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K. N. Marriage

Mentzelia nudiflora

[See page 236]

A Review of Louisiana Irises

IRA S. NELSON

There was no doubt in the minds of the judges that Sunburst was the best Iris of the show, and should be officially crowned the "Iris of the year." The judges were some two hundred of the most ardent native Louisiana Iris enthusiasts to be found in the country. The show was a part of the program of the annual meeting of the Mary Swords DeBaillon Louisiana Iris Society which was held on the Southwestern Louisiana Institute campus, in the city of Lafayette, last spring.

This society has felt that, since native Louisiana Irises are still in a formative stage of development as to type, recognition should be given to the Iris with the greatest popular appeal, rather than to one which appeals to a few judges. Each person attending the show is asked to vote for his first, second and third choices. First choice is given five points per vote, second three points, and third one point.

It is indeed significant that Sunburst received over three times the number of points received by its nearest competitor in a show devoted entirely to Louisiana Irises and featuring well over one hundred outstanding varieties.

Sunburst represents the peak of a new development in Louisiana Irises. As its name implies, its coloration reminds one of the brilliance of a sunset. It is a dusty sunset-red with huge radial crest of brilliant yellow which covers almost half of the sepal. The claw is quite long and the sepals flare back and are rounded at the end. The petals are large and upright. Its outstanding feature is its huge and brilliant radial crest.

Sunburst is a seedling grown by W. B. MacMillan of Abbeville, Louisiana, from seeds given to him by the late Mary DeBaillon of Lafayette, for whom the society was named. It is probable that Mrs. DeBaillon was breeding to achieve this type of crest since Mr. MacMillan has produced several other Irises with outstanding crests from the seed Mrs. DeBaillon gave him during her last illness. It is unfortunate that records of the parentage of her seeds have been lost. Without doubt, the foundation collection, from which Mrs. DeBaillon did her breeding, is one of the finest ever assembled. Most of the collection was assembled after Dr. Small published his first papers on Louisiana Iris.

The discoveries and collecting of the late Dr. John K. Small of the New York Botanical Garden did much to focus the attention of the botanical world on the vastness of wild Iris beds in Louisiana and their almost infinite variation. However, there is good evidence that Louisianians had cultivated their swamp Irises for generations about their homes. At the time Dr. Small made his discoveries, there were in existence fine collections of native Irises in the gardens of several wild-flower lovers. Space does not permit a description of these early collections, but it should be pointed out here that Dr. Small expressed surprise at finding a collection of swamp Irises thriving in the wild-flower preserve of Miss Carolina Dormon in the sand hills of North Louisiana.

The hobby of collecting Irises from the bogs increased in popularity throughout the state from 1930 on. By 1941 a sufficient number of collectors had become acquainted with



Elmo Morgan

*Collecting in an isolated patch of *giganticaerulea**

each other through the time-honored grape vine system of communication that organization was possible. Twenty-odd collectors met in this year and organized. Since then the organization has grown to about two hundred.

The work of this society probably is the greatest single factor contributing to the general interest and development of this fascinating group of the Iris family. The newer developments of native Louisiana Irises cannot be fully explained unless the history of the Mary Swords DeBailon Louisiana Iris Society is briefly reviewed.

At the organization meeting, Miss Caroline Dormon offered both Southwestern Louisiana Institute and Louisiana State University one rhizome

of each variety of the collection which had been willed to her by Mrs. DeBaillon. This was done primarily to insure perpetuation of the collection. The following fall, Southwestern Louisiana Institute received the rhizomes and planted them on its horticultural farm. The society adopted this planting as the nucleus of a test garden for Louisiana Irises. Thus the test garden of the society came into being. The test garden serves primarily as a public display garden and as a place where promising varieties can be grown and tested to ascertain their horticultural value. Varieties grown in the test garden are accurately described and catalogued. Varieties are neither bought for nor sold from the test garden. All additions are gained by donations from



Excellent corsage material, upper left; a fondling probably foliosa-giganticaerulea cross, upper right; an oddity of fulva extraction, lower left; Abbeville red, lower right

members of the society who believe that their seedlings or findings are worthy of a place in the garden. At present there are over three hundred varieties grown in the test garden.

A pollen bank from which the society's members may get pollen was established as another function of the test garden. This project involved more labor than is available for the duration of the war; so it has been temporarily suspended. It is hoped that the pollen bank will be a tremendous stimulation to improvement of Louisiana Irises by amateur hybridizers.

The Louisiana Iris Society has been able to stimulate considerable interest by having well planned and instructive projects. The publication of four mimeographed bulletins per year and more frequent notes on Louisiana Irises has given Louisiana Iris fans an opportunity to keep up with new developments. The society's annual meetings have been not only stimulating, but have also been educational. Until the war these meetings included a tour to the nearby swamps, where the Abbeville Reds are found. Since the war, one day programs consisting of a business meeting, tea and show, a visit to Lafayette gardens and a banquet have been held. In spite of travel restrictions, the number attending the meetings has increased each year.

It is seldom that any convention can enjoy facilities comparable to those which are offered to this society by the College of Agriculture at Southwestern and by the city of Lafayette. Besides features that any Chamber of Commerce might be proud of, there is the unique setting for the show. It so happens that the society's test garden lies adjacent to a magnificent colonial home which is used by the college for a Home Man-

agement House for students in Home Economics. The Department of Home Economics annually cooperates with the Iris society by offering this house to it for the tea and show. The girls living in the house are hostesses to the society. Their part is done so graciously that the tea and show have become a tradition among Louisiana Iris fans.

Another tradition is the annual visit to the DeBaillon garden. Mr. Dan DeBaillon has been more than generous in opening his garden to the society at the time of its meeting. Many have enthusiastically exclaimed that a visit to the DeBaillon garden and Iris collection more than repaid the effort expended in attending the meeting.

The discovery of the much talked of Abbeville Reds is another important factor contributing to the rapid increase in interest and development of better varieties of Louisiana Iris. The credit for the discovery goes to Mr. W. B. MacMillan of Abbeville, Louisiana. This group of "super-fulvas" contain not only many individual variations suitable for garden culture, but it also has produced individuals which are proving their worth as parent stock for breeding new and unheard of beauty. The importance of the Abbeville Reds warrants a more detailed description than space permits.

The brief descriptions given here are merely the high points in the memories of one who has collected extensively in the Abbeville area. To begin with, the swamp in which the Abbeville Reds are found is more or less isolated from neighboring swamps by pastures and cultivated fields. While it is quite large, it is by no means as large as the vast swamps of giant blue Irises found in the state. There are no regular *fulvas* found in



Typical Abbeville Red; giganteaerulea type

the swamp and only occasionally is the swamp bordered by patches of *foliosa*. Although *giganticaerulea* is found within a few miles, none are known to be growing with the Abbeville Reds. It seems apparent that the Abbeville Reds are a distinct type that has developed in an isolated swamp of cypress and tupelo.

In the main the Abbeville Reds are of general *fulva* type. All six floral parts tend to droop and their predominating colors are shades of red and yellow. Their large size and vigor of growth set them distinctly apart from the ordinary *fulva*. This group is more than half again as large as the *fulva*. Its leaves are wider and its rhizomes are thicker and longer than the common *fulva*. The claws of the sepals are almost lacking and the petals are unusually wide. The floral parts are often wide enough that they touch one another fully half their

length. This gives them somewhat the appearance of the Jap Iris. Most of the Abbeville Reds have a velvety sheen that is so often lacking in the common *fulva*. Many have a crest (signal patch) although some do not. The size, shape, and color of the crest is quite variable, but a single yellow line crest is the most prevalent. The bulk of the flower stems are over forty inches tall and it is not uncommon to find an occasional clone of Abbeville Iris that will exceed five feet in height. The diameters of blossoms will vary from five and one-half to seven and one-half inches with most of them about six inches.

Practically all of the yellows of the Abbeville group have a muddy cast to them. It is rare enough to find a yellow but it is even rarer to find a clear yellow. Brown is the rarest color and appears to be genetically close to yellow.

In two separate corners of the Abbeville swamp, yellows appear in greater numbers than in the rest of the swamp. One of these places is known as Youngue's Coulee. The other, the Steen swamp, undoubtedly has produced more good yellow Irises than all the rest of the swamps in the state combined. Youngue's Coulee has produced some good yellows, but more important it has produced two brown Irises.

In another section of the Abbeville swamp, known as the Buteaud place, *Iris foliosa* grows within a few feet of the Abbeville Reds. It is in this spot that one of the best purple Irises yet found anywhere was discovered. It is large and generally shaped like the Abbeville Reds, but is growing on a typically *foliosa* zig-zag stem. The circumstantial evidence is that this Iris which has been named Haille Sellassie is a cross between these types. In height of flower stalks and dates of bloom, it is an intermediate between Abbeville Reds and *foliosa*.

The Buteaud place also has produced a number of excellent smokey-wine colored Irises, some of which exhibit a crinkly characteristic that is most pleasing. Although yellows have been found at the Buteaud place, it is most famous for its clear reds. Like the *fulva*, most Abbeville Reds show a coppery hue, which although beautiful, is still not a clean red. A rare few have been collected from the Buteaud place which are almost void of the copper color and are exceptionally red. Invariably the redder the flower the surer it is to have a trace of blue pigment. The blue pigment almost resembles a blue dust in effect. The most comparable effect is the bloom on a ripe Concord grape berry. While this blue pigment is not a dust on the outside of the epidermis, its presence causes the flower to ap-

pear as though such was the case. The color shades found in the Abbeville group of Irises are so numerous that collectors are never sure whether or not they have already seen or collected any particular shade they may happen on.

One of the interesting minor features of the Abbeville group is that they exhibit two different ways in which the buds open. One is a gradual swelling until the bud is almost balloon shaped at which time all six floral parts drop open at one instant. The other mode of opening is similar to that found in gladiolus. The ends of the floral parts separate first as they practically spiral out of the bud stage. Once the flowers have completely opened the two types cannot be differentiated.

A third factor contributing to the popularity of Louisiana Irises is the abundance of unusual and distinctive individual clones. These have been found in profusion in the great fields of natural hybrids scattered throughout the southern half of the state. Since three of the four main types of Louisiana Irises are cross fertile and produce fertile hybrids, the variation found in nature is almost infinite. The wide variation makes a most difficult subject to treat since the variation is not confined to color alone. The size and shape of flower, bloom stalk and foliage are as varied as is color.

At this point it seems wise to very briefly describe the four main types. These types are not necessarily true botanical species as their names imply but are rather, groups of species and hybrids. *Viosca has given a botanical speciation which closely follows these four main types. †Fitzhugh has

*Viosca, Percy, Jr. *The Irises of Southeastern Louisiana*. American Iris Society Bulletin, April, 1935.

†Fitzhugh, William C. *A Proposed Schedule for Louisiana Iris Shows*. Mary Swords DeBaillon Louisiana Iris Society. Mimeographed Bulletin, Number 3, 1942.

given a horticultural show classification which seems to be the most practical grouping yet devised for placing varieties in any category.

In group one, which is referred to as *fulva*, we find Irises of intermediate height on fairly straight stems. The flowers are usually a coppery shade of red to yellow in color. All 6 floral parts droop.

Group two consists of the giant blues and whites which are borne on straight stems. The sepals are typically horizontal and the petals vertical. This type is known as *giganticaerulea*.

Foliosa is the third group. Its flowers are usually blue to white with a great deal of substance of floral parts. It is the dwarf of the Louisiana Irises. The stems of the *foliosa* group may be either fairly straight or zig-zag. The foliage is typically taller than the flower stalk. This group usually grows on upland areas bordering the swamps.

All three of the above are cross fertile and their hybrids are fertile.

The *virginica* group includes *Iris virginica*, and closely allied species. Its flowers are typically a pastel blue or white with rather heavy venation. The leaves of this type have a midrib which is pronounced. All of this group are cross sterile with members of the other three groups.

A listing of the ten, fifty, or even one hundred best varieties is a task of no small magnitude. Such a list would be of little value because it would necessarily include varieties not yet named much less on the market. Perhaps, since variations have greatly contributed to the appeal of this group of plants, the variations of high merit here mentioned will give uninitiated some idea of why otherwise sane people become "Iris Bugs."

‡The varieties, Hallie Sellassie, Peggy Mac, Cousine Houma and an unnamed findling collected by the writer, form a family which is distinctly different than all other types. Besides being alike in conformation, they all have very thick and leathery floral parts. All four are of Abbeville Red extraction and differ from each other primarily in color and crest markings. Hallie Sellassie is royal purple, Peggy Mac is magenta, Cousine Houma is a few shades brighter than crimson and the findling is rose-red. It is interesting to note that an excellent red seedling produced at Southwestern Louisiana Institute this year has the same leathery texture and is also of Abbeville Red extraction. It is a cross between Orchid Bicolor and an Abbeville Red but exhibits the general *giganticaerulea* shape of Orchid Bicolor.

Orchid Bicolor is the most pronounced bicolor collected from the wild. The only bicolor that is more definite is a seedling of unknown parentage, which bloomed this year. Bicolors are exceptionally rare in Louisiana Irises.

Sunburst and Sunset exemplify the group which exhibit huge brilliant radial crests. Both are somewhat *giganticaerulea* in conformation. This type of crest is unforgettable.

Three clones of white flecked with blue have been found which together with MacMillan's Moonlight, a new seedling of yellow flecked with blue, are outstanding in the so-called sky-fleck group. All are of general *giganticaerulea* form.

Edith Dupré, a seedling of George Arceneaux, is an outstanding sample of a blush overcast. It is canary yellow with an orange blush on only the upper surface of the floral parts. This

‡Varieties mentioned have not necessarily been registered with the American Iris Society.

is a cross of Maringouin Yellow and Bazetti, a lovely lavender.

Kramer's Yellow is without doubt one of the best yellows and is unusual in that it is definitely *giganticaerulea* in type. Another yellow of a different type is Brown Stripe, a Younge's Coulee yellow with a distinctive brown stripe down the sepal. This yellow is unusual in that it does not fade and its blossoms last for three full days.

An unnamed seedling of R. Bazet is typical of a small group having the style arms of an contrasting color to the other floral parts. The seedling is dark purple with lemon-colored style arms. Edith Dupré also has the same characteristic.

This season a *foliosa* type and an Abbeville Red were discovered with a crest line running the full length of the sepal. A few collectors have reported the discovery of crests on all six floral parts. The usual situation is for the crests to appear on the sepals only.

Not infrequently varieties will appear with freak blossoms having more than the usual six floral parts. In the future this tendency may be developed by breeding. If so, a complete new series of all colors will be possible.

This sample of variations is but a drop in the bucket, compared to the total amount of desirable variations to be found in Louisiana Irises. It is well to keep in mind that variation alone is not necessarily desirable. Many a person has ordered Louisiana Irises by mail and has been very disappointed that they did not come up to expectations. The vendors of disappointing varieties have in most cases been honest in their advertising but the purchaser has been so unfamiliar with Louisiana Irises that he has expected too much. To illustrate

this point, let us consider the person who buys a collection of say ten different native Louisiana Irises for a nominal or even ridiculously low sum of money, after previously reading of the wonderful variation and beauty of Louisiana Irises. When his collection comes into bloom he finds that he has ten different mediocre varieties, some of which may be so unsuitable to garden culture that they bloom only after several years in his garden. A large share of them may be similar to each other having only minor differences. The vendor did not specify that they were high quality variations nor did he specify that they would be greatly different. The purchaser bought a wild flower collection and probably would have done no better if he had purchased a wild flower collection of ten varieties of violets, spiderworts, or other wild plants.

A common disappointment expressed by those who first became acquainted with Louisiana Irises by mail orders is that the varieties thus obtained are seldom seven feet tall with flowers having diameters of eight inches. Although it is true that some varieties such as Wood-carver's Blue, Ray, Wild Swan and others of *giganticaerulea* extraction may reach these giant proportions under ideal growing conditions, they may not do so under garden conditions. Furthermore many of the best varieties are not this large.

In the southern portion of the United States, Louisiana Irises will do quite well under ordinary garden culture provided plenty of moisture is available during the fall, winter and early spring. Since it is not possible to give them too much water, many are grown in sunken beds which can be easily watered by allowing the garden hose to run in them. Ground-level

beds kept adequately moist are equally satisfactory.

During the summer, the plants may or may not go dormant depending on the amount of moisture available. It is not necessary that they go dormant for them to produce a good crop of flowers. Dormancy is often the summer condition of Irises in the swamps. This is brought about by the drying up of the swamps during July and August. Irises in swamps which retain water the year around do not go completely dormant. Growth is resumed at the time of the fall rains and cooler weather.

I do not know how well Louisiana Irises do in the North. However, I have received reports that they are successfully grown in Massachusetts, and Iowa, and presume that they can be grown in most states. In all probability varieties of *fulva-foliola* extraction will do better in the North since these two species are found growing wild as far north as Missouri.

The uses made of Louisiana Irises are varied and are continually increasing. They are superb for naturalizing along the water's edge and in low places. A well-selected planting should bloom for six weeks. Any single variety will bloom over a period of one to two weeks.

They are an excellent border flower and are especially suited to shady areas which are often difficult to plant. They do well in full sun, a point which has been repeatedly established.

Louisiana Irises are particularly adapted to use as cut flowers. Their graceful stems and foliage make them easy to arrange. The fact that buds will open almost as well on stalks in water as they will grow on the plant, makes them doubly valuable as a cut flower. When the blossoms have

withered they may be removed and new blossoms will continue to open on cut stems for a period of a full week. Individual blossoms usually do not wither until the third day after opening.

For use as corsages, Louisiana Irises compare favorably with orchids. A single blossom is often sufficient for this purpose. The blossoms last for a considerable length of time out of water. Some varieties are able to stand up unusually well under the punishment a corsage receives.

It is unfortunate that the *virginica* group is not as suitable for cut flowers as the other groups since some of the loveliest pastels are found in this group.

The foliage of Louisiana Irises is especially attractive. It is long and graceful and grows in very pleasant shades of green. Occasionally rust attacks the foliage thus spoiling its appearance. There is a marked varietal difference in susceptibility to rust. Rust is always more noticeable on varieties when grown in full sun. One enthusiast wrote me that Louisiana Irises would be grown in his garden even if they never flowered because he could make such good use of the leaves in floral arrangements. He stated that Louisiana Irises were practically evergreen in Washington, D. C.

