine in coldframe, with rock chips around base of stems. Beware of slugs.

Collina.

About 8 inches high. Many downy-leaved stems, each bearing a few rich violet, broadly tubular flowers—sometimes only one. Calyx appendages. Attractive.

Elatinoides.

Corolla rotate, like *garganica*, but with sturdier stems. Leaves downy, and bigger than those of *elatines*. Not difficult in well drained soil.

Elatines.

Bluish purple flowers on a branched, almost prostrate stem. Correvon considers it one of the most exquisite of the rock campanulas—lovelier than *garganica*. Mine growing in coldframe, set in the holes drilled in the

side of a pot. Gritty soil; cover with glass pane in winter.

Excisa.

Pale lilac-blue, nodding flowers. Base of flower lobes look as if they were "punched out" by a street car conductor. Delightful, but difficult. Probably dislikes lime. In order to keep it, advisable to divide it each season.

Fragilis.

Light violet blue, wide open flowers; trailing stems. Not difficult, and very attractive. Mine grow in a crevice with eastern exposure. Fine for hanging baskets.

Glomerata.

Violet blue flowers in a head, on the end of fairly stout stem. There are many varieties, some of which are a trifle too tall for rock garden. *C. g. acaulis* has short stem, and large flower heads. *C. g. dahurica*, about one foot tall, is attractive. All are easy to raise.

Isophylla.

A charming plant, with numerous, broadly campanulate flowers, but not able to withstand our winters. Excellent for hanging baskets in a cool greenhouse. *C. Mayi*, a hybrid, is particularly attractive.

Laurii.

Delicate violet flowers, with recurved lobes; wiry stems, each bearing one flower. Graceful, but not reliably hardy.

Loreyi.

Upper part of flower violet blue, the middle part blue, the center white. There is also a white variety. Very attractive and not difficult. An annual.

Macrostyla.

About 14 inches high. Large, dull-purple flowers, with net-like veins; prickly stem and leaves. Calyx ap-



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Campanula Allioni (above) ; *C. garganica* (below)



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Campanula caespitosa (above); *C. excisa* (below)



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Campanula muralis major (above) ; *C. pusilla alba* (below)

pendages. Possibly the most curious of the campanulas. An annual.

Macrorrhiza.

Resembles *rotundifolia*, but has a woody rootstock. A sturdy, long-blooming plant.

Mirabilis.

Pale lilac, broadly campanulate flowers, almost hiding foliage. Calyx appendages. Very interesting. Probably a biennial. Gritty soil.

Morettiana.

Very low plant. Light violet, semi-erect flowers, one on each stem; greyish, hairy leaves. Rather difficult; probably scree.

Muralis=portenschlagiana.

About 6 inches high. Rather tubular, violet blue corolla. Excellent for rock wall. An easy, reliable plant. A variety called The Major is somewhat larger than type.

Parryi.

A Rocky Mountain species, found on moist, grassy uplands. Interesting, but with me it is short lived.

Piperi.

An American species from the Olympic Mountains. About 2 inches high, very small, holly-like leaves. Delicate blue, spreading corolla, on a short stem. Rock crevices.

Poscharskyana.

About 6 inches high. A somewhat one-sided raceme of violet flowers; the lobes deeply cut, and recurved. An easy plant in a light, well drained soil.

Pulla.

Dark indigo-blue, drooping bells on short, slender stems. Attractive. Dislikes lime. Sandy peat and leafmold. Divide frequently.

Punctata.

About 15 inches. Long, drooping, whitish flowers, spotted reddish-purple inside. Calyx appendages. Different, and not difficult. Have raised it

in ordinary light garden soil, in full sun.

Pusilla=bellardi.

About 4 inches. Delicate light blue, drooping bells, on thin stems. Charming, and reliably hardy in well drained crevices. *C. bellardi* Miranda has smoky-grey bells, on 3 inch stems. Highly praised by Farrer. Sometimes catalogued as *C. Miranda*.

Raddeana.

About 8 inches high. Large, drooping, rich purple bells, and glossy basal leaves, on wiry stems. Calyx appendages. Easy in light soil—possibly half shade.

Raineri.

About 3 inches. Large lavender-blue, slightly lobed, broadly cup-shaped flowers. Rich gritty soil. Delightful, but rather difficult. In winter, cover with glass pane.

Rhomboidalis.

About 15 inches high. A panicle of pale violet flowers, on upper half of stem. Grows in sun, or half shade. Not difficult.

Rotundifolia.

The so-called "Blue Bells of Scotland." Too well known to be described. Light drained soil, in sun or half shade. There are a large number of varieties and allied species.

Sarmatica.

A loose raceme of pale blue bells, on a stem about 15 inches high; leaves greyish, tomentose. Tiny calyx appendages. Easy in well drained soil—sun or half shade.

Stenocodon.

Correvoon describes it: "a strange little plant, with 2 or 3 very narrow hanging flowers in a deep violet-blue tube." Dainty. Scree or rock crevice.

Thyrsoides.

Included in this list because of its straw-yellow flowers. I know of only one other yellow campanula. A ros-



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Campanula Waldsteiniana (above); *C. Zoysii* (below)

ette of basal leaves, from which arises a one foot, erect stem, bearing a spike of flowers. Not highly attractive, but interesting. A biennial.

Tommasiniana.

Pale purple, drooping, rather tubular flowers, along the slightly recumbent, slender stems. Six inches. Attractive. Does well in half shade, in light soil.

Vidalii.

A half hardy perennial from the Azores. In a rather cool greenhouse, the plant is delightful. Large whitish, waxy, drooping flowers, on 14-18 inch erect stems; waxy green leaves.

Waldsteiniana.

About 4 inches. Several upright stems, rising from the ground, bearing small, light violet-blue, erect flowers. Attractive plant; have raised it in half shade. Divide it annually.

Zoysii.

About 4 inches high. Azure blue, slightly drooping flowers, contracted at the mouth. Tiny pale green, spoon shaped leaves. A delightful curious plant, which as yet I have only risked in cold frame, in light soil—not too rich. Divide frequently. Slugs love it.

The following are a short list of hybrids, any one of which would grace a choice place in the rock garden. Only one or two of them can

be purchased in this country. Generally speaking, they bear few seeds, and seedlings do not always come true to type. The plants are all listed in English catalogues—and in fact are mostly of English origin. Ultimately, I presume our nurserymen will import them.

Halli=*pusilla alba* × *muralis*.

Low, slightly nodding white bells, blooming in early summer.

Haylodgensis=probably *pusilla* × *turbinata* or *isophylla*.

Trailing stems, and wide open blue flowers, blooming late summer and fall.

Kewensis=*excisa* × *arvatica*.

Single purple star shaped flowers, on terminal branches.

Mayi=*isophylla* × *fragilis*.

Rather large, attractive, saucer shaped flowers.

Pulloides=probably *pulla* × *turbinata*.

Larger than *pulla*. Rich dark purple, drooping flowers.

Pseudo-raineri=*turbinata* × *raineri*.

Wide open violet flowers, on 2-3 inch stems.

Stansfieldii=probably *pulloides* × *waldsteiniana*.

Wide mouthed violet bells. Three inches.

G. F. Wilson=*pulla* × *turbinata*.

Large, wide, nodding violet bells. Four inches.

Phlox—The New Garden Aristocrats

BY ETHEL LAURENS CAMPAU

Phlox from the Greek "flame" anciently applied to *Lychnis* and later transferred to the family of garden phloxes, was developed from the wild species of our own countryside, the for-distant ancestor of the race. It is an all-American plant. Of the fifty species, only about a dozen of which are in extensive cultivation, all are indigenous to the United States with two exceptions; one which ranges through Alaska to Siberia (defined by Brand as species 48, in Engler's *Das Pflanzenreich*, 1907) and the other is found in the Andean land of Chile.

The most frequently encountered varieties, mentioned in the order of their appearances, are *P. subulata* the moss pink—so called from the resemblance of its short pointed leaves to a shoe maker's awl in bloom from April 25 to May 30, *P. amoena*—a creeping, bright pink, hybrid phlox forming a carpet of bloom from May 5 to 30, *P. Douglasi*—minute cushions of soft mauve flowers May 10 to June 10, *P. divaricata*, the dwarf early wild phlox of the north with loose flat heads of fragrant lavender blue flowers May 20 to June 20 and *P. ovata*, mountain phlox with erect stems and small clusters of showy red flowers May 20 to July 10. In June the mid-summer varieties begin with *P. suffruticosa*, represented by the pure white *Miss Lingard*, *Dr. Hornby*, white with crimson centre and *Empress* or *Indian Chief*, a mallow purple, with their smooth, glossy foliage and freely flowering heads blooming throughout the summer. Next follows *P. maculata*, coming into bloom after *Miss Lingard*, a specie with rose pur-

ple flowers, June 10-30, *P. Arendsi*, a strain of George Arends of Ronsdorf, Germany, developed by crossing *P. divaricata* and the tall later flowering ones, whose varieties *Grete*, *Charlotte* and *Kathe* are the best known, with their bushy to open habit of growth, in bloom from late spring until fall and the annual *P. Drummondii* named in honor of the collector-botanist who sent the seeds from Texas to England in 1835. The curious *P. cuspidata* or star phlox is one of the many developments of this variety, blooming from July 1 on through the summer. The last to bloom but the first development and unquestionably the most important from the gardener's standpoint, as it is one of the most brilliant flower groups in cultivation, is *Phlox paniculata*, founder and basic form of the family whose descendants are the great hybrids of today.

The early history of the migration of this interesting garden subject is shrouded in obscurity and the records are few and conflicting. It has been suggested that the plant had been established in Europe for some time before it or its variations were offered by nurserymen. It is first cited in Johnson's *Gardener's Dictionary* (London) as having been introduced into England in August, 1782. This might mean that it was brought in by a botanist or garden amateur as a "new" garden plant. There are many possibilities as to the means of its introduction—travellers, ship crews, consignments of seeds and goods, and possibly birds. Mr. Grant Allen says in his book "Flowers and Their Pedi-

grees" that the seeds of some of the early garden plants may have been carried across the Atlantic in the mud and slime that clung to the feet of water birds. This is doubtful in the case of phlox as the seeds are explosive and not sticky. I had a theory that Francis Masson (born in England in 1741), the pioneer collector, sent out from Kew Gardens, London, may have sent or taken back with him some seeds or specimen plants of the species of wild phlox from the eastern part of the United States, as we can follow his trail through Mr. E. H. Wilson's "Travel Tales of a Plant Collector," first to Cape Town, South Africa, then to the West Indies, thence to North America. While the complete list of his collection is not available, it is known that he introduced into England, which was poor in species plants, over 400 new species entirely unknown to botanists. And according to one authority Phlox was first cited in Johnson's *Gardener's Dictionary* (London) as having been introduced into England in August, 1782, or shortly after Francis Masson's return to Kew.

I have been compelled to abandon this theory, however, as I have recently received from Miss Dorothy Manks, Librarian of the Massachusetts Horticultural Society, some important information concerning the migration of phlox plants. The data was found in a paper read at New Orleans by Mr. A. M. S. Pridham, who has made a study of the early history of this plant. He says that *Phlox paniculata* may have been in England as early as 1700 under the name *Lychnidea* which it was given by Plukenet and which remained its common name for some time after Linneus gave the name phlox to the genus. In *The Garden and Botanical*

Dictionary, published by Philip Miller, he found the first record of phlox in 1735. In this edition, says Mr. Pridham, *Lychnidea* is differentiated from *Lychnis* and two species described. In the 1754 edition four species are listed under the name of phlox, but not until the 1768 edition were the present species names used.

Although the commercial importer Peter Collinson, who received regular shipments of American plants from John Bartram and a few from Dr. Witt, states that *Phlox paniculata* was not in England before 1744 and that most of the species were sent by him to the botanists of the time, Mr. Pridham says that most of the authorities agree with Aiton's "Hortus Kewensis" that it was first cultivated by James Sherard in 1732, and cites as proofs records of this phlox in the *Journal of Horticulture* published at Brussels, Mrs. Loudon's "Flower Garden: Perennials," and Philip Miller's *Gardener's Dictionary*. So, in a summary of the importation of phlox species to Europe he listed *paniculata* as cultivated by Sherard, even though as he says, he included a statement by Dillwyn that Collinson had the first plants. "This may be a matter of nomenclature or it may be that Collinson had a different form of *paniculata* to that described by Plukenet."

The following garden notes of Collinson used after his death by Dillwyn as a basis for Hortus Collinsonianus, are important:

"*P. paniculata*, 1744, a new *lychnidea* sent me by John Bartram, has a large spike of pale reddish purple flowers, peach shaped leaves, flowered in July and August, called in Virginia Sawpit Flower."

"*P. paniculata* variety, flowered in my garden June 6, 1740, not in England before. A new *lychnidea* with

broad green leaves and purple flowers—since dead.”

Mr. Pridham adds that Collinson supplied both the botanists and the trade with samples of his importations.

The old adage that a prophet is not without honor save in his own country seems to have been borne out in the case of this American subject, because it is a fact that the European plant breeders were the first to recognize the valuable attributes of these pioneers from the wildernesses of the New World, and it is to them that we owe their first development. These early hybrids bore such names as Van Houtteii, Brownii and Wheeleriana. In 1850 some Belgian and German growers offered as their protégées, hybrids of some merit obtained from these varieties. Although an article by Professor J. H. Russell appeared in the *American Garden Magazine* in 1836, bringing the possibilities of this flower family before the public, it was not until 1850 that serious culture began. During the following thirty-five years varieties of much merit were produced, the chief advancement being the development in the size and shape of the flowers, but little was done with color improvement, the majority of plants bearing pink-purplish or slate colored flowers. During the next fifteen years mottled and splotched varieties made their appearance and gained much favor, followed by the bright reds and the scarlets with an orange sheen, showing the French hand at work.

Let me say a word here to correct an impression among amateur gardeners that phlox reverts to type. It is about the only thing ever said in disparagement of phlox and this is a fallacy. The trouble is that the seedlings have been allowed to flourish

until the original plant has been crowded out and these seedlings are almost always inferior and revert to the insignificant bloom of the wild species. To keep choice varieties true, two things only are necessary; keep the seeds from ripening and divide the clumps every three or four years.

Early in the present century the advantages of foreign training were beginning to be much discussed in the flower world and the children of this family were literally sent abroad for a European education: to Lemoine in France, who returned to us *Eclaircur*, a carmine, the dwarf white *Tapis Blanc*, *Etna* an orange scarlet, *Matador*, a cardinal, *Pantheon*, a rose and *Coquelicot*, a brilliant scarlet; to B. Ruys, who has done such spectacular work at the Royal Moerheim Nurseries in Holland, giving us *Mia Ruys* a great improvement on *Tapis Blanc*, *Gustaf Lind* and *Emain Macha*, the best dwarf reds, *Morgenrood*, a striking new shade of red, *Karl Foerster*, an improved *Deutschland*, *Professor Went*, a glowing amaranth, *Caroline Vandenberg*, bluest of all; *Mrs. W. Van Beuningen*, salmon pink self color—a distinct novelty; *Margaret Gavin Jones*, a beautiful new variety with large pink flowers and brighter eye; and *Goliath*, a gigantic red. The lists are inexhaustible. Other foreign tutors have sent the children home greatly improved, an outstanding one is *William Pfitzer*, of Stuttgart, Germany, who presented to us *Mrs. Pfitzer*, one of the loveliest of all the new pastel phloxes, and many valuable additions to the family.

From overseas also came back to us *Antonin Mercier*, forerunner of *Maid Marion*, *Marie's Jacob* and *W. Kesselring*, which are larger, more showy lavender flowers with white centres; *Mrs. Jenkins*, a pure white

with a longer season of bloom, and Europa, a white with a red eye, grandfather of Graf Zeppelin and great-grandfather of Delhi, one of the phloxes of tomorrow which bears a mammoth white bloom with an eye the color of an American Beauty rose. Still another descendant, the youngest and perhaps the best of all the blond phloxes is Apollo, tall snow-white with indented petals, a throw-back to a distant ancestor, but larger, more perfect and infinitely more beautiful. These last two are recent introductions of an American hybridizer, Mr. W. F. Schmeiske.

The English horticultural schools have given us an entirely new color in their latest products, Dr. Charcot, Border Gem, The King and Royal Purple, unfortunately difficult to procure in this country—the only royal purple phloxes with a bluish cast and not the reddish tinge of Champs Elysees or William Ramsey. Mrs. Francis King once said, "the longer I garden the more deeply do I prize all flowers in tones of violet or deep rich purple. We need more such as foils for paler colors." There is a growing interest now in dark flowers; dark delphiniums, dark lilacs, dark phlox. We may overdo it (iris breeders have already realized this danger) and our gardens may become too sombre. But the pendulum will swing back some day when we have found the long sought pink delphinium, the really blue iris and a yellow hardy phlox.

During the last decade, since Quarantine No. 37 placed its restriction on plant importation, or possibly due to the isolating effects of the war which have thrown us on our own resources, the American schools of horticulture have so far advanced that it is no longer necessary to send the children abroad for their cultural development.

