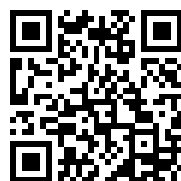

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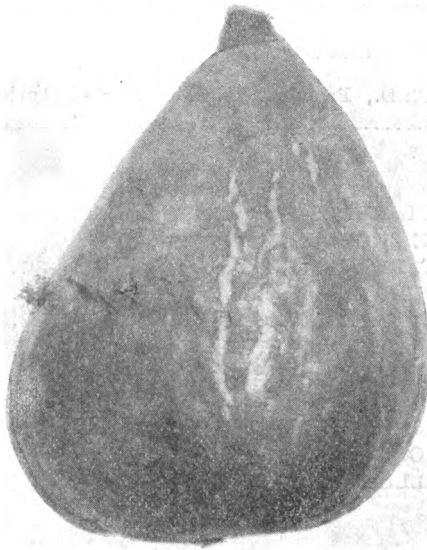
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Bulletin 61.

November, 1903.

STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.
GEORGIA EXPERIMENT STATION,
EXPERIMENT, GA.

THE FIG IN GEORGIA



By **HUGH N. STARNES.**

Be The Bulletins of this Station are sent free to all "persons actually engaged in farming, who make request for the same" and to all newspapers in the State.

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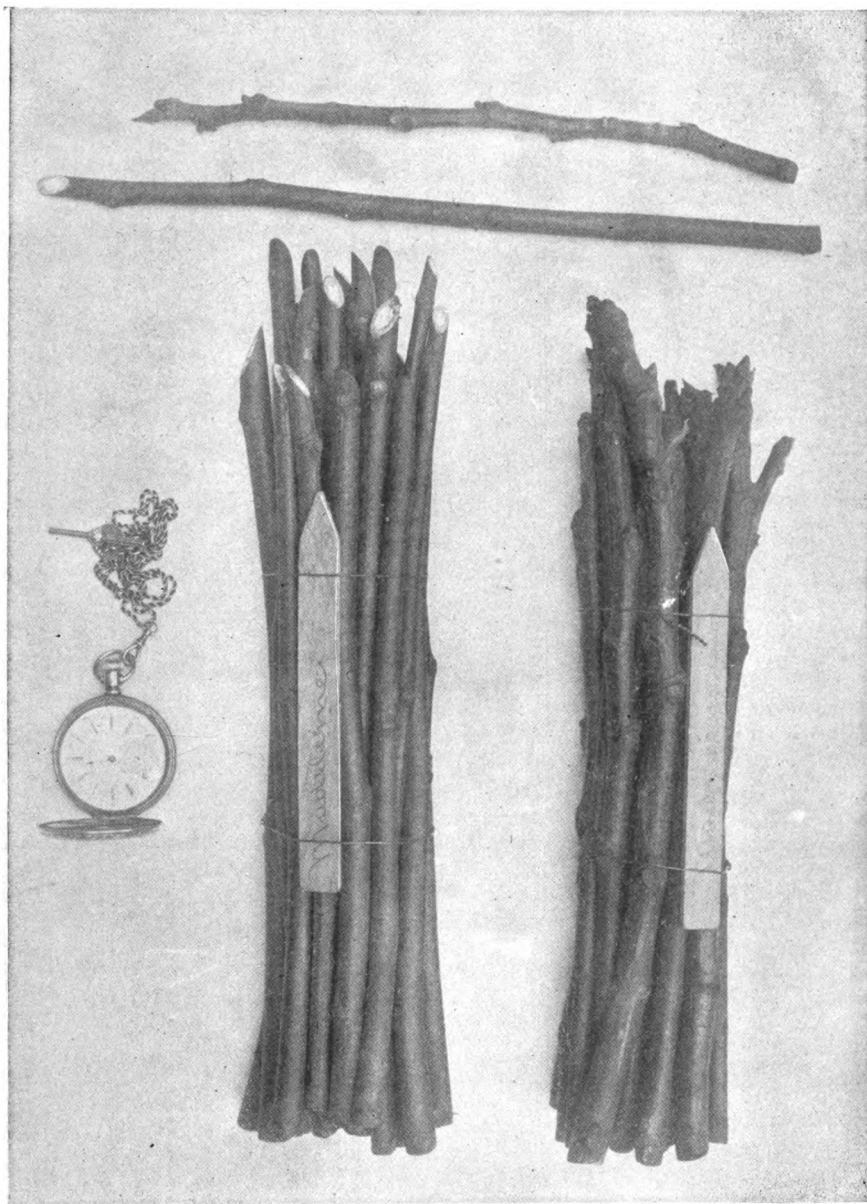


FIG CUTTINGS—Lower bundle, "terminals"; upper bundle, "second cuts". Single cutting on right, "terminal"; on left, "second cut".

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THE FIG IN GEORGIA.

[BY HUGH N. STARNES, Biologist and Horticulturist.]

1. INTRODUCTORY.

The purpose of this Bulletin is threefold:

1. To present simple cultural directions for the guidance of those unfamiliar with the characteristics and management of the fig.
2. To stimulate, in this section, an increased interest in a fruit the importance of which is, in general, too little appreciated.
3. To endeavor to lay some sort of foundation for future improvement in nomenclature—at present extremely loose, uncertain and sadly mixed.

Toward the last mentioned object the co-operation of the Horticultural Department of all of the Experiment Stations of the South Atlantic and Gulf States is earnestly invited. It is only by continued effort, free correspondence and persistent comparison that order can be brought out of the present chaos. Yet surely the end in view is worth some expenditure of time and labor?