Another use is that of a toy for amateur hybridizers. With travel restrictions in effect, a large number of collectors who in peace time collected in the wild have turned to breeding to get new and better Irises. The number of amateur hybridizers breeding Louisiana Irises as a hobby has increased to the point where good new seedlings are more common than good new findlings. The increased interest in hybridizing will undoubtedly have

a profound effect on the development of Louisiana Irises.

Very little has been done toward working out the genetics of this interesting Iris group. Probably Dr. George Arceneaux of Houma, Louisiana, has done more of this work than anyone else. He is both a professional geneticist and a very serious Louisiana Iris hobbyist. This happy combination has enabled him to lay fundamental ground work for determining future breeding programs. To him goes the credit for discovering a method of getting seeds to germinate before the first year after planting. He has established that seeds harvested from pods which still show considerable green color will germinate within a very few months after planting, if planted at the time of harvest. While Dr. Arceneaux is primarily in-

terested in the genetics of Louisiana Irises, he has in his breeding work developed some very excellent varieties for garden use.

The actual quantity of rhizomes of the better Louisiana Iris varieties is very small. For this reason, it is probable that many good varieties will become extinct before they find their way to the market. Other varieties held in high esteem now will probably never reach the market because they will be supplanted by superior varieties of a similar appearance. What forms and types Louisiana Irises will eventually take, no one can say. One thing, however, seems to be a safe gamble, and that is that our present swamp Irises of Louisiana are destined to be the foundation stock of a popular new race of garden Irises.

Lafayette, La.



R. M. Senior

Lupinus villosus. N. W. Florida

The Coastal Region of Northwestern Florida

ROBERT M. SENIOR

The native flora of northwestern Florida,—that part running westward from Appalachicola to Pensacola,—is probably unknown to most northern tourists. If he visits Florida at all, and is interested in its flora, he is more likely to observe the vegetation southward from Jacksonville, for it is the Florida peninsula that attracts the winter visitors. It was with particular interest therefore, that in April 1941, we decided to "explore" this northwestern coastal region.

The late Dr. John K. Small, who had spent so much time studying the flora of Florida, had traversed this section in April, 1920, and his account of his botanical discoveries had been an incentive to us to make this trip. "This whole vast country," wrote Dr. Small in 1940, "for sixty years the home of Dr. Chapman, in his time the most active botanist in the South, is still practically unexplored botanically. During the first part of the last century it was held by hostile Indians, and during the latter part it was inaccessible on account of the lack of highways and railroads." Needless to say that today there is a magnificent highway running along the entire northwestern coast of Florida.

Since this was to be new country for us, we took along three reference books,—Chapman's "Flora of the Southeastern States," Dr. Small's "Manual of the Southeastern Flora," and a very small handy book on "Florida Wild Flowers," by Mary Francis Baker. In passing, I might mention that this last named book is perfectly satisfactory for the person desiring to identify the flowers most frequently observed.

Much of this country was a flat coastal plain. Three types of plants were found,—those inhabiting the pine woods extending back from the coast, those of the damp, rather swampy fields, and those growing on the sand along the seashore. The only plants mentioned are those that would attract the eye of a more or less unobservant traveler. Given the proper environment, any one of these plants would grace a Southern garden.

An outstanding plant of the pine woods is *Chaptalia tomentosa*, sometimes called the Pinewoods Daisy. It is about six to ten inches high with white rays, and disk flowers that are of a whitish hue. Bailey, in his Encyclopedia of Horticulture, states that it makes a good border plant. In fact, the flower struck out fancy to such an extent that we brought back seeds, which germinated but died before flowering. Possibly the plant flourishes only in the acid soil of the pinelands.

There is a charming low plant with glistening white flowers that is widely dispersed in Florida. At first glance, it looks as if it would be a delightful rock plant, but anyone who would attempt to lift it, would remember it for some time, for it is covered with stinging hairs that pierce the skin. It is a Spurge, and bears the formidable name of *Cnidoscopus stimulosus*, but the natives aptly call it "Tread Softly."

As you drive along the coastal highway, you are certain to encounter occasional clumps of *Amsonia ciliata*, which I imagine must be grown in some southern gardens,—for it is a very attractive plant, about two feet high, with a long stalk that rises well above the narrow leaves, and bears nu-



R. M. Senior

Lupinus diffusus, near Panama City, Florida

merous bluish star shaped flowers. Mary Francis Baker has an excellent picture of the plant.

When you pass some open marshy meadows, you will very likely stop the car to view the various terrestrial orchids, many of which such as *Pogonia ophioglossoides* you may have seen further north. But the one plant that is bound to catch your eye, since it generally stands well above the marsh grass, is the chocolate-purple pitcher plant, *Sarracenia Drummondii*, which is often three feet tall. And then, if you wander to near by damp pine woods, you may find the fascinating *Sarracenia flava*, with a large light yellow flower, possibly four inches broad, standing erect on a stem that may be as high as three feet. The large "pitchers" are also a source of interest. Of course you know how they trap the insects, which enter the pitcher, are unable to extricate themselves, are dis-

solved in a sweetish secretion, and thus serve as food for the plant. Just open the pitcher and examine the base, where you will no doubt find the remains of its victims. We left this locality regretting that we could not hope to raise this plant in our northern home.

Anyone who sees the Atamasco Lily for the first time, with its pure white flowers on leafless stalks, that are possibly seven to twelve inches long, is likely to remember the experience, for it is a beautiful flower, and certainly worth cultivating. We have a couple of these plants in pots, which we place in cold frame over the winter, and they bloom year after year. One Fall we placed a bulb in the open ground, and it survived and bloomed the following Spring, but during the ensuing summer, it disappeared. We are now raising some plants from seed, in the hope

(Continued on page 202)

Minor Species of European Lilies

GEORGE L. SLATE

During the last 15 years the writer has grown or attempted to grow as many species and varieties of lilies as could be obtained from dealers and collectors in various regions of the world. This was done to determine whether some of the lesser known species could contribute anything to a lily breeding program. It was also desired to learn something about their characteristics and cultural requirements.

The lesser known or minor species of lilies have never become common in gardens because they lack certain characteristics which good garden plants must have. Some are lacking in beauty, others are difficult to grow because of susceptibility to mosaic, or basal rot, while others propagate so slowly that commercial growers will not bother with them. A few are not hardy and a few are scarce in the wild or grow so far away that bulbs cannot be gotten to this country in good condition.

Both seeds and bulbs have been imported. The former are often not true to name, are sometimes mixed and occasionally lacking in viability. The bulbs too often arrive in poor condition. However, if one is persistent eventually nearly all the lilies known may be secured from one source or another.

Many of the species have been grown on two soil types, one a clay loam containing considerable lime and with a pH of 7.5 to 8.00, the other a fine sandy loam containing no lime, but only slightly acid. On the clay loam many of the lilies have been grown in a cheese cloth house which provided light shade. When the seedlings were transplanted from the flats to the field, half of each lot was planted on the two soil types. Straw or sawdust mulches

have been used in some cases to control weeds and conserve moisture.

The European species of lilies have several characteristics in common. In general they seem to be somewhat happier on a clay loam soil than on the sandy loam. As a group they are apparently much more susceptible to basal rot than the lilies of other regions of the world. Except with *Lilium bulbiferum* and *L. candidum* the seedling does not appear above ground until the second spring and the period from seed planting until the seedling flowers is rather long, usually 5 or 6 years. In general this group is hardly suitable for the beginner with lilies.

L. carniolicum is a typical Martagon with its pendulous red flowers and strong reflexed petals. The color is a rather dull brick red, much less attractive than the brilliant red of *L. chalcidonicum* to which it is related. The odor is unpleasant. The writer's plants have not grown over 18 inches high and have borne up to 5 flowers. It is the first of all lilies to bloom at Geneva, usually starting about May 25th and for that reason it is retained to start the lily season. *L. carniolicum* ranges from northern Italy, western Roumania, and Hungary to southern Yugoslavia where it occurs in well-drained loamy soils which contain lime. It has not been especially difficult to grow, but its slowness requires much patience which is not well rewarded when the plant at last comes to flower.

The yellow flowered *L. carniolicum* subsp. *Jankae* is even less exciting and rarely attains a foot in height with two small flowers which open at the same time as *L. carniolicum*. It is not worth a place in the garden. Possibly a thorough search of the region where these

two lilies grow wild would yield more vigorous and floriferous plants bearing flowers of a brighter color. The writer's efforts to produce superior individuals by the raising of seedlings have not been successful thus far.

L. pyrenaicum is a very old garden plant, having been described by Parkinson in 1629. It seems to grow well in England where it is an old garden favorite. It is not very persistent with the writer and seedlings are very slow to bloom. It often sends up a barren stem that with any other lily would produce flowers. The flowers when produced are small, greenish yellow with black dots and not over 3 to 5 in number, and are of the typical Martagon shape. It blooms soon after *L. carniolicum* and has the same unpleasant odor. It is a native of the Pyrenees where it grows in moist loamy soils. When crossed with *L. carniolicum* plump seed capsules were produced, but none of the seeds germinated.

L. pomponium has been highly praised by European authorities, but its performance in the writer's garden does not recommend it. It seems to be very susceptible to basal rot and unless special steps are taken to control this malady one may have difficulty in keeping *L. pomponium*. The flowers are an attractive bright red with very flat perianth segments but are not equal in beauty to those of *L. pumilum* which flowers nearly at the same time. The odor is unpleasant. The plants are easily identified by the narrow silver-margined leaves which twist from left to right in a characteristic manner that is easily remembered when one has seen it. *L. pomponium* is a native of the Maritime Alps where it grows between the rocks in full sun on steep southern slopes. There are so many other good lilies that it is hardly worth while trying to keep this species alive and happy.

L. chalcidonicum is much handsomer than the three preceding species to which it is related. The nodding flowers with strongly reflexed perianth segments are a brilliant, intense scarlet color that attracts the eye as far as they may be seen. The plants grow 3 to 4 feet in height and bear from 3 to 8 flowers. The foliage suggests that of *L. candidum*, being larger at the base of the stem and smaller and clasping above. The species is susceptible to basal rot and botrytis; requiring thorough spraying with Bordeaux mixture to control the latter disease. It prefers the heavier soils and is rather slow to become established. Well-established plants had better be left alone. Seedlings grow slowly but are worth waiting for as they are free from mosaic. *L. chalcidonicum* is one of the reputed parents of *L. testaceum*, and as such is a useful species for the breeder. It is native in southern Greece where it grows on northern slopes in soils rich in leafmold.

L. monadelphum is one of the handsomest yellow lilies grown by the writer. If good bulbs were available in quantity at reasonable prices and could be established readily this species would be widely grown. The nodding bell-shaped flowers are a rich deep yellow with a few small black spots and are fragrant. It flowers early in June. The stems grew to 4 feet in height and good specimens bear a dozen flowers or more. It is slow to become established from purchased bulbs and seedlings grow very, very slowly. One needs much patience to wait for seedling bulbs to attain full flowering size. The plants are susceptible to mosaic and are fairly tolerant of the virus. *L. monadelphum* is native in the northern Caucasian region. It has done well on a clay loam in the light shade of a cloth house.

L. Szovitsianum was formerly de-

scribed as a variety of *L. monadelphum*, but botanists now consider it to be a distinct species. The individual flowers of this lily are very handsome but in the seedlings raised by the writer the flowers are somewhat crowded so that the general effect is unsatisfactory. If they were as nicely placed as in a good specimen of *L. monadelphum* this would be a very attractive lily. The color is straw yellow and the perianth segments more reflexed than with *L. monadelphum*. It flowers in early June and is fragrant. This species has a more southerly range than the preceding being found in southern Georgia in Russia, Azerbaijan and Armenia where it grows in the edges of woodland. It is happier in a clay loam than in a sandy loam. Seedlings grow as slowly as those of *L. monadelphum* and mature bulbs are slow to become established.

The upright lilies are represented in Europe only by *L. bulbiferum* and its subspecies *croceum*, the latter a handsome and well-known lily. *L. bulbiferum* produces several bright red, erect, cup-shaped flowers which open in mid-June. Small, round greenish bulbils are borne in the axils of the leaves and may be used for propagation. It is a moderately attractive lily and worth having in the garden of the specialist. Some of the writer's plants have not flowered to any extent and there is evidently a tendency to non-flowering in the species. Kerner and Oliver state that in several valleys of

the central Alps it fails to flower, depending upon its bulbils for propagation. The writer has had non-flowering plants which may have come from this region. Seedlings have flowered more freely. However, all stocks of this lily except one plant, failed to come up this spring.

The martagons are a valuable group of lilies. *L. Martagon* and its variety *album* are too well-known to include in this article, but the dark wine red variety *Cattaniae*, is an unusual and attractive lily well worth a place in the garden. The plants are much taller than the ordinary Martagon, flower more freely and bear larger flowers. It is tall and stately in habit and appears to better advantage in a colony of a dozen or more plants than where growing singly. All of the Martagons are apparently very resistant to lily mosaic, but very susceptible to basal rot. Imported bulbs failed to become established, but seedlings have done much better. However, a few are lost each year from basal rot so that replacements must be kept coming along. Some hybrids between this lily and Marhan flowered this year for the first time and were very attractive plants. Their resistance to basal rot remains to be determined. *L. Martagon Cattaniae* has been hybridized with *L. Hansonii* on various occasions but the hybrids seen by the writer have not been of much merit. Plants in a clay loam soil have done better than plants growing in a sandy loam.

Shrubs that Herald the Coming of Spring

HELEN M. FOX

Gardeners who live in a climate where winter is cold, the ground white with snow and the bare branches of trees are outlined against pale blue or grey skies, delight in prolonging the season of bloom, extending it as far as possible into autumn and starting it early before spring has actually come.

A few attractive shrubs open their flowers so early while the landscape still wears a wintry look. They come before elm branches are filmy with brown-green bloom, before maples are tinted red or green with their airy blossoms and while the grass still looks brown and dried. These shrubs are exotics and though they have been transplanted to a climate far different from that of their native land, they follow their inherited patterns and bloom in the frosted air of late winter. Among the early bloomers, the ones planted infrequently are *Hamamelis mollis*, *Abeliophyllum distichum*, *Corylopsis glabrescens* and *Lonicera praeflorens*. More often planted than the preceding are *Rhododendron mucronulatum* and *Magnolia stellata*. Others that come a little later are so well known they will not be described here. They are *Cornus mas*, *Lonicera fragrantissima* and the forsythias.

In southern New York the tall broad-leaved evergreens, such as *Rhododendrons*, do not look glossy and lush in winter as they do further south so they are not attractive as background shrubs. Therefore early flowering shrubs are placed where their colorful branches are outlined against broad-leaved plants such as *Pieris* and *Kalmia* or against yews, pines or hemlocks. They are placed to the south of these evergreens because ice frequently lin-

gers on the north and shaded side. Under them can be a carpet of *Vinca minor* and under the latest to bloom, *Magnolia stellata* and *Rhododendron mucronulatum*, can be drifts of snowdrops, crocuses, chionodoxas and scillas. Sometimes the magnolia comes late enough to bloom with *Tulipa Kaufmanniana*.

Members of the witch hazel family seem to choose the chilly air either of autumn or late winter in which to bloom. The native *Hamamelis vernalis* is not pretty enough for the garden but *Hamamelis mollis* from China is exceedingly attractive. Its outstanding charm is the strong pleasing fragrance, with something of magnolia, that pervades the cold air, even sometimes when the ground is covered with snow. A striking feature about this witch hazel is that the dried leaves persist all winter and do not fall off until the new leaf buds begin to expand, so the flowers bloom amid them. The clusters of starry yellow blossoms with their thin strap-like petals, the flowers bunched like little tassels and set amid the withered leaves on woolly grey branches, suggest the picture of a similar shrub in an ancient Chinese garden and a mandarin in long blue robe bending to smell them and walking into the garden house to write a poem about this floral expression of the Chinese veneration of old age. Indoors the branches with their highly fragrant flowers are attractive in arrangements. The leaves can be left on to express the coming of spring while winter still persists, or can be stripped off, if one were impatient for youth, bloom and spring without any reminder of winter.

In its native land the shrub grows to

30 feet and can be trained to a tree-like shape. It is evidently a slow grower, for in my garden after five years it is not much over eight feet high. The top is rounded and grey-brown branches marked with wart-like lenticels grow up and out. When young the branches are so woolly they look as if they needed dusting. The unopened leaf buds are woolly and later when the leaves expand they, too, are soft and furry, from hairiness and a very light green on the under side, with crinkly margins, that are slightly serrate and hairy. Their shape is broadly obovate, mucronate at the tip with the base rounded into two lobes on either side of a central vein from which the other veins branch. The bracts subtending the leaves are tan and velvety. The leaves measure about four inches in length and turn a bright yellow late in autumn. The flowers have very short stalks and are crowded into clusters of 4-5. They have four brown-red tiny sepals and four petals that grow in the space between each sepal but above them. The petals are light yellow with a roseate base, the same color as the rosy inside of the calyx and are one inch long. Inside the flower, four short stamens are darkly colored like the sepals.

For several months before it happens, the buds on another member of the witch hazel family, *Corylopsis glabrescens* (formerly called *gotoana*) look as if they would open momentarily. At last, the end of March or early April the pendulous racemes lengthen to two inches and hang like many tiered Chinese lanterns composed of flowers of a greenish yellow on dark brown branches marked with lenticels of tiny lines. In North Eastern Asia where the shrub is native it grows to 18 feet, but in my garden it is eight feet high. From the flowers, appropriately, comes the scent of primroses, for both are the same color. Calyx lobes are short, the

five petals rounded, slightly ruffled and a little longer than the five stamens. Sepals, petals and overlapping bracts from the base of the flower are the same greenish yellow. The leaves open after the flowers have gone and grow out on the side of the racemes from bracts subtending them. The stalks are vermilion as are little bracts subtending them, just the right dash of color to harmonize with the chartreuse green tone suffusing the young leaves. The leaves are pointed at the tips and the base rounded into two lobes. The upper surface has a few hairs on it. Along the margins are thorn-like projections to emphasize the teeth, and the surface between the teeth, and the surface between the feather veining is raised. By mid May the leaves measure three inches in length. The branches of this *Corylopsis* are straight and do not twist as do those of *spicata* and the flowers are not as thick and stubby. *Glabrescens* is more floriferous than *Corylopsis pauciflora*, in fact it is the best looking of the three—to my taste. According to Dr. Rehder the plant was introduced into gardens in 1905. I raised my plant from seeds given to me by the director of Highland Park in Rochester. In my garden *Corylopsis glabrescens* (it will grow in slight shade) stands before a forsythia bush bare of bloom at first. Since *Corylopsis* holds its flowers longer than most shrubs the butter-yellow blossoms of forsythia open before it has faded and make a good combination of color with the paler, greener-yellow flowers. Branches of this shrub can be forced indoors and look well in Chinese pottery containers.

