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(Continued on inside back cover)

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CONTENTS

Note: In order to be able to present in one issue all of the splendid monograph by Dr. Hume on the Native American Hollies, several of the usual sections have been dropped from this number, as well as a number of articles that had been planned. It is expected that in October, we shall resume all the sections including the Lily Notes.—B. Y. Morrison, Editor.

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Robert L. Taylor

[*See page* 200]

The Summer Snowflake

Evergreen Hollies Native in the United States

H. Harold Hume

At Glen Saint Mary, Florida, in the autumn of 1906, a block of nursery stock containing several hundred American holly trees was examined critically. At that time, so far as known, there were no named horticultural varieties of *Ilex opaca* in the United States and no one had undertaken native holly propagation in quantity by vegetative methods. Casual interest in hollies had started several years before but on that October day in 1906 they were being looked at from a different angle. From that time to the present, the writer has had a continuing, active interest in them.

Trees in the block, on the whole, were well grown. Some care and attention had been given them; they had been pruned, fertilized and cultivated, but they were seedlings collected in the woods of Tennessee and transplanted in Florida. It was impossible to go through them and take out even a small number of well matched trees. There were small, medium and large leaved specimens. Under identical conditions, the foliage of some was darker than that of others. The leaves of certain trees were dark glossy green, of others yellowish green. Leaves of some trees had many spines; others had only a few and these varied in size. In shape also, leaves varied from tree to tree. Some trees were bearing fruit, others bore none. Of those without fruit some were too young to bear, but it was realized that perhaps fifty per cent of the entire lot, whether in fruit or not, was made up of staminate specimens that never could bear fruit. Those few hundred trees typified and presented a real problem, and at the same time a challenge to anyone interested in horticulture. Here was represented a broad-leaved evergreen tree of great beauty, valuable for garden and park use and having at the same time potential economic values. To make those values possible and real, two things were necessary. (1) Propagation by vegetative methods (grafting and cuttage) adapted to nursery practices, and (2) finding and selecting desirable trees to be propagated as horticultural varieties. There was much to be done before persistent leaved American hollies could be placed on the same nursery production basis as other ornamental and fruit trees. Fortunately three propagators, than whom there never were better, were available and because of their part in the success of the undertaking their names, in tribute, are given here—John Barton, Jess Chieshire and H. H. Lauramore. Work was undertaken in a small preliminary way in January 1907 and within three years the details of propagating hollies in quantity, true to variety, by grafting in winter and budding in summer were worked out, followed by propagating by cuttage, first undertaken in the summer of 1912 and finally successfully worked out in 1916. Since good varieties for propagation were needed, the search for specimens began at once and still continues, for it was realized then, and it is still true, that there are almost endless variations among holly trees of the species *Ilex opaca*. Many different kinds were propagated and tested. Some were found close at hand, others at a distance, and many friends helped. Only a limited number was finally selected for propagation and growing in quantity.

Groups of Hollies

Hollies native in the United States may be divided into three groups: (1) a black fruited evergreen group, (2) a group with evergreen foliage and red fruit, really yellow, orange or red, and (3) the deciduous hollies which also bear red fruits. We are concerned here only with the first two groups.

In the first group there are three species, *Ilex coriacea, I. glabra* and *I. Krugiana*. The second group contains five species, *Ilex cassine, I. cumulicola, I. myrtifolia, I. opaca* and *I. vomitoria*. For the most part the eight persistent leaved hollies are native in the eastern half of the country and, so far as known now, two of them are found only in Florida. One of the species that does not extend in the United States beyond Florida is *I. Krugiana* but it is found also in parts of the West Indies.

Black Fruited Evergreen Hollies

Ilex coriaca (Pursh) Chapman
Large Gallberry

The large gallberry is distributed from Florida north to southern Virginia and west into Louisiana. It usually grows as a shrub to a height of 8 to 10 feet but sometimes to 15 feet. Occasionally it is a small tree with a diameter of as much as 3 inches. Since it produces stolons and also sprouts from the roots, it forms clumps, but these lack the density of those which its smaller relative the gallberry forms. It is found in damp soils associated with sphagnum, aronia, gallberry, sweet bay, and saw palmetto.

Leaves of the large gallberry vary in size and shape on different plants. Usually they are 2 to 2½ in. long and ½to 1¼ in. wide. They are smooth, leathery, dark green above with definitely marked, light green midribs and on the under surfaces they are light green. They are variously shaped, oval, obovate or elliptical—oblanceolate with remotely spinescent or entire margins. Apices terminate in small spines, really prolongations of the midribs; petioles are short, reddish brown in color; and the twigs on which the leaves are borne are at first mahogany brown, later becoming gray. Fruits are large, much larger than those of the more common gallberry, ellipsoid, glistening black and borne on longer pedicels. The dark green leaves and shining black fruits give to the fruiting mahogany colored twigs of this holly a distinctive beauty.

Ilex glabra (L.) Gray Gallberry

Though not commonly recognized as a holly by rural peoples throughout the areas where it grows, this shrub is a true holly. In the greater part of its native habitat it is known as "gallberry", a name aptly descriptive of the taste of its fruit. In other sections where it is less common and to those who handle it as a nursery shrub for garden planting it is known by the more aristocratic name of "inkberry", a name descriptive of its black fruit. More people know it as gallberry than by any other name and for this reason it is given preference here. It grows as a native plant on acid soils from Massachusetts (Cape Ann) to Florida and west into Louisiana, being most abundant in southeastern Georgia, northern Florida and southeastern Louisiana. Of all hollies it is the most numerous. It is not too much to say that there are many more specimens of it than of all other American hollies counted together. It grows mostly in neat, dense, clumps or in thickets of large extent. The areas occupied are enlarged by means of underground stems (stolons) that extend out from parent masses and grow up to form plants. Much of the area where gallberries grow is burnt over from year to year. In consequence

Plate I *Florence McKeel*

Black fruited hollies. Upper left: Ilex coriacea; upper right, I. Krugiana; bottom, I. glabra.

it is mostly seen at a height of 4 to 5 feet or lower, but where protected and not burned annually it grows up to 10 feet or somewhat higher. In much of its natural habitat, it is commonly associated with fetterbush, saw palmetto, wax myrtle and slash pine.

Where at home and properly nourished, gallberry is an evergreen shrub with rather thin leaves (that is, thin for an evergreen holly) 2.5 to 5 cm. long. The twigs are green or slightly reddish tinted and well clothed with foilage. Fruit is produced abundantly on pistillate specimens. The fruits (drupes) are small to medium in size, ¼ to ⅜ inch in diameter, globose or somewhat flattened, and black in color. The combination of black fruit and shining green foliage is distinctly pleasing. Doctor John K. Small reported finding a red fruited form, but where is not known now. It would be a valuable acquisition as a garden shrub.

Gallberry is highly esteemed as a honey plant, but in much of the region where it grows abundantly, its flowering is seriously interfered with by repeated burnings. Mostly it is burnt in winter and in the following spring it comes again from the roots or underground stems but does not bloom until the second spring if it escapes fire.

Though little used in gardens in areas of its greatest abundance, it is a good shrub. Definitely it is a better plant, wherever adapted, than Amoor or California privet and some other shrubs commonly seen in gardens. When taken up from the wild, it has a notoriously poor root system but when the tops are cut back to mere stubs and the plants set out in suitable ground, about fifty per cent survive and develop fibrous root systems in a year or two and are then easily transplanted. To insure fruiting a few staminate specimens should be placed with the fruit-bearing ones. In the Lower South the best time to transplant gallberry is in winter, particularly in the early part of the season. It is useful as a hedge plant and for forming groups or masses.

Ilex Krugiana Loesener

Krug's Holly

For this holly, two common names have been proposed, Krug's holly and Southern holly, but neither of these has come from people associated with it in its native habitat. In the Bahamas it is known as "Whitewood" perhaps with reference to the twigs which are white when old. It belongs to the West Indies, from which source it was first described and named and to Dade County, Florida, where it grows in hammocks and in adjoining pinelands. It was first located in Florida by Dr. John K. Small and Percy Wilson sometime prior to 1908.

Some specimens are shrubby in growth, while others are trees reaching a height of 30 to 45 feet. The bark of Krug's holly is smooth, vari-colored, brown, gray and light yellow, dotted with tiny black dots and marked with fine dark brown or black lines. Twigs are slender, at first dark brown, becoming light gray or almost white with age. Leaves are quite unlike those of any American holly, dull, dark green, usually ovate, 3 to 4 inches long and 1½ to 2 inches wide, with broad rounded bases and sharp pointed apices. They are borne on slender petoiles about ½ inch long. Pistillate flowers are produced singly or in clusters of three to five on a common peduncle. The fruits are small, globose and purplish black in color. There are no records of specimens of *I. Krugiana* being used as garden shrubs or trees.

Red Fruited Evergreen Hollies

Ilex cassine Linnaeus

Dahoon Holly

Probably the name Dahoon is of Indian origin. It was given to this

Florence McKeel

Plate II

Red fruited hollies. Top: I. cassine; lower left, I. cumulicola; lower right, I. cumulicola var. Ft. McCoy.

holly as a specific botanical name by Walter in 1788 but the name *I. cassine* applied by Linnaeus in 1753 antedates it. Essentially it is a southern holly found in the Costal Plain from southern Virginia southward deep into Florida and west in Louisiana. It grows in low lands along streams, in swamps and low hammocks where it is accompanied by red maple, sweet gum, wax myrtle, nyssa and other swamp inhabiting trees. Usually it is found on little hummocks or elevations and at the bases of other trees. These afford suitable places for seed to germinate and the young trees to get started.

It is a small tree up to 40 feet in height with a diameter of 12 to 18 inches. The bark is smooth and dark gray. Leaves are dark green, obovate, oblanceloate or elliptic, 2 to 4 inches in length, with entire spineless margins. Fruit is small, globose, bright red, commonly borne in dense clusters. Yellow fruited specimens have been found, but they are far from common. A botanical variety, *Ilex cassine* var. *angustifolia* Aiton has been described. It has been found in eastern North Carolina, South Carolina, Alabama and Florida.

I. cassine can be grown from cuttings or by grafting on its own seedlings or those of *Ilex opaca*. It makes a very satisfactory ornamental tree and in spite of its preference for damp or wet locations, it can be grown when transplanted to drier ground. Careful attention to watering should be given until it is established. It grows well when grafted on *I. opaca* stock and in this way its adaption to drier soils is insured.

Glencassine (Hume)—Leaves elliptical, 10 cm. long by 4 cm. wide on vigorous twigs, usually about 6.5 cm. long by 3 cm. wide on twigs of normal growth, leathery, bright glossy green above, lighter beneath, keeled, slightly curved, margins entire, spineless except for a tiny projection of the midrib at the apices, bases tapered, apices blunt, petioles 1 to 1.8 cm. long, purple on upper surfaces, twigs dark colored, fruits small, 7 mm., red, globose or slightly subglobose, on slender pedicels 8 mm. long, or borne in dense compact clusters, tree head rounded or somewhat obovate in outline, densely branched and well covered by foliage. (H.H.H.)

Ilex cumulicola, Small.

Dune Holly

It was most appropriate that on Christmas Day 1922, Doctor John K. Small, who for so many years studied the plants of Florida, collected them, classified them and wrote about them, found a holly in fruit growing on the interior dunes about Lake Jackson (Lake Nancesowe) near Sebring, Florida. For many years it had passed as *Ilex opaca* but Small, who had a keen eye for plant characters and peculiarities, saw it was different and added it as another to the list of American hollies. To it he gave the botanical name *Ilex cumulicola,* in reference to its growing on heaps of sand (dunes) and published a description of it in 1924 in the Bulletin of the Torrey Botanical Club. In the same year, in the Journal of the Elisha Mitchell Scientific Society, W. W. Ashe described the leaves only of this holly and applied the name *Ilex arenicola.* This inadequate description has been accepted by some as establishing the species under that name but the botanical name given by Small, supported by an adequate description, has been approved by Standardized Plant Names (1942) and this disposition of the matter is accepted by the writer. While Small gave its distribution as the "Inland sand dunes ("scrub") in the

southern part of the lake region of Florida," subsequent explorations have shown a much wider distribution. So far as known at this time, its northern native limit in Florida (it is not known to grow outside the state) is in the vicinity of Kingsley Lake in Clay County. Somewhat farther south there is a single specimen north of Melrose on the road to Keystone. At this location, there probably were more trees at one time but they were moved away for garden planting. In Melrose there are three trees, that may have been transplanted to their present locations, the largest of the species so far found. Recently Director H. S. Newins of the University of Florida, School of Forestry, measured two of them. One measured 17 inches in diameter at three feet above ground and 39 feet high and the other 16 inches (diameter) at four feet above ground and 41 feet high. Two of these trees are in rather poor condition because of lack of care through absentee ownership, but the third and tallest is a beautiful, heavily fruited tree. It has had attention, water and fertilizer from time to time as needed. Trees in natural dune habitats are much smaller, from 6 or 8 feet to about 20 feet high.

In its short dense branching, short internodes and small erect leaves, this holly reflects its sandy and at times dry environment. Its branches are closely spaced and upright (fastigiate), forming a dense head. The leaves, borne on short petioles, are small, narrow, tapered to their bases (cuneate), coriaceous, upright, often with recuved margins. The armature consists of very sharp spines and they too are inclined upward. Usually the apical spine is accompanied by one on each side at the top of the leaf to form a trio. Trees are found here and there that have nearly spineless leaves such as are sometimes found in *I. opaca*, to which *I. cumulicola* is most nearly related. Drupes ("berries") are large, ovoid to globose, deep red (there probably are yellow fruited specimens, though rare). When crushed the scent of the fully ripe fruits is like unto the fragrance of a fine ripe apple, but my, how their taste belies their scent!!!

In plate II two twigs are shown. The one on the right is from a small seedling tree in Melrose, Florida; the other variety, named Fort McCoy, is from a grafted tree the scion for which was taken by Doctor W. A. Murrill and R. J. Wilmot from a seedling tree growing near Fort McCoy, Flordia. Differences in foliage characters of these two are typical of leaf variations found on different trees belonging to this species. Several varieties and forms and at least one species have been described as related to *I. cumulicola* but they are apparently nothing more than variations that may be expected within the species. They are paralleled in the variations of *I. opaca*.

As a tree for sandy, well drained soils the Dune holly is valuable. While it grows well when grafted on *I. opaca* stocks, it is probable that stocks of its own kind will have an advantage on light soils. Actually the relative merits of the two stocks have not been determined. The use of horticultural varieties on good soils with satisfactory drainage is not precluded because of its adaptability to sandy soils.

Ilex myrtifolia Walter

Myrtle-leaved Holly

This interesting tree inhabits shallow, open, often dry cypress ponds in the low pinelands of the coastal plain here and there from North Carolina to Florida and west to southeastern Louisiana. The soil where it grows is very acid. Often it is classified as a variety of the Dahoon holly, but those

who have lived with it and know it as it grows regard it as a distinct species. Its habitat, too, is quite different from that of *I. cassine* throughout most of its range and this is particularly true in northeastern Florida and westward. The little depressions in the pinelands where it grows with cypress, gum and wax myrtle are not commonly the homes of the Dahoon holly.

Seldom does the Myrtle leaved holly grow straight, and its trunk standing off from the earth at an acute angle in different directions give it a distinctive, oriental appearance. Its branches are stiff or rigid. Not often does it reach a height of more than 20 feet; usually it is much lower and sometimes its growth is shrubby with several small trunks. The leaves are short-petioled, small, narrowly elliptic, leathery, dark green and spineless. The fruit is globose, small, produced abundantly by some specimens, yellow, orange or red in color.

Grafted specimens grow with straight trunks and well balanced heads. To a limited extent it has been planted in gardens but there are no named horticultural varieties.

Ilex opaca Aiton

American Holly

Of evergreen hollies native in the United States, the American holly is the most widely distributed. It grows in Massachusetts (Rogers says in southern Maine also) and from there southward into Florida. In the East it extends as far west as West Virginia. From Florida it is found westward into Texas, Arkansas and Missouri and as far north as Kentucky, southern Illinois and southern Indiana. Nowhere is it an abundant tree. It occasionally grows in pure stands, but like so many others of our forest trees it is found usually in mixed stands with such trees as hickory, oak, magnolia, sweetgum and redbud. It is not particular as to the kind of soil but it requires good drainage and is intolerant of poorly drained locations. Specimens planted in soils where water fails to circulate do not long survive. The American holly grows to a height of 45 to 50 feet in good soils with a trunk diameter up to 3 feet. Its bark is gray, rough or warty and as much as ½ inch thick. Sargent says it reaches its greatest dimensions in the rich lands of Eastern Texas and Arkansas, but the largest specimen reported by C. R. Randall in the Report on American Big Trees is at Hog Island, Virginia. It measures 11 feet in circumference and 50 feet high. For many years a fine large specimen stood in Green Cove Springs, Florida, but it was blown down in the storm of September 16, 1945. This tree measured 3 feet through the trunk at the ground, 30 inches through at breast high and 20 inches at 20 feet above ground. It was estimated to be more than 50 feet high. Recently Mr. Wilfrid Wheeler, who has studied *Ilex opaca* at or near the northernmost points of its distribution, has written "that there are about five or six places in southeastern Massachusetts where apparently original hollies are growing, even as far north as Cohassett about twenty miles south of Boston. In these places there are hollies up to 50 feet in height and 2 feet in diameter. These trees have escaped all the fires of land clearing operations, the depredations of vandals and browsing by sheep. Of these, sheep have been the most destructive for at one time the whole of Cape Cod was a sheep pasture and the sheep did more damage to hollies than either fires or vandals. Some of these places are being protected by present owners but it is hard to say what will happen to them when they pass on".