It is strange that the bibliography of the Southern Fig should be so meager. Dr. Gustav Eisen¹, of California, has, it is true, quite exhaustively covered the entire topic of Fig Culture in a government publication, and Dr. L. O. Howard² has succinctly treated the Smyrna Fig with reference to the Pacific Slope; but with the exception of the official publications of Professors Earle³ and Price⁴ little attention has been paid this fruit from a distinctively Southern standpoint. To all of these authorities—and especially to the comprehensive work of Dr. Eisen—the writer is indebted for much valuable information.

¹ Bulletin No. 9, Div. Pomology, U. S. Dept. Agr.—“The Fig: Its History, Culture and Curing”; by Gustav Eisen, Ph. D.

² Smyrna Fig Culture in the United States”; by L. O. Howard, Ph. D.—Year-Book U. S. Dept. Agr. for 1900.

³ Fig Culture in the Gulf States”; by F. S. Earle.—Bulletin No. 5, Div. Pomology, U. S. Dept. Agr.

⁴ “The Fig”; by R. H. Price and E. A. White.—Bulletin No. 62, Texas Experiment Station.

Unquestionably the Fig deserves more consideration at our hands than has been heretofore accorded it, and, unless the writer is greatly mistaken, this consideration it will receive; for upon recently presenting a paper on the Georgia Fig before our State Horticultural Society the general interest manifested in the topic was most gratifyingly evident. Portions of this paper—as far, at least, as they happen to serve the purpose of the present Bulletin—will be incorporated therein.

The importance of the fig in our own State is now considerably emphasized by the fact that the growth of our city populations has of late been quite extensive, and as communities increase in size the demand of their citizens for novelties in the way of luxuries and the means for the indulgence of elaborated tastes expand with equal pace. On this account it is now possible to find home markets, within easy reach, for commodities heretofore almost unknown to commerce and consumed only where they chanced to be casually grown—fruits which the commission houses have habitually “turned down” in the past—such as the scuppernong and the fig—because of their poor shipping capacity and the slight demand existing for them in smaller and heretofore (relatively) moneyless communities.

Now a substitute for the scuppernong may possibly be found in other late ripening varieties of grapes, but

THE FIG IS “SUI GENERIS.”

it stands alone, and nothing can take its place. It is sometimes asserted that a taste for the fig is acquired, like that for bananas or olives. This may be true with regard to Northern communities, but it is as difficult to find a Southerner who doesn't like figs as it would be to discover a Georgia darkey repudiating fried catfish and watermelon on the Fourth of July or 'possum and potatoes at Christmas. With us it is a natural taste, inbred, doubtless, for generations, and housekeepers with means in the larger Georgia towns would buy figs readily enough—if they could get them. It is the steady increase in the number of these would-be purchasers that to-day emphasizes the value of the fig as a commercial possibility of the immediate future.

Yet it is to the shipment to the larger towns of

SELECTED FRESH FIGS,

and to the consumption of inferior grades by canneries that the industry must look for success. In Mississippi there already exist extensive canneries putting up preserved figs, and it is reported a profitable and growing industry. Capital will always follow profit, and with an assured supply of this fruit it should not prove difficult to induce Eastern money to “come our way”—especially as the bulk of the fig crop immediately follows that of the peach crop—in Georgia an extensive and seductive adjunct. Moreover, the canneries could readily continue operations after the figs were over with sweet potatoes for the benefit of our Minnesota, Dakota and Montana friends—and for Manitoba and Assiniboia across the border.

DRYING IS IMPOSSIBLE

with profit on a commercial scale in our climate, at present, and will always be, unless, indeed, the development of the Smyrna fig in future should exceed our most sanguine expectations.

That the fig has not sooner received more attention in Georgia is not due to the fact that it can not be successfully grown, but mainly to general unfamiliarity with its characteristics and habits. It is entirely at home throughout the "Wiregrass" and the whole of Southern Georgia; thrives fairly well over the red-clay cotton belt (the metamorphic region) of Middle Georgia, and even in the Northern part of the State, except in the mountains proper, may be safely grown with moderate winter protection.

The fact of its not being more extensively planted in even its natural habitat—the coast counties—may possibly be explained by

THREE REASONS:

1. The slight market demand for it in the past—now no longer a valid objection.
2. Its want of adaptability to orchard culture and conditions.
3. Its soft and pulpy character, which renders it a poor shipper.

Nevertheless, if not over-ripe, the fig will, with careful handling, carry fairly well in berry crates or shallow trays a reasonable distance—sufficiently far, at any rate, to supply our local markets. Yet it must be admitted that its sugar content exists in a highly unstable form and rapidly breaks up into acetous (and even putrefactive) fermentation, and this is a great drawback to successful shipment. It must be picked fully ripe to be worth eating and can not be gathered prematurely like the peach or plum. But a day's wilt somewhat improves its quality and increases the sugar content, provided it is carefully handled. After twenty-four hours, however, the danger line is reached and fermentation is imminent. It must therefore be handled rapidly as well as tenderly. When this is done there is no more delicious morsel known to horticulture—given also the proper variety and soil and a favorable season—quite a formidable array of prerequisites.