From the Arnold Arboretum in 1934 to my garden came a bush of *Abeliophyllum distichum*, a member of the olive family, to which also belongs forsythia, both native to Korea where the hills in spring must be glorious with the wealth of handsome flowering

shrubs. The buds open on leafless branches the end of March or early April and are almost always injured by frost, as far north as New York. But for the short time they last and for forcing indoors at the end of December or early January they are well worth growing. The wand-like branches are square, bare of leaves and are closely studded with clusters of little bell-like white blossoms faintly tinted with rose and having a delicate scent. At first sight they look like a deutzia, but when examined closely look like tiny forsythia blossoms one-half inch long. The unopened buds are cream-colored in contrast to very dark brown flower stalks and calyces. The flowers on short stalks grow from the axils of last year's branches. The shrub is attractive, grows to three feet, and received an Award of Merit from the Royal Horticultural Society in 1937, thirteen years after being introduced into cultivation. The leaves are numerous, similar to the leaves of its relatives, the lilacs. They grow in pairs joined at their stalks and below these pairs are smaller leaves. Their margins are entire, they are ovate, terminate in a point and are rounded at the base, and are slightly hairy on both surfaces. The longest are $2\frac{1}{8}$ inches long and $1\frac{1}{2}$ inches across.

Somehow it is thrilling to have a shrub waft an unusually sweet scent when the only other sensation for the nose is generally cold, crisp air. Three of the shrubby honeysuckles open very early. They are not particularly handsome but are desirable for their fragrance early in the season and later for their colorful sometimes translucent fruits. These early bloomers are *Lonicera praeflorens*, *L. Standishii* and *L. fragrantissima*. *Lonicera praeflorens* opens the first of the three, generally early in April before the leaves are out and is a twiggy shrub with grey-brown

furry branches scaling in threads. The flowers in pairs are violet-pink and measure less than one-half inch, and the filaments before they ripen are a roseate salmon that enhance the color scheme. The young branches are hairy and tinted dark red magenta. In its native Korea and Manchuria whence it was introduced in 1917 the shrub reaches six feet. My specimen came from the Arnold Arboretum in 1936 and is four feet high. The leaves in opposite pairs on short stalks are attractive for they look and feel velvety. They are wider below the center, come to a sudden point at the tip, are rounded at the base and measure about $2\frac{1}{2}$ inches in length and $1\frac{3}{4}$ inches across. They are so close on the branches and to each other they sometimes overlap and give the shrub a lush, handsome appearance that makes it one of the best looking *Loniceras* when not in bloom.

Through bare branches at the base of a slope where it stands out against a clump of *Pieris japonica* is a rosy violet cloudlet of bloom, startling amid the greys and browns of the winter landscape, is *Rhododendron mucronulatum*. In my garden it is a slender shrub about three feet high but elsewhere and in Northwestern Asia where it is native, and whence it came in 1882, it grows to six feet. The bare branches, woody, brittle and scaly, with the bark peeled in places, are now glorified by the delicately textured blossoms about $1\frac{1}{2}$ inches across, shaped like deep saucers with rounded petals united at the base. Subtending the flowers are overlapping green-brown bracts with netted surfaces. Three to six blossoms grow in a cluster at the tips of branches. On the outside of the petals are fine hairs that catch the sun and produce a glistening effect over the violet surfaces. The flower stalks with dark purple tinting have green gland-like dots on them



Walker Beebe Wilder

Magnolia stellata

and there are similar dots on the calyx. The pistil and stamens of unequal lengths curve out and away from the flower giving it a look of action. The pistil is longer than the stamens and dark rose at the base, paling to faint lavender. The filaments have silky hairs below the centre and are pale colored as are the anthers. After the flowers fall the leaves come out slowly, they are narrow with undulate surfaces, somewhat twisted at the tip, with dot like glands above and more of them on the under surface. They are pointed at the tip and narrow to a short stalk at the base, and are wider above the centre, and about $2\frac{1}{4}$ inches long and one across. They turn yellow-bronze in the autumn.

A low tree from Japan introduced in 1862 is *Magnolia stellata*. The starry white blossoms open against the sky and send forth a heady fragrance far across the garden. The bark is an ele-

gant smooth grey, the flower buds are furry, and the flower stalks, too, are fuzzy. The flowers subtended by bracts of bronze tinted jade-green are three inches or more across, have petals and sepals alike, numbering nine or more. They are strap-shaped, slightly convex on the upper end and terminate in a rounded oval. The stamens are cream-colored and spiral, the pistils green with cream-colored stigmas. The glossy leaves coming after the flowers have gone make a handsome picture all summer in combination with the grey bark. They are smooth, entire and obovate, rounded at the tip and mucronate. The veins branch out from a central vein, feather fashion, and the leaves are three or more inches long. The flowers are frequently injured by early frost or late snow but in seasons where this does not happen or for a short time before the catastrophe occurs the trees are surpassingly lovely.

Peekskill, N. Y.

THE COASTAL REGION OF NORTHWESTERN FLORIDA

(Continued from page 194)

that we may develop a more hardy strain.

There are two species of Lupine growing on the coast, which differ particularly from our cultivated Lupines in that their leaves are entirely *Lupinus villosus* also differs in color from any wild Lupine that I have ever seen. The delightful flowers are a combination of

cream color and crimson.

L. diffusus we found growing on the seashore in sand so white that in the sunshine it dazzled the eye. Here were often huge clumps with masses of blue flowers in long terminal racemes. It was certainly the most attractive sand loving plant that we encountered on the trip.

Disease-Resistant and Hardy Varieties of Vegetables

VICTOR R. BOSWELL

Agricultural Research Administration, U. S. Department of Agriculture

(Continued)

In this, the third, part of this "continued story" on disease-resistant and hardy varieties of vegetables, the vine crops are considered. In general, it will be noted, the several crops are being dealt with in alphabetical order as a matter of convenience and to facilitate later reference to any particular one. That order of treatment is interrupted here, however, to group the cucumbers, melons, squashes, and pumpkins into a single article because of the similarities of the species and of the troubles that they encounter. These plants are so commonly grown over most of our country that one might expect them to be subject to no serious troubles of adaptability or disease. On the contrary, they are comparatively delicate plants that are readily damaged by a number of insects and diseases and by unfavorable soil and climate. All of them are quite frost-tender.

Cucumber

Most varieties of cucumber are highly susceptible to a large number of diseases and to damage by a number of insects. For many years plant pathologists and plant breeders in America have tested all obtainable varieties from all over the world trying to find some worth-while degree of tolerance or resistance to one or more of the following diseases: mosaic, downy mildew, bacterial wilt, anthracnose. Out of the thousands of items observed, only two varieties, Chinese Long and Tokyo Long Green, have shown any appreciable resistance to any of those diseases. Both of these varieties are of oriental

origin and are obtainable from a few commercial sources in this country. Chinese Long is a very long, crooked cucumber of no commercial value but it has good resistance to mosaic and some tolerance to downy mildew. Tokyo Long Green is of more conventional appearance, still not desirable commercially, and is also resistant to mosaic and downy mildew. Both, unfortunately, are susceptible to bacterial wilt, as are all sorts studied so far. Nevertheless, Chinese Long and Tokyo Long Green have been used extensively as parents in efforts to breed new sorts having high quality, attractiveness, and disease resistance.

Shamrock is a mosaic-resistant slicing variety developed by the Iowa Agricultural Experiment Station, that is now commercially available. The experiment station of the University of Puerto Rico has produced a slicing variety named Puerto Rico 39 that is resistant to the strains of downy mildew that are found in Puerto Rico, but it appears susceptible in at least some parts of the United States. Shamrock and Puerto Rico 39 both are susceptible to bacterial wilt.

Two new, short-fruited varieties appear promising as disease-resistant pickling cucumbers. The Maine Agricultural Experiment Station about 10 years ago distributed Maine No. 2, a black-spined sort resistant to scab, for use in home gardens. Scab is generally troublesome only in the Northeast, and Maine No. 2 is recommended only where scab is prevalent. It is not notably resistant to other diseases and its

only superiority is scab resistance. The H. J. Heinz Company and the Ohio Agricultural Experiment Station have collaborated in producing a mosaic-resistant pickling cucumber named Ohio 31. This is not yet commercially available (1944) but it should be in the near future.

Despite the very considerable amount of work done by many agencies, it must be recognized that only a little success has been attained in breeding disease-resistant cucumbers. No variety is immune to any disease that commonly attacks the crop, and none shows worthwhile resistance to bacterial wilt—a disease that may quickly kill the plants regardless of their resistance to other diseases.

Since the cucumber is of tropical or subtropical origin it is to be expected that most varieties are poorly adapted to the northernmost part of this country. Plant breeders at the State experiment stations in North Dakota and Minnesota have succeeded in developing sorts that are early and better adapted to the relatively low mean temperatures and short seasons of those states. Mincu, developed in Minnesota, is small, short, and thick, about 4½ by 2 inches, and can be harvested in about 45 days from seeding in contrast to most varieties that require 60 to 75 days.

The Midget or Hill cucumber from North Dakota has an extremely compact type of plant that is adapted to the short dry summers of the Northern Great Plains. It is of only average earliness (about 70 days) but was developed for adaptability to the rigorous climate of the Dakotas. Another very early variety of interest to northern gardeners, is Mandarin. This produces very slender fruits about 10 by 1½ inches, in 45 to 50 days. Extra Early Siberian produces short, thick, fruits of the pickling type in about 45 to 50 days.

All four of these last-named varieties are available from seedsmen who serve the north-central part of the country.

Although the cucumber requires warm weather for best development, it generally does not thrive and continue to bear over a long period in summer in our own Southern States. It is therefore a bit surprising to find that certain varieties that do none too well in our own southern summers have been reported as highly successful when introduced into certain tropical islands of the Pacific. This is probably due in part to the fact that with no cucumbers grown in those places in the past, few specific pests and diseases have had a chance to become built up to high intensity. There is the further fact that maximum summer temperatures in many of our inland districts are considerably higher than in certain relatively small tropical islands where sea winds have a modifying influence.

Muskmelons

By way of introduction to this section, correct American usage of the terms "cantaloupe" and "muskmelon" may well be clarified since there is rather widespread confusion about them. All so-called cantaloupes, using the word in the popular American sense, are muskmelons. They are small, netted muskmelons and include a group of varieties that is characterized roughly by small size (up to about 4 pounds), oval to spherical shape, heavily netted rind, and a few more or less (usually less) distinct furrows extending from pole to pole. Varieties of the Rocky Ford type, the various strains of Netted Gem, Pollock, Hale Best, and Perfecto are properly called cantaloupes. Neither the very large, netted, or heavily ribbed varieties, such as Tip Top, Bender Surprise, and Montreal (5 to 7 pounds), nor the odd-shaped varieties, such as Banana, are cantaloupes, although they are muskmelons.

Muskmelons with non-netted rinds, such as Honey Dew and Casaba, are rarely confused with the so-called cantaloupe. There is an unfortunate tendency to use the word "melon" as a synonym for "muskmelon" and in some instances as a synonym for only muskmelons other than varieties of the cantaloupe type. This should be corrected and the more definite term "muskmelon" restored to commoner use to avoid still further confusion from the loose usage of "melon" in referring to watermelons.

Muskmelons, like cucumbers, are susceptible to many diseases and insects. Powdery mildew is probably the most destructive muskmelon disease, but fortunately for most gardeners, it is generally very serious only in the southwestern part of the country. Two forms of the fungus causing the disease are known, and identified simply as Race 1 and Race 2. A number of varieties of muskmelon resistant to Race 1 of the mildew have been bred and introduced in the past dozen years by the U. S. Department of Agriculture and the California Agricultural Experiment Station. The mildew resistance was obtained from a "wild," virtually inedible type of muskmelon from India. Powdery Mildew Resistant Cantaloupe No. 45 was introduced in 1935, superseding in some less satisfactory strains. It is similar to Hale Best except for its high resistance to Race 1 of powdery mildew. Next, resistant types of Honey Dew and of Persian were developed. Powdery-Mildew Resistant Honey Dew No. 60 is suitable for home and local market gardens in the Southwest where only Race 1 of the mildew fungus causes trouble, but its shipping qualities are not entirely satisfactory. Baby Persian (released in 1940) is a resistant, small strain of Persian having very high quality. Since the development of

these three kinds resistant to Race 1, Race 2 of the fungus appeared and caused serious damage to the varieties resistant to Race 1 as well as those susceptible to it. In 1943 a new cantaloupe of the Hale Best type was released that is resistant to both races of mildew—it is called Powdery Mildew Resistant Cantaloupe No. 5. Practically the entire cantaloupe crop of the Imperial Valley will be planted to this new variety in 1945.

It should be borne in mind that powdery mildew, which almost destroyed the muskmelon industry of the Imperial Valley about 10 years ago, is quite different from downy mildew. This latter disease is much more widespread and is serious in the humid parts of the country. At this time (1944) no commercially obtainable varieties show any great resistance to downy mildew, although various research agencies are making some progress in breeding for resistance to it.

In the States in the northern half of the country muskmelons are frequently attacked by fusarium wilt, a soil-borne fungus that invades the plant through the roots and causes its gradual collapse. Golden Gopher is a small, ribbed, oval, orange-fleshed variety, developed by the Minnesota Agricultural Experiment Station, that is highly resistant to fusarium wilt and adapted to the north-central part of the country. Cornell University has developed a fusarium-wilt-resistant muskmelon named Iroquois, a large, ribbed sort of the general character of Bender Surprise. The old well-known varieties Burrell Gem, Paul Rose, and Pollock 10-25 have been reported as possessing a fair tolerance to fusarium wilt.

The netted and ribbed types of muskmelon including cantaloupes are better adapted to the cooler and more humid parts of the country than are the smooth "winter" sorts like Honey Dew

and Casaba. Although Persian is netted it has the same climatic requirements as Honey Dew and Casaba. These all require bright, hot weather with a dry atmosphere, as in our irrigated districts of the West. They are called winter melons because of their relatively long keeping qualities. In the 1930's Honey Dew melons grown in Chile were shipped to markets in the United States.

Squash and Pumpkin

Many observers have stated that some of the best yields and certainly the best quality of various crops are to be obtained when they are grown well toward the northern limits of their principal region of culture. While this may not be true for all crop plants it appears to be true for a great many. It is sometimes a little surprising that species of tropical origin thrive so well in our northern States. The behavior of squashes and pumpkins is an example. This can probably be explained not by any especially favorable direct effect of the northern temperature and rainfall upon the plants, but by the fact that the plants' enemies have less opportunity to flourish. Squash and pumpkin are much more seriously beset by insects and disease in the South than in the North, while summer temperatures in the North are high enough for good growth. Thus, in this case, it seems as difficult to find varieties that are hardy to the adversities of a warm climate, as to find some that are adapted to short seasons and relatively cool temperatures.

No variety of squash or pumpkin plant will stand frost, but varieties have been produced that mature so quickly that they are successful in the northernmost districts and at relatively high altitudes of the Great Plains or of intermountain districts. The little green-mottled Mandan squash was derived from stocks grown by Indians of the

northern plains. It is very early (about 50 days), small, somewhat resistant to drought, and does not require high mean temperature for good growth. It is of only fair quality, but in districts where other varieties are not adapted, it is decidedly worth growing. The North Dakota Experiment Station developed a very early variety named Dakota from a cross between Mandan and Table Queen. The quality is better than in Mandan and it is ready for use in about 50 days. A very early pumpkin (about 85 days) named Early Cheyenne has been developed by the U. S. Department of Agriculture for the high plains country. It is very small, weighing only 2½ to 3 pounds, but it is very prolific. Fort Berthold, a larger and later pumpkin, obtained from the plains Indians is of about the same size and season as Small Sugar, but is reported to be unusually hardy in northern locations or at high elevation.

Perhaps the most interesting accomplishment in breeding squash for specific adaptability and use was the production of the Butercup squash by the North Dakota experiment station. Because of the limitations of climate some popular vegetables cannot be grown successfully in the northern plains, among them the sweetpotato. There appeared to be a definite need for a variety of vegetables that would produce good yields of a food having many of the desirable properties of the sweetpotato such as high total solids, high carbohydrates, appealing flavor, rich yellow flesh color, good storage qualities, and adaptability for baking, making pies and other preparations for the table. The Butercup squash was developed as a substitute for sweetpotatoes to a high, dry, country with a season too short and cool for sweetpotatoes. It is a small "turban" squash, early, productive, and surprisingly

similar to sweetpotato in composition and culinary properties.

African is a comparatively recent introduction into this country that is reported to be well adapted to southern conditions and to possess some resistance to damage by the stalk borer.

Since squash and pumpkin are comparatively minor crops in this country, they have not been subjects of as intensive breeding for disease resistance as many more important crops have been; no specific disease resistance has been purposefully bred into new kinds. It so happens, however, that a number of varieties have been found resistant to curly-top, a virus disease that affects many crops in certain western areas. Susceptible varieties of squash and pumpkin may be destroyed completely by curly-top in epidemic years. Of the squashes, Marblehead (a winter type) and Long White Bush and some strains of Vegetable Marrow are resistant. Among pumpkins Big Tom, the various strains of Cushaw, the Large Cheese and Tennessee Sweetpotato are all resistant. With this range of varieties to choose from it is possible to grow at least one of each of the important seasonal types despite the occurrence of curly-top. The Early Cheyenne variety referred to above seems to be resistant to certain diseases or adverse conditions that damage many varieties under the western irrigation conditions where they have been compared with Early Cheyenne. Cheyenne Bush pumpkin is especially adapted to short cool seasons.

