

THE AMERICAN *Horticultural* MAGAZINE



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THE AMERICAN *Horticultural* MAGAZINE

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PREFACE

The American Horticultural Society is celebrating its 45th anniversary in 1967. These have been 45 years of great achievement for horticulture. We rightfully honor the men and women whose creative thinking and sacrifices of time and financial support have brought the Society to its present position.

During its long history the Society's expenses have been remarkably small when compared with its accomplishments. Our financial needs have been met by modest membership dues and by small contributions from horticulturists who are aware of the importance of the Society's work. By far the most notable individual benefactors to the AHS have been the Society's management team, our Secretary-Treasurer, Mrs. Grace Wilson and her hard-working husband, William. Mr. and Mrs. Wilson serve without remuneration. Their daughter, Mrs. Grace Murphy, serves the Society very ably as Administrative Secretary, our only paid employee. AHS members owe a great debt of gratitude to the Wilson family for their dedicated devotion to the Society. Were it not for the concerted efforts of these three persons, the AHS might not be in existence today. And so, we give a special salute to the Wilsons and the many other horticultural leaders of the past for their role in the steady advancement of horticulture.

* * * *

Let us briefly consider, now, certain milestones in the Society's 45-year history. Evolving from its earliest beginnings before the turn of the century, the AHS came into being in September 1922 in Washington D. C. It was the Society's fond hope that it might one day be the American counterpart of the Royal Horticultural Society.

A National Horticultural Society was founded in Minnesota in July 1922 and, from the first, efforts were made to unite these two organizations. Final ratification of the union took place in June 1926. In the mid-forties the American Horticultural Council was organized and it merged with the American Horticultural Society in 1960 to further the influence and scope of both groups.

It is interesting to note that the first four volumes of the National Horticultural Magazine consisted of four pages in tabloid form and the fifth similar volume was published by the newly-united Society in 1926. The linoleum block covers, so familiar to many members of long standing, started with Volume Six in 1927, and this was the prototype of today's magazine. And so both the years 1922 and 1927 are especially important to the Society with 1967 being the 45th anniversary of its inception and the 40th anniversary of its magazine.

To celebrate these two anniversaries our management has chosen favorite articles from past issues, some now out-of-print and unavailable, and gathered them into this Special Issue. It was a difficult task indeed to choose articles that would present a cross-section of the wealth of material that the magazine has covered over the years. Emphasis has been given to the years since 1955 when our first Anniversary Issue appeared. We have also assembled a number of the well-loved linoleum block covers that were printed from the work of the expert hands of our first Editor, the late Benjamin Y. Morrison. These grace the covers of the present Anniversary Issue.

* * * *

During my two-year tenure as your President I was privileged to serve at a time when America for the first time in history was host to the International Horticultural Congress. The AHS was co-sponsor along with the American Society for Horticultural Science of the Congress which was held at the

University of Maryland in August 1966. Our own Dr. Harold B. Tukey was President of the Congress and his able assistants were our immediate Past President, Dr. Russell J. Seibert and Dr. Frank P. Cullinan. The Congress, adjudged a highly successful meeting, consumed many man hours of time of the Administration and Management of the Society.

As a member of the Board of the National Junior Horticultural Association, I have been able to bring our two organizations much closer together. It is our hope that their graduates will be our new AHS members. Also we hope to attract the highest quality young men and women to the N.J.H.A.

The President's Beautification Program was launched in the past two years and our Beautify America Committee, headed by Mr. Frederic Heutte, assured that our interests would be represented in national meetings. Our immediate Past President, Dr. Russell J. Seibert, and I were honored by being included in the President's White House Conference on Natural Beauty.

The Daffodil Handbook was printed in 1966 and much work has been done on the Hemerocallis Handbook that is scheduled for early 1968.

Blessed by the inspiration of an able Vice President, Dr. Fred Galle, and a most progressive and knowledgeable Board of Directors, we decided at our very first Board meeting that it was even more necessary for us, the present leaders, by new sacrifices of our own, to provide time, talent, and money for continued progress toward a greater Society.

Recognizing that radical and rapid changes taking place in all segments of the economy would certainly have a pronounced effect upon professional societies such as ours, we decided that a goodly portion of our regime would be centered on the subject of those changes, effects, and actions. We realized that all the considerations of our AHS Board had to be based on a realistic analysis of the Society's strengths and weaknesses and the Society's opportunity to achieve its goals within its budgetary limitations. Our Board readily agreed that a membership survey would pinpoint the strengths and weaknesses of our present program. We also were well aware of the fact that it would be necessary to build into the blueprint of action provisions for periodic review and the means to modify AHS's programs in line with changed conditions.

A Long Range Planning Committee was set up with Mr. David Leach as Chairman. Other members of the Committee were Mrs. Ernesta Ballard, Mrs. Barbara Emerson, Dr. Fred Galle, Mr. Stewart Winn, and Mr. Robert Wintz. This Committee was charged with discussing the policy and programs of AHS in the following terms:

1. Objectives and goals;
2. Short-term measures to meet emergency needs;
3. Long-range programs directed toward achieving basic goals and objectives.

The Long Range Planning Committee reviewed and analyzed the Society's organizational structure and procedural systems. It then submitted to the Board a set of concrete recommendations. The Board approved this report and the Committee was disbanded.

Just as the AHS of today represents the efforts, the progress, and the sustained support of many loyal horticultural leaders over the past 45 years, so the AHS of the future will be measured by what we, today, in our generation decide to do. Now, on the occasion of the Society's 45th year of operation those who believe in the AHS are unanimous in the conviction that the Society must keep up this hard-won forward momentum.

JOHN H. WALKER

President, American Horticultural Society



Larix Gmelini japonica

Our Deciduous Conifers

BY ARTHUR D. SLAVIN

Several of our most beautiful conifer groups are of the deciduous type. During the growing season, they present all of the beauty of the evergreen and when dormant they appear not unlike many of our regular shade trees. In the spring, their new growth appears rapidly as though, well satisfied with their winter rest, they desire to see what the coming season has in store for them. In the autumn, their foliage which turns to golden hues before falling makes them especially valuable for color ornamentation.

The uses to which they may be put are many. As they all attain a fair height, they make excellent specimen trees. Their habit is mostly pyramidal and symmetrical. Given a fair amount of space, much less than that required for most trees, they may be expected to develop without becoming unwieldy or overcrowding the lawn.

When planted among the evergreen cone-bearers, they never fail to offer a pleasant combination of color since their foliage is brighter and, in most cases, a lighter green than that of the former. They are especially useful for planting in place of the usual deciduous trees as they fulfill much the same purpose, but in a more interesting manner. They give the owner none of the troubles caused by the litter of fallen leaves, their foliage amounting to so little in bulk that it may be left on the ground where it will rot during the winter and add humus to the soil. If so desired, it may be raked up and later mixed with soil for the rock garden. In this capacity, it

makes an excellent acid compost for growing acid loving plants.

Strictly speaking, there are four genera of the deciduous type within our area. One of them, the Ginkgo, although it belongs to the Coniferae, will not be considered here because it is a broad leaf type and bears a drupe-like fruit rather than a cone.

Like much of our cultivated material, these species require some conditions for their success at variance with those of their native haunts. Several are known in the wild as bog plants, but I have yet to see any cultivated specimens doing well in wet ground. Good, fertile, well-drained soil will generally assure their success. A sandy loam is excellent, and with few exceptions, no care need be taken for their protection against adverse climatic conditions.

The first of these groups is the Larch. It is represented in this country by seven species, one hybrid, and five varieties. This genus is distinguished, in addition to its deciduous habit, by several distinct characters. The leaves are arranged in both solitary and clustered fashion. On the young branchlets, they are solitary; on the older growth, they are borne in fascicles on the ends of small spurs which appear laterally along the branches. The male flowers are solitary. The cones have persistent scales, that is, they do not disintegrate when mature. This last character is important in that it forms a means of differentiation between this and an-

other genus which is to be considered later.

Larix Kaempferi, or Japanese Larch, as it is called because it came from that country, was introduced into cultivation during the middle of the last century. With our present knowledge of this genus, we must give this species first honors as being the most valuable for ornamental work. It is entirely hardy and a fast grower. When young, it assumes a pyramidal habit, later developing a broad head not unlike that of many deciduous trees.

The branches of this tree are long and slender, spreading horizontally over a wide area. The bark is quite thick and dark brown, peeling off in plates which leave markings of red on the trunk. The branchlets are a distinguishing feature; when young they are covered with a bloom and scattered hairs; later they become yellowish red in color and, finally, the second year a lustrous tan or reddish brown. The foliage is light green and pale on the underside. In the autumn it turns to beautiful yellow. It is this feature coupled with its broad habit of growth, that marks it as so desirable an ornamental tree. The leaves are quite broad and measure from $\frac{3}{4}$ to $1\frac{3}{4}$ inches in length. They are ribbed on the underside and have two bands, one on either side of the rib, each of which is made up of five rows of stomata. The cones appear early in the season, grayish green at first, becoming light brown when mature. The largest specimen I have examined in this country is now fifty years old and 47 feet tall. Young trees, once established, may be expected to make an average growth of at least 12 inches a year.

The European Larch *Larix decidua* is the common species of that con-

tinental where it is used on a large scale for both reforestation and ornamental work. Trees, in this country, which reach a height of 60 feet may be considered good specimens. In the British Isles it is valued as a source of lumber and trees well over 100 feet in height have been recorded. Next to the Japanese Larch, it is the most valuable species of the genus commonly available in this country.

Although it sometimes develops an irregular top with age, it is generally seen as a tree of narrow pyramidal habit. The branches are short and dense, increasing in length with the age of the tree. The branchlets are glabrous and yellow, becoming gray the second year. The leaves are rather narrow, soft, and light green. The cones are much like those of *L. Kaempferi* except that the scales are not reflexed as in that species.

In 1908, a seedling of this species with distinctly upright habit was found growing in the nursery of the former Ellwanger & Barry Nursery Company, and was presented by them to the Park Bureau of Rochester. At that time it was 8 feet tall; present measurements indicate a height of 34 feet and a maximum breadth of about 16 feet. It is columnar-pyramidal in habit with almost erect branches which clothe the trunk from base to apex. I have named this form *Larix decidua pyramidalis*. (Conifers in Cultivation: Report of the Conifer Conference; Royal Horticultural Society, London, 1931.)

A cross between *L. Kaempferi* and *L. decidua* was first discovered in Scotland, about 1900, on the estate of the Duke of Atholl at Dunkeld. It was described by the famous Irish collector, Augustine Henry, and named *Larix eurolepis*. Since then, it



Larix Kaempferi

has been given the common name, "Dunkeld Larch," after the place where it was found. The seed parent is *L. Kaempferi*. That the cross is not difficult to make has been established by the fact that seed, taken from a specimen of the Japanese species growing in close proximity to several European Larch in Rochester, have produced intermediates between the two species. Reciprocal crosses have also occurred.

Specimens of this hybrid show a pyramidal outline with horizontal branches. The branchlets are yellowish and slightly pubescent. The

leaves are best recognized by their difference from the Japanese parent. They are shorter and narrower and have fewer rows of stomata on the underside. Their color is a darker green and less bloomy. The cone is conical and has the same number of scales as those of *L. Kaempferi*, except that they are not reflexed as in that species. The bracts which in *L. decidua* are longer than the scales, are shorter in this hybrid, and exceed the length of the scales only near the base of the cones.

English gardeners claim this tree to be more vigorous than either parent and free from the usual dis-

eases of the European Larch. Specimens, here, increase in height at a rate of about 12 inches per year.

Larix laricina, known as the Tamarack or American Larch, is the common species of this country. It is both a wet and dry land tree in its native habitat and is found in the northeastern and northcentral states and in southern Canada. In cultivation, it is most successful when grown in a light, loamy, well-drained soil. When growing in wet locations, it manages only to exist. Specimens 40 to 50 feet high are well developed trees.

It has a narrow spire-like habit formed by short, horizontal branches and a main stem extending the entire length of the tree. Its branchlets play an important part in its determination. They are slender, smooth, covered with a bloom, and yellowish-red which becomes reddish brown the second year. The leaves are blunt at the apex, bright green, and one-half to three-quarter inches in length. The cones are quite small, seldom measuring more than three-quarters of an inch in length, and have only 10 to 15 scales.

Larix Gmelini, previously known as (*L. dahurica*), and called the Dahurian Larch, is a species of doubtful hardness in this country. It is native in eastern Siberia. Although there are supposed to be several specimens in the pinetum at Durand Eastman Park in Rochester, their condition is such that a dependable determination cannot be made. It is even doubtful if they are the true thing.

There are two varieties of the species, both of which have wide geographical distribution from the type. The first, *Larix Gmelini* var. *Principis Rupprechtii* is found in northern China and in Korea. It is identical

with type, except for the cones, which are longer and have a greater number of scales. Unfortunately, the specimens which I have seen are not yet of sufficient size or age to bear cones.

This variety is of broad pyramidal habit with horizontal or slightly ascending branches. The branchlets are straw color to yellowish-red and with a few scattered hairs. The leaves are broad, glaucous on the underside, and a darker green than found in most of the other species. They average about $1\frac{1}{8}$ inches in length. Specimens raised from seed, sent by Dr. Wilson from China in 1903, are now 16 feet tall. They are slow growing but appear entirely hardy.

The second variety, *Larix Gmelini* var. *japonica*, from Japan, has been known a longer time. It is hardy and does well in cultivation. A specimen which I have observed is now 38 years old and about 30 feet tall. It is easily distinguished from the other variety, which it closely resembles, by its dark red, hairy branchlets.

Larix occidentalis or, as the name implies, the Western Larch, is another American species but is more limited in its distribution than the Tamarack, its southern range being Oregon and Montana, and in the north, British Columbia. It is considered the largest growing member of the genus, attaining a height of almost 200 feet. It is not commonly cultivated in the East and having seen but one specimen, I do not know how well it enjoys conditions other than those of its native environment. The cultivated specimen with which I am acquainted is a young plant about 4 feet tall and is, so far, doing nicely. The branchlets are orange-brown and covered



Larix decidua pyramidalis

with hairs when young. The leaves are quite long, often measuring more than $1\frac{1}{2}$ inches, very slender, sharp pointed, and pale green.

Larix Potaninii was introduced into this country by the late Dr. E. H. Wilson 28 years ago. In China, where it finds its native home, it is known as "Hung Sha," meaning Red Fir, from the characteristic cinnamon red bark on old trees. As all our trees in cultivation are too young to show this character, it has been given the common name, Chinese Larch. Not yet in general cultivation, I believe this tree will eventually rank among our best materials for ornamental purposes. It is described as a pyramidal tree with short horizontal branches, although in the specimens here they are quite long; this condition is undoubtedly due to the vigorous growth of the young trees. The branchlets are somewhat drooping, orange-brown, becoming a shiny brown the second year. The leaves make an easy means of determination: they are keeled on both sides and hence appear rectangular in cross-section; they are stout, sharp pointed, and shorter and broader than those of the other species. A specimen raised from the original batch of seed, sent from China by Dr. Wilson and now growing in Durand Eastman Park at Rochester, measures 21 feet in height.

The Siberian Larch, *Larix sibirica*, does quite well here. A tree 16 years old now measures 18 feet in height. It is found in parts of Russia and Siberia and is considered by some authorities to be a geographical form of the European Larch. It is, however, quite distinct from that species, its leaves being more deeply keeled, more slender, and longer. It is narrow pyramidal with short horizontal

or slightly ascending branches.

Pseudolarix amabilis, the Golden Larch, is a monotypic genus found in eastern China. In beauty it has no rival among the deciduous conifers but is seldom seen in this country, the specimens now present having been, for the most part, imported from Europe previous to the plant quarantine. The fact that it can be successfully grafted on the Larch if seed is not available, should induce the trade to grow it more freely. Although invariably described as a tree disliking limestone soil, it appears to do well in any light, loamy, well-drained soil. I have had the opportunity to observe for some years, three specimens obtained from the famous Veitch Nurseries of England in 1905. At that time they were two feet tall. Recent measurements of these same trees show them to be 25 to 32 feet in height.

This tree has a broad head, often almost equal in cross-section to its height. The branches are long, spreading, horizontal and irregularly whorled; towards the top they become quite ascending. It is distinct from the Larch in that it has clustered male flowers and cones whose scales become detached at maturity. The branchlets are of two kinds, as in the Larch, long terminal shoots and short lateral spurs. The long branchlets are reddish-brown and glaucous. The short spurs are club-like stubs, the age of which may be determined by the number of rings on the outside, each ring being the cushion-like base of a previous year's leaf cluster. The foliage is arranged in spirals or scattered along the terminal branchlets and in fascicles on the ends of the lateral spur shoots. The leaves are broader than those of the Larch and also longer, measuring from 1 to $2\frac{3}{4}$



Larix sibirica



Pseudolarix amabilis

inches in length. They are acuminate, slightly rounded on the surface, and keeled on the underside. The color is a beautiful, very soft, light green. On the underside there are two bands of stomata which impart a glaucous appearance to that part of the leaf. In the early autumn the foliage turns bright yellow which remains until the leaves fall. It is this characteristic, along with the habit of the tree, that makes it so valuable an ornamental plant.

The third member of the deciduous group is the *Taxodium*, or as it is sometimes called, The Deciduous Cypress. The genus is native in the southern sections of North America, and to my knowledge, is not represented elsewhere. It is identified by its rounded cones which are quite different than those of the preceding genera in structure, being made up of irregular, four-sided scales which break apart when mature.

It is an habitue of wet places in the wild, but succeeds in cultivation only in well drained soil. In the south, where it is at home, it can take care of itself in places where the roots are under water; but in the north, cold and frost will constantly injure the root system if planted in wet ground. It does well in a light sandy loam.

The nomenclature of this genus is quite interesting and it is my opinion that at least one point requires some rearrangement. There are three species represented, two of which are hardy in this area. The third, known as *Taxodium mucronatum*, is native in Mexico and cannot be grown here.

The Bald Cypress *Taxodium distichum* was at one time considered the only species of the genus, the others having had only varietal rank. Even now, this condition still holds true with some authorities. Previous to their rearrangement there were

two so called varieties, (*Taxodium distichum imbricarium* and *Taxodium distichum pendulum*). The first mentioned was then given specific rank and called *Taxodium ascendens*. The second was considered to be a variety of the other and was given the varietal designation *nutans*. Now there happens to be also a pendulous form of *T. distichum* about which we hear nothing in our botanical publications. It appears to have been left to the horticulturist for consideration. That it is not new is illustrated by the fact that two trees were planted in Rochester in 1896 under the name *T. distichum pendulum* and in the excellent catalogue of Hillier & Sons, Winchester, England, issue of 1930, the name is mentioned for a pendulous form of the species. They also quote the other species and varieties under their correct names. That it is a distinct variety can be seen from its description which follows in the proper order.

The Bald Cypress *Taxodium distichum* finds itself a citizen of the swamps and wet lands bordering the streams along the middle and southeastern coast of the United States. Its straight tapering trunk is strongly buttressed at the base. Old trees growing in wet ground often produce cylindrical projections from the roots. These appear above the ground about the trees, as hump-like growths and are termed, "Cypress Knees." Just what part they play in the physiology of the plant, I do not know, but it is not unreasonable to believe that they may act as aerating agents for the water-soaked root system. I have never seen them on trees situated on dry land.

This species is entirely hardy in cultivation when placed in well drained soil. Trees 50 feet tall are not uncommon. The habit is narrow pyramidal with short, horizontal branches.



Taxodium distichum

The branchlets are of two kinds: the terminal growth is green when young, becoming brown during the first winter. The lateral branchlets which bear most of the foliage, are decidu-

ous. The foliage is scale-like and inconspicuous on the terminal growth. On the deciduous shoots, it appears laterally in the form of small, linear, distinctly pointed leaves. The ar-

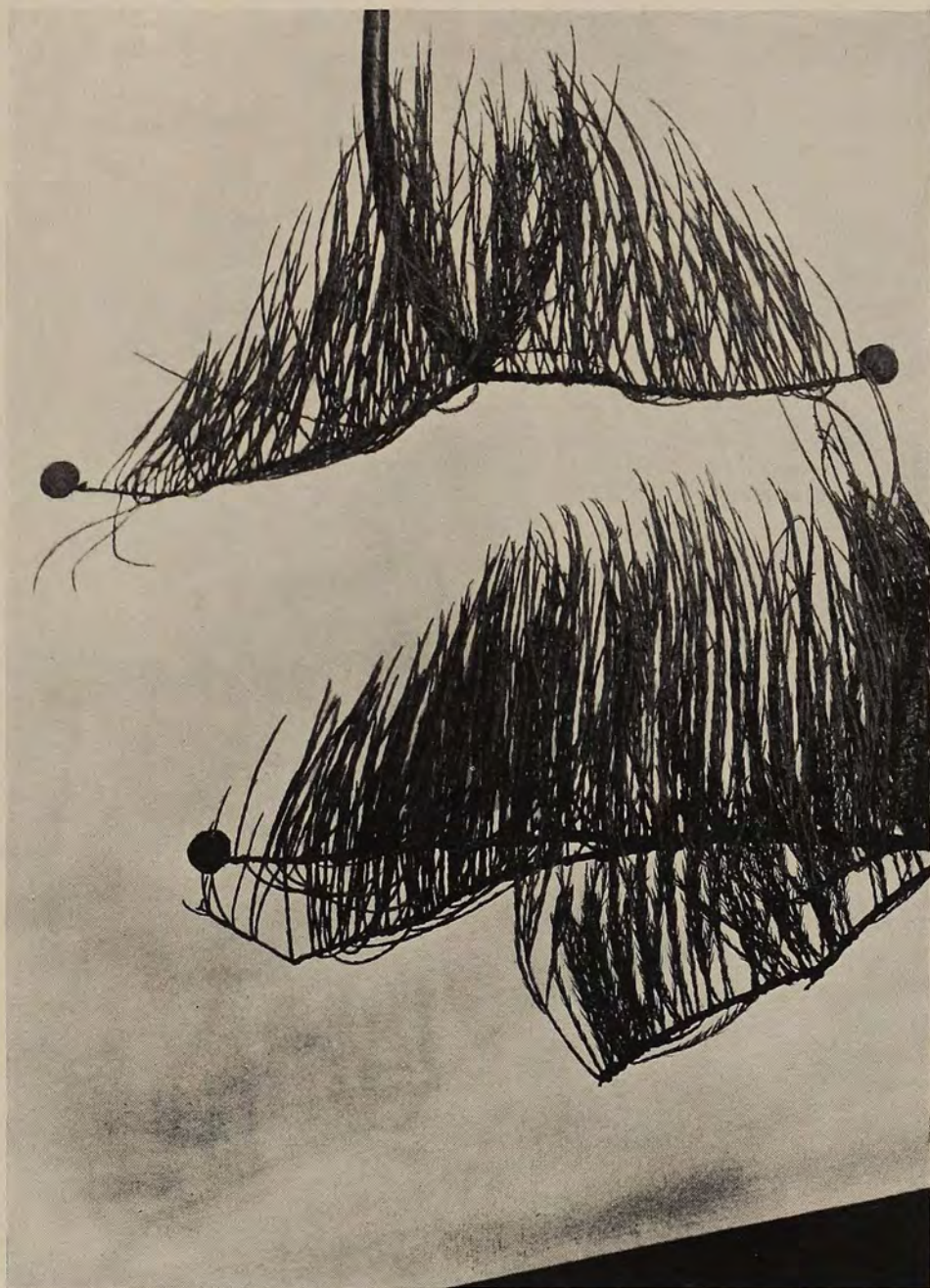


Taxodium distichum pendulum



Branchlets and Fruits

Taxodium distichum, above
Taxodium distichum pendulum, below



Taxodium ascendens

Note upright branchlets
Fruits immature

rangement of these leaves on the branchlets gives the whole the appearance of being a pinnately compound leaf. This, however, is not the case although both are annual growths.