Plate III

Florence McKeel, upper three; Esther Coogle, lower two.

Red fruited hollies. Upper right, I. myrtifolia; center, I. vomitoria sterile branch; upper left, I. vomitoria; lower left, I. opaca var. Baker; lower right, I. opaca var. Baker # 2.

H. Harold Hume

Flowering twigs of Ilex opaca. Left: staminate; right, pistillate. Flowers on new shoots.

At Sandy Hook, New Jersey, there is a large number of fine specimens of native *Ilex opaca* growing on an area about one hundred acres in extent. Specimens up to 40 feet high and 2 feet in diameter growng there are estimated to be two to three hundred years old. This is one of the finest holly stands on the Atlantic coast.

Leaves of the American holly as found on different trees follow no exact uniform pattern. It is difficult to find two seedling trees with leaves that match one another exactly. They may vary in size and in details of shape, number and size of spines. Commonly they agree in being thick, stiff, dark green on the upper surface (when well nourished); lighter colored beneath, and in having spines, though in some specimens the leaves have only a single apical spine while on others the spines may number a dozen or so. Leaves of some trees are quite flat while on others they are curved (bent downward about the middle), keeled and sometimes twisted. In length they may be as short as 1½ inches (about 4 cm.) or as long as 4 inches (10 cm). Their margins are undulate or waved with a spine at the tip of each projection. Usually the spines are accentuated by these marginal projections of the leaf blades, and in consequence the spines have the appearance of being much larger than they actually are. For the most part leaves are persistent for three seasons but specimens have been noted that lose every leaf every year. The season of greatest leaf fall is in spring when new growth is shoving out.

Ilex opaca flowers are produced for the most part on new shoots in the axils of leaves or of small, early deciduous bracts. Flowers in very limited

Plate IV *Florence McKeel*

Four varieties of Ilex opaca. Upper left, Taber # 4; upper right, Croonenberg; lower left, Lake City; lower right, Marion.

numbers occasionally are found on last season twigs. On staminate trees they are produced very abundantly in little clusters (cymes) of three to as many as twenty-six, and are greenish in color. Pistillate flowers are produced singly for the most part, but there may be two or three on a peduncle. They measure a quarter of an inch across the petals and are white. The roundish ovary is green. Holly flowers are beloved of bees and honey of good quality is gathered from them.

Usually berries (drupes) of this holly are borne singly but sometimes two or three are produced on short pedicals from a common peduncle. They measure ¼ to ⅜ inch in diameter or occasionally larger, may be globose or ovoid in shape. The most common color is red, varying somewhat in intensity, but trees are known also that bear orange colored drupes and rarely one is found with bright yellow fruits. So the color runs from yellow through orange and orange-red to red. Fruit ripens late in autumn and remains through the winter or even later unless eaten by the birds or squirrels.

American hollies are commonly grown as specimen plants. With a limited amount of pruning they become very shapely trees. Excellent hedges can be made with them. They are good trees for growing in shade.

Ilex vomitoria Aiton

Yaupon

Of all American hollies this is one of the most interesting. It grows near the sea coast in the states of Virginia, North Carolina, South Carolina, and Georgia, about half way down the Florida peninsula, westward along the Gulf of Mexico in Florida and Alabama, well up into Mississippi, through Louisiana and Arkansas, down into coastal Texas and for quite a distance inland in that state. In 1891, Dr. E. M. Hale estimated that Yaupon grew on 40,000 acres in its native range. Throughout most of its eastern distribution it grows on sandy soils, well drained and dry at times but in the western areas it is found on heavier and sometimes rocky soils. Often it is shrubby in its growth, stolons are produced and thickets are formed, but it also becomes a tree up to 30 feet high with a trunk measuring as much as 1 foot in diameter. Its trunk, seldom upright in growth, is covered by gray bark. Its leaves are small, dark shining green, thick, with crenate-serrate margins and obtuse apices and bases. Flowers are borne on twigs of the previous season's growth, not on new growth. Staminate flowers are in axillary clusters of 22-28. Specimens are found here and there with very small leaves not more than 1 centimeter long but usually they are 3.5 cm. long by 2 cm. wide. Pistillate flowers are produced abundantly, singly or two to seven in cymes. Fruiting twigs are often literally covered with fruit and as the pedicels are short it looks as though the fruits were sessile and grew right out of the twigs. Perhaps no holly surpasses it in the abundance of its fruiting. The fruit, bright shining red, almost translucent, sub-globose, ¼ inch or slightly less in diameter, persists throughout the winter.

Yaupon leaves contain caffein and during World War I when that drug was scarce they were seriously considered as a source of supply. Air-dried leaves were assayed by Power and Chestnut. The highest content of caffein found was 1.67% and from that the content varied downward to 0.32%. Plants collected from near the mouth of the St. Johns River and grown under cultivation at Glen Saint Mary, Florida, yielded 1.40%. From this it will be seen that the caffein content varies, a high yielding sample containing five

H. Harold Hume

Flowering twigs of Ilex vomitoria. Left, staminate; right, pistillate. Flowers produced on twigs of the previous year.

BLACK DRINK CEREMONY AS PERFORMED IN NORTHERN FLORIDA, AFTER LE MOYNE (1564).

I. vomitoria tea drinking ceremony of the Indians (after Le Moyne, 1564)

times as much as a low one. If the cultivation of yaupon as a source of caffein were undertaken, plants should be propagated from specimens having a high percentage of caffein in their leaves.

Leaves were used by the Indians in making a ceremonial, medicinal drink and when dried (as they were) by fire were an article of trade. Mark Catesby in 1763 in his *Hortus Americans* referred to the trade in yaupon leaves. "The Indians of the seacoast supply those of the mountains therewith and carry on a considerable trade with it in Florida." Indians also made pilgrimages to the coast to drink a decoction made from yaupon leaves. Hale, in his "Woods of North Carolina" says, "At a certain time of year they come down in droves from a distance of some hundred miles to the coast for the leaves of this tree. They make a fire on the ground and putting a great kettle of water on it, they throw in a large quantity of these leaves, and seating themselves around the fire, from a bowl that holds about a pint they begin drinking large draughts, which in a short time occasion them to vomit freely and easily."

Le Moyne, historian of René de Laudonière who led the Hugenots into Florida in 1564, described the ceremonial drinking of the "black drink" by Indians at the mouth of the St. Johns River and illustrated his description of the ceremony. "The Chief and nobles are accustomed during certain days of the year to meet every morning for this express purpose in a public place, in which a long bench is constructed, having at the middle of it a projecting part laid with nine trunks of trees for the

Chief's seat. On this he sets by himself for distinction sake; and the rest come to salute him, one at a time, the oldest first by lifting both hands twice to the height of his head and saying, "Ha, ha, ha, ha, ha." To this the rest answer, "Ha, ha." Each as he completes his salutation takes his seat on the bench. If any question of importance is to be discussed the Chief calls upon his lauas (that is, his priests), and upon the elders, one at a time, to deliver their opinions. They decide upon nothing until they have held a number of councils over it, and they deliberate very sagely before deciding. Meanwhile the Chief orders the women to boil some casina, which is a drink prepared from the leaves of a certain root and which they afterwards pass through a strainer. The Chief and his councillors being now seated in their places, one stands before him, and spreading forth his hands wide open, asks a blessing upon the Chief and the others who are to drink. Then the cupbearer brings the hot drink in a capacious shell, first to the Chief, and then, as the Chief directs, to the rest in their order in the same shell. They esteem this drink so highly that no one is allowed to drink it in council unless he has proved himself a brave warrior. Moreover, this drink has the quality of at once throwing into a sweat whoever drinks it. On this account those who can not keep it down, but whose stomachs reject it are not intrusted with any difficult commission or any military responsibility, being considered unfit, for they often have to go three or four days without food; but one who can drink this liquor can go for twenty-four hours afterward without eating or drinking. In military expeditions also the only supplies which they carry consist of gourd bottles or wooden vessels full of this drink. It strengthens and nourishes the body and yet does not fly to the head as we have observed on occasion of these feasts of theirs."

The leaves were prepared for storage by drying over a fire even to the point of slight parching. This, of course, changed the flavor of the green leaves. The use of yaupon leaves to make a tea was taken up by the white settlers in coastal areas, but this use has not been continued to any extent.

As a garden plant the yaupon is held in high esteem. It stands shearing well, forms dense dark green heads, making it unsurpassed for formal plantings and for hedges. Planted in full sunlight it is a first class hedge plant. Grown informally, fruiting specimens are artistic and quite unusual in appearance with their rigid branches and twigs so heavily fruited as to almost obscure the leaves. It grows well on a variety of soils. When transplanted from the wild, specimens are not well rooted and usually not more than half of them survive even when pruned very severely as they must be. It is best to choose specimens less than an inch in diameter and cut them back within a few inches of the ground. It can be grown from seeds and cuttings.

Pollination.

Pollination of holly flowers requires attention if good crops of fruit are to be secured and this is particularly true because they are dioecious, that is staminate and pistillate flowers are produced separately on different trees. In those areas where *Ilex opaca,* for instance, is fairly common as a native tree, there are likely to be staminate flowering trees close enough at hand to insure pollination by insects of the flowers of such pistillate trees as may be planted, provided of course that both bloom at the same time. There can be no pollination unless this takes place.

Holly flowers are favorites with bees and within the range of their flight they take care of pollination. It is, however, good holly crop insurance to have staminate trees close by and provision can be made for ample supplies of pollen by planting trees of a staminate variety with the pistillate ones. A proportion of one staminate to ten pistillate trees is suggested where considerable numbers of trees are being planted in orchards. As the trees attain considerable size, a smaller number of staminate ones will suffice. In garden plantings where space is limited, it should be kept in mind that staminate hollies can be fine ornamental trees. All that is necessary is to make selection of staminate trees with good foliage and shape and propagate them. The general desire of garden makers is to have hollies that bear fruit and those that are staminate are not favored, yet they may be fine as other kinds of trees that do not bear red fruits. In England, where another holly, *Ilex aquifolium,* is a favorite, about as many staminate varieties have been selected and named as of fruiting varieties and they are widely used in gardens. It is also possible to have trees producing both staminate and pistillate flowers on one tree by grafting scions of the two kinds on a single root, thus securing what are in reality double trees, partly staminate and partly pistillate. Another satisfactory plan is to plant two trees of small size, one pistillate and one staminate close together in one hole and allow them to grow up together. Another method for insuring satisfactory pollination is to place staminate branches in flower in bottles of water and hang them in the tops of pistillate trees when their flowers are opening. Satisfactory pollination as evidenced by abundant fruit has been secured by this method. With care, flowering branches can be transported considerable distances.

The question, "To what extent do the different species of holly inter pollinate?" must for the present go unanswered.

Propagation

Broadly speaking, hollies of the American persistent-leaved groups are not difficult to propagate by methods commonly used for other shrubs and trees. With the usual care given to propagating similar plants they can be multiplied true to variety or type by cuttage, graftage and division; the last method is limited to a few species. Producing plants of some species from seed is difficult.

By Seeds

When hollies are grown from seed there is, of course, no way of knowing until the plants come into flower whether they will be staminate or pistillate, but an equal division between the two sexes is a reasonable expectation. Growing from seed is done to secure stocks for grafting, to secure new varieties, or to produce plants for hedges and other purposes where fruiting specimens are not a primary requisite.

The statement is commonly made that a long time must pass between the sowing of holly seeds and their germination. This is true for some species but it is not so for others. Seeds of *I. opaca* take considerable time. For instance, seeds planted in January, 1947 need not be expected to start into growth until spring of 1949, a period of something over two years under outdoor conditions. Seeds of *I. cassine* and *I. myrtifolia* planted in December or January will begin to germinate about three months later and seedlings 8 to 12 inches high can be secured by the end of a single growing season. Information on the time required for

all of the American evergreen hollies is not available.

Seeds should be freed from pulp before sowing. This is easily done by placing the fruit in water in a warm place for a few days to allow fermentation to soften the pulp, then squeezing the pulp through a fine sieve (16 mesh), and washing the seed free with water. When dried slightly it is ready for planting in a prepared bed. For this there is no better soil than woods mold. They are sown thinly, covered lightly and mulched with leaves.

No record is available of any one in the United States growing *Ilex opaca* in quantity from seed successfully, and stocks used for grafting and budding are usually collected seedlings. Dallimore gives the following directions for growing the European holly from seed, "When raising *I. aquifolium* in quantity, seeds are collected as soon as ripe and mixed with two or three times their own bulk of sand, the whole being thrown into a heap and left for twelve months exposed to the change of the weather. At the end of this time the sand and seeds are sown together, thinly, in beds 4 feet wide, with paths 12 to 18 inches wide between them for cleaning purposes. After the seedlings appear they are left undisturbed for two years, when they are taken up, graded into sizes, have long, straggling roots trimmed back, and planted in rows in nursery quarters". This plan of handling European holly seeds should be tried out with seeds of *I. opaca* and *I. cumulicola* with this suggestion—it would be advisable to protect the seeds against rodents by placing the mixture of seeds and sand in a wire container and to maintain satisfactory moisture conditions by partially burying the container in a suitable place.

By Cuttings

Hollies are grown from cuttings fairly easily, using growth of the current season. The best time for making cuttings in the Lower South is late July and early August, by which time twigs that started in spring are hardened sufficiently. Cuttings from trees in good growth are best; it is difficult to get results from hard, stunted twigs. Terminal cuttings with two or three leaves are the most satisfactory. Sharp, coarse sand is a good rooting medium. Careful attention to shading and watering are necessary but the making and handling of cuttings does not differ from the methods used for cuttings of other broad-leaved evergreens. Usually there is little difficulty in securing goodly percentages of rooted cuttings if care is taken, but it may be pointed out that, as so often happens in propagating plants, some varieties belonging to a single species root much more readily than others. Among varieties grown from cuttings it has been found that East Palatka is one of the easiest to form roots. Plants grown from cuttings make suitable stocks for grafting.

Old native trees growing in woods and fields usually do not produce twigs or branches suitable for propagation because growth is slow and twigs of the current season are too slender and short to yield good buds, scions, or cuttings. Here and there a vigorous branch that is suitable may be found, but lacking this it may be necessary to cut back a branch at or near the top of the tree to induce growth of vigorous shoots. This should be done in late winter or early spring before growth begins. After young trees are propagated, they will produce good wood, and there will be no further difficulty in securing suitable material.

By Grafting and Budding

Varieties of *I. opaca, myrtifolia, cassine* and *cumulicola* as well as a number of exotic species have been propagated by budding and grafting. Stocks of the first three, viz, *opaca, cassine* and *myrtifolia,* have all been used but for the most part *opaca* stocks have been given perference because this root is adapted more widely to the soil environment of gardens.

In parts of the South and Southeast, a method of sub-surface grafting is in common use in nurseries. This is done during the dormant season and it is not satisfactory as a rule in areas where the ground is subjected to alternate freezing and thawing in winter. The soil is removed from the stocks to expose their trunks for three or four inches below the surface. At a suitable point grafts are set, using either the cleft or whip graft depending upon the diameter of the stocks, cleft being used for large stocks and whip for smaller ones. Usually the unions are wrapped with waxed twine. As soon as grafting is completed the soil is carefully packed by hand about the graft union and up to the tops of the scion. In due time growth starts, and while results vary somewhat with different varieties, the method on the whole is very satisfactory. If thrifty, well established stocks, ½ inch or so in diameter are grafted by this method, it is possible to grow holly trees 3 to 5 feet high and ½ inch or more in diameter in a single season.

Budding is done late in summer just before growth ceases and the bark tightens. Buds are inserted by the inverted T method. It is best to cut them from the budding sticks with a large piece of bark and wood—1⅛ inch in length is about right. Waxed cloth strips are used for wrapping and these are not removed until spring, just before growth starts, and the stocks are cut off just above the buds. As growth develops the shoots are tied to stakes to keep them straight and prevent their being broken off. The topworking of hollies by budding is not particularly difficult. Under the writer's direction a very considerable number of seedling hollies have been topworked successfully.

By Division

Clumps of *I. glabra,* the gallberry, if not too large can be taken up and cut into smaller parts with several shoots in each, or sections may be cut out of large clumps as they grow. This method of handling makes it possible to establish new clumps quickly, particularly in those areas where this holly is conveniently at hand.

Planting

For *Ilex opaca* a location with good drainage must be chosen. Trees of this species cannot be grown on waterlogged or poorly drained soils. When grown on their own roots some of the other species are not so particular about drainage. An acid or slightly acid soil is preferable, but good specimens are also found on neutral or slightly alkaline soil.

Small trees, one-year grafts or buds with well developed root systems can be transplanted from open ground successfully with bare roots. Their roots, of course, must be protected against drying out from the time they are dug until they are planted, and their tops must be cut back. If the whole top is to be retained they should be "balled and burlapped", as must also specimens of larger sizes, and even then it is a wise safety measure to prune back the tops somewhat.

Holes for the trees should be dug deeper and wider than actually needed for the roots or ball of earth, to afford space for the use of a goodly quantity

Plate V *Florence McKeel*

Three varieties of Ilex opaca. Upper left, East Palatka; upper right, Savannah; bottom, Howard.

of good soil in planting. A hole a foot deeper and wider at least should be made.

Good top soil reinforced with peat, mold from the woods or compost should be used to fill in the holes about the roots. To this material commercial fertilizer may be added to advantage at the rate of a 6-inch flower pot full to a wheelbarrow full of soil.

Trees should be set no deeper than they grew. This means that the top of the burlapped ball should be flush with the surface of the surrounding earth. If the tree is bare rooted it should be set no deeper than the circle about the trunk marked by the earth in which it grew.