Watermelon

The growing and eating of watermelons is so intimately associated with the South that not everyone realizes that this plant can also be grown successfully rather far to the northward. Generations ago the culture of watermelons had been extended into the cooler parts of Russia and it is from

small-fruited northern forms grown in such regions that our present small, very early watermelons were derived. A number of articles in the popular press in recent years have implied that small watermelons were something new or about to be introduced for the first time, but several varieties for northern culture have been available for many years.

Most varieties of watermelon require 80 to 100 days of warm weather to produce ripe fruit and will not thrive in the northernmost parts of the country. Commercial seedsmen and the state experiment stations of North Dakota and of Minnesota, however, have introduced a number of kinds suited to relatively cool, short summers. All of them are small and round, or nearly so, weighing around 8 to 12 pounds. Dakota Sweet, developed at the North Dakota Experiment Station, is very early, requiring but 65 to 70 days, and is of good quality when grown in the north. Northern Sweet, from the Minnesota Experiment Station, is about the same size and requires 70 to 75 days. Arikara is a very early, hardy, sort with a quality described as fair by its introducer.

Several other small varieties of the Siberian type adapted to the North and listed as maturing in 75 to 80 days are not much earlier than some varieties that are grown in the South; however, they still are more likely to succeed in the North than some of the large, better known kinds. Sweet Siberian, and Ranger are two of the names of these that appear in current catalogs.

It will be recalled from the first article of this series that one of the first efforts to breed a disease-resistant variety of a horticultural plant involved watermelon, and resulted in the fusarium-wilt-resistant variety Conqueror in 1911. That variety is probably no longer obtainable anywhere be-

cause it has been superseded by many better ones produced by the State experiment stations of California, Iowa, and Florida, or introduced from abroad.

The Iowa Experiment Station has developed many wilt-resistant varieties, most of which have been superseded by Kleckley No. 6 (similar to its parent variety, Kleckley Sweet) and Stone Mountain No. 5, a resistant sort that is earlier and smaller than Stone Mountain. These varieties are adapted to the Middle West. The Florida Experiment Station has developed several resistant strains suitable for the South. The best known of these is Leesburg, a variety

developed from Kleckley Sweet, but somewhat shorter and lighter colored than the parent variety. For western conditions the California Experiment Station has developed Klondike R7, a resistant strain of Klondike. The Hawkesbury is a large, long, light green, highly resistant variety that is well adapted in the South, and that was produced by the Australian Department of Agriculture. Thurmond Grey is another resistant, long, light green sort. This list of important resistant varieties includes one or more kinds adapted to each of the regions of this country where damage from fursarium wilt is serious.

The Illusive Ivy—IX

ALFRED BATES

DERIVATION OF NAME

When Linnæus retained the name *Hedera* for this genus he was keeping a plant-name which had not only been used by the earlier botanists and herbalists but had also been given to this plant by Pliny and Vergil. Various derivations of the word have been suggested by writers on the subject.

The earliest explanation which I have been able to find was by Philip Miller in his *Gardener's and Botanist's Dictionary*, Vol. I Part II, 1707; "*Hedera* (Ab edendo, quod arbores exedit; because it wastes and devours trees.—A very doubtful etymology; but better than another, ab hærendo.)" Later in his *Gardener's Dictionary* (7th edition, 1759; neither book is page numbered) which is a condensed version of his first book and for gardeners only, he omits any reference to the etymology.

Next in chronological order comes Sowerby's *English Botany* published in thirty-six volumes from 1790 to 1814; I have not seen this edition and am taking for granted that the subject matter was not altered in the edition from which the following is cited. "The derivation of the name of this genus of plants is variously given. One author says it was conferred on the plant by Pliny, and ingeniously conjectured to be a corruption of *adhæret*, it adheres—or clings to other trees. Another explanation is that it has been derived from *hedra*, which means *cord* in Celtic. A third gives the origin from *hiedra* or heath, the Scotch heather, because it was used for fuel." (Vol. IV, p. 181; 3rd edition, 1877.)

In J. C. Loudon's *Arboretum et Fruticetum Britannicum* (1838) this statement occurs, "Various etymologies have been proposed for the word

Hedera; but the most probable supposition appears to be, that it is derived from the Celtic word *hedira*, a cord. The English word Ivy is derived from the Celtic word, *iw*, green." (Vol. II, p. 999; 1838.)

Joseph Paxton's Botanical Dictionary of 1840 follows Loudon; "The name appears to be derived from *hedra* a Celtic word signifying a cord, and the English name, Ivy, is derived from *iw*, a word in the same language, signifying green, from its being always green." (p. 275; edition of 1868—first edition not seen.)

Johnson's Gardeners' Dictionary of 1846 also follows the Celtic tradition with, "*Hedra* is the Celtic word for cord, alluding to the ivy's stems." ("New Edition" of 1917; p. 414—first edition not seen.)

Richard Deakin seems to be the first to completely ignore the Celtic derivation theory for in Florigraphia Britannica he states, "Name said to be from *haereo*, to stick, because it attaches itself to trees and old walls." (Vol. I, p. 330; 1857.) Note that he says "old" walls; might not the complaint that ivies do not easily attach themselves to buildings be because the stone or brick had not weathered?

Hibberd, in 1858, in Vol. I, p. 134 of the Floral World and Garden Guide, says that "*Hedera* takes its name from the Celtic *hedra*, a word in allusion to its tight-clinging stems." This statement is repeated in substance in his book, "The generic name is said to be derived from the Celtic, and to express the climbing character of the plant." (The Ivy, p. 51; 1872.) It is rather difficult to understand how a "cord" can climb.

E. J. Lowe says the name "appears to be derived from the Celtic word *hedra* signifying a cord, in allusion to the stems of the Ivy." (Beautiful Leaved Plants, p. 117; 1864.)

Nicholson's Dictionary of Gardening merely states that *Hedera* is "the old Latin name for the Ivy, used by Virgil and Pliny." (Vol. II, p. 120; 1886.) Bean's Trees and Shrubs Hardy in the British Isles gives no derivation of the name.

Bailey's Standard Cyclopedia of Horticulture (Vol. II, p. 1437; 1925 ed.), Rehder's Manual of Cultivated Trees & Shrubs (p. 672; 2nd ed.) and A. T. Johnson's Plant Names Simplified (1931; p. 58) all make the same statement: "ancient Latin name of the ivy."

From such conflicting views we dare to offer a solution. The Italian word for ivy is *edera* (also *ellera*), the Spanish is *hiedra*, the Portuguese is *hedra*, the Old French was *edre* which later became *ierre* and finally *lierre*, having assimilated the article *le*. As these languages were derived from the Latin that derivation of the word may be the correct one. But when one remembers that a strong under-layer of the Celtic also entered into French, Spanish and Portuguese and notices that in the Spanish and Old French words the *e* between *d* and *r* is omitted as in the Celtic *hedra* and that the Portuguese word is exactly the same, one may well wonder if both claims may not be based on fact. Or even that the Celtic claim is correct.

As the Romans were not an original minded race and adapted—and adopted—ideas and words from other nations and languages as they saw fit, may they not have taken over this plant-name from the Celts? By the time of Vergil and Pliny, Celtic slaves had been in Rome for more than a century and their word for ivy may have taken the Roman fancy. We know that the Romans absorbed the cultural attainments of the nations they subdued; and the people of Gaul were by no means an uncultured race. As the Celts lived

closer to nature than the Romans, they undoubtedly had given names to the plants of their fields and forests to a much greater extent than their more utilitarian minded captors, who though following the Greeks in using the ivy for wreaths at the Bacchanalians and to crown poets, may never have bothered giving the plant a fixed Roman name until Vergil and Pliny adopted the Celtic one. And they may have adopted it because both (or the earlier writer, Vergil) had been impressed by the closeness of the Celtic word to a word in their own language which so adequately described the plant's characteristic manner of growth. Foreign words have been adapted into various languages on less close similarities.

This is not altogether conjecture for since first coming to this conclusion I find that Carl Koch in his *Hortus Dendrologicus* in 1853 substantiates this theory with the statement "origine dubia, ? celtica dicitur, vox a Romanis jam usurpata." (p. 284) which can only mean something like this: origin doubtful, said to be Celtic, a name taken over by the Romans.

Continuing along this line the thought occurs, if they were fitting a foreign word to a Latin meaning why did they not make use of the Greek word for ivy especially as all their uses of the plant had been adopted from Hellenic customs both religious and cultural. Further investigation reveals that the Greek name was given in honor of a demi-god and did not describe the plant's habit or form. I can recall no plant-name coined by the early Latin writers which is divinely honorific. In seeming contradiction to this statement is the word *Dianthus* which we have been told means Jove's flower which it does not for the name was given by Theophrastus and means "divine flower" in allusion to its fragrance and bright coloring. The Romans, as

claimed above, freely adopted plant-names from other languages when not named for a diety; while on the other hand the Greeks delighted in using names from their Pantheon. It was more consonant with their idealization of beauty and poetry to humanize a plant by connecting it with a diety; whereas the more prosaically minded Roman was inclined to give descriptive names. A very interesting line of investigation could be developed from this premise. While this closed the investigation of the word *Hedera* some very interesting facts had been gathered which will be briefly outlined for such "curious gardeners" as are interested in botany beyond just the growing of a plant successfully and the knowing it under its correct name.

Referring back to Sowerby's *English Botany* we find that "Its Greek names were *kissos* and *kittos* from *Kissus* or *Cissus*, the name of the boy whom Bacchus is said to have changed into it." (Vol. IV, p. 182; edition of 1877) and further down the same page, "The specific name *helix* comes from *eilein*, to encompass or turn about, in allusion to the twining habit of the plant" which latter statement is incorrect as a citation from a Greek lexicon will prove. First, however, it should be noted that this word *kissos*, Latinized to *cissus*, has been used to label one genus of plants and been compounded into at least two others; *Cissampelos*, meaning ivy vine and *Parthenocissus*, meaning virgin ivy.

Upon looking up the word *ivy* in C. D. Yonge's *English-Greek Lexicon*, edited by Henry Drisler, 1870, we find, "ivy, *kissos* [attic, *kittos* of 3 kinds, 2 climbing, *melas* and *leukos*, and one creeping, also called *elix*, Theophr.]." (p. 315). This part of the research was done with a friend, a Greek student, who beside Anglicizing the letters explained the citation as follows:

the Athenians made slight differences in very many Greek words, hence "attic, *kittos*" and "Theophr." meant that the English compiler referred to the *Historia Plantarum* of Theophrastus for his authority. Liddell & Scott's Greek-English Lexicon, edition of 1890, (p. 809) gives the above information almost verbatim (same is repeated in the 1925 edition) and under the word *kissos* gives a long list of descriptive words beginning with it and having such meanings as "fond of ivy," "overgrown with ivy," "planted with ivy," etc. It is quite evident that *kissos* meant ivy to the Greeks; but was that ivy the same plant that we know by that name?

According to Theophrastus the Greeks knew "3 kinds, 2 climbing, *melas* and *leukos*, and one creeping, also called *elix*." Upon looking up these three words we find that *melas* not only meant "black, swarth, dark," etc., but also anything contrasted with light in color; *leukos*, meaning "light, bright, clear," etc., also meant anything contrasted with black or dark in color; *elix*, while meaning "spiral, curved, winding," etc., had originally and in its purest sense meant "creeping." The keenly observant Theophrastus had accurately described the ivy which we know as such; first the juvenile vining form which creeps along the ground or up trees and rocks was *elix*, but when it was mature and produced fruits he knew that some were dark berried and other were light berried; for both the blue-black and the yellow fruited ivies grow in Greece.

Since writing the above I find that Kock in *Wochenschrift fur Gartnerei und Pflanzung* (p. 75; 1859) says the Romans recognized the ivy as in two stages of growth; calling the one creeping on the ground *Helix* and the fruit-bearing one *Hedera*. This statement Koch repeats in *Dendrologie* (p. 678;

1869) citing Pliny as authority. As Pliny "was no field-botanist, but got all his lore from books" (*Hort. The Unconventional Garden*, p. 140) we may surmise that he copied *helix* from Theophrastus and used Vergil's name *hedera* for the mature stage.

DIAGNOSIS OF THE GENUS

For more than a century after Linnaeus established this genus, *Hedera* was made to include many plants that are now placed elsewhere. At present *Hedera* covers a closely related group of plants with such very similar characteristics that it is surprising some modern botanist has not placed them all as varieties of one species. And indeed he would have much to justify such an arrangement for the small differences in blossom formation would be of little hindrance to a "lumper" and fruit color alone should not be a determining factor. On the other hand these small differences could be magnified by a "splitter" into many more species than we have today.

Hedera may now be described as woody stemmed plants developing through two stages of growth: (a) a juvenile stage in which they grow as vines climbing by means of aerial roots (processes produced along the internodes and penetrating into the medium of support just deeply enough to obtain a firm hold) or, when no support is near, creeping along the ground and very freely forming true roots along the entire stem; and bearing alternate, more or less lobed, leaves which are built upon a framework of radiating veins arranged like the ribs of a fan; (b) a mature stage in which they grow as compact shrubs with twiggy, stout stems without either aerial or true roots and bearing alternate unlobed leaves built upon a framework of radiating veins arranged like the ribs of an almost closed fan; and in this stage,

which develops when the plant can climb no higher—or has reached a position where there is more light and sunshine—producing its flowers and fruit. The small individual blossoms are arranged in many flowered spherical terminal umbels, either solitary or with additional lateral umbels below the terminal one and then forming a panicle of umbels. In color they are a pale greenish light yellow and are not showy as they open gradually and only a few at a time; they are slightly fragrant in most species. The season of bloom is from late August and throughout the autumn according to species and to the location (climate) in which the plant is growing. The flower is built on a plan of 5; a 5-celled ovary entirely or half enclosed (according to species) by a calyx with 5 teeth (abortive sepals), 5 small petals which are roundish in shape with sharply pointed apex, 5 stamens which are set between the petals and bear ovoid anthers, a very short pistil extending but little above the ovary. The fruit is a round fleshy berry of about a $\frac{1}{4}$ " diameter; in all but two species the color is a blue-black or black-purple with rare examples of albinos, in one of the two exceptions the color is rather a bright yellow, in the other it is a bright reddish orange. The fruit ripens from late November and throughout the winter according to species and the location (climate) in which the plant is growing. (Some authorities state that the berries ripen to as late as April; I have not been able to verify this statement.)

Minor botanical differences separate the genus into from five to nine species depending upon the view points of the various botanists. Of the larger number, two are so little known (they were named by a Japanese botanist giving scant diagnoses only) that they may later when live material is available prove to be merely varieties; and the

other two are almost certainly varieties of *H. Helix* and will be so considered in this study.

In describing the various species and their forms and complexes they will be taken up according to geographical development as outlined at the close of Article VII.

Hedera nepalensis Koch 1853 (Hort. Dendr. p. 284)

Himalayan Ivy

In that issue (N.H.M. Vol. 21, p. 140) we left the progenitor of the ivy as we know it today firmly established as the head of a new plant clan somewhere in the forests of northern India. From there as it spread northward, its progress was stopped by the intense cold of the higher Himalayan Mountains; but it spread eastward and westward throughout the vast extent of northern Hindustan along the southern slopes of the Himavat. Its farthest recorded eastern range being in Assam; its western, in Afghanistan; its northern, in Kashmir. It ascends the mountains to a height of about 9,000 feet. If seed could be obtained from that height or from its most northern habitat in Kashmir it might prove to be hardier than it so far has.

History and Synonymy

There has been much confusion in nomenclature of this species due principally to botanists not having seen the live plant and so basing their diagnoses either on the observations of those who had seen it or upon herbarium specimens—or both. In the few specimens I have seen not only do the berries lose their color when dried but the characteristic grey band along the larger veins either fades completely or becomes much less noticeable than in the live leaf. Because of the "yellow" berries it has been confused with *H. poetarum*; only color blindness can account for failure to distinguish its red-

dish orange fruit from the truly yellow berries of the latter.

1824. The first description of it occurs in the second volume of what is known as Wm. Roxburgh's *Flora Indica*. This work was published posthumously (Vol. II, in 1824) with notations, observations and additions by Nathaniel Wallich, another authority on Indian flora. But this second volume includes many plants which Roxburgh had never seen; for in the preface to the reprint of 1874 the editor, C. B. Clarke, in reference to this second volume says, "It contains, indeed, the Roxburgh manuscript, but there are added crowds of species by Wallich from Nepal" and the notes on this ivy were omitted from the reprint. It is therefore erroneous to credit Roxburgh with the following description and references to it will be made throughout this paper in Wallich's name except in citations which have used Roxburgh's. This description is here given in its entirety.

"This is one of the most common as well as noble productions of Nipal, where it grows to a majestic size and extent over trees and rocks. I have met with it from Bheempedi and Cheesapanee to the great valley and on all the mountains surrounding it up to the very top of mount Sheopore. I have had it likewise from Kumaon and Shreenugur. It blossoms and produces fruit in succession from May to December.

"Newar. Saogooke or Gooke (the climber).

"*Stem* round, a little flattened on one side, very branchy, of various thickness, generally of the size of a man's wrist, though sometimes still larger. I have brought specimens with me for the Museum at the India House, measuring nine inches in circumference.