As the foliage appears in the spring, it is a delicate green and later becomes a soft green and somewhat pale on the underside. In the autumn it turns light orange-brown, a shade of color not duplicated in any of our other trees. It is this element in its beauty that makes it so much to be desired in ornamental work. The cones are subglobose (round in shape with flattened ends) and measure about $\frac{7}{8}$ inch in diameter. The pendulous variety of this species, known, at least horticulturally, as *Taxodium distichum pendulum*, is a far more graceful tree than the type. It is distinctly pyramidal, with a broader base than the species which narrows regularly to a small top. The branches extend from within a few feet of the base and are horizontal or somewhat drooping. Towards the apex, they are ascending. The branchlets, both persistent and deciduous,

are pendulous. Although the foliage is identical with the type, the cones are more oval than subglobose, slightly smoother surfaced than in the species and much larger, measuring about $1\frac{1}{2}$ inches in length and $1\frac{1}{4}$ inches in width.

The Pond Cypress *Taxodium ascendens* is a more southern conifer found generally in Georgia and southward. It is hardy in cultivation although it requires some protection in the colder sections of the country. It does not have the beauty of the Bald Cypress and is mentioned here only to record its presence in ornamental work. It is pyramidal in habit with short, horizontal branches and upright branchlets. It is easily recognized by its awl-like leaves which are small and appear almost as scale-like formations on the branchlets. The cones are identical with those of *T. distichum*.

The variety *Taxodium ascendens nutans* differs from the type in that the branchlets are pendulous rather than upright. Its ornamental value ranks with about that of the species. It is, of course, more graceful.

(October 1932, January 1933)

Window Gardening

ELVIN McDONALD¹

Window gardening is becoming more popular each year . . . and with the array of new and old plants suitable for window culture, it is easy to see why. Vines and other plants, well arranged, can be a highly decorative part of any room, to say nothing of the new life they give a window which otherwise is ordinary. Shelves of all types increase a window's capacity and effectiveness, while plant brackets and wall vases add their smart effect, too. Handsome plant stands, flower boxes, and trays help fill in even the most barren rooms.

If you have failed with house plants, probably the reason can be laid on one of the following: injurious gases, plants unsuitable for house growing, lack of knowledge of the plant's needs and common every day neglect. A fancy container, a dash of water once in a while, and a dark corner with no humidity, will not keep a plant growing.

Most window plants like a temperature minimum of 60° Fahrenheit with a rise of 10 to 15 degrees during the day. Set the pots on a tray of moist sand or pebbles to increase humidity.

Amaryllis

The *Amaryllis* can well be called the "Queen" of window garden plants. It gives us its strikingly beautiful blooms in the dead of winter. Bulbs are purchased in the fall, potted and brought to warmth and good light as soon as they are rooted and the bud is showing at the neck of the bulb. After flowering, continue watering and

feeding regularly to get as many leaves as possible. Put it outdoors in the summer if possible and bring it in before frost. Dry it off, and repot. Then you will be ready to enjoy its blooms again.

Geraniums

Many people have failed with *Geraniums* even though they are thought to be very easy to grow. To bloom indoors, *Geraniums* must have direct sun. Place them as close to the glass as possible. A good potting soil can be made up of three parts good garden soil and one part peat moss. They bloom best when a little pot-bound. Four-inch rooted cuttings, out of two-inch pots from the florist repotted in a three-inch pot, will provide a beautiful showing in record time. They do not require heavy fertilization.

Most everyone is familiar with the *zonale* types of *Geraniums*, but very few people have grown the fancy-leaved varieties, and the Ivy-types. The Ivy *Geraniums* make good hanging basket plants. Most of them have very beautiful double flowers and they come in almost every color. The flowers of the fancy-leaved varieties are not especially attractive. They must have good sunlight to bring out the brightest colors of their foliage. Some of them have two-color foliage, others, tri-color.

Begonias

Begonias offer a wealth of window-garden material. For the shady, humid place, the highly colored *Rex* varieties fill the bill. The popular, wax (*semperflorens*) *Begonias* make good plants for the sunnier spot. There are dwarf,

¹Editor, *The Gloxinian*, official publication of the American Gloxinia Society.

tall, and trailing Begonias . . . indeed you may choose a variety for almost any need, and if you buy wisely, you will be able to have some bloom on your plants most of the year. They like a soil rich in leaf mold, fast draining, but on the rich side.

Stem and leaf cuttings are very easy to root, but a terrarium or discarded fish bowl will be needed to root them in because they need high humidity until they are established. In the warm, bright weather of spring and summer, the cuttings seem to root faster, and grow better. All Begonias are easy to grow from seed, and you will enjoy some real thrills when they begin to develop into full-fledged plants.

Gesneriads

Perhaps the GESNERIACEAE which includes the *Saintpaulia* (African-violet), *Gloxinia* (*Sinningia*), *Achimenes*, *Episcia* and dozens of others makes up one of the largest groups of plants for indoor culture . . . and plants that are adaptable to windows and locations with not much direct sunlight. They prefer a light, porous, rich soil. Too much light will cause the leaves to yellow, while too little light will produce limp stems and may prevent blooming. Some of the Gesneriads are tuberous rooted . . . others are fibrous rooted. The *Saintpaulia*, *Streptocarpus* and *Episcia* are among the latter. *Gloxinia*, *Achimenes*, *Reichsteineria*, and *Naegelia* are among those that are tuberous rooted.

The *Episcia* perhaps offers to us one of the most promising foliage plants of many years. Why they have not been grown more generally before, I do not know, but I am finding them to be very adaptable to many conditions, and, although they are noted for their beauti-



Peggie Schulz Photograph

Episcia fulgens

ful foliage, they also have beautiful blooms most of the time.

Achimenes flower in the summer and are dormant in winter. Their small tubercles are handled in much the same manner as is used for *Gloxinias*. They need moist soil and should be shaded from direct sunlight during the summer. Their name comes from a Greek word meaning "to suffer from cold." In addition to brightening a window-garden, they may be used to decorate a sheltered porch.

The *Streptocarpus* is almost ever-blooming under good conditions. They need a tiny bit more sun than the *Saintpaulia*. Other requirements are the same. There are a number of species available, as well as some new hybrids which are very outstanding.

Aeschynanthus pulchrum is a fibrous-rooted Gesneriad for hanging baskets. It has thick, leathery, dark-green



Elvin McDonald Photograph

Episcia viridifolia

leaves, that look much like those of the *Hoya carnosa*. It can stand quite a bit of sun. It blooms in the spring usually,

but may have a few blooms on it during other seasons. It should be given a rest period in the fall, during which

time it should not be watered except enough to keep the leaves and stems from shriveling. Brilliant orange and yellow flowers.

Gloxinias need a good deal of sunlight in the window-garden, so an eastern or southern exposure will probably prove to be best. A collection of Gloxinias may be started almost any time of the year. The spring and fall seasons of the year are considered to be the best starting times by many people.

Rechsteineria macropoda is a plant I have not grown long and only recently it rewarded me with its beautiful vivid orange flowers. They are small, tubular flowers borne on dainty clusters atop two inch stems above the beautiful velvety green leaves. It requires the same culture as the Gloxinia. It is tuberous rooted. It could get along on less sunlight. Orange or yellow coloring in Gesneriad blooms is hard to be found. Therefore, this might be a good plant to use in hybridizing to get yellows and oranges into our Gloxinias and African-violets.

There are many more Gesneriads that you may want to try. They are all very interesting plants, and they'll richly reward you for the small amount of effect it takes to grow and flower them.

Cyclamen

Cyclamen plants are among the most regal of all house plants, I think. The plants should be kept as cool as possible during the summer, and placed in partial shade. Syringe the foliage during the summer quite often. They need a 50° night temperature. Withhold water almost entirely after flowering and give the plant a rest.

Foliage Plants

There are many foliage plants to choose from. Among my favorites are the *Crotons*, *Coleus*, *Philodendrons*, fancy-leaved *Caladiums*, *Maranta* (Prayer Plant), *Pilea microphylla* (Artillery fern) and *Dracaenas*.

Most everyone likes to have some Ivy. Two things are important for the success of Ivies. They like plenty of moisture and an acid soil. Place in a north or east window with not too much sun. Wash the leaves gently every week or two. There are dozens of new varieties to choose from.

Summering

Most house plants will profit by a summer spent in a well-protected spot outdoors. Bring them in well before frost is expected. You must remember that when you bring them in, the growing conditions are changed greatly and you'll need to pamper them extra for a while. Some plants are just too tender for this treatment, but as weather conditions vary from place to place, it is impossible to point out which plants can be put outdoors and which ones cannot. Here in the Oklahoma Panhandle, without a lath-house, or any other special protection, I would hesitate to put out *ANY* house plant!

Grow House Plants From Seed

Growing house plants from seed is a hobby in itself. You can do nothing that will bring you more enjoyment, I am sure. Always buy high quality seeds from a reliable seedsman and follow the directions for planting that are on the packet.

Indeed there seems to be no end to the amount of material available for window gardens. Once you start this

*Jim Hudson Photograph**Episcia fulgida*

fascinating hobby, you will continually be on the lookout for new and unusual house plants. You may want to try them under fluorescent lights. Already African-violets and Gloxinias have proved to thrive under this "artificial sunlight." Always keep your plants in

a healthy, growing condition so they will not be so likely to take up every little bug and disease that come along. If some of them do get infested or sickly, take them away from the rest of the plants, and either treat them, or discard.

(October 1953)



RUTH A. NELSON

A general view in the author's garden where native plants predominate. The Boulder Raspberry is shown in the foreground, Littleleaf Mockorange at the middle right, Aspens at the corner of the house, and Antennaria—the silvery ground cover—in the center

Horticultural Use of Native Rocky Mountain Plants

RUTH ASHTON NELSON

With the development of new subdivisions, which are spreading thousands of ranch and contemporary style homes over the foothills and mesas of the West, there has come a demand for a new type of landscape planting. Three factors must enter into consideration in planning gardens for these homes. First, much of this area is a land of "little rain"; water is expensive and sometimes available only in limited amounts. Second, much of the soil here is rocky or composed of gravel with very little water holding capacity. Third, the low, widespread houses demand informal plantings appropriate to the setting. These problems, together with the increasing expense and difficulty of obtaining trained labor for maintenance, put a premium on plant materials, which are

not only appropriate to the setting, but which do well in this semi-arid climate and which require a minimum of attention.

Over the past forty years a few gardeners and nurserymen have been experimenting with the use of native Rocky Mountain trees and shrubs in gardens of this region. Only a small number became popular in old-style gardens. But with the recent change in both architecture and methods of gardening there is a growing demand for these hardy shrubs. If you desire an oasis of lush greenness in a desolate land, some of the species described below are not suitable because many of them have small and often grayish leaves, but if you want to cooperate with the climate in order to achieve an effective and prac-

Rubus
deliciosus

Boulder raspberry



tical garden which will require a minimum of maintenance, these hardy natives will serve you well. There are two general rules which should be remembered in the use of most species which are natives of semi-arid regions. In the first place, they must have very good drainage; and, in the second, they require less water than we ordinarily give our lawns and gardens in such regions. Their appearance improves with slightly more moisture than they normally receive in their natural habitats, but they become overgrown and unattractive when they receive too much water. On this account it is sometimes difficult to combine the xerophytic species with conventional garden plants.

In this article some of those species which have proved themselves valuable

are described; others, which have not yet had a thorough trial, but which appear promising, are suggested. They fall into three groups: The flowering shrubs; the shrubs and small trees useful mainly because of their foliage; and the low-growing, evergreen ground covers or subshrubs.

Flowering Shrubs

Of this first group, three species belong to the Rose Family and two to the Saxifrage Family.

Boulder Raspberry, *Rubus deliciosus*. This is probably the best known and most generally useful of the whole group. In *My Garden in Spring*, E. A. Bowles commented that it was growing happily

in his English garden almost fifty years ago, and he says of it: "We must stop and wonder at the rose-like beauty of a large bush of *Rubus deliciosus*, that arches out . . . and bears its snow-white flowers all down the arching branches." It forms a clump of thornless canes 3 to 6 feet tall, festooned with flowers 2 to 3 inches broad. Its foliage is bright green; the leaves usually roundish in outline and 3- to 5-lobed. The vigorous young branches which appear after blooming have a reddish coloring. On old wood the bark is straw-colored and flaky. This shrub will stand more water than many of its fellows and so can be used in the same beds with plants requiring frequent watering, but under such conditions it requires severe pruning. Old wood should be cut out after flowering.

Apache Plume, *Fallugia paradoxa*. This shrub grows naturally in New Mexico and southern Colorado, but does well at least as far north as Cheyenne, Wyoming, and is reported to be hardy even in Canada. Its white barked stems are set with small 3- to 5-lobed, quite persistent leaves. The pure white flowers, about one inch in diameter, are held on slender 2- or 3-inch peduncles. It blooms profusely in June and scatteringly until late September. One of its most attractive features is the abundance of fluffy fruit heads which immediately follow the flowers. These clusters of plume-tailed achenes vary from a soft rose or copper shade to silver and an individual shrub in mid-summer is often covered with them and at the same time bears a sprinkling of the white blossoms. Apache

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*Fallugia
paradoxa*

Apache Plume





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Fendlerbush, Fendlera rupicola, in flower in the author's garden

Plume can be easily grown from seed or increased by layering. It requires full sun and is happy and useful on dry gravelly banks.

Cliffrose, *Cowania mexicana*, which occurs in the southern Rockies, bears an abundance of pale yellow, wild-rose-type flowers about $\frac{3}{4}$ inch broad, and small, resinous 3- to 5-lobed leaves. It has plumose achenes similar to those of Apache Plume but fewer in each head. This has not yet been grown to any great extent in the Denver area but is now being raised from seed at a nursery near Golden. It promises to be very valuable as it seems to be hardy, evergreen, and begins flowering when only a year old.

Little-leaf Mockorange, *Philadelphus microphyllus* of the Saxifrage Family, is native on stony banks and in washes of the mountain area from New Mexico and Utah to Wyoming. It is easily grown either with conventional garden shrubs or in dry-land plantings and is valuable because of its small size and fine texture. Its 4-petaled white blossoms are an inch or slightly less in diameter and it blooms

freely in early summer. The oppositely branched twigs give an interesting effect due to their brown and white streaked bark. The small, oblong leaves are a soft silvery green. If grown where it receives considerable water it will require pruning to maintain its naturally small size.

Fendlerbush, *Fendlera rupicola*, is a relative of the Mockorange which should be more widely known. It may be best seen in its native beauty on the limestone cliffs of Mesa Verde National Park, where it blooms in late May. A shrub has been in the garden of the writer for several years. Its exquisite, square buds are tinged with rose but the flowers open paper white. It is also a fine textured shrub with very narrowly oblong or linear, grayish green leaves and an erect habit of growth. We hope this species will soon be available from nurseries.

Foliage Shrubs and Small Trees

Aspen, *Populus tremuloides*. Somehow a superstition grew up that this small, white-barked tree was difficult to grow.

But that is certainly not the case in the cities at the base of the mountains which have an altitude above five thousand feet. It requires more water and better soil than some of the shrubs discussed in this article; it does send up suckers and the female trees produce cotton, but in spite of these faults it is being planted more and more. It can be used very effectively in small groupings and such a group will provide the light shade which is ideal for many of our native wild flowers.

Forestiera or Mountain Privet, *Forestiera neo-mexicana*, a member of the Olive Family, is a tall, very useful shrub for background and informal or formal hedge use. On the old stems its bark is light, usually a pale greenish gray, on young twigs it is a darker gray. The habit of close, opposite branching gives it a fairly dense appearance even when leafless. It will stand shearing. This species is dioecious and the female plants often bear quantities of bluish-black berries which are attractive to birds. Before the leaves unfold the shrubs are covered with tiny yellow blossoms. Its light green leaves are spatulate-oblong in shape, from $\frac{1}{2}$ to $1\frac{1}{2}$ inches long and often fascicled. They turn an attractive pale, clear yellow in autumn.

Water Birch, *Betula occidentalis*, is one of the most beautiful shrubs of western America whether growing naturally along mountain streams or planted in parks or gardens. Its many names give cause for confusion. Our mountain form was called *B. fontinalis* Sarg. but recent botanists are including it in *B. occidentalis* Hook. It has also several common names including Western Red Birch and River Birch. It is a clump birch with several arching stems clothed in a dark, glossy reddish-brown bark. Its slender twigs are graceful and it has dainty, ovate, sharply cut leaves. Its soft yellow autumn color is beautifully contrasted with the dark bark, and it often retains numerous papery catkins after the leaves have fallen. During the winter a group of these birches seem to hold a purplish haze among their delicate twigs.

Rocky Mountain Maple, *Acer glabrum*, is a shrub or tree which may grow, in favorable locations in the wild, to twenty feet in height and with trunks 4

to 5 inches in diameter, but always in clumps. It is easily grown and is valuable in sunny or semi-shaded situations. The main stems have a smooth, gray bark and the young twigs, petioles and winter buds are red. Those who look closely when it is in bloom will discover small corymbs of exquisite, fragrant flowers with tiny chartreuse petals. Most individuals fruit freely and the red-tinged samaras are very attractive during the summer. The leaves are 3- to 5-lobed and sharply and doubly serrate and there are forms with compound leaves. Its pale yellow autumn coloring is not of particular interest.

Big-tooth Maple, *Acer grandidentatum*, is a species of great interest and challenge. It is closely related to the Sugar Maple, *A. saccharum*. In the canyons of Utah where it grows abundantly it is a shrubby tree 20 to 30 feet tall, often growing in thickets where it layers naturally. Its autumn coloration, predominantly a rose-red, is spectacular. In southern New Mexico it is sometimes found as a small shrub on dry ridges, and as a small tree in well-watered canyons. Several people including Kathleen Marriage of Colorado Springs; Robert More, then of Denver; and George Kelly, of Littleton, Colorado, have made efforts to obtain and grow this maple for horticultural use. At present there are a few specimens in Colorado Springs and in Denver. It makes very slow growth but the Western Evergreen Nursery is now raising it from seed so there should be a supply available in the future. Quite possibly it is being used for ornamental planting by persons in the areas where it occurs naturally.

Three-leafed Sumac, *Rhus trilobata*, which is also called Lemonade-berry, Squaw bush, and even Skunkbrush, is a fine, tough species for the dry, hot, gravelly hillside and will thrive under almost any conditions. It is one of the few dry-land natives which has luxuriant looking, bright green foliage. Its three leaflets are more or less irregularly lobed and turn beautiful shades of orange and red in autumn. In late summer there are clusters of dark red, pubescent berries. It does not have the bad suckering habit of some other sumacs but does have a pungent odor which is distinctive and, to the writer, not at all skunk-like. This is only noticeable when one bruises



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Yucca glauca flowering in its native habitat

the twigs or brushes against the foliage. It is very useful on banks, against native rocks, and in many sunny, dry situations.

Bluestem Willow, *Salix irrorata*. This is a native western pussy willow which makes a very attractive shrub under cultivation. It has more slender stems and slightly smaller buds than the French pussy willow and can more easily be kept to a size appropriate to a small garden. It is also more resistant to disease. The dark bark on young stems is coated with a glaucous bloom which increases their attractiveness. It roots easily. It is available from nurseries in the Denver area.

Curl-leaf Mountain Mahogany, *Cercocarpus ledifolius*. This is an erect shrub, or sometimes a small tree, which occurs naturally on dry slopes of the intermountain states. It has only recently become available but it promises to be

very popular because it is, without exception, the only hardy, broad-leaved evergreen which will stand full sun winter and summer in dry, exposed situations along the eastern face of the Rocky Mountains. Its leaves are about 1 or 1-1/2 inches long and 1/4 to 1/2 inch wide, lanceolate or oblong with revolute margins, dark green above and paler beneath. Those who have had the opportunity of seeing "Curl-leaf" in plantings feel that it will soon become one of the most valuable shrubs we have for use in the elevated, semi-arid regions of the West.