Having placed the tree at the proper depth, with roots well spread out if they are bare, the prepared soil is packed in until the hole is one-half to three-quarters full. Water is then given to thoroughly wet and further pack the soil. Finish filling and leave a basin of earth to hold water that should be given from time to time until the tree is established.

The best planting time in those areas where the ground does not freeze is in winter. Farther north planting time is in autumn or in early spring.

Care and Culture

After planting the care given a holly tree should be directed toward getting it well established in its new location. It will be advisable to water it unless rains come frequently enough to keep the soil moist and in this connection a goodly mulch of leaves will help in maintining a moist condition about the roots. See to it in any case that the transplanted tree is properly supplied with water for the first two or three years or until the original root system has had time to grow and spread out into the soil about it.

In colder sections where the ground freezes it is good cultural practice to water well before winter sets in and to see that the mulch is deep enough to prevent freezing of the soil. Hollies must have a sufficient supply of water to take care of transpiration in winter, and being evergreen, may require more moisture than deciduous trees. Deep freezing may prevent the roots from taking up needed moisture supplies, resulting in injury to both leaves and twigs. In southern areas this advance provision for moisture supply in winter is not so important but there, watering should receive attention from time to time, throughout the season if rainfall is not sufficient.

Many holly varieties make fine symmetrical trees without particular attention to pruning. Where young trees develop branches out beyond the general outline of the top they may be cut back. If twigs in fruit are cut for the Christmas season it should be done carefully so as to maintain the symmetry of the tree. This may be all the pruning needed. Hollies stand pruning well. When damaged by storms or by sleet and snow, broken branches can be cut back to stubs where necessary, and from these, new shoots will come out to repair the injury. Large wounds should be protected by a suitable paint dressing to prevent decay until they are covered over by callus growth.

Fertilizers can be used to increase the growth and fruitfulness of hollies and enhance their beauty. There is nothing better than stable manure, unfortunately too scarce for general use. Commercial fertilizer analyzing 4% nitrogen, 5% phosphoric acid and 6% potash, or one approximating this analysis, will be found satisfactory particularly on lighter soils. Fertilizer can be applied two or three weeks before growth starts in spring and again in the

Plate VI *Esther Coogle*

Three varieties of Ilex opaca. Upper right, Old Heavy Berry; upper left, Bountiful; lower right, Cape Cod.

early part of summer—July 1st for the second application is about right for most locations. The amount to be used will depend upon the size of the tree and the condition of its growth. Roughly a half pound for each foot of height at each of the two applications is right, with slight increases for poor soils. For older, well established trees the amounts may be reduced somewhat.

It must be kept in mind that hollies aside from their dioecious habit are subject to the same factors that affect the fruiting of fruit trees. They must be kept in a condition of normal healthy growth if they are to bear good crops. To this end they need care and attention, water, fertilizer and protection against insects and diseases. Holly orchard plantings can be handled in much the same way as fruit orchards are in the different areas where they are located in so far as their culture is concerned.

Ilex opaca Varieties

A large number of varieties belonging to the species *Ilex opaca* have been selected and propagated. Most of them are native trees found here and there from Massachusetts to Florida. A few varieties have been raised from seed to secure new varieties. It is necessary that the number should be considerable for there are variations in growth habit, foliage and in the size, color and abundance of their fruit that should be represented. Many have been and are interested in hollies and have helped in finding them.

It cannot be expected that all varieties will do equally well in any one location because climatic and other conditions vary greatly from one area to another in which they have been found. There may be locations midway between the extremes of natural distribution where a large number of varieties will do well, but the interchange of varieties between the extremes is not likely to prove successful.

In 1906, no named varieties of *Ilex opaca* were being propagated, grown or sold by nurserymen; now there are upwards of a hundred. Naming and introduction of varieties have followed the course of nearly every group of fruits now grown in America—at first no varieties, then a few, then a large number, then increased plantings and much testing, then the elimination of many varieties, then back to a few again. Culture of hollies may follow the same lines, but because of the extended area, North and South, East and West, in which they may be grown and the varied conditions within these great regions, a fairly large number of varieties will be needed. A small number will not meet the needs of every locality. But the time has come when new varieties should not be added unless they are different from or superior to varieties already available. As time goes on the shortcomings and weaknesses of varieties will become apparent, the values of others will stand out, and a better selection can be made from among those available.

It has not been possible to get specimens of twigs with leaves and fruit of all varieties that have been named and propagated but most of them are described here in more or less detail. Much remains to be done in this connection. A very considerable amount of travel will be needed to completely describe and evaluate all of them. The names of introducers are given immediately after the varietal names, and notes and descriptions are acknowledged with the initials of those who furnished them. Help from Jackson M. Bachelor, Charles H. Connors, Earle Dilatush, W. C. Frierson, M. M. Ful-

Plate VII *Marian Ruff*

Three varieties of Ilex opaca. Upper center, Jesse Younce; lower left, Cain; lower right, Dupre; drawings made from dried specimens, much fruit had dropped.

ton, H. H. Hohman, G. E. Malmborg, F. L. O'Rourke, Samuel Thrasher, Wilfred Wheeler and Miss Elizabeth C. White is gratefully acknowledged. All of them are pioneers in American holly culture.

Two terms used in the descriptions need explanation. A "curved" leaf is one in which the tip or upper part is curved or bent downward. Leaves of most varieties are curved but a few are not. A "keeled" leaf is one in which the halves of the blade are set up at an acute angle from the midrib. Leaves of different varieties vary in this respect and some have flat leaves.

Alto (Wheeler) Origin, Farm of Nestor A. Alto, West Barnstable, Mass. Several trees of this type are outstanding in the size and color of their berries as well as their fine shape and foliage. (W. W.)

Albert King (Frierson) A tree owned by Albert King, Rt. 3, Bristol, Tennessee, on the Holston Valley highway about 8 miles from Bristol. Altitude approximately 1,800 ft., the tree bears bright red berries in great profusion, has a good green leaf, stands a little over 25 ft. tall, with a diameter of about 16 inches, broadly pyramidal in shape. (W. C. F.)

Arden (Nearing)—Leaves narrowly elliptic, dark green, small to medium in size, 5.5 by 2.2 cm., 7 by 3.7 cm., slightly curved, spiny with 9 to 15 spines, mostly 13 to 15, midrib depressed, margins shallowly scalloped, petioles short, gray, twigs gray. Named for the town of Arden, Delaware, where the original tree was found. Selected by Mr. G. G. Nearing. (H. H. H.)

Baker # 1 (Hume)—Leaves elliptic to obovate-elliptic, thick, stiff, dark glossy green, curved, midribs depressed, margins reflexed, teeth shallow, spines 5 to 9, mostly 7, short, stout, flowers staminate. Tree compactly branched, completely covered by the dark glossy foliage. Original tree stands a short distance from the other Baker specimen. (H. H. H.)

Baker (Hume)—Leaves obovate to rectangular with apices and bases tapered alike, flat or very slightly curved, thin, stiff, midribs narrow, slightly depressed, dull dark green, small, 4 to 5 cm. long by 2.5 to 3.5 cm. wide, teeth shallow, spines 3 to 6, mostly 5, small, sharp, petioles short, slender, internodes short, flowers staminate. The original tree on the grounds of the Glen Saint Mary Nurseries, Baker County, Florida, is about 20 feet high, broadly conical, compactly branched forming a dense head. Gray twigs showing somewhat and the under sides of the leaves where visible give the specimen a grayish cast that is unique and pleasing. Named for the county. (H. H. H.)

Bill Combs (Frierson) Owned by Bill Combs, in the Green Spring community 12 miles from Bristol, Virginia. The tree is at least 60 ft. tall. Has a beautiful dark green leaf, a good berry bearer, trunk is about 24 inches in diameter. Altitude is over 1,800 ft. Tree almost cylindrical in shape. (W. C. F.)

Bittersweet (Dilatush) Leaves elliptic, dark green, slightly curved, keeled, medium size, 7.7 cm. long x 3.5 cm. wide, 4.5 cm. x 3 cm., bases round, teeth shallow, 9 to 17, mostly 13 to 17, spines fine, sharp, midrib depressed above, prominent beneath, peticles short, green, twigs dark gray, fruit ovoid, medium, 10 mm. by 8 mm., orange to orange red, glossy, borne on slender

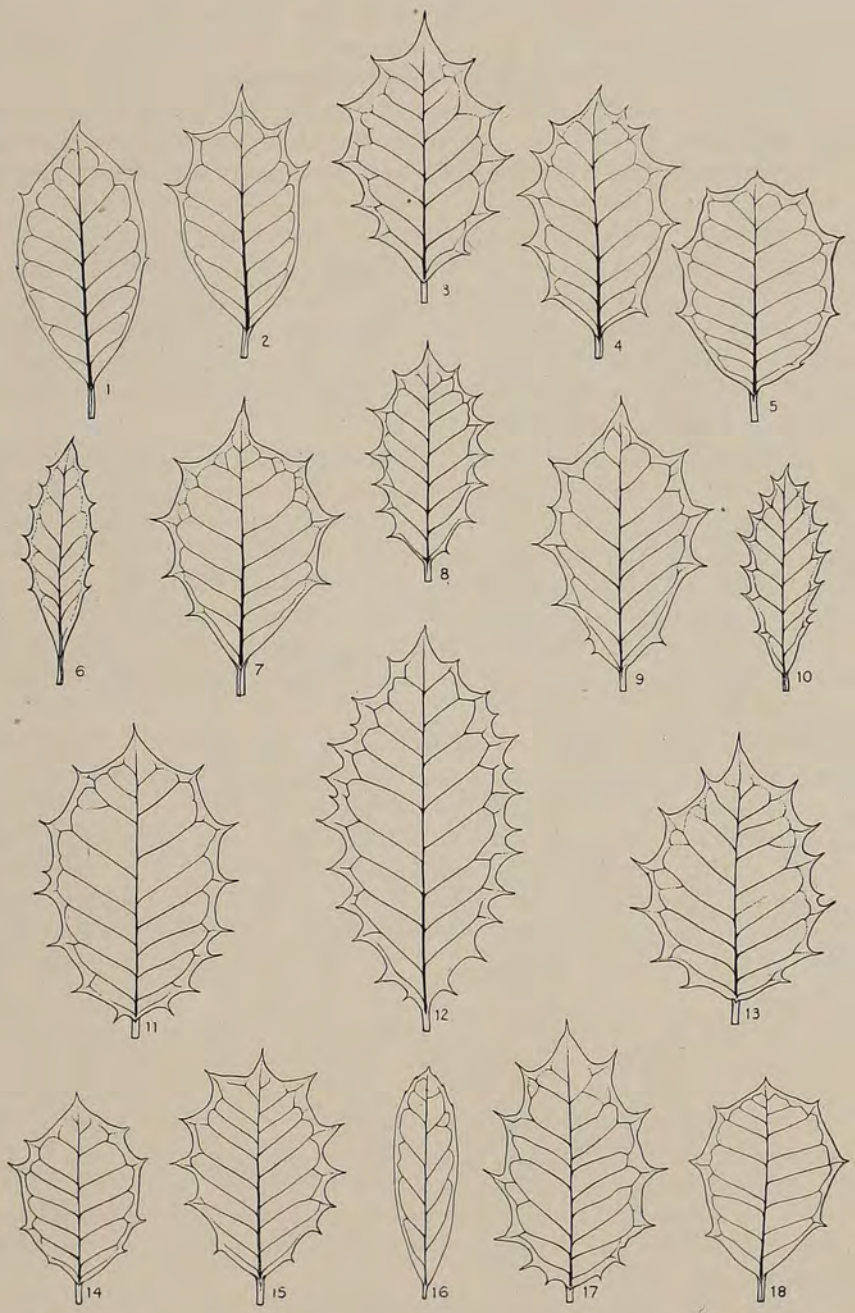


Plate VIII *Esther Brooks*

Leaves of different varieties of Ilex, one half size. 1. Hume # 1, 2. Hume # 2, 3. Bountiful, 4. Taber # 4, 5. Jesse Younce, 6. Savannah, 7. Dupre, 8. Ardens, 9. Farage, 10. Ft. McCoy, 11. Clarks Valley, 12. Edgewood, 13. Old Heavy Berry, 14. Loyalton, 15. Katz, 16. I. angustifolia, 17. Cape Cod, 18. Cain.

green pedicels 7 to 8 mm. long. (H. H. H.) It is hardy and bears heavily. First propagated by Dr. P. W. Zimmerman of Boyce Thompson Institute, Yonkers, New York. Probably native in Massachusetts. (E. D.)

Boggs (Frierson) About 12 miles from Westminster, S. C., just off the Townville highway to the left. Altitude about 900 ft. Large bright berries, regular bearer, pretty leaf. Many trunks, very broad pyramid. Much admired. (W. C. F.)

Bountiful (Dilatush)—Leaves broadly elliptic, dark green, medium to large, 6.5 cm. by 3.5 cm., 8.5 by 5 cm., curved slightly, veins depressed, otherwise surface flat, spines 9 to 13, large, on larger leaves widely separated, petioles grayish tan, twigs gray. (H. H. H.) The original tree of this variety is a compact, symmetrical, cone-shaped tree that measured 28 feet in height and 22 feet wide. As its name indicates, it fruits heavily. Original tree was located in Beverly, New Jersey. (E. D.)

Brooks (O'Rourke) The name Brooks, suggested by me and accepted by Prof. Maurice Brooks, West Virginia University, in December, 1942. Cuttings were sent by Prof. Brooks to the Soil Conservation Nursery, Beltsville, Maryland, where they were propagated and later placed in the trial grounds there. Prof. Brooks stated that the tree was observed by his grandfather over sixty years ago on a neighboring farm and has never failed to produce a crop of berries even though there are no staminate trees within one-half mile. 1,700 feet elevation. Characterized by thick, wide, dark green leaves and large berries. (F. L. O'R.)

Cain (Frierson) Leaves elliptic with cuneate bases, curved, slightly keeled, dark green, midribs depressed on upper surface, small to medium, 4.5 cm. x 3.5 cm., 6 cm. x 3.7 cm., teeth shallow, widely separated, 5 to 7, confined to upper portion, fruits small, globose, 8 mm., bright red, abundant, pedicels slender, shorter than the fruits, twigs gray. (H. H. H.) At the home of Frank Cain, Westminster, S. C., altitude a little over 900 ft. Very dark green leaf and very distinct in shape. Regular bearer, and always has an abundance of fruit. Greatly admired. 45 ft. tall, 18 inches in diameter. (W. C. F.)

Cape Cod (Dilatush) Leaves dark, dull green, curved, slightly keeled, medium size, 5 to 7 cm. long, 3 to 4 cm. wide, elliptic, teeth of medium depth, 7 to 15, mostly 15, sharp, margins reflexed, bases round or tapered; fruit globose, large, 8 to 10 mm., bright shining red, pedicels 5 mm., petioles short, green or somewhat purplish, midribs very prominent on underside. (H. H. H.) This unusual holly, a true dwarf, was found on Cape Cod. The old tree, twenty feet across the branches and only three feet high, was washed away in the 1939 hurricane. Propagation was started before that, so the variety has been saved. (E. D.)

Cardinal (Dilatush) Leaves elliptic, rounded or slightly tapered at their bases, slightly curved, flat, dark green above, lighter green beneath, small to medium, 7 cm. by 4 cm., 5 cm. by 3 cm., midribs prominent beneath, teeth shallow, spines slender, sharp, petioles slender, green, twigs gray, fruits light red, bright, ovoid, small to medium, 7 to 9 mm., by 7 mm., pedicels as long as or slightly longer than the fruits, slender, green, petioles slender, green beneath, darker above. (H. H. H.) Very fruitful, bears while young, com-

pact, symmetrical tree, very cold resistant. Original tree native in Massachusetts. (E. D.)

Carol (Wheeler) Origin, Ashumet Farm, Wilfrid Wheeler, Falmouth, Mass. The tree has a real holly shape even in very young ones, that is growing with a central stem and in pyramidal shape. Fruit is very large up to $\frac{7}{16}$" in diameter, foliage glossy dark green and fruit a fine scarlet. Principal values are in its good tree shape and large fruit. (W. W.)

Clark (White) Leaves elliptic, dark green, 8 cm. by 3.5 cm., slightly curved, margins reflexed, bases tapered, spines 9 to 13, yellowish green, petioles short, twigs gray. (H. H. H.)

Clarks Valley (Fulton) Leaves oval, flat not curved, medium to large, 5.5 cm. long by 3 cm. wide, 9 cm. long by 5 cm. wide, dark green above, lighter beneath, bases rounded or slightly tapered, teeth shallow, distributed from base to apex, 13 to 15, spines fine, short, petioles stout, dark green, 1 cm. long; twigs dark gray; fruit medium, 9 mm., ovoid, bright red; pedicels slender, 1 cm. long (H. H. H.)

Croonenberg (Thrasher) Leaves elliptic, curved, slightly keeled and sometimes twisted, thick (coriaceous) dark glossy green above, lighter green beneath, midribs depressed, medium size, 6.5 cm. long by 3.5 cm. wide, spines 5 to 9, usually 7 to 9, stout, sharp, margins recurved; petioles short, curved, tan colored contrasting with the dark green of the blades and the gray of the twigs; fruit bright red, globose or somewhat ovoid, 8 to 9 mm., on slender pedicals that are a little longer than the fruits. The parent tree is a noble columnar specimen at Greenbrier Farms, Virginia, to which location it has been transplanted. (H. H. H.)