"*Bark* scabrous, ash coloured, wood of a light grey, or yellowish colour,

soft and light. The stem and branches produce a vast number of fibrous, long radicles by which they attach themselves and adhere firmly to trunks and branches of trees, and to rocks. Sometimes they are perfectly concealed within and as it were bearded with these radicles. Young shoots long and slender, ash coloured, shining, perfectly smooth, as are also the leaves and petioles. *Leaves* leathery, dark green and shining above, pale underneath, from five- to seven-nerved; nerves subdichotomous, veins capillary and forming large reticulations; they vary exceedingly in size and form, and are from three to five inches long. On the flower- and fruit-bearing branches they are invariably undivided, lengthening into a cuspidate acumen, more or less tapering and contracted toward the base which is acute, from narrow-, almost linear-lanceolate, to ovate or elliptic, sometimes obovate or trapeziform with a retuse apex, often unequal at the base, with even or repand margins. In all other cases they are three- or five-lobed, sometimes palmate or even sub-digitate, the lobes entire or repand; that in the middle larger and more acuminate than the rest; with a broad, more or less cordate, entire base. *Petiole* slender, widening at the base, a little thicker immediately under the leaf, which it equals or exceeds in length. *Umbels* globular, many-flowered, lateral, or terminal, forming oval, simply branchy, racemose corymbs. *Peduncles* an inch or an inch and a half long, pedicles two-thirds of an inch long; all covered with minute stellate silvery scales. *Flowers* of a pale green colour, nearly white, inodorous, covered on the outside with scales. *Teeth* of the calyx almost invisible. *Petals* ovate, acute, most spreading, at length reflected, equalling the stamina. *Ovary* turbinate, scaly, four-seeded. *Style* short. *Stigma* truncate. *Berry*

yellow, shining, perfectly round, three- or four-seeded, in other respects precisely as described and represented by Gaertner, in carp. i. 130. t. 26.

"Obs. I dare not separate this plant from our European Ivy, from which it seems to differ only in its gigantic size and in the number of seeds.—It is not put to any use except for faggots, which fate it shares with so many other grand productions of Nipal. N.W." (Flora Indica, Vol. II, p. 515; 1824.)

It should be noted that no mention is made of the narrow strip of grayer green along each side of the main veins which is so characteristic of the plant as we know it. This is all the more surprising as so detailed a description is given in all other respects, even to noting the "large reticulations" of the viens; that is the extensive and beautiful net-work of minute veins which is so much more pronounced in this species than in any other. It should also be noted that the fruit is described as "yellow" and the leaves "dark green and shining above, pale underneath"; while they are pale underneath, one would hardly speak of the upper surface as being dark green or shining. As we know the plant they are a deep gray-green and rather dull in comparison with *colchica* or *hibernica*. Of course at the time Wallich was writing the former had not been discovered and the latter may not have been known to him. But even when compared with *Helix*, the plant we know does not have much more "shining" leaves.

The question then arises as to whether it may not be possible that we have clones from one form only which shows a grayer venation than the plants Wallich knew in the eastern end of its range. From the ivy's great proclivity to sport in other species it would be very surprising to find *H. nepalensis* constant throughout its wide range. This point will be further dis-

cussed when we reach the ore variety of it which is known botanically. It is greatly to be regretted that Wallich did not see fit to include this plant when he published the three hundred beautifully rendered plates of new plants in *Plantæ Asiaticæ Rariores* (1830-32); the more so in that he included some of much less beauty or rarity.

1825. In the following year (1825) D. Don in *Prodromus Floræ Nepalensis*, etc. considered this plant as a variety of *H. Helix*. I have not seen this book and quote from Tobler: "Don (1825) gives *H. Helix* for Nepal with a very insignificant diagnosis for the plant actually occurring there. [in footnote: 'leaves five-lobed, sub-peltate, coriaceous-glabrous, lustrous; the old elliptical, acute, the umbels simple, pubescent.' (Don, p. 187)] He did not recognize the peculiarity of the form." (Tobler, 1912; p. 71) Don certainly had not seen the live plant for there is no record of living material having reached England at that time.

1830. DeCandolle in his *Prodromus Systematis Regni Vegetabilis* (Vol. IV, 1830; p. 261) recognized our plant as differing from *Helix* but without having seen the live plant. Again I cannot use first hand information and am compiling the following from Tobler's remarks and from J. C. Loudon who accepted De Candolle's statements. De Candolle considered it a sub-division of *Helix*, placing it after his *H. H. vulgaris*, which was his type name, and called it *chrysoarpa* because of its "yellow" fruits; he called attention to its wedge shaped base in mature foliage (Tobler says DC. "did not refer to the youthful form"), its gigantic size and its scaly pedicels.

1838. Loudon's list makes *chrysoarpa* DC his third variety of *Helix* with the following list of synonyms: "H. poetica C. Bauh., H. chrysoarpus

Dalech., H. Dionysias *J. Bauh.*, H. *Helix Wall.*" (Abor. et Frut. Brit. Vol. II, 1838; p. 1000) all of which except the last we now apply to the yellow berried ivy of southern Europe. Then, after repeating De Candolle's brief description as given above, he adds this interesting information, "There is a plant in the Horticultural Society's Garden." Was this plant *H. nepalensis* or was it *H. poetarum*?

If it was the former surely in the course of time its orange berries would have been noted and some reference to them made in the Journal of the Horticultural Society or in some other garden paper. I think I have covered all available English publications up to 1890 and have found no reference to it. In fact an orange berried ivy is not mentioned until The Garden, issue of Nov. 22, 1882, contains a brief note regarding such a plant having been reported in *Revue Horticole* and again in the issue of March 1, 1884 of The Garden a fuller note occurs referring to a later report in the same French publication. Both of which will later be discussed in their chronological order. At present all that need be said is that these items evidently did not make much impression upon English gardeners even though the next issue of The Garden contained the information that plants were to be sent to England from the nursery of Messrs. Besson at Nice. For even as late as 1913 that sharp-eyed, keenly plant-conscious gardener, E. A. Bowles, after mentioning the "golden-fruited form *Hedera Helix* var. *chryso-carpa* . . . also called *Hedera poetarum*" continues, "I have an Ivy that was given me with the reputation of bearing scarlet berries. No book mentions it, and had it been offered me by any ordinary gardener I should not have believed in its refulgent fruit, even if I accepted the plant, but my generous

friend its donor knows plants as well as anyone, so I anxiously await the production of berries." (My Garden in Spring, p. 175.)

From the above we may conclude that the plant which Loudon states was in the Horticultural Society's garden was *not* the Himalayan Ivy; and furthermore that this species was not known in Europe (at least according to record) until about 1882, and then only in France.

The synonym *chrysoarpa* has been used for both *H. H. nepalensis* and *poetarum* up to the present time; see N.H.M. Vol. 15, pp. 34 and 137; 1936. Whether the yellow berried ivy is a species or not does not concern us here; until it is reached I shall refer to it as of specific rank.

1853. Returning to the chronological order of its history, in 1853 Karl Koch established it as a species on page 284 of his *Hortus Dendrologicus*; giving it the name "nepalensis" because it was native to the kingdom of Nepal and "basing it on the *H. Helix* of Don's *Prodromus* and Roxburgh's *Flora Indica*" (A. Rehder: *Journal of the Arnold Arboretum*, Vol. IV, p. 250; 1923) but without a diagnosis of his own. According to the rules of botanical nomenclature he did not need to make a diagnosis to make the name valid as he referred to Wallich's. The point I wish to make is that he did not know the living plant or herbarium specimens and was not sure that he had made "a lucky guess" as he never mentions it again in his later writings. In his treatment of the genus *Hedera* in his *Dendrologie* (1869) he not only omits all mention of this name but lists two species only, *Helix* and *colchica*. NOTE: At this time I wish to correct a serious misstatement regarding *H. colchica* and Carl (or Karl) Koch which I made in the July 1934 issue of this magazine. At that time I stated

there were two Kochs—Caspar and Karl, father and son. I have recently gone over my notes for that article and can find none to substantiate that statement which places me in a very unenviable position for there was no Caspar Koch and Karl Koch's father was not a botanist. I should like to shift the responsibility of this error onto other shoulders; I am certain I did not make it up for I knew Koch's given name was variously spelled with a K or a C; until I can find where I got the basis for this wrong statement I shall have to plead "brain fag" and ask readers of this magazine to make the following corrections in their copies of the July issue, 1934: page 236, col. 2, last line: delete "and his father"; page 237, col. 1, line 2: delete "his father, Dr. Caspar Koch"; page 237, col. 1, line 6: delete "with his son"; page 238, col. 1, line 13: change "Caspar" to "Karl"; page 240, col. 1, line 23: delete "Caspar"; page 240, col. 2, last line: delete "Caspar."

1863-64. The next *probable* mention of this plant occurs December 8, 1863, when Shirley Hibberd read a paper entitled *The Ivy* before the Central Society of Horticulture; this paper is of great interest to us in that at the end of it he described 52 "species and varieties" under their current names, that is, not the names he coined later. In this list the name "himalaica" makes its first appearance as though it was a current name at that time for Hibberd states he obtained the plant from a nursery. Up to the present time I have failed to find any prior use of it and for the present we must suppose it to be a horticultural name given by a nursery.

This paper, *The Ivy*, was printed in full in the *Gardener's Weekly Magazine* and *Floricultural Cabinet*, issues of December 12th, 19th and 26th, 1863 with seven very excellent drawings of

ivy leaves which were not used in Hibberd's book although the text portion of the paper was repeated almost verbatim. An "abridged report" of it was also published in *The Floral World and Garden Guide*, issues of January, February, March and April, 1864. Hibberd was the editor of both publications. Lawrence and Schulze's citation in *Gentes Herbarum*, p. 121; 1942 of the first occurrence of the name "himalaica" being in *Floral World*, 1864 is therefore incorrect, it was the second. The descriptions in the *Gardener's Weekly* are in several cases fuller than those of *The Floral World*.

Both lists are divided into four groups: "Large-leaved Green and Variegated Ivies," "Green-leaved Climbing Ivies," "Arborescent forms of *H. helix*" and "Variegated Climbing forms of *H. helix*" and the 52 names are numbered consecutively. The names which concern us—"chrysocarpa" and "himalaica" occur in the second group; but, as will be shown below, two others must also be considered as he has tied them in with the first two either in description or with common name. It must always be borne in mind that Hibberd did *not* do any research work to ascertain what any of the plant names actually stood for; he accepted each plant under the name it carried in the nursery or garden which supplied him with that plant and did not try to check back in order to find whether the plant was entitled to that name or not; reference to the first chapter in his book will clearly prove this. So this list of 1863 does not give us any authority regarding the names but he does in several cases give the nursery from which he got the plant.

I give the descriptions as they occur in both the above publications by citing that of the *Gardener's Weekly*

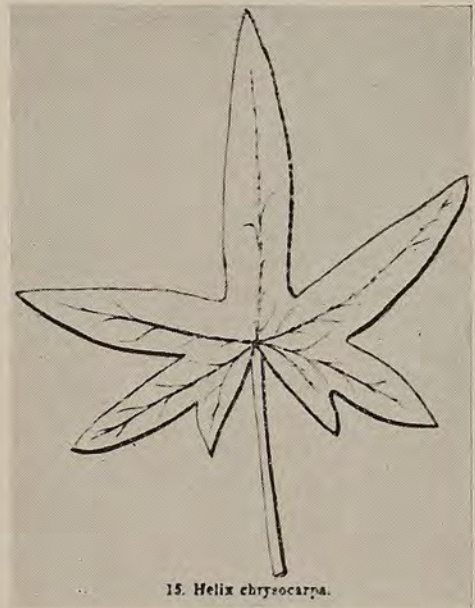
and enclosing in brackets such parts as are omitted in *The Floral World*. In the following extracts the names are italicized as in the text; all other italics are mine.

"14. *Baccifera lutea*.—This is the climbing form of the yellow-berried ivy, and does not greatly differ in general characteristics from *H. helix*. [The leaves are quinquangular, the terminal lobe being long and wedge-shaped, the two principal side lobes smaller and less acute, and the two lobes next the leaf-stalk, still smaller and more blunt. The surface of the leaf is a deep glossy green, so marked with *lightish* veins as to appear occasionally as if *mottled* with a lighter shade of green. It grows as freely and in precisely the same manner as the ordinary forms of *helix*.] When it acquires a fruiting state, it is remarkably handsome, but the berries are of a greenish-yellow, and hence less beautiful than those of the variety which follows.

"15. *Chrysocarpa*.—It is of great importance for the cultivator to be able to identify this variety, on account of the brilliant *golden* colour of its berries, and fortunately it is as distinct in its leafage as in the splendour of its fruit. The leaves are distinctly quinquangular, the segments lengthened out into lanceolate lobes; and when the leaves obtain their largest size, there are added two small auricled lobes at the base. Colour of leaf a *deep green*, with distinct *whitish* midrib and veins. This variety is a native of India, and at present scarce." (*Gardener's Weekly*, p. 413, Dec. 26, 1863; *Floral World*, p. 58, March 1864.)

Obs. A leaf drawing of "*chrysocarpa*" is given in the *Gardener's Weekly* and reproduced here. Neither of these ivies have any relationship to *H. nepalensis* in spite of Hibberd's claim that "*chrysocarpa*" was a native

of India. "*Baccifera lutea*" was and is a synonym of the yellow berried ivy as Seemann later told Hibberd and is *not* a climbing ivy; see Seemann's letter in *The Gardeners' Chronicle*, Dec. 11, 1869, p. 1281. The climbing form of the yellow berried ivy does not have quinquangular leaves "with the terminal lobe long and wedge-shaped" nor are they "so marked with lightish veins as to appear occasionally as if mottled with a lighter shade of green" (their venation is not pronounced). Later, in his book, when he made this name a "synonym" of one of his arborescent forms the leaves become "ovate and entire" and the berries "are a dull deep orange colour" and he adds, "This



15. *Helix chrysocarpa*.

From Gardener's Weekly Magazine and Floricultural Cabinet, 1883; p. 413

is probably the true 'poets' ivy,' if the poets lay claim to any one in particular, because it occurs frequently in Italy and Greece." (*The Ivy*; p. 92.) No orange berried ivy ever grew in Italy or Greece.

"Chrysocarpa" was later made a "synonym" of his *pedata* which is a form in the *donerailensis* complex and comes under *Helix* as its pronounced venation of white veins, which to the touch are "as a thread laid on" the leaf surface, shows. The "added two small auricled lobes at the base" (see cut) is characteristic of several forms of *Helix* that have deeply cut lobes; appearing as exceptional leaves and not typical of any one form. I have noticed these extra basal lobes scattered through the foliage of forms of both the *donerailensis* and the *palmata* complexes when plants are growing vigorously though not necessarily "when the leaves obtain their largest size" and have often tried to perpetuate it by making nodal cuttings—cuttings with a portion of the stem with just that one leaf—but to date seven lobed leaves have not appeared on any of my plants. Hibberd was drawing upon his imagination when he stated that this plant was a native of India or that it produced golden fruits. In his book he drops his claim of yellow berries and lays the Indian legend to statements in "trade catalogues." It was his business as a writer claiming to be an authority on the ivy, he called his book a monograph, to verify "trade catalogue" statements and also to ascertain the color of the berries before going into print.

"22. *Poetica*.—The 'Poet's Ivy' is a very pretty form of *H. helix*; the leaves are of the *full size* of the type, somewhat angular; the terminal lobe a regular triangle; the side lobes very slightly marked. The colour a fresh bright deep green, glossy, and with *whitish veins*.

"23. *Himalaica*.—*Not very different* from the type; habit slender, long-jointed; leaves approximating to the form of an isosceles triangle, the terminal lobe being long and wedge-shaped. This has *no special excellence*, and is

perhaps less effective as an ornamental shrub than the English form of *H. helix*. [The specimen before you (he was showing a plant. A.B.) was grown from a cutting supplied me by Mr. Cutbush, of Highgate, in March last. It now measures two feet nine inches in height, and forms a tolerably regular pyramid; it may therefore be considered a fast-growing variety.]" (Gardener's Weekly, p. 413, Dec. 26, 1863; The Floral World, p. 58, March, 1864.)

Obs. "*Poetica*" needs to be considered here because one usage of the name *chrysocarpa* was applied to the Poets' Ivy and still is used by some authorities; and because of the "whitish veins" in Hibberd's description. Later he made this name a "synonym" of his newly coined *lucida* and varied his description. The leaves that were "the full size of the type" (*Helix*) before now become "large" and "without lobes, but a few are obscurely three- to five-lobed"; the "whitish veins" are no longer noted and the leaf color becomes "young leaves bright grass-green; the older leaves deep holly-green, overspread in winter with fine chocolate or purplish bronze." (The Ivy, p. 69.) This is clearly not our plant; but as we are trying to find it we needed to consider the suspicious "whitish veined" ones and also those claimed to be poets' ivy, which form in all literature, both botanical and historical, is yellow berried. Therefore our field is narrowed to "himalaica"—in the 1863 list merely because of the name, it is not until 1870 when the material for his book was published in The Gardener's Weekly Magazine that the description begins to fit in. Remember that so far we have no European record or description of the ivy of Nepal which Wallich had discovered.

Up to the present writing I have been unable to find the name "hima-

laica" earlier than its appearance in the list of 1863; and as Hibberd states he got his plant from a nursery we must conclude that the name was in current use in some nurseries. In his book this name becomes a "synonym" of his "cinerea" and the description of it undergoes some drastic changes. But before going on to that it should be noted that in his remarks cited above he states that a cutting "obtained . . . in March last" was on December 8th of that year when he showed the plant "two feet nine inches in height and forms a tolerably regular pyramid." What he means by a pyramid is shown on page 47 of his book; it is formed by placing four stakes in the pot equidistant along the rim and tying their upper ends together, then training the ivy's stem around and through the stakes so as to form a pyramid. *Any* ivy that in from nine to ten months will take root and cover a frame to even a "tolerably regular" extent, and to the height of 2'-9", is *quite* a rapid grower; and I may be excused if like the envious Cassius I peevishly question,

"Upon what meat doth this our Caesar feed,

That he is grown so great?"

By 1870 this "not very different from the type" and "perhaps less effective" plant "of no special excellence" has become "very distinct and interesting" for now "the leaves are smallish and peculiar in form and colour; in some instances they are three-lobed and nearly triangular, in others the

central lobe is prolonged, and has a few sharp subsidiary lobes and notches on the side; the colour is greyish-green, the lines of the principal veins being a lighter grey than the blade, and inclined to a milky hue." (The Ivy, p. 71.) Why was not the plant conspicuous for its gray venation and leaf color in 1863? Did it grow too fast? Or was Hibbard lax in his observations of both his cutting and the mother plant? Why, at least in 1870, was there no observation of the deep lobing of year-old leaves and their almost oak leaf shape? Why is nothing said about the peculiar flush of pinkish purple along the edges of the very young leaves and the growing stem? Is it possible that Hibberd did not make daily or even weekly observations but only spasmodic ones? A much better description will be furnished him in 1884 of this plant—and he reject it, as we will later see. Or was the plant Hibberd had a form different from ours? True, his plant is *like* ours but I do not consider it to be the same—unless Hibberd was guilty of forming a snap judgment based upon too little observation; and this is possible in that he says his was "long-jointed" in 1863 and fails to note later the peculiar manner of the growth in that sometimes the stem will grow with long internodes and at others the internodes will be very, very short. This Hibberd discussion has taken us into the seventies and we must return to 1864.