A rainy season during the ripening period spells ruin. The fig needs moisture, it is true—plenty of it—but it insists on taking its supply through its root system and elaborating it in its own way and at its own pleasure. It doesn't want its water in the way a good Baptist likes it; it abhors immersion and even objects to sprinkling. Too much atmospheric moisture not only cracks and splits the fruit, but immediately superinduces fermentation—what is known as the "fig sour." Even too much underground moisture will tend to split the ripening fruit through the rapid expansion which it produces. A dry season is therefore much to be preferred by the fig grower to a wet one.

While the fig has never responded profitably, in this section, to

ORCHARD PLANTING,

it has been and may be very successfully grown for family use—with some to spare—and every backyard in the State—at least throughout Middle and South Georgia—would be the gainer for half a dozen fig trees. The fig is essentially a surface feeder; its root system is shallow and peculiarly sensitive. Every one who has propagated it realizes how dangerous it is to permit the roots to dry out during transplanting or even to expose cuttings for any length of time above ground. Their porous character permits such excessive transpiration of moisture that their vitality becomes sadly impaired. Consequently the disruption of the shallow root system by the plow in orchard cultivation is

extremely injurious, while the roots remain practically undisturbed and intact under the harder surface of the backyard and around the home premises.

Banishing the plow altogether from the orchard would of course obviate this difficulty; but with the hoe left as apparently the only means of cultivation, it is evident that the cost of maintenance would be excessive. Even so "the end will justify the means" where there exists an active home-market. Yet this is not absolutely necessary, for the shallowest soil-stirring is practicable when the "narrow-toothed" (or "eleven-toothed") cultivator with rear "leveler," or rake, is used. Unless the land is permitted to become too foul with weeds and grass the Acme harrow will be found a still more economical implement and altogether an ideal surface tool. Deep plowing is ruinous—mere surface stirring is harmless; no other obstacle stands in the way of orchard culture with the fig.

2. INFLORESCENCE AND CLASSIFICATION.

Before taking up cultural methods, it may be well to explain the differentiation and consequent classification of the fig due to its peculiar method of inflorescence or blossoming.

The fruit of the fig, as all know, is a hollow pyriform receptacle, on the interior surface of which are located the flowers. These are of four kinds:

1. STAMINATE or Male—bearing pollen, but of course with no seed carpel at the base.
2. PISTILLATE or Female—with well developed ovaries or seed ears, but, unless pollinated, incapable of development.
3. GALL FLOWERS—sterile organs whose only province is to shelter the *Blastophaga* or "Fig Wasp"—the sole agency possible in the fecundation of the fig, and
4. MULE or Sterile Flowers—incapable of performing any function whatever.

These four types of flowers are not all borne in the same fig at once, and their varied distribution gives rise to three distinct classes (comprising, in all, seven sub-classes) into which our species of fig (*Ficus carica*) is divided. We are immediately concerned, however with the first class, only, though it may be that in the near future Smyrna figs and Caprifigs will assume for us increased interest.

The division is as follows:

Class 1.—**DOMESTICATED** Figs—possibly the best term for the division including the three sub-classes, *Mission*, *Adriatic* and *San Pedro*, which supply the naturally edible product so long utilized by man. This group contains neither Male nor Gall flowers, and is divided as follows:

Sub-class 1.—**MISSION** Figs—the most prominent of the three "naturally edible" divisions. These contain chiefly Sterile or Mule flowers, with a small number of Female or Pistillate flowers—so few, however, that for all practical purposes they may be considered as entirely wanting. There are (in common with the other two sub-

classes) no Male flowers and no Gall flowers. To this division, as Dr. Eisen has shown, should be referred almost all of our Southern and California figs, and nearly all of the European figs, as well, notwithstanding the habit into which pomologists have quite generally fallen of classing all of these under the second division—"Adriatic" figs. While "Mission" figs thus have sterile flowers the receptacle nevertheless develops into an edible fruit, with false seed carpels, which are absolutely incapable of germination. Consequently no seedling can ever originate from the Southern fig; it belongs to a true "Mule" type—yet one attaining, as Dr. Eisen aptly puts it, "pomological" though not "botanical" maturity and ripening *both* its crops into edible fruit when not injured by cold or other vicissitudes of climate and season.

Sub-class 2.—ADRIATIC Figs—differing from the previous division only in the character of the first crop or "Brebass." This crop contains such a large proportion of Female flowers that (not "caprificated") it invariably shrivels and drops before reaching maturity. The second or main crop, containing Mule or Sterile flowers, like that of the "Mission" figs, develops (pomologically) an edible fruit. The inevitable loss of the first crop is therefore the chief distinction between the "Mission" and "Adriatic" sub-classes. It is, however, difficult for the average grower to successfully compare the two by reason of the frequent loss of the first crop by the "Mission" type, also, from outside climatic causes; and there are no obvious "ear-marks" (other than their inflorescence) by which they may be distinguished apart. It is therefore not remarkable that there should arise considerable confusion and uncertainty over the matter. It is sometimes extremely puzzling, even to one reasonably familiar with plant physiology, to determine with accuracy the structure of hundreds of minute, immature flowers crumpled into a compass the size of a cherry, when the "brebas" are shed in spring-time; and frequently extraneous damage (as that of severe frost) to the brebas of some variety of "Mission" fig, recurring for one or two seasons, may lead to the erroneous conclusion that it *never* sets a first crop and hence belongs to the "Adriatic" type. On the other hand the maturity of a single crop of edible brebas locates the variety with certainty in the "Mission" column if it is also known to mature a second crop. "Mission" figs may and often do perfect a crop of brebas; "Adriatic" figs cannot.