Mr. Samuel H. Thrasher of Greenbrier Farms has supplied the following information relative to the Croonenberg holly:

"This tree was originally discovered in an old garden on Lynnhaven Bay. The garden had been tended by a Mr. Croonenberg who at the time of our discovery had been deceased at the age of eighty-seven. His daughter-in-law sold us the tree in 1934 at a price of $1,250.00 where it stood. The tree at that time was 37 ft. high and 22 feet across its branches at the ground and so dense that we had owned the tree for some time before we discovered it was twin trunked, having two trunks, closely parallel, starting at the ground.

"It was the contention of the Croonenberg family that the Croonenberg holly was a cross between the English and the American, both of which grew in the garden, but there were many small hollies up to six inches in that area and all of them had some characteristics of the Croonenberg—none as nice but all showing a superior leaf development and berry placement. We did not discover any staminate trees in the vicinity.

"The Croonenberg has both male and female flowers at a ratio of ten female and one male. It never has failed to bear, often fruiting profusely in the cutting beds. This plant when moved to the farm in May of 1937 was in full fruit. It held its berries and went ahead and has produced an abundance of berries every year since.

"We figure this tree to be approximately seventy-five years old, about thirty inches through the base, and is and always has been a magnificent specimen.

"We think well of this holly as one of the outstanding varieties of *Ilex opaca*.

It was first publicized by the Norfolk Garden Clubs and it was systematically trimmed for a number of years for holly for sale which brought three and four times the usual price per bunch on the open market. Since we have owned it this practice has been discontinued because of the slowness of growth and the fact that some one hundred thousand cuttings have been taken from it."

Delia Bradley (Hohman) Leaves narrowly elliptic, green, medium size, 7 by 3 cm., keeled, nearly flat, margins reflexed, spines 9 to 13, short, petioles short, mostly gray, occasionally light reddish tan, twigs dull yellowish gray. (H. H. H.)

Dorothy (Wheeler) Origin, West Barnstable, Mass., a roadside tree, which has since been moved to Ashumet Farm. A very fine tree with large fruit and good foliage outstanding in the way the fruit is borne in clusters. (W. W.)

Dupre (Frierson) Leaves cuneate, flat, keeled, dark green, teeth shallow on upper parts of leaves, spines small, sharp, petioles slender, green, fruits ellipsoid, medium, 10 mm. x 8 mm., dark glistening red, pedicels slender, shorter than or as long as the fruits, twigs gray. (H. H. H.) Owned by Mr. DuPre, dairyman, 3½ miles from Walhalla, S. C., on the Highlands (N. C.) Highway. Altitude over 1,000 ft., 35 ft. tall, 16 inches in diameter. Heavy fruiter, bright, medium sized berries, pretty leaf similar to Taber No. 3. Distinct. (W. C. F.)

Dupre # 2 (Frierson) Leaves cuneate to cuneate-elliptic, green, medium dark, midribs depressed on upper surface, prominent on underside, medium size, 5 cm. x 2.5 cm., 7 cm. x 3.5 cm., teeth small, remote, shallow, confined to upper part of leaf, spines 5 sharp; fruits small to medium, ellipsoid, 10 mm. long x 8 mm. wide, bright red, borne on slender pedicels as long as the fruits; twigs gray. (H. H. H.)

East Palatka (Hume) Leaves obovate or oval, flat with tip slightly depressed; blades of medium size, 7 cm. long by 3 cm. wide, much smaller among the fruits; dark glossy shining green above, lighter green beneath; surface smooth, midrib slightly depressed above, elevated and prominent beneath; margins entire, slightly reflexed; spines usually only one at apices, occasionally three or four on margins in upper part of leaf, short, fine with little basal elevation of leaf blade; petioles slender, light tan colored, 7 to 10 mm. long; twigs of current season green becoming gray; fruit bright red, globose, 6 mm. in diameter, very abundant. Shining dark green leaves and heavy fruiting make this a very attractive holly. It bears when young.

Here is the story of the finding of it. Early one morning in January 1925 accompanied by P. M. Parthemore, Harrisburg, Pennsylvania and the late Wallace R. Pierson, Cromwell, Connecticut, I left Jacksonville for southern Florida by automobile. The route chosen took us through East Palatka. As we crossed the railroad in the village a red topped tree was noted in the distance. Coming to where it grew it was found in front of a house a short distance from the highway. It was a holly tree with shining leaves and bright red fruits, produced so abundantly as to literally cover the branches. A young woman answered the knock on the door. "Madam, you have a very interesting holly tree. May I have a few twigs from it?" "I'm sorry," she replied, "but we rent this house, and the person who owns the property is very particular that no branches be cut." "Well madam, it seems as though the tree is not having very much care for here are five or six cows that have eaten off every leaf and twig as high up

as they can reach. Now, if you will go in the house and close the door, I'll cut a few small pieces from it and the tree will not be injured." So scions were taken, grafted, and the variety given the name East Palatka. It is noteworthy for its glossy green, almost spineless leaves, bright red drupes, abundant and early friuting and pyramidal or conical-pyramidal tree growth. (H. H. H.)

Emily (Wheeler) Origin, West Barnstable, Mass., original tree destroyed by the army in military manouvers. This tree is probably the best one that I have found in this section, in that it combines large sized fruit with deep scarlet coloring and very fine leaves. The young trees come into bearing at a very early age and tree shape is established very early. Named for my wife, Emily Wheeler. (W. W.)

Estes (Frierson) Owned by Mrs. R. C. Estes, Rt. 8, Lenoir, N. C., about 6 miles from Blowing Rock, N. C., toward the Globe store, on a very steep road, the John's River Road. The tree is 50 years old. It is approximately 35 feet high, 12 inches in diameter. Dark, thick green leaf, and loaded with fruit every year, except when late freezes occur. The altitude must be over 2,000 ft. as it is over 4,000 ft. only 6 miles away, at Blowing Rock. (W .C. F.)

Fallaw (Batchelor) Yellow fruited variety, found by Jackson M. Batchelor near Batesburg, S. C. Three varieties of yellow fruited *I. opaca* have been named, Fallaw, Goldie and Marion. Only the last one is described here as material for descriptions of the others has not been at hand. (H. H. H.)

Farage (White) Leaves obovate, broadest above the middle, tapering to the bases, dark green, curved, shallowly keeled, medium to large, 8 cm. by 4 cm., margins deeply toothed, spines 9 to 15, light green, distributed from base to apex, petioles mahogany brown, short, twigs gray. (H. H. H.) The original tree was collected, with several others, from the woods about New Lisbon, N. J., for planting on the grounds of my old home. This one was planted on the left side of the garage. The top died but the root developed a good sprout which grew into a tree about five ft. high. In 1932, it was balled, burlapped and included in a garden that we put on in the Atlantic City Auditorium. The old site by the garage was too crowded for its development and when it returned from Atlantic City it was planted at Whitesbog, where it has tripled in size and is now my best specimen tree. It was one of the early varieties I used in experimenting with cuttings. The labels in the cutting bed were marked "Left Garage" and the name "Farage" is a condensation of this. It is a good New Jersey holly with fine dark leaves and a regular bearer of good crops of fine berries. We have several trees from the early cuttings, now 8 to 10 feet high. When it has missed fruiting it has been because of frost and one year it was defoliated by beetles. (E. C. W.)

Fort McCoy (Wilmot) Leaves oblanceolate or lanceolate, not curved, dark green above, light green beneath, small, 6 cm. long by 2 cm. wide, 4 cm. long by 1.5 cm. wide, margins recurved, teeth shallow, 5 to 13, short, very sharp; petioles short, purple; twigs gray; fruit globose, 9 mm., bright red, single, on pedicels shorter than the fruit. (H. H. H.)

Griscom (White) I have over a hundred plants, two feet or more high. I tried several years to get cuttings to root before the tree was broken but I could only reach material that had a half inch to an inch seasonal growth except from a sprout at the base so heavily shaded that it had only a small amount

of stored food. After the break it was easy to secure new growth, six inches to a foot long, from a sunny situation. Cuttings from these sprouts rooted easily. The thinning out of the regeneration sprouts for two or three years after the break helped greatly in reforming the tree. I have seen the tree this fall (1946). It requires close examination to discover that it was ever hurt. It is a novel and exceedingly beautiful specimen. The vigorous young regenerative sprouts on this tree had a large proportion of the berries three to a peduncle as described under Manig; scarlet, glossy. (E. C. W.)

Good Will Park (Wheeler) Origin Good Will Park, Falmouth, Mass. A fine tree with splendid fruit. A very good type. (W. W.)

Greaser (Frierson) Owned by Gus Greaser, Mt. Lookout, W. Va., pointed out to me by W. C. Legg, same address. It is an everbearer, good berries, and has a good thick leaf. The State of W. Va. is very much interested in this holly and has propagated many. It is a shapely tree, 35 ft. tall, and 12 inches in diameter. Being in the high mountains the altitude must be over 2,500 feet. (W. C. F.)

Gunby (O'Rourke) Selected by O'Rourke in the woods of Paul Gunby, Marion Station, near Crisfield, Maryland. Typical of the best of the Eastern Shore type. Fairly long leaf, crinkly contour, long pedicels, about 12 mm. which cause the 10-12 mm. berries to stand out among the leaves. Propagated at Glenn Dale and Beltsville, Md. Soil Conservation Service nursery. Disseminated to some extent for trial growing. (F. R. O'R.)

H. L. Russell or Firecracker (O'Rourke) Selected by Wyman Smith on farm of E. Price Carpenter, Gunston, Va., for the reason that it retained berries during the second year. Publication by Smith in *American Forests*. Propagated by O'Rourke and distributed to Brooklyn Botanic Gardens and others. (F. L. O'R.)

Hampton (McDonald) Leaves broadly elliptic, green, medium size, 6.5 cm. by 4 cm., slightly curved shallowly scalloped, spines 9, small, short, sharp, surface almost flat, petioles dull dark brown, twigs gray. (H. H. H.)

Helen Makepeace (Wheeler) Origin West Barnstable, Mass. The value of this tree lies in its ornamental value as a tree which quite resembles the Griscom holly in New Jersey. Really a good landscape tree. (W. W.)

Henry Hicks (Frierson) Owned by him in the mountains of North Georgia, almost halfway between Walhalla, S. C., and Highlands, N. C. Grows in poor red soil, but is a very heavy bearer and has a good leaf. Should do better in a better location. The altitude there on Pine Mountain must be about 1,200 ft. The tree is 30 ft. tall, and about 12 inches in diameter. (W. C. F.)

Hibernia (Hume) Leaves obovate, medium green, midrib well defined above, elevated on lower surface, small, 4.5 cm. by 3 cm., spines 3 to 5, occasionally 1, small, sharp, on upper part of leaves, petioles short, mahogany brown, twigs gray, fruit dark bright red, borne singly or occasionally on a peduncle, 9 mm. diameter, tree broadly conical, openly branched, fruiting abundantly, a good grower. Original tree found at the Mahoney home, Hibernia, Florida. (H. H. H.)

Howard (Hume) Leaves obovate to obovate-cuneate, curved toward the apices, dark glossy green, small to medium, 6 cm. long by 3.4 cm. wide, teeth confined to upper parts of the leaves, small 3 to 5 in number, occasionally only

1, margins reflexed, petioles slender, mahogany brown; fruit globose, very abundant, bright shining red, medium size, 7 to 9 mm., borne singly, occasionally in twos and threes. Tree columnar, densely branched and well covered by the foliage, a vigorous grower. The original tree was found on the Howard farm about 2½ miles northwest of Macclenny, Florida. Someone has made the name Howardi, but this is not correct. (H. H. H.)

Hume # 1 (Hume) Leaves elliptic, tapered to bases, curved, slightly keeled, thin, glossy green above, light green beneath, medium to large, 9 cm. long by 3.5 cm. wide, 6 cm. long by 3 cm. wide, scarcely toothed, spines few, 1 (apical) to 7, small, (spinescent rather than spiny); petioles purplish; twigs ridged, purplish; fruit dark red, bright, subglobose, medium size, 7 cm. long by 9 mm. wide, borne sometimes two or three on a peduncle but mostly single. A strong growing variety. The original tree was a fence row seedling on the property of the Glen Saint Mary Nurseries. It was transplanted and is now about twenty-five feet high. (H. H. H.)

Hume # 2 (Hume) Leaves elliptic to obovate, curved, thick, dark green, medium to large, 6 cm. long by 3.5 cm. wide, 8 cm. by 4.5 cm., teeth 3 to 7, shallow, widely separated, spines short, stout, margins reflexed, midribs depressed on upper surface, veins depressed; petioles medium, 1.5 cm. long, dark colored; twigs gray; fruit ovoid, bright shining red, 10 mm. long by 9 mm. in diameter. This has proven to be a good variety with fine red, large fruits. The original tree, a chance seedling of imported origin, is on the grounds of the Glen Saint Mary Nurseries. (H. H. H.)

Jessie Younce (Frierson) Leaves elliptic, with tapered bases, dark green above, lighter beneath, flat, slightly curved, small to medium in size, 5 cm. x 3.2 cm. 6.5 cm. x 3.7 cm., teeth along upper portions only, shallow, spines small; twigs slender, gray; fruit small to medium, bright shining red, globose, 8 to 9 mm., borne on slender pedicels as long as the fruit. (H. H. H.) The tree stands where Mr. Younce lives ¼ mile to the left of the Walhalla-Pickens (S. C.) Highway, about 12 miles from Walhalla. Altitude about 1,100 ft. The prettiest holly tree I have seen. It is almost always loaded with red berries in great profusion from the top to bottom. The height is estimated to be 50 feet or more and the diameter is two feet or more. It is so red with berries some years that the redness can be seen from the highway a quarter of a mile away. It has a good leaf and is easy to propagate. The shape is almost cylindrical. One stands beneath this beautiful tree with bated breath when winter's sun bathes its bright red berries and dark green leaves. (W. C. E.)

Joe Stephens (Frierson) Owned by Joe Stephens, across from Bill Combs. This tree is in limestone soil on the edge of a pasture and cornfield, both of which have been repeatedly limed. It bears more cutting wood than I have ever seen on any other holly. Has a good leaf and fruit in abundance. Height approximately 40 ft. and diameter is about 18 inches. The fruit is borne in clusters, is oblong, and is all over the tree. The leaf is 2-3 inches long and is similar in shape to DuPre. Produces fruit yearly, fair sized berry. (W. C. F.)

Joyce (White) Leaves elliptic, dark green, medium size, 6.5 cm. by 3.5 cm., slightly curved, spines 9 to 15 rather widely separated, light green, borne on short gray pedicels, twigs gray. (H. H. H.) One of the varieties collected

for me by Tom Windon. We had much cutting material which rooted easily and have had many plants. It is a very rapid grower, making four to five feet of whip like growth in a season when the young plants are well established and conditions are favorable. The berries are too dark to be especially attractive and the leaves are not especially beautiful. If I were able to carry holly work further it would be discarded so far as I am concerned. (E. C. W.)

Judge Brown (N.J.H.R.C.) Leaves dark green, rather glossy, retaining the green color all winter, broad elliptic, 8.5 to 9.5 cm. long by 5 to 5.5 cm., midrib depressed on upper surface wide; margin slightly recurved, wavy, spines sharp, medium in length about 11. Fruits large, oval, glossy, red tending toward crimson. Tree located on property of Judge Thomas Brown, Locust, New Jersey, height about 28 feet, trunk 5 inches in diameter, selected and named for Judge Brown by the New Jersey Holly Research Committee. Propagation of the variety has been undertaken. (C. H. C.)

Karen, Mae, Manig, Osa (White) These are four of the many hollies collected for me by Thomas Windon the great majority of which have been discarded. These four were selected out of the nursery row. *Karen* is a heavy bearer of good berries but I doubt if under identical conditions it would compare favorably with many other varieties. *Mae* is a good variety. It was tried earlier than the others. Six or more years ago we had a row about four feet high and nearly everyone who came into the nursery chose the slender, well shaped and heavy berried of the Mae variety. *Manig* I class very highly as compared with the others I have tried. Manig was the first holly that I ever noticed which had three berries to a peduncle as illustrated in the Griscom photograph I enclose with this. It was the only variety among fifteen or so growing in nursery rows under practically identical conditions that had this feature. I wanted to name it for its many berried characteristics. Consulting Webster I found the word *Manig* given as one of the roots of Many, an Anglo Saxon root I think. Since Manig I have seen several varieties of holly with three berries to a peduncle and on all the varieties I have observed I have found that on the pedicel of every holly berry there were two minute bracts. Where there are two or three berried to a peduncle they have always developed from the axils of these bracts so I have concluded that all plants of *Ilex opaca* are potentially three berried but conditions have to be very favorable for the extra berry or berries to develop. I have grown several hundred plants of *Manig* but only occasionally have they developed three berries. *Osa* is probably as fine a variety as Manig, I have not had it so long. (E. C. W.)

Katz (Hume) Leaves large, 6.5 to 9.5 cm. long by 4 to 5 cm. wide, oval to somewhat obovate, dark green above, light green beneath, thick, coriaceous, midrib and veins depressed and distinctly marked on upper surface; spines 8 to 17, sharp, accentuated by projections of the leaf blade, widely spaced, usually distributed along margins from base to apex; bases rounded or tapered, apices depressed; petioles stout, curved, 2 cm. long; fruit bright shining red, ovoid, 12 mm. long by 9 mm. wide, borne singly or less frequently in twos and threes, pedicels of single fruits about as long as fruits, peduncles up to 1.5 cm., and where two or three fruits are found on a peduncle the pedicels are short. Twigs green, becoming gray at maturity. The original of this

fine holly is a native tree in the garden of Mr. and Mrs. S. J. Katz, Covington, Louisiana. Its propagation has been undertaken recently. It is noteworthy for its large, bright red fruits, abundant fruiting and somewhat pendant branches. (H. H. H.)