Low-growing, Evergreen Shrubs for Ground Covers

Yucca or Spanish Bayonet, *Yucca glauca*. This species is the common one along the eastern base of the Rockies from northern New Mexico into south-



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Dry slopes along driveway showing Buffalo Grass, two species of Yucca, Y. glauca and Y. baccata, with wild plum in background

ern Wyoming. It is hardy and extremely drouth resistant. Its large rosettes of pale green, dagger-like leaves liven dry hill-sides during the winter months and the strong panicles of creamy white blossoms transform barren slopes and mesa tops during early summer. Yuccas are picturesque and appropriate in western and contemporary gardens besides being very useful in helping to control erosion on banks, and to fill dry corners. They can also be used as low hedges where something which requires only a minimum of water is needed. Another species, the Datil, *Y. baccata*, which has heavier leaves is hardy as far north as Denver. This forms very decorative clumps and is handsome in bloom. Its leaf-margins are more conspicuously ornamented with curled filaments than are those of the Spanish Bayonet. A smaller species

which has similar recurved filaments along the leaf-margins is *Y. harrimaniae*. Its rosettes are usually about 15 to 20 inches in diameter and extremely bristly. Yuccas may be grown from seed, from root cuttings or from offsets.

Buffalo Grass, *Buchloe dactyloides*. This is a good, tough grass in a dry climate. It forms a dense, strong sod, grows only 3 to 4 inches tall and requires no watering. Its only disadvantage is the shortness of its green season, which is between three and four months. But weigh that against the constant necessity of watering and mowing a bluegrass lawn in the western states and you may decide to try it, as the writer did. From late May to September its color is a beautiful soft, bluish green. A cutting after the staminate heads appear in early summer improves its appearance and



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*Creeping Mahonia, Berberis repens, as background
and Antennaria as foreground for early Crocus*

another one in late August followed by a good watering, will keep it green to about mid-September. It is ideal for childrens' playgrounds because it may be kept dry.

Antennaria or Pussytoes. Several members of this genus make very attractive, silvery gray ground covers between stepping stones, along walks and in many places where there is not much traffic. It makes a good setting for flowering bulbs but must be kept under control as it spreads rapidly when once established. To maintain a neat appearance it should be clipped once a season after the flower stalks develop. It is collected in the wild and both *Antennaria rosea* and *A. parvifolia* are used. *A. rosea* is smaller leaved and makes a more compact mat than the other.

Creeping Mahonia, *Berberis repens*. This is now well known and much used in western gardens. It has compound, evergreen leaves somewhat similar to

those of the Oregon or Holly-leaved Mahonia but usually grows only about a foot tall and spreads extensively when once established. It is very useful among shrubs, along walls, and in foundation plantings. When shaded from the winter sun it will remain green but in partially sunny locations the leaves turn red or maroon in winter. It is attractive under either condition.

Kinnikinnik, *Arctostaphylos uva-ursi*. Native habitat of this trailing shrub is not restricted to the western mountains but it occurs abundantly here and is one of the few broad-leaved, evergreen species which can be used in this climate. It needs protection from winter sun to retain its glossy, green foliage. A member of the Heath Family, it has charming pink and white jug-shaped blossoms followed by handsome scarlet berries.

Creeping Juniper, *Juniperus horizontalis*. This is a species of the northern



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Juniperus horizontalis in its native habitat on a very exposed southeast slope in northern Wyoming

United States which occurs naturally in the mountains of northern Wyoming and Montana and is a handsome ground cover and rock garden plant, which is very satisfactory in all but the most extreme conditions of this climate. It is a creeper only 3 or 4 inches tall, rooting from the branches and can easily be divided and transplanted. There are both green and silver forms in nature but all the writer has seen tend to become purplish in winter, as do the cultivars. Several horticultural varieties of this are listed by

some dealers but it has seemed difficult to obtain the true creeping form. The writer has several collected plants which are thriving and compare favorably with all the named varieties seen.

Nature has taken many generations in adapting these western species to their environment. We can save ourselves much labor and expense by making use of them. In this great high, dry, and sunny region there are many additional plants, both woody and herbaceous, which would be valuable in horticulture.

The Bottlebrushes Like Wet Feet

EDWIN A. MENNINGER¹

Bottlebrush trees—the name commonly given to about fifteen species of *Callistemon* native to Australia—seem to offer Florida some much needed material for highway planting in low areas. Many of our roadside ditches are often called upon to carry heavy overflows, and flooding is detrimental to most trees. But the bottlebrushes are specially suited to low, damp, badly drained situations, some of them are fairly hardy, and they grow fast. Certainly these ornamentals from down under are worthy of extensive trial to determine which of them thrive under our growing conditions.

Two or three species of *Callistemon* have been grown by central and north Florida nurserymen for years, but the genus has been much neglected in the southern half of the state, and no planned effort has been made to get acquainted with other available species,

some of which are more ornamental, grow better, and are generally more satisfactory than the common kind. Because of the need for an actual experience rating for the trees, the author has under cultivation in his garden in Stuart, Florida, the following species of *Callistemon* which represent practically every known member of this interesting family:

Callistemon phoenicius, Fiery Bottlebrush. This is a six-foot shrub from western Australia, with narrow, thick, veinless leaves and blossoms much like those of *C. citrinus* except that the growth is stiffer and exceedingly dense, the stamen brushes are bigger and a richer red, and the plant is a shrub rather than a tree. Lord² says: "This is probably the best and most brilliantly-flowered of all Australia's bottlebrushes. It does particularly well in

¹The Flowering Tree Man, Stuart, Florida.

²Ernest E. Lord, *Shrubs and Trees for Australian Gardens*.

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Callistemon brachyanrus



low, moist areas and relishes a clay soil. The narrowly-lanceolate leaves are two to four inches long. The seed pod buttons are often a half inch across.

C. salignus, Pink Tip. Willow Bottlebrush and White Bottlebrush are other accepted common names. It is a creamy-white-flowered tree from eastern Australia, with a paper bark, says de Beuzeville: *Australian Trees for Australian Planting*, and a very dense, shapely crown of small rather prickly-pointed, dark green leaves; "the young leaves and shoots form a foot-long terminal of beautiful pink tint, giving the plant a most ornamental appearance, and from which its popular name is derived." The tree flowers in Australia in late Spring (October-November), making a fine display of bloom, and the pink tips linger for some time after the flowers disappear. The creamy or pale yellow stamens (rarely light pink) are usually under a half inch in length. The tree prefers a moist situation, thriving in badly drained areas; it grows fast, gives good shade, stands some salt, likes clay soils, and is moderately frost resistant. It does well on dry land, if watered. Pink Tip is a good tree for highway planting under telephone wires, as it rarely exceeds 15 feet, though occasionally it may go to forty feet. The timber is one of the hardest of all Australian woods.

C. pinifolius viridis, Green-Flowering Bottlebrush. This amazing New South Wales tree looks like a pine (*Pinus* sp.) because it has rigid two to four-inch needlelike leaves, and its Kelly-green bottlebrush flowers, produced in spring when the plant is less than two feet high, could scarcely be called beautiful, but they are in striking contrast to the dark green foliage. I first saw this rare tree in one of Peter Riedel's parks in Santa Barbara, California, growing on a clay hillside. It also likes moist situations. George W. Althofer of the Nindethana Nursery,

Dripstone, New South Wales, writes: "An interesting thing I noticed about *C. pinifolius* along Duck Creek, Auburn, was that both the brilliant crimson and bottle-green forms grew there side by side. There was also a number of in-between colors. The progeny of the bottle-green plant, however, could not be depended on to give a hundred per cent green flowers. At least thirty per cent were red and a smaller number pale reds or yellowish."

C. speciosus, Showy Bottlebrush. Albany Bottlebrush is also an accepted common name. Ivo Hammet considers this West Australian species the finest of all the bottlebrushes, with *C. phoenicius* a runner-up. Certainly in Florida it has proved itself the most spectacular in bloom. It makes a handsome, bushy tree to twenty feet. The deep-red flower spikes to six inches long are tipped with gold, and, although spring is the accepted blooming time, it repeats frequently through the year. The narrow, two to four-inch lance-shaped leaves have a prominent midrib. Ernest E. Lord, in *Shrubs and Trees for Australian Gardens*, recommends that this tree be freely used in gardens and in highway planting. In this connection Mr. Lord sent a photograph with this comment: "The photo of the bottlebrush (*Callistemon* sp.) is taken from a few feet away but shows both flowers and leaves perfectly. The plant is in the shrubby stage at time of photographing, with flowers right to the ground. This is the general habit of most species of *Callistemon* with us for many years. Eventually some of them do become treelike with a single trunk, given a little pruning below. I call to mind a street in Hornsby, an outer suburb of Sydney, where I tried to snap a record of magnificent bottlebrushes, perfect standards twelve feet high, blood red with blossom, but light was poor and I did not get a good picture. The *Callistemon* picture I am sending



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Callistemon salignus

you is *C. citrinus* (Syn. *C. lanceolatus*), indigenous to our eastern states, but it could almost as well illustrate the Western Australian *C. speciosus* (slightly shorter leaves and with more gold on anthers), or *C. phoenicis* (more shrubby, but brilliant in flower). It takes us all our time to distinguish the species if we get a bit out of practice."

Some confusion of names resulted several years ago in Florida when the

U. S. Department of Agriculture introduced a tree labelled *Melaleuca genistifolia* which should have been labelled *Callistemon speciosus*. Peter Riedel of Santa Barbara, California's leading authority on introduced plants, helped to clarify this mix-up: "Your specimen is *Callistemon speciosus*. It could not be *Melaleuca* because the stamens are not united in five bundles. I enclose a small sample of *M. genistifolia* of which the flowers are white. The error is



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Callistemon viminalis

excusable because Nicholson's *Dictionary of Gardening* says *M. genistifolia* has red flowers and H. M. Hall groups it with the red-flowered ones. I received the seed of the first *M. genistifolia* grown here direct from Professor J. H. Maiden, so there is but slight chance that it is incorrect."

C. violacea, Violet Bottlebrush. This rare plant is described in the catalog of Nindethana Nursery, Dripstone, N. S. W. as "a tall, dense-growing shrub with violet flower spikes. It reaches twelve feet."

C. lilacinus, Lilac Bottlebrush. E. Cheel, curator of the National Herbarium, New South Wales, wrote: "*C. hortensis* was raised from seed obtained from Berlin under the name *C. amoenus*, a yellow-flowering species, probably only a form of *C. salignus*. From *C. hortensis* I have obtained *C. lilacinus* [Cheel spells it *lilacina*.] which was probably obtained as a result of hybridism. The first batch of seedlings raised from seed of *C. hortensis* was planted out and at least three color forms were produced, two-thirds garnet-colored spikes like the parent plant,

and the other third creamy-white and lilac-colored species. It would seem that *C. hortensis*, misnamed *C. amoenus* by Berlin and Italian seed merchants, is also a result of hybridization." In Florida, this *C. lilacinus* has not yet bloomed for me, but D. J. McSwiney in Fort Lauderdale has bloomed the hybrid *C. lilacinus carmina*, an eight-foot shrub with carmine flower spikes and golden anthers.

C. linearis, Narrow-Leaf Bottlebrush. Harris writes in *Australian Plants for the Garden*, that this red-flowering form from sandy soils along the warmer east coast of Australia makes a fairly dense hedge ten to fifteen feet high, if planted at four-foot intervals. The tree has long, stiff leaves and deep red brushes to six inches long in spring and summer. The four to five-inch narrow leaves are grooved on the upper surface.

C. citrinus, Lemon Bottlebrush. (Syn. *C. lanceolatus*, *C. acuminatus*). This commonest form of red-flowered bottlebrush tree has been planted through central and north Florida for years, to the neglect of many improved

forms and better species. It makes a ten-foot bushy tree with faintly lemon-scented leaves. The flower heads are crimson, compact and upright. In Australia, this plant is often used for fairly dense hedges, planted at three to four-foot intervals. The most desirable improved form of this tree is known as *C. citrinus splendens*, a plant of garden origin raised many years ago at Kew from seed received as *C. laevis* from an Australian source that can no longer

be traced. In moist climates like England and the San Francisco bay region of California, this tree is more spectacular in flower than *C. speciosus*. The young leaves are pink and silvery. The big bottlebrush flowers are shiny vermilion, each stamen tipped with gold. The tree flowers with great freedom and makes a magnificent show. It is probably hardier than most of the bottlebrushes, and does not mind the cold of Feltham, Middlesex, England.

Callistemon rugulosus

George J. Farnham



C. paludosus, Swamp Bottlebrush. This useful tree from the swampy lands of New South Wales grows from fifteen to 30 feet high. It has narrow, sharp-pointed leaves and bears pale-yellow bottlebrush flowers in late spring or summer. It is a handsome plant for the bog garden.

C. ziminalis, Weeping Red Bottlebrush. Much planted in both California and Florida, this makes a tree often to sixty feet, though normally much smaller and easily kept in bounds. It has a scaly bark, willowy branches, and four-inch light green leaves that are covered when young with bronzed hairs. These are found at the tips of all branches in



Pasco Roberts

Callistemon rigidus

spring and often are as ornamental as the long, red flower spikes that appear soon after the new foliage. In New South Wales, this tree, which grows naturally on river banks, is often alternated in hedges with the yellow-flowered *C. salignus* to provide a highly ornamental effect, as the trees bloom simultaneously.

C. rigidus, Stiff Bottlebrush. Though native to the rocky sandstone ledges near Sydney, New South Wales, this species is fast disappearing there. It is a fifteen-foot shrub with foliage to the ground, very stiff and slow-growing, with narrow, crowded, five-inch leaves, and bearing twice a year six-inch,



Pasco Roberts

Callistemon speciosus

dense, crimson bottlebrush flowers. It is much planted in sandy locations near the coast, and endures hard, dry conditions.

C. rugulosus, Crimson Bottlebrush. (Syn. *C. coccineus*.) This shrub of ten to fifteen feet from New South Wales is particularly happy in fresh water swamps, or in constantly wet sandy soil on the coast. It has rigid, rather narrow two-inch leaves, and bears large scarlet flower spikes in late summer or autumn. The spikes are short, but are described by Harris as "very handsome."

OTHER SPECIES. Besides the dozen kinds of bottlebrush trees here described, the author has one *Callistemon* tree with pink bottlebrush flowers, and another on which the spikes are wine red. The identity of these has not yet been determined, but they doubtless are hybrids or variations of some of the trees described.

(April 1955)

Plantainlilies

FREDERIC P. LEE

Plantainlilies or hostas are controversial plants. You like them or you despise them — no tolerant, dispassionate views are heard. They are not gaudy in flower like a dahlia or marigold. Neither are hostas shy and unobtrusive. Their habit and leaves are flaunty. Leaf size and design and cool color variations in shades of green, and green and white, make hostas conspicuous, even a bit ostentatious. You cannot ignore a large-leaf hosta whether in or out of flower.

One gardener on viewing the Siebold Plantainlily (*Hosta glauca*) will have painfully obtuse thoughts of an immense cabbage before it has headed up; another that the plant is interestingly unique, nothing quite like it in either nature or art. Such unimaginative horticulturists would, however, be left dazed by herbaceous perennials like the moisture-loving Gunneras (*Gunnera manicata* and *G. chilensis*), natives of Chile and Brazil, with high rhubarb-like leaves four to six feet across on stalks up to six and eight feet. Many hostas have unusually large leaf blades, two of them over a square foot in area, but hostas are far from one of the giant leaf herbaceous perennials of the plant world. Thus that majestic lily, *Cardiocrinum giganteum*, is a temperate zone plant like the hostas, but its leaves are fifteen by eighteen inches, larger than those of the largest hosta. On the other hand, most hostas are far from pygmies. The Siebold Plantainlily and the Giant Plantainlily (*H. fortunei* var. *gigantea*) would provide a garland suitable in past millenniums for adorning the brow of a mastodon.

Characteristics and Uses

Hostas have several characteristics that are both uncommon and valuable for the home gardener.

As has already been vaguely hinted, the foliage of large hostas creates a striking impression. Fancy-leaf caladiums, cannas, elephant ears, and pelargoniums are likewise familiar plants with striking foliage in size, design, or color, but they are all tender tropical or subtropical plants. The hostas are temperate-zone plants that are hardy and permanent even in our most northern states. There is no winter killing.

Hostas are excellent for accents, for large or small edgings and boundary lines, or for facing down shrubs. Their effect is heavy, not airy. Despite the ponderous and unusual appearance of the large hostas, their dense masses of foliage fit into naturalistic gardens even better than into formal gardens. Hostas can be used in woodlands and in shrub borders.

While the exceptional character of their leaves makes hostas primarily foliage rather than flowering plants, nevertheless, their flowers are good. Those of the Fragrant Plantainlily (*H. plantaginea*) are excellent. Hostas are one of the very few hardy herbaceous perennials having conspicuous blooms in summer shade.

Hostas are long-lived perennials. Edgings of the Wavyleaf Plantainlily (*H. undulata*) planted in great-grandmother's day still endure. Undisturbed hosta plants a quarter century old are common. Being an herbaceous perennial, the soft, succulent stems and leaves die down while the crown and roots remain alive and produce new stems and leaves in the spring. In the Washington, D.C., area hostas are effective plants from early May to October; the leaves appear in late spring and die with the first heavy frost.

Hostas do better in the shade than in the sun. They are one of the few shade loving, rather than merely shade tolerat

ing garden perennials. They will stand not only high shade of deciduous trees but also somewhat denser types of shade, such as those to which many ferns and lilies-of-the-valley are adapted. Hostas light up dark places.

The perennial roots are thick, somewhat tuberous, and durable like heavy cord. They form a dense clump. The Fragrant and the Blue Plantainlilies (*H. plantaginea* and *H. ventricosa*) are exceptions. Their roots are rhizomes, a shallow, knobby, branching rootstock, from which the leaf stalks rise and the roots grow down. See Plate 3. The roots of hostas do not require regular division for maintenance but propagate readily by division in the fall or early spring before the leaves unfurl.

A hosta may take two or three years to become well established but after that it increases rapidly. In five to ten years some of the larger hostas will make a clump of leaves four to six feet wide. If given room hostas will gradually increase the size of their clumps for many years.

The Generic Name

Confusion galore has prevailed among botanists as to the proper generic name for the plantainlilies.

The plantainlilies belong to the lily family (LILIACEAE). Among the 200 or so genera in that family the genus most closely related to the plantainlilies is *Hemerocallis* (the daylilies). Incidentally, the plantainlilies are not kin of the Common Plantain (*Plantago major*) that has distinguished itself as a lawn and garden weed. The Common Plantain belongs to a wholly different group, the plantain family (PLANTAGINACEAE).

Engelbert Kaempfer, a German physician, on a trip to Japan about 1690 saw the plants we now call *H. lancifolia* and *H. glauca*. Karl Peter Thunberg made a trip to Japan in the 1770's following his appointment as surgeon on a ship of the Dutch East India Company. He described the plant we now know as *H. lancifolia*, the Narrow-Leaved Plantainlily, under three different names,—first

in 1780 as *Aletris japonica*, in 1784 as *Hemerocallis japonica*, and in 1794 as *Hemerocallis lancifolia*. *Aletris* is the name now used for stargrass and *hemerocallis* for the daylilies. The plantainlilies thus started out their nomenclatural career as stargrasses and daylilies.

In 1812 the name *Hosta* was proposed by L. Trattinick while in the same year R. A. Salisbury placed two of the species, *H. plantaginea* and *H. ventricosa*, into two new genera, *Niobe* and *Bryocles*, respectively. Then in 1817 Sprengel gave the name *Funkia* (syns. *Funckia* and *Funkea*) to the plants and it prevailed for many years. Until rather recently the plantainlilies have usually been found in the nursery catalogs under the name *Funkia*. Today, *Hosta* (hos-tah or hoh-stah) has become the accepted name for the genus. Nicolaus Thomas Host (1761-1834), from whom the name is derived, was a botanist and physician to an Austrian emperor.

The Species Names

When it comes to breaking down the genus *Hosta* into species the difficulties increase. Hostas as known today in the Western World are composed of plants found in the wild, mainly in Japan; plants introduced into Europe from gardens in China and Japan over a century ago but not known in the wild; and plants, mutants or hybrids, developed in Europe from these introductions but not known in the Orient in either gardens or the wild; also one recent American hybrid. The Fragrant Plantainlily (*H. plantaginea*) was introduced into France from Chinese gardens the latter part of the eighteenth century, and the Blue Plantainlily (*H. ventricosa*) into England a little later in the same century. From 1830 on numerous hostas were brought into Holland from Japanese gardens by Siebold's nursery at Leiden. The plants in this country have come mainly from these European introductions. Doubtless many species or garden forms in Japan still remain to be introduced—a suggestion for the Plant Introduction Section of our Department of Agriculture.

The obscure origin of most of these various plantainlilies makes them a botanist's nightmare. Taxonomic botanists differ widely in their views as to the plants that fall within a particular species of *Hosta*. Few genera are so baffling. Not only are many of the alleged species garden forms but some are probably hybrids. Charles Hervey Grey of England, in his *Hardy Bulbs*, in 1938, lists around thirty species. This is indicative of the large amount of material remaining to be introduced from Japan for Grey based his list on the works of the Japanese botanists Takenoshi Nakai, Gen'ichu Koidzumi, and Fumis Maekawa. In 1940 Maekawa listed thirty-nine species based almost wholly on Japanese native and cultivated plants, and in 1953 Jisaburo Ohwi, another Japanese botanist, considered that the native Japanese plantainlilies consisted of thirty-five species.

Liberty Hyde Bailey, in *Gentes Herbarium*, 1930, listed seven and made brief mention of five more "not known to be in cultivation in North America," and W. T. Stearn, of England, in *The Gardeners' Chronicle*, 1931, starting with Bailey's account, winds up with seven species. Edgar T. Wherry, of the University of Pennsylvania, lists ten in his key in *The National Horticultural Magazine*, 1946. Recently, Nils Hylander, of Sweden, in *Acti Horti Bergiani*, published in 1954, recognized thirteen species mainly on the basis of plants in gardens in Sweden, a country holding hostas in high esteem.

The Flowers

The flowers of hostas are distributed on scapes, that is, leafless flower stalks. The flower scapes arise from the crown formed by the leaf stalks as they emerge from the roots, and extend above the mound of leaves. While the scapes do not have true leaves branching from them, they may have scales or bracts. These are reduced, vestigial, leaf-like structures. Along the top portion of the scape are the flowers, usually well spaced but occasionally, as in the Siebold Plantainlily (*H. glauca*) and the Fragrant Plantainlily (*H. plantaginea*), tending to be bunched into a terminal cluster. The flow-

ers rest on short pedicels. The pedicel is usually surrounded by a prominent leaf-like bract and occasionally, as in the Fragrant Plantainlily, with a small second bract inside. The flowering portion of the scape constitutes a raceme. These bracts around the flower pedicels (not those on the scapes) wither rapidly and also occasionally in their early stages will have the same color as the flower.