(To be continued)

The Nursery and Seed Trade Catalog Collection of the United States Department of Agriculture

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When the United States entered the war in 1941, abnormal conditions throughout the world had already blocked the flow of economic materials in world trade. Many familiar raw materials necessary to our normal standard of living were now unobtainable, and so were the unfamiliar raw materials needed for making war. Products previously of little importance suddenly became vital; yet these, as well as many in constant use, could no longer be had.

Substitutes had to be found among our own native products. Many of the plants from which critical fibers, oils, and drugs were derived could be grown in this country. Investigators at the experiment stations had shown that they could be produced here, but it was cheaper to import them. Growers were willing to try the new crops—the question was where to obtain stocks of the vital plants.

In addition, many domestic agricultural products had been diverted from their normal uses to serve wartime purposes. To replace these, and to maintain agricultural production with a reduced labor force, millions of people never before interested in gardening planned Victory gardens. Their problem was where to obtain seeds and plants. The answers to many such problems of both commercial growers and amateur gardeners were available

in the collection of seed and nursery trade catalogs in the Library of the United States Department of Agriculture.

The collection is a center of information for research workers and plant buyers, both in this country and abroad. It is used by botanists interested in the history and distribution of plants, by statisticians interested in price trends, and by plant breeders and landscape architects. The earliest published account of a plant's origin, description, and introduction, the rise and fall of a plant's popularity, or the history of a nursery or seed house may be traced through successive catalogs. Nurserymen and seedsmen ask where they can obtain plant material needed for their stocks for sale, or inquire about catalogs of their own which are missing from their files.

In the catalogs themselves, detailed descriptions and histories have superseded the brief statements of the early issues. The catalogs of the 1860's show the beginnings of color printing, which may be followed through the years to the beautifully colored illustrations of flowers, fruits, and vegetables found in modern catalogs. Increasing attention is given to lists of plants for special places and conditions, to color schemes, tables of blooming and fruiting periods,

and directions for planting, cultivating, and pruning.

In the war years the greatest service of the catalog collection is in answering inquiries from buyers of economic plants. Seeds or plants thought to be adaptable to war use—such as hemp, guayule, and milkweed—are greatly in demand.

Drug plants are urgently needed for medicines; and the collectors' lists included in the collection of catalogs are often the only means—except for an occasional advertisement in an agricultural or horticultural journal—of locating these, many of which have been known only as weeds. Many forage and field plants, for example, peanuts and soybeans have also been the subjects of inquiries. Foreign catalogs hold the clue for those crops common in other countries but little known in the United States. Most numerous of all are the questions as to where to obtain vegetables and fruits, sent in by people who want to share in the program to increase the Nation's food supply and people who want to produce food to supplement rationed goods.

The collection of seed and nursery catalogs in the Library of the Department of Agriculture was begun about 40 years ago through the efforts of the Office of the Economic Botanist of the Department. William P. Rich, the Librarian of the Massachusetts Horticultural Society, had a collection of several thousand old catalogs, covering for the most part the period from 1845 to 1890. There were many duplicates, and from these the senior author selected several hundred catalogs to form the basis of the Department collection.

He added many more as he was able to turn them up on his official visits to nurseries in many parts of the country. Although nurseries usually kept no more than a single set of their own catalogs, odd copies could be picked up here and there which dovetailed with

the ones previously acquired and went far toward completing the whole. Rare catalogs which were valued by their owners could not be obtained in the original, but could often be photographed for the collection, and copies made for exchange. Second-hand stores in many cities were sometimes unexpectedly rich in old catalog material, and so were the lists published by dealers in second-hand books.

The most promising place to look for valuable catalogs was in the files and the attics of very old nursery companies. The nursery owned by William Prince and Son, of Flushing, Long Island, was probably the earliest established large commercial house of its kind in America. It was founded in 1730, and issued catalogs up to 1865, when the nursery was sold. When the senior author learned that some early material, including four broadsides containing lists of nursery stock, dated between 1771 and 1799, was stored in the attic of the old Prince home, he obtained permission to have these photographed for the collection and to have duplicate prints made for exchange with other collections.

One of the employees of William Prince in 1826 was Patrick Barry, who became one of the founders of Ellwanger and Barry of Rochester. When they were closing out their business, they gave the Department permission to select old catalogs from their attic, keeping only a single set for themselves. Thus a valuable addition was made of catalogs running back to 1857.

Exchanges of duplicates made with the Missouri Botanical Garden and with U. P. Hedrick, horticulturist at the New York State Agricultural Experiment Station, also enlarged the collection.

In 1919 the collection came under the joint administration of the Library and the Division of Fruit and Vegetable Corps and Diseases of the Bureau

JUST IMPORTED,
Garden & Grass Seeds, &c.

MINTON COLLINS, respectfully informs the ladies and gentlemen of Richmond, and its vicinity, that he has just received from London, in the ship Bowman, an assortment of the following SEEDS, and a choice collection of FLOWER ROOTS, which are warranted to be of the last summer's growth, and may be had by applying to him at Mr. Richard Denny's store (only) at the west end of the bridge:

Red and white clover seed,
 Lucern, burnet, and rye grass,
 Rape, and Canary seed,
 Early York, sugar loaf, Battersea, Scotch,
 Alnwick and Madeira cabbage seed,
 Brocoli, and cauliflower, do.
 Green and white crows lettuce,
 Large Roman and mixed do.
 Spanish and white silver skin'd onion,
 Salmon, short top and turn 'n raddish,
 Round and prickly spinnage, and a variety of
 other garden seeds too tedious to mention.

FLOWERS, ROOTS, &c.

Animonics,
 Persian Iris,
 Mixed tulips,
 Five large hyacinths,
 Do. polianthus narcissus,
 Do. double white narcissus,
 Do. mixed ranunculus,
 Do. tube roses,
 Mixed blue and yellow crocus,
 Lilies of the valley,
 Bella-donna lilies,
 Widow wall flower,
 With a considerable assortment of flower
 secus, and some white glass bottles to hold
 the flower roots.

Richmond, October 15, 1792.

Newspaper advertisement

of Plant Industry, Soils, and Agricultural Engineering. Gaps in the collection were filled in as far as possible, both by purchase and request. Nursery

and seed firms cooperated by sending missing copies needed to complete the sets of their publications on file here.

Some of the rare old catalogs in the

TO BE SOLD, BY
WILLIAM PRINCE,
At FLUSHING-LANDING,
On LONG-ISLAND, near NEW-YORK,
A large Collection of Fruit Trees, as follows,

<p>English Cherries. MAY DUKE'S. Black hearts, White hearts, Carsons, Bleeding hearts, Os hearts, Amber, Red hearts, Duke cherry, Double blossom cherry, Cherry cherry, Spanish hearts, Jew hearts, Harrison's hearts, Honey cherry, Kensich cherry, Mazzara cherry, Morillo cherry.</p> <p>Plumb. Green gage plumb, Yellow egg do. as big as an hen's egg, White sweet ditta, bigger than a hen's egg, Oftentimes very large and fine, Imperial do. Red imperial do. Catharine plumb, Cherry plumb, Matchless do. Large pear plumb, White imperial do. Drab D'Or do. Royal do. Apricot do. White bonum magnum do. Violet perdigone do. Red disper do. Whiston do. Jean laive do. Pereos de ours do. Fotheringham do. Damask violet do. Red perdigone, White perdigone do. Le Prince valour do. Bengole do. Celine do. White dandon do. Large red sweet do. Large Holland do. Early sweet dandon do. Lace do. Red bonum magnum do.</p> <p>Apricots. Large early apricot, Large French brussels do. Orange do. Madeline do. Alger do. Rouman do. Turkey do. Small sweet do.</p> <p>Nectarine. Fairchild's early nectarine, Large green clingstone do. Yellow do. Red Roman do. Yellow Roman do.</p>	<p>Elmer do. Temple's do. Italian or European do. Belgian tartine do. Newington do. Gene do. H. Wagon do.</p> <p>Peaches. The scales mering peach, The green mering or early ash, ripe in July. The late ripe peach, Old or mering do. New mering do. Large early clingstone do. Large early do. Large red clingstone, weight from 1 1/2 to 2 1/2. Yellow clingstone, called the Carolina peach, weight a pound. Fine large French peach called meringing. Fine red clingstone, equal to a fine apple for goodness. English ball peach. Large melrose do. weight from 1 1/2 to 2 1/2. Large yellow clingstone, weight from 1 1/2 to 2 1/2. Large white clingstone, weight 1 1/2 to 2 1/2. Large melrose clingstone, Large double leaf peach. Large water clingstone do. Large yellow melrose do. Large yellow white clingstone do. Large white Rose do. White water clingstone do. Black peach, Camden clingstone do. Wilton melrose do. Baltimore yellow clingstone do. Lambert peach, Yellow catharine do. Red chock melrose do.</p> <p>Pears. Bergamot pear, Catharine do. Vergil do. July do. Monter Jean do. Tremor vertice do. French primitive do. Winter bon certan do. Amber do. Champanelle do. Kaufert do. Early ligier do. Burrett vert do. Winter haute do. Burrett de roy do. Green chaff do. Swan's egg do. Colman do. Credle do. Spanish bon certan do. Large bell pear, Ceron de castis do. Summer bergamot do. Autumn bergamot do. Amorille do. Lent St. German do.</p>	<p>Brecon bergamot do. Winter bergamot do. Targoule do. Rouillon do. Cullerman do. Green catharine do. La Chaffiere do. Hampton's bergamot do. Doctor Uvedale's St. German do. Large winter do. weight near two pounds. Pear melrose, Empire pear, Large autumn baking do. The black pear of Worcester or Parkinson's winter do. The Florida do.</p> <p>Apples. Newington pippin, Edison pippinburg, Pear maine, Vanderbilt, Large pippin, weight a pound or more, Large red and green leafed apple, ripe at midsummer, weight a pound or more, Large early apple, two or three weeks earlier than other pippin of low apple. Early oak, Early low apple, Early pippin, Red Black, Newcom's Spitzenberg, Jenny green, Golden pippin, Golden rector, Bullington, Lush apple, Longspur, Litching, Knox's Island greenings, Sweet apple, Large water setting, Red flower, 24 White pippin.</p> <p>Mulberries. Large black English, Black American mulberry.</p> <p>Fig Trees. Cranants. Large red cranant, 6/6 each, Large black do. 6/6 Large white do. 6/6</p> <p>Quince Trees. Madeira Nut Trees, 1/6 Black Walnut Trees, 1/6 Grapes, 6/6 each Vine. Goose-berries. Great amber goose-berry, 6/6 Large yellow oval do. 6/6 Green goose-berry, 6/6</p>	<p>Rasberries. White rasberry, English red rasberry, 6/6 American do. 6/6</p> <p>Strawberries. Large handboys strawberries, The chili do. The laurel and chit frae-berry roots 1/6 per dozen, The wood frae-berry 1/4 per dot.</p> <p>Ever-green Trees and Shrubs. Red Virginia cedar, 1/6 each, Wry nash's pine, 1/6 Pitch pine, 1/6 Larley pine, 1/6 Black locust fern, 1/6 Red juniper fern, 1/6 Hemlock spruce fern, 1/6 Large liver fern, 1/6 Silver birch fern, 1/6 Common laurel, 1/6 Virginia laurel, 1/6</p> <p>Timber Trees and Flowering Shrubs. American white oak, 6/6 each, American black oak, 6/6 Scrubby white oak, 6/6 Scarlet oak, 6/6 Ballard black oak, 6/6 Black oak of the mountains, Swamp chestnut oak, 6/6 Mountain chestnut oak, 6/6 American white cherry, 6/6 Scarlet maple, 6/6 Common maple, 6/6 Sugar maple, 6/6 Common ash, 6/6 White ash, 6/6 Black ash, 6/6 Sweet almond, 1/6 Bitter almond, 1/6 Catalpa, 1/6 Broad leaved dog wood, 1/6 White dog wood, 1/6 Magnolia, 1/6 Tulip tree, 2/6 Snow ball tree, 1/6 Bedford taxus tree, 1/6 Lacust tree, 1/6 Button tree of Virginia, 1/6 Sweet fern, 6/6 Blue lilac, 1/6 White lilac, 1/6 Fringilla, 1/6 Standing American honey suckle, 1/6 Candle berry myrtle, 6/6 Poplar, 1/6 Benjamin tree, 1/6 Sugar birch, 1/6 Black birch, 6/6 Sassafras, 1/6 American alder, 6/6 Carolina bird cherry, 1/6 Dwarf alder, 6/6 Fibbert, 1/6</p>
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Any person inclining to purchase any of the above mentioned trees, there in many thousands of a proper size; if any of the above trees should be wanted to find over sea, the purchaser may depend upon having them safely put up in cedar masts, casks, or boxes, with earth, without any other cost except the first cost of said masts, casks or boxes.

The price of the fruit trees is 1/6 each, except the fig trees 1/6, the mazzara cherry 1/6, quince trees 1/6.

Any person having a mind for any of the above trees, and desiring to have them sent to New-York on their days, and may commonly be found at Burling's Slip, (John Yates, master), weeks as there is a boat that constantly goes from Flushing to New-York on their days, and the boat should not be there, they are desired to leave them with Mr. William Field, overseer, at the head of Burling's Slip, in New-York. If any of the seed of the above timber trees, ever-green shrubs, or flower trees, should be wanted, the person may be supplied by applying to said William Prince.

NEW-YORK: Printed by H. GAINE, in HANOVER-SQUARE.

collection were purchased—for example, the collection bought from the estate of William Prince and Son, covering the years 1818 to 1860. It included a number of letters, journals, and other

papers, and in these the history of the firm and the range of its contacts may be traced even more fully than in the catalogs themselves. For example, some of the plants introduced by Wil-

SEEDS OF MEDICINAL PLANTS.

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Fenugreek	{ <i>Trigonella Fœnum</i>
	{ <i>Græcum</i>
Feverfew	<i>Matricaria Parthenium</i>
Foxglove	<i>Digitalis purpurea</i>
Gromwell	<i>Lithospermum officinale</i>
Ground Ivy	<i>Glecoma hederacea</i>
Hemlock	<i>Conium maculatum</i>
Horehound	<i>Marrubium vulgare</i>
Hound's-Tongue	<i>Cynoglossum officinale</i>
Indian Physic	<i>Spiræa trifoliata</i>
Blue Lobelia	<i>Lobelia siphilitica</i>
Liquorice (roots)	<i>Glycyrrhiza glabra</i>
Lovage	<i>Ligusticum Levisticum</i>
Dyer's Madder	<i>Rubia tinctorum</i>
Marsh Mallow	<i>Althea officinalis</i>
Sweet Milfoil	<i>Achillea Ageratum</i>
Horse Mint	<i>Monarda punctata</i>
Mugwort	<i>Artemisia vulgaris</i>
Nep, or Cat-mint	<i>Nepeta Cataria</i>
Palma Christi	<i>Ricinus communis</i>
Red Chick-weed	<i>Anagallis arvensis</i>
Carolina Pink-root	<i>Spigelia marilandica</i>
Poppy	<i>Papaver somniferum</i>
Rattlesnake-root	<i>Polygala Senega</i>
Garden Rue	<i>Ruta graveolens</i>
True Turkey Rhubarb	<i>Rheum palmatum</i>
Common English do.	„ <i>Rhaponticum</i>
Monk's Rhubarb	<i>Rumex alpinus</i>
Officinal Scurvy-grass	<i>Cochlearia officinalis</i>
Virginian Snake-root	<i>Aristolochia Serpentaria</i>
Southernwood	<i>Artemisia Abrotanum</i>
Virginian Speedwell	<i>Veronica virginica</i>
Tansey	<i>Tanacetum vulgare</i>
Thoroughwort	<i>Eupatorium perfoliatum</i>
Virginian Tobacco	<i>Nicotiana Tabacum</i>
English Tobacco	„ <i>rustica</i>
Holy Thistle	<i>Carduus marianus</i>
Winter Cherry	<i>Physalis Alkekengi</i>
Wormwood	<i>Artemisia Absinthium</i>
Worm-seed, &c. &c.	{ <i>Chenopodium anthel-</i>
	{ <i>minticum</i>

B

Bernard M'Mahon, Philadelphia, no date, but before
1807

liam Prince were brought back for him by sea captains from distant countries where their ships had stopped. The purchases included some catalogs of auction sales from the 1830's and

1840's, among which was C. J. Wolbert's Philadelphia Catalogue of Camellias, Rhododendrons, Cactus and Other . . . Greenhouse Plants Just Arrived per Louis Philippe at New York . . .