Lake City (Hume) Leaves elliptic to elliptic-cuneate, the shape greatly affected by the strongly reflexed, almost revolute margins, green, lighter beneath, the whole leaf mass with a lighter green cast than most varieties, curved and twisted, the apices long taper pointed, large, 9 cm. by 4 cm. wide, 10 cm. long by 4 cm. wide, midribs depressed, veins depressed, the blades rolled outward from the midribs, teeth shallow, remote, confined to the upper parts of the leaves, 3 to 7 in number, spines fine, sharp, petioles slender to 1.5 cm. long, dark tan colored, twigs gray; fruit orange, ovoid, medium to large, 8 mm. to 10 mm., borne singly on dark pedicels, 5 to 7 mm. long. Tree openly branched, fruiting well, interesting for its orange colored fruits and peculiar curved twisted foliage. The original tree stands close to Highway U. S. 90 on the east side of Lake City, Florida. (H. H. H.)

Lambert (Frierson) Owner, Will Lambert, very old, five miles from Wiley Moore's, R. F. D. 7, Lenoir, N. C. "The finest tree in the whole country" (Grant Moore). The tenant, Mrs. Edward Nichols, says "it berries every year." She has known the tree 19 years. It is certainly more than 50 feet tall, and by actual measurement the trunk 18 inches above ground is 9 feet in circumference. There are three main trunks about 6 feet above ground, each 12 to 14 inches in diameter. It missed bearing in 1945, the first time in 60 years. "Can see red tree for a mile" (Grant Moore) because of heavy fruiting. It is the largest holly I have seen. One small branch never bears fruit. It is half way up the tree on one side, and grows out of a big limb. This puzzled us (E. C. Clark, Glade Spring, Va., and myself). But we decided that a seed had fallen into a rotting knot hole and germinated, later self-grafting onto the limb, for it was partially decayed at the place, and turned out to be a male plant from seed. (W. C. F.)

Lawrence (Wheeler) Origin, Farm of Emily Lawrence, West Barnstable, Mass. This tree has the largest fruit of any tree that I have found, averaging better than ½" in diameter and a good round berry so that we did not have to measure the oblong way. Color is good and type of tree upright. Tree has been moved to Ashumet Farm. (W. W.)

Lombard (Frierson) Owned by Eric G. Lombard in Horse Hole several miles from Highlands, N. C. It stands at the original spot where it commenced life in the wild, now his front yard. In 1941 it was 8 ft. tall. Now it is 30 feet high, with two trunks at 4 ft. high, each of which is 8 inches in diameter. Is vigorous and produces many berries, and hardly ever misses. Produces an abundance of cuttingwood. It stands at an altitude of 3,100 ft., the highest that has come under my observation. The limbs "are bent down by berries." (W. C. F.)

Loyalton (Fulton) Leaves cuneate obovate, slightly curved, flat, small, 4 cm. long by 2.5 cm. wide, 5 cm. wide by 3 cm. long, dark green above, medium thick, midribs prominent on under sides, teeth small, very shallow, 5 or 7 on the upper three quarters of margins, spines very small, petioles short, mahogany colored; fruit small, 6 mm., red; twigs brownish gray. (H. H. H.)

Manig (White) Leaves elliptic to oblong elliptic, dark green, curved, keeled, thick, stiff, variable in size, 3 cm. long x 1.7 cm. wide, midribs prominent beneath, teeth large, 7 to 15 (13 to 15 on larger leaves), distributed along the margins from base to apex, petioles stout, dark colored, twigs short, gray, well covered by leaves. Fruits globose or slightly flattened, dark glossy red, medium, 8 to 9 mm., pedicels as long as or slightly shorter than the fruit, brown. (H. H. H.)

Marion (Hume) Leaves obovate, curved and twisted, fastigiate, medium thick, light green midribs and main veins depressed, leaving the portions of the blades between the latter elevated and rounded, medium size, 7 cm. long by 3 cm. wide, margins much reflexed, teeth shallow, widely separated, spines small, sharp, usually 5, petioles 1 cm., slender, green, twigs gray; fruit of medium uniform size, bright yellow, ovoid, 9 mm. by 8 mm., stigma scar prominent. Tree grew in western part of Marion County, Florida. A good yellow-fruited variety. (H. H. H.)

Merry Christmas (Dilatush) Leaves elliptic, dark green, curved, slightly keeled or flat, small to medium, 4.5 cm. x 2.3 cm., 8 cm. x 3 cm., teeth shallow, mostly along the upper half or two thirds of margins, spines 15 to 23, short sharp, bases rounded or somewhat tapered, petioles reddish brown, slender 5 to 7 mm., fruit borne singly, ovoid, large, 11 mm. x 8 mm., glossy red, pedicels reddish brown, 7 to 9 mm. (H. H. H.) A holly tree with good foliage and bright red fruits, a fine all-round variety. Easily propagated from cuttings. Original tree found near Bayville, New Jersey and transplanted to Robbinville, New Jersey. (E. D.)

Mrs. Santa (Nearing) Leaves elliptic, light green, slightly keeled, curved, medium, 6.5 cm. by 3 cm., surface smooth, midrib depressed, spines 11 or 13, light yellowish green, petioles tan, twigs gray. (H. H. H.)

Mt Vernon (O'Rourke) Selected by O'Rourke in January, 1941, on Mt. Vernon Estate, Virginia. A comparatively small tree about 18 feet high, with an exceptionally long dark leaf of medium contour and large red berries. Propagated by O'Rourke. Distributed to S.C.S. nursery and others. (F. R. O'R.)

Myles (Frierson) E. C. Myles, Fayetteville, Rt. 2, W. Va., is the owner. His daughter, Mrs. E. L. Wheatley, nearby, told me about the tree. It is a regular bearer, with bunches of bright red berries. Has a pretty, thick, green leaf. The place is a few miles north of Fayetteville. (W. C. F.)

Natale (Wheeler) Origin, West Barnstable, Mass. Owner, Peter Barbosa. This tree was moved to its present location about ten years ago, and while not very tall it has grown quite wide. In many ways it is the most outstanding tree on Cape Cod. Fruit is large and highly colored, but its chief beauty is in the way the berries are carried in the tree, great clusters of fruit well out on the ends of the twigs so that the tree appears as though covered with fruit. It is not only an excellent fruiting tree but makes a fine landscape specimen. The tree grows in almost the coldest spot on Cape Cod and is exposed to all of the North winds that sweep across Massachusetts Bay, yet I have never known it to be damaged by cold or winds. It is really a hardy holly. The name "Natale" is the Latin for Christmas or natal day. (W. W.)

Nelson (Frierson) Owned by Liza Nelson, Victory, Kentucky, in a very cold region. "Loaded every year," for 42 years with the exception of 1945. Me-

dium sized, spherical, bright berries. Two trunks of 18 inches each, 50 feet tall or higher. Altitude must be over 1,500 feet. (W. C. F.)

Nicholson (Frierson) Owned by B. C. Nicholson, in the Mts. of N. Georgia, on the Walhalla-Highlands Highway. A very good holly as to leaf, quality and profusion of berries. (W. C. F.)

Old Heavy Berry (Dilatush) Leaves broadly elliptic, medium size, 6.5 cm. x 4.5 cm., 5.0 cm. x 3 cm., coriaceous, dark green above, lighter beneath, curved, slightly keeled, bases round, midrib and lateral veins depressed on upper surface, teeth of medium depth, 9 to 13, distributed from base to apex, spines short, sharp, petioles short, green, twigs dark gray. Fruit borne singly, large, globose, 8 to 9 mm., deep red, pedicels short, 4 mm., slender. (H. H. H.) Leaves large dark green, thick; tree with stout branches and rounded, somewhat conical head. Fruits abundantly. The tree was found near Burlington, New Jersey. (E. D.)

Savannah (Robertson) Leaves closely spaced on the twigs, ovate-lanceolate to elliptic, small, 6.5 cm. long by 2 cm. wide, dark glossy green above, lighter beneath, midrib depressed on upper surface, elevated beneath, mahogany to purplish brown for most its length on under surface, margins scarcely toothed, spines small, remote, 9 to 17, well distributed from base to apex or sometimes only along the upper half of margins, petioles slender, 8 to 10 mm., purplish brown, young twigs purplish brown; fruit globose, slightly ovoid, variable in size, bright red, 6 to 9 mm. thick, borne on short, slender pedicels, 4 to 5 mm. long. Original tree is in the city of Savannah, Georgia. It was found by W. H. Robertson, Commissioner of Parks, who propagated it for planting in the city parks. It fruits heavily. The unusual color of the young twigs, petioles and midribs is distinctive and separates it from other hollies. In shape and spines, some of the leaves resemble those of *Ilex aquifolium chinensis* as described and illustrated by W. Dallimore in his book, "Holly, Yew and Box." (H. H. H.)

Speed (Frierson) Owned by Jeff Speed, Clayton, Ga., in the Mts. "Most always bears . . . observed for 25 years." Pretty green leaf. 35-40 ft. tall, and trunk 16 inches in diameter. (W. C. F.)

St. Ann (Wheeler) Origin, Osterville, Mass., on the Island of St. Mary in Oyster Harbor Bay. This tree moved from the woods to its present location where it has been for about 25 years. It is or rather was a magnificent holly, badly hurt in the hurricane of 1944, but it is coming back and will in a few years look like its old self. Tree is particularly noted for its large highly colored scarlet fruit borne in great clusters all over the tree. The tree itself is a fine landscape type open and spreading with long sweeping branches which gives the impression of its being much larger. Present owner Mr. H. Lee, of Osterville, Mass. (W. W.)

St. Mary (Wheeler) Leaves elliptic, green, curved, slightly keeled, small, 5.5 cm. by 2.5 cm., spines small, short, 11 to 13, light tan colored, petioles green, small, short, twigs gray. (Description not complete but the best that could be done from material in hand.) (H. H. H.) Origin, Osterville, Mass. A sister tree of St. Ann, they grow a few feet apart on St. Marys Island. Named by Wilfrid Wheeler for the island which was in turn named by its former owner Rev. Andrew Wilson. St. Mary is a very compact tree with small beautiful glistening foliage and medium sized berry (is) produced in

great profusion all over the tree. It is a fine landscape tree with short heavy stem growth and is more valuable as a tree than as a source of holly branches. On the other hand St. Ann is one of the best varieties to furnish large sprays. St. Mary was badly injured in the 1944 hurricane. (W. W.) St. Mary I found easy to propagate and the little plants are free from the tendency to sprawl as most of our young hollies do. They grow upright from the beginning. The leaves are rather small, wavy and glossy and a fine green color. It is a good producer of beautiful, bright berries. I have over fifty little plants about two feet high. (E. C. W.)

Stumphouse (Frierson) Owned by Mrs. Sallie Vissage on Stumphouse Mt., Oconee Co., S. C., Highlands Highway, about 8 miles from Walhalla. Pretty, peculiar, large, dark green leaves with few spines. Numerous large, bright red berries. Mrs. Vissage calls the tree the "Stump" because it leans badly being undermined by the creek. Vigorous grower, a little difficult to propagate. 1945 is the first time it ever failed to bear. (W. C. F.)

Susan (White) Cuttings taken from a tree in the woods near New Lisbon, N. J., in the early days of my experimenting with Holly. The original tree was not marked. It is a fairly good medium quality New Jersey holly, nothing special. The most interesting feature about it is that it bears berries so very early. The cuttings frequently bear berries in the cutting bed where I think, but cannot prove, they have no chance to be pollinated. (E. C. W.)

Taber # 3 (Hume) Leaves elliptic, dark shining green, curved, keeled on fruiting twigs, small to medium, 6.5 cm. long by 2.5 cm. wide, 6 cm. by 3.2 cm., teeth on fruiting twigs with few shallow teeth, on vigorous shoots larger, spines 1 to 3 to 9, small to stout, petioles slender, light or dark tan, twigs gray; fruit ovoid, shining red, of medium size, 9 mm. This variety is noteworthy for its distinct fastigiate habit and heavy bearing. (H. H. H.)

Taber # 4 (Hume) Leaves obovate to elliptic, dull dark green, curved, thick, 8 cm. by 3.5 cm., 6 cm., teeth small, shallow, spines 5 to 9, distributed from base to apex or only on the upper parts, on vigorous twigs the teeth are larger and the spines much stouter, petioles stout, purplish brown, on fruiting twigs the petioles are slender, all twigs gray. Propagated from an introduced tree that has been lost. (H. H. H.)

Toner (O'Rourke) Selected by O'Rourke 1941 or 1942, from large tree near Toner Hall, St. Elizabeth's Hospital, Anacostia, D. C. Propagated and distributed to S.C.S. nursery, Beltsville, Md. (F. L. O'R.)

Trisco (————) Leaves broadly elliptic, dark green, slightly curved, flat, medium size, 6.5 cm. by 3.5 cm., midrib depressed, spines 11 to 13, short, petioles stout, purplish brown, twigs gray. (H. H. H.)

Vissage (Frierson) Owner, as above. (Mrs. J. D. Vissage, Walhalla, S. C., R. F. D.). 25 feet tall, 12 inches in diameter. Altitude 1,200 feet. Heavily fruited; bright, large berries. Extra good holly for decorations. Grows in an old hog pen. Shape a symmetrical pyramid. (W. C. F.)

Vora Woods (Frierson) Owner, Mrs. Vora Woods, Mt. Lookout, W. Va. Many medium sized orange berries. "Never misses." Alt., 2,000 feet, 30 feet tall, 12 inch trunk. There are a series of natural graftings in limbs and trunks. All branches, however, bear orange berries. I have seen many natural graftings of male and female trees and only one side bears fruit. Informants, when I visited the tree, are Mrs. Woods' son, Austin, and W. C. Legg. (W. C. F.)

War Woman (Frierson) On War Woman Creek (so named because in a fight Indians killed some white women), Rabun, Co., Georgia, near Clayton. Take road to right at War Woman School. Large dark leaf and large bright berries, with from 3 to 5 on a peduncle. Tree 7 inches in diameter of trunk, 25 feet tall, 18 years old, owned by Ernest McCoy. He bought the place from Judge Speed. (W. C. F.)

Drawings for the illustrations of Evergreen Hollies Native in the United States were made by Mrs. Harry Lambeth (nee Miss Florence MeKeel) who has made so many fine drawings for Gentes Herbarum, by Miss Marian Ruff who has succeeded Mrs. Lambert at the Bailey Hortorium and by Miss Esther Coogle, artist at the University of Florida. Their names in acknowledgement are placed at the bottom of the several pages illustrated from their drawings. My sincere thanks are extended to Dr. L. H. Bailey for having the fine drawings made by two artists of his staff. University of Florida, Gainesville, Florida

Narcissus Notes

B. Y. Morrison, *Editor*

From New York

Last Friday, May 9th, the Amherst Garden Guild (of which I am Vice-President) held their annual Daffodil Show. There were lots of Trumpets entered, mostly Spring Glory and King Alfred, and one Diotima. Diotima carried off the honors in this division.

In the Incomps, the most noetworthy entries consisted of Abelard, Scarlet Elegance, Dick Wellband, and some exceptionally well grown Sir Watkins. I had Abelard and Bernardino were in poor shape. Two days before the show we had 4 inches of snow and they were expanded at the time, thus the back of the perianths were lined and streaked. Abelard was not unfolded at the time of the snow so I was able to exhibit clean blooms but not completely full blown. This fact kept my Abelards from winning as I gathered from the Judges' comments. Scarlet Elegance won this division and was also Best Flower in the Show.

In the Leedsii division, Daisy Schaffer won, hands down. Gertie Millar and Mitylene also were shown as good examples.

In other divisions, the winners were: Doubles—Van Sion: Barrii, Firetail; Poeticus (only one entry, no award made) in Division 5 I had entered Queen of Spain but as that was the only entry in Div. 5, no award was made.

The number of entries was surprising, and augurs well for the future of the daffodil in the township of Amherst. It was also surprising how well grown the majority of the entries were. After the judging many of the various exhibitors began making notes on the various varieties shown. The division with the most entries was the trumpet division. The Leedsii had the second largest number of entries (20) which really surprised me. I guess I'm one of these fellows who follows the trends as I go for the Incomps. The notes in the quarterly are also a good guide in selecting varieties, as Mrs. Barbee's article shows a pleasant familiarity with the better varieties.

George S. MacAlevy
Snyder, N. Y.

From New Mexico

In answering your inquiry about the 'jonquils', I can report that I have jonquilla simplex and several of the hybrids. All seem to flourish and haven't

been replanted as I expected. I reset Golden Sceptre two years ago (had been in place for six years) but missed one. It made a lovely clump, with eighteen blooms this year. So many of my newer varieties of narcissus have failed to bloom after the second year, while the clumps look quite small. Winter Gold delighted me last year but this year only one of the bulbs bloomed. Getting back to jonquils, I have bought Orange Queen, Lady Hillingdon, single campernelle and Golden Perfection. The last was new this year, nine bloom stalks from three blubs. I shall have to report later on their continuing performance.

Mrs. E. L. Barrows
Santa Fe, N. M.

Tulsa Daffodil Show

Miss Eleanor Hill staged her second "one-man" daffodil show at Philbrook Museum on April 6, 1947. Visitors were interested in comparing King Alfred with the other yellow trumpets. White trumpets and red cups attracted a great deal of attention. It was gratifying to see the number of people who took notes. Twelve hundred people attended.