The flowers of hostas range from four to six inches long for the Fragrant Plantainlily to the more usual one and a half to two inches in length for most other species. There is no clear distinction between the three sepals (calyx) and the three petals (corolla) and consequently these in combination constitute a perianth of six similar-appearing lobes. The lobes are joined or fused part way up from the base into a tube and then separate and flare into six limbs. The flowers are usually funnel shaped and bell-like, but the Fragrant Plantainlily has long tubular flowers while the Blue Plantainlily and the Blunt Plantainlily have urn-(cup) shape flowers. See Plate 1.

The perianth is dark or pale violet or white, although some, as the Blue Plantainlily (*H. ventricosa*) and the Blunt Plantainlily (*H. decorata*), may be white penciled (streaked or striped) with violet on the inside.

The ovary of the flower with its three cells, surmounted by its single style terminating in the stigma, rests in the center at the base of the perianth. Ovary, style, and stigma constitute the pistil. Each of the six stamens is composed of a filament topped by a pollen-bearing anther. The anthers are attached crosswise on the apex of the filaments and are capable of turning. See Plate 2. The stamens arise under the ovary or are attached to sides of the flower tube. The single pistil is longer than the stamens and both are longer than the lobes of the perianth. Usually both pistil and stamens are reflexed so that the stigma and anthers face down and do not protrude beyond the perianth, at least until stigma and anthers straighten out somewhat as the flower wilts and closes.

The species differ as to the number of flowers in a raceme. The maximum number for some of the species and varieties is approximately as follows:

<i>H. decorata</i>	28
<i>H. fortunei</i> var. <i>gigantea</i> ,	40
<i>H. fortunei</i> var. <i>marginato-alba</i>	36
<i>H. glauca</i>	24
<i>H. 'Honeybells'</i>	60
<i>H. lancifolia</i>	15
<i>H. lancifolia</i> var. <i>tardiflora</i>	24
<i>H. minor</i>	8
<i>H. plantaginea</i>	26
<i>H. undulata</i> var. <i>univittata</i>	20
<i>H. undulata</i> var. <i>erromena</i>	30
<i>H. ventricosa</i>	28

The flowers open successively starting from the bottom of the raceme. One or several of the flowers in a raceme, but not all, may be open at a time. On some days none may be open. Flowers of most species open in the morning and close in the evening. The Fragrant Plantainlily (*H. plantaginea*) opens, however, early in the evening and remains open until early the evening of the next day. 'Honeybells,' a hybrid, *H. plantaginea* × *H. lancifolia*, takes an intermediate position. Its flowers open in the morning and remain open until the following morning. Hot, dry weather may expedite closing.

Hostas may be found in bloom from late June through September and into October. Blooming periods in the Washington, D.C., area are:

Late June or early July:

<i>H. fortunei</i> var. <i>gigantea</i>
<i>H. fortunei</i> var. <i>marginato-alba</i>
<i>H. glauca</i> (about the earliest)
<i>H. undulata</i>
<i>H. undulata</i> var. <i>univittata</i>
<i>H. undulata</i> var. <i>erromena</i>
<i>H. ventricosa</i>

July:

<i>H. fortunei</i> var. <i>viridis-marginata</i>
<i>H. lancifolia</i> var. <i>fortis</i>

August:

<i>H. decorata</i>
<i>H. minor</i>
<i>H. plantaginea</i>
<i>H. 'Honeybells'</i>

Late August and early September:

<i>H. lancifolia</i>
<i>H. lancifolia</i> var. <i>albo-marginata</i>

September and early October:

<i>H. lancifolia</i> var. <i>tardiflora</i>

The flowers of the Fragrant Plantainlily are strongly and pleasantly scented. So is its hybrid, *H. 'Honeybells.'* The scent is even more noticeable at night. Flowers of the other species are without fragrance or only slightly fragrant.

The Leaves

Hosta leaf blades range in size from a maximum of twelve by eight inches for the Fragrant Plantainlily (*H. plantaginea*), fourteen by ten inches for the Giant Plantainlily (*H. fortunei* var. *gigantea*), and fifteen by twelve inches for Siebold Plantainlily (*H. glauca*), to seven by three inches for Narrow-leaved Plantainlily (*H. lancifolia*) and five inches by an inch and a half for the Dwarf Plantainlily (*H. minor*). The leaf blades are more or less heart-shape at the base. Some are broadly heart-shape, others narrow and lanceolate. Most have pointed tips. Leaves have conspicuous curving nerves or side ribs running from either side of the midrib. See Plate 4.

The leaves of hostas vary in color from bright greens and dull greens, to bluish greens. Some have a gray, waxy covering (bloom) on the top or bottom side, or both, of the leaf blade. Such leaves are glaucous like the skin of some plums from which the glaucescence or bloom can be rubbed off. The Siebold Plantainlily is the conspicuous example of a hosta with glaucescent leaf blades.

Some hostas, as the Wavyleaf Plantainlily (*H. undulata*), and its variety *univittata*, have white, irregular stripes down the middle of the leaf blade and

down the greater part of the petiole. Other hostas have white edging to the leaf blade. Thus *H. fortunei* var. *marginato-alba* has an irregular white margin. The Whiterim Plantainlily (*H. lancifolia* var. *albo-marginata*) and the Blunt Plantainlily (*H. decorata*) each have a narrow, white band around the margin of the leaf blade, extending down the edges of the petiole. See Plate 5. The Greenrim Plantainlily (*H. fortunei* var. *viridis-marginata*) has yellowish green leaf blades with deep green edges becoming wholly deep green in summer.

The petioles connecting the leaf blades with the crown are deeply grooved (canaliculate) and usually longer than the blades.

The Siebold Plantainlily (*H. glauca*), the Giant Plantainlily (*H. fortunei* var. *gigantea*), the Blue Plantainlily (*H. venetricosa*), the Fragrant Plantainlily (*H. plantaginea*), the Greenrim Plantainlily (*H. fortunei* var. *viridis-marginata*), *H. fortunei* var. *robusta*, and *H. 'Honeybells'* make clumps twenty-four to thirty inches high. They are large plants and give heavy mass effects. *H. fortunei* var. *marginato-alba*, the Narrow-leaved Plantainlily (*H. lancifolia*), the Bigjap Plantainlily (*H. lancifolia* var. *fortis*), the Whiterim Plantainlily (*H. lancifolia* var. *albo-marginata*), *H. undulata* var. *univittata*, and the Midsummer Plantainlily (*H. undulata* var. *erromena*) are medium size plants. They make clumps fifteen to twenty inches high and two or three feet wide in the same period of time. The Dwarf Plantainlily (*H. minor*), the Autumn Plantainlily (*H. lancifolia* var. *tar-diflora*), the Wavyleaf Plantainlily (*H. undulata*), and the Blunt Plantainlily (*H. decorata*) are small with clumps ten or twelve inches high.

Culture

Hostas are not fussy as to soil, whether light or heavy. A soil with humus is desirable. A little fertilizer in early spring is not amiss. The plants look much better if grown in shade and if the soil is somewhat moist. They will endure much dryness but it affects the appearance of the leaves. Edges and tips turn brown.

Watering in dry spells helps a lot. Hostas prefer soils at least slightly acid. They do well under the same growing conditions as azaleas. Their climatic range, however, includes the coldest areas in the country if at least moderate rainfall is available. Whether it includes the Lower South is not known; at least hostas are not grown much there, perhaps because sub-tropical foliage plants are available. Hostas are permanent, durable, and withstand neglect. They may be propagated by division, preferably in the fall or early spring. Their roots are tough and you will need a sharp spade, maybe an axe for some.

If kept out of full sunlight and given adequate moisture, hostas are little subject to diseases or pests unless one calls a heavy hail storm a pest when the hailstones lacerate and shred the leaves. Fortunately in most regions such storms are rare. Occasionally snails or crown rot or one of the leaf spots may trouble hostas, but rarely seriously. Under some city conditions the larger leaf plants need to be washed off occasionally to get rid of soot. In spring and early summer during the growing season for appearance sake cut off damaged leaves; others will replace them or their absence will not be noted.

Exudate from tulip tree scales in overhanging trees may fall on hosta leaves below. This "honeydew" is a clear liquid but a sooty fungus will quickly grow in it discoloring the hosta leaves. The fungus will wash off in rains, but slowly. The leaves may be badly damaged for the season.

Description of Species and Varieties

There are described below various hosta plants available from the trade in this country. The descriptions are of *mature, living plants* in the Washington, D. C., area, not herbarium specimens. Size of leaf, heights, and other figures in some instances run larger than in the corresponding botanical descriptions.

The classification used is not intended for botanists, but gardeners. It is based mainly on using certain species or varietal

botanical names that have substantial acceptance in this country.

The botanists have differences among themselves when it comes to naming hostas. Such difficulties are to be expected when species and varietal names are given to garden forms not known in the wild. Nurserymen's names for hostas re-

flect the confusion among the botanical names. Different nurserymen give different names to the same plant and the same name to different plants. We hope the following classification will be a useful working guide for the hosta gardeners in this country. Any botanist who pays the slightest attention to it, does so at his peril.

There follows a finding list of the species and varieties of the plantainlilies here described and their synonyms:

- Funkia alba*, see *Hosta plantaginea*
F. caerulea, see *H. ventricosa*
F. fortunei, see *H. fortunei*
F. glauca, see *H. glauca*
F. grandiflora, see *H. plantaginea*
F. lanceolata, see *H. lancifolia*
F. ovata, see *H. ventricosa*
F. sieboldiana, see *H. glauca*
F. subcordata, see *H. plantaginea*
F. 'Thomas Hogg', see *H. decorata*
F. undulata, see *H. undulata*
F. variegata, see *H. undulata*
Hosta albiflora, see *Hosta minor*
H. albo-marginata, see *H. lancifolia* var. *albo-marginata*
H. albo-marginata var. *alba*, see *H. minor*
H. albo-picta f. *viridis*, see *H. fortunei* var. *viridis-marginata*
H. crispula, see *H. fortunei* var. *marginata-alba*
H. decorata
H. decorata var. *marginata*, see *H. decorata*

H. elata, see *H. fortunei* var. *gigantea*
H. erromena, see *H. undulata* var. *erromena*

H. fortunei
H. fortunei var. *albo-marginata*, see *H. fortunei* var. *marginato-alba*
H. fortunei var. *hyacinthina*, see *H. fortunei*

H. fortunei var. *gigantea*
H. fortunei var. *marginato-alba*
H. fortunei var. *obscura*, see *H. fortunei*
H. fortunei var. *robusta*

H. fortunei var. *rugosa*, see *H. fortunei*
H. fortunei var. *stenantha*, see *H. fortunei*

H. fortunei var. *viridis-marginata*
H. glauca
H. glauca var. *aurea variegata*
H. 'Honeybells'
H. japonica, see *H. lancifolia*
H. lancifolia
H. lancifolia var. *albo-marginata*
H. lancifolia var. *fortis*
H. lancifolia var. *tardiflora*
H. minor
H. minor alba, see *H. minor*
H. plantaginea
H. plantaginea var. *grandiflora*, see *H. plantaginea*

H. sieboldiana, see *H. glauca*
H. sieboldiana var. *elegans*, see *H. glauca*
H. sparsa, see *H. lancifolia* var. *tardiflora*
H. tardiflora, see *H. lancifolia* var. *tardiflora*

H. undulata
H. undulata var. *erromena*
H. undulata var. *univittata*
H. ventricosa
H. venusta
Niobe caerulea, see *Hosta ventricosa*
N. fortunei, see *H. fortunei*
N. japonica, see *H. lancifolia*
N. plantaginea, see *H. plantaginea*
N. sieboldiana, see *H. glauca*
N. undulata, see *H. undulata*

1. *H. plantaginea* (syns. *Funkia subcordata*, *Funkia alba*, *Funkia grandiflora*, *Hosta plantaginea* var. *grandiflora*, *Niobe plantaginea*) (Fragrant Plantainlily):

Usually sold by nurserymen as *Hosta* or *Funkia subcordata grandiflora*.

Distinguished especially by its long, tubular, scented white flowers opening in the evening.

The leaves are a bright yellowish green and both sides are glossy. The leaf blades are twelve inches long and eight inches wide with about nine nerves on either side of the midrib. The wide-spreading foliage forms a mound twenty-four inches high.

The flowers are the finest among hostas reminding one of the white trumpets among some of the "true" lilies. They are a pure, waxy white, four to six inches long, two to three inches wide, and tubular. There is supposed to be a variety, *grandiflora*, which are the plants with five to six inch long flowers.

The slender tube of the flower is longer than the limbs. The stamens have white filaments and yellow anthers; the style is white. The stamens are reflexed and so do not extend as far as the top of the perianth. The pistil is not reflexed and is about the same length as the perianth. The flower scape is thirty inches tall and usually has a single leaf-like bract. The flowers are horizontal and rest on a pedicel surrounded by two leaf-like bracts, a small one inside a much larger one. The flower raceme is well above the leaf mound. The flowers are close together in the raceme making a crowded terminal cluster with about twenty-six flowers to the cluster.

The flowers are very fragrant; some call it an orange-like scent. They open in the early evening and remain open throughout the night and following day until early evening. *H. plantaginea* (except for its hybrid, 'Honeybells') is the only hosta with fragrant, night-blooming flowers. The blooming period is throughout August. See Plate 16.

2. *H. ventricosa* (syns. *Funkia caerulea*, *Niobe caerulea*, *Funkia ovata* (Blue Plantainlily):

Usually sold by nurserymen as *Hosta caerulea* or *Funkia caerulea*.

Distinguished especially by its large, glossy, dark green leaves and urn-shape, dark violet flowers.

The leaves are broad at the base, have a twisted point, and are sometimes wavy. They are a glossy, deep green above and a glossy, grayer green beneath. The leaf blades are ten inches long and eight inches wide, with about ten nerves either side of the midrib. The leaf mound rises to twenty-four inches. It forms large dense clumps.

The flowers are deep violet (campanula violet, HCC 37/2) lavender and white striped and streaked (pencilled) especially inside. They are the darkest flowers of any hosta, two and a quarter inches long and one and a half inches wide. The flowers are urn-shape, abruptly enlarging midway. The species name is derived from its suddenly swollen (ventricose) flower tube. The stamens have white filaments with purple anthers; the pistil a white style with yellow stigma. The flower scape extends to forty inches in height and usually has several leaf-like bracts. The flower raceme is well above the mound of foliage and has up to twenty-eight flowers to the cluster. The flowers bloom in late June and early July. See Plates 4 and 6.

3. *H. glauca* (syns. *Funkia glauca*, *Funkia sieboldiana*, *Hosta sieboldiana*, *Niobe sieboldiana*) (Siebold or Short-cluster Plantainlily):

Frequently sold by nurserymen under the name *Hosta sieboldiana*.

Distinguished especially by the large, deep gray-green, 'glaucous' leaves. Here the "grayness" is "bloom" that will rub off readily. The low flower scapes bring

the raceme of flowers little, if any, above the mound of leaves.

The leaves are most attractive. The leaf blades are broad, roundish, and wrinkled, and the lobes frequently overlap at the base. The leaf blades are fifteen inches long and twelve inches wide. They are a deep gray green on top and a lighter gray green below. Both sides are glaucous. The leaves have about seventeen nerves on either side of the midrib. The plant forms a loose leaf mound twenty-four inches high. Stephen F. Hamblin says the Siebold Plantainlily may be used as an accent "where a very large bang is required."

H. glauca has fine foliage but poor flowers. The flowers are white faintly flushed purple, bell-shape, two inches long and an inch wide. The stamens have greenish white filaments with yellow and brown anthers; the pistil has a greenish white style and stigma. The flower scapes are usually about the same height as the leaf mound and the leaves tend to hide the flowers. The flowers, however, droop and wither quickly, hang on, and are untidy, so it is well that they are partly hidden. The flowers bloom in late June and early July. The scapes have one or two leaf-like bracts. The flowers are close together on the raceme and tend to crowd into a dense terminal cluster. The cluster has up to twenty-four flowers. See Plate 10.

The above is probably the plant designated by Nils Hylander as *Hosta sieboldi* var. *elegans*. Some plants sold under the name *Hosta sieboldiana* have leaves less square or broader at the base, more pointed, and less glaucous than *H. glauca*. Also the flower scapes may rise eight inches or so above the leaf mound. *H. aoki* may belong in this area.

There is a plant sold as *Hosta glauca* var. *aurea variegata* with a wide yellowish green margin to the leaf.

4. *H. fortunei* (syns. *Funkia fortunei*, *Niobe fortunei*) (Fortune or Tallcluster Plantainlily):

H. fortunei is probably not a species but a group of hybrids and there is a tendency to dump any unclassified *hosta* into the group. The result is that plants under the name of *H. fortunei* show a good deal of variation.

The plant that has usually been sold as the typical "species" is that now called *H. undulata* var. *erronema* or sometimes treated as a separate species *H. erronema*. It is described later.

There is, however, a number of "varieties" of *H. fortunei* that are distinctive and are described below. Two of these, *H. fortunei* var. *gigantea*, which is sometimes treated as a separate species, *H. elata*, and the similar *H. fortunei* var. *robusta*, are closely related to *H. glauca* particularly the form of it sold under the name *H. sieboldiana*. Two other varieties are variegated leaf forms, *H. fortunei* var. *marginato-alba* frequently treated as a separate species, *H. crispula*, and *H. fortunei* var. *viridis-marginata* frequently treated as a separate species, *H. albopicta*.

Nils Hylander places under *H. fortunei* four varieties, *stenantha*, *rugosa*, *obscura*, and *hyacinthina*. They are not known in this country, at least by those names. All seem closely related to *H. fortunei* var. *gigantea* (*H. elata*) and *H. glauca* (*H. sieboldiana*).

H. fortunei var. *gigantea* (syn. *Hosta elata*) (Giant Plantainlily): It has large, glossy leaves, deep green above and grayer green underneath, fourteen inches in length and ten inches in width, with about fourteen nerves either side of midrib, sometimes wavy margins.

The flowers are two inches long and one and a quarter inches wide. Their color is white faintly flushed purple. The stamens have white filaments and yellow and green anthers; the pistil has a white style and stigma. Some flower scapes do not top the leaf mound; others extend eight inches or so above it. The flowers are in dense clusters of about forty and bloom in late June and early July. See Plates 4, 7, and 13.

This plant might well be regarded as

a hybrid of *H. glauca* or at least of the form of it sold as *H. sieboldiana*. The flowers are as poor as those of *H. glauca*, but the leaves are fine and the huge plant impressive.

H. fortunei var. *robusta*: This, while large, is smaller than *H. f.* var. *gigantea*. The leaves are gray green, glaucescent underneath, not wavy, eight inches wide and ten inches long, with about eleven nerves either side of the midrib. The leaf mound is twenty-four inches high. This might also be a hybrid of *H. glauca*.

H. fortunei var. *marginato-alba* (syns. *Hosta fortunei* var. *albo-marginata*, *Hosta crispula*); This has dark green, wavy-margined leaves, glossy on the underside, and the leaf mound is twenty inches tall. The leaf blade is up to ten inches long and six inches wide with an irregular white margin, broader than in *H. decorata* and in *H. lancifolia* var. *albo-marginata*. The flower scape is forty-two inches tall.

The flowers are one and three-quarters inches long, and one inch wide. The color is white faintly flushed purple. The stamens have white filaments with yellow and green anthers; the pistil a white style and stigma. There are up to thirty-six flowers to a cluster. They bloom in late June and early July. See Plate 11.

H. fortunei var. *viridis-marginata* (syn. *Hosta albo-picta* f. *viridis*) (Greenrim Plantainlily): This is the only well known hosta with leaves in two shades of green. The leaf blades are a light yellow green with a darker green margin, turning dark green all over in early summer; underneath they are gray green and glaucescent. The leaf blades are twelve inches in length and seven inches in width, with about ten nerves either side the midrib. The leaf mound is dense and twenty-four inches high.

The flowers are two inches long, one and a quarter inches wide, and bell shape; white faintly flushed and penciled violet (bishops violet, HCC 34/3). The filament is white and the anthers violet; the style and stigma are white. There are about thirty-six flowers to the dense cluster. The flower scape is up to thirty

inches tall and has two leaf-like bracts. The flowers bloom in early July.

The flowers of *H. fortunei* var. *viridis-marginata* are much like those of *H. undulata* var. *erromena*. The flowers of both are slenderer and the segments of both flare more widely than those of *H. glauca* and *H. fortunei* var. *gigantea*.

5. *H. lancifolia* (syns. *Hosta japonica*, *Funkia lanceolata*, *Niobe japonica*) (Narrow leaved Plantainlily):

Distinguished especially by its narrow leaves and late blooming period.

Frequently sold by nurserymen as *Funkia lanceolata*.

The leaves are narrow and long, and dark green and glossy on both sides. Their length runs seven inches and their width three inches, with about five nerves on either side of the midrib. The leaf mound is dense and rises to twenty inches in height. The plant spreads readily. There is a form with longer and narrower leaves.

The flowers are violet (violet, HCC 36/2) with some white streaks or lines. They are one and a half inches long and one inch wide, and bell-shape.

The slender tube is about one-third the length of the flowers. The flower scape is thirty inches tall and has two to four leaf-like bracts. The flower raceme extends well above the leaf mound and the flowers are well spaced on the raceme. There are about fifteen flowers to the cluster. The stamens have white filaments with dark purplish anthers. The pistil is a little longer than the stamens and is white. The flowers bloom in late August and September.

There are several varieties:

H. lancifolia var. *fortis* (Bigjap Plantainlily): This variety has broader leaf blades seven inches in length and five inches in width, and pointed. They are dark green, grayer, and glaucous underneath, with about nine nerves on either

side of the midrib. There is a very fine white line around the leaf margin. The variety blooms in late July, earlier than the type species. The leaf mound is dense and twenty inches high.