(11)

- | | |
|--|--|
| <ul style="list-style-type: none"> a. <i>Cornus alba</i> <li style="padding-left: 2em;">sericea <li style="padding-left: 2em;">canadensis }
h. herbacea } ✓ a. <i>Corylus americana</i> <li style="padding-left: 2em;">rostrata } <i>Muh.</i> <li style="padding-left: 2em;">cornuta } <i>Auth.</i> ✓ b. <i>Crataegus coccinea</i> <li style="padding-left: 2em;">✓ viridis <li style="padding-left: 2em;">✓ tomentosa <li style="padding-left: 2em;">crus-galli <li style="padding-left: 2em;">✓ multifida <li style="padding-left: 2em;">✓ trifida <li style="padding-left: 2em;">✓ flava <li style="padding-left: 2em;">✓ pyrifolia ✓ g. <i>Cupressus disticha</i> <li style="padding-left: 2em;">thyoides ✓ <i>Diospyros virginiana</i> ✓ o. <i>Dirca palustris</i> ✓ o. <i>Epi. za repens</i> h. <i>Euonimus americanus</i> <li style="padding-left: 2em;">atropurpureus 3 ✓ d. <i>Fagus ferruginea</i> ✓ <i>Fothergilla gardeni</i> ✓ <i>Franklinia florida</i> ✓ <i>Fraxinus alba</i> <li style="padding-left: 2em;">nigra ✓ c. <i>Gaultheria procumbens</i> ✓ n. <i>Gleditsia monosperma</i> <li style="padding-left: 2em;">triacanthos ✓ <i>Glycine frutescens</i> ✓ <i>Gordonia pubescens</i> <i>Hort.</i> <li style="padding-left: 2em;"><i>Kew.</i> <i>Gordonia lasianthus</i> ✓ <i>Guilandina dioica</i> } ✓ <i>Gymnocladus</i> — } <i>Mich.</i> ✓ <i>Halæsia tetraptera</i> ✓ a. <i>Hamamelis virginica</i> | <ul style="list-style-type: none"> ✓ <i>Hedera quinque-</i> <li style="padding-left: 2em;">folia } <i>Ampel-</i> <li style="padding-left: 2em;">× cordifolia } <i>opsis.</i> <li style="padding-left: 2em;">× arborea } <i>Mich.</i> <i>Hopea tinctoria</i> <i>Hudsonia ericoides</i> † <i>Hydrangea quercifolia</i> <li style="padding-left: 2em;">glauca } <i>Willd.</i> <li style="padding-left: 2em;">radiata } a. ✓ frutescens ✓ <i>Hypericum kalmianum</i> <li style="padding-left: 2em;">macrocarpon <li style="padding-left: 2em;">frutescens <i>Auth.</i> <li style="padding-left: 2em;">angustifolium ✓ <i>Ilex opaca</i> § ✓ cassine <li style="padding-left: 2em;">vomitoria g. × angustifolia <li style="padding-left: 2em;">× lurida } <i>Auth.</i> <li style="padding-left: 2em;">canadensis } <i>Mich.</i> § a. <i>Illicium floridanum</i> ✓ <i>Itea virginica</i> <li style="padding-left: 2em;">cyrilla* b. <i>Juglans sativa</i> <i>Auth.</i> <li style="padding-left: 2em;">amara <li style="padding-left: 2em;">hicorys rigida } <i>Aut.</i> <li style="padding-left: 2em;">balsamica } <li style="padding-left: 2em;">lenta <li style="padding-left: 2em;">cinerea <li style="padding-left: 2em;">nigra <li style="padding-left: 2em;">alba <li style="padding-left: 2em;">Varieties innumerable. ✓ <i>Juniperus virginica</i> <li style="padding-left: 2em;">× pseudosabina <i>Auth.</i> ✓ <i>Kalmia latifolia</i> <li style="padding-left: 2em;">angustifolia g. hirsuta × glauca |
|--|--|

* *Linnaeus* calls this plant *Cyrilla racemiflora*; but we are of opinion that it belongs neither to the genus *Cyrilla* or *Itea*, but should constitute a new one.

John Bartram & Sons, Philadelphia, 1807

to be Sold at Auction on Wednesday, the 15th of April, 1840.

The growing recognition of the Library collection as a center of plant information is shown by the number of

valuable gift collections which began to come in. Among these was that of C. R. Orcutt of La Jolla, Calif., a botanical explorer and collector, the founder of the Orcutt Seed and Plant

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Mar. No.	Package	No. of Peaches	FRENCH NAMES.		ENGLISH NAMES.
NY 31	bale	80	25	Pechers Quenouilles } Pourprée, Hative. }	Standard Peach, Early Spotted } Purple. }
		81	25	Do. do. Galande.	
				50	
32	bale	82	25	Pechers Quenouilles Made- } leine Rouge, }	Standard Peach, Early Magdalens. }
		83	25	Do. do. Blanche,	
				50	
33	bale	84	25	Pechers Quenouilles Admirable,	Standard Peach, Admirable.
		85	25	Do. do. Petit Mignonne,	Do. Little Veloute.
				50	
34	bale	86	25	Pechers Quenouilles Avant } Pêche Blanche, }	Standard Peach, Very Early White. }
		87	25	Do. Sanguinole,	
				50	
35	bale	88	25	Brugnoniers Quenouilles Vio- } lette Hative, }	Standard Nectarine, Early Purple. }
		89	25	Do. do. Jaune Lisse.	
				50	
36	bale	90	25	Brugnoniers Quenouilles } Pourpré Hative, }	Standard Nectarine, Purple Peach. }
		91	25	do. do. Transparent Ronde.	
				50	
37	bale	92	25	Brugnoniers Quenouilles } Pourpré Hative, }	Standard Nectarine, Early White. }
		33	25	Do. do. Violet Tardif,	
				50	
38	bale	94	25	Coignassiers Quenouilles } de Portugal. }	Standard Quince of Portugal. }
		95	25	Do. do. do.	
				50	

From an auction catalog, Messrs. Mills and Minton; stock from Vilmorin Andrieux & Co., New York, 1825 (greatly reduced)

Company of San Diego. Other gifts included the large collection of the Division of Plant Exploration and Introduction; the collection of domestic and foreign catalogs and orchid lists, acquired largely through the efforts of

David Lumsden, which was turned over 2 years ago by the Bureau of Entomology and Plant Quarantine; the collection of Edward J. Wickson, sent in 1926 by the University of California; and the collection of catalogs listing

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Hovey and Company's Catalogue of

NATIVE AMERICAN
TREE, SHRUB, AND PLANT SEEDS.

Orders should be sent during the months of November, December, and January.—Those marked ^h are herbaceous.

TWENTY-FIVE CENTS PER PAPER.

<i>Acer rubrum</i>	Scarlet Maple.
<i>sacharinum</i>	Sugar.
<i>nigrum</i>	Black.
<i>montanum</i>	Mountain.
<i>Æsculus flava</i>	Yellow Flowered Horsechestnut.
<i>macrostachya</i>	Dwarf White.
<i>Alnus serrulata</i>	Serrated Leaved Alder.
<i>Andromeda paniculata</i>	Panicled Andromeda.
<i>Azalea glauca</i>	White Glaucons Azalea.
<i>nudiflora</i>	Red Flowered.
<i>Berberis canadensis</i>	Canadian Barberry.
<i>Betula populifolia</i>	Poplar Leaved Birch.
<i>lenta</i>	Black.
<i>excelsa</i>	Yellow Leaved.
<i>Bignonia radicans</i>	Trumpet Creeper.
^h <i>Cassia marylandica</i>	Maryland Cassia.
^h <i>nictitans</i>	Sensitive.
<i>Carpinus americana</i>	American Hornbeam.
<i>Castanea americana</i>	American Chestnut.
<i>pumila</i>	Chinquapin.
<i>Catalpa syringæfolia</i>	Flowering Catalpa.
<i>Cephalanthus occidentalis</i>	Swamp Buttonwood.
<i>Clethra alnifolia</i>	Alder Leaved Clethra.
<i>Cornus florida</i>	Great Flowering Dogwood.
<i>Corylus americana</i>	American Hazlenut.
<i>Crataegus coccinea</i>	Scarlet Hawthorn.
<i>Cupressus disticha</i>	Cypress Tree.
<i>thyoides</i>	White Cedar.
<i>Diospyrus virginiana</i>	Persimmon Plum.
<i>Fraxinus acuminata</i>	White Ash.
<i>Gentiana saponaria</i>	Soapwort Gentian.
^h <i>Gerardia quercifolia</i>	Oak Leaved Gerardia.
<i>Gleditsia triacanthos</i>	Three Thorned Acacia.
<i>Halesia tetraptera</i>	Snowdrop Tree.
<i>Hammamelis virginica</i>	Witch Hazel.

From a catalog of 1834/35

cacti, made by Joseph N. Rose, sent to the Department in 1930. The Library of the Brooklyn Botanical Garden recently contributed more than 200 items—copies of issues lacking in the files here and publications of several firms

not previously represented in this collection.

A list of duplicates was compiled and sent to a number of libraries with the request that they choose material lacking in their own files, and in this way

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BIENNIAL, AND PERENNIAL FLOWER SEEDS.

a—Denotes those which often bloom the first year, and therefore possess all the advantages of annuals.

c—denotes climbers.

d—denotes species the seeds of which seldom vegetate well, and often fail entirely.

Alyssum, Golden	d Crown imperial
Amsonia, Broad leaved	Dahlia, Single mixed
Willow leaved	Double mixed
d Anemone coronaria	Dragon's head, Pink,
Sylvan White	Variegated
d Asiatic globe flower	Eupatorium, Celestial
Aster, perennial, 20 species	Red
d Auricula	Verticillate and others
Balm of Gilead	a Feverfew, Double white
Bartsia, Scarlet	Flax, Purple Perennial
Bellflower, Siberian	Flower of Jove, Red
Netted leaved	Foxglove, Purple
Panicle	White
Azure	Yellow flowering
American Blue	Great flowering
a Bladder Senna, Scarlet	Oriental
Boltonia, Starry flowered	Iron colored
Sylvan	d Fraxinella, red and white
Bugloss, Italian	French honeysuckle, Red
Cacalia suaveolens	White
Campion, Bladder	c Fumitory, pink
Canterbury Bell, Blue	Garlick, Yellow flowering
White	White do
Double blue	Purple do
Double lilac	d Gentian, Purple
Caper	d Porcelain, &c.
Cardinal Flower, Scarlet	Geranium
Cassia, Maryland	d Gerardia, Yellow Oak leaved
Florida	d Yellow Glaucous
Catananche, Blue	Geum, Pyrenean
Cinquefoil, Various leaved	Broad leaved, and others
Dark flowering	Gilliflower, Scarlet Brompton
Hoary leaved	Purple do
Erect, &c.	White do
Clary, Red topped	Twickenham
Purple topped	Scarlet Queen
Columbine, Blue	Purple do
Roseate, or Pink	White do
Purple	Persian
Red	Splendid German
White	Brompton, in 12 varieties
Double White	c Gonolobium, Hairy
Canadian Scarlet	Hibiscus, Rose colored
Commelina cœlestis	Pale pink colored
Coreopsis, Trifoliolate, and other varieties	Halbert leaved
Coral plant	White
d Cowslip	White and crimson
	Rose and crimson, &c.

William Prince & Sons, 1835/36

the duplicates were divided among a number of Eastern and Middle Western horticultural libraries. Large numbers of the older catalogs were sent to the horticultural departments of Cor-

nell University and the New York Agricultural Experiment Station at Geneva. Many of the foreign duplicates went to the Massachusetts Horticultural Society Library.

38

D. MILLER, JR.'S DESCRIPTIVE CATALOGUE.—RASPBERRIES.

RASPBERRIES.

Many of the Raspberries are the better for being protected, in cold latitudes, during the winter. Directions for the same will be found on page 13.



[BRINCKLE'S ORANGE.]

Red Antwerp—Large, fine-flavored, tender flesh, but vigorous and productive. 12½ cts. each; \$1 per dozen.

Createn Red or GENESEE—Rather large, vigorous, hardy and productive. A profitable sort. 12½ cents each; \$1 per dozen.

Franconia—Large, purplish red, vigorous and productive. 12½ cents each; \$1 per dozen.

Fastolf—Large, purple, vigorous and productive. 12½ cents each; \$1 per dozen.

Knevett's Giant—Highly praised. 25 cents.

Brinckle's Orange—Large yellow, sweet and delicious, vigorous and productive; one of the very best. 25 cents each; \$2.50 per dozen.

Vice-Pres. French—Large, crimson, good. 25 cents each.

Thunderer—Said to be very fine. 25 cents each.

Cushing—Said to be good. 25 cents each.

Rivers' Antwerp—25 cents each.

Col. Wilder—Large, yellow, sweet, tender and good. 20 cents each.

White Antwerp—Large yellow, sweet, tender and good; too soft in flesh to carry. 12½ cents each; \$1 per dozen.

White or Yellow Cap—A small native variety, very hardy, handsome, agreeable and good. 15 cents each.

Black Cap—Our native sort, growing wild. 15 cents each.

Ohio Everbearing—Much like the above, but produces a fair crop in autumn. 15 cents.

Catawissa—Belongs to the same type as the above, but is larger, and produces a heavy autumnal crop. Quite hardy and vigorous. 25 cents each.

Bagley's Monthly—Highly praised. Not tested. 25 cents.

Belle de Fontenay—Very large, purplish red, very productive, hardy, and (under proper care) will produce a fine autumnal crop. Needs thinning, as it suckers very freely. 15 cents each; \$1.50 per dozen.

Typical illustration, 1859/60

The earliest list in the collection is a foreign one, a photoprint reproduction of a list of seeds and plants issued in 1769 by Vilmorin-Andrieux, of Paris. The collection has catalogs from this

firm covering the period from 1878 to 1940. The earliest foreign catalog is an English one, Robert Furber's *Catalog of Curious Trees and Plants*, 22 pages. It was issued without a date, bound

REPRODUCED TO
NOV. 27 1911



CATALOGUE
OF
SEEDS
FARM IMPLEMENTS & MACHINERY

SOLE WESTERN AGENCY FOR
Landreth's Warranted Garden Seeds
FRUIT & ORNAMENTAL TREES.
FROM

F. A. SCHWILL & BRO.
AGRICULTURAL WAREHOUSE,
No. 64 & 66
SYCAMORE STREET,
CINCINNATI, O.



W. T. NORMAN, Wood Engraver & Printer, s.w. cor. Third & Sycamore Streets, Cincinnati

with Philip Miller's *Gardener's and Florist's Dictionary*, edition of 1724.

The earliest German catalogs in the collection are two lists published in 1854 by Friedrich Pabst of Ilversgehofen, near Erfurt. These are bound

with the Department Library copy of E. Regel's *Gartenflora*, volume 3. Erfurt was the center of an extensive business as early as 1668. Catalogs of Erfurt firms in the Library include the 1865 catalog of Haage and Schmidt,

whose predecessors had been in business since 1730; and catalogs of F. C. Heinemann from 1862 to 1938.

The oldest American catalog in the collection is a photoprint copy of a list issued by the William Prince nursery, dated 1771. Other eighteenth-century catalogs of which there are photoprint copies are those issued by William Prince, dated 1790, 1793, and 1799; John Bartram & Company, 1790; and Minton Collins, Richmond, Virginia, 1793. Photoprint copies of the catalog of Daniel Smith and Company, Burlington, N. J., 1806, and of another of later date, are also in the collection.

The earliest printed American catalogs in the collection are those issued by Bernard M'Mahon of Philadelphia, published in 1804; Steadman & Floy, 1806; and John Bartram & Son, 1807. Among the old catalogs acquired in the early days of the collection is that of William Booth: *Catalog of Kitchen Garden Seeds and Plants*, 26 pages, dated 1810 at Baltimore. *A Catalog of Peach Trees*, one page, issued by Mahlon Moon of near Attleboro, Bucks County, Pa., is dated 1845. This firm was founded by James Moon in 1767, and the last catalog, an undated one, was received in 1935.

The first catalog from the Grant Thorburn firm of New York City is dated 1821, although the business was established in 1805. Grant Thorburn died in 1863, and the firm name, continued by F. W. Bruggerhoff issued catalogs until about 1930. This name has probably continued in business longer than any other in this country. Peter Henderson, of New York City, who was employed by this firm, established his business in 1865, and it still continues.

The growth of the collection since 1919 has been steady. By the end of 1920 the catalogs numbered 16,344

American and 3,185 foreign lists, a total of 19,529. At the end of the 6-year period following, it numbered approximately 34,000 lists and occupied about 430 feet of shelving. Since December 31, 1926, it has more than doubled, so that it now includes more than 70,000 items. Most of the catalogs come from Belgium, the British Isles, France, Germany, Holland, and the United States, though there are many from other European countries and from Africa, Asia, Australia, and South America.

Requests come in from Government agencies, experiment stations, nurseries and seed houses, horticultural organizations, commercial organizations, libraries, schools and colleges, newspaper information services, and the general public. Inquirers want to know the names and addresses of nurserymen and seedsmen in certain places or handling certain plants; and where they can obtain seeds, roots, and plants of ornamentals, vegetables, fruits, and field crops. Compilers of check lists of specific plants use the collection as a whole.

Data contained in the catalogs are made available to the user by means of card indexes by scientific name and common name and a card index of the fruit varieties listed in catalogs received from firms in the United States and Canada.

At the present time many firms are unable, on account of the curtailment of communication with occupied countries, to send their publications with the promptness and regularity of pre-war years. These will again participate after the war. The collection owes its existence and its usefulness to the 2,000 nurserymen and seedsmen who cooperate year by year by sending their publications to the Department of Agriculture Library.

The Gardener's Pocketbook

Iris Hoogiana and Friend

Ever since World War I, my gardening motto has been, perforce, "maximum effect from minimum effort" so exotics needing attention of trained gardeners have been quite out of reach. However, on reading that the *Regelia Iris Hoogiana* was a favorite of Mr. Dykes I was tempted to try it. I had no expectation of undertaking such care as removing it to a hot bed for its summer baking then back to its location in the garden picture for blooming, but believed some spot could be found in a Western New York garden where a *Regelia* iris would settle down and feel at home.

Following a visit to Col. J. C. Nicholl's Iris Garden in Ithaca, N. Y., *Iris Hoogiana* was purchased and, on Col. Nicholl's advice iris *Hebe* was added as a companion to grow with *Hoogiana*. Both were planted in ordinary garden soil in a slightly sheltered spot south of a lilac bush. Here they lived for three or four years in harmony but that was all, no blossom, no increase.

Then they were moved to the main iris border on an elevation falling away to the south and west. Here they had clay loam in a lime stone country, full sun, and temperatures up to 104° F. in Summer and down to 34° F. below zero in Winter and no protection from either. They were still too homesick to blossom but they held their own for five or six years more, and would probably have been forgotten and lost but for their metal place cards that distinctly marked them.

Finally, in spite of the short allowance for ornamentals in my gardening budget of time and effort, I determined to give *Hebe* and *Hoogiana* one more chance and moved them myself one September to their third location, all

within a radius of about ten rods. At last they were at home and rewarded us with exquisite bloom and increase the following Summer.