Sub-class 3.—SAN PEDRO Figs form a division directly the obverse of the foregoing. While with the "Adriatic" fig the brebas have a pre-dominance of Female flowers and hence fail to develop, with the "San Pedro" sub-class the brebas possess Mule flowers and attain an edible maturity, while the second or main crop has Female flowers only, and (unless caprificated) invariably drop. Each is a "one crop" division—the "Adriatic" type losing its brebas and the "San Pedro" type its second crop—while the "Mission" sub-class, in normal seasons, perfects both.

Class II.—SMYRNA Figs—These are, as their name indicates, of Asiatic origin, and to Syria, Asia Minor, Northern Africa and Greece their cultivation is to-day practically confined. The figs so widely distributed throughout Italy, France, Spain and Portugal are almost entirely of the "Domesticated" or Mule type.

"Smyrna" figs contain only Pistillate or Female flowers. These, if pollinated artificially swell and grow, developing into the finest figs known to commerce. Unpollinated, they dwarf, shrivel and finally drop off. Pollinated "Smyrna" figs dry readily in even a semi-humid

climate like that of California, and present, even in Florida and South Georgia, our only chance or hope (albeit a slender one) of ever developing this branch of the fig industry. "Mule" figs only dry successfully in a rainless region, and here their profitable manipulation would be impossible; that is to say, the product, as compared with Asiatic, European or even California dried figs, would be found so inferior that the attempt would have to be abandoned. This being the case it is altogether unnecessary to enter into a detail of the process of drying in this Bulletin. Pollinated "Smyrna" figs acquire a rich, aromatic, nutty flavor that is exquisite in the fresh product and extends to even the dried article. The finest grades of commercial dried figs are all of the "Smyrna" class. Quite recently their culture has been successfully introduced, on a small scale, into California—the pioneer in the work being George C. Roeding, of the Fancher Creek Nurseries, at Fresno. Yet without the close companionship of the next class—"Caprifigs"—the "Smyrna" fig would be absolutely valueless, as self-pollination is of course impossible.

Class III.—**CAPRIFIGS**, or "Wild-figs" (literally "Goat-figs") were evidently the prototype of the entire race. They rarely develop edible quality and their province in nature is apparently to serve as pollinators for the Pistillate group. This they effect in a most peculiar manner. The "Caprifig" with its first crop, or "Profichi" referred to more in detail further on) which is the one used in artificial pollination, bears three kinds of flowers. First, Staminate or Male, clustered in a compact mass around the interior rim of the "eye" (sometimes termed the "ostiolum" or "little mouth") their anthers or pollen cases blocking the exit like a screen of brushwood. The rest of the interior of the receptacle bristles with "Gall" flowers but there are no Pistillates. In the base or false ovary of the Gall flowers, which are merely degenerate Pistillates, the egg of the *Blastophaga grossorum* or "Fig Wasp"—a minute insect—is deposited, hatches and develops to maturity. The wingless males emerge first and with their powerful mandibles cut into the flowers containing the female wasps, partially release and impregnate them. The gravid females shortly complete the liberating process, and, being winged, at once seek to escape for the instinctive purpose of ovipositing. They emerge from the eye of the "Caprifig" after squeezing through the mass of pollen-covered anthers protecting the exit and seek other fruit in which to lay their eggs. Naturally they would enter the nearest "Caprifig" in the proper stage of development. But meanwhile, if the "Caprifig" containing the colony has been plucked from its stem and suspended from the branches of an adjacent "Smyrna" tree, the female, on emerging, forces her way into a fruit of the latter class, losing her wings in the process, and at once begins a frantic scramble around the interior, searching for the anticipated Gall flowers, in which to oviposit. Failing, necessarily, to find them, and incapable of again taking flight, she finally curls up and dies heartbroken, but not until she and her companions have between them pretty thoroughly pollinated every Female flower in the cavity with the plentiful store of pollen conveyed from the "Caprifig"—thereby insuring the development of the fruit.

It is in this way that "Smyrna" figs are artificially pollinated. The process is termed "Caprification," and requires, of course, for its conduct, the parallel cultivation of a sufficient number of "Caprifig" trees to furnish the necessary quantity of *Blastophaga* to pollinate the crop of Pistillate "Smyrna" figs. It is estimated that some 400 females, on an average, emerge from a normal "Caprifig" and from 50 to 100

figs per tree are needed for the thorough pollination of the crop, while the proportion of "Caprifig" trees to "Smyrna" trees should be, for thorough work, according to Eisen, about 1 to 50.

Seed of pollinated "Smyrna" figs (even when dried) are capable of germination, and from their planting it is possible to originate new varieties—a field of work that at no very distant day may offer an inviting opportunity to the patient experimenter in this section of the South. Yet it should be noted that all "Smyrna" seedlings are not "Smyrna" figs but true hybrids, with the hybrid tendency to revert more or less to the male parent—the "Caprifig"—thus greatly reducing the chance of obtaining a valuable product in the progeny.

To understand how the succession of broods is maintained with the *Blastophaga* it is necessary to examine briefly the habits of the "Caprifig." Unlike most "Mule" figs, which, as previously stated, usually bear but two crops annually—the first crop or brebas, and the second or main crop—the "Caprifig" bears three distinct crops.

1.—PROFICHI—on the old wood—first appearing about December and passing the rest of the winter as "buttons." They are caprificated, (in a natural way) by insects from the third crop, along in March, when about the size of a hazelnut. "Profichi" have many *Male* and *Gall* flowers, but no *Female* flowers, and is the crop used to caprificate "Smyrna" figs commercially.