The flower scape is twenty-six inches tall and has four small leaf-like bracts. There are about thirty-six flowers to the dense cluster. The flowers are one and three-quarters inches long, three-quarters inch wide, and white flushed and penciled violet (bishops violet, HCC 34/3). The stigma is white and the filaments are white with dark purple anthers. The flowers bloom in mid-July.

H. lancifolia var. *tardiflora* (*H. tardiflora*) (Autumn Plantainlily): It blooms in September and October and is much dwarfer than the type species. The leaf blades are deep green and glossy, six inches long and two and a half inches wide. There are about seven nerves on either side of the midrib. The leaves form a low, loose clump twelve inches high.

The flowers are flushed pale violet (cobalt violet, HCC 634/3), and are one and a half inches long and wide. The anthers are yellow. The flower scape is about eighteen inches tall, has two leaf-like bracts, and the flowers are crowded on the terminal of the raceme. There are around twenty-four flowers to the cluster.

Variety *tardiflora* is treated as a separate species by W. T. Stearn. *H. sparsa* may be a clone of *H. lancifolia* var. *tardiflora*.

H. lancifolia var. *albo-marginata* (syn. *H. albo-marginata*) (Whiterim Plantainlily): This has light green leaves with narrow white margins and white edging to petioles. Leaf blades run five by three inches with about five nerves on either side of the midrib. The leaf mound is dense and fifteen inches high. The plant is sometimes treated as a separate species, *H. albo-marginata*. The flowers are similar to those of *H. lancifolia*.

6. *H. 'Honeybells'*:

Bristol Nurseries, Bristol, Connecticut,

introduced this hybrid of *H. plantaginea* and *H. lancifolia* in 1952. The leaves are long, not broad at base, and are wavy and glossy. They are a light green and eleven inches long and seven inches wide with about ten nerves on either side of the midrib. The leaf mound rises to twenty-four inches.

The flowers are white pencilled violet (bishops violet, HCC 34/3). They are two inches long and an inch and a half wide. The filaments are white, the anthers purple and yellow, and the style and stigma white. The scapes extend far above the leaf mound and may reach fifty inches. They have two leaf-like bracts. There may be up to sixty flowers in a cluster.

The flowers have a fragrance like *H. plantaginea*. They open throughout the morning and close the following morning. *H. 'Honeybells'* blooms the latter half of August. See Plate 9.

7. *H. minor* (syns. *Hosta minor alba*, *Hosta albo-marginata* var. *alba*, *Hosta albiflora*) (Dwarf Plantainlily):

Distinguished especially by its small size, solid green leaves, and white flowers.

Nurseries distribute an excellent dwarf hosta with white flowers. The leaves look like a small *H. lancifolia*. Usually it is sold under the name of *H. minor* or *H. minor alba*. The plant is not described in most botanical listings, at least under this name. It is not the *H. minor* of Takenoshi Nakai. Edgar T. Wherry assigned the plant the horticultural epithet, "albiflora." Nils Hylander recently designated it as a form of the plant here called *H. lancifolia* var. *albo-marginata*.

The leaves of *H. minor* are narrow. They are a dark green and glossy on both sides. In size the leaves run up to five inches long, and an inch and a half wide, with about three nerves on either side of the midrib. The small, dense leaf mound is about ten inches high.

The flowers are white and one inch

wide. The stamens have white filaments and yellow anthers and the pistil is white. The flower scape extends twenty-six inches in height, well above the leaf mound. It has two leaf-like bracts. There are up to twelve flowers to a cluster. *H. minor* has been called "a large flowered Lily-of-the-Valley blooming in August." See Plate 16.

H. venusta is a similar dwarf form but with violet flowers.

8. *H. undulata* (syns. *Funkia undulata*, *Niobe undulata*) (Wavyleaf Plantainlily):

Distinguished especially by its white and green wavy leaves and small size.

Frequently sold by nurserymen as *Funkia variegata*.

The leaves have broad white centers and margins in two shades of green, the darker green on the outside. The white extends down through the petiole which has a narrow green edging. The leaves are five and a half inches long and two and a half inches wide and are wavy, twisted at the tip, and with about seven nerves either side of the midrib. The leaf mound is ten inches high.

The flowers are two inches long and light purple in color, and bell-shape. The flower scape is about twenty-four inches tall, extends well above the leaf mound, and has four large leaf-like bracts. The flowers bloom in July. See Plates 5 and 15.

This is a common plant widely grown for edgings.

H. undulata var. *univittata*: This is a larger plant with a much narrower white center.

The leaves are glossy, pointed, and wavy. They are eight inches long and six inches wide, and are dark green, with some lighter green toward the center, and more narrowly striped or splashed white down the center. The white may extend down through the center of the petiole the greater part of the way. There are about nine nerves on either side of the midrib.

The leaf mound is dense and twenty inches high. Occasional leaves may be all green mutants.

The flower scape is about forty inches tall with three leaf-like bracts also striped white. There are about twenty flowers to the cluster, well spaced in the raceme. The flowers are two inches long, one and a half inches wide, and bell shape; white flushed and penciled violet (bishops violet, HCC 34/3). The filament is white and the anther violet; the style and stigma are white. The flowers bloom in early July. See Plate 14.

H. undulata var. *erromena* (*H. erromena*) (Midsummer Plantainlily): This variety appears to be a solid green leaf form of *H. undulata* var. *univittata*. Some botanists treat it, however, as a separate species, *H. erromena*.

The leaves are eight inches long and five inches wide, with about ten nerves on either side of the midrib, and are dark green and glossy on the underside. The leaf mound is twenty-four inches high. The leaves are somewhat wavy but not so much as *H. undulata* var. *univittata*.

The flowers are white flushed and penciled violet (bishops violet, HCC 34/3), two and a quarter inches long and bell-shape; the stamens have white filaments and deep purple anthers; the pistil has a white style and pale yellow stigma. The flower scape rises to forty-eight inches and has two to five leaf-like bracts. The flowers are horizontal to the flower scape. The flower raceme extends well above the leaf mound and has about thirty flowers to the cluster. The flowers are well scattered in the raceme. They bloom in early July. "Midsummer" is hardly an appropriate common name.

There is in the trade a plant similar to *H. undulata* var. *erromena* save that the flowers are a little smaller (one and three-quarters inch long and one and a quarter inch wide) and are the same violet color all over, not merely white flushed and penciled. The throat, however, has white stripes extending to the point where the segments separate. The flower scape is shorter, thirty-six inches or less, with about thirty-six flowers to the cluster.

9. *H. decorata* (syns. *Funkia* 'Thomas Hogg,' *Hosta decorata* var. *marginata*) (Blunt Plantainlily) :

Distinguished especially by its narrow leaves which together with the petiole are white margined; also blunt leaves.

Frequently sold by nurserymen under the name *Hosta* or *Funkia* 'Thomas Hogg.' The name is taken from that of the nurseryman who brought the plant from Japan to this country, about 1884.

The leaves are broad at the base, blunt, and somewhat wavy at the margins. They are seven inches long and four inches wide, with six nerves on either side of the midrib. The leaves are a dark green, grayer on the underside, with narrow white margins extending down the edges of the petiole. The plant is compact and small with a low, dense mound of leaves twelve inches high.

The flowers are violet (bishops violet,

HCC 34/2), two inches long and one and a half inches wide. They are urn-shape like the flowers of *H. ventricosa* and have a very narrow tube. The stamens have white filaments and cream anthers. The pistil is white. The flowers are held horizontal on the flower scape. The scape is about twenty-four inches tall and has four leaf-like bracts. The flower raceme is well above the leaf mound and has up to twenty-eight flowers to the cluster. The flowers bloom throughout August. See Plates 5, 12, and 16.

Note: Nurseries offering by catalog a wide range of hosta species and varieties are few. Those known to have a good range of varieties are listed below. Omission of any such nursery merely indicates lack of information on the part of the writer.

Fairmount Gardens (Mrs. Thomas Nesmith), 166 Fairmount Street, Lowell, Massachusetts.

Mackwoods Gardens, Lotus Woods, Spring Grove, Illinois.

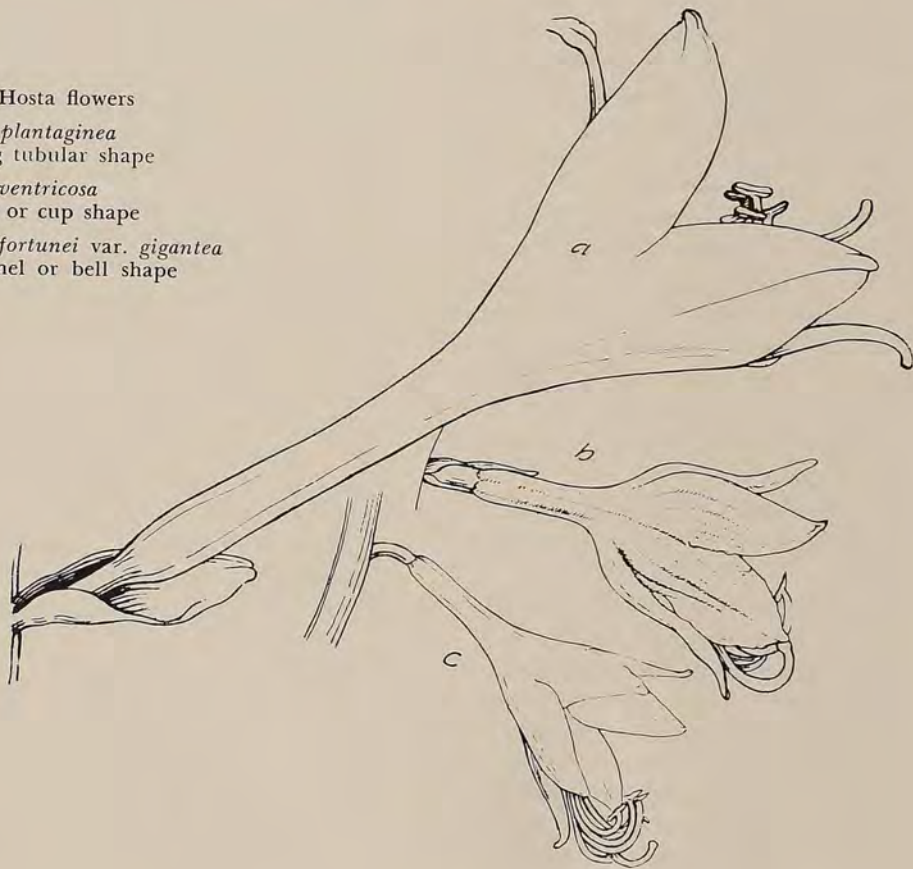
Carl Starker, Jennings Lodge, Oregon.

H. A. Zager, 4215 Urbandale Avenue, Des Moines 10, Iowa.

Plate 1.

Forms of *Hosta* flowers

- a: *Hosta plantaginea*
long tubular shape
- b: *Hosta ventricosa*
urn or cup shape
- c: *Hosta fortunei* var. *gigantea*
funnel or bell shape



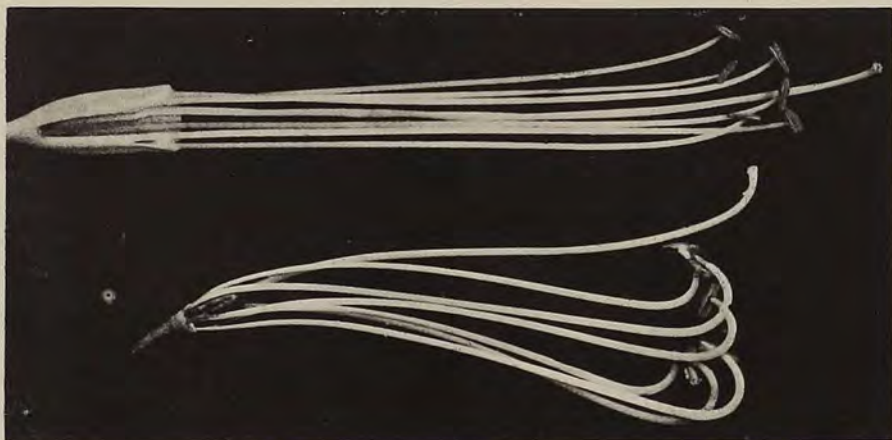


Plate 2. Stamens and pistil in Hostas
Hosta plantaginea (Fragrant Plantainlily), above
Hosta fortunei var. *gigantea* (Giant Plantainlily), below



Plate 3. Rootstock of *Hosta ventricosa* (Blue Plantainlily)



Plate 4. Hosta leaves
Hosta fortunei var. *gigantea* (Giant Plantainlily), left
Hosta ventricosa (Blue Plantainlily), right

Plate 5. Variegated Hosta leaves
Hosta decorata (Blunt Plantainlily), left
Hosta undulata (Wavyleaf Plantainlily), right





Plate 6. *Hosta ventricosa* (Blue Plantainlily)



Plate 7. *Hosta fortunei* var. *gigantea* (Giant Plantainlily)

Engravings for Plates 1 through 7 are loaned through the courtesy of the Bailey Hortorium, Ithaca, New York.

Photographs from which Plates 8 through 15 were made were taken by Marian A. Lee.

Plate 7. *Hosta fortunei* var. *gigantea* (Giant Plantainlily)



Plate 8. Pale chartreuse shoots of *Hosta fortunei* var. *gigantea*
(Giant Plantainlily) emerging in spring

Plate 9. *Hosta* 'Honeybells' a hybrid of *H. lancifolia* \times *H. plantaginea*





Plate 10. *Hosta glauca* (Siebold Plantainlily)

Plate 11. Leaves of *Hosta fortunei* var. *marginato-alba*





Plate 12. Leaves of *Hosta decorata* (Blunt Plantainlily)

Plate 13. Leaves of *Hosta fortunei* var. *gigantea* (Giant Plantainlily)
growing among Azaleas, Daffodils, and Lilies





Plate 14. *Hosta undulata* var. *univittata*

Plate 15. *Hosta undulata* (Wavyleaf Plantainlily)



Plate 16.

Hosta plantaginea (Fragrant Plantainlily)



Hosta decorata
(Blunt Plantainlily)



Hosta minor
(Dwarf Plantainlily)

(October 1957)



The Glossy Abelia

ERIK HANS KRAUSE

The large and extremely versatile Honey-suckle family (CAPRIFOLIACEAE), with fourteen genera and around four hundred species, has contributed many popular and useful shrubs to horticulture. A listing of only three of the genera, *Viburnum*, *Weigela*, *Lonicera*, would make an impressive catalog.

Yet some of the most attractive members of this family are seen and enjoyed in relatively few gardens: the *Abelias*. Of course it is true that with few exceptions the *Abelias* are not hardy in the more northern sections, and all of them have a delicate structure which calls for a special setting.

In keeping with the spirit of simplicity of this series, the species most suitable for average conditions will be selected: the Glossy Abelia. (Named after Dr. Clarke Abel, physician and author on China, 1780-1826.) As the botanical name indicates, it is a hybrid between two Chinese *Abelias*, which originated before 1880.

Though the parents are restricted to milder zones, the *A. grandiflora* does quite well in Zone V where it will flower until definitely discouraged. This hybrid, like the parents, is a small plant, though the spreading branches reach out in graceful arches. The ovate leaves, lustrous dark green as the evergreen parent *A. uniflora*, are beautiful just in themselves. Near the end of June, or later in cooler climates, the axillary and terminal cymes begin to form; even before the flowers open. The very strange purplish sepals form a pattern unlike any other plant. From the center of these irregular formations arise, week after week, the slender buds, to open into delicate mauve-pink, fragrant flowers.

It would seem that this long succession of fragrant blossoms, when most other plants show the wear and tear of the past seasons, is reason enough to reserve a special place for the Glossy Abelia.

(January 1956)

The Best of the Dogwoods

DONALD WYMAN

Speak of dogwoods, and most gardeners immediately think of two or three species which are popular small trees, but there are many more species and varieties in this interesting and ornamental clan. In fact, American nurserymen today are offering approximately forty-five species and varieties, while over sixty-five are growing in the Arnold Arboretum at Jamaica Plain, Massachusetts. Not all are outstanding ornamentals, but those that are, or with further trial may prove themselves to be, certainly are worth careful consideration by the interested gardener.

Visitors who may have made a May pilgrimage to Valley Forge, Pennsylvania, when the Flowering Dogwood (*Cornus florida*) is at its height of bloom, feel that this one species is the most important. There special efforts have gone into making an extensive planting of these beautiful trees as a living memorial to the Revolutionary soldiers who wintered there almost two centuries ago.

On the other hand, people who live in the Pacific Northwest are familiar with the beautiful Pacific Dogwood (*C. nuttallii*) which does so well along the West Coast but does not grow well in the East.

People who have made a hobby of arranging flowers have come to realize that the Cornelian cherry (*C. mas*) is one of the best of this entire group for "arrangements," especially for those made early in the season when branches cut from garden plants are forced indoors for precocious bloom.

Then there are those shrubs with colored twigs, some of which are outstanding all winter long. The native Red Osier Dogwood (*C. stolonifera*) is colorful, but the true Siberian Dogwood (*C. alba sibirica*) is even more brilliantly colored. It is unfortunate that this variety has be-

come badly mixed in the American nurseries. We have been disappointed many times in ordering plants from American sources under this name, only to find when the plants arrive that they were not true Siberian Dogwood, but rather *C. alba*, the European *C. sanguinea*, or one of the native Americans with red or reddish twigs (*C. stolonifera*, *C. amomum*, or *C. baileyi*).

The Arnold Arboretum obtained plants purporting to be that of Siberian Dogwood from nearly thirty-six sources in this country and abroad, noted the considerable mix-up, found the true variety and re-introduced it to American sources. The true Siberian Dogwood is hard to distinguish from the species on purely botanical characteristics but is recognized by the fact that the twig color is a more brilliant red, making it more worth-while as an ornamental for winter display.

Even native American species are frequently mis-identified. Such is the case sometimes with *C. stolonifera* and *C. amomum*. Both have reddish twigs, but *C. stolonifera* is usually the more desirable of the two for ornamental planting because of its stoloniferous habit of growth, lower size and greater hardiness. One nurseryman was propagating thousands of *C. amomum* (with brown pith) and labelling it *C. stolonifera* (which has white pith) before he realized his rather serious error.

It is also probable that these shrubby types can hybridize, one with the other, so it becomes increasingly important to realize the differences between the species and offer them for what they really are.

In order to do this so that comparisons can be made, it seems advisable to divide the plants into tree types, large shrub types—from seven to twenty feet—and low shrub types. Since nearly forty species and varieties have some merit for landscape planting and another fifty are

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ARNOLD ARBORETUM

Cornus controversa

either inferior to the selected group or no better ornamentally, only those that are worthy of consideration for landscape planting will be discussed here.

Tree Types

There are six species of dogwoods that are trees in this group recommended for landscape use, four of them being natives of China or Japan (*C. capitata*, *C. macrophylla*, *C. controversa*, and *C. kousa*), and two natives of North America (*C. nuttallii* and *C. florida*). The least hardy, seldom planted in the United States (except in protected gardens on the Northwest Pacific Coast), is the Evergreen Dogwood (*C. capitata*), a rounded, evergreen to semi-evergreen tree growing about forty feet tall with small flower clusters and four to six pale yellow bracts an inch and a half to two inches long. The flowers appear in June and July and the red, strawberry-like fruits appear in the fall. The tree is very tender and can be grown only in those parts of the country relatively free of frost and high summer temperature.

The Largeleaf Dogwood (*C. macrophylla*) is a forty-five foot tree hardy

from Long Island southward, with large leaves four to seven inches long and as much as three and a half inches wide. The flowers are small, in yellowish-white clusters about four to six inches wide but without conspicuous bracts. Even though it is not superior to *C. controversa* in flower, it may have merit in some situations because the flowers appear in July and August, at a time when few other trees bloom. Certainly it has merit as a foliage tree.

One of the taller of the dogwood trees growing up to sixty feet high, is the Giant Dogwood (*C. controversa*). This is perfectly hardy as far north as Boston, where it does well. The leaves are alternate; unlike those of most dogwoods; the flowers are small and similar to those of the shrubby types. The fruits are bluish-black berries and the autumn foliage color is red. The branches are produced in tiers or layers, as are those of some of the other dogwood tree types. All in all, this is superior to the native alternate-leaved Pagoda Dogwood (*C. alternifolia*) which is not recommended because it is frequently susceptible to a serious twig blight.



ARNOLD ARBORETUM

Cornus kousa variegata

The last of the exotic tree types worth growing is the Japanese or Kousa Dogwood (*C. kousa*) or its Chinese variety, the Chinese Kousa Dogwood (*C. kousa chinensis*). This is a small tree, only about twenty-one feet tall, with very definitely layered branching and it is hardy as far north as Boston. The Chinese variety is supposed to have larger flower bracts. Those of the species are supposed to be an inch and a half long and about an inch wide, while those of the Chinese variety are supposed to be up to three and a half inches long and up to an inch and three-fourths wide. These two kinds are definitely mixed in nurseries, however, and are very difficult to tell apart. My suggestion is to use the Japanese species which is slightly more cold hardy than the Chinese variety and fertilize it well. This treatment will probably result in just as large flower bracts as those of the Chinese variety. At least, this has been our experience in the Arnold Arboretum.

The fruits of the Japanese Dogwood are large, red, raspberry-like affairs, all borne erect on the upper sides of the horizontal branches, as are the flowers. The foliage turns a dull red in the autumn. This tree is definitely one which, if possible, should be observed from above, to obtain the best view of the flowers. As the flowers fade, the bracts sometimes become tinged with red, but this depends upon either the situation or the climate or both. The variety named *variegata* has variegated leaves, but is not especially outstanding.

The two native American dogwood tree species are, of course, the most popular. The Pacific Dogwood (*C. nuttallii*) is native from British Columbia to Northern California and can grow to seventy-five feet, making it the tallest of all the dogwood clan. Incidentally, it has also been termed by some the best of the native American flowering trees. The small flowers are surrounded by four to six large flower bracts, making the entire flower cluster four or five inches across. In this also, the flower bracts frequently fade to a soft pink. The fruits are red. It is unfortunate that this species does not thrive in the eastern United States.