The varieties displayed were: *Yellow trumpets,* Advance Guard, Bulwark, Forerunner, Giant Perfection, Goldbeater, Golden Harvest, Hebron, John Farquhar, King Alfred, King of the North, Lord Antrim, Magnificence, Moongold, Principal, Royalist, Sorley Boy, Winter Gold; *White trumpets,* Beersheba, Cantatrice, Cornith, Eskimo, Kanchenjunga, Kantara, Mrs. E. H. Krelage, moschatus, Rosabella, Roxane, Tain; *Bicolor trumpets,* Effective, Immense, Lovenest, Quip, Silvanite; *Yellow perianth Incomparabillis,* Carbineer, Campfire, Cocarde, Cornish Fire, Damson, Dolite, Fortune × Torrid (Guy Wilson), Garibaldi, Goodwill, Havelock, Invergordon, Jubilant, Killigrew, Klingo, Malvern Gold, Odessa, Rouge, Rustom Pasha, St. Egwin, St. Ives, Stella Tid Pratt, Trenoon, Truan, Whiteley Gem; *White perianth Incomparabilis,* Buoyant, Carmencita, Coverack Perfection, Franciscus Drake, Galopin, Great Warley, Greeting, Hades, Milford Haven, Monique; *Yellow perianth Barrii,* Anna Croft, Clackmar, Crowned Beauty, Market Merry; *White perianth Barrii,* Firetail, Forfar, Galata; *Giant Leedsii,* Brunswick, Carnlough, Courage, Delaware, Ettrick, Eve, La Tendresse, Mitylene, Pink a'dell, Pink Lustre, Pucelle, Silver Wedding, Still Waters, Suda, Tunis, Water Lily; *Small crown Leedsii,* Fairy Circle, Mrs. Nette O'Melveny, Polar Sea, Silver Coin, Silver Plane, White Lady; *Triandrus hybrids,* Acolyte, Johanna, Queen of Spain, Snowbird, Stoke, Thalia, Viscountess Northcliffe, White Witch; *Cyclamineus hybrids,* Beryl, February Gold, March Sunshine; *Jonquil hybrids,* Cheyenne, Fairy Nymph, Gen. Pershing, Golden Goblet, Lady Hillingdon, Lanarth, Lintie, Orange Queen, Tullus Hostilius, White Wedgewood; *Poetaz,* Glorious, La Argentina, Scarlet Gem, St. Patrick, Poeticus, Actaea; *Species and miscellaneous,* Bulbocodium, caniculatus, cyclamineus, juncifolius and gracilis var. tenuoir.

Daffodils in the Grass

A dozen old varieties of small-flowered daffodils were planted in newly plowed ground in the autumn of 1935 and seeded down to bluegrass. A light dressing of 5-10-5 commercial fertilizer has been given every third year and the grass is cut in July but otherwise they have received no attention. I planted the Yellow Trumpets Golden Spur and Trumpet Major, the Yellow Incomparabilis Peris, the Yel-

Edwin C. Powell

Daffodil naturalized in grass.

low Barrii Vanessa, the Bicolor Barriis Albatross, Clara Viebig, Princess Louise, and Seagull, the Small-Crowned Leedsiis Beatrice, Countess of Pembroke, and Minnie Hume, and a seedling Poet. A few years later I planted with a mattock several lots of seedling White Trumpets, Large-Crowned Leedsiis, and a Bicolor Incomparabilis which have really "gone to town" with their fine blooms and abundance of flowers.

Of the older varieties Golden Spur has disappeared; Vanessa, Peris, Minnie Hume, Clara Viebig (a Poeticuslike Barrii), and Trumpet Major have increased slightly; whereas Beatrice, Albatross, Countess of Pembroke, Seagull, and the Poet have increased enormously. Two years ago I dug a clump of the Countess that produced 16 flowers and 16 round bulbs. The past season I counted 23 flowers on one clump of Seagull where one bulb had been planted in 1935. They occupy an area of roughly 25 by 100 feet and make a wonderful display during the flowering period.

EDWIN C. POWELL
Maryland

One of the features that strikes a visitor at a small show of narcissus is either the predominance or lack of yellow and other trumpet narcissus. There are still many people who feel that no daffodil is anything worth looking at unless it is as large as a trumpet and preferably is yellow.

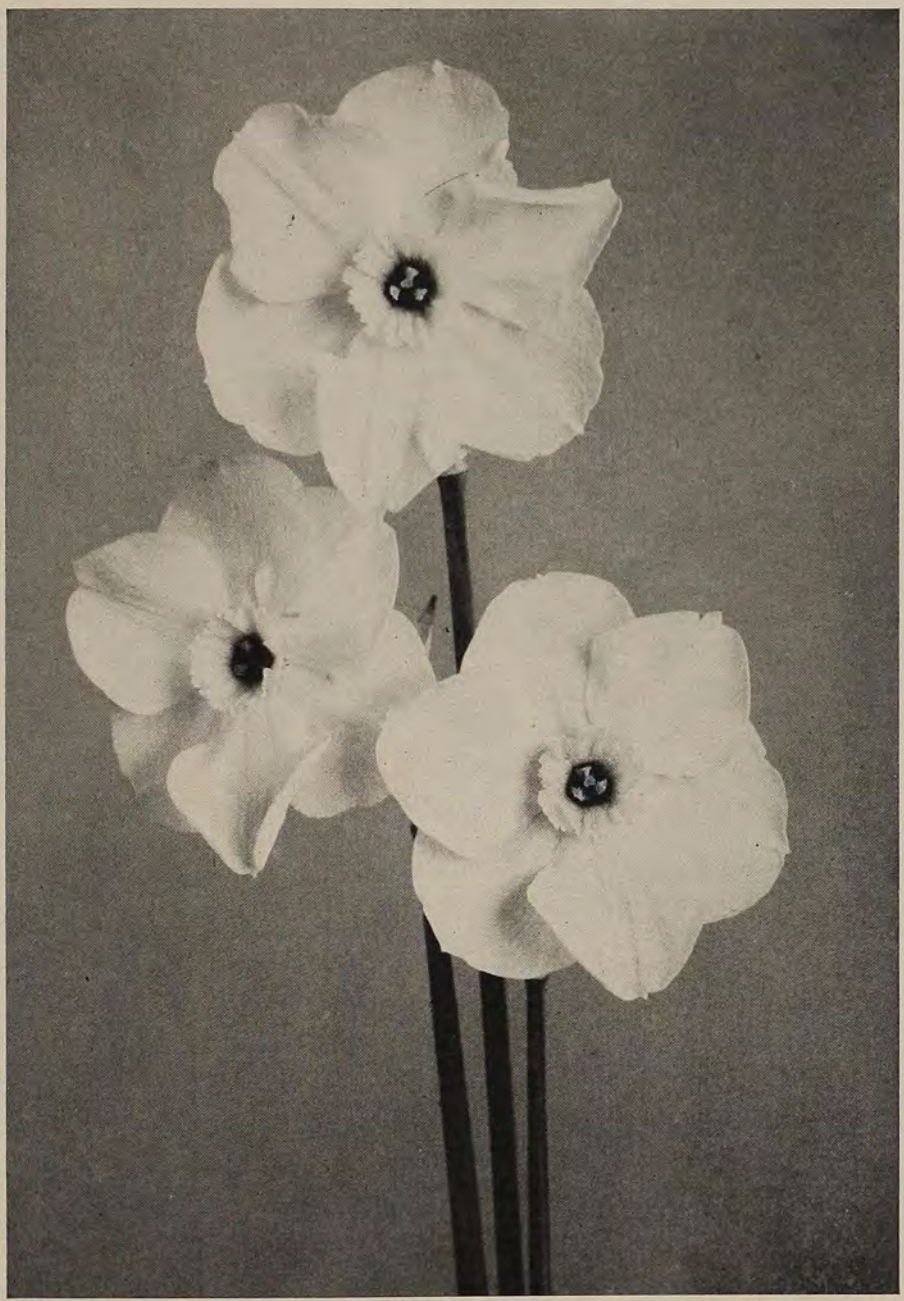
Because of this perference it frequently happens that the small show date is set to be sure that there will be a plentiful supply of trumpets and that every one feel that there is a blaze of color. This is all very well, even in these days when there are now a goodly number of Leedsii varieties that are 'first early' as well as a fair number of colored Incomparabilis like Fortune and its progeny which also come early. There is none the less a fine array of

Robert L. Taylor

[*See page* 183]

Narcissus, Silver Salver

smaller narcissus which have very definite character and very special beauty that are quite unknown to the average gardener unless he visits collections. THE NATIONAL HORTICULTURAL MAGAZINE has deliberately figured a number of these sorts and has more to show as time goes on.



Robert L. Taylor

[*See page* 184]

Narcissus, Alberni Beauty

This note is intended only to draw the attention of gardeners to two types of Leedsii varieties both of which are as late as the best poeticus and which are divergent in types. Silver Salver which is no new flower having been introduced into trade as far back as 1923 grows with all the ease that char-

izes most of the Leedsii sorts and flowers freely. The flat cup is one degree whiter than the perianth which is the only way the editor knowns how to describe the situation, although he has been reminded that white cannot be whiter than white. The flowers are shown natural size and one can see that the stems are slender. Its nearest rival as mentioned in catalogues, is Samaria, which in this garden is later, less white and not so sure to open its flowers perfectly.

As an example of the other extreme among the late flowering Leedsiis, we are showing flowers of Alberni Beauty raised by Dr. C. T. Hilton, Port Alberni B. C. and introduced into trade through Guy Wilson in Ireland. The flowers are more typical of the poeticus element in the Leedsii type, than are those of Silver Salver. This is a type of flower that Mr. Wilson has specialized in producing and it is to be hoped that in some future issue it will be possible to have a rather full report on the delicate range of varieties that he has produced not all of which are entirely white or even white with the green tube. Such names as Grey Lady, Addio, Cushendall and so on are all provocative of interest.

In so far as has been discovered here there is no special trick in growing any of these sorts. They respond to any situation that would be good for narcissus but if there were to be any variations they would be in the way of a slightly more moist soil than for some, provided of course that the drainage is perfect.

Cacti and Succulents

W. Taylor Marshall, *Editor*
Director, Desert Botanical Garden, Phoenix

The Desert in Spring

On the deserts of our western states, spring works its magic in a manner more pronounced that in other sections. The last rain in central Arizona fell on December 26th of last year, therefore we would expect no spring flowers and have few or none, were it not for the patient hording of moisture by the Cacti.

First to flower were the beaver tail prickly pears, *Opuntia basilaris*, who produced a profusion of light magenta or pink flowers. Then various species of hedgehog cacti, *Echinocereus* spp., flaunted their scarlet or purple flowers in sharp contrast to the bright yellows of the flowers of the other species of prickly pears. Later the chollas (chō' yas) or cane cacti put out flowers ranging in color from green through browns to dark purple and red, a strong contrast to the large white, nocturnal flowers of the saguaro (*Carnegiea gigantea*) which are flowering as this is written in late April.

The palo-verde tree, which appears as a thorny, leafless, small tree for most of the year becomes a halo of lemon yellow as the thousands of small flowers open in the spring. The creosote bush (*Larrea tridentata*) bears yellow flowers and wooly little fruits simultaneously and the mesquite (*Prosopis juliflora*) leafs out with feathery foliage to indicate the presence of water not too far below ground.

From the window of my study, as I write, a hillside appears almost yellow with its bushes of straw-colored cholla (*Opuntia Bigelovii*) which now bears flowers similar in color to the spines

Wright Pierce

A hillside appears almost yellow with its bushes of straw-colored cholla.

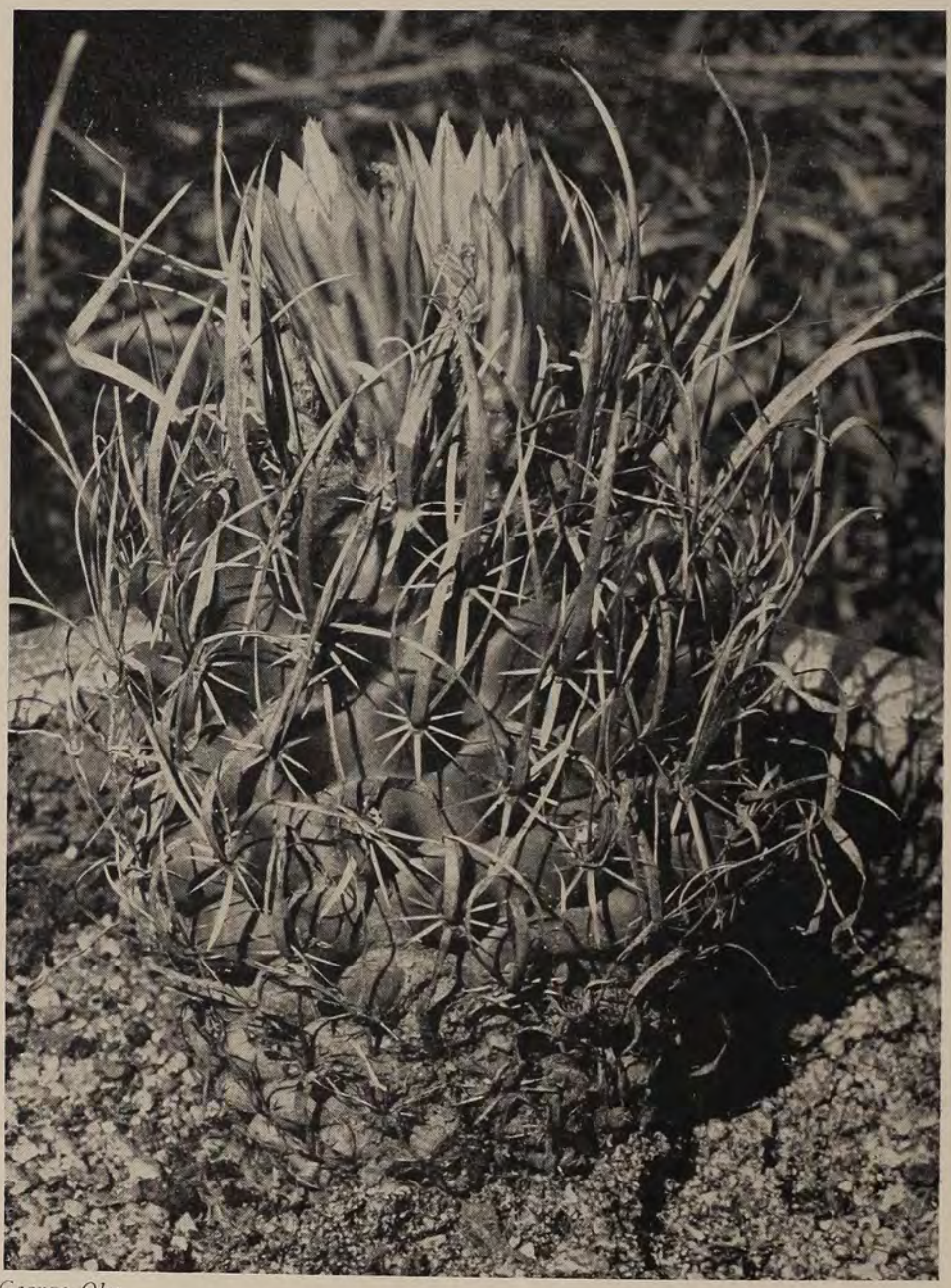
and the adjacent hill glows softly with reds reflected from the flowers of the hedgehogs.

But the most delighted indication of spring was my find of a nest of the Gambel Quail in the grass at the base of a Palo Verde tree in which were found 14 of their brown marbled eggs.

Almost every plant of chollas has its nest of Cactus Wrens, only two or three feet off the ground but secure from depredation because of the vicious spines of the plant. A mourning dove took over last years nest of a thrasher in a tall Cereus very near the central path in our garden and continued her business of housekeeping under the admiring gaze of our many visitors. Before her eggs were hatched a red racer, about four feet long found her nest and would have made short work of the young had I not observed the snake climbing the cactus and routed him.

Yes! Spring on the desert is something very special and must be seen to be appreciated. Through most of the year the spiny vegetation repels all but the true xerophists, who find in the spine patterns and colors much to admire, but when the magic of Spring brings the large and colorful flowers with their almost translucent petals one is forced to the conclusion that not even the Orchid can rival desert blooms in either color or delicacy.

Now Summer is approaching when intense heat envelopes the desert and the eastern tourists desert us for cooler coastal resorts but to those who remain the desert offers the highly perfumed flowers of the Night Blooming Cereus (*Peniocereus Greggii*) and the delicious fruits of the Saguaro and the prickley pears and still later the massive



George Olm

Toumeya papyracantha

barrel cacti will put on their hats of red to orange flowers.

The Genus Toumeya

Britton and Rose erected the genus for single species, *Mammillaria papyracentha* Engelmann, which they knew only from New Mexico. Mr. Robert Peebles has found the plant in Arizona,

[*See page* 188]

Neogomesia agavoides

no mean achievement, when its size and protective coloration is considered.

One to two inches high and less than an inch in diameter, the plant is armed with papery spines, white or straw colored, exactly matching the bunch grass in which it is usually found.

The illustration is one of "blown

up" to permit a study of the details of the small plant which otherwise must be observed under a magnifying glass. The flowers can also be studied in such a picture better than from living material. The fruits are globe-shaped, dry and smooth.

Recently four species of small Mexican plants have been added to the genus, *Toumeya lophoporoides* (Thelocactus, Werdermann), *T. macrohele* (Echinocactus, Werdermann), *T. pseudo-macrohele* (Strombocactus, Backeberg) and *T. Schmiedickeanus* (Echinocactus, Boedeker).

The last addition to the genus was a very small plant with papery spines found near Holbrook, Arizona. It was described as a new genus, new species by Dr. Croizat under the name of *Navajoa Peeblesiana* but was later transferred to Toumeya.

A collection of all six species could be planted in a six inch fern pot without overcrowding.

A new genus of Cactus

Neogomesia agavioides Castenada is a small species of cactus from the state of Taumalipes, Mexico which has a fleshy stem terminated by several, leaf-like tubercles which give it the appearance of a small Agave.