Great improvements have taken place in this country. Cherry Hill Nurseries, of West Newbury, Mass.; Dreer's, of Philadelphia; Fred Rea, of Norwood, Mass.; Willis E. Freyer, of Faribault, Minn.; D. M. Andrews, of Boulder, Colo.; W. F. Schmeiske, of Kirkwood, N. Y., and G. N. Smith, of Wellesley, Mass., all have produced new strains of high quality. The greatest advancement has been in stabilizing the coloring which was formerly affected by the elements, also in the quality and texture of the petals and foliage, the length of blooming season and the abundance of bloom. Now we have a highly developed new race of native sons and daughters, the superb cross of *Phlox paniculata* and *Phlox maculata*, which bears little resemblance to its early ancestors. Too much can not be said of the tremendous value of these new offsprings. Everyone admires them, even those who do not know the lovely flowers by name. Hardy as a weed, dependable in its dates, orderly in habit, quickly increased, sure to bloom even under neglect, but repaying an hundred-fold for a little consideration in placing it in deep, rich, moist soil in a sunny location—in fact, few flowers better repay or more richly deserve liberal culture—with a color range unrivalled perhaps by any other hardy plant, an accommodating variation of height, the ability to blend well in mass and to hold up the border at a time when there is a scarcity of other flowers, it is the indispensable loyal stand-by through the hot months of summer to carry on the garden of continuous bloom. All these things have helped this family to forge its way from obscurity into the front rank of the floral world.

I have what Mrs. King said in 1915 would be an interesting experi-

ment if one had the time and space for it—"a garden made up entirely of varieties of hardy phlox" which runs the gamut of the lovely colors now obtainable, ranging from carmine to crimson, lavender to purple, pink to coral, salmon to cerise, with large lakes or self colored, light eyes or dark. From the whites of Jupiter, Apollo and Delhi the colors start with the flesh pinks of Dawn, Anne Cook, Minerva, Pink Beauty, Mme. Paul Dutrie, and Mrs. Livingston Farrand, through the lavender pinks of Miss Verboom, sister of Miss Lingard; Mrs. Charles Dorr, L'Esperance, Alpha and Mrs. Pfitzer, the pale cherry of William Tell—unlike any other color in phlox—deepening into Ceresious, the shaded crushed strawberry of Guy Moore and the mauve rose and carmine of Riverton Jewel, on down through the deeper rose pinks of George Mendel, Mrs. W. G. Harding and the crimson pinks of Asa Gray and Faust. I have segregated the salmon shades such as Mrs. Scholten, Jules Sandeau, Elizabeth Campbell and her handsomer cousins, Enchantress and Wellesley, all important, but better used at some distance from the bluish pinks and reds. The color scheme strengthens in the lilacs and heliotropes of Fantome, the important Crepuscule which is well named "Twilight" as its dark lilac shaded lighter toward the margin gives the silvery gray color effect of evening. It darkens in Caliph, such a new arrival that it is not yet listed in the catalogue of the hybridizer; Obergartner Wittig, an improved Michael Buchner and the gorgeous September Glow, a glowing crimson even better than Brilliant,

finally reaching a climax in the wine red B. Compte and the rich plum and violet blooms of Rosenberg, Dr. Charcot, Champs Elysees and William Ramsey—the ensemble a dazzling sight in full bloom, rearing their showy pyramidal heads covered with monstrous flowerets of colors indescribably lovely. Here is a completely furnished color box for the garden artist, with apologies because it is not always possible to find the correct description as the colors vary according to the light. Phlox is most beautiful in the early morning and at sunset. Shadows and a slight dew seem to intensify the coloring.

The latest graduates, both native and foreign, who give promise of a great future are Leo Schlageter, bright scarlet carmine with an orange sheen, listed as one of the very best phloxes, Hauptmann Koehl, dark blood red, Rokoko, clear soft pink of unique shading, Paul Hoffman, carmine with dark green foliage and stems, George Stipp, one of the brightest of all phloxes, carmine with violet pink centre and three operatic namesakes—Rosenkavalier, very large clear rose-red flowers on robust stems, Rigoletto, carmine lilac edged with light maroon "colossal pyramids of bloom" and Traviata, new color tone, carmine red with light sheen and blood-red eye. These newcomers are said to be resistant to heat, sun, wind and rain.

All these finished products are home from school, class of 1931, and are equipped to take their places beside the Imperial Japanese Peonies, the Regal Lilies and the great Dominion Irises in the Royal Family of the garden.

The A, B, C's of Rock Gardening

By ALICE MINER

Not long ago I was asked to recommend a book on the A, B, C's of building a rock garden. In spite of the many books on this subject with which I am familiar, I was unable to suggest one that had sufficiently detailed information on location and construction. These two factors are after all the necessary prerequisites of a successful rock-gardening venture, for unless the location and construction are adequate, the plants are doomed to a hard life and a short one.

Now it so happens that the design and building of rock gardens has always been especially fascinating to me, and I have not only rebuilt my own garden repeatedly but have helped many of my friends with the construction of their gardens. I have had the fun of working on a hillside with a natural rocky outcrop, a small ravine, a steep bank at the edge of a lake, several types of dry walls, as well as numerous flat areas. I have used granite boulders, limestone rocks, flagging, and even broken up cement sidewalks.

The type of garden you wish will influence the choice of material. If your joy is in the plants themselves without regard to the setting, even cement blocks, brick, or porous tile may be used in building the beds, in which special conditions and soil requirements may be met.

The late Mr. Clarence Lown was more successful than anyone else in this country in the growing of alpiners, but he cared nothing for the garden picture. All he asked was to have the plants thrive, and he could make

even the most recalcitrant sort flourish. Many of my plants are gifts from his garden, and I treasure them inordinately. Nevertheless, though I never dared say so to him, I do feel that it is quite possible to give these alpiners just the environment and soil that they desire and still have the garden with one lovely plant complimenting another. It is with this latter type of garden that I wish to deal rather than those gardens where the sole purpose is to grow numbers of choice alpiners without regard to the relation of the plants to each other or the garden itself to the surrounding landscape.

ROCK MATERIALS

Naturally if rocks are interesting, they can be used to enhance the garden picture; so if you have a choice of materials, select irregular weathered limestone or sandstone, for not only are such rocks more beautiful but they absorb moisture freely and keep the soil cool and damp, which most alpiners love.

Because granite boulders absorb very little moisture and their near spherical shape makes solid construction difficult, they are unfriendly to any type of garden. I can speak feelingly on this subject, for our first rock garden was built entirely of glacial boulders, since they were the only stones native to our region. In those early days, as weathered stone could not be purchased in our locality, we laboriously collected these boulders one by one. An epidemic of new houses in our neighborhood was a great help, for as the basements were

dug many a stone was unearthed and we annexed the day's harvest each evening. This was no simple matter, for we had no proper conveyance, but we carried the small ones in the baby carriage and the larger ones in a coaster wagon. Now, every spring for years I have been replacing the granite with weathered limestone. I regret the hard labor wasted on the granite, but perhaps we should never have had the rock garden had the granite not been available at the time of our first enthusiasm.

It isn't that the granite is impossible in a garden, for our plants thrive amazingly well during those first years, but once having tasted the joys of the weathered stone, one cannot resist it. This type of stone is more desirable because it gives at once the appearance of age to the garden. In addition the crevices in the rocks offer delightful homes to *Sempervivum*, *Saxifrages*, *Violas*, small *Campanulas*, and many others.

For walls or wall type construction in a garden, thin flat weathered rocks are preferable though again boulders may be used if great care is taken in the building. There is no denying, however, that rock which gives a stratified effect is more pleasing in a wall.

THE VITAL QUESTION OF LOCATION

When we come to the all important question of location, climate first of all must be taken into consideration.

Alpines are great sun lovers, and in their native habitat have a short growing season, often coming up through the snow to bloom defiantly. The plants enjoy a brilliantly hot sun, water at their roots from the constantly melting snows, and a moist atmosphere. These conditions are impossible to duplicate, but it has been found that proper placing of the

rocks, a loose gritty soil, and plenty of sun will adequately meet their needs.

The question of the amount of sun will be governed in a measure by the climate. Although I have had no experience with southern rock gardens, I assume that owing to the long hot summers it is wiser to plan for more shade than in my locality. I live in a suburb of Chicago, and our proximity to Lake Michigan tempers our climate so that we do not have the extremes of heat and cold that occur in some parts of the central states. We do have rapid changes in temperature, and many warm days in winter when the hot sun does much damage to alpines. During long spells of drought, the garden must be thoroughly watered no matter where the location.

WE CONSIDER THE QUESTION OF PROVIDING SOME SHADE

My own garden was originally planned for all day sun, but as our experience grew, two small hawthornes (*Crataegus coccinea*) were planted in strategic spots to give protection from the hottest sun to certain groups of plants. In the extreme south east corner is an oak tree under which in our pre-rock garden days a collection of wild flowers grew. This area was separated from the vegetable garden by a path, so when the rock garden idea was born, it seemed natural to use this wild garden as a starting point. The tree has since been trimmed high, and under it primroses bloom happily along with some of our small native wild flowers and other lovers of semi-shade.

At one time a sizeable mountain ash was planted in the garden. It not only grew too large, but the sap-suckers ruined the bark and the berries were a terrible nuisance. The



Section of Mrs. Miner's rock garden

robins ate most of the fruits, but plenty was left to fall in the garden and paths, so after a few years the tree was cut down. It is just such ruthlessness that is necessary if one is to approach perfection. In some such fashion as has been suggested, each garden must have the matter of some shady spots adjusted to meet its particular location.

The most northerly rock garden with which I have had experience is at Mackinac Island at the north end of Lake Michigan, where one of my friends has a summer home. She had there a rock garden in which, while it had considerable bloom, the construction and location were far from satisfactory. It was under three tall maples, and though they were trimmed very high, the garden did not get enough sun for that northern latitude. After much discussion, we located the new garden on a side hill. This as well as the surrounding areas was

densely populated by spruce, firs, and maples. We regretted that all of them within the limits of the rock garden area, had to be sacrificed, but as the slope faced south and had some beautiful rocky outcrops, out the trees came. We had planned for a maximum of sun, and this was the only way to get it.

The ground was full of rocks and roots which had to come out. This was achieved with the more or less aid of four young collegians. Many of the rocks we took out were fine ones and were used in the building of the garden. It was a frightful job, but the results have been worth all the investment of thought and labor. The difference between the growth and bloom in the two locations is an object lesson to those doubting Thomases who thought we had lost our minds when we tore up one apparently good garden only to build another.

"DONT'S" ON LOCATION

Regardless of climate never put a rock garden directly under large trees. I suspect you are smiling as you recollect that large oak in my own garden. We make rules only to break them. However, the roots of large trees are greedy robbers of the soil, and as I have said alpiners resent heavy shade, nor should the garden be built too near large shrubs or against the house where overhanging eaves will keep the moisture from the plants. Never, oh never put it out in the open unrelated to the rest of the landscape.

NOW WE CHOOSE THE SPOT

In spite of the "don'ts," there are many places where a rock garden can pleasingly and safely be located, even in a small yard.

If you are lucky enough to have a hillside or even a small slope, your problem is simplified, as it becomes largely a matter of construction, the details of which will be given in a later section. The lay of the land will determine the specific plan, but in a general way there should be winding paths, one or more plantings of small growing trees such as wild crab (*Malus Ioensis*) and other flowering crabs and cherries. The size and amount of the rocks used will depend on the extent of the area. If the situation is a completely open one, it must be tied to the surrounding landscape by careful shrub and evergreen planting.

The foregoing deals with a large slope, but a small one requires the same treatment on a much reduced scale. Perhaps only one small tree and a single path.

If the slope is wooded and you wish a garden full of color, you must harden your heart and do the same drastic clearing that we did at Mackinac.

Always remember that most alpiners must have at least a good half day sun if they are to thrive and flower, and don't blame the plants for not blooming if they are deprived of their ration of ultra-violet rays.

A semi-shaded garden can be achieved on a wooded slope with judicious clearing and trimming, but here your list of plant material will be sharply limited. You may grow primroses in great variety, native wild flowers, and other shade lovers but many of the most beautiful of the alpiners you cannot have. You might specialize on ferns, as there are many beautiful varieties little known, those from the west coast mountains being especially interesting.

A ravine is rare but may be made into a most enticing spot. If it is heavily shaded, it will require the same treatment suggested for a wooded hillside, but if your ravine has plenty of sun, the world is yours. Imagine a brook gurgling through the center forming little pools here and there as it goes; the sides of the ravine made safe from the havoc of erosion by careful placing of stones, and the whole vista ablaze with the abundant bloom and dazzling colors that only alpiners have. Here, too, flowering trees against the dark green of conifers may be most effective. This picture created by hands instead of nature may be just as lovely even though the brook may come from a pipe and through a meter and the plants be thousands of miles from their native mountains.

Not far from my home, there was a small ravine, the beginning of a large one going toward the lake. I watched with great interest to see what the owner would do with it. To my everlasting regret it was filled up and made into a flat lawn. An-

other similar ravine a few blocks away was made into a delightful rock garden, which is a constant joy to its owners.

Sad to say, ravines and hillsides are only a dream to most of us, and it will probably be your problem as it was mine to create hills and valleys on a plot as flat as a proverbial pancake.

AND HOW WE PLAN IT

I shall try to suggest plans that will be complete in themselves but may be readily enlarged if the desire for more planting space becomes acute. My most earnest plea is to begin in a small way and learn as you work.

It is much easier to build and rebuild a small garden than a large one, and to your horror perhaps I shall insist that only by rebuilding do you learn to handle the material. You may, by a miracle, get the construction to please you at the first try, but if you don't you must pull it down and try again, working at each section until it satisfies you. Thus if you attempt a large garden with no previous experience, it will be a long time a-building. Just this spring when I was expressing dissatisfaction with a small section of the garden, and my husband remarked that it was of comparatively recent construction. I replied, "Oh no, I redid that two years ago." He laughed but it does illustrate my point, for I know I can build better today than I could two years ago. I realize that I've been thinking that every spring for sixteen years but only by constantly improving does the garden approach success. After all what fun is a garden that requires little else but the dull routine of weeding and cultivating.

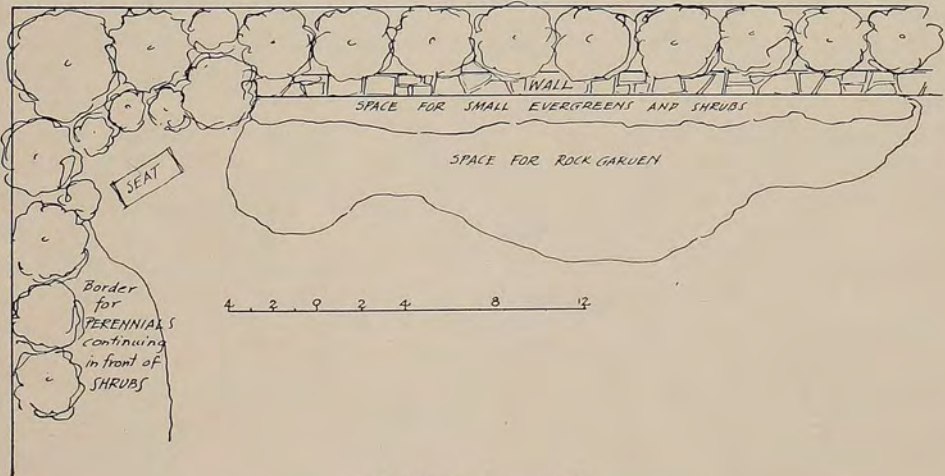
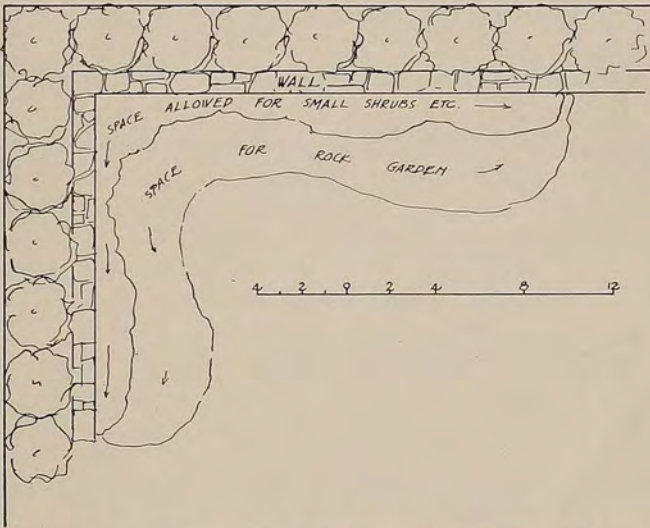
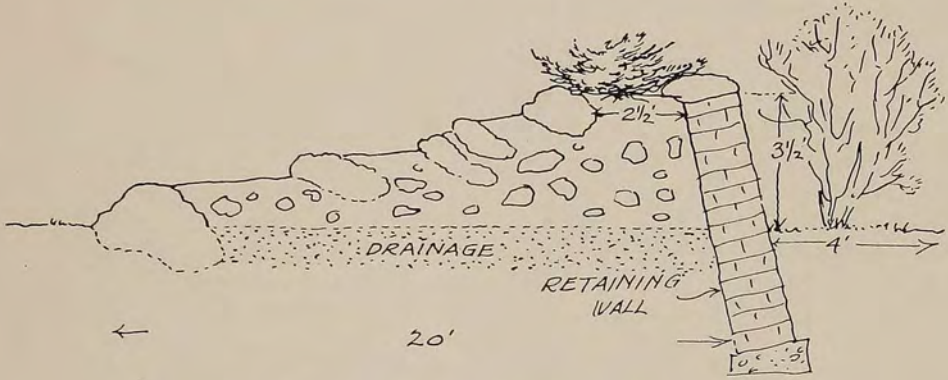
PLANS FOR FLAT AREAS