There is a variety of this called *C. nuttallii eddiei* which was discovered grow-

ing wild in 1918 by H. H. Eddie, a nurseryman of Vancouver, British Columbia. It resembles the species in every respect except that the leaves are variegated an attractive green and gold in a spotted or mottled effect. It also tends to bloom a second time during August, as do many plants of the parent species.

The Flowering Dogwood (*C. florida*) is native over a wide part of the eastern United States. A few plants have been found even in the woods of southern New Hampshire, but this is about its northernmost limit, for flowering, at least. This species can grow forty feet tall, and can live to be nearly a century old, but to attain such trees, plants would require good care to remain in good condition. The merits of the Flowering Dogwood are well known and need not be stressed here. As a specimen flowering and fruiting tree, it is one of the best. Its horizontal branching habit, its vivid red autumn color, spectacular fruit that may persist after the leaves fall, all combine to make it of ornamental interest every season of the year. There are some varieties more or less well known, which are worthy of particular note.

Cornus florida varieties

'Cherokee Chief'—Plant Patent No. 1710 in 1958 by Ike Hawkersmith, Winchester, Tennessee, with flower bracts listed as a "rich ruby red" and new growth reportedly reddish. This variety, unfortunately, was grown and distributed under the name ('Super Red') by several growers in the Winchester, Tennessee, area shortly before it was patented under the name 'Cherokee Chief.'

'Cherokee Princess'—a selection of the white-flowered species.

'Fastigiata'—the original tree has been growing in the Arnold Arboretum in Boston, Massachusetts, since 1910. It was distributed to fifteen nurseries in 1954 and probably to others before that. The branching is definitely fastigiate, making it possible to plant this clone in gardens where space is limited. This grows twice as tall as it does wide, but in most *C. florida* trees the proportions are just the reverse.



ARNOLD ARBORETUM

Cornus florida fastigiata

As far as I can tell, the variety 'Ascending,' patented in 1952, is almost identical.

'Gigantea'—found and named by Paul Vossburg, Westbury Rose Company, Westbury, L. I., New York; on the nearby Phipps estate about 1932, with flower bracts reportedly six inches from tip to tip.

'Magnifica'—also found on the Phipps estate about 1926 "with full, rounded bracts about four inches from tip to tip."

'New Hampshire'—selected from a tree in Atkinson, New Hampshire, for its apparently greater flower bud hardness, by Heinrich Rohrbach, Heatherfells Nursery, Andover, Massachusetts.

'Pendula'—originally described in 1887 for its pendant branches. A well grown tree, does make a good specimen, somewhat stiffly branched but still interesting.

'Pleuribracteata'—with six to eight and often more, flower bracts, flowers more or less aborted; originated in Orange County, North Carolina, before 1914.

'Salicifolia'—with narrow, almost willow-like leaves and short, twiggly growth, making a tree smaller and denser than the species. Henry J. Hohman of Kingsville Nurseries, thinks highly of this variety and has proved to me that uncomplimentary statements I have made about it in the past should be corrected.

'Welchii'—selected by Mark Welch, a nurseryman, about 1920. Leaves are sometimes a combination of green, creamy white and pink. A sparse bloomer, the foliage often burning in full, hot sun, nevertheless very pretty in a lightly shaded situation, coloring well in the fall. Sometimes it will revert to the green-leaved species. Mr. Hohman has an excellent form of this which he calls the "Kingsville form" with better color and a better grower. The variety 'Aureo-variegata,' listed by Brimfield Nursery, Wethersfield, Connecticut, in 1958 is identical with the "Kingsville form."

'White Cloud'—A seedling selection made by Wayside Gardens, Mentor, Ohio, before 1946. It flowers profusely when very young, sometimes a creamy white.

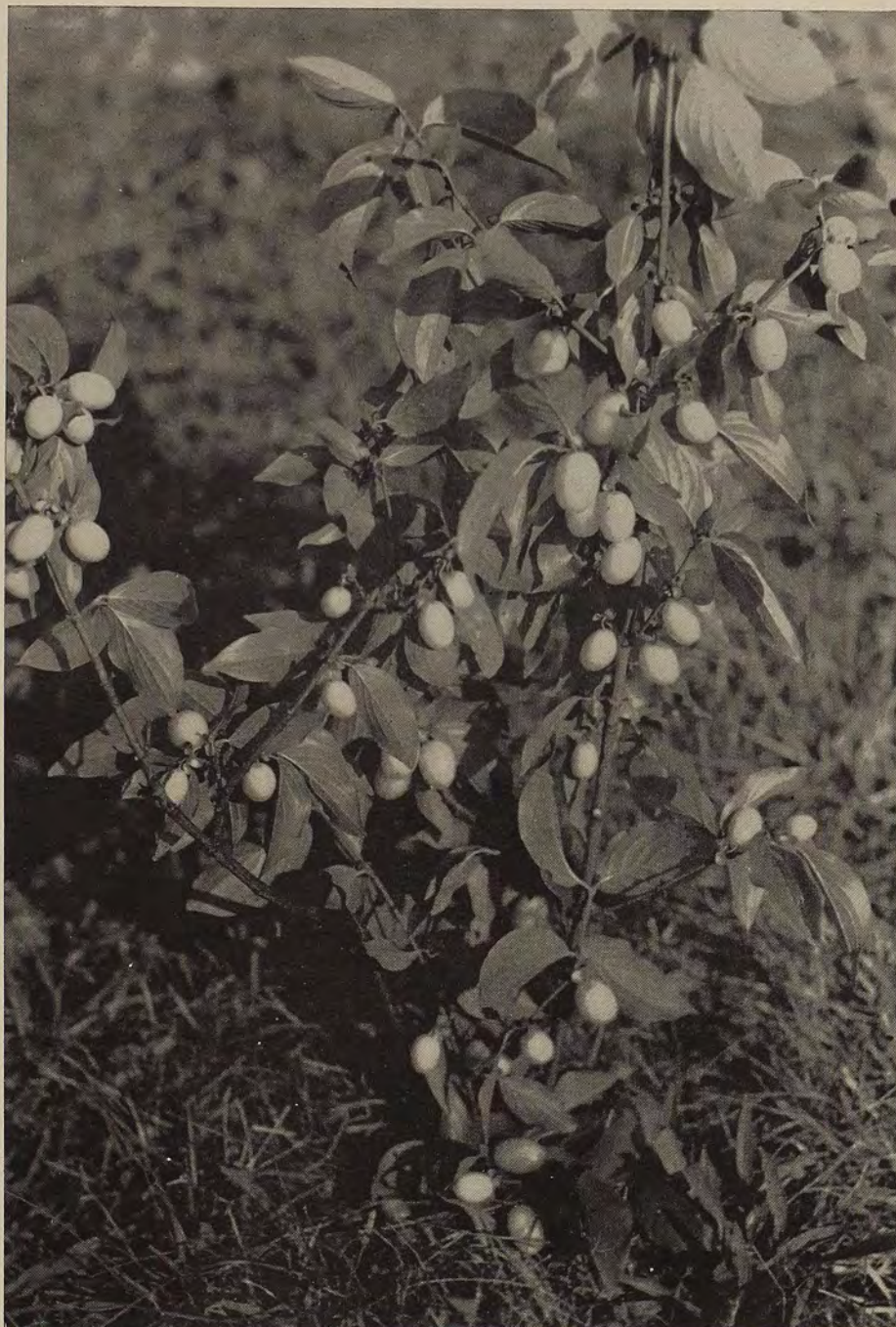
'Xanthocarpa'—A variety with yellow fruits, known since 1919.

C. florida rubra—Probably first found and noted by Marc Catesby in Virginia about 1731. This is not so cold hardy as the species and the color of the flower bracts apparently varies considerably from a washed-out pink to a deep red and may even vary on the same tree from year to year. It has been found several times in the wild. The cultivar 'Prosser Red' was found by Bruce Howell of Knoxville, Tenn., about the time of World War I, about three miles from his nursery on property owned by Brown Prosser. This has been grown, off and on, ever since, but most have discontinued growing it because the flowers are small and it grows slowly. Also the leaves are a dark reddish green when they first appear, so that when the plant is in bloom there is not any great contrast between the flowers and the foliage. Young plants are also reported as slow to bloom.

It is of interest to note that J. H. Eddie of H. M. Eddie and Sons, Vancouver, British Columbia, writes that he has a cross of *C. florida* and *C. nuttallii*. This hybrid, originated by his father, H. M. Eddie, has pendulous branches, leaves like those of *C. florida* but slightly larger, and flowers like those of *C. nuttallii*. Some of the blooms measured were six inches between the bract tips. This needs further trial, and testing in the United States.

Medium and Large Shrubs

Of the six species in this group, two are natives of Europe (*C. mas*, *C. alba*); one is a native of China (*paucinervis*) and three are natives of the eastern United States (*C. amomum*, *C. racemosa* and *C. stolonifera*). The tallest of the group is the Cornelian cherry (*C. mas*) which may be a tree up to twenty-four



ARNOLD ARBORETUM

Cornus mas 'Flava'

feet in height, but is usually much lower and is grown as a shrub with many stems from the base. It is truly an excellent ornamental, with profuse small yellow flowers opening before the forsythias bloom in the spring and bearing elongated cherry-like fruits which can be used for making preserves. The autumn color is reddish. There is a plant in the Arnold Arboretum which is over seventy years old and which has never been pruned or treated for any pest, so it is a shrub that will be long-lived and require little care. Hardy up to southern New Hampshire, this can be used as a specimen, as a hedge (for it responds well to clipping) or as a large shrub for the background.

Flower arrangers like it because cut branches brought into a warm room force well in the late winter and are easily worked into many types of arrangements indoors. There is a white-fruited form 'Alba'; a yellow-fruited form 'Flava' and a variety with yellow leaves, *aurea*. There is also the form 'Aureo-elegantissima,' formerly called *elegantissima*, which has leaves with a creamy white to red variegation, but it is not a very vigorous grower. Another form 'Variegata,' has leaves with a white margin. The variety 'Nana' has been described as a "spherical bush," originating in France before 1879, but I have never seen it. Several European nurserymen list this plant, but when we have received specimens so named, they have always turned out to be *C. pumila*, a low-growing type of dogwood with black fruits and little ornamental merit.

The next tallest in this shrubby group is the Gray Dogwood (*C. racemosa*), an American native growing up to fifteen feet tall, but usually is seen in gardens under this height. It is as hardy as *C. mas*, grows vigorously from the base with rather slender stems and so can be used in clipped hedges. The flowers are in flat white clusters up to two and a half inches in diameter, in mid June. These are followed in early summer by small white berries on red stalks, which are most attractive, appearing earlier than most of the other dogwood fruits.

The Littleleaf Dogwood from China (*C. paucinervis*) is not quite so hardy as the other two just mentioned. The fruits are black, sometimes the foliage is half

evergreen, and it is usually under nine feet in height.

The Silky Dogwood (*C. amomum*) is native in the eastern United States, grows about nine feet tall, is as hardy as *C. paucinervis* (it can be depended upon only up to the warmer parts of Massachusetts) and is not so good an ornamental as *C. alba sibirica*. It is mentioned here because it is so widely found and has been collected and planted as a poor substitute for the Siberian dogwood. The fruits are bluish to almost a grayish color and the twigs are not nearly so red as are those of the Siberian dogwood.

The Siberian Dogwood (*C. alba sibirica*) is a native of Europe. If properly cultivated the young stems will be a more brilliant red than any other hardy woody plant with colored twigs. Considerably under nine feet tall, this plant, to look its best each winter, should have the older branches cut back at the base of the ground in the early spring. Thus, young vigorous shoots are forced into growth. It is also hardy throughout the United States and in all but the coldest parts of Canada. The flowers are small and white, borne in flat umbels about two inches in diameter; the fruits are white (sometimes slightly bluish) and very effective in the fall. An advantage this has over *C. stolonifera* is the fact that it does not tend to spread by underground stolons.

Because the variety *sibirica* has better red stems, the species (*C. alba*) need not be grown. There are other varieties of *C. alba*, however, which are also worth cultivating. *C. alba* 'Argenteo-marginata' is one, with its white-edged leaves. In fact, from a short distance, there is enough white in the foliage of this variety to make it a decided white-and-green color, distinctly different from the solid greens of most other shrubs. 'Gouchaulti' is a variety with leaves streaked with yellow and red hues, making it also a shrub to use for its contrasting foliage. 'Spaethii' has leaves irregularly variegated with deep yellow, and some consider this the handsomest of these varieties. I have always liked 'Argenteo-marginata,' for its white-and-green foliage has a cool appearance that is restful even on the hottest summer day.

The Red Osier Dogwood (*C. stolonifera*)



ARNOLD ARBORETUM

Cornus alba 'Argenteo-marginata'

fera) is the last of the species in this medium-sized group. It also is a native of the eastern United States, seldom grows more than seven feet tall and, like *C. alba*, is hardy in all but the coldest parts of Canada. It differs in that its twigs are not colored such a brilliant red. It tends to spread by underground stolons and so takes over space and is perfectly at home in moist to wet soils, hence this species is excellent for planting on banks or beside a stream or pond. For strictly specimen planting, *C. alba sibirica* or one of the other forms of *C. alba* should be selected, but for naturalistic planting in wet soils, the Red Osier Dogwood is the species to choose every time.

The yellow-stem variety should also be mentioned, *C. stolonifera* 'Flaviramea.' This has been known since 1900, and has all the good characteristics of the species and brilliant yellow twigs, in addition. Like many other shrubs, the older stems should be removed every few years, cut off at the ground in the early spring, to force from the base vigorous young growth which will, of course, be more brightly colored.

Dwarf Dogwoods

The smallest of all the dogwoods is the little Bunchberry Dogwood (*C. canadensis*), a native throughout eastern North America and even eastern Asia. Anyone familiar with the mountains of the eastern part of the country will recognize this nine-inch-high plant, usually growing in dense mats as a ground cover, its small head of yellow flowers surrounded with four to six large white bracts, and later followed by the edible bright red berries in the late summer. The leaves are evergreen and whorled about the stem. It grows only in the cool, moist climate of the mountains and when tried elsewhere must be given protection from drought and too-hot sun, else it will fail miserably.

A taller dwarf is the Kelsey Dwarf Dogwood (*C. stolonifera* 'Kelseyi'). This grows about eighteen inches tall and was found in 1927 and introduced by the Kelsey Highlands Nursery of East Boxford, Massachusetts. It has red stems and is densely branched, so it has some use as a low plant.



ARNOLD ARBORETUM

Cornus racemosa

These, then, are the better ones of the dogwood clan to grow as ornamentals. Of course, not all should have a place in every garden, but since there are twenty-one trees, fourteen shrubs and two dwarf shrubs among their number, at least one or two might be considered by every gardener, depending upon the area where his garden is located and the specific situation he might have available. It is obvious from the foregoing discussion that most of these recommended trees

and shrubs are of ornamental interest for at least two seasons (because of flowers and ornamental fruits) and that the majority could be said to have a third season of interest because of good foliage or interesting bark coloration. Trees and shrubs of interest for such a long period might well be given prime consideration in every garden, especially the small garden where space is limited and plants selected should be ornamental for a maximum length of time each year.

(January 1962)

Rosemary And The Lavenders

HELEN M. FOX

Rosemary and the Lavenders are among the most attractive plants in the herb garden, because of their delicious scent given off by the leaves and flowers and also because of their evergreen foliage and neat habit of growth. They have always been favorites with gardeners, perfumers, healers and herbalists and the Rosemary with cooks as well. Perhaps even more than most herbs they have figured in folkways down through the years and at the present time Rosemary and *Lavandula officinalis* are listed in both American and British Pharmacopoeias and are used in both medicines and perfumes. *Lavandula latifolia* furnishes oil for paints and varnishes. In one year before the second World War, over three hundred and twenty five thousand pounds of Lavender oil were imported from Europe and two hundred and eighty-three thousand pounds of Rosemary oil.

In southern New York only the dwarf forms of *Lavandula officinalis* are hardy though the tall forms winter through along the seacoast and in the Hudson valley. Rosemary and the less hardy species and varieties of Lavender are so essential, however, to the picture of an herb garden that in order to have them, they are often grown in pots, wintered indoors in a cool yet sunny place and planted out in the garden for the summer.

Rosemary and most of the Lavenders come readily from seed and can be increased from cuttings, almost any time during the growing season. Each gardener seems to have his favorite time and special way of rooting Lavender. A sure way is to leave a bit of heel on the cutting and root it in moist sand. Both

plants seem to thrive best in light, well drained soil, where there is a little lime present. With me the Lavenders require protection from the north and are mulched lightly either with salt hay or pine boughs. This is done principally to prevent burning from sun during false springs when the weather turns unseasonably warm.

Rosemary and the Lavenders are native to the Atlantic Islands and can be found all along the Mediterranean littoral. A few of the Lavenders come from Persia and India. Voyagers to Spain since Roman days have said the fragrance of these plants could be smelled far out at sea, a statement which can be verified from personal experience. There, too, trunks of old, large plants are used for firewood and give forth a fragrance which smells like incense. This is not surprising since Dr. Paul Leon Guiseppe, collector and grower of alpine plants, wrote that when he was high up in the Spanish Sierras incense was being made by burning *Cistus*, Rosemary and Lavender in pits.

Upon venturing into the realm of naming plants, the way leads into a complicated and controversial territory and it is best to follow one authority as much as possible to avoid confusion. In this paper, the classification of the former Miss D. A. Chaytor, who made a taxonomic study of Lavenders at Kew, which was published in the Journal of the Linnean Society, October 1937, is taken as the principal authority. Some advice from Dr. L. H. Bailey's books and my own notes on plants in the garden, are used principally on horticultural varieties. In an account of this kind it is not necessary to go into

the naming of all species and crosses, only those plants are described that are commonly grown in gardens or used commercially and a few unusual ones, to show the great variation existing in the genus.

There are about twenty eight known Lavendar species. The characteristics common to all species are as follows: *Lavandula* is an aromatic shrub or subshrub with leaves either entire, pinnately-toothed or -dissected. The flowers grow in whorls composed of two to ten blossoms; these whorls are generally crowded into cylindrical, terminal spikes and the spikes are borne on long stalks either unbranched or branched from the base. The colors of the flowers most frequently are blue, violet or lilac and rarely pink or white. The calyx is tubular, five toothed and the five corolla lobes are nearly equal or with the upper lip two-cleft and the lower three-cleft. There are four stamens directed obliquely and generally not protruding outside the corolla. The style is shortly two-cleft. The hairiness is simple, branched or stellate. The size, shape and color of the thinly textured bracts which subtend each half whorl furnish means of identification for several species. The tiny bracts under the flowers are present only in the species classified under the Section SPICA. To further complicate identification there has been a great deal of hybridization among the Lavenders in both the wild and cultivated state, sometimes between plants of different Sections.

Miss Chaytor gives five Sections, namely: STOECHAS, SPICA, PTEROSTOECHAS, CHAETOSTACHYS and SUBNUDA. The most important Section horticulturally is SPICA. Under this Section come the species: *officinalis*, *latifolia* and *lanata*.

Lavandula officinalis is now the ac-

cepted name of a plant heretofore called *L. spica* or *L. vera*. There are several varieties of *officinalis* differing in height, length and width of leaves, color and quality of the essential oil they yield. *Latifolia* and *officinalis* have been cultivated for centuries and have been hybridized and from these plants several garden varieties have been selected. Characteristic features of *officinalis* are its one to three feet high growth and woolly stems. The leaves are entire with revolute margins, a prominent central vein and linear lanceolate shape, up to two inches long. Much smaller leaves grow out of the axil of the larger ones. The young leaves are grayer and the older ones greener. The flowers are violet, more rarely pink or white, one quarter to a half inch long and grow in whorls of six to ten with ovate pointed bracts subtending the whorls.

Under *officinalis* is a low variety called *compacta* which according to Dr. Bailey, is the same as var. *nana compacta*. They are allied to var. *angustifolia* and var. *pyrenaica* which is small and grows in Spain and the Pyrenees. It has large bracts, often purplish, especially at the top of the young plants. The dwarf forms are hardier than the tall and are the only Lavenders which live through the winter for me so I have collected as many variations as I could find. They grow from eight to twelve inches high and begin to bloom in July and keep on for some time. Among them is a form called Munstead Dwarf, which has hairy lavender gray foliage with bluish flowers and furry flower buds. In its young stage it looks like a tiny gray pine, it is so regular and stiff but with increasing maturity the weight of the open flowers bends the stems a little, the whole plant loses its stiffness and resembles a tiny Laven-

der gray fountain. Other dwarfs are *nana* Backhouse, with slightly larger and deep blue flowers; Folgate Blue, with mauve flowers, paler than Munstead Dwarf but otherwise like it; Hidcote Purple, with rich purple flowers; and Twickle Purple with graceful flower spikes up to four inches long and because of this are of a length good for cutting and putting in vases. Also there is a form called Middachen with glaucous foliage and dark flowers. One supposed to be *alba* turned out to have pale pink flowers with an undertone of pale lavender and is enchanting. This is undoubtedly var. *rosea*. The whole plant is more blond than the others; the green of unopened buds is very pale, the calyx instead of being tinged purple or dark green, is pale green too. A note in the English *Gardeners' Chronicle* recommends a form of var. *alba* only three inches high. When the plants with flowers in different hues from deep purple to pale pink are interplanted in a border along the top of a low stone wall or as an edging to perennials with a green lawn in front of them the effect is a symphony in pastel tints.

Of the tall forms there is a white flowered one offered in an English catalogue, also one called Silver Gray said to be similar to the plant called Old English, a selection of Eleanour Sinclair Rohde's and claimed to be the most floriferous of all.

A variety called *delphinensis* is said to be like *angustifolia* but differs from it in being larger and more robust with leaves lanceolate to oblong and margins scarcely revolute, and with longer more interrupted and more robust spikes. This form is found in Switzerland and France and is collected for extracting the oil.

A plant called *Lavandula serrata* appears to be a variety of *officinalis* and

smells like it. The distinctive odor of a species is often a sure way of knowing the plant is different. It is distinguished from the type by the fact that the lower leaves on the stems are dentate from the tip two thirds of the way down.