2.—MAMMONI—on new wood—first setting in June and maturing in August. These have *Male*, *Female* and *Gall* flowers and perpetuate the wasps for their own third crop. They also furnish, from the *Female* flowers, seed capable of germination.

3.—MAMME—on maturing wood—setting in the early fall, passing the winter in a nearly matured state and ripening before the "Profichi" in spring. They contain *Male* flowers and numerous *Gall* flowers and their function is to winter the *Blastophaga* for the natural caprification of the "Profichi"—thus perpetuating the species.

It will hence be seen that caprification is a rather involved process, and it becomes more so should the crop of "Mamme" chance from any cause to meet with accident. In such event the "Profichi" must be caprificated by the importation of "Mamme" that have escaped destruction in some other locality, or "Profichi" obtained elsewhere for caprification of the "Mammoni" and the "Smyrna" crop. The patience and drudgery necessary for the successful conduct of the "Smyrna" fig industry is an essentially oriental characteristic, but it is greatly to be doubted if it is adapted to the nervous energy and hustling disposition of the average American. It should stand, in this regard, upon somewhat the same plane with tea-growing and silk-culture, though it must be admitted that the industry is slowly increasing in California, and it is said that the U. S. Dept. of Agriculture is prepared to furnish a limited supply of *Blastophaga* for colonization to anyone in South Georgia, Florida or the Gulf States who has made a sufficient planting of "Smyrna" and "Caprifig" trees and has brought them up to the bearing age. As the *Blastophaga* already colonized in California are reported to be fortunately free from the parasitic enemies that decimate them in their native habitat it is very much to be hoped that all supplies for other parts of the country will be drawn in future from the Pacific coast and not imported from Asia Minor or Greece, thereby averting one of the chief drawbacks to the successful culture of the "Smyrna" fig.

There are also to be noted two sub-variations or modifications of "Caprifigs," generally regarded as distinct and separate groups, al-

though it is here found more convenient to include them as "modifications"—to wit: "Cordelia" and "Erinocyce" figs.

Modification 1.—CORDELIA Figs.—These form a unique division whose European representative may possibly be, according to Eisen, the "Croisic" fig of France. Its peculiarity is a zone of Male flowers in the receptacle in addition to the Female flowers—and perhaps Mule or Sterile flowers, also, since the fruit is, to a certain extent, edible, and it is not probable that the development producing this edibility is due to self pollination, as this would require the maturity of the anthers at the exact time the stigmas became receptive—a rather unlikely conjunction. The zone of Male flowers produces pithy streaks in the fig, which considerably impair its quality; and, as a matter of fact, "Cordelia" figs are of more interest botanically than pomologically.

Modification 2.—ERINOCYCE Figs.—These are apparently confined to Europe and while differing materially from the "Croisic" or "Cordelia" type are yet, in common with it, only a modified form of "Caprifig." Their first crop (Profichi) contains Male and Gall flowers and their second crop (Mammoni) Female and Gall flowers. Neither this modification nor the preceding is of the slightest economical value.

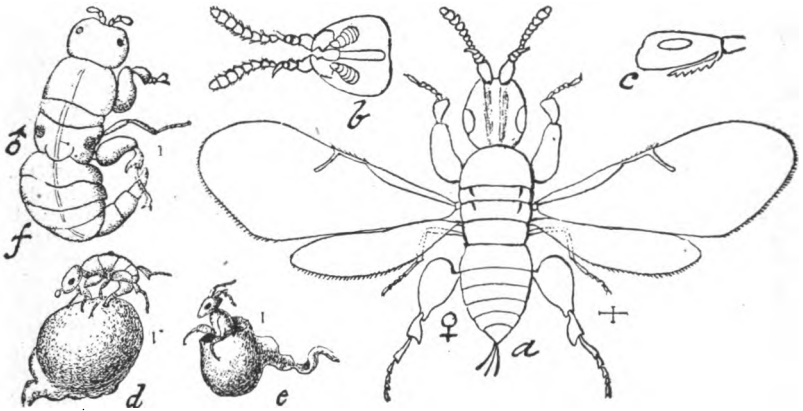


FIG. 1.—*Blastophaga grossorum*; a, adult female; b, head of same from below; c, head of same, side view; d, male operating; e, female issuing from gall; f, adult male enlarged—(L. O. Howard, Year book U. S. Dept. Agr., 1900.)

SUMMARY.
SCHEME OF CLASSIFICATION (in tabular form) BASED ON INFLORESCENCE.

CLASS	CROP	FLOWERS	VALUE OR FUNCTION
I. DOMESTICATED FIGS.			
Sub-class 1— MISSION FIGS.....	{ 1. Brebas..... 2. Main Crop.....	{ Mule or Sterile..... Mule or Sterile.....	{ *Naturally edible. *Naturally edible.
Sub-class 2— ADRIATIC FIGS.....	{ 1. Brebas..... 2. Main Crop.....	{ Female or Pistillate..... Mule or Sterile.....	{ Drops unless caprificated. *Naturally edible.
Sub-class 3— SAN PEDRO FIGS.....	{ 1. Brebas..... 2. Main Crop.....	{ Mule or Sterile..... Female or Pistillate.....	{ *Naturally edible. Drops unless caprificated.
II. SMYRNA FIGS.....	{ 1. Main and only crop—no brebas..... 1. Profchi.....	{ Female or Pistillate..... { Male or Staminat..... Gall or Wasp Cells.....	{ Drops unless caprificated. +Used for the caprification of Smyrna figs.
III. CAPRIFIGS.....	{ 2. Mammoni..... 3. Mamme.....	{ Female or Pistillate..... Gall or Wasp Cells..... { Male or Staminat..... Gall or Wasp Cells.....	{ Carry Wasps through sum- mer. Carry Wasps through win- ter.
Modif'n 1— CORDELIA FIGS.....	{ 1st Crop..... 2nd Crop.....	{ (Character uncertain)..... { Male or Staminat..... Female or Pistillate..... Mule or Sterile (?).....	{ Self developing and partially edible.
Modif'n 2— ERINOCYCE FIGS.....	{ 1st Crop..... 2nd Crop.....	{ { Male or Staminat..... Gall or Wasp Cells..... Female or Pistillate..... Gall or Wasp Cells.....	{ Inedible—drops. Partially edible.