A rock garden is one kind of gar-

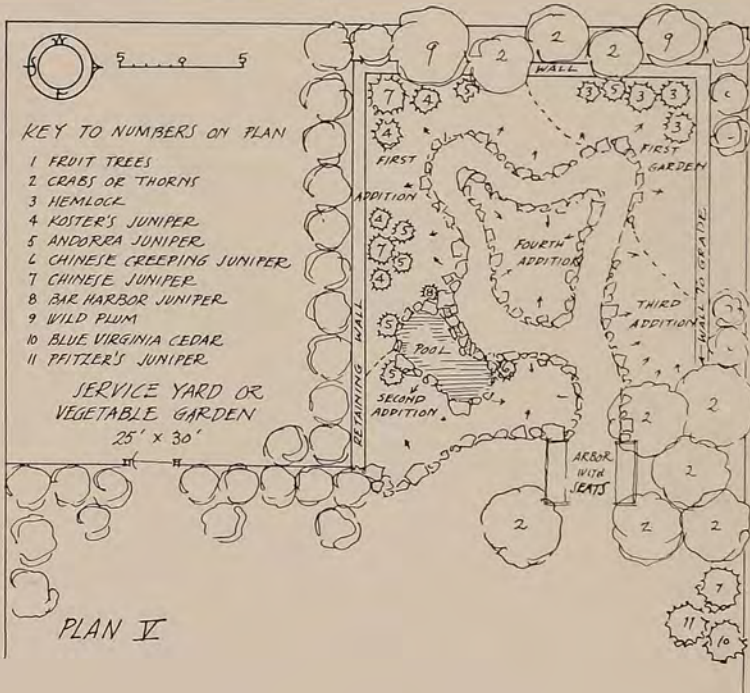
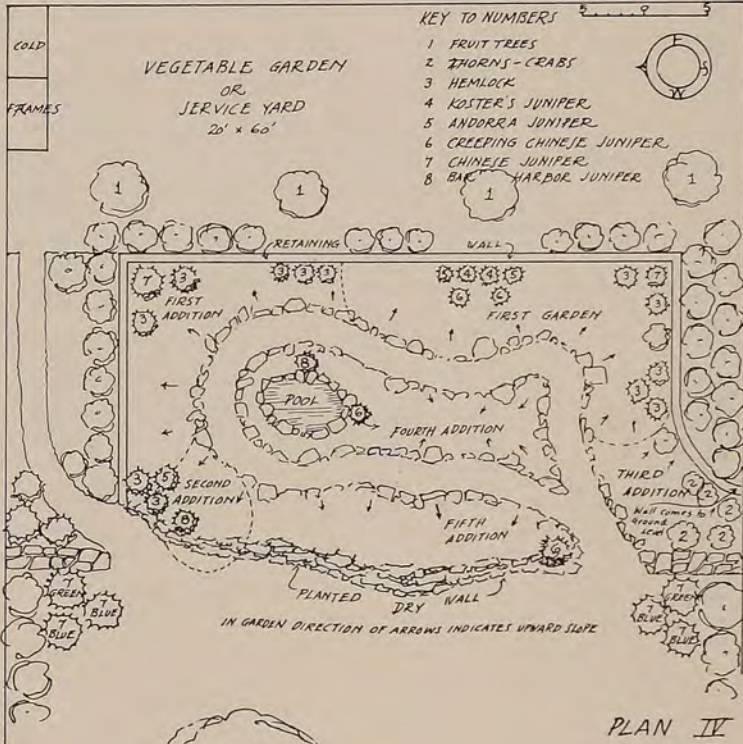
den that does not require a large space, and there are many types that are readily adaptable to the average suburban lot. For example, a rock garden may be placed advantageously in a corner or along a boundary line. If the boundary is already shrubbed, a retaining wall must be planned to go in front of the shrubs. This wall is laid up as the building of the garden proceeds and is necessary to hold up the dirt as the slope is created. Just in front of the wall, space should be allowed at the top of the garden for a planting of low shrubs and evergreens. These will blend with the tall shrubs at the back and make the garden appear more natural, while the smaller root growth will not be a menace to the alpinists.

The first drawing shows a cross section of such a construction. The second and third drawings suggest a plan for a corner and a side border. These two gardens may be readily combined and carried around the second corner to make a continuous rock border. If the lot is reasonably deep, the plan may be enlarged to make the rock garden a separate unit. This scheme has possibilities for keeping the enthusiast busy for years to come. As the knowledge of the plants and their requirements increases, suitable situations will be developed for many a difficult plant which he would otherwise be unable to grow.

The 4th drawing illustrates the method which may be employed to build such a garden. This is only one of many ways this or a similar plot may be developed, the results depending on the ingenuity of the builder. In following this plan, I should suggest that a corner such as that marked "First Garden" on the plan be built first. The dotted lines indicate the original limits, and of



PLANS I, II and III



course, these edges will have to be rebuilt as a new section is added. The sections may be built in any order, but the one designated seems the simplest to me. In this plan the garden would be quite complete without the fourth or fifth additions, though enclosing it with a planted dry wall would add to its charm. If such a wall is to be built eventually, it might be wiser to build section two and five at the same time rather than to do them in separate units. Section two will complete the garden pleasingly if no further additions are planned.

The planting is suggested in some few spots and will, I feel sure, be satisfactory if used. The varieties of evergreens named may all be clipped, thus keeping them in scale. There are many delightful dwarf types which will be discussed later.

The pool may be built when section four is added or at some later time. If the pool is contemplated, however, the supply pipe and drain should be put in before section one and five are added.

The fifth drawing is a different treatment for the same space. The garden would be enlarged in the same order as in the fourth drawing. This plan has no wall but features an arbor under a thicket of crabs and hawthornes. This feature or the wall may be used in either garden. In each plan I should suggest that the space at the right front of the garden be used for wild flowers, primroses, and other shade lovers.

Both plans allow space for a service yard. This may be utilized for vegetables, a picking garden, or a general utility spot where you may have cold frames, extra dirt, gravel, sand, stones, all of which are necessary in this complex game of rock gardening.

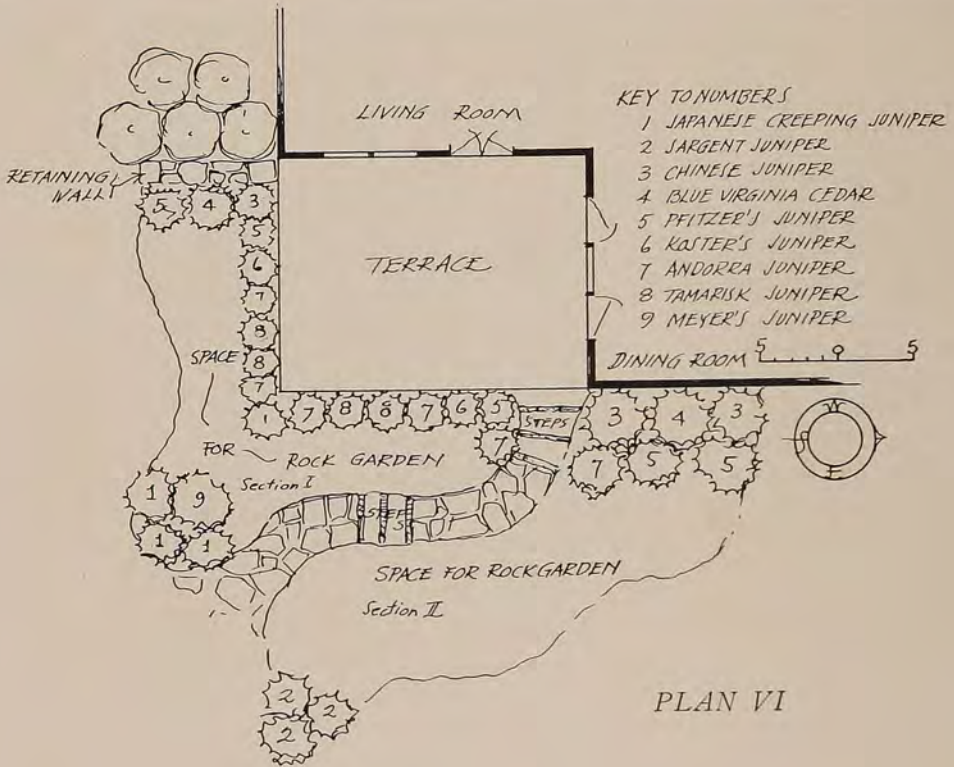
One point I want to stress is the

necessity of arranging for adequate background. Be sure to allow plenty of space when planning the garden. We did not and left no room at all, putting the retaining wall directly on the boundary line. The very first spring the lack of background was painfully obvious, so we had a lattice fence built, and it was finally covered with vines. This was never pleasing and was ultimately taken down. I then did some drastic reconstruction and by reducing the rock garden space have made a place for evergreens which make a charming foil to those flowers that bloom early in April.

Another feasible place for a rock garden is against a terrace. In these days, an open flagstone terrace is frequently an adjunct of the house. If your terrace is two feet or more above ground level and has a sunny exposure, a most delectable garden may be created. Such a plan is shown in the sixth drawing and may be built at two different times, section one being constructed first. To be able to look out of the windows into this garden would be most enticing, though I'm afraid the builder would perhaps spend too much time in contemplation of his handiwork.

Another garden which I helped to build is located at the meeting place between a wooded spot and the lawn. The trees make a beautiful background for the splash of color in the garden.

An unique place is used for a rock garden in a neighboring suburb. It is on a corner where the streets make a sharp angle instead of a right angle. This makes a very long narrow point, and from the sidewalks upward a long slope has been built and thickly planted with shrubs and evergreens. The garden is carried up from the lawn to meet this slope and is completely concealed from the street but makes



a charming picture from the house.

There are many other possible locations for rock gardens and no other garden gives the builder so much opportunity for the exercise of ingenuity and imagination.

The possibilities for the use of dry walls must not be overlooked. They occupy less space and when you must cultivate, it is much easier on the back which is no small consideration. A wall may be put where a rock garden is impossible yet you may have practically all the plant material that can be grown in the rock garden.

A dry wall is one in which the stones are laid up with soil instead of mortar, and the resulting crevices planted with alpines. Our wall came into being because when looking in the literature for treatment of new plants, we constantly found the state-

ment "does well in a dry wall." This finally became too much for us and a double faced wall was built between the lawn and the tennis court. The wall is a hundred feet long, and through the two walls are 6 feet apart at the base, they slant toward each other and are only three feet apart at the top. About twenty feet at each end is taken up with shrub planting and gates, the rest being planted with alpines.

The wall was built by stone masons, as the construction on so large a scale at one time seemed too much for me. Serious illness in the family prevented me from giving the building sufficient supervision, and the wall was never quite satisfactory; so after eight years I took to rebuilding it. Last spring I redid the tennis court side and this spring did the same to the lawn side,



Dry wall just after building



Planted steps in my garden



Boundary wall garden and path in Mrs. Armstrong's garden

of course, with the aid of my man by the day to do the heavy lifting.

A dry wall may be built on a boundary line, may separate the vegetables from the flowers, may border the sides of a flag terrace, or may take care of different levels in a lawn. I have seen one very steep slope where a street had been cut down to go under a viaduct treated with a series of planted walls and the effect was stunning.

Dry walls are easier to build than rock gardens, and are, I think, one of the very lovely forms of rock work.

Just one more suggestion on the matter of location. A number of years ago we added a flag terrace to

our home. It did not seem feasible in the specific location to use a planted wall or a rock garden around it, but I did use very wide steps leading to the lawn and planted the crevices between the stones. The effect is unusual and very gay, and brings the garden right to the very door.

Now after the plan is made, the materials collected, the day of reckoning comes, and the building must be started. That dreadful helpless feeling comes, and one wonders why this idea ever seemed good. However, the only way to build is to build, therefore let us start and take up the construction step by step.

(To be continued)

Are Freesias Fragrant?

BY ALBERT F. BLAKESLEE

Carnegie Institution of Washington, Department of Genetics, Cold Spring Harbor, N. Y.

The question in our title was asked of a group of about 80 students in a nearby college. Two varieties of freesias, Golden Treasure and Golden Daffodil, were supplied and the odor reactions to them were recorded by each student. Most found both varieties fragrant in different degrees. About a sixth of the group, however, found at least one of the two varieties to be without odor. This lack of odor was more commonly reported in the Golden Treasure. On the other hand, although Golden Daffodil had a stronger odor to many, this odor to some was distinctly disagreeable and not to be called fragrant. About a third of those who smelled the two varieties expressed their dislike for the odor in the Golden Daffodil or, if they called it fragrant, indicated that it was less pleasing than the fragrance in the other variety. And yet the grower from whom the freesias were purchased was very emphatic in saying that the Golden Daffodil was much to be preferred on account of its superior fragrance.

Tests with a smaller number of people have shown that there are both smellers and non-smellers of fragrance in Elder's Giant White freesias.

A number of similar cases in which some people cannot detect floral odors which are distinct to others have been discovered by us or brought to our attention. About two-thirds of the forty persons individually tested found a particular pink-flowered Verbena from our breeding plots to be fragrant, but could detect no fragrance in

a particular red-flowered plant. About one-third found the fragrance relations just reversed. Only two persons got a faint fragrance from both and could not decide between them. In this case 95 per cent failed to find fragrance in one or the other of the two flowers but not in both. It was not an example of a general loss of the sense of smell for all odors, which sometimes occurs.

A potted Azalea in the Barnard College greenhouse had flowers which were entirely devoid of odor to the writer, as well as to several in the Department of Botany. Others in the department found them fragrant, apparently in different degrees.

Professor Buchholz of the University of Illinois has made tests with both the wild apple tree of his state (*Pyrus ioensis*) and with the cultivated Bechtel's crab. He finds a considerable number who can detect no fragrance in their flowers which are fragrant to others. Professor Kurz of the Florida State College for Women also writes that he has found considerable differences in the strength of reaction which his students showed toward fragrance in the wild crab, *Pyrus angustifolia*. In his experience, however, only a few failed entirely to find fragrance in the flowers.

In all the examples that have been given, a considerable number of individuals were in both classes—smellers and non-smellers. Sometimes the non-smellers are very rare. Thus, out of 26 persons tested with flowers of the yellow day lily (probably

Hemerocallis Thunbergii), only one person found them without fragrance, and she was a good smeller of fragrance in other flowers.

The peculiarity of floral odors in that certain odors can be detected by some but not by all people is probably common. It has not been noted more frequently because it is generally necessary for its discovery that several people smell of the same flowers at the same time; and because, when one fails to detect an odor that others are experiencing, the failure is generally attributed to a cold, real or imaginary. A cold in the head certainly may impair the keenness of smell and various external factors do have an influence upon the amount of fragrance given off by flowers. The differences in odor sensitivity discussed, however, are probably for the most part innate and hereditary as has been proven to be the case in certain differences in

the sense of taste worked out by the writer. Some people can detect a bitter taste in a very dilute solution of quinine, for example. Others cannot taste this substance unless the solution is concentrated. An acute taster for one kind of bitter may be a poor taster for another bitter. In a similar way apparently, a person may be keen in his ability to detect a faint odor of one kind but poor in detecting another kind of odor.

Perhaps others have run across examples similar to those that have been given. The writer would appreciate information regarding any such cases. Other examples may help in the solution of some of the secrets of fragrance.

The peculiarities in smell which we have discussed lead to the conclusion that, in detecting fragrance in flowers, the kind of noses is as important as the kind of posies.

The Illusive Ivy-II

BY ALFRED BATES

Among the many letters which have come to me in response to the call for information on *Hedera helix* were several from gardeners who had spent years amid English gardens, either through having lived and gardened there or through having studied horticulture in that country. Strange as it may seem, they all declared that the typical plant—*H. helix*, itself—was not being grown in their present location in this country. Almost every one advanced a different variety of the type as the “English Ivy” grown in that particular locality: thus *H. h.* var. *triloba*, var. *lobata major*, var. *hibernica* (if we consider it as a variety and not a distinct species) and the species *canariensis* were the candidates offered. So the confusion is worse than ever.

The first two of these are certainly not the plant which is sold for “English Ivy” in the area with which I am familiar, that is between New York and Pittsburg and as far south as Washington. The variety *triloba* has a leaf which, in shape, is roughly described as an isosceles triangle placed upon the straight side of a semi-circle; the variety *lobata major* is not so easily described. It is a five-lobed leaf which is longer from the base to the tip than it is wide, the lobes are all distinct and the central or main lobe is always about twice the size of the side lobes; or as W. J. Bean describes it, “chiefly distinguished by the very large, narrowly ovate, pointed middle lobe.” These two varieties will be more fully dealt with in their logical places for I am sure that I have specimens of both.

The other two candidates come nearer to the mark; for the ivy sold by florists as a pot plant or to be grown in water, in the section defined above, has a leaf which is distinctly wider than it is long. And were it not for the fact that most authorities state that the leaf of *hibernica* is thinner in texture than the leaf of *helix* I would be inclined, for the present, to say that it was the common ivy of my district. As it is I am wavering between it and the species *H. canariensis*. Of course, many will say that it is not hardy, coming as it does from the Canary Islands; but to that point I merely express doubt. It certainly agrees, from the various descriptions that I have read so far, with the commonly sold plant; for it has large leathery leaves which are not very distinctly, or rather very acutely, lobed, grows quickly and the foliage is bright green, not dark green as in the variety or species called *hibernica*. However, as we are all very probably speaking of different plants, this part of the subject had better be dropped for the present. The leaf shown in the lower right hand corner of the plate shows a typical leaf from the plant I mean; it is not drawn to scale for the leaves on the vine from which this one was taken are anywhere from two inches wide by one and three-quarters long to eight inches wide and six and one-half inches long.

Until I get more information and hear from several sources it will be quite futile to point to any one form and say that such is the true *Hedera helix*. If horticultural writers had

described species in some such manner as—lobes cut to one-third or one-half the depth of the leaf we might be able to distinguish the different species more easily. So I will be perfectly frank and say that just now the three species—*helix*, *hibernica* and *canarienses*, present a chaotic jumble to me and I must wait to receive a certified specimen of the first.