Under the Section SPICA, today considered to be a distinct species, is *Lavandula latifolia* the now accepted name and includes *vulgaris* and *fragrans*. *Latifolia* is the type of spike or spike lavender used in industry and grown commercially. It has been hybridized with *officinalis*. The leaves in this form are wider than those of *officinalis*. They are either shaped like a narrow ellipse or like a spatula, much attenuated at the base and with glands especially noticeable on the under surface. They measure two and a half inches in length and one half inch across. The flower spike is often interrupted, compact and rather slender; the bracts linear lanceolate, acute and equal to the calyx or slightly longer; the marginal teeth of the calyx are obtuse and rounded, the posterior appendage elliptic; and the hairiness is short gray and suede-like and occasionally tinged with purple. Spike oil which smells like Rosemary and Lavendar mixed comes from this plant.

Lavender oil is distilled from flowering tops and sometimes upper leaves of *officinalis* and some of its varieties and from *latifolia* and from *delphinensis*. English Lavender oil is obtained from plants cultivated in England and claimed to be better than French oil which is extracted from wild plants. The English use the narrow leaved form which before the change of botanical names was called *vera* but now is *officinalis*. The best quality of French oil is obtained from plants found in altitudes from two thousand to almost four thousand feet. Lavender oil is used for

*Gottscho-Schleisner**Lavandula latifolia*

soaps, perfume and medicine. Today it is also used to overcome disagreeable odors in ointments and other compounds. It has mildly stimulating prop-

erties, hence spirits of Lavender is a restorative for faintness and is said to provoke appetite, raise the spirits and dispel flatulence.



Gottscho-Schleisner

Lavandula serrata

The only time I saw *Lavandula lanata* was as a herbarium specimen from North Africa, but, it is native also to Spain. It is unusual because the

leaves clustered near the base of the stem are exceedingly woolly. They are linear lanceolate and narrowly spatulate. According to Miss Chaytor the

flower spike is interrupted, lax and sometimes very long, reaching five inches. The bracts are linear to lanceolate; the calyx has four teeth alternating with four rounded lobes, the posterior lobe is enlarged into an upright elliptic and slightly hooded appendage. The corolla is small and the tube tiny but longer than the calyx.

Under the Section *STOECHAS* are the species: *dentata*, *stoechas*, *viridis* and *pedunculata*. *Dentata* is distinct from the other three which differ in minor points. The most obvious differences lie in the length of the stalk that carries the flowering spike, which is short in *stoechas*, medium in *viridis* and long in *pedunculata*. Other differences are in the hairiness and color of the flowers. The Section is unique because of the tuft colored bracts which grows out of the tip of the flowering spike.

For years I have grown *Lavandula dentata* as a pot plant and found it one of a most persistent bearer of flowers, for it blooms from mid-summer until the following spring. It is native to the Mediterranean and in Sicily is used as a hedge as it stands clipping well. The plant is a vigorous shrub, branches freely and grows three feet or more high. It is rough to the touch, and the narrow light green leaves are so evenly dentate they look as if they had been cut with a pinking shears almost to the center. The margins are revolute; flowers are borne at the tip of a long naked stalk in short interrupted lax spikes, are subtended by broad green bracts outlined with lavender and pointed at their tips; the bracts growing from the apex of the inflorescence are grouped in several whorls and overlap each other. They are lavender with a green line down the center; flowers are pale lavender and the corolla tube is slightly longer than the calyx.

It is said the Romans called the Stoechades Islands off the coast of France after *Lavandula stoechas* where it is abundant. Hegi said in antiquity it was used more than *latifolia* or *officinalis* and in the Middle Ages was one of the ingredients of the Vinegar of the Four Thieves, famous as an antidote against the plague. After being dried, it was carried over the Alps, was called sticadore and until the middle of the eighteenth century was used medicinally. The gray green shrub covered with fine white hairiness is native to the southern coast of France, also Spain and Portugal. With me it has grown to eighteen inches high, but elsewhere to three feet. The leaves arch upward, are slender, downy, and pointed at the tip. The stems are leafy, much branched and tinted reddish plum. The dark purple flowers are almost trumpet shaped and grow in close heads and form an inflorescence one and one eighth inches long and one eighth inch across. The calyx is green and furry and so is the bract subtending it. Miss Chaytor says the calyx is occasionally white, pink or copper pink. Out of the top of the flowering spike grows a tuft of narrow purple bracts with wavy margins resembling a bunch of bright feathers. A fine form of *stoechas* with immense violet beards, that is the plumes, has been reported as plentiful in Crete where it covers several acres exclusively. The plant smells a little of turpentine and yet flowery too.

When I grew *Lavandula pedunculata*, it appeared similar to *stoechas* except that the leaves were lanceolate with crinkled surfaces, the peduncles longer, and the flowers smaller. The shrub grows three feet and the hairiness on leaves is densely short and gray—on peduncles and young stems short

*Gottscho-Schleisner**Lavandula dentata*

and densely white. The flowers are dark purple yet sometimes white, the tube only slightly longer than the calyx.

In *Lavandula viridis*, the hairiness is

dense and consists of short greenish hairs. The corolla is white with the tube slightly longer than the calyx and the bracts subtending the flowers as

also the plume are white or greenish white. It sounds quite charming.

Under the Section *PTEROSTOECHAS* are three species which I have grown, all with much divided feather leaves entirely different from the other groups of Lavenders and desirable because they bring a greater variety of leaf forms and shades of green as also different smells to the collection. They are not hardy in the northeast but are admirable plants for southwestern and southern gardens. The three species I have grown are *multifida*, *canariensis* and *pinnata*.

The whole Section is characterized by having pinnate or bipinnate leaves, but they may be dentate to laciniate-dentate or entire as in *atriplicifolia*. The bracts each support a single flower. The calyx is sessile, five-lobed, bilabiate, the median posterior tooth usually broader than the others and the corolla tube considerably longer than the calyx, sometimes more than twice. The corolla is usually two-lipped, the posterior lobe is erect and either much larger than the spreading anterior lobes or they may be of almost uniform size as in *antriplicifolia* and *rotundifolia*. The plants occur in the Mediterranean region and in northern tropical Africa from Somaliland to Nigeria.

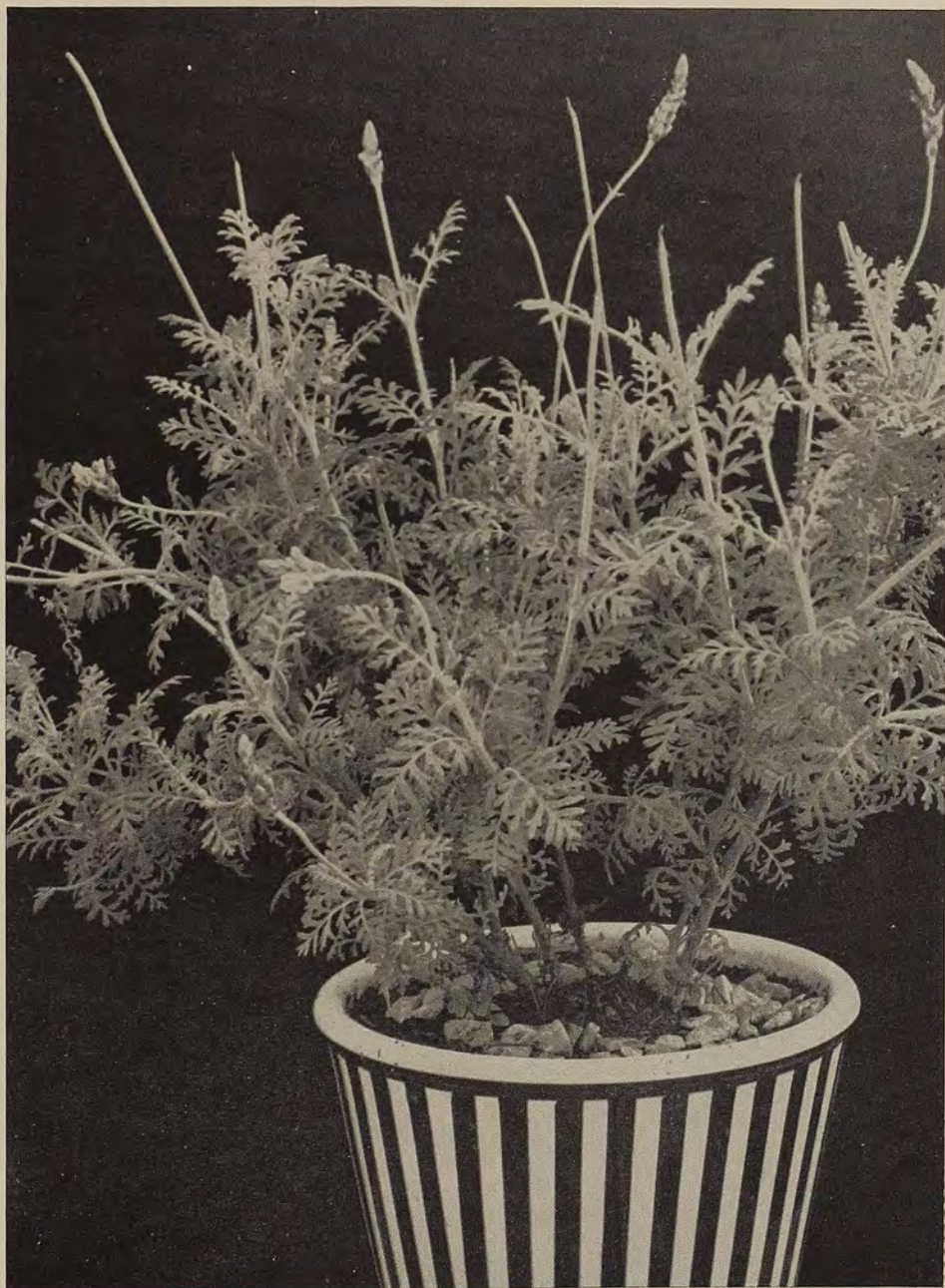
Lavandula multifida now includes *pinnatifida*. The hairs on the stems are long and weak and the bracts and calyx are woolly and gray. It is an odd plant, more curious than attractive. It is said to be biennial in its native land, grows about two feet high and is hairy with a green fuzz on the leaves, which arch and in my plants are bipinnately divided. The flowers form a spike at the termination of a long, naked stem and open a few at a time. They grow in four rows, one dovetail-

ing into the next. The spike twists spirally. The blossoms are lavender, tubular, and five-parted and in each division is a tiny purple line as if to indicate the way to the pistil to visiting insects. The calyx is green, marked brown and furry. There is a colored bract under each whorl. The whole plant, at least in my garden, smelled a little reminiscently of gasoline.

Lavandula canariensis, in my plants, has bipinnate yellow green leaves. The hairs are branched, denser on the leaves than on the stems. A synonym of this plant is *abrotanoides*. The leaves smell strong and sharply. The flowering spike is pointed and at the end of a six inch long stalk. About one inch under the spike is a pair of opposite flowers. The bracts subtending the flowers are green covered with brown, marked with lines and hairy, widest at the base, then narrow to a point. The flowers flare, are rose lavender and about as long as the calyx which is hairy.

Lavandula pinnata from the Atlantic Islands has fairly long leaves three inches in length including the stalk which is an inch long and with the blade a little over one inch across. They feel like soft velvet or felt and are not feathery like the others, instead the leaf blade is deeply cut with divisions far apart and rounded at the tips. The corolla tube is very narrow and more than double the length of the calyx. It has no fragrance, at least none in my plants.

A last Lavender belongs to the Section *CHAETOSTACHYS* and comes from distant central and southern India and is called *Lavandula bipinnata*. The leaf divisions are bright green, slender and long. The largest leaves measure three by three inches, however, in their native habitat they reach six inches in length.



Gottscho-Schleisner

Lavandula multifida

Each division is again divided. Because the leaves arch and the divisions are separated from each other the effect is relaxed rather than stiff. A character

of the plants is that the stems are contracted a little at the nodes. The flowers grow in a branching inflorescence which at times becomes umbellate. The flow-



Gottlieb-Schleisner

Lavandula canariensis

ers are in whorls and each of the lower whorls has a stalk, under these is a bract which has three elongated pin thin tips. Under each flower the bracts

have a single spine shaped tip and this gives the inflorescence a look of being bristly but these tips are not stiff. The flowers are white, the tube tinted laven-



Gonscho-Schleisner

Lavandula pinnata

der and in my plants the same length as the calyx though they have been described as nearly double the length. The

plant is said to vary considerably according to growing conditions. It is very attractive.

*Gottscho-Schleisner**Lavandula bipinnata*

My own experience with Rosemary, *Rosmarinus officinalis*, is somewhat unique for it has not been hardy. It grows very well in pots where, how-

ever, they are not as long lived as in the ground. In Ireland I saw bushes with trunks eight inches across and stems rising to eight feet.

Rosemary means "dew of the sea." There is but one species but there are varieties that differ in habit of growth and tinting on the leaves. They come readily from seeds and are sometimes large enough to plant out six weeks after being sown. It is also easy to increase the plants from cuttings. The plant is native to the Mediterranean and is wild on the chalk hills of Southern France and especially abundant around Narbonne.

Rosemary has numerous somewhat arching branches, the main trunk is woody with shredded bark; upper stems are rounded and have a fine pubescence on them. The evergreen leaves are one and a half inches or more long and one eighth inch across, linear and pointed at the tip and have a strongly marked depressed vein down the center. They are closely set along the stems. On the upper surface they are glossy green with revolute margins. Since the leaves arch they show the gray undersurface. The flowers are pale lavender blue, one half inch long, grow in short axillary more or less hairy racemes and the stamens are exserted. They generally begin to bloom in February and continue into May. The whole plant is very fragrant, with its own special and characteristic smell, sometimes called "balsamic."

In the type, the branches arch and grow somewhat loosely and are a yellower green than in some other varieties. One variation called Miss Jessup is more upright, comes true from seed and makes a fine hedge plant particularly becoming to roses.

A variety called *prostratus* is a low rock plant with branches level with the ground and the least hardy of them all.

Among other variations read about but not grown by me is one called var. *pyramidalis* which grows to three feet

and is said to have dark and pale lavender flowers. *Pyramidalis* is reported to lend itself to being shaped into standards to anyone so minded. A "golden Rosemary" is mentioned as a variegated plant of the seventeenth century, and sounds lovely. There is also mention of a plant with silver variegations. A white-flowered Rosemary is reported to have been found in Malta.

Rosemarinus officinalis "Beneden Blue" said to be var. *angustissimus*, was given an award of merit in 1933 by the Royal Horticultural Society. It was grown by C. Ingram who had collected it in Corsica. The leaves are said to be narrower than in the type, the numerous flowers are bright blue.

Rosemary has a long history and has been associated closely with folklore. Undoubtedly because of its evergreen foliage and strong scent it was used in decorations at weddings, funerals and for Christmas. In the Middle Ages in French hospitals it was customary to burn Rosemary with juniper berries to purify the air. One wonders how much germicidal effect this had, if any. Lavender was used in the same way.

The best oil is extracted from flowering tops. Commercially it is extracted from stems and leaves before the plant flowers, using generally young shoots and trimmings taken at the end of August or beginning of September, after the woody parts are separated.

The flowers are liked by bees and impart their flavor to honey gathered where it grows plentifully.

The colorless or pale yellow oil is imported to the United States from France, Spain, Tunis and Morocco in large quantities. It is used chiefly with other drugs as a carminative, as an ingredient in rubefacient liniments, in hair lotions, in perfumes, especially in soaps and *eau de cologne*.

(July 1952)

The Lilyturfs in Gardens

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Common names or garden names of plants usually have been given by those who lived with them as native plants or have grown them in their gardens. Some names have been in use for many years but Lilyturf is an exception. There was no name commonly used for these plants in the United States, so in 1929 L. H. Bailey proposed that they be called Lilyturfs. This is a very appropriate name, since they belong to the Lily Family and they form a turf of sorts or cover the ground with their grass-like leaves.

The Lilyturfs as wild plants are native of China and Japan, mostly in the latter country and have been known in western botanical and garden literature at least since 1712. In that year, Engelbert Kaempfer, a German doctor with the Dutch East India Company in his book *Amoenitatum Exoticarum*, illustrated and described one of them, now known to botanists as *Ophiopogon japonicus*. He cited the Japanese names *mondo* and *riuno fige* for it, which he translated into Latin as *Barba serpentina* (Snake's Beard). This species has come to be widely known through much propaganda as Mondo Grass, a not too inept name as the plant in great masses does suggest a grassy surface or lawn.

In spite of the fact that they have long been known in the literature, both technical and popular, the individual plant longest known and grown is probably the species now known as *Ophiopogon jaburan*. Many readers will doubtless recall this name in old lists, such as Dreer's, where the plant was offered for use in pots forty years or more ago.

The greater number of plants included under the common name of Lilyturf belong to the related genus *Liriope* (pronounced Lir-i-o-pe), and it is probable that only within the last decade or so, they have come into general use in parts

of this country and their possibilities exploited to any extent. Much remains to be done to prove the ultimate limits of their cold hardiness and still more for their uses in garden designing, since they need not always be written off merely as ground covers.

In the genus *Ophiopogon*, there are only two *bona fide* species now generally cultivated in the United States, (*O. jaburan* and *O. japonicus*) with an additional plant masquerading under the invalid name of *O. arabicus*. This last is a distinct plant, with more or less the stature of *O. japonicus*, but differs markedly in that the new leaves, though green on appearing soon turn black, and that unlike its presumptive kin, it is slower than slow to increase.

In the genus *Liriope*, there are several species and many cultivars that have originated mostly from seed of one species, *L. muscari*. These have been propagated to some extent, particularly for use in the South (south of Washington, D. C.), though it appears that this area is not necessarily their proper climatic limit. These species include: *L. exiliflora*, *L. spicata*, *L. muscari*, *L. graminifolia*, and *L. gigantea*, the last mentioned is a new species described in *Baileya* Vol. 9, No. 4 (1961). The gardener who is curious about the technical distinctions between the genera and the species is referred to the above-mentioned work.

In brief, it may be said that the Lilyturfs (*Liriope* and *Ophiopogon*) are much alike in general appearances, with the best distinctions to be found in the growth habit, in the structure of the flowers, and in the kinds of inflorescence.

Although any generalization is dangerous, it may be said that all species in the two genera are evergreen-herbaceous plants, either forming caespitose clumps or spreading by underground stolons or rhizomes, some at alarming rates. The leaves though evergreen are at their best

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for a little more than one year, save in *O. japonicus* which seems to be a little more resistant to cold and sun. The leaves vary in length and width. Among the cultivars of *O. jaburan* and *L. muscari*, garden cultivars exist that show various types of leaf variegation, some of which are of great value in bringing a new color range into any mass planting. In the South where gray is rare and gaudy colored leaves are common. These plants make a welcome addition for even the variegated forms carry through as green from a distance.

Garden Values and Uses

Ophiopogon and *Liriope*, strange as it may seem, have been neglected plants. They are now gaining favor as their values are recognized and the uses to which they may be put in garden making have become better known. They may be used as ground covers particularly for places where grass is difficult to establish and maintain. They are also useful for the edging of walks and the facings of shrubs and flower plantings. They make attractive pot plants both as green foliage masses and when in bloom. In the olden days it was the cultivar 'Vittata' of *O. jaburan* that was mostly used in this manner. In *Baileya* (l.c.), E. H. Wilson is quoted, who wrote in *A Naturalist in Western China* 2:44 (1913) and *China the Mother of Gardens*, p. 324 (1929): "Table grass (*Liriope spicata*) is admired for its graceful habit and is placed on a desk or table to afford rest to the eyes when reading or studying."

In the lower South, particularly in gardens of the coastal towns of the Atlantic and Gulf, these plants have been used more extensively than elsewhere. It is not unlikely that some of them were introduced long ago by sailors who touched at different ports. What could be more highly regarded as a gift for a friend, than plants from a foreign land? Lilyturfs could easily be transported either as plants or as seeds.

Ground Covers

Since these plants are grass-like in their growth habit, they are particularly suitable as ground covers in shade, and in or alongside lawn areas; they introduce no out-of-place note. Of the species tested so far, the best are *O. japonicus* and *L. spicata*, each a rhizomatous

species. The former is more widely used, because it is more readily available, not because it is a particularly better plant, though its lower stature does appeal to some. If either of them is planted 6" x 6" or 8" x 8" apart, good coverage can be had in two growing seasons. Elsewhere it is indicated that the best time for planting is either late autumn in the South or early spring farther north. After they have covered the ground they require no more attention than turnips or beans to keep them looking well! It has been found, particularly with *L. spicata*, that it is best in spring to cut back the plants in all areas where used as ground covers to within an inch or so of the ground. This is advisable because the winter season sometimes makes them appear ragged by spring. The new leaf growth quickly recovers the greenery.

The question is sometimes asked whether these ground covers will withstand mowing. Over a period of several years, a narrow strip of *L. spicata*, has been regularly mowed with the rest of the lawn, and the plants have persisted although the lawn grasses have made their way among them. They are still there and apparently unhurt and add something with their dark green color to the appearance of the strip. In another garden, *O. japonicus* has invaded a centipede lawn from an edging, and is regularly mowed. There is no damage from the mowing and the invasion continues, but in the spring when the new leaves are tender, the cut leaf tips turn white and show the damage of cutting; later mowings seem not to produce this effect.

Although the writers at this time do not have any significant number of reports from northern areas, there is reason to believe that these same plants can be used as ground covers far from the Deep South. It is known that nurseries exist as far north as Connecticut that carry all the cultivars to be discussed later on. Our reporter does not say in what part of Connecticut they were observed but that all needed a good trimming in the spring.

It may be pointed out that as these plants are mostly of Japanese origin, or so the species were, that should be a good omen for their general use throughout the Northeast. This is not a safe criterion any longer, as we are



Liriope muscari 'Big Blue'
Medium sized plants with racemes well above the foliage

beginning to discover that some plants from northern Japan are not happy in our South and that plants which appear to be indigenous in the Kyoto area of Japan are not necessarily happy in our South in comparable climates. It is a sad thing to lose this old rule of thumb, but it is safer to record its present fallibility.

It may well be that the ease with which these plants are grown in coastal areas in the South will not be matched when they are taken inland and to higher elevations.