The relatively large flowers arise from new tubercles in the center of the plant and vary from rose pink to deep purple. In many respects Neogomesia resembles a Leuchtenbergia and in other ways it looks like an Aricarpus to which it is most closely allied. Although described in 1941, the plant has not been available to American collectors but plans are now under way to procure a quantity of them from Mexico.

Camellia Notes

H. Harold Hume, *Editor*

Camellia catalogued as "oleifera"

So far as it has been possible to trace the name "oleifera", as related to a particular horticultural variety of camellia catalogued in the United States, it first appeared in the "600" nursery catalogue of E. A. McIlhenny in 1937 where it is listed as "Oleifera—Large blossom, crepe-like, white, faintly washed rose". In the "700" catalogue of the same source, 1941, it is described as a species thus—"5.Camellia Oleifera: a native of China, this beautiful camellia is very rare in cultivation. My collection is fortunate in having secured a plant from the type plant now growing in Kew Gardens, England. The blossom of Oleifera resembles Sasanqua but is larger and more delicate in petal texture and color."

Under the species heading Oleifera in the 1945-46 catalogue, "oleifera" is described thus "—very large, pure white, edged Tyrian rose; some blooms almost pure white; petals large and crinkled". This same disposition of oleifera is repeated in the 1946-47 catalogue.

In 1937, in the *Journal* of the Royal Horticultural Society, Mr. J. R. Sealy of the staff of Kew Gardens, England, a botanist whose attainments are of the highest order, published an article on the species of camellias at that time in England. Of *Camellia oleifera* he said, "*C. oleifera* is not, apparently, in cultivation in this country now".

Opportunity has been afforded to study this camellia during the past two seasons and it is very certain that this

H. H. Hume

Camellia oleifera

particular plant is not *C. oleifera* nor is it a variety belonging to that species. It is a straight horticultural variety of *C. Sasanqua.* The size and shape of the leaves, their dark green color and crenulate margins, the attachment or rather lack of coherence of the stamens and the musty under scent of the flowers place it definitely as a variety belonging to the species *C. Sasanqua.*

The name "oleifera", (by whom first applied to this particular plant, is not known), should never have been used as it is the species name of a camellia, the oil bearing camellia hence the name, and the species *C. oleifera* Abel has no varietal connection with the plant in question. It does not belong there.

Since this Camellia misnamed "oleifera" probably originated in the Orient,

it doubtless has an oriental name which should be used if it can be discovered or lacking that a name that will definitely separate it from *C. Oleifera* should be given it. H. H. H.

Camellia maliflora

Camellia varieties belonging to *C. japonica* are usually properly placed under that species, but a number of varieties have been assigned to *C. Sasanqua* that do not belong there. Exactly how many there are is not known, but this species as represented in this country appears to be a catchall for many camellias that do not belong to it.

Some time ago it was determined that a variety known as Appleblossom belonged to *C. saluenensis* and not to *C. Sasanqua* or *C. japonica,* under both of which it had been placed. Recently an opportunity has been afforded to examine carefully a camellia known as "Betty McCaskill," in the collection of T. J. Smith, McRae, Georgia. This proves to be *C. maliflora,* described by John Lindley in 1827. Hence it is possible to add another to the species already represented in camellia collections in the United States. Formerly the list included *C. cuspidata, C. japonica, C. reticulata, C. saluenensis, C. Sasanqua, C. sinensis,* and now *C. maliflora* is added.

C. maliflora forms an upright shrub with a dense head of stiff slender twigs well furnished with dark green foliage. The leaves are small, thin, glossy on both surfaces, dark green above, lighter green beneath. Flowers are chromatic self colored. Tyrian rose 24 (R. H. S. colour chart) running through three shades 24/1, 24/2 and 24/3. Under some conditions the entire gamut of that color may be included. In the center the color is light but it deepens to the outer petals. Partially expanded buds are particularly beautiful and both in buds and flowers the resemblance in color to that of appleblossoms is striking. Flowers are "incomplete double" and measure a little more or less than 5 cm. across the expanded petals. They are produced abundantly. As a garden shrub *C. maliflora* is a fine subject worthy of more attention than it now receives. It is at least as hardy as most varieties derived from *C. japonica* and it may be even more resistant to cold than they are. H. H. H.

Camellias in Pennsylvania

My garden is in the Susquehanna Valley (North Branch) where the winters are sometimes rather severe. About six years ago I purchased three Camellia plants from a grower in Georgia and have all three. They were quite small, but have grown nicely; all three have bloomed. The past season had one plant, Mina Seidel with 18 blooms, the plant being less than 18 inches tall. A few years later, I purchased some more mature plants in pots. When they arrived they seemed so full of promise, but as time wore on, they started to thin out. First one branch would die and then another. I believe I have found the reasons: (a) soil too alkaline, (b) grown too dry. In fact, I lost several very nice young plants by only one day's neglect in watering.

I grow them in pots. During the early spring, summer and later fall, I have the pots buried brim full on the eastern side of my hot-house, in a cold frame. As frosts appear in the fall, I place glass over the frame and allow them to remain until the buds are well developed. This takes place around December 1. Then the plants pot and all, are dug from the frame and moved into the green house where they are grown at about 40° to 50°. Immediately upon removing them to the greenhouse, I place a mulch of about 2 inches

H. H. Hume *Camellia maliflora* [*See page* 190]

of oak leaf mold on top of pot and keep them fairly well on the wet side. I have discovered that the plants feed from just below the surface of the soil and by using leaf mold, have found that the roots penetrate the mold quite freely. It is during this period of treatment I find the greatest favorable change.

The later varieties are given the same

treatment, except that as they are about to bloom I give them a fresh feeding of leaf mold.

About February 12-22 I move them again to the outside under glass in a cold frame. I have found they will stand considerable frost without any apparent damage.

Have been quite fortunate for I have not any difficulty with pests or disease. However, they must take the same fumigation that is given all the other plants growing in the same hothouse.

My greatest problem is to keep sufficient moisture in the pots. During the blooming period, the plants appear to require more frequent watering.

During the past winter I had about 3 dozen blooms of various kinds and might add, that every bloom brought a thrill that only a patient gardener could feel.

WILLIAM T. DEETER
Danville, Pa.

A Book or Two

Lilies for Every Garden. Isabella Preston. Orange Judd Publishing Co., New York, 1947. 160 pages, illustrated. $2.00.

This is not a rewrite of Miss Preston's earlier 'Garden Lilies' but it has all of the excellencies of the book and more of its own. It is written for the amateur and makes no pretense to be addressed to the expert or to the scientist who probably wouldn't want to be addressed in any case.

It follows the most simple and desirable of structural outlines. Basically it gives as all good plant material books must give a description of the material itself, suggestions at to the difficulties that may arise and the remedies that one must be prepared to bring into action. The whole of Part Two is given over to describing the material. To Part One, which covers most of the points mentioned above, there is added a very clear chapter on Propagation, with notes on hybridizing added to the section on seeding.

Probably the most important thing to remind the prospective reader is that Miss Preston, recently retired, has in her long and most successful professional career, grown the plants herself and produced a series of hybrids which are now definitely garden plants. Her pronouncements are not based on hearsay, discussion about the fireside or anything of that sort and deserve the serious attention of any good gardener who wants to grow lilies.

The World Grows Round My Door. David Fairchild. Charles Scribner's Sons, New York. 347 pages, illustrated. $5.00.

One reads whatever Dr. Fairchild writes with affection and sincere regard and for those of us who have privileged to know him in any way with a remembered feeling of enthusiasm which he himself always lighted in the heart and spirit of every associate.

In his present book which has been reviewed in so many places with major stress laid upon the strange plants he mentions in passing and the alas somewhat stereotyped wonder that is engendered by the names of places the reviewer probably will never see, we have felt that the essential matter has been missed. As a record of plants the book is not too good; as a note book on the places he has visited it is equally unsatisfactory. As the reminiscences of a friend and leader who has dedicated his life to the pursuit of unfamiliar plants in unfamiliar places, always remembering the center of interest of his

adopted country on the edge of the tropics, it is quite another matter.

There are many things about which one might cavil. There is ample room for complaint that too much space is given over the people who are not of necessity important in themselves. There is regret that the thread of the matter grows tenuous at times. But none of this is too important. The thing that really counts is the record of a life which has never failed in discovering the innate beauty of the living world of plants and creatures, and of the man who has succeeded in no small measure in the always perilous task of inciting others to vision, through the most difficult business of a purely emotional approach. In a world in which man himself too often seems to have no vision, the book will give courage to those who have some measure of insight and who wish to enlarge it.

Flower Arrangement for Everyone. Dorothy Biddle and Dorothea Blom. M. Barrows and Company, Inc. New York, 1947. 192 pages, illustrated. $2.50.

There should be no doubt in the mind of any reader that in this year of Our Lord, the term 'Flower Arrangement' is not just a combination of two good old English words, but a technical term with in many cases highly esoteric meanings and in some cases highly debatable implications. If you do not agree, read Chapter Eleven of this book and see how far out of the life stream of the nation you live.

This book is an extremely interesting one. In this reviewer's opinion it is like the little girl in the nursery rhyme, the one who had a little curl right down in the middle of her forehead. You recall! There is much good material in it and much that will doubtless sell it to purely emotional creatures who will then go off gushing. The truly interesting thing is that the authors have deliberately invented, as far as we can discover, a host of emotional connotations to many things that need no connotation. The illustrations themselves, have 'titles' that are amazing. There is also some very loose writing in horticultural matters. The legend for the arrangement on page 24 is "Silken Symmetry". I defy any one who has not seen the cut to guess in advance just what would be meant by that label! On page 27 one meets "Distilled Memory". Personally the reviewer thinks this arrangement is nothing short of 'foul' but he also thinks that it would never be safe or wise or kind to invite an ardent group of flower arrangers to set up a whole show of 'distilled memories'. On page 67 one finds "Symbolic Melody." The legend as a whole is pure twaddle.

There are many good things in the book, however, and they should be sought for. Page 91 shows a charming arrangement and a good legend, but it was God who made the rhythm and not Margaret Carrick. Her only contribution was the gift of vision and choice, two particularly human attributes. Page 97 presents a study in monochrome and a good one, but one doubts that there are any sedums in the composition. Page 104 has a particularly interesting composition but none of the points that interest this reviewer are mentioned at all. The container is in all of its characteristics based on the circle. The arrangement, of carnations, a circular flower, is based on the arc and its placement is purely tangential. Nice design in every way but under no circumstances could it or should it be called "Carnation Cascade" because a cascade has only one way motion and that is not true of this piece. But please explain how in any man's language or jargon could "Sweeping branch lines (develope the design and) *create pleasing voids'?* Although some of the ar-

rangements are pretty bad, the underlying ideas of the series of month by month ideas which begins on page 163, is worth critical consideration.

Flower Arranging for the American Home. Gladys Taber and Ruth Kistner. Macrea-Smith-Company, Philadelphia, 1947. 221 pages, illustrated in color and black and white. $2.75.

This is a very personal volume and both gains and suffers from that fact. It will probably have less than no effect on "Flower Arranging" as any kind of "Art" folk or otherwise. It should have a definite and happy reaction on people who might be slow to undertake arranging their flowers with more than casual attention. The frontispiece for example is very pretty and a good illustration as well, but it is most unhappily titled. One reads: "An old oil lamp base flames with new beauty." There is not one flower used that suggests flame either in color or in line. Mostly florist's junk. But the piece which fills this reviewer's heart with ribald laughter is the legend for Plate 7: "Fruit and Flowers in modernistic vertical for Drama." Who, please, wants a little drama sitting about to leer at him as this one would, with its three drooping bananas hanging from the lip of the "vertical." The color plate that has for a legend "Simple daisies and wild Scotch Broom in a wooden bread tray—much for little" is a sweet deception for the "simple daisies" are tender florists' marguerites and the Scotch Broom, if it is that, is quite overshadowed by the galax leaves that are not mentioned at all. They as a matter of fact from their texture, substance, color and very definite form are the most decisive factor in the composition.

Nevertheless one reads the book easily and with pleasure. One can decide without a moment's hesitation that the authors are people one would like to meet and whom one could rally with safety when opinions didn't coincide. As a human document the book should be read, as a contribution to flower arranging as an art—may be.

The Soil and Health. A Study of Organic Agriculture. Sir Albert Howard. The Devin-Adair Company, New York, 1947. 307 pages, illustrated. $4.00.

By this time it is not necessary to remind readers that Sir Albert Howard's life has been dedicated to studies related to the soil, not so much as soil for its chemical and physical nature but rather as the living base on which and from which life is lived and derived. His concern has been to understand that relationship and to devise and demonstrate the practices that man should follow in order not to destroy but to maintain the soil as a living factor in agriculture, whatever its expression.

His specific battles have been against certain practices in artificial fertilization of soil for crop purposes with secondary reformations in regard to the evils that he feels have resulted from these practices and to persuade the current practitioner that his own thesis is sound and desirable. Although there is nothing to suggest that he himself ever wished to precipitate a conflict, he like all other reformers has had to meet opposition in all of its entrenched expressions and like many reformers he has had to endure the emotional enthusiasms of "followers" some of whom have been emotional but not too sound.

The present volume is interesting but often tiresome reading simply because the author has been too concerned to pile up case histories many of which are not given in detail that would have been more informing with charts and figures; and many of which would have been more valuable to us if they had been taken from parts of the world with

climate pictures closer to our own. Tropical agriculture may be essentially and basically like any other agriculture but its processes are speeded up and agriculture as practiced in Britain is unlike our own in many ways since it is a colder, slower climate in expression.

Since this reviewer had had compost heaps long before he ever heard of Sir Albert and had not to be persuaded on that score, even if he did not know all the details of composting that he has since learned, it may be that his reactions are slower and less gushing than those which have been printed on the dust cover, as expressing opinions of one and sundry Americans, many of whom had recourse to such words as exciting, provocative, revolutionary in regard to the work of one of Sir Albert's followers in this country. This reviewer is not yet prepared to accept all the implications of life and health that are in the volume but he certainly suggests that any one who does not consider all that the book has to teach is needlessly stupid.

Vegetable Growing. J. S. Shoemaker. John Wiley and Sons, Inc., New York, 1947. 506 pages, illustrated. $4.50.

The author is Professor of Horticulture and Head of the Department of Horticulture, Ontario Agricultural College, Guelph, Ontario, and begins his Preface by saying that the book is the outgrowth of material used by him in teaching and in dealing "with a wide range of growers' problems." He acknowledges assistance in reading the texts and in many of the illustrations that are used.

For the person who does not like a book which approaches the textbook there may be some objections to the beautifully clear and succinct fashion in which the material has been presented. This reviewer looks with particular favor on a work in which the purposes of the author are announced and then accomplished. Again, because it has been his problem during recent years, to find a work with clear data on seed production, the reviewer is delighted with the discussions on seed production which form the opening chapters of the book. All that follows is as clearly presented and the inclusion of historical data should please those who may not like the more compact presentation of cultural data. Any one who is interested in growing vegetables, no matter how or where, can and should profit from this book. Highly recommended.

In Quest of Spices. Sonia E. Howe. Herbert Jenkins, Ltd., London, n.d. (1946). 268 pages, illus.

"Politics and pepper may not seem to have anything in common, or diplomacy with nutmegs and cloves, yet these spices have influenced the destinies of several European Powers, who, in turn, coveted, and then conquered those lands where spices grow." With these preface remarks, Sonia Howe takes the reader off on a most delightful cruise of nineteen chapters "in praise of spices" from Adamic Paradise to Timbuctoo, to the Realm of Prester John, to Canaria (from the large number of dogs, not canaries, on the islands), to Capri (abounding in goats), and on to Ormus (where India begins). Then there's Taprobane (Sumatra to the uninitiated), Ceuta (taken by the Portuguese in 1415), Sunda Islands ("one finds here two kinds of fish called Siren: one of half-woman and half-fish; the other—half-woman and half-bird"), "beyond Cape Bajador" and Java-Maggiore (where lives the footless Bird of Paradise), Zeila (a great slave market)and Zanzibar, and finally to Malako (better known as the Moluccas or Spice Is-

lands) and Chersonesus (visited by d'Albuquerque who sought six bronze lions for his tomb and young girls of each race living there, gifts to King Manuel to validate the voyage of discovery—most unfortunately all lost at sea). This is a book to fill many hours too wet for digging in the garden. Then, too, the book is satisfyingly made with tipped-in plates of authentic models of old sailing ships, maps, and the like, not to mention the cuts and tailpieces redrawn from obscure contemporary sources. There is a topically arranged bibliography but no index. Gratifying is the historical accuracy of the text to please the antiquarian. Lore about pomegranates, date palms, dragon trees—to mention a few interlopers—adds to the gardener's reading pleasure.

JOSEPH EWAN.