Linnaeus gave the name *Hedera*, which was the old Latin name for the ivy to that group of plants which may be roughly defined as follows: evergreen shrubs climbing by aerial rootlets; leaves, alternate with long petioles, in shape being entire (without any indentations as in a rhododendron leaf) or coarsely toothed or from three to seven lobed; the flowers are in umbels arranged in terminal panicles or loose clusters with a five-toothed calyx, five petals, five stamens and a five celled ovary and the fruit being a round berry from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick, usually blue-black though sometimes it may be of a yellowish orange and even a white. According to W. J. Bean, in *Trees and Shrubs Hardy in the British Isles*, the genus is divided into seven species: *helix*, *canariensis*, *chrysocarpa*, *cinerea*, *colchica*, *hibernica* and *rhombea*. I have preferred to follow Bean rather than any American writer because this is not an American genus of plants and I consider an European horticulturalist to be in the position of being more familiar with them than any one over here. I do not at present have access to Tobler's monograph and until it is at hand will continue to accept Bean. As this classification seems to be based upon such minute distinctions, in some cases, as the fact that one species has groups of from five to eight rays in the down on the stem and another has

these rays grouped in from twelve to fifteen it may, from a gardening point of view, be advisable to ignore some of these species for we are here dealing with the genus from the horticultural side.

The uses of the ivy in the garden picture are almost unlimited. Being an evergreen it is attractive at all seasons of the year. As a wall cover it has the utilitarian advantage of absorbing moisture from the wall through the little roots which it forms along its stem by which it attaches itself to the wall and so will dry out a wall which would be otherwise damp. But the pestiferous English Sparrow loves to nest in it so it would become anathema to any but early risers. We are often warned against allowing it to grow into a tree and are told that it sucks the life of the tree. This is not true. The only cases where it might damage a tree are when in young or small trees the foliage of the ivy smothers the leafage of its support. In large and old trees the ivy ceases to be a vine and assumes its mature or fruiting stage long before it has grown into the smaller branches which bear the tree's foliage. Bean says that he knows of trees "in perfect health which have supported ivy for forty years." The foliage which is shown in the drawing was taken from a plant in southern New Jersey which was growing up the tree which bears it for over fifty years and the tree is still in perfect health. In this same district another ivy has been growing on a pine tree for at least forty years. As there are in that neighborhood at least twenty-five old trees which look to be the same age as the two mentioned and bear masses of ivy almost if not as large as these two carry it shows that the ivy does not harm the tree in the least. I have

made inquiry among the older inhabitants and none of them can recall any trees which have been covered with ivy that have died.

As a ground cover it is undoubtedly the best of all plants for such use. For it will thrive in either sun or shade and in dry and poor soil as well as in moist and fertile; except that in the poorer and drier places it grows more slowly and bears smaller leaves. The less rampant and the smaller leaved varieties make exceptionally beautiful ground covers for such spring flowering bulbs as the snowdrop, the squills, the grape hyacinth, chionodoxa and the smaller cupped daffodils of the *Barrii* and *Leedsii* sections. When so used such varieties as *gracilis*, *nigra*, *pedata* and *Caenwoodiana* only should be planted for larger growing forms would make too heavy a mat. There is no lovelier a garden picture than that made by the snow white blossoms of the snowdrop over a mass of dark green leaves of *H. h. var. nigra*. Species of the crocus family may be ivy-planted also provided the ivy is kept quite thin so the corms may have the hot summer baking that most of them seem to delight in. While I have not so used it I can see no reason for not growing calochortus and erythronium under the varieties mentioned above; that it would make a lovely picture I know for I have a small leaved form, not yet determined, which grows up an eight foot post and annually throws out shoots which grow over the ground, in and about *Calochortus amabilis* and *Erythronium Hendersoni*. The ivy is not allowed to grow on the ground there, but is frequently shorn of these ground shoots because I am trying to make it go into the mature state; so I cannot speak of this combination as a permanent one. But I

think that the cover would be beneficial to the flowers. A. T. Johnson in *A Garden in Wales* speaks of using ivy as a ground cover over montbretia not only for the beauty of the combination, but because of the winter protection to the corms.

Among flowering plants to be used with the ivy none are more charming than the yellow fumitory; the color contrast of the foliage as well as of the flowers is particularly pleasing. Then, too, columbines and peach-leaved bellflowers do well amid ivy. While amid the looser leafage of the variety *gracilis* forgetmenots, hepaticas, English primroses and polyanthus primroses may be grown. In fact, the combinations which could be made with these smaller ivies as ground covers is almost endless.

From growing ivy on stone walls as the English do it is but a step to using it to cover unsightly fences. Many an ugly iron picket fence, a relic of the past century, has been made into a wall of verdure by twining the ivy about the bars. It can also be used as a garland much as rambler roses are used by growing it on a series of posts from which chains are suspended. There is a beautiful example of this use along one of the shore roads of the north Jersey coast. Here six foot supports were attached to a low iron fence and from the top of the bars an iron chain was suspended and the ivy trained over fence, posts and chains. The iron work is soon covered and the ivy may be trimmed to the outline of a low hedge with garlands above. I am finding that it will attach itself to any board fence quite easily and grow over it almost as well as over a stone wall. The English have recently found a new use for it; they form hedges of ivy by planting it thickly

at the base of a wire and lath fence and weave the ivy through the open spaces. In this manner a solid wall of greenery is quickly and cheaply obtained. In our drier climate one should be persistent in watering the plants for the first two summers.

I have referred above to a plant I have growing on a post. Some years ago when a little more of the yard was given over to the garden an old grape arbor was demolished. As the posts of the arbor were still in excellent condition they were left and roses planted at all but one. At the base of this one a very small-leaved ivy was placed in the hope that it would mistake the post for a tree trunk and when it had reached the top develop its mature or arborescent form. The experiment has been highly successful, although as yet the ivy still retains its vining form. It has grown flat against the faces of the six by six inch post and so forms a square green pillar which always attracts the attention of garden visitors even calling them away from the flowers. Now that it has reached the top it is beginning to send out shoots; but these are easily removed each spring and again late in the summer and always find ready homes in the gardens of friends. So treated, as a pillar the ivy might be more effective than pillar roses for it would remain a shaft of greenness throughout the whole of the year. In formal gardens pillars of ivy might be alternated with pillars of roses.

So far only the uses of the vining or juvenile form has been discussed. Cuttings struck from the arborescent—this will be explained later—or mature form retain such form and become more or less compact little shrubs. These shrub-forms may be used after the manner of dwarf coni-

fers for accent in garden and shrubbery and in the rock garden. Their only drawback is that the cuttings root slowly which makes them expensive when purchased and hard to start when grown at home. But in an acid soil and covered with a glass jar the cuttings will eventually root especially if started in a damp and shady place.

It might be well to explain the terms used above in speaking of the two forms of the ivy's growth. A plant raised from seed or from an ordinary cutting will continue to grow as a "vine" with roots along the stem and leaves cut to the pattern of its kind; if grown upon and along the ground the plant will continue in this state always rooting as it grows, but if allowed to ascend, to grow up a wall, tree or post, the same roots which if in contact with soil would be growing roots become aerial roots and attach themselves to the stone, brick or wood (bark) and hold the stem fast to the support. That these are the same type as those which grow into the soil, adapting themselves to the other condition, is proven by the fact that an ivy sprig torn from its support or to a certain height, as in the case of trees, a change takes place both in its growth and in its foliage. This change is always preceded by a very marked increase in the size of the leaves. The leaf shown in the lower right hand corner of the plate is from a plant whose normal foliage has been about two to two and a half inches in width, but now that it has reached a height of some twenty feet the leaves upon the upper stems have increased to as large as eight inches across. Up to this point the ivy is said to be in its juvenile or vining state. The change which takes place is that it no longer puts out vine-like shoots with roots



natural size

arborescent form of (probably)
Hedera helix



about
1/2 full size



side shoot
from trunk
of above

natural size



H. hibernica?
(no scale)

CB.

along the stem but grows woody, twig-like branches after the manner of a tree and the leaves which have been lobed and indented become more or less oval in shape with entire margins, that is the edge of the leaf is continuous as in a laurel leaf. These leaves are not regular in shape, some may be quite lopsided, and often the margin is quite wavy; in color they are of an even dark shiny green, as though they were varnished as against the more waxed finish of the juvenile leaves and the distinct veining of the earlier form is quite lost. This state is called the "arborescent" state or the mature or the fruiting state for now the plant puts forth flowers and fruits. If cuttings are struck from these twigs the plant will retain its mature characteristics and continue to flower and fruit as a shrub.

The flowers of the ivy are not attractive; they are best described as of a greenish yellow, but they are quite sweet scented with an odor which I have never been able to describe. But the fruits are quite ornamental in every stage of their growth. After the flowers have faded and fallen in late October the little ovaries soon become small pale green round berries which darken as they grow until they are a dull blue-black. There are other kinds, note I do not say varieties, for I have never seen any but the black-berried ones, which have yellowish, or reddish, or even whitish fruit, but how strong in tone each color is I cannot say.

The drawing is an attempt to show two stages of ivy growth. The plant from which the specimens were gathered is the old ivy of which reference has been made earlier in this paper. As it was planted previous to 1875, maybe many years before that, I am inclined to think it is the true type

plant, *H. helix*. But let us forget about that for the time. The leaf in the upper left hand corner attempts to show the typical shape of the "arborescent" foliage with its even dark green glossiness and its almost imperceptible veining; in the drawing the veins have been accented more than they would appear in nature in order to show how distinctly different they are in the mature leaf from that of the juvenile leaf as shown in the lower left hand corner.

The sketch to the right of this leaf shows a twig of the "arborescent" plant with an old fruit stem from which the berries have fallen and a new growth just beginning to develop into leaves from the scales of the leaf bud. These young leaves are of a pale pastel green which stands out sharply against the rich deep green of the old foliage. As the old leaves die they become a rich golden and glossy yellow, as lovely a color as anything I have ever seen in nature. If all the leaves changed at once a tree ivy would be one of the most striking sights in the garden. I am not thoroughly convinced that the leaf of the ivy is of one year's duration only and can not find any comment on this point. Certainly the vining form does not shed its leaves annually, but for how long it keeps them I cannot say.

When an ivy has reached its mature stage it ceases to send out shoots from the base, as a rule, and the flow of sap seems to concentrate upon the foliage in the branches of the plant. However, in some cases and usually in older plants, there will be found growing from the main stems between the ground and the lowest branches a distinctly different manner of growth. A half way between state as it were, a gnarled, twiggy stem with the juvenile type of foliage. The sketch in

the lower left hand corner of the drawing illustrates this type. If these growths are removed and rooted they very often return to the full vining state but sometimes they grow in what might almost be called a semi-juvenile form in that the leafage is neither of the one or the other and the stem seems not to be able to make up its mind as to just what it is going to be. I have several year-old specimens in such a state; but have one three-year-old plant which is slowly going back to its juvenile form. I am sorry that I did not root such a side shoot, years ago, from the plant illustrated so that a true juvenile leaf might be shown as well as the other forms.

From this it will readily be seen that the ivy is indeed elusive; just when one is sure that a new type has been acquired a young growth may develop which blasts all one's hopes, but the pursuit of them is fascinating. As I write I have four groups of leaves which have come to me from four different places—New York, Maryland, Tennessee and California. These groups of leaves were taken from one plant as each correspondent informs me and yet when the individual leaves in each group are compared with each other it would seem that they had been taken from distinctly different plants. But upon closer examination a group characteristic is readily noticed; there is a re-

lationship in the veining, the leaf texture and even in the general outline which holds the various leaves together in each of the four groups. This is even the more amazing in that two of the groups consisted of over a dozen leaves each.

I wish to thank the many members and their friends who have so kindly responded to my call for help and to state here that I am still crying for more. As I seem to have established myself as a clearing-house for ivies the job might just as well be done as thoroughly as possible. I had thought that leaves alone would answer my purpose, but I find that it will be necessary to have cuttings as well. If the cutting is sent with a bit of damp sphagnum moss wrapped about the cut end of the stem, they will carry through in excellent condition. The senders of such cuttings will have them named as quickly as possible and drawings will be made of them for future issues.

Since the above was written Mr. W. A. Manda has definitely identified the leaf in the lower right hand corner of the plate as that of *H. hibernica*. This seems to be the common variety sold by florists in most parts of the country; Mr. Eric Walther, of the Golden Gate Park, San Francisco, bears this out, for he writes that "the most common form here is *H. hibernica* and is usually known as "English Ivy," the true species being quite rare."

Wild Crocuses of Spring and Autumn

BY AGNES FALES HUNTINGTON

This record looks more pretentious than it deserves to do. I have planted crocuses in a very small way. Only a few bulbs of each variety bought at a time, and few varieties bought more than once. The only virtue of these notes is that I have collected crocuses for a good many years, and my records have been kept more or less fully from the start, and very fully for the past six years.

I do not include any of the so-called garden forms, derived mostly from *Crocus vernus*, though it is hard to write of crocuses and not sing the praises of my beloved *Agnis*. Of course, they do not belong with the generally much smaller wild crocuses. I do, however, include the named forms of *Crocus chrysanthus*, for they are much closer to the wild crocuses in character, and also they bloom so much earlier than the big garden varieties.

Of course, personal taste enters into any record of this sort. I have praised certain varieties for their round shape, because I love a flower that has broad, well-rounded, overlapping petals. Narrow, pointed petals do not please me in the crocus, nor, indeed, in other flowers. Also, I dislike a veining of many long dark parallel lines on the lighter ground color of a crocus' inner surface; that is why I am so indifferent to the very popular *Crocus speciosus*. But this veining is a very different thing from feathering. A delicate dark feather, or 2 or 3 sharp dark lines on the backs of the three outer petals of a crocus, can form its crowning glory, as in the case of *Crocus ver-*

sicolor picturatus, and one form of *Crocus Imperati*.

As to culture, most crocuses are easy the first year or two, but many are not very permanent. Certainly they do better in a light soil than in one that is heavy. And, of course, they are sun-lovers, and rain-haters. One good rain can reduce their delicate petals to mush, though it does not hurt the buds. They know their weakness, and will not open during a rainy spell, though, of course, a fully developed flower can never close up so tightly as a bud. In these notes, I have mentioned a few varieties as being especially rain-resistant. Certainly, they hate a soggy soil, and I imagine they might like a glass over them in summer, possibly at all times. But luckily, they do not demand this cossetting. Still, it might be well to humor the more impermanent varieties, like *Crocus vitellinus*.

I apologize for some confusion in this record; between writing it, and mailing it, my crocuses were bravely advancing into their 1932 Spring bloom, and I added dates from day to day.

SPRING CROCUSES

Crocus susianus.

Earliest bloom date, March 6; latest, March 29. But bloom does not last long. Permanent—I have had same bulb for 16 years. Tiny flower, opening so widely in sun, that petals reflex. Brilliant golden yellow, with almost black stripes on back.

Crocus Tomasinianus.

Very regular in its mid-March bloom. Permanent, free, does not

stand rain well. Blooms for about two weeks. A lovely thing, but not one of my greatest favorites. Rather small, slim build, variable in quality. Soft lilac, but the "cheap cotton" gray backs spoil it for me a little. Anthers dull buff, stigma dull orange. There is a lovely form of reddish coloring inside and out. This came with my other bulbs, but it may be the form called *Whitewell Purple*.

Crocus Imperati.

Always described as one of earliest bloomers. Yet *always* a late bloomer with me, it can even be last crocus in bloom. Dates here vary from March 15 to April 1. Refer to Mr. Bowles' books as to various forms of this crocus. I have had three forms in this garden:

1. Inside, deep red purple; outside, buff; not very pretty.
2. This has glorious blackest feathers on outside, and is one of the handsomest of all Crocuses. Also, this bulb is free blooming, and has had six flowers.
3. An intermediate form with three sharp dark lines up back.

With exception of 2, this crocus is not free-blooming, but a succession of flowers straggles along for about one month from the various forms. Fairly permanent.

Crocus Sieberi.

The most perfect spring crocus to date. It has every beauty, and every virtue. Very early, though variable in this respect. Its first year, not till March 17. Second year, February 24, beating all others. (But these were the established bulbs; new bloomed March 18). This year of 1932, it bloomed January 19. Permanent, free, nice tufty growth, a wonder at withstanding rain. Fair size, lovely round shape, smooth

heavy texture. Blooms for nearly 3 weeks. Exquisite shade of lavender with gold throat, dull orange-red stigma, and yellow anthers. (Fine in pot, where it blooms for one month.)

Crocus versicolor picturatus.

April 2 bloom in first year, March 21 in second, then it died out. A late bloomer, and apparently impermanent, though it has not that reputation. Very charming little variety of tufty growth, full of flowers which are small and white, with lovely blue-purple feathering and deep gold stigma.

Crocus chrysanthus.

The type never bloomed for me, but merely sent up scant leaves for years.

Crocus chrysanthus, Bowles' Snow Bunting.

March 12 for 10 days, then disappeared, and not worth buying again. Very small, white, with feathers of slatey-green, and cream anthers, and orange stigma.

Crocus chrysanthus, Bowles' Bumble-Bee.

Bloom between March 12 and 18 for the 4 years I've had it. Lasts 10 or 11 days. Very free. Nine flowers from the one bulb in its second Spring. An extremely small flower, but the color is startling; outside, darkest mahogany with narrow yellow edge; inside, yellow; the stigma is orange-scarlet. (This variety is rendered unnecessary by *Crocus chrysanthus, Zwanenburg Bronze*.)

Crocus chrysanthus, E. A. Bowles.

Bloomed March 17 for 10 days; then disappeared. A beauty, soft yellow, paling with age, but equally lovely then; brown blotch on outer base of petal; orange-red stigma; yellow anthers of same color as petals.

Crocus chrysanthus, Moonlight.

Bloomed March 16 in its first year; later years, March 6 and 13. In 1932, nearly open on January 30, and open on February 7. Lasts nearly 3 weeks. Permanent. Hurt by rain. Free blooming. Small. The name is misleading for the flower is yellow, sometimes pale, but sometimes bright. Anthers yellow, stigma red.