It may be pointed out that the Lilyturfs are not particular as to the kind of soil in which they are planted, but to secure best results, the soil, of whatever kind, should be enriched from time to time. This is particularly true on light soils which leach easily, or under trees where there is root competition. In fact, they should be treated as well as are grasses for lawns. They are particularly valuable on slopes to prevent washing and in shady places where grass is difficult; in short, Lilyturfs are useful for

any area where grass is a problem to establish and maintain. Of the two species mentioned, *O. japonicus* with its short leaves not over eight inches high when grown in mass, makes a more pleasant surface over which to walk, if one must traverse it.

In rock gardens, *Liriope* makes an excellent subject, if one chooses the clump-forming types. *O. jaburan* is useful, but it is much larger than most kinds of *Liriope*, even to two feet or more high when happily placed, so it should be pushed back to the rear or to marginal areas. Other kinds may be used for accent, of course, but one should have a particular sensitivity in choosing the kind and the site. In any case, one should consider the plant as giving a dark green color, with lavender or white bloom in season, and often a vase or mound-shaped mass of evergreen foliage. Once established, Lilyturfs need little additional care.

For edgings, the caespitose cultivars of *Liriope* are best. They are not prone to interfere with the growth of shrubs or

other plants adjacent to them, though they make very solid root masses. Among cultivars of *Liriope* commonly available, some of the best are 'Big Blue,' 'Majestic,' 'Lilac Beauty,' and 'Blue Spire.' Of the variegated sorts, 'Variegata' is the most striking, although the newer cultivars, such as 'Silvery Midget,' 'Silvery Sunproof,' and 'John Burch' are worth a trial. In some quarters, any variegated plant is suspect or else is written off as a sign of poor taste, but of this more later. Certainly one should hesitate before making extensive lines of variegated foliage in his garden unless especially designed for such elements. On a smaller scale, there are two very interesting cultivars 'Monroe White' and 'Christmas Tree.'

While kinds of *Ophiopogon* and *Liriope* have been used more extensively in the South than elsewhere, indications are that their use may be extended successfully farther north. William A. Strong, landscape architect in Cleveland, Ohio, has used *L. spicata* and found it to be satisfactory where it is usually covered with snow in winter. *O. japonicus* has been used in the Washington, D. C., area with success in some recent gardens, although it was well established on the Old Mall before that was redesigned. Frederic P. Lee reports some twenty-three species and cultivars as successful in his garden in nearby Maryland, and in *Baileya*, the survival of *L. graminifolia* at Glenn Dale, Maryland, a locale much colder than the District of Columbia, speaks well for its hardiness. L. H. Bailey reported various aspects of hardiness in his paper on Lilyturfs in *Gentes Herbarum* (1929). The writers have been told of other gardens in the North where all kinds survive, *O. jaburan* less happily, though all kinds look shabbier by spring than even the most enthusiastic owners desire.

When not in flower all kinds of *Liriope* are rather similar in garden effect, but when the racemes of buds and flowers appear their differences are easily seen and the beauty of some as flowering plants is particularly striking. This is especially true of the garden varieties originating from *L. muscari* of which there will be more from time to time. The racemes bear quantities of flowers but these do not open, many at one time, and the opening may be irregular over the total area, not a development

from base to tip; but the buds are as deeply colored and make as much show as do the blooms. Buds of the cultivar 'Christmas Tree' or 'Monroe 2' never open, but the mass of color they make is as fine as a grape hyacinth in the North. Many buds in other cultivars never open and fall off as closed buds. The deepest color is probably found in the cultivar 'Variegata,' though this may be more apparent because of the colored leaves, which certainly augment the beauty at blossoming time.

In the Gainesville, Florida, area, *Liriope* bloom for about two months, July and August, the same time as in the Gulf Coast area of Mississippi, overlapping the blossoming season of some other garden plants of major importance. For example, the time agrees with the last weeks of bloom of *Lilium speciosum* 'Rubrum' and allies, and matches exactly the full period of the Formosan form of the *L. philippinense*. If all goes well the herbaceous hybrids of the common mallow are in fine show. In a lesser way, and related to rains, one may have great masses of the commonest of the rain lilies, *Zephyranthes grandiflora*, and equal lots of a species still available in trade as *Z. macrosiphon* shortly to be renamed *Z. miradorensis*. This last self sows freely and comes up even in grass.

Again depending on conditions of weather, one may have secondary masses of fragrant white blossoms from *Cooperia pedunculata*, stray blooms from the earlier *Habranthus robustus*, even a few from *H. brachyandrus*, but whether or not the newer hybrids, *H. × floryi* and 'Sparkman's Beauty' will fit into the scheme remains to be seen. They are temporarily in pots but it is hoped that they will be as cold hardy as the others. *H. cardenasiana* will also be given a trial. And if courage holds, *H. concolor* in yellow, and *H. immaculatus* in white will join the crew.

If the season is propitious, meaning rainy and warm, the annual *Torenia* will be making its first masses of clear lavender flowers marked with pansy purple. Here, the white form has not maintained itself, and as yet, the yellow species has not been discovered.

Elsewhere, perennial phloxes, stokesia and false dragonheads are well in bloom, so one could multiply combinations variously depending on location.



Liriope muscari 'Monroe White' with pure white flowers

As yet, in the Mississippi garden no bulbous plant has been discovered that may be planted through a mass of *Liriope*, although a few narcissus have lived unhappily, and the invasive *Alstroemeria pulchella* that no one really covets, will live in spite of all.

Cut Flowers

Flower racemes of *Liriope* and *Ophiopogon* are very useful and attractive although there is usually some shattering on the second day after cutting. The color range is from pure white to deep violet, almost indigo, and a combination of several kinds with their own or comparable foliage makes a delightful bouquet of the old-fashioned "flowers in water" type. Because the leaves are rather stiff, have a definite and characteristic curve, they, with the flower racemes can also be made into striking stylized arrangements, or the flowers alone can be used with other flowers to add a secondary note of lavender that will accentuate the pinks of polyantha roses or the like. And, should the sea-

son be one in which there is heavy fruiting, the racemes of shining black berries may be used with fine success, in any sort of combination.

Pot Plants

In the colder parts of the country, garden varieties of *L. muscari* make good pot plants for indoor or greenhouse use. A temperature of 40 to 50 degrees F. in winter is satisfactory, though the plants will tolerate a higher one. In warmer areas, they may be potted and used on patios. Compact growing varieties make the best plants as they will give more bloom per clump. The cultivars 'Silver Banded' and 'Majestic' are suggested; 'Variegata' with its striped leaves, makes a handsome pot plant, or a specimen in box, planter or urn, if one still owns such. One may use either the green or the variegated form of *Ophiopogon japonicus*. A five inch pot will accommodate two or three divisions of *Liriope* and the number can be increased in larger pots. A mixture of equal parts of good soil, sand, and peat, plus dairy fertilizer



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Liriope exiliflora has racemes carried well above the foliage

makes an excellent potting soil. Plants may remain in the same pot for two or three years, by giving them small amounts of commercial fertilizer two or three times a year. When repotting becomes advisable, the plants are knocked out, the soil and drainage chards removed, and reset, in a somewhat larger pot, although if some of the older root masses are cut away, a pot of the same size may again be used. After repotting, plants should be watered well. Early spring before growth starts is a good time for repotting.

Propagation

If one tries to buy Lilyturf plants, he will find as a general rule, only a few of the most common kinds are available and these may be offered as growing potted plants or as any other perennial, dormant roots packed with sphagnum around the roots, often with the foliage somewhat cut back as in iris. Many of the named sorts one might wish to find in his local shop do not yet seem to have reached the lower levels of retail business. If he insists, his retailer can certainly find the wholesale sources of all.

If one buys only a few plants of each kind, intending to propagate his own, it is important to remember that if they are clump-forming or caespitose types, the sooner one starts to divide them, the easier the task. Old clumps, with a mass of roots, and almost woody center, take a strong arm and a sharp tool to make them into separate units, even after washing away as much soil as possible. It is possible to divide such into single fascicles of growth, but this will call for greater care in the next stage, regular watering and if possible a location in a semi-shaded area.

An old clump of *L. muscari* eighteen inches in diameter, may give as many as one hundred and fifty separate pieces, sometimes erroneously called "pips." In the lower South, this division should be carried out in autumn before the winter dormant season; in colder northern sections of the country, division is better in spring before growth starts. Proliferations sometimes develop on the rachises of *L. muscari* as they do on some clones of *Hemerocallis*, appearing after the buds and blooms have fallen off; these may be removed carefully and planted to produce new plants, using the same care in planting to induce rapid root development.

Ophiopogon and *Liriope* produce seed that can be sown if one wishes, although not all garden forms are equally productive and some species seem to produce few seeds that reach maturity. If one wishes to raise Lilyturf plants from seed, there is no special problem if the seed is sown as soon as it is ripe. Planted in boxes, pots or in the open ground, germination will commence in a month or so, and if the soil in each pot, box or bed is well prepared the seedlings will be large enough to use in two years. Any soil will do, but the better the soil, the better the plants will be. Outside, seed should be sown about $\frac{3}{4}$ of an inch deep and the bed thinly mulched with leaves. Bamboo leaves are excellent as they are light, easily scattered and do not interfere with the young plants as they appear. The soil should be kept moist until germination begins and after that care must be taken to keep the bed from drying out.

There is little variation in the growth and appearance of young seedlings of most of the different species and seedling populations result in fairly uniform lots

of plants. Among seedlings of *L. muscari*, wide differences may show up when the seedlings attain size, not only in the foliage, flowers and color, but in the raceme of buds and bloom. Differences in stature and vigor may appear as well. This is attested by the numerous cultivars now in the trade obtained by seedling selection.

If one does not want to bother with sowing seed, more than likely, he will find seedlings appearing in many places in his garden, sown there by birds or other creatures.

It would delight the authors if they could conclude this report with a descriptive list of all known Lilyturfs. The list that follows contains descriptions, in so far as we can give them, of the species and garden cultivars with names taken from published lists either in catalogues or horticultural papers as well as in the *Baileya* reference already cited. Our data have been supplemented by data from Frederic P. Lee.

Species

Ophiopogon jaburan. A clump forming species, with masses of dark green leaves up to $\frac{1}{2}$ " wide and 13 inches long, somewhat striate, forming a moundlike mass, up to 10 or more inches tall; scapes 8 to 10 inches tall, overtopping the foliage. Not dependably cold hardy in the North.

There is a variegated cultivar known as 'Vittata' similar in all respects, except that the foliage is striped with yellowish bands of varying widths that does not carry its color through the entire season. It is possible that the plant offered as 'Argenteus Vittatus' is the same.

Ophiopogon japonicus is a stoloniferous species of low habit, forming carpets of grass-like leaves, not over 12 inches long, and not over $\frac{3}{8}$ inch wide, dull surface, dark green; the flowers are not conspicuous and are usually hidden in the foliage masses, followed by round blue fruits, with white seeds. This is the ground cover plant of the genus.

Liriope exiliflora is a rhizomatous species forming dense turf-like masses, but at greater height than in the popular *Ophiopogon japonicus*; the leaves are dark green, up to 13 inches long and $\frac{3}{8}$ inch wide, glossy; flowering scape is violet-brown, up to fifteen inches tall, rising well above the foliage masses; the flowers are violet in color, showy, fol-



Liriope spicata, being used as a ground cover,
the third season after planting

lowed usually by abundant fruiting; the fruit is black.

Liriope graminifolia is a rhizomatous species with leaves up to 12 or more inches long, narrow, about $\frac{1}{4}$ inch wide; the scapes are 9 to 10 inches tall; the flowers are pale, almost white; fruiting is not recorded. Probably not in commerce.

Liriope gigantea is a new species certainly not yet in the trade, with wide spreading rhizomes, forming in time a densely matted turf, of dark green leaves $\frac{1}{2}$ to $\frac{3}{4}$ of an inch wide, up to 2 feet long; the scapes barely overtop the dark green foliage; the light violet flowers are produced earlier in the season than any other species growing in the same or comparable situations.

Liriope muscari is best known by the named cultivar 'Big Blue' described below.

Liriope spicatus has rather wide spreading rhizomes, but forms a good turf. The leaves are up to $\frac{1}{2}$ inch wide and 24 inches long, dark green and glossy; the scapes are not over 10 inches

long and barely overtop the foliage masses, more or less tinted with dull violet, and carrying a short mass of pale, almost white flowers; the fruits are shining black.

Cultivars of *Liriope muscari*

In so far as is now known, nearly all Lilyturf selections are derived from *L. muscari*.

'Big Blue.' This is the garden name for the species, *Liriope muscari*. The plant makes strong clumps in time, with leaves up to $\frac{1}{2}$ inch wide and 14 inches long, dark green and glossy. When young, or newly planted, the flowering scapes are taller than the foliage masses but with age they rarely rise much above the leaf masses. The blooms are typical, freely produced and excellent. Fruiting varies from year to year, with the usual black berry-like fruits.

'Blue Spire.' This cultivar grows in compact mounds of foliage, producing racemes well above the foliage masses, often broader at the base and sometimes forked at the tip in such a fashion as to



Liriope muscari 'Lilac Beauty'
Scapes are dark colored; flowers abundantly

suggest the cockscomb. Earlier than 'Big Blue.'

'Border Gem.' Not seen by the authors, but reported to be a cultivar of *L. muscari* with broad glossy leaves $\frac{1}{2}$ inch wide, and up to 24 inches long, forming a foliage mass not over 18 inches tall. Flowers not reported, but it is safe to assume they are lavender as in all cultivars of *L. muscari*.

'Christmas Tree' (sometimes known as 'Monroe No. 2'). Close tight clumps of somewhat narrow, ascending yellowish leaves, to 6 inches long, which make an excellent background for the flower scapes that rise well above them, and the crowded masses of flower buds, often so thick at the base, from branching, that they appear as a Christmas tree in shape. Sometimes the flower masses are merely club shaped and stolid-looking. The flowers do not open, but the buds, light violet in color, are showy. This cultivar may not be a derivative of *L. muscari*.

'Cockscomb.' Not seen by the authors, but reported by Frederic P. Lee as a

plant with somewhat dull leaves, not over $\frac{1}{2}$ inch wide, and 15 inches long, forming a mound about 10 inches tall. No report on flowering.

'Curly Twist.' A strong growing cultivar, characterized by its unusual yellow-green rather than dark green leaves, many of which are curled and twisted on their axes, giving a curious effect in mass. The short flower scapes do not rise high above the foliage, and are not particularly abundant in either garden reporting.

'Eleven-o-three.' A chance seedling found in Hume's garden in Gainesville, blooming usually after 'Big Blue.' The leaves are long and rather narrow forming a somewhat open clump. The flower scapes rise to a height of about 10 inches, with light violet flowers.

'Grandiflora.' In Morrison's Mississippi garden this is the tallest cultivar, with narrow yellowish green leaves up to 14 inches tall. The flower scapes are well down inside the masses of leaves and are rather late to appear. As they develop it appears that the flowers will

be white, but with growth, a light lavender color shows first in the rachis, starting from the base, and eventually colors the whole inflorescence. This cultivar is practically deciduous in Mississippi. As reported from Maryland, the plants there are very different, with thick leathery typical dark green leaves. The Mississippi plants came from the originator.

'Lilac Beauty' is a tall grower with sheaves of high ascending leaves up to 12 inches long. The dark brownish violet flower scapes carry the flower racemes well above the foliage masses, with dark violet flowers, that seem nearer the color of the traditional lilac. The leaves are up to 20 inches long and to $\frac{3}{4}$ inch wide.

'Majestic.' This produces masses of somewhat narrow leaves, to 13 inches long and to $\frac{1}{2}$ inch wide, held in high ascending curves, to 10 inches or more. The flower scapes are freely produced and often bear fasciated heads of violet flowers. Sometimes this is confused with 'Big Blue,' but it is lower in stature and possibly less robust.

'Monroe White' (sometimes listed as 'Monroe No. 1') is the most distinct cultivar raised from *L. muscari* and a charming garden plant, but it must have some shade as its foliage burns in full sunlight. The somewhat narrow leaves rise to 12 inches high in ascending curves, but not overtopping the scapes. The light green flower scapes produce somewhat open masses of pure white buds and flowers.

'New Wonder.' This cultivar, according to Frederic P. Lee, is furnished with leaves to 23 inches long, and to $\frac{3}{8}$ inch wide, glossy above and rather more erect in carriage than most.

'Purple Bouquet.' This makes a good clump with narrow leaves to 10 inches long, but more broadly spreading in carriage than some of the others; it is free-blooming with erect flower scapes bearing rather typical pinkish lavender flowers.

Cultivars with Variegated Foliage

'Gold-Banded.' This makes a compact tuft of firm leaves that form a somewhat spreading clump mass. The line of variegation is gold when the leaf is new, but lightens toward white as the season advances. It disappears entirely on old

leaves. The scapes are about 10 to 12 inches in height with buds and flowers of a violet-purple hue, sometimes with a few narrowing masses toward the tips of each raceme.

'John Burch.' Plants produce leaves about the size and character of 'Big Blue,' but a little darker green, rarely over 10 inches long, spreading rather than erect; each leaf is edged with a definite white line. It is free blooming in the Mississippi garden, which is its chief advantage over 'Silvery Midget.' As all plants are grown in passing shade, no premature fading has been noted, but by late autumn, all white color has disappeared.

'Silver Banded.' A slow growing cultivar forming low compact masses of strongly arching leaves, each with a well defined narrow yellowish line on each margin, later turns white and finally disappears. The strong flower scapes with compact racemes of dark violet flowers and buds are buried among the leaf masses.

'Silvery Midget.' A cultivar that rarely makes leaf masses higher than 8 inches. The leaves tend to be spreading rather than ascending as in other cultivars. The leaves are broad, dark green, with a thin white line on the edge only which in the young stage of leaf development shows some yellow tint, but later turns white and lasts well. The flower scapes are low, barely overtopping the leaf masses. Flowers light lavender.

'Silvery Sunproof.' A cultivar that makes a tall vase-shaped mass of ascending leaves to 12 inches high or more. Each leaf, as it develops, is heavily striate with gold, but later the gold lightens toward white as the leaf matures in summer. The whitish striation is not completely lost in cold weather, but the leaves lose their rigidity and so do less credit to the plant. It has not been very free-flowering in the Mississippi garden.

In a poorly designed garden under live oak shade, it makes the most striking effect of any plant used there.

'Variegata.' A cultivar with leaves green in the center and yellow or whitish-yellow on the margins when young, turning green throughout with age. Leaves to 16 inches or more tall, the flower scapes not as tall, with fascicles of dark violet flowers. In *Baileya* (*l.c.* p. 156) this cultivar is reported to be of



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***Liriope exiliflora* used as a ground cover at the base of the Agricultural Building, University of Florida at Gainesville**

obscure origin, doubtfully a seedling of *L. muscari*. Possibly this needs critical comparison with the cultivar known as 'Silvery Sunproof,' or some other variegated cultivars. In any case, 'Variegata' is a most useful plant when the planting is well designed.

Use of Lilyturfs in Modern Garden Design

Although it is not known to the writers, someone may already have made a special study of the uses to which lilyturfs can be put as a basic element in the contemporary stylized gardens. Since the caespitose forms are almost static evergreen plants, with or without variegation, they could be employed in making patterns of almost geometric form.

For a garden of the type mentioned, it was proposed to a certain owner that she consider it for a series of beds she had in mind, that were to decorate a level area near the very modern house, brown in color, with an undertone of red. She wished a plant that would tie

together a bed of salmon-pink floribunda roses, but she wanted other blooming shrubs used as accents. A pattern was worked out, along a basis of a modified Greek key, using bottle-brushes for the accent shrubs and roses for the mass effects. The outlines of the key-pattern called for the use of a lavender-flowered *Liriope*. After much study the idea was abandoned, since the owner felt her house was not "that modern." But the idea remains sound.

It might be suggested that block areas of contrasting kinds of *Liriope* be used, approximating the long abandoned idea of carpet-bedding, a style that came into disrepute because of poor use in design. In spite of unfavorable reactions against carpet-bedding that arose when the "naturalistic style" was the vogue, it is useful in special places. This reaction against it was also responsible for the abandoning of variegated plants, a loss of a genuine style of value. Possibly the time has come to make a reevaluation of the style properly used, which frequently means only "with restraint."

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U.S.D.A.

Magnolia wilsoni

Magnolia wilsoni is one of our more beautiful reminders of the journeys of Ernest H. Wilson in the Orient. This magnolia was first seen by him during a trip to western Szechuan, China, in 1904. Four years later Wilson introduced it into cultivation. He described it as a straggly deciduous tree growing to twenty-five feet high in the wild. This magnolia is rather common in moist woods and thickets at altitudes of six to seven thousand feet. The flowers are borne in moderate profusion and are of such striking beauty that one wonders why the trees are found so infrequently in our gardens. Only nine nurseries are listed as offering this species in the *Plant Buyer's Guide*, 1958.

Magnolia wilsoni is characterized by branchlets which turn dark brown, almost purple, at maturity and is certainly the darkest of all magnolias. The flowers are white, pendent, and fragrant. The peak of flowering [in the Washington, D. C., area] is reached in late May or early June, but scattering flowers are produced for some time after the main blooming period has passed. The mature flowers are about four inches across,

with obovate petals and a cluster of raspberry-red stamens surrounding the green carpels. The leaves are broadly elliptic and more or less pointed at the tip.

The writer has seen two plants growing close together in Silver Spring, Maryland; one is in a semi-shaded, moist location, has made the best growth, and is perhaps twice as large as the one in a more sunny-location.

Propagation is by seed and grafting. Occasionally, a cutting will root, but with limited chances for survival. *M. wilsoni* probably can be layered, but like other deciduous Asiatic magnolias, it is difficult to propagate vegetatively. A further word of caution: like all Asiatic magnolias, it must be carefully transplanted, avoiding damage to the fleshy roots near the surface of the soil.

It may be that with increasing interest of gardeners in rare species, the future of *M. wilsoni* is promising. For the present, however, this species remains in horticultural obscurity—only another entity in the long list of plants collected by Ernest H. Wilson in his wanderings through the high mountain forests of China. JOHN L. CREECH, *Agricultural Research Service, U.S. Department of Agriculture, Crops Research Division, Beltsville, Maryland.*

(April 1960)

FIRST EDITION

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