*Prevented from perfecting at any time only by the season's vicissitudes.
†Capriffs are also (when self caprificated) edible.

3. CULTURE.

1.—SOIL AND LOCATION.

Though a surface feeder the fig is yet a gross consumer of plant food and requires, in consequence, liberal nourishment and a strong, rich, yet warm and well drained soil. It especially affects a limestone formation and in a freestone country should be freely supplied with lime as a part of the annual fertilization. "Second bottoms" afford an ideal location, and for this reason it generally thrives in garden plots and about the back door of dwellings, where more or less refuse is too often suffered to accumulate. This not only gives the proper mechanical consistency to the soil and retains abundant moisture, but also serves to nourish the tree manurially, while the root system, in such a location, is usually exempt from disruption and injury.

The exposure should of course be favorable—which means, necessarily, southern, if possible, with adequate protection on the north and northwest. In orchard planting any good land capable of producing a bale of cotton per acre would be well suited, and may, by special fertilization, be made to serve quite well, if open or sloping to the south, with woods to the north and west.

2.—DISTANCE.

The fig can be "crowded" with less harm than might be supposed from its tendency to suffer from an excess of dampness and moisture. Its dense habit of growth is the explanation; for every tree or "cane stool" wraps itself up in its own foliage as with a blanket, however, far apart they may be set. Hence it is only necessary to give sufficient distance between the rows for easy passage and the trees may be crowded in the row till their topmost branches touch—should land be any object. The fertilization, however, must be made to correspond.

Distance also depends largely on latitude, or, more properly, isotherm. In upper Georgia, where the trees are small and the "shrub" or bush form with a stool of canes branching diagonally is employed, 10x15, or at most 10x17 feet is amply sufficient, while a greater distance is of course necessary where the growth assumes ampler proportions and the arboreal form. Yet 15x20 feet may be regarded as a maximum for even the coast region, and perhaps 20x20 for Florida.

3.—FERTILIZATION.

A good annual mulching of well-rotted lot manure is the best fertilizer that can be given the fig—supplemented, when the trees are of bearing age and the growth of wood is lusty and vigorous by the addition of phosphoric acid and potash in the form of commercial fertilizer. Five pounds of acid phosphate and two pounds of muriate of potash per tree, broadcast, would not be too much. Eight pounds of kainit or a peck or so of hardwood ashes may be substituted for the muriate of potash, if desired. On no account should the lime, previously referred to, be omitted. From five to six pounds per tree of air-slacked lime would prove profitable; but it should be applied separately and never in conjunction or mixed with either the lot manure or the commercial fertilizer.

When stable manure is not readily obtainable any good potato or

onion fertilizer, analyzing 3 to 4 per cent. of nitrogen, 8 per cent. of phosphoric acid and from 7 to 8 per cent. of potash, will give excellent results, used at the rate of from 3 to 9 lbs. per tree, according to size or age.

The following formula would present just about the required analysis:

Nitrate of Soda	534 pounds
Acid Phosphate (14%)	1146 pounds
Muriate of Potash	320 pounds
Total	2000 pounds

Any ordinary standard cotton formula, in default of the foregoing, though of not so high a grade, would measurably replace it, if reinforced by a couple of shovelfuls of wood ashes per tree. For the first year's fertilization, in place of the complete formula suggested, cotton-seed meal alone may be used to advantage, 3 or 4 pounds to the tree. This will produce very economically a rapid growth of wood. Afterward, however, the phosphoric acid and potash are essential to superinduce heavy fruiting, if the growth has been satisfactory.

4.—PROPAGATION.

The fig grows so readily from cuttings and therefrom produces bearing wood in such a short time that it would be useless to consider here any other method. While it also responds tolerably to grafting little is gained thereby, since the same cion, used as a cutting, would produce fruit on its own roots almost as soon, certainly bearing a small crop the second year, if a vigorous variety. Where this is not the case grafting may be resorted to, but the fig does not take kindly to "stopping back" and the probability of its advantageous employment is such a remote contingency that it may well be ignored.

Cuttings may be taken either in late winter, just before the sap starts and after all danger from severe frost is past—in which case they may be at once set out in the nursery row, with the terminal bud even with the surface—or they may be cut earlier in the winter, bundled and buried, as with grape cuttings. In either event the cuttings should be long—ten inches or a foot—with several joints or buds, and in diameter from the size of a large lead pencil to that of the little finger—the latter size generally making a thriftier growth. Long cuttings stand a better chance to strike root than do shorter ones, as they are more likely to reach permanently moist soil. The two forms of cuttings—with the terminal bud and those taken lower on the cane—are shown in Plate I (frontispiece) together with the manner of shaping base and terminus and mode of bundling.