Crocus chrysanthus, Large Warley.
(Probably same as *Warley Variety*)

Bloom dates: March 16, February 25, and March 13, in the three earlier years I have had it bloom. This year of 1932, it showed buds in January, open on February 7. A bloom season of 4 weeks. Does not stand rain well. A very small flower, much smaller even than *Moonlight*, but rounder petals and much freer than that variety. In its second Spring it produced 34 flowers from the 5 bulbs. Not at all showy, but a dear little flower. Opaque white with lovely purple stain; center and anthers yellow; stigma orange and red. Deteriorating by the third year. (But better now in its fourth).

Crocus chrysanthus, Zwanenburg Bronze.

One of the perfect crocuses. I should rank it with *Crocus Sieberi*, at the very top of spring crocuses, save that its record is shorter. At date of writing, (February 4) *Crocus Sieberi* is blooming beautifully for the third Spring, whereas *Zwanenburg Bronze* was new last Spring, and this year, though full of nearly open buds the end of January, a cold wave followed by rain has kept them closed. Its record last year was perfect in every way. It bloomed on March 13, and continued for the phenomenally long season of 4 weeks and 4 days. Free

blooming. Resistant to rain. A large flower, far larger than any of my other *chrysanthus* hybrid (unless possibly *E. A. Bowles*, which I remember as of good size). The beautiful gourd shape, with waist line, of the *chrysanthus* hybrids. This variety had rounder petals than is usual in these hybrids. And the color was dazzling: outside, dark bronze with yellow edge; inside, richest deepest yellow. (In fact this variety is a glorified *Bumble-bee*, rendering the latter quite unnecessary. The bronze is a little lighter than *Bumble-bee's*, the yellow is richer. *Bumble-bee's* amazingly dark exterior is its only point of superiority: in all other respects *Zwanenburg Bronze* is so much finer that comparisons are really absurd). Postscript: It has now opened on February 6, and is full of fine bloom.)

Crocus aërius Céleste.

First year, on March 12. Second year I watched flower on April 6. So much like the more beautiful and far better-behaved crocus that comes next in this record, that I could easily resign myself to failure with this variety.

Crocus biflorus Weldenii violascens.

If its first year's record had been duplicated by its second, this variety would stand with *Crocus Sieberi*, and *Crocus chrysanthus, Zwanenburg Bronze*. Alas, such was not the case! In its first year, it was perfection. It bloomed on February 25, and continued for just one day under 5 weeks. Each bulb gave 3 or 4 flowers. Texture so beautiful and thick that it was surprising how non-resistant it was to rain. There were two forms, both very beautiful:

1. Very round flower, faintly washed with gray-blue on white ground.
2. A more pointed flower of an es-

pecially blue tint. I think it was this form that developed a lavender tip on the white inner surface of the petals. The stigma was orange-red in both forms.

I think I fairly worshipped this beauty, and was much disappointed in its second Spring, when it did not bloom till March 13, and lasted only 3 weeks or less, and was very much smaller, though still of lovely color and texture. And this year of 1932, I rather fear it is gone. (Both these forms came under the above name from Van Tubergen. They no longer list anything under this name. They list *Crocus biflorus Weldenii*, "white, outside shaded grayish-blue": and *Crocus biflorus argenteus*, "white, violet shaded." These may be my two forms, and I hope to try them both.)

Crocus biflorus Adami.

These *biflorus* forms are not happy with me. Ungrateful, when I love them so! This bloomed last year on February 28. Almost a failure, but it showed how beautiful it could be if happy. Only 1 small and defective flower from the 5 bulbs. Color a very blue-lavender, with the backs sharply and darkly feathered on a pale ground, like my best *Crocus Imperati*; orange stigma. This year of 1932, some feeble plants and buds in January, in white papery sheaths.

Postscript: It leads to complications to write a crocus article during the bloom season! Since the above notes on this variety, I was charmed to see a nearly open bud on February 8. Slim, fair size, soft grey-blue with 2 or 3 very dark lines. Open on February 9, and evidently not the bulb that bloomed last year, for this is deepest blue-purple inside, as deep as *Purpureus Grandiflorus* and much bluer. Very beautiful. And several other bulbs are in bud. Yellow an-

thers, orange-red stigma, no yellow in throat.

Crocus vernus leucostigma.

This variety is supposed to be interesting because it has a creamy-white stigma, instead of the orange-scarlet stigma of the type; also, because it is much earlier than other forms of *Crocus vernus*, and of a peculiarly blue-lilac tint. Having bought it for these qualities, I was naturally surprised and displeased to see a *Crocus* of harsh deep purple, with orange-red stigma, and not blooming till March 20, though in a very warm bed. Obviously untrue, which is to me, the worst fault a flower can have. Later appeared a couple of flowers in which the stigma was pale, and I believe these flowers were lavender, not purple. The creature tried to atone for its faults by blooming for only 2 weeks. In its second Spring, it bloomed on March 18, again for about 2 weeks. The anthers were practically white; but the stigma, pale orange. This year I see, with marked lack of enthusiasm, that it is still with me. I have often wished we might choose our failures and successes!

AUTUMN CROCUSES

(It must be remembered that the first bloom of Autumn Crocuses is influenced by date of planting.)

Crocus speciosus.

Normal bloom time is first half of October.

It can bloom in less than 3 weeks from planting, and continue for one month.

Dearly loved by many gardeners, but not by me. I prefer any of its forms to the type. I have never given it a very choice bed, and it has not been permanent nor especially free. Rather deep purple, too heavily

veined. Stigma, orange-red. Poor substance.

Crocus speciosus globosus.

A slight improvement on the type in color and shape, as it is bluer and rounder, though it also is rather spoiled by heavy veining. It has the same orange-red stigma. Texture is better. It tends to bloom a little later than the type, often waiting till the end of October, or even end of November, but it is one of the erratic Crocuses, and once I had a flower in December and once in *February!* I have no record of bloom continuing for more than 2 weeks.

Crocus speciosus albus.

Sent to me under another name, but it matched this variety in another garden. Blooms first half of October. A very lovely thing; tall, big, shapely, round, white, with anthers and stigma yellow instead of the orange-red of the type.

Crocus speciosus Aitchisonii.

The best of the *speciosus* clan; in fact, one of the best three Autumn Crocuses. Blooms in early October. Permanent. Free. Continues for about one month. *Very* large. I have had 2 forms under this name:

1. Blue lavender, with silvery backs, and yellow stigma. Rather pointed in shape.
2. Just a little less lovely, though lovely enough. One point of superiority is that the flower is rounder than in the other form. This form is a little smaller, less free, deeper color, same silvery backs, but color somewhat spoiled for me by prominent zig-zaggy, deep stripe up back.

(I believe this is the only wild crocus as large as the garden varieties.)

Crocus speciosus Pollux.

Bloom dates were October 18, September 23, October 12.

Similar to above, in fact almost identical with form number 2, and therefore not especially valuable, as it is not very free and the texture is thin. Yet, it is a good crocus, and gives a lovely soft blue effect.

Crocus zonatus.

Easy, permanent, free, long bloom season of 3 or 4 weeks, but not so thrilling as some. Rather a pale pinkish-lavender, but charmingly finished with orange spots in throat, and cream anthers. Its best point is its tendency to earlier bloom than any of the other easily obtained autumn crocuses. I have had it bloom on September 26.

Crocus vitellinus.

A little beauty, but it lasted only one year here, and the same tale is told of it elsewhere. A tiny golden flower with brown back, like the spring crocus *Crocus susianus*. It bloomed on October 12, and continued till November 25, over 6 weeks. (A little cold frame was over it after cold weather began). And when I *say* bloom, I *mean* bloom—the little clump was full of flowers the entire time. This variety is worth almost any amount of trouble or re-buying.

Crocus Tournefortii.

After Mr. Bowles' unrestrained praise, I was surprised to find how disappointed I was in this variety. As it bloomed here, it was much like *Crocus pulchellus*, and inferior in every respect to that perfect variety, less blue, with narrower petals of irregular length (a very ugly fault), and I do not think the brilliant red-orange stigma goes so well with its pastel tint as the similar stigma, softened by *white anthers*, goes with *Crocus pulchellus*. In its first year, it bloomed on November 3, the individual flowers lasted for the unusually long period of 10 or 11 days, and the

clump continued to bloom till December 5, over one month. This took it into the Winter, beating even *Crocus vitellinus*, in the same little cold frame. But *Crocus Tournefortii's* total season was about 2 weeks less than that of *Crocus vitellinus*: and instead of blooming steadily, it bloomed in 3 relays. A little more permanent than *Crocus vitellinus*, though not much was gained thereby, because the 2nd year, it produced one flower on October 22, and no others; and the 3rd year, it began on October 8, and had only 2 flowers and seemed to be getting well away from its virtue of late blooming. And its history in this garden ended here, with no desire on my part to buy it again, since it was a poor understudy of one crocus in the matter of beauty and of another in the matter of late blooming.

Crocus pulchellus.

One of the very loveliest of all crocuses. Blooms during the first half of October; October 4, its earliest. Continues in bloom for 1 month. Free-blooming. Bulbs have proved permanent here, but 2 years of good bloom were followed by 2 years of poor bloom and then by 1 year of no bloom at all. Nothing but leaves that stand up sturdily during the Winter. It probably dislikes its encroaching neighbor, *Sedum album*, too much to bother with flowers. But it deserves to be made happy, for it is the autumn counterpart of the adorable spring crocus, *Crocus Sieberi*, both of them delightfully round in shape and of the most exquisite blue-lavender. *Crocus pulchellus* has a little, but very little, veining. It atones for this slight fault by its perfectly enchanting "trim" of gold spots at throat, scarlet stigma, and white anthers.

Crocus longiflorus.

Another bit of perfection. Just as beautiful as *Crocus pulchellus*, better-behaved in some ways, beginning to bloom about 3 weeks later and therefore continuing the crocus season in a very gratifying way. Bloom dates here have been late October or very early November. In its first year, it bloomed from October 31, till December 18, just under 7 weeks, a record breaker. (A little cold frame was over it toward the end of its season). To compare *Crocus pulchellus* with *Crocus longiflorus*: the former has the more delicate beauty; the latter, the more vivid; the former, a blue-lavender, and the latter a little pinker. Or, compare *Crocus longiflorus* with still another perfect autumn crocus, *Crocus speciosus Ait-chisonii*: of course, the latter is far larger, but the little fellow is not to be downed by a mere matter of size and is perhaps the more lovable of the two. Outside, deeper purple than the lavender lining; a few faint lines inside, but none of the streaky look I dislike in some varieties; orange throat and anthers, scarlet stigma. The most brilliant of purple autumn crocuses. Very free-blooming when it is happy. And unique in this garden by reason of being the only crocus that has made a good "come back." Generally, when a crocus begins to disappear, it goes on more or less speedily to the bitter end. But in the first year, *Crocus longiflorus* was a perfect success; in the second, only one flower; in the third, picking up nicely; and in the fourth (1931), lovely and free again. If I could have only one autumn crocus, I believe it would be this.

Crocus longiflorus melitensis.

One of the garden mix-ups that are so hard to bear with equanimity. It

makes me almost dizzy to read my notes: "It is thus and so, it cannot be true"; "It is thus and so—maybe it is true." If I ever really had it (and true or untrue, it is gone now), it was vastly inferior to the type—paler, grayer, stripier, earlier, less free—in fact, not to be missed or bought again!

Crocus laevigatus Fontenayi.

I was delighted when I finally succeeded in buying this, for I wanted a real winter bloomer. It is that, and there is not much more to be said! The first year, I think it made an earlier attempt, and finally bloomed on March 6, in a little cold frame, 2 messy little flowers of lavender; and a few days later, another, hardly better, this one sufficiently developed to show deeper stripes on its pale lavender tiny petals; still later, in March, 4 more, equally poor. In the second year, no bloom at all. In the third year (1932), when I thought the bulbs had gone and had not made a

loan of a cold frame, I saw a lavender bud on January 7, and hastily provided a cover for it in the shape of a peach basket. Nearly open on January 10, never quite, and on January 13, a sodden mess from rain. Same pale lavender with deeper stripes, and still very small. A little finger and thumb work showed the characteristic white anthers. No other flower has appeared to date (February 5).

Crocus iridiflorus. (Correct name is really *Crocus byzantinus.*)

The newest of my crocuses. No bloom in 1930. In 1931, I came home from a month's absence, to find one faded flower on November 5. But even this failure showed it *could* be lovely if it were happy. It is supposed to have 3 large and 3 small petals; in my flower, the 3 small were non-existent. It resembled *Crocus longiflorus* in color. Stamens were rather pale yellow. The stigma was most unusual—very feathery and *lavender*.

The Gardener's Pocketbook

Iris iberica Hoffm. (See page 227).

Although *I. susiana* is the iris that comes most frequently to mind when the Onocyclus iris are mentioned, there are several other species that are almost as easy and in some ways more beautiful.

Of these one must mention *Iris iberica* which forms good tufts of slender, curving foliage, making a mass somewhat as in *Iris pumila*. In April, ten to twelve inch stalks arise on which are borne the proportionately large flowers, which are illustrated here in natural size.

The standards are almost pure white and are lined and dotted with a clear but not dark pinkish lavender. The falls have the familiar, greenish yellow base, almost entirely covered by the broad reticulations and dottings of velvety blackish, chocolate purple. These flow together to form the wonderful deep signal blotch which in this species is somewhat obscured by the large, overarching style branches.

Washington, D. C.

Leucocrinum montanum Nutt. (See page 228).

The Sand Lily is familiar to many



L. A. Guernsey

[See page 226]

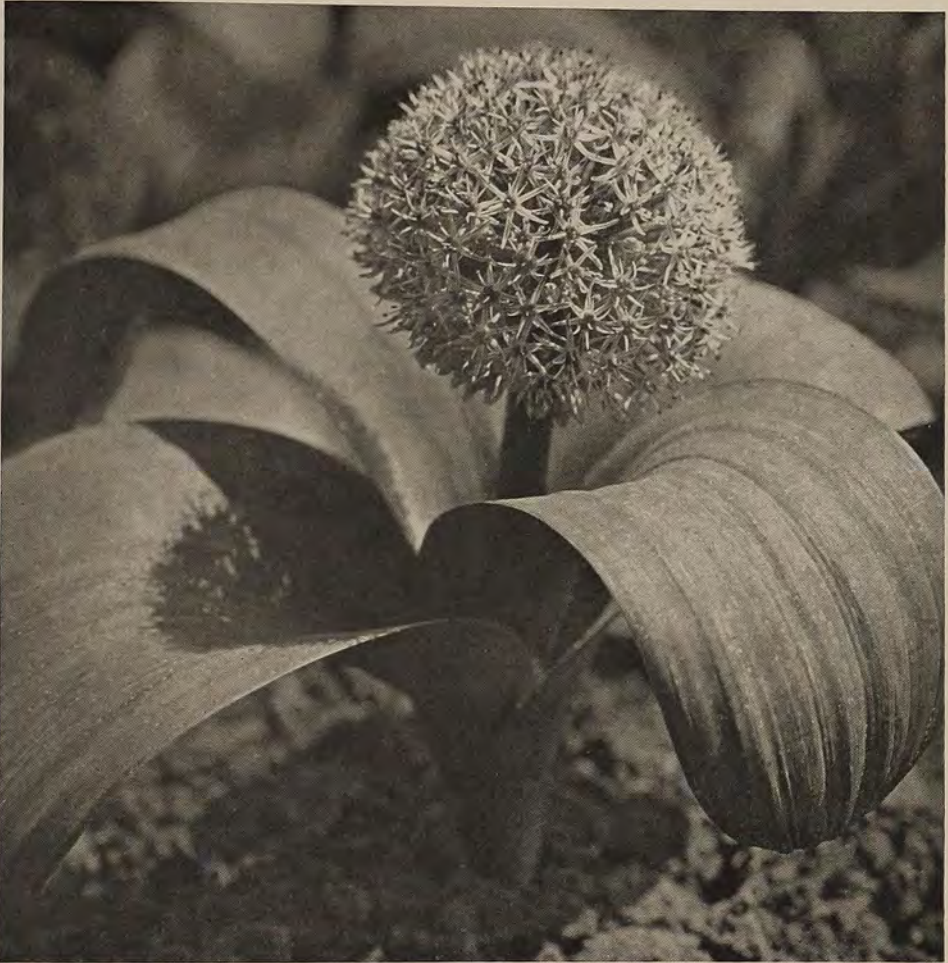
Iris iberica



H. L. Standley

[See page 226]

Sand Lily, *Leucocrinum montanum*



K. Heydenreich

Allium Karataviense

who live in the Great Plains and Rocky Mountains but is not as much used in Eastern gardens as might be.

There seems to be some evidence that it is most successful in establishing itself if planted in late summer or early autumn but this might not be the case in the North. Here, at any rate, it settles down the first year to building up a fine mass of spreading roots which make me think somewhat of an old lily-of-the-valley bed, although the structure is different. Once

well at home, it makes fine tufts of gray-green foliage, through which push up the somewhat crocus like white flowers that show their character in natural size in our illustration.

Washington, D. C.

Allium karataviense Regel. (See page 229.)

This very interesting and decorative garlic is well suited to rock and alpine gardens. It is native to the plains and high plateaus in the mountain range of Turkestan and requires

therefore, if it is to thrive, a rather sunny, dry situation. The small bulbs should be planted in autumn and will flower in May the following year. Early in spring, two to four large, broadly ovate, blue green leaves develop from the bulb. From the center of the leafy rosette, develops the ten inch stalk with the almost spherical inflorescence. The individual flowers are dull pinkish white, the stamens and pistils somewhat reddish. The flowering lasts almost through the entire month of May. After the flowers pass, the seeds set freely and the seed capsules are almost as decorative as the flowers.