The Garderner's Pocketbook

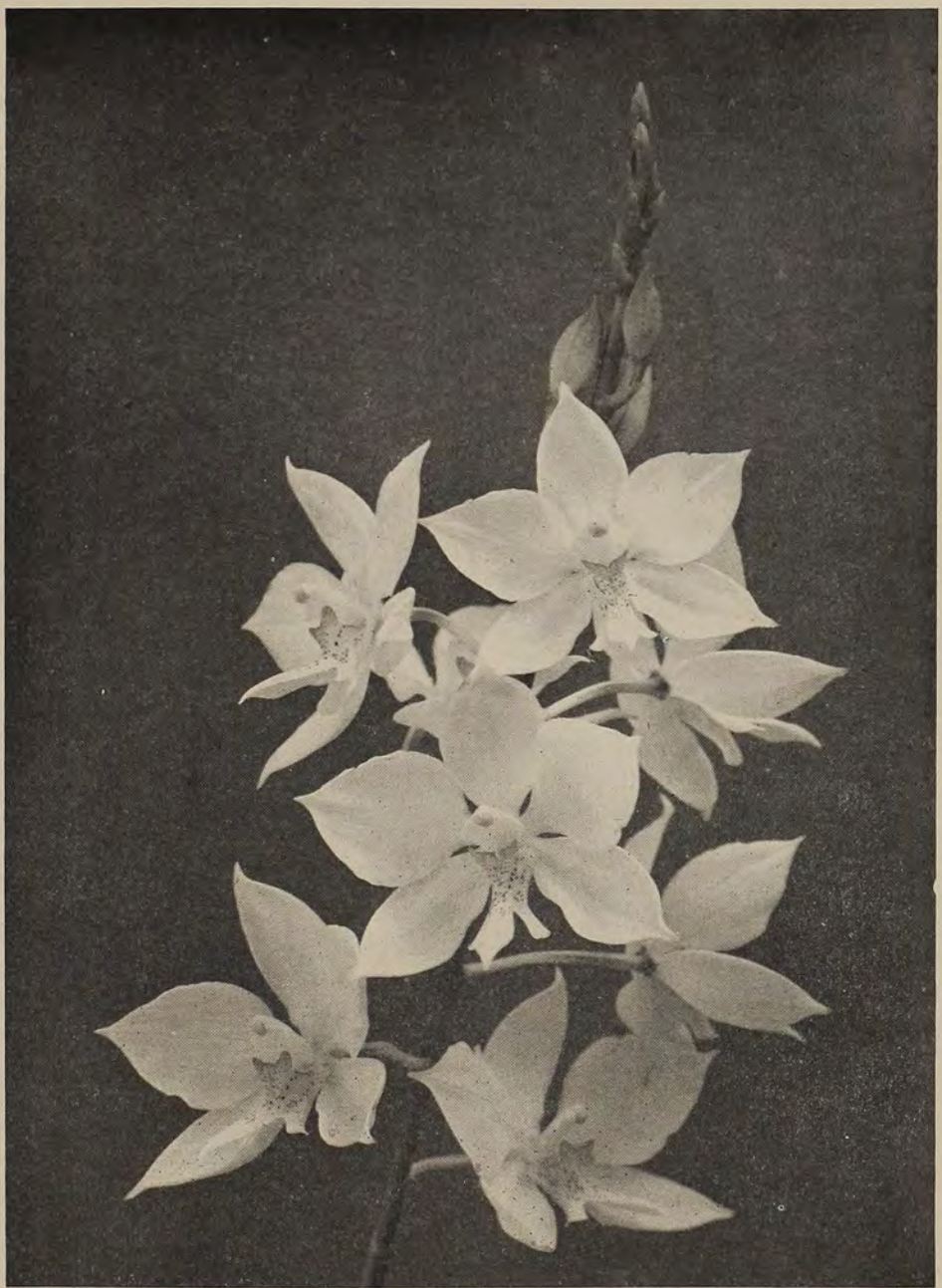
The Virgin Orchid

The Virgin Orchid (*Diacrium bicornutum* (Hook.) Benth., originally included in the genus *Epidendrum,* is native in northern South America, Trinidad and Tobago. It has been included in collections of many orchid specialists but seems to have been one of the more difficult species to grow successfully with its fate usually passed over with some such remark as "Did well for one or two years and then failed." Reasons for these failures are hard to understand as the species appears adapted to a wide range of conditions in nature and is no more tropical in its requirements than many of the commercial varieties of orchids widely grown.

In the U. S. Plant Introduction Garden, Coconut Grove, Florida, plants have done well and increased in number, by division, for many years, having been grown in pots of osmunda suspended in a lath house as well as under glass. The first plants were brought back from the island of Tobago by the Allison V. Armour Expedition of 1932. The plants were collected in February in Man-of-War Bay, made famous by Defoe as one of the two controversial sites of Robinson Crusoe's shipwreck and island home, and were found in flower on the precipitous cliffs rising from the bay at its eastern limit. They were only a few feet above the high tide mark and here, fully exposed to the afternoon sun and frequently drenched with salt spray, they clung to the bare rocks from which a few were gathered by Dr. David Fairchild as he stood in the bow of a pitching lifeboat.

A day or so later the writer, in company with Dr. Fairchild, found this species in an entirely different habitat on the island. From a point where the road crossed a high ridge a large tree with white flowers was seen projecting above the forest in the valley. Upon arriving below the tree it was found to have been dead for some years but the upper trunk and branches had been completely enveloped by the Virgin Orchid whose flowers were so profuse as to attract immediate attention from the distant point where the tree first came into view.

The Virgin Orchid is classed as a "botanical" species but certainly has many requirements of a commercial one. The star-shaped flowers are long lasting, nearly two and a half inches across and have a delicate fragrance. Their pure white sepals and petals, of a texture sparkling like new-fallen snow, are accented by the purple-spotted, 3-lobed, labellum bearing two stub-



Harold F. Loomis

[*See page* 196]

The Virgin Orchid, ¾ natural size.

by golden yellow horns above near the base. The 12 to 20 flowers are borne in succession along the tip of a stem rising 18 to 30 inches from the apex of the pesudobulb and 5 to 10 flowers usually are open simultaneously, making an attractive spray which may retain its beauty for two months or longer.

The plant is composed of hollow, cigar-shaped pseudobulbs 6 to 8 inches long, bearing two or, more commonly, three permanent, leathery leaves, the largest possibly 10 inches long, with two or three smaller dehiscent ones below on the newer pseudobulbs. In wild plants the pseudobulbs usually are inhabited by ants that enter through an elongate slit at the base but no reports have been seen showing that a symbiotic relationship exists between the ant and the orchid. In cultivation, where the pseudobulbs are not inhabited by ants, slits nevertheless develop at their base, proving that they are inherited rather than made by the ants and suggesting that a mutually beneficial association of plant and insect may have originated in the course of time.

H. F. Loomis
Coconut Grove, Fla.

Re Hedges

Donald Wyman's article on hedges in the July 1946 issue of The National Horticultural Magazine brings to mind the use of cypress for this purpose. Monterey Cypress has superseded privet and laurel in these parts as the most common hedge material. It has definite faults—grows very rank and fast, needs frequent cutting, is liable to get bare at the bottom with age and is somewhat tender under conditions approaching zero. It has a tremendous capacity for growth and where ignorantly planted in restricted areas it is bound to give trouble. However, when intelligently used and regularly pruned it quickly makes a very lovely fresh green hedge, and it is tolerant of poor soil and withstands considerable drought.

Arizona Cypress is slower growing, usually more upright in habit, with an attractive silvery green foliage and since it is hardier we are trying to encourage its use in the Victoria area as a substitute for Monterey Cypress.

From the Midwest W. H. Warren
Horticultural Society Victoria, B. C.

Trillium

It seems a trifle unnecessary to call attention to one of our most conspicuous wild flowers. However the merits of this as a garden plant are not well realized.

In the garden the bulb-like roots of the Trillium are planted in late summer or fall after the foliage has died down. These should be obtained from firms specializing in wild flowers or from collectors who are approved by the wild flower preservation societies. Collecting from the woods near large cities serves only to destroy the natural habitats and to deprive others from enjoying them.

The soil may be a good loam or preferably a soil well filled with leaf mold. The situation should be shaded at least for part of the day, and deep shade is not injurious. As a planting under trees and shrubs they are excellent. Woodlands with clumps naturalized in shaded spots are beautiful in the spring.

Of course the flowers should not cut with the foliage as this removes the entire source of food for the plant and may result in the death of the root. Inasmuch as the stems would be very short without the leaves it is better to enjoy them on the plant as garden flowers rather than as cutting material.

Dwarf Buckeyes

A couple of nice small shrubs for specimen use are the dwarf species of buckeyes or horsechestnuts. These are similar to the tree species in the shape of the compound leaves and in the small panicles of flowers on the tips of the branches. *Aesculus parviflora* has flowers that are yellowish white and *A. pavia* has flowers taht are red.

Conditions suitable for most trees and shrubs suit them. They are somewhat inclined to be straggly as they grow older but small plants are neat. Growth would be about 6 inches a year so the plants remain small for some time. The flowers appear on even tiny plants a foot high and are attractive. The foliage is ornamental throughout the season.

Uses for these appear to be as foundation specimens, or as groups in gardens or shrubberies.

While these plants are not listed by very many nurseries, they can be obtained and are relatively inexpensive as they are seed grown and sold only a few years old. Certainly these are nice small plants for a distinctive garden.

Abies fraseri

The Fraser fir or Allegheny Balsam has proved to be a good addition to the evergreens of the Chicago region. While there has been a statement made that it does not like the heat of the summers here, yet plants have withstood some of the worst drought conditions during the past several years without suffering as much as hemlock and pine.

The growth of this fir is compact and has some resemblance to the spruce, however, the needles are flat with two white lines on the lower surface and the bottom side of the branches are flat. The odor is not as pronounced as in the northern balsam, but is present when the foliage is bruised or brushed.

Plants growing in loam and clay seem to be making equal growth while those watered during summer and those not, are showing good results. In many ways this plant is more attractive than the more common spruces and is superior as an ornamental to the northern balsam. Growth is moderately rapid but not objectionably so.

This would be serviceable in any location where a fairly compact conical evergreen can be used.

Clematis

No plants are more admired and neglected than the large flowering hybrids of clematis. The old familiar Jackmani with its masses of rich purple flowers is universally admired and desired when seen in flower. However, the beautiful whites, reds, mauves, pinks, and blues are seldom seen although equally admired. The beauty of these hybrids is breathtaking.

The culture of the hybrids is no more exacting than that of the old Jackmani and in some cases seems to be easier. The soil needs to be a good loam and the plant benefits by watering during drought. Good balanced fertilizer seems to be the best for sound performance. Blooming time is long and in some varieties lasts from June until frost. The hybrids have been derived from several species and the parental influence is seen in the flowering habits. Those of the Jackmani ancestry produce a terminal and many lateral branches which end in flowers and produce a showy mass effect with few scattering flowers afterwards. The ones of the lanuginosa ancestry which is best known in the white variety Henryi, form individual flowers on terminal growth and so the mass effect is never quite as striking but the display continues for the entire season. Both types should be included for best effect.

As the clematis are vines some support must be provided as a trellis, post, wire or string.

There are about forty distinct varieties that should be more widely planted. This selection is large enough for

any purpose and to provide most any color except yellow.

ELDRED GREEN

Hardy Cacti

For the lazy gardener, a miniature desert of hardy cacti is a boon as well as a source of constant enjoyment. No plants are less demanding that at the same time stay put. Once they are placed in the ground, they do not later appear yards away, choking out some saxifrage or androsace before their presence is discovered. Increase in size is slow and orderly. Occasionally, an opuntia may overstep its allotted place but it is a matter of a few minutes to break off a few pads during a dry spell and place them in the ground in a new position.

The wishes of the cacti are easily met. All they ask is unadulterated sunshine, perfect drainage in a soil not too rich and to be let alone. They do not like to be bruised nor injured, particularly in wet weather.

My cactus bed is high on a slope facing southeast, where the plants are bathed in sunlight from dawn to sundown. Nothing, not even a distant tree wards off the blistering rays of the midsummer sun. When the rest of the rock garden droops in spite of watering, the cacti—though they grow leaner—continue to flourish without care.

The soil is hard and stony without humus except from an occasional fallen leaf. Here, drainage is perfect. In early summer, during a downpour, even should it last for days, what water does not run down the hill quickly disappears into the porous soil. There is never standing water about the plants and the cacti shed the rain like proverbial ducks. But the roots seem to take it up quickly as it passes and the plants straighten up and become turgid.

During the dogdays, when drought may descend on the garden for six weeks, the soil becomes packed and unyielding. No self-respecting weed would make its home in this hot, hard ground and if a chance seedling appears, it quickly dies in the arid earth. Only the little annual *Sedum hispanicum* finds it congenial and seeds in around the cacti in irregular pink-grey patches. It is pleasant to turn one's back on the weeds that one should be pulling—weeds that seem to spring up over night in every corner—and look with contentment at the one spot that is weedless.

Once the plants, rootless on arrival, are set firmly in the ground, they need no further care. Roots appear readily and hold them securely in place. The mulches and fertilizers are not for them except that, in my sub-acid soil, they get a casual sprinkle of lime in the spring.

Those species I have tried have withstood whatever a New England winter has to offer, whether bare ground or three feet of snow, ice, sleet or the inevitable January thaw—even two major hurricanes left them unscathed. They come readily from seed planted out of doors though seedlings take several years to reach blooming size and I prefer getting plants. I am growing the following species—all that I have been able to find that were reputed hardy—*Opuntia arenaria, compressa, fragilis, imbricata, macrorhiza, phaecantha, rhodantha, rigidissima* and *tortispina, Coryphanta vivipara, Echinocereus viridiflorus, Neobesseya missouriensis, Echinocereus reichenbachii* and *rigidissimus.*

HELEN C. SCORGIE
Still River, Mass.

Leucojum aestivum (see page iv)
Summer Snowflake

This is one of the familiar bulbs which has been in garden literature for many years and yet is not as common in most gardens as it well might be.

Yale Studio

[*See page* 202]

Cantua buxifolia

In the ever useful Standard Cyclopedia of Horticulture (Bailey) one reads: "They are less popular than snowdrops (Galanthus) to which they are closely related, and have larger flowers, with all the segments of equal size."

Just where they cease to be a common bulbous plant is not recorded. If

one starts in the Gulf States, they are certainly common enough and as one comes along the Atlantic seacoast they are found often enough in gardens so that one does not notice. In the vicinity of Washington, D. C., they are not common or not common enough so that people never fail to inquire about them when shown. This is curious but perhaps can be explained when one stops to recall that here they flower with the middle season to late narcissus varieties and have to compete with these somewhat showier bulbs. They occupy about the same amount of room in the garden and take about the same cultural conditions.

The illustration gives the details of the inflorescences and shows also the somewhat flattened flower stalk which is often twisted as well. A close look will also show the manner of withering of the flowers as well as the elongation of the flower pedicels as the flowers come into full bloom, so that the older larger flowers overtop the newest blown.

In the editor's garden there are bulbs from several sources all of which appear to be almost identical save one lot purchased through one of the regular seed stores which presumably bought the bulbs elsewhere. This clon has the tendency to make some foliage growth in the autumn which is unfortunate as these leaves are always injured and the bulbs correspondingly weakened though never killed. Only an occasional seed pod matures seed here and the normal increase from offsets of the bulbs is more than adequate for the building up of a good supply. The color variations that have been reported in standard texts, namely with yellow or even reddish spots on the segments in place of the normal deep green, have never been found here. If the yellow were to be pure and deep it would be as striking as the golden spotted forms that do occur in Galanthus. As to red spotted forms it would be hard to say, although the autumn flowering species which is tinted with pale rose color is charming. It, however, is a plant of very different dimensions and character.

As a test popular opinion may not be too definitive, but the many visitors to the garden in narcissus time, who usually carry away bunches of flowers as souvenirs of their visit, often ask if they may have some snowflakes added to the bouquets. They make a charming addition to the bouquets which are chiefly late flowered Leedsii and poeticus varieties. If combined with the late flowering double poetaz Cheerfulness, they make that sort look like old ivory.

Cantua buxifolia (see page 201)

The *Cantua buxifolia* in my garden has bloomed this March with an unusual profusion of its orange-crimson, pendant, long tubular flowers; it had fairly dripped color and has been very lovely, the color is really indescribable.

In trying to discover more about it I learn that in his book, "Plant Hunters in the Andes," T. Harper Goodspeed refers to *C. buxifolia* as the nation flower of the republic . . . sometimes called the magic tree of Peru." According to my husband's book, "Trees and Shrubs of California," it is known as the "flower of the Incas." One would always like to know more.

MIRA C. SAUNDERS
Pasadena, Calif.

Plants Wanted

Seeds of *Streptosolen amabilis magnifica* (Browallia) are wanted by the undersigned. He would also like propagation material of Chrysanthemum, Seven Oaks.

FRANK C. PATTERSON,
Greenhouse Dept.,
State Hostpital, Salem, Ore.

SOCIETIES AFFILIATED WITH
THE AMERICAN HORTICULTURAL SOCIETY

(*Continued from page* i)

Takoma Horticultural Club,
A. C. Barret, Pres.,
4719 Brandywine St., N. W.,
Washington, D. C.

The San Francisco Garden Club,
465 Post St.,
San Francisco 6, Calif.

The Trowel Club,
Mrs. J. Douglas Rollow,
4524 Cathedral St., N. W.
Washington, D. C.

Tulsa Garden Club,
Mrs. Allen Henry, Pres.,
1301 South Yale,
Tulsa 4, Okla.

Victoria Horticultural Society,
Mr. Jack G. Beastall, Sec'y.,
255 Battleford Ave.,
Victoria, B. C., Canada

Vivian Garden Club
Vivian, La.

Welcome Garden Club
Mrs. J. A. Reid, Pres.,
400 Speed Drive,
Monroe, La.

Winnsboro Garden Club,
Winnsboro, La.

Woodridge Garden Club,
Mr. George Targett, Pres.,
2948 Carlton Ave., N. E.,
Washington, D. C.

Worcester County Horticultural Society,
30 Elm Street,
Worcester, Mass.

The American Horticultural Society

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

For its members the society publishes THE NATIONAL HORTICULTURAL MAGAZINE, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of membership in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

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

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

The annual dues are three dollars the year, payable in advance; life membership is one hundred dollars; inquiry as to affiliation should be addressed to the Secretary, 821 Washington Loan and Trust Building.