Cuttings may be sometimes planted to advantage in the place the tree is to permanently occupy. If the conditions are favorable and the cutting grows off promptly it should attain the height, the first season, of from three to six feet. A few figs may be obtained the second year, and the third season a good crop should result if the tree has not been cut back by frost, which is frequently the case in our climate. In this event it is customary to remove the injured wood, cutting clear to the ground, if badly frost-bitten, and starting a new stool of canes from the root. It is not uncommon, with prolific varieties, to find the cuttings covered with young figs in the fall of the first year; these are not "brebas," although the first and only crop of that season, because they are necessarily borne on the new wood—and they are generally cut off prematurely by frost. Plate II, however, shows

part of a row of *White Ischia* cuttings put out March 17, 1903, from which the writer gathered several well ripened and very palatable specimens of fruit before photographing them on October 20, following—seven months after planting.

If either a cutting or a rooted plant from the nursery fails, when set out in its permanent place, to grow off well at the start, it is useless to leave it and endeavor to bring it out by subsequent attention, such as manuring or cultivation; it is unlikely to ever develop into a vigorous plant; something is radically wrong with its vitality, and it is better to grub it up and replant. In transplanting, only the most healthy and vigorous specimens from the nursery row should be selected—and this is one advantage in using rooted plants. On the other hand, a year's time is frequently saved by employing cuttings. Only the less vigorous need be replaced. In orchard planting, however, it is somewhat difficult to protect the cuttings placed *in situ* during the earlier stages of their growth, and this consideration often induces the owner to select rooted, and therefore larger and more conspicuous plants.

In handling fig cuttings and rooted plants for both home use and shipment neither the cuttings nor the roots should be permitted to dry out. If so, they are worthless, for they never recover their moisture like other plants.

5.—STRUCTURE AND ANATOMY.

The fig neither sets its fruit exclusively on the new wood, like the grape, nor upon the old wood, as with the apple and pear. It is quite catholic and utilizes both, successively. We have seen how the Caprifig sets its "Profichi" on the old wood, its "Mammoni" on the new and its "Mamme" on the ripening wood. The common "Domesticated" or edible fig, of either the Mission, Adriatic or San Pedro sub-classes parallels this habit closely. The first or early crop—the "brebas"—pushes out from the leaf scar on the last developed wood of the previous year—on what in the nomenclature of the vine would be termed "canes"—but it is frequently winter-killed in embryo and fails to materialize. The second or main crop is set in the axil of the leaf on the new wood of the current year (the "shoot," with the vine) which has of course to push out from the cane of the previous year before the fruit becomes visible. It is thus protected in the undeveloped "shoot" from danger of winter-killing, unless the cold is so severe as to destroy the "cane" itself, and in consequence the second crop is reasonably sure. With all figs of the Mission sub-class both the "brebas" and the fruit of the second crop are of course "Mule" figs and unfertile, though edible. With the Adriatic sub-class there can be no edible "brebas" as they contain chiefly Female flowers and hence drop, while with the San Pedro sub-class it is the second crop that fails, but the brebas, being "Mule", develop. While the latter division is very unsatisfactory in the open air in this section it nevertheless includes some of the best and most delicate varieties in Europe; but considerable protection and manipulation are necessary with them. French gardeners make a speciality of this type at high prices for the tables of wealthy Parisian epicures.

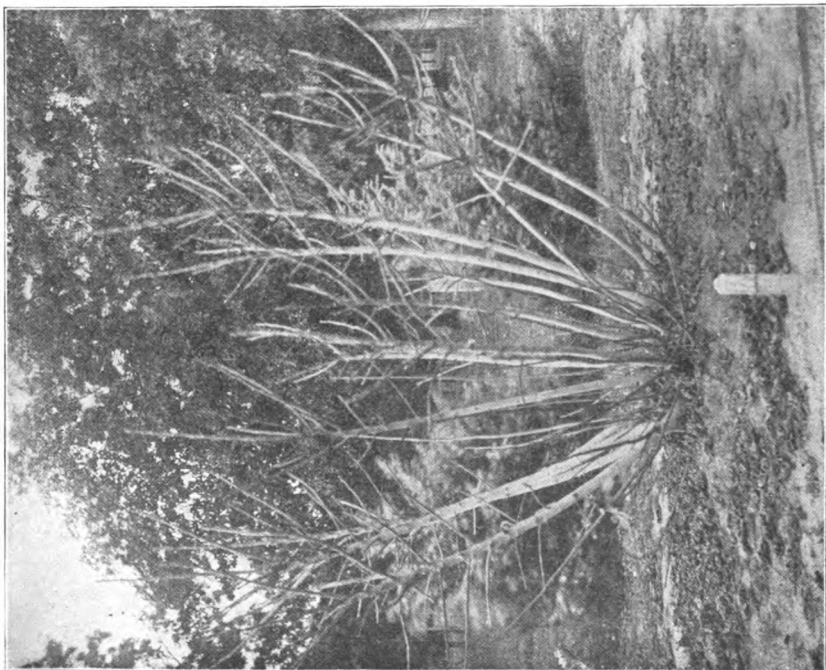
6.—PRUNING AND TRAINING.