One increases this allium by seed. The seedlings flower in the third year, often when self sown. It may also be increased by offsets.

A unique plant that pleases everyone.

K. JOSEFSKI.

Berlin.

To the above note can be added the statement that this species is quite hardy in America. The first sight of it came in an old garden at Plymouth, Massachusetts, where these plants had increased until a huge, funkia-like mass of the metallic blue green leaves was almost two feet across, an astonishing picture in the garden.

Here we find increase, except by seed, rather slow.

The leaves are deciduous, rather slow to appear in spring, really more attractive than the flowers and last longer through the summer than do those of some American species.

Washington, D. C.

YUCCAS-DWARF, EVERGREEN AND HARDY

In the flora of the Colorado Mountains and adjacent plains are numbered no less than five distinct species of yucca, all of which are hardy and

evergreen, their color contrasting agreeably at all seasons with the prevailing gray of the desert landscape.

Farther south, especially toward the Mexican border, the stature of yuccas increases almost imperceptibly until the more southern forms have stems frequently several yards in height. It may be supposed that hardiness diminishes somewhat in proportion to their increase in stature; at any rate the Colorado species are dwarf, their rosettes resting upon the ground, and all are extremely hardy.

By far the most abundant is *Yucca glauca* (Syn. *Y. angustifolia*), distributed over most of the plains region and ascending to quite high elevations in the mountains. In common with the other species it is easily grown, and like them it is satisfied with the arid conditions prevailing on the plains and the dry slopes of the hills and mesas. This indicates for their place in the garden a sunny slope or elevation which will insure the quick run-off of surplus moisture; and such will be found ideal without much choice as to soil more than to avoid excessive richness and extremely light or heavy texture.

The flowering spike of *Yucca glauca* is imposing, usually unbranched, the flowers large, creamy-white or sometimes tinged outside with purplish or rose. Flowering is an event to be anticipated for a few years, during which time the rosette grows larger and finer and substance is stored for the supreme effort of its lifetime. After flowering the old stem may be cut away and before the old rosette dies several new ones will spring up from its base which repeat the process. This cycle is true of the other species with minor variations.

Yucca angustissima has grass-like foliage, long and extremely narrow,



H. L. Standley

Yucca glauca



D. M. Andrews

Yucca baccata in fruit

raveling at the margin into numerous thread-like filaments two or three inches in length, curling into a marvelous cobweb effect which surpasses any other species. Its flowering is much like *Y. glauca*.

Yucca Neomexicana is a recent discovery, 1913, and about that time was introduced to cultivation under the horticultural name, Coloma (Colorado-Oklahoma). This places its range in south-eastern Colorado and the corners of New Mexico and Oklahoma. It has not been reported elsewhere. Its leaves are short and very broad, compared with the two previously named, and its flowering is similar. The small, full rosettes are very decorative for the rockgarden.

Yucca Harrimaniae comes from western Colorado and Utah. It is the most alpine of Yuccas and its miniature rosettes often contain more than 100 of its stiff, glaucous needles less

than six inches in length. Apparently it remains longer in the rosette stage before flowering than other species, but this may be due to its exceedingly dry habitat. In the garden it makes a more open growth, so in order to preserve its natural compactness a dry position is indicated. Its large root demands considerable depth of soil. The cut shows a rosette about one foot in height.

Belonging to a distinct group is *Yucca baccata*. Its foliage is thick and wide, and deeply channeled like an agave. Its seeds are imbedded in large pulpy fruits not unlike a cucumber, and these have been used for food by the Indians. The flower spikes are short and the blossoms very large. The dwarf native type of southern Colorado is entirely hardy, but as it extends much farther south only northern material should be cultivated.

The yuccas grow easily from seeds, which are not often obtainable, for the reason that the moth, which visits the flower and is the exclusive agent in fertilization, also lays eggs which hatch at the right time for the larvae to devour the maturing seeds. Like the well-known *Y. filamentosa*, the roots form "toes" which may be broken off and planted; this is an effective but somewhat slow method of propagation. Hybrids which sometimes occur between species can be increased in this way. The breeding of yuccas by hybridization is a promising but unexplored field.

D. M. ANDREWS,
Boulder, Colorado.

ELK GRASS IN CULTIVATION

Perhaps the most showy wildflower in the mountains of the Northwest is *Xerophyllum tenax*, a western cousin of the turkey-beard, *Xerophyllum asphodeloides*, which was mentioned in the National Horticultural Magazine for January, 1932, in a discussion of the plants of the New Jersey pine barrens. It is possible that the author of the article alluded to, Bernard Harkness, as well as its readers, might like to hear of the behavior of this other species in the garden.

In its natural habitat, the plant grows both in sun and shade, the shade of the coniferous forests of the Cascade Mountains, and the open glades among them. It is a plant of the high mountains; appearing below timber line, along the summit of the range. It is my observation that the plants growing in sun or light shade flower better than those in deep shade. The soil in which they grow is well drained, light, gritty soil, with much vegetable mould in it, this being largely decayed needles of spruce, fir and pine. Summer is short, dry and

warm in this mountain section, and owing to the gravelly nature of the soil, the plant appears to be growing in a very dry situation, but this should be discounted, remembering that there is ample moisture deep down where its roots go, and also that there is atmospheric moisture in the form of mists at night, that we cannot count on in our lowland gardens.

Keeping these things in mind, we planted our collected specimens in light, mellow soil, with good drainage underneath, in a sunny spot, but accessible to a hose, where they might be easily watered. We gave them a good deal of water the first summer, and they prospered, making good foliage growth, and presumably, root growth.

People told us we would never make them bloom, and it is the usual experience, but in the second spring a number of plants sent up little blunt rounded stalks, rather like the sprouting horns of a young calf, which soon lengthened out into eighteen-inch flower stalks, topped by a cluster of thickly set, creamy white flowers, with a lily fragrance. The flower cluster is at first shaped like a little peaked Mexican hat, but as the central flowers bloom the cluster lengthens out into the shape shown in the picture, on the second flower from the left.

The second year the plants repeated the performance. In 1931 they failed to bloom, and in the spring of 1932, after a cold winter flower buds are again showing.

I know of no one who has raised the plants from seed to the blooming age, and just what that age is, seems to be unknown. I have some small seedlings, two and three years old, but they are a long way from bloom. I should be glad to send seed to other interested amateurs in the eastern

states, and hear of the results. Anyone who wishes to try raising them, may send me a stamped, addressed envelope and the seed will be sent later in the summer, when it ripens in the mountains.

A friend, who gardens very expertly reports flower stalks on collected seedling plants, which she has had in the garden four years, approximating five years from seed.

Edith Banghart, a grower of western alpiners, recommends placing this plant by a stream garden. Though I have had no chance to observe its behaviour in such a situation, I should think it a good place to try, especially if the plant is set above the stream, and not in boggy ground. This is certain: even if it sulks in the matter of bloom, it is a fine foliage plant in the rock garden or streamside garden. And if its Latin name is too much of a mouthful, it has several English aliases, basket grass, squaw grass, (from its use by the Indians as basket material), elk grass, bear grass, and pine lily. Take your choice!

DREW SHERRARD.

Oswego, Ore.

Narcissus, Samaria, Idris, and Silver Salver. (See page 237).

Among the newer forms of narcissus that add to the diversity of charms in that genus are some of the derivatives of *poeticus* from which almost all the color has been lost.

Mr. Watt's Idris (1914) a mid-season incomparabilis form with pure white perianth and short yellow cup was included for comparison to show the essential difference in style of cup and coloring.

Silver Salver (1922) and Samaria (1923) both came from The Brodie and are charming flowers for garden and exhibition. The first, my fa-

vorite of the two, is the smaller plant, practically a snow white poet with an emerald green eye to set off its whiteness; the second, a much larger and more Leedsii-like plant, is somewhat less white but shows the same green eye.

New flowers of this type are on their way, probably better than either with more size and robustness than Silver Salver and even purer whiteness and more translucent greens.

Washington, D. C.

COLOR IN DAFFODILS

It will be interesting to hear further from Mrs. Foote about the pink-toned daffodils she bought from Mr. Engleheart's garden. Have they developed in her Michigan garden the same pink tones she saw in the originator's Wiltshire garden? Are these and others of similar coloring that are coming along in increasing numbers as coy as the varieties that we already are growing in displaying their elusive colorings in our American climate?

Two of the varieties that have been in commerce long enough abroad to prove their outstanding quality are Rosary and Suda. Of these, Rosary has proved itself quite dependable here. The first season after planting it developed its characteristic coloring and every year since for its seven years here, its trumpet has never failed to show a delicious suffusion of rose, varying in depth of tone according to the season, but always evident even to the casual eye. I have wondered if its time of blooming, late midseason, may not be a prime factor in this regular habit of developing normally colored blossoms, for a frequent feature of our April weather is a wave of summer heat that rushes into bloom the earlier varieties with the result that even old standbys like



Frank I. Jones

[See page 233]

— *Xerophyllum tenax* in the garden of T. H. Sherrard, Oswego, Ore.

Bernardino and Brilliancy display cups of plain yellow.

Suda on the other hand has been a complete disappointment, for its crown remains stubbornly yellow. Yet may not one hope that the season will come that will produce in his own garden a Suda with a crown of pure rose such as was exhibited in the Midland Show a few years ago?

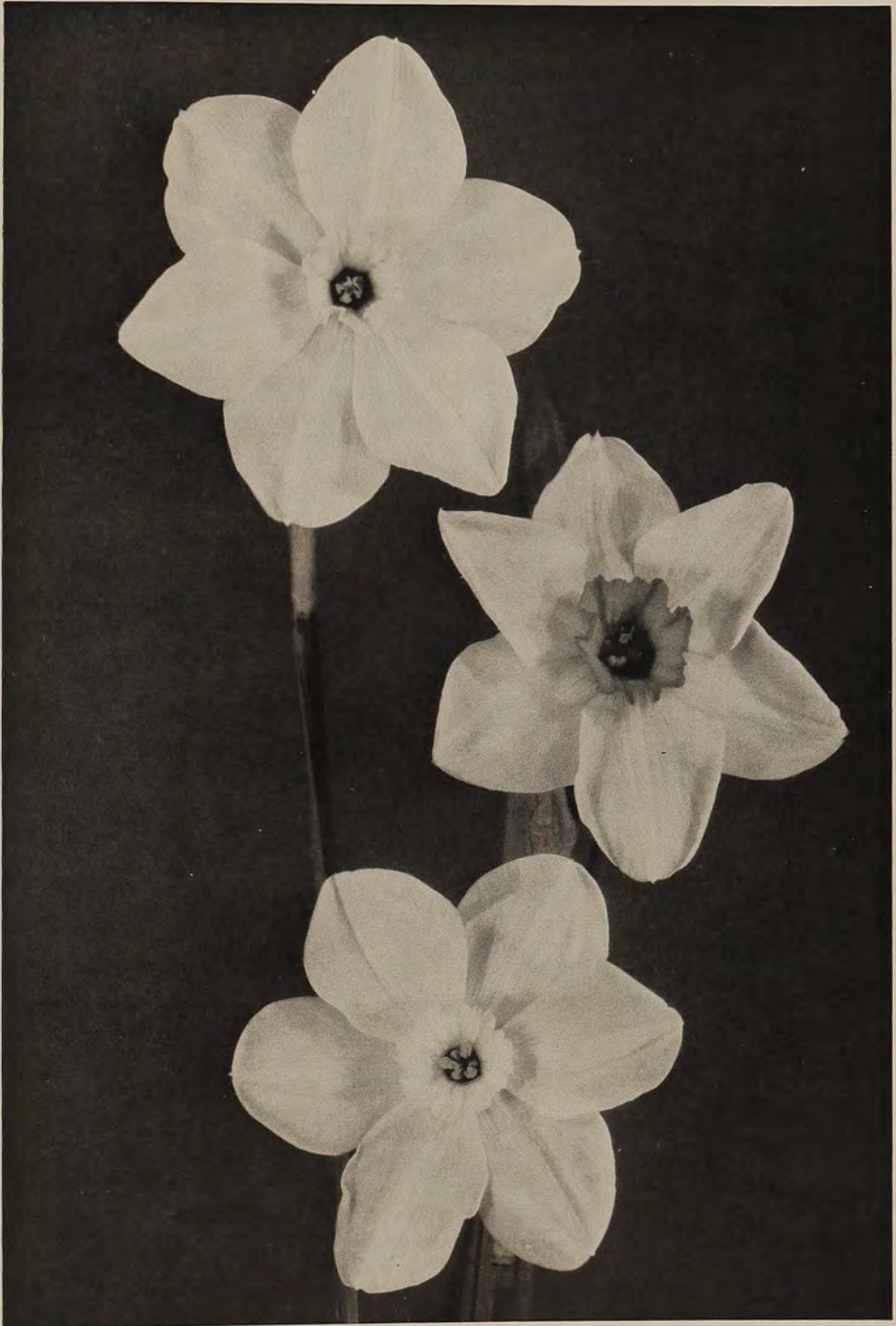
That this may not be an illusory hope, consider the history of Pax in this garden. This is a rather small Giant Leedsii of quite good form and substance that I was intrigued into purchasing because the catalogue description stated that it had a pink cup. The second season it bloomed, there were a few flowers with a faint pink rim to the usual pale lemon cup. There was no further sign of color until 1929, a season remarkable for the depth and brilliance of color developed in all red-cupped varieties, when the first blossoms that opened had cups of solid deep flesh pink. As they aged the color changed to a rich shade of apricot orange. The later flowers had this orange color when they opened and an examination at this stage, of buds just ready to break showed none with the pink tone of the earlier flowers.

This uncertainty that the described color will develop extends also to many of the varieties with red or orange in the crown. Disappointment is sure for those who take the catalogue descriptions literally. Only rarely may one see the colored cups as they are exhibited in the London Shows. A Croesus without its orange red crown is a dull thing indeed; a Bernardino without its orange cup is just another white and yellow daffodil. But have patience and you may see a Croesus with a solid orange red crown. It is a glorious thing, I can

assure you, for I have seen it once! And you may see a Bernardino with a crown of solid brilliant orange. You may even see, as I did, a Queen of Hearts with fiery scarlet cup.

Many of the newer things are less certain to disappoint for the hybridizers have been increasingly successful in fixing the colors. In place of Croesus, Brightling and Sunset Glow can be recommended. Brightling, a little earlier to bloom than Croesus and in form quite its equal, has a pure primrose perianth and an amazingly brilliant crown that has never failed to develop during the several years it has been under observation here. Sunset Glow is later than Croesus. The intense orange red crown set in a pure yellow perianth reflects the colors of the evening sky. No better examples of appropriate naming than these could be found. Beauty of Radnor, a variety reminiscent of Bernardino, is a new one of rare distinction. The white cup has a clean cut wide band of that shade of orange seen in the flesh of a ripe apricot. This color is catalogued, a pinkish apricot, a descriptive term, it must be confessed, that my color sense can not differentiate from pinkish orange, the term sometimes used to describe the color on the rim of Mystic.

Of genuine worth is Zillah, really a perfected form of Will Scarlett. Until it breaks into bloom, their style of growth is so identical, they could be mistaken for one another. The fully developed blossom illustrates the progress made by hybridists during the period between the introduction of the two varieties. The flat creamy-white perianth is composed of wide overlapping segments, the large spreading crown is bright yellow with a deep edging of orange scarlet. Last year for the first time the cup was



L. A. Guernsey

[See page 234]

Narcissus, Samaria, Idris and Silver Silver

plain yellow but it was merely keeping step with some of the more highly varieties. It is such a brilliant thing that I find myself looking forward to it each season.

Among the solid red-cupped varieties of the Barrii Class are two that have proven their value as regular bloomers. They are Kilter and Carminowe. Kilter has a larger deeper colored crown and a whiter perianth than Firetail. Carminowe's small cup of brilliant red contrasts strikingly with the pure white perianth.

Perhaps the real delight in growing the colored cups lies in the uncertainty before flowering as to how much color if any will be developed. A Yukon will always be a deep gold, a Beersheba pure white, but will Galopin's huge crown be solid red? Will Folly's corona glow with brilliant orange? How deep will be the rose suffusion in Rosary's trumpet and will Pax once more exhibit a pure pink cup?

B. F. CURETON.

Ohio.

A NEW COLOR TYPE IN IRIS

So myriad are the color variations and nuances in the tall bearded Iris that almost anything may happen at the hands of the modern breeder, but it was hardly to be expected that the color types as now listed should prove inadequate to the inclusion and proper classification of all arrivals. Yet this may prove to be the case.

At every Iris show there is some confusion among exhibitors as to which varieties are blends and which are not, and the border-line cases become ever more numerous so that even the judges themselves may well be in doubt and sometimes reverse one another. However, it is quite a simple matter to define a "blend" in good

scientific parlance, the only difficulty in recognizing them when seen.

Iris colors are comprised in two very distinct categories as was shown some years ago when the author devoted some time to a microscopic study of them, prodded thereto by the occurrence of a freak variegata wherein part of the standards were white instead of the normal yellow and a portion of the falls were common purple instead of the customary red-brown. This examination showed that the entire range of color from light lavender to the most intense purple, whether leaning more toward red or toward blue, belonged in one category, the anthocyanin group. These are all due to a staining constituent of the cell sap and may be expressed as a liquid which will change toward red or blue color according as acid or alkali is added to the expressed juice or sap.

The various shades of yellow, however, constitute another category. Here the color is due to the presence of plastids, minute granules, that may range from white or colorless to deep yellow or almost orange, and these apparently may be more or less abundant within the cell as well as of different color intensity. These are the only real Iris colors. But there is nothing to prevent the yellow plastids and the purple anthocyanin sap occupying the same cell and when they do the eye sees, not a new simple color, but a purely mechanical combination of purple sap and yellow granules which is translated to the eye as red-brown, the character and intensity of which depends upon the quality and proportional admixture of the two. It is this combination of anthocyanin sap and dyellow plastids that makes any Iris a "blend," whatever the quality or strength of its color may be.

At the time of these investigations observation indicated that the sap color might occur variously, either throughout the flower in which case if of even intensity a "self" is produced. Or it may be much stronger in the falls than in the standards, or even entirely wanting in the latter. The purple color may be confined to a central clearly defined blotch on the falls or, as in the plicatas, to marginal penciling or flecking on a white ground.

At the same time it was thought that the yellow color never came in any patterned form but if present at all was to be found throughout the standards and falls alike. It is this assumption that we must now bring into question.

In most Iris blooms, whether anthocyanin colored or yellow, there is apparent a tendency to lighter ground color central to the fall and just beyond the tip of the beard. This area may be of greater or less extent; may be smoothly blended as conspicuously shown in such varieties as Lohengrin and Aphrodite, or thickly overlaid with veining as in many other varieties. It may detract from the richness of a flower like Leverrier and some others by its too conspicuous character. In the yellows also this tendency toward lighter color in the same region is noticeable but did not seem to disappear entirely or constitute a definite pattern as is so often the case with the sap colors.

Now, however, we seem to be developing varieties that are quite distinctly patterned as to the occurrence of yellow plastids. Derivatives from Mr. Fendall's Loudoun have presented a fall that is white with a quite distinct narrow band of yellow for border; and a Coppersmith X Sophronia seedling now presents light yellow stand-

ards with white falls. This would seem to forecast a possible new color type, a white bicolor wherein the relation of standards to falls, the latter usually darker, would be just the reverse of that hitherto known.

J. MARION SHULL.

Maryland.

Notes on *Calochortus* (See pages 167-181).

These charming bulbs from the western states are not as much used in gardens as they should be. There are, to be sure, various reasons why they may not be as useful in the general border as many other plants and even more reasons why they will not fit into the general scheme of the garden that must always be a bower of bloom, but in most gardens there are some places that can be devoted to plants that like a hot situation, with reasonable amounts of moisture during the spring months and a well drained, warm soil for the remainder of the season. It should be said at once that winter cold seems to have very little to do with the life of the plant. The time of difficulty is the autumn season when abundant rains and mild temperatures will start the dormant bulbs into active top growth that is not hardy. In a general way it is the same problem that confronts the gardener who grows Spanish iris or the more difficult oncocyclis iris.

In the present experiment, now going into its third year, a site was chosen where there would be a maximum of sunlight, perfect natural drainage and a not too rich soil. The border lies under a hedge of evergreen barberry, that sends its greedy roots into the bed. The exposure is to the south and no shade, not even from distant trees, falls across the border. The soil was dug out to a depth of

eighteen inches. In the bottom of the trench a good layer of stones was laid, much as in the preparation of a rock garden. The remainder of the trench was filled with the natural soil, none too rich, to which had been added equal parts of leaf soil and fine gravel. At the time of planting the bulbs, a little more coarse gravelly sand was added to the planting holes.

The bulbs resemble small, rather elongate tulip bulbs, with coarse coats that split to show the orange colored inner skins. One plants them in the usual manner, down at least twice the depth of the bulbs themselves. Like tulips, also, they can be planted very late in the season, which helps one the first year as the planting can be delayed until the ground is cold.

The earliest warm weather in spring brings up the first leaves, that look for the most part like the single leaves that small tulips send up. These are followed later by the developing stalks that usually carry rather finer grassier leaves. It is these first leaves that bear the brunt of winter injury in the established plants for they will push up in late fall, despite all one's efforts not to let the border get wet. Even if frosted, their loss is not fatal to the health of the plants.

As to the plants themselves, one finds that they fall into three sharply marked groups which are well indicated in the illustrations and a fourth group which is not so conspicuous and is not illustrated.

It is a member of this fourth group that usually comes first into flower and is one of the most permanent of all the species, as well as one of the least showy. It is *C. lilacinus*, one of the meadow tulips. In spite of its secondary charms, one welcomes its pale lilac shell-like flowers that come into flower with the crocus.

It is soon overtaken, however, by the fairy lanterns, first the low yellow *amabilis*, then the somewhat taller pink *amoenus*, and finally the taller *albus* and the wire-faced yellow *pulchellus*. Although woodland plants in their native homes, these plants are dependent on a dry site for their summer rest and do not seem to suffer here in company with the plants of drier climates. The pictures show their characteristics and suggest the peculiar charms of their nodding flowers. They cannot show, however, the transparent tissue of the petals nor indicate the pearl-like tinting of the petals. If one could choose but one of these, I believe that the white form would be the one to select as it makes the tallest plant and bears the most flowers on its branching stems.

Before the fairy lanterns are all swinging, the first of the next sections have appeared, and mid-April makes quite a show in their borders. The star tulips, or owl's ears, as they are known in the west, are lower plants that tend to tangle about on the ground, with weak and twisted stems that just hold up their flowers. The pictures show the form (see pages 171, 172, 173) and suggest the reason for the common name, the inner surfaces of the petals being lined with silky hairs, like uncut velvet. *Maweanus major*, is essentially a lavender tinted white, *Maweanus roseus*, a brilliant clear pink, and *Benthami*, a brilliant lemon yellow, with rusty spots at the base of the petals.

A word should be said about the colors of all these flowers. In every case they are of the most glowing brightness, intense clear yellows, vivid pinks, pure lavenders, unbelievable scarlets, in many cases set off by accents of color in the green of the pistil, the green blues or pale lemon of

stamens, and the astonishing markings in the Mariposa tulips, the last group to flower.

The first of this last section to appear, is one that has not been happy here, although it has persisted. *Catalinae* from southern California (page 176) is a slender thing, with almost pure white flowers in the bulbs I have had, set off by the deep crimson, almost black spots at the very base of the petals. Before it has entirely gone, the first flowers of *luteus citrinus* (page 175) and *Howellii* (page 174) are open. The latter, from Oregon, is not altogether happy, either, but usually gives more flowers of clear enamel-like substance, ivory white in color, with hints of green at the base of the petals, a yellow gland spot and dark brownish hairs. The former ushers in the great display of the Mariposas. As yellow and shining as any buttercup or trollius, it makes a great display with three inch flowers, marked and pencilled in deep red browns and covered with brown tipped hairs at the base of the petals.

It is soon joined by the forms of *venustus*, of which those illustrated (pages 178, 179) are the extremes from the variety Eldorado, the one with a white ground, the other with a rosy lavender ground, all of the forms with deep rosy purple blotches on each petal and variously colored pencillings and dotting over the lower part of the petals, under the abundant coats of silky hairs that also are dotted and tipped with color. Words entirely fail to indicate the beauty of these flowers on the two foot slender stems, nodding and delicately poised. The variety *purpurascens*, as it has flowered here, is almost exactly like these forms, except that there is in each case a second smaller blotch above each large blotch and a more or

less distinct band of color connecting the two and fading out toward the margin of the petals.

While they are in full flower there come the amazing flowers of *Kennedyi* from the edges of the desert in southern California. Fragile plants with slender stems and thin leaves, topped here with solitary flowers of such brilliant orange red that *Lilium tenuifolium* seems almost a shadow. The dark purple, almost black spot is small and close to the base. In some happier climate, these plants should show better growth and more flowers, but I am happy enough to have cheated them into living at all. Among my plants was also a pure lemon yellow form.

After this there is a brief lull in the procession before *luteus* (page 177) shows its rather short petalled pale lemon yellow flowers on two foot stems. As compared to the variety *citrinus*, which, to my gardener's eye, should be a variety of *venustus*, rather than of this species, this makes a smaller display but the flowers are lovely enough with their thin pencillings of deep sienna brown.

Greenei appeared next, here on rather short stalks but with large flowers, with rather truncate petals of clear pinkish lavender with amazing hairs like delicate floss, not only over the petals, but along the edges.

Even more showy is *nitidus* (page 180) with tall branching stems, and shell like petals of clear lilac, covered like the last with long tender hairs over the petals. None of the flowers here were blotched with the indigo blotch of the books, but were handsome enough with the deep purple blotch, the greenery-yallery freckling and the speckled hairs deep in the cup. At the same time come the huge flow-

ers of *Gunnisonii* (page 181), of tinted white color, running down to green in the base with a yellow blotch and a tangle of dark spotted hairs.

Before these have finished, in the last weeks of June, come the final species, *Plummerae* and *macrocarpus*, both tall and branching plants with many flowers. Neither do as well as I have seen them in California and neither make as great a show as do the varieties of *venustus* as their branching growth spread the flowers far apart. The flowers of the first have been all pale, somewhat pinkish lavenders with clear yellow hairs that line the whole of the inside of the

petals, almost to the upper edges. The flowers of the second have been a somewhat deeper bluer lavender, with some darker hairs and yellowish blotch within and a greenish band down the outside of the petals.

It is a matter of regret that we do not have photographs at the present time of the last two species as they are well worth the attention of gardeners here, particularly as they rarely make any autumn growth of foliage, are slow to put in their appearance in the spring and so escape the late frosts that are the nightmare of gardeners.

Washington, D. C.

A Book or Two

The Blackberries of North America.

By L. H. Bailey. Published by the author, Ithaca, N. Y., March 5, 1932. 154 pages, illustrated.

This is a part of the series known as *Gentes Herbarum*, of which it is *reali-Americani* (*Rubus* subgen. *Eubati* *Bobatus*). On the inside cover, Dr. Bailey kindly explains that *Gentes Herbarum* means "the kinds of plants."

Looking back over the previous issues one finds that *Gentes Herbarum* started in July, 1920, the first article in volume 1 being about Chinese plants. Article 5 in this volume is entitled "Certain Cultivated Rubi," and article 6 is "Rubus: Enumeration of the *Eubati* (dewberries and blackberries) native in North America." You will see from this that Dr. Bailey knows his blackberries. Yes, sir! He is some batologist. (Incidentally, it might be mentioned that article 6 ends on page 300. There is an Index to

Gentes Herbarum, published separately without date but beginning with page 301. On page 302 in the index is this note under *Campylotropis*: "By some authors, *Campylotropis* is kept distinct from *Lespedeza*; and as this is the case in the recent authoritative treatment of Chinese woody plants (Schneider, in *Plantae Wilsonianae*, ii, 113) it may be advisable in the interest of uniformity to transfer *Lespedeza distincta*, p. 31, to the other genus, when it becomes *Campylotropis distincta*, n. st." The author referred to is Schindler, not Schneider. *Lespedeza distincta* Bailey was listed in the 1921-25 supplement to Kew Index; but the indexers did not find *Campylotropis distincta* in the index.)

As the preceding eleven articles in volume 2, beginning February, 1929, do not contain any remarks on blackberries, they may be passed over. Dr. Bailey begins his monograph—"Presumably there are as many species of blackberries as of hawthorns in North

America." Farther down the page: "Forty years ago, when I took up the study of *Rubus*, five species constituted the blackberry flora of eastern North America—." This monograph recognizes and describes 85 species as native to North America, north of Mexico. Of these Dr. Bailey himself has described 33 of the species listed, 14 of them in this paper. So he ought to know his blackberries; nearly half of them literally *are* his.

In looking over a monograph, a botanist wants to know what other people have said on the same subject. Dr. Bailey devotes nearly 3 pages to this feature and it is complete and well arranged. Next the botanist wants to know if the author has looked up type material of species published by previous authors. And here Dr. Bailey does one's heart good. He went to Europe and looked up and photographed the existing types of all the species he could find, visiting London, Paris, Berlin, Vienna, etc., as well as studying all the specimens in the large collections in this country. Not only that; he also went to the type localities of all the species in North America and tried to find the actual place where the type specimen was collected. Here is an example, *Rubus amnicolus* Blanchard was collected on "the Rosin dump below the Leatheroid shop" in Kennebunk, Maine. "On inquiry the leatheroid shop was pointed out to me, but the former manufacture had gone But an old resident was found . . . the dump had been burning for some years, and he pointed to the thin line of smoke then ascending down the lane behind the old building—and there at the side just beyond the smudge stood a single plant of *amnicolus* in full form and in bloom."

Dr. Bailey does not hesitate to

make new terms to cover the particular parts of the plant he wants to describe. Primocane and floricanes are explained on page 279 and figured on page 270, which is a reproduction of a photograph showing the cane which grew last year and is now in flower, the floricanes, and the new shoot which is growing this year, the primocane. It seems to me that the idea would be more plainly understood if the cane which bore and died the previous year had been included in the picture; possibly a morticanes?

The figures, there are 38 of them, both from line drawings and from photographs, are excellent; they show just what they are meant to show,—prickles, bristles, weak prickles, shaggy bristles; they stand right out and you can see the differences on the plates. And the descriptions under the figures are ample and definite.

At the back, after the index to the botanical names, there is an alphabetical list of the promological varieties, 86 of them, referring to the page on which each variety is mentioned under the species to which it belongs. It is interesting to know, if you are growing Eldorado and Snyder blackberries, that they belong to *Rubus allegheniensis* Porter. Or, if your preference is for Blowers and Perfection, that they are *Rubus ostryifolius* Rydberg.

Possibly Dr. Bailey is open to criticism in the lack of definite information regarding the types of his own species. Presumably the type specimen is in his own herbarium, but he does not say so. Neither does he give the number of the specimen as deposited in some well known herbarium, like the National Herbarium, which is a general custom among people who make a business of describing and publishing new species of plants. Nor is his description of

the type locality very definite, as witness the notes on *Rubus sons* Bailey,—"Low but dryish lands, in southern Louisiana, abundant, in fields making great snarled mounds to 5 feet high and 10 feet or more across; probably southern Mississippi. One soon learns to recognize it from bus or automobile, with its interlaced twigs and profusion of bloom. Twice I have visited a certain clump in the open country back of New Orleans in which a mocking-bird had successfully hidden her nest." If you find the same nest it is not the right clump; because then the nest is not successfully hidden. And where he does cite a definite specimen and locality, as for *Rubus centralis* Bailey,— "Talbot County, Maryland (eastern shore), Mt. Vernon, Virginia, and also Stafford County; southern Indiana; type C. C. Deam 27, 967, State Forest, Clark County, Indiana, on a black-white oak slope." We trust that Deam 967 was collected from the same plant as Deam 27. How much more definite the information would be, had he listed Deam's locality first, with number and date of collecting, instead of misleading one by first listing locations, presumably of his own collections, more than 400 miles away. But we must not expect perfection when a horticulturist, or should one again say botanologist, turns botanist.

H. C. SKEELS.

Washington, D. C.

Cactus Culture. By Ellen D. Schulz. Orange Judd Publishing Company, Inc., New York, 1932. 157 pages, illustrated. \$2.00.

First of all this is an excellent volume from the standpoint of information on the different phases of cactus

culture, including definite directions for establishing indoor and outdoor cactus gardens, and "desert" gardens, with chapters on nurslings, grafting, and pests and diseases. Besides giving us all of these usable facts, which are so evidently born of actual experience, Miss Schulz succeeds very nicely in making the uninitiated reader acquainted with the cactus family as a whole, and in creating a more sympathetic understanding of these plants in their struggles against a most unfriendly environment.

P. R.

Flowers and Folk-Lore from Far Korea. By Florence Hedleston Crane. Printed in Japan; sole distributors for America, The Macmillan Company, New York, 1932. 100 pages, illustrated in color. \$15.00.

This interesting book is arranged, as so many Oriental books are, by seasons so that one begins the year with January's camellia, tea, and eunonymus and closes it with December's holly, mistletoe, and wild smilax.

The illustrations are somewhat Oriental in style and arrangement but are clear and usually accurate. The scientific names do not always agree with those in current usage here and some of the diagnoses seem incorrect. Certainly the drawing on page 59 is not of *Iris ensata* but of *I. laevigata* and the leaf details of *Styrax japonica*, page 33, are certainly different from anything observed here.

The text is the most entertaining part of the book with very interesting allusions to Korean life and art, but the gardener will look with wishful eye on many of the plants shown, as for example the sheet of exquisite violets.

Insects and Diseases of Ornamental Trees and Shrubs. By E. P. Felt and W. H. Rankin. The Macmillan Company, New York, 1932. 508 pages, illustrated. \$5.00.

The latest addition to the Rural Science Series, of which Dr. L. H. Bailey is editor, is the present volume. It represents a combination of texts of the two authors in their separate fields, brought up to date. It is addressed to the layman and is arranged by plant subjects so that the uninitiated can quickly locate all that is given about a specific plant.

The four introductory chapters, Insects and Their Depredations, Fungi and Their Depredations, Insecticides and Fungicides, and Injuries Other than Those Caused by Organisms, give the necessary general information.

Annuals in the Garden. By H. Stuart Ortloff. The Macmillan Company, New York, 1932. 88 pages, illustrated. \$1.25.

The last decade has witnessed a great change in the gardener's attitude toward annuals, for he has recovered somewhat from the late orthodox passion for perennials. This book falls into two parts: the opening chapters that concern themselves with how to use annuals, the closing chapters that have to do with the growing of annuals.

The term annual is given an almost too catholic elasticity to cover any plant that will give flowering in a single season. The planting lists show as well a very decent admixture of perennials and tender plants of more or less shrubby nature. The designs are usually simple, the more successful ones those of somewhat formal style. The directions for growing are simple. The photographs show

chiefly annuals used to support perennials. The list of annuals mentioned is essentially routine.

Scoring Systems for Flowers and Gardens. By Emily L. Brown for the Hillsborough Garden Club. Printed by Helen Gentry for the Club. 1932. 108 pages.

In this day of frantic effort to judge and score exhibits at flower shows with some reasonable accuracy, especially when the supply of competent, or perhaps one should say, old and seasoned, judges is inadequate, one is more than grateful for Mrs. Brown's little book.