This last time they were planted about six inches from a concrete cellar wall under a vine covered brick house. They are in the full blaze of direct southwest sunlight. The soil is poor and mixed with rubble and, being on a side hill the drainage is perfect. A wide overhanging roof three stories up keeps off some rain and snow but gives no shade and the heat reflected from the wall is intense. There is seldom more than three or four inches of snow over them in Winter and that usually melts off once or twice in January or February disclosing the green iris leaves and the faithful markers. *Hebe* and *Hoogiana* may be a bit choosy about where they live but no one can question their hardihood.

For three years they have bloomed happily here by the foundation wall and without the slightest further attention beyond admiration. They are now a great satisfaction and that too without involving labor troubles which means a lot in this day and age.

MARY M. SELDEN,
Avon Park, N. Y.

Daylilies or Hemerocallis

That "Lemon Lily" is one of the oldest of the daylily family. It is not a true lily at all, but is properly known as Daylily or *Hemerocallis*—which means "beautiful for a day." Each morning the daylily refreshes its beauty with newly opened flowers to give your border and garden a constant splash of color.

Daylilies came from Europe and the Orient. In Europe the production of horticultural Daylilies began about

1890, and shortly thereafter hybridizing and breeding began. Of these older varieties some of the best proved to be Apricot, Gold Dust, and Tangerine.

The important part of Hemerocallis as far as known are free from plant diseases and insect pests, grow in any soil from sand to muck, will withstand flooding to moderate amounts of moisture under conditions full sun and in partly shady spots, which makes this a much more important perennial that should occupy every garden.

The newer hybrids show a greatly extended color range, varied height and foliage, and many more flower buds to the scape.

Color varieties come in various tones of yellow and orange from light to very deep and some pastel shades. It should be remembered that Daylilies do not always show their true characteristic coloring the first time they blossom after having been moved. By the second season they are likely to show and surely the third season, their glory. They bloom from the middle of May to October.

Dr. A. B. Stout, Curator of Education and Laboratories of one of the finest metropolitan botanical gardens in the United States, is a true pioneer in breeding new forms of Daylilies. Since 1912 he has produced more than 70,000 Daylily seedlings. These have been carefully evaluated over a period of years in New York City and at Weiser Park, Pa.

A very high standard was set by Dr. Stout and, as a result, only 48 ton of these seedlings have been introduced since 1931. Some of these introductions still exist in such small quantities that they have been withdrawn from commercial lists and have been held for propagation.

I have to say that I have enjoyed my Conrad Weiser collections in groups of 3 in my perennial border even with

dryness of weather since I had them. They are the glory of my garden.

MATTIE MAE BARNES,
Three Rivers, Mich.

Home Made

"With all the land you have you ought to buy some small nursery stock to use as you need it."

That was a truly valuable suggestion made by the Scotch garden expert whom we always had when plants needing extra care had to be moved.

On twenty acres "more or less" . . . four less by actual measurement . . . we tried to have a small farm. Failing to achieve the right combination for that plan the place settled rather uncomfortably into the "estate" class.

Since we couldn't afford to have it regularly landscaped, the design just grew and we have been trying to correct our mistakes the hard way.

Our first, one which, unfortunately, is still prevalent, was the foundation planting. It was the nursery man's delight, a generous selection of things which normally require a great deal of room. They look inadequate at first but, all too soon, they are blocking out the doors and windows. Therefore the moving, for experience and garden club lecturers were beginning to teach us rapidly.

The first plants were spread out making new groups to screen out ugly spots; to accent or define new vistas.

Then came the gardener's remark and a new order was started. We did buy some small conifers and by the time they were large enough for permanent places there was a definite project under consideration. When they had all been utilized we missed our nursery so much that the operation was repeated.

Soon another suggestion was too tempting to be overlooked. This one came from a well known lecturer who

told us that if we were willing to wait a few years for effect we could get very small rhododendrons and azaleas in quantity for a reasonable sum.

This year the rhododendron planting which resulted from carrying out that recommendation was a breath-taking sight and the *Schlippenbachii* azaleas have been paying dividends for quite some time.

The biggest thrill of all has come from carrying out Mr. G. G. Nearing's directions for rooting cuttings.*

As we were anxious to have some holly we used the mixture indicated three times without success. Other things, however, have more than repaid us. When we take them out of the coldframe they have a beautiful root system and fine new top growth. Queerly, this year's cuttings have only top growth so we must wait another year for roots to form.

It has been a great deal of fun and well worth while for there always seems to be a use for the material when it is ready and it is amazing to find it ready in just a few years.

This summer, after many year's absence, the gardener came back and by way of commendation said we would soon find that we have a botanical garden.

Life is too short, perhaps, for that but it is something to work toward.

RUTH ADT STEPHENSON,
New Haven, Conn.

Daffodils in West Virginia

In visiting gardens and talking with flower growers, one is considerably disappointed that there are so few of the newer daffodils from the present day hybridists of Great Britain and Ireland. Even varieties that have been registered for fifteen or twenty years are of-

ten quite unknown. Probably the reason lies in the fact that British growers seem never to have been interested in establishing great commercial nurseries in the United States, such as have introduced daffodils from other countries. People are not going to ask for flowers about which they know nothing.

Some years ago I began to realize there were many daffodils which never appeared in the catalogues of leading flower distributors. A few articles about these varieties began to appear in the better class of garden magazines, but when one tried to find out where to buy these flowers, one came to a dead stop. A few could be had at sort of amateur nurseries where, as one establishment informed me when I asked to visit the garden, "So and so" does not admit the general public."

Finally came the great day when a permit to import daffodils arrived from the Department of Agriculture. How thrilled one was to have catalogues from Mr. Guy L. Wilson and Mr. J. L. Richardson in Ireland, and how one's arithmetic came forth to brush up on pounds, shillings and pence. The next spring how eagerly one watched Carbineer, Pinkeen, Red Abbot and many others unfold to usher in a new daffodil world.

Having announced the new varieties in the West Virginia Garden News, a few visitors came to see them, but no one said, "I'll import some too." Several years later a man from Huntington, W. Va., saw some of the flowers in Doctor Barbee's office. They were not like any he had seen, so he asked to visit the garden. For several years he came every spring with friends and finally after my stock had increased considerably, I decided to give about twenty varieties to these visitors.

Then about three years ago Huntington, West Virginia, gave its first

*First presented in Real Gardening, May 1939. At that time the New Jersey Agricultural Experiment Station at New Brunswick had a detailed paper available to anyone for the asking.

daffodil show. This year a really creditable show was given in connection with the annual meeting of the West Virginia Garden Club. Now I was able to exhibit varieties such as Ruston Pasha, Carbineer, Market Merry, Diolite, Marksman, Polindra, Coverick Perfection, Forfar, St. Egan, and a number of others. After the meeting was over some very interesting visitors from New York and Pennsylvania stopped in to see these new daffodils hidden away in the far hinterlands of West Virginia, and gave encouragement to my idea of starting other colonies of British daffodils in different parts of the State.

After the war I hope this will lead people to import other beautiful varieties or buy them from growers in this country.

MRS. H. A. BARBEE,
Point Pleasant, W. Va.

Hypoxis hirsuta

Weeding—on a rainy June morning—I came upon a somewhat neglected *Phlox* "*nitida*" had four or five years back, from Wisconsin. The few shoots of the *Phlox* were about four inches high, and seemingly from the same base were a few grassy and sparsely hairy leaves a bit taller, with a six-point star of brilliant gold—a form and color tone that conveyed happiness and contentment as well as beauty. *Hypoxis hirsuta*, Golden Star-grass, modest, diminutive, and beloved—in a higher, dryer portion of the Great Plains, well out of the native range of the species. It is quite evident that a seed of the Amaryllid came in with the roots of the *Phlox* and in an improved soil and with some advantage in shade and moisture over the average of the prairie environs had found suitable habitat.

Speaking of range it may be noted that Hortus Secund gives the range of the species as from Maine to Florida and Texas. Rydberg's Flora

of the Prairies and Plains of Central North America, evidencing further research, includes Maine, Florida, Saskatchewan and Texas. Local authors, Stevens, of North Dakota, refers to its haunts in low meadows; Over mentions the "wet meadows" of the Big Sioux River valley at the eastern end of South Dakota; Pool lists the plant for the Nebraska Sandhills which lie centrally or more to the west in that state. Winter, recording also for Nebraska, definitely states that *H. hirsuta* occurs as far west as North Platte, which is somewhat west of the center of the state, and the plant ranges over a similar area in Kansas. The Catalogue of the Flora of Texas indicates a continuation of the approach to or slight overlapping onto the Great Plains as marked by altitudes of 1800 to 2000 feet, dryer climate apparently bounding the western reach of the plant.

From the approximate center of the state of Kansas I had four plants of the Star-grass perhaps seven or eight years ago. They were set almost in the open, yet with a little shade from pines which also acted in reducing the natural moisture supply. Their spot is remote from the new plant lately discovered, and in that and unlikely place three of the plants continue, as they have with no supplied moisture through many extremely dry periods, and their bloom has been brought forth faithfully. Yet for our own enjoyment I could wish that my plants might enjoy a more stimulating environment, in which they could develop into sizeable tufts with whole bouquets of blossoms. I think I now see the way clear to provide that better living for them.

Its persistence in my prairie garden indicates an adaptability that qualifies *Hypoxis hirsuta* for wide use where a quite low and very pleasant bit of golden springtime bloom is desired.

CLAUDE A. BARR,
Smithwick, S. D.

Hardiness in Plants

Hardiness in plants is a quality that seems difficult to define; and ability to withstand severe cold is not always a guarantee that a plant will be hardy under local conditions. There are many other factors to be taken into consideration; such as the length of the growing season required to ripen up growth properly, the moisture necessary for healthy growth, and whether soil of an acid or alkaline reaction suits the individual species best.

Here at Dropmore we find that some of the trees and shrubs of the drier plains to the southwest of us, such as *Pinus ponderosa* and *Juniperus scopulorum* from the Bad Lands of North Dakota, cannot stand our winters when grown on our more rich and retentive soil, even though they have to endure as much cold in their native haunts.

Then again, the Sugar Maple from near Fort William, with its moister climate and more acid soil, simply cannot stand exposure to the dry air when grown on our calcareous soils.

Then there is the difference in hardiness in geographical forms of the same species, as was well illustrated in our plantings at Dropmore during the past two years. Here we had a strain of *Ulmus pumila* from Harbin, Manchuria, growing along side the form from China that has commonly been cultivated in the Great Plains area. In the autumn of 1941 the Harbin type had shed all its leaves while the Chinese type was still well clad with leaves. The extremely severe winter of 1942-43, which destroyed so many plantings of the Chinese Elm throughout our area, killed out entirely this Chinese form that kept its foliage so late in 1941, while the Harbin type along side came through the winter alive to the tips.

It may seem rather strange to Eastern readers, but I find that trees and

shrubs of Continental origin that have not proved hardy at Kew are well worth a trial here. Take *Populus tristis* for instance: Bean says of it, "Although introduced in 1896 from Späth's Nursery at Berlin, it has never succeeded; and although it makes vigorous growth during the summer, it is frequently cut back during the winter, and it has never got beyond a few feet high."

Cuttings of this Poplar that I secured from Kew before the war are now trees over 25 feet high and making annual growths of from 3 to 5 feet.

It would seem, therefore, that the problem of hardiness is rather a complex one, and can only be solved by trial in the locality in which the plant material is intended to be grown.

F. L. SKINNER.

Dropmore, Manitoba, Canada.

Some Mentzelias of Colorado

The rough company with which these Rocky Mountain *Mentzelias* associate makes their beauty all the more surprising.

On dry hillsides, by newly eroded gullies, and most of all where new roadway cuts have been made through the hills, *Mentzelias* move in and decorate the place with handsome lavishness.

Mentzelia nudiflora is one of those lovely but weakminded people possessing adequate petals, but unable to decide which stamens shall remain stamens and "therewith be content," or change to the status of petals. Plants are from one and a half to two feet high, erect and well formed, consisting of many branched stems, each terminating in a well spaced group of daisy-like creamy-white flowers. The leaves and stems have the usual family viscous stubby hairiness, unpleasant to feel and encouraging them to stick to everything that they touch. Worn as a corsage, it carries its own pins. This



K. N. Marriage

Mentzelia decapetala

species opens its flowers about mid-afternoon, earlier on cloudy days.

The fairest of the family without question is *M. decapetala* (syn. *ornata*) with refined flowers of exquisite beauty and dignity. Ten large petals of creamy satin from whose center rises a cluster of shiny yellow stamens, form a flower

suggestive of water lily substance and quality. The uncouth company of cactus, yucca and the like with which it associates contrasts strangely with its regal flowers. Its rough stems and leaves, stubbly to the touch as those of any of her sisters, give the lie to its queenly blooms.

Small and almost dainty is the yellow-flowered *Mentzalia multiflora* that welcomes us around the bend of mile 2 on Pike's Peak. Sparse and small leaves and relatively long flower stems give it an airy appearance. When kept on a very poor diet in full sunshine this one may be tolerated in the Rock Garden. We find it usually on steep slopes of granitic gravel with *Penstemon alpinus* (glaber). Do you suppose they know that their intense blue and clear yellow together are good to the eye? Or is it again some biological sculduggery. You lure that moth for me and I'll see what I can do with this bee for you.

These beauties all have long woody roots with few fibers, so are not in the easily transplantable class; individual plants are impermanent. The only satisfactory way to establish them in the garden which must be very sunny and extremely well drained—is to sow seed where we hope to have plants to stay put. Sown on a sandy surface in which peatmoss is mixed they germinate fairly well and send down six-inch roots before the obvious part is an inch above ground. Once established they go gaily on and self sow.

In regions of humid air they may be expected to sulk and be most unhappy, but if conditions are such as suit *M. decapetala* she will repay tenfold all the effort spent to invite and to welcome her.

KATHLEEN MARRIAGE,
Colorado Springs, Colorado.

FROM THE MIDWEST
HORTICULTURAL SOCIETY

Quercus robur

The English oak (*Quercus robur*) will remind most people of a white oak with smaller leaves and a slightly different growth. While this might be only attractive as a somewhat more

graceful white oak yet it has advantages in that a fastigiate form is available.

There has always been something attractive about oaks from the time of the ancient Druids down through the ages. An oak woods with several species present will present an endless variety of texture, and color in all seasons of the year. The majesty and sturdiness of them make them one of the favorite of trees. However, most oaks are not too easily transplanted except in small sizes. The English oak does not seem to be more difficult than others of the group and being nursery grown should respond readily. I have known this oak to grow satisfactorily on the sandy shores of Lake Michigan and on the stiff gumbo clays of the larger part of this region. It is one of my favorite oaks and one that should be more widely used wherever oaks are being planted. Growth in seedling plantations has been relatively rapid and nursery trees have proved good growers even under adverse conditions.

For those who need columnar forms for landscape use the fastigiate form will prove more useful than the forms of *Populus* which have but a short life. Inasmuch as the species has proved adaptable there is no doubt that the columnar will do equally as well. Oaks have been too often overlooked in plantings in this region but this species as an addition to the native oaks in wooded areas or as a lawn tree will be a desirable tree in every way.

Acer ginnala

This maple may best be described as a small maple similar in growth to a crabapple. The plant in this region grows in much the same manner and would lend itself to the same uses as the native crabs.

However, the Amur maple is more graceful with smaller branches and the

lobed leaves are more attractive for landscape use than the crabs. The foliage colors a brilliant red in fall and makes a delightful accent for several weeks. The flowers while small as in most maples are more noticeable because the short stature of the plant brings them to eye level, and the odor is also noticed. In the summer the two-winged fruits (seeds) are tinged with red and the clusters of them are quite apparent.

This shrubby tree seems to be rather easily cultivated and needs but little attention. Its use seems to be as a small tree for screening purposes where something different from the usual line of coarse shrubs is desired, or as an interesting break in the monotony of material of too similar a height. Fall color is also a point of value.

Pinus mugo

This pine has come into rather wide use during the past few years as a rock garden plant or as a border to other evergreens in crowded foundation plantings.

While there is no doubt of the attractiveness of this plant in its juvenile stages yet its use in crowded areas is indeed questionable. There are plantings in this region, especially in some of the older cemeteries where the mugo pine has been planted sufficiently long to attain some of the size of age. Clumps sixteen feet high and equally as wide are common enough to one who associates these with the diminutive ones sold for home use. Generally the plants used around the home in confined spaces soon lose some of the branches on the crowded side and become lopsided cripples.

The proper place for the mugo pine is where a clumpy evergreen is desired for landscape effect. A large rock garden, a limited use in foundation plantings with due regard for development,

or in specimen treatment would be suitable uses.

Give each plant at least six feet of room on each side if you wish good results.

In culture this is rather an adaptable pine as it grows well in sand or clay, or loam.

While this is rapidly becoming one of the commonest pines it may easily become the most disliked because of the improper use of it in the youthful sizes and the invariable disappointment as it outgrows its limited space.

Ipomoea pandurata

The recent enthusiasm for morning glories has blessed many a fence and post with a display of beauty in the late summer and fall. While Heavenly Blue captured many fancies the later development of other colors has added impetus to the use of these ornamentals. A few years ago my attention was called to a perennial morning glory with flowers slightly larger than the commonly planted sorts. The leaves are heart shaped and in general resemble those of Heavenly Blue. The stems are rather robust and spring from large fleshy roots, that occasionally have the habit of running underground for some distance. The shoots appear in early spring and make a rapid growth until the middle of July when growth slows and the flowers appear. The flowers are borne in clusters of about six and are white with a purplish throat. The flowers open in the morning and last until the sun becomes hot, usually shortly after noon. Successive buds in the clusters open in rotation, for a period of nearly a week.

While listed as a native it is one that I do not recall having encountered in the wild. In cultivation it has withstood extremes of heat and cold, drought and moisture.

Propagation is effected by transplanting portions of the root. No doubt other methods are equally as valuable. The plants that I have observed spring from seed obtained from some forgotten source through a magazine advertisement. As a plant for fence or arbor where a permanent vine is needed for summer ornamentation this has the advantage of being a perennial and of

making a faster growth in spring and so covering earlier and better. The production of flowers is several weeks earlier than the annual sorts and so gives a longer display.

With purple color present in the flower this might be fertile field for the development of some native flowering vines in several colors.

ELDRED E. GREEN.

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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. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of membership in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

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., 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, 821 Washington Loan and Trust Building, Washington, D. C.