Little pruning is needed with the fig, and that little should be formative, only, and for the purpose of ventilation. In lower Georgia, where severe freezes seldom cut down the growth, it is customary to

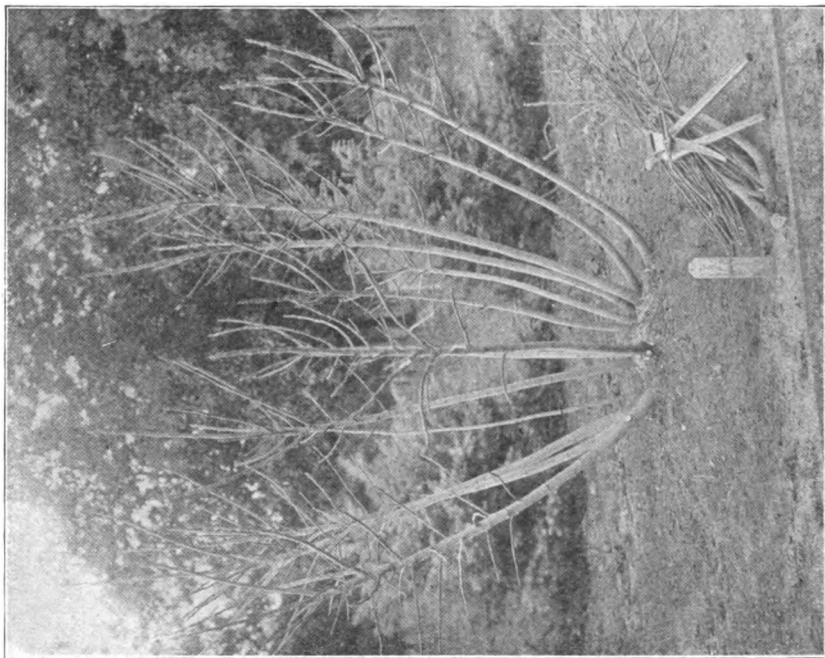


FIG CUTTINGS—Planted Mar. 17, 1903; photographed Oct. 20, 1903.

PLATE III.



1. *Madhuzia* Fig, before pruning.—Shrub or stool form of training.



2. Same tree, after pruning. Note on right the small amount of wood removed.

develop a single central trunk—giving the plant the true tree form. In Savannah, Brunswick and even Augusta ante-bellum fig trees sometimes towered as high as third-story windows. Farther up the State where the wood often winter-kills, the bush or "shrub" form, in place of the arboreal, becomes necessary—leaving several separate canes from a common stool to grow diagonally upward. This insures a maximum output of fruit in a minimum time and also speedy re-establishment in case of injury from blizzards. So uncertain have climatic conditions become since the wholesale destruction of our forests that this precaution is now becoming more and more necessary in latitudes formerly exempt from serious injury. A simple way to start such a stool is to plant two cuttings (or rooted trees) instead of one, placing them "back to back" This forces diagonal growth from the start and is strongly recommended by F. S. Earle.

A cardinal rule to be observed in pruning is never to "stub-back" a limb. When thinning is needed for light and air it is better to remove the entire cane or arm.

7.—WINTER PROTECTION.

In extreme North Georgia, beyond Atlanta and the Chattahoochee, it is always necessary to protect in winter against possible damage by a screen or wind-break on the north and northwest, composed of either trees, buildings or fencing. Indeed this is desirable even in Middle Georgia. Proper exposure has already been referred to under the head of Location—especially with reference to orchard planting. A good location for a fig row, on a small scale, will be found upon the south or east margin of a protecting strip of woods, though not so near the trees, of course, as to permit them to rob the figs of their own moisture and plant food. A close board fence or a building makes an excellent wind-break. In lieu of these a hedgerow of Cherokee or Macartney rose, or of Osage orange (where the latter chances to thrive) will serve. A double row of closely set Carolina poplar makes a good substitute, on account of its inexpensiveness and rapid growth—for it propagates from cuttings even more readily than the fig itself and grows much faster. As it is deciduous, however, it serves only partially as a protection at the time protection is most needed. Some such evergreen material as Amoor River privet, though not so rapid in growth, is a more perfect wind-break. At the Georgia Experiment Station a row of Deodora cedar is employed for this purpose, but it requires some years to establish it and it is not to be recommended for general use.

In the mountains of this State it is necessary to adopt the Northern plan of starting a number of slender canes, sufficiently flexible to bend over and admit of a covering of earth during bitter winter weather. This requires some pains, but the labor is well worth while where one cares much for the fruit.

8.—MALADIES.

Fortunately the fig is tolerably exempt from serious maladies and affections. Few insects and fewer fungi attack it and its worst enemies appear to be wet weather and fruit depredators such as birds, junebugs, wasps and other insects. The cat-bird is easily first among feathered depredators, followed closely by jays, mocking-birds, red-birds and thrushes—all of whom, however, pay their score most royally by the destruction they visit upon insects injurious to other crops;

and, while they are undeniably provoking at times we should nevertheless philosophically welcome them to their share, stolen though it may be! The writer remorsefully confesses having repeatedly sinned, as a boy, by shooting depredating cat-birds out of fig-trees with canna seed—the only substitute for shot obtainable during war times—for the which, being now somewhat more conversant with their true value, he earnestly prays forgiveness.

Among insect enemies Earle mentions a borer (*Ptychodes vittatus*) and a leaf-mite; but the damage they do is inconsiderable. Much more serious are Nematodes (*Heterodera radiculicola*) the minute "vinegar eels" so injurious, in some soils, to the Peach. The best remedy for this, and indeed for any instance of devitalization or loss of vigor in a fig tree, is the mattock. Figs develop so rapidly that a vacancy is soon filled, and the chance of the malady, whatever it may be, involving