After a brief preliminary chapter dealing mostly with matters that should concern committees holding exhibits, the book gives page after page of score points, frequently with more than one set of points for a single plant. In most cases the source is given, but there is no mention as to why these score systems were chosen. The tables include those for specimen blooms, collections, growing displays, arrangements, gardens, and leads on to an appendix in which are recorded the examination questions used by the Chicago and Pennsylvania Schools of Judging.

It is all very compact, very explicit, very dispassionate, as it should be, but one yearns for a second appendix in which there might have been a disquieting text for exhibitors on all of those ineffable beauties that cannot be scored and yet distinguish an exhibit.

Florida Wild Life. By Charles Torrey Simpson. The Macmillan Co., 1932. \$2.50.

Nothing is more thrilling or unbelievable than the truth. Especially the truth about science. And when we read about the trees that walk or

the strange shells, seeds, and vines that are found on tropical shores, we come upon facts more fascinating than even an Arabian night's tale which has always been the most entrancing type of story to me. Dr. Simpson knows his material thoroughly but one wishes he would not write quite so much in the style of a radio address. He is particularly annoying when describing the closet naturalist; "generally a pale, anemic people who believe that change necessarily means progress. They have absolutely no idea of the great out of doors, of the wonders of the seashore; they have no knowledge of the deep peace and holiness of a primeval forest"—and so on. Where so much is well done, it is too bad a little of it had to be so, shall we say, rotarian.

All through the book are statements such as, "Europe is the great weed factory of the world," which could either have been eliminated or modified. However, the book will undoubtedly prove helpful and interesting to travelers going into the interior of Florida and to the native school children, for it describes such fascinating things about the tropical growths, the epiphytes, the great floppy leaves of the trees, the vines that make a tangle of the woods, and many other phases of wild life.

HELEN M. FOX.

Plants, What They Are and What They Do. By A. C. Seward, F.R.S., Sc.D., LL.D., Master of Downing College, and Professor of Botany, Cambridge University Press, Cambridge, England. New York, The Macmillan Co., 1932. \$1.50.

The subtitle and introduction are the only clumsily written portions of this book. Often what one writer calls the "entrance porch" of the book

is the most difficult to write smoothly but once this is passed we have clear flowing prose written as only a cultivated Englishman can and does write. The book, in its thoroughness and wide scientific background, reminds one of the book of F. A. Hampton of Oxford, *The Scent of Flowers and Leaves*, which has never been equalled on that particular subject.

This book, although written as a sort of text book for beginners in the study of plants, seems a bit stiff for a young person to go through unless under the guidance of a teacher; at least it would be stiff for most American youngsters. However, what the British youth are reading is not known to me. It has the simplicity of style and subject matter, the going back to fundamentals, that we find in modern architecture and furniture. Here we return to primary facts which we have learned in our youth but long ago buried under a heap of less vital details. We almost never think about why the tap root goes down and the stem rises, or the chemical actions going on in the leaves, or that most of a tree's trunk is dead, and it is pleasant to have them brought to our attention connected up with the latest scientific point of view.

One sentence pleased the reviewer especially and it was so suggestive of the author's love of his subject and showed what an excellent and stimulating teacher he must be—"It is hardly an exaggeration to describe the green leaf as one of the most wonderful things in the world; the work it does provides the store of carbohydrates, such as sugar and the more complex nitrogen-containing proteins on which practically the whole organic world subsists."

HELEN M. FOX.

1932 American Rose Annual. Edited for the Society by J. Horace McFarland and G. A. Stevens. Harrisburg, Pa., 1932. 226 pages, illustrated. \$3.00.

It is almost impossible to review this or any other of the excellent annuals published by the American Rose Society for its members. One is tempted to dodge the issue with an earnest recommendation to join the Society and see for yourself. If you

do, you will find, opening as often on a rather sentimental note, the annual soon "gets down to business" and provides articles on subjects relating to "the trade" and "the consumer," articles related to diseases and insects, species roses, varieties ancient and modern, with the final data on reports of many varieties and their behavior from different parts of the United States. The illustrations are all interesting and some are beautiful.

Correspondence

SIR:

The January number of our magazine contains so many things of interest that I cannot refrain from writing. The "Idealist in the Garden" sadly anonymous, speaks of *Anomatheca*. All my life in England (up til ten years ago) I have known and loved this dainty thing, under the name, as a conservatory flower and considered it to be tender. My authorities, Bailey's *Hortus* and Saunder's *Encyclopedia of Gardening* both give "*Anomatheca* See *Lapeyrouisia*." Bailey says: "Hardy in the North with winter protection. Saunders says: "*cruenta* is hardy. Soil, sandy loam and leaf mold. Position, sunny, well drained borders and rockeries. Plant bulbs four inches deep, September to October." But of course Saunder's information is for England, and possibly south of England at that. . . .

I brought seeds from England back to Tennessee five and a half years ago. They were started indoors and then planted outside in semi-shade, in leaf mould and have flowered there for four seasons. They have not been disturbed and have not increased. Every winter the corms are given a

thick leaf mulch and in spite of this the foliage is frozen back. During these years we have had winter weather down to zero, summer heat above 100° and two years of long drought. My *anomatheca* as I still wish to call it is pink with red marks in the center.

The Idealist's remarks that he refuses to be daunted by the statement that it is not hardy north of Washington, is brave. I try to be the same way about some of my special pets but it will not always work and I fear ends sometimes only in sorrow of mind and emptiness of purse.

I have learnt to love *ixias*, during two flower seasons spent in New Zealand. Also the exquisite *Iris pavonia* correctly but not so poetically *Morea glaucopis*. I have actually flowered *ixias* out of doors once but they are not reliably hardy under our conditions. The *morea* has now lived through two winters and I hope, and I wonder, if I shall have the joy of seeing it again this year. The trouble with these south Africans is that they will put up their foliage in the Autumn. I believe the best treatment is to dig them up after ripening and dry them off, keeping them inside as

long as possible and planting them out only when they insist upon sprouting and then planting rather deep. . . .

The photographs and article about Iris sindpers are most interesting. I am anxious to establish the possibility of having iris blooming through the winter here. This year *Iris unguicularis* both blue and white bloomed in December and January. *Iris persica* bloomed in January and February. *Iris reticulata* is now in bud and *Iris (Hermodactylis) tuberosa* as well. They will certainly last into the next month and then the pumilas, the early flowering Regelio-cyclus Charon and the early German iris will carry on.

E. R. LODGE,
Tennessee.

SIR:

It was quite a revelation to me to find such a splendid illustrated account of *Byrophyllum tubiflorum* in the January issue of our magazine.

Walking through one of our local stores one day last September, I chanced to see a tray of rather unusual succulents and seedling shrubs which were being sold for Japanese dish-gardens. Many of these plants were unlabeled and having been surfeited with water were in a very sad state of decomposition.

Nevertheless, I rescued two sickly nandina seedlings and several unnamed succulents from the sodden mass; three of the latter being *Byrophyllum tubiflorum*. Their curiously mottled leaves and the method of producing young plants became a source of great interest to me. I felt this plant must be an uncommon one, for many searchings and inquiries failed to identify it.

One of these plants went to a flower loving friend; another into the garden to test its hardiness, but need-

less to say, it succumbed to the first frost. The third is now doing well in a sunny south window and although having grown quite tall apparently gives no indication of blooming this season.

Since learning this plant's name, I have discovered seeds of another variety listed in the catalog of a well known English seed-house, under the name of *Kalanchoe flammea* and described as having brilliant red flowers.

Care was required to resuscitate the Nandina shrublets, which on being purchased merely consisted of a spindly main stem surmounted by a tuft of leafless petioles. The transfer into larger pots filled with rich loam and sandy peat, brought about a satisfactory recovery, insomuch that new leaves have been developing throughout the winter months.

A friend visiting here last summer from North Carolina greatly aroused my interest in this shrub by lauding its beauty, rapid growth, and hardiness in that state. This spring I intend to transplant one of these seedlings into a sheltered peaty hollow of my woodland, to prove its hardiness in central Indiana.

Among the many beautiful illustrations in THE NATIONAL HORTICULTURAL MAGAZINE, I recognized a very old friend, *Saxafraga cordifolia* or *Bergenia cordifolia*. I first came into possession of this plant when quite a little girl, having begged it from an old lady, who at the time described it as "some foreign plant with a name she couldn't remember." This saxafraga increased so rapidly in my small English flower-patch—a fertile spot of rich clay loam in the family vegetable garden—until it had the appearance of some specie of dwarf rhubarb, and it was occasionally nec-

essary to hack out some of its rank growth.

A short time ago, I introduced this plant into my Indiana garden. So far it has not developed into a robust specimen. Therefore, I have yet to learn what special care and situation it requires in this locality.

The practical advice given by Florens DeBevoise in her "Notes on Saxafrages," in making an appeal to Eastern American garden lovers to consider their soils, environments and climatic conditions, and not to imitate too closely the culture of various alpine plants as directed in English garden books, should save many precious plants from a sickly existence or premature death, if taken as a timely warning.

Furthermore, I find that on this vast continent of North America, where most states cover such an extensive area, with a corresponding variation of climate, one cannot safely follow even a neighboring state's mode of cultivation, where European plants are concerned, much less emulate the cultural methods of England, who's climate is totally different to that of Eastern American states.

Recollections of my own personal sufferings in becoming acclimatized to America's intense heat and cold, serves to generate sufficient "fellow feeling" when selecting a location in my garden for European plants of any kind.

My early gardening experience in this country was very distressing, simply because I did not know how to cope with the vastly different climate of Indiana, after the mild temperature of a west midland county of England, where the hottest summer days and the coldest winter weather is tempered by the moist atmosphere drifting in from the Bristol Channel.

However, I gained much helpful knowledge of American flower culture by the dilligent study of the exceedingly valuable garden books by Mrs. Francis King, Mrs. H. Rutherford Ely, Richardson Wright, and Alfred C. Hottes.

DORA E. WATERSON,
Indiana.

SIR:

I have read with great interest your schedule in the 1932 Horticulture. My most recent acquisition is a small, very small, greenhouse, which I want to use principally for the propagation of interesting material for my garden from seed and for a few out-of-season vegetables and a very few flowers, as I have no wish to go in for elaborate hot house flowers which I can so easily buy from the florist. It may seem that you already have published many articles along these lines, but I have such a desire for information that I thought it would do no harm to send the suggestion in for something to be included in your 1933 program.

With all good wishes for the coming year and the continued success of the Society.

MARGARET K. BLODGETT,
Great Barrington, Mass.

SIR:

May I be permitted a word or two in applause of our dear Idealist's noble and, I hope, not doomed to be quixotic lance-breaking in defense of capitals?

I feel for him all the more, as I am myself in the minority on an Editorial Staff which treats all specific names with that levelling-down to lower case which I cannot but regard as an ignominious degradation.

To me, one of the minor, but by no means inconsiderable, pleasures of

botany-cum-horticulture has been that derived from the associations, now historic, now geographic, linguistic, onomatopoeic or what not, called up by the botanical names of plants. Far from letting myself be terrified by these, I admit, sometimes formidable bug-bears, I take a very decided pleasure in delving into their origins. Any practice which tends to obscure these derivations I cannot but regard as deplorable and not to be outweighed by a gain in uniformity, which could in any case only appeal to bookkeeperish minds.

And how agreeable it is for the eye, in running down a column of names, to find, at pleasantly irregular intervals, here and there a resting place in the shape of a word in capitals, instead of an interminable line of typographically undistinguished matter. It is like finding a few trees in a plain, a blessed island or two in a sea of uniformity.

The *F* of *Farrerii* stands out like a semaphore to remind me of the great Reginald on his Roof of the World. Our numerous *Douglasii*, *Menziesii*, *Lewisii* and many more here in the West, why not leave them in the full dignity of capitalization, a salute to the noble band of those who have enriched our Knowledge, and the gardens of the world?

JAMES WEST.

The St. Louis Horticultural Society was founded by Mr. Eugene H. Angert in 1928 with a membership of two hundred and under Mr. Angert's very enthusiastic direction grew during the first year to over a thousand members. Since Mr. Angert's death in 1929 those left in charge have carried on in a very creditable way and the Society continues to grow. Mr. Geo. H. Pring, Superintendent of the Missouri Botanical Garden now holds

the seat of honor, is a very able and appreciated President.

Garden Life, published monthly by the Society is edited with an understanding of the needs and conditions of Missouri soils and climate.

Meetings are held the first Friday of each month and here are held round table discussions, lectures and flower contests.

Two flower shows are given each year, spring and fall; at the Missouri Botanical Garden display house.

The Garden Contest started three years ago has steadily grown in popularity and we feel has done much to stimulate the interest in gardens in and about St. Louis.

The Garden Pilgrimage gives all members entry into the interesting gardens of St. Louis and County at the season they are looking their best, some on a specified date, others during a protracted period.

Prizes are offered each month to the member bringing in the most new members, these prizes are donated by the leading Nurserymen, Florists and Seedhouses, there are also quarterly prizes and a grand prize at the end of the year.

An office is maintained at the Missouri Botanical Garden where members may have access to the wonderful library belonging to that institution.

BERNICE M. NULSEN.

SIR:

Nearly every gardener at one time or another is interested in plants for some part of the garden that has little sunlight. Hanson's lily [*L. Hansoni* Leicht. (See page 164)], provided it can have a decent soil and a reasonable amount of moisture, is just the plant for such a place. Indeed, one of the loveliest plantings I have

ever seen was in an open wood path, where there were other shade loving plants for company and a light broken shade from trees above.

E. H. Wilson in his *Lilies of Eastern Asia* (page 92) describes this lily on the island of Takeshima as growing "in thickets and open forests in rich vegetable humus, where one's foot would often sink out of sight in the decaying leaves." This gives one clue enough as to its preference and our illustration shows how well it behaves in the garden at Foxden, where it has a sunny spot, but proper shade for its feet, the requirement of so many lilies. Here it has done almost as well in a deep soil, well enriched with leaf mold, where it can push up its shoots through the edges of cotoneaster.

As compared to more flamboyant lilies, it makes no great show, but the little flowers are beautifully modelled and the plant itself exquisitely fashioned. In addition, it is the parent, with some of the martagon lilies of various garden hybrids, of unequal merit, to my mind, for nearly all of them have flowers of delicate tinting, which is lovely close at hand and somewhat dull at a distance, whereas the singing yellows of the parent *Hansoni* carry perfectly. Washington, D. C.

SIR:

I have wondered for several years why more attention was not paid to some of the later flowering perennials that take up the mass effects of bloom after the first beauty of the spring borders have passed and before one can depend very much upon annuals for a great supply of color.

Among the many plants that have been interesting here this season are the *sidalceas*, apparently vigorous perennial plants that produce masses of

rosy lavender flowers, depending on the variety, from mid-June on. It is amusing to read the names that have been given, Rose Queen, Rose Beauty, Scarlet Beauty and the like, for no imagination, no matter how facile, could make them rose-colored, although they are indeed the color of some unlovely roses. It would be much better to say frankly that for the most part they are various shades of mallow purple but that practically all of them are useful even in the mixed border in spite of their near-magenta color, because their petals are translucent in substance and assume more exquisite tinting because the light shines through. There is no great difference in the colors of some of these, but there is a marked difference in the time of flowering of these smaller cousins of the hollyhocks.

Although there are many gardens, particularly those in which old-fashioned flowers are featured, where one may find great clumps of spiderwort or tradescantia, there are too few gardens in which this plant is valued as it should be for its free-flowering habit and its willingness to grow in semi-shade. Indeed shade is a great advantage since in shade the flowers will stay open through the day.

In the garden this year, I have had small clumps of several plants from different parts of the country. A clump donated by Dr. Wherry who collected them in Alabama produced two entirely different plants when pulled to pieces, one a rather dwarf plant, more or less like *T. virginia* and the other a tall, rather hairy plant that does not come into flower until mid-June and continues through the next two months. The first is rather the nicer of the two as it had among the individuals some that were pure white and one that was a rather tender pale pink color.

M. C.,
Maryland.

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Although many of our members are growers, breeders or collectors, still more are just amateur gardeners—people with a bit of a garden in their back yard where they grow a few fine Peonies, a few Irises and other precious treasures which they have collected through their gardening years. Therefore, the members of the American Horticultural Society should be particularly interested in this kindred society. Our Bulletins in a special field have the same point of view as the National Horticultural Magazine has in the broader field of general horticulture.

To the isolated gardener our Bulletins have brought notes drawn from the experiences of our members in many parts of the world. To the gardener who is fortunate enough to share his interest with many neighbors, our society offers an opportunity to co-operate in some sort of community work. Each year many local exhibitions are held under our auspices and we owe much to the members who have aroused local interest. Gradually, also, it is becoming possible for our members to inaugurate display plantings of Irises, which are not only of interest to all gardeners, but, more important, do much to make public open spaces more sightly.

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The American Horticultural Society

INVITES to membership all persons who are interested in the development of a great national society that shall serve as an ever growing center for the dissemination of the common knowledge of the members. There is no requirement for membership other than this and no reward beyond a share in the development of the organization.

For its members the society publishes *THE NATIONAL HORTICULTURAL MAGAZINE*, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members.

The American Horticultural Society invites not only personal memberships but affiliations with horticultural societies and clubs. To such it offers some special inducements in memberships. Memberships are by the calendar year.

The Annual Meeting of the Society is held in Washington, D. C., during the first week in February and members are invited to attend the special lectures that are given at that time. These are announced to the membership at the time of balloting.

The annual dues are three dollars the year, payable in advance; life membership is one hundred dollars; inquiry as to affiliation should be addressed to the Secretary, Mr. C. C. Thomas, 211 Spruce Street, Takoma Park, D. C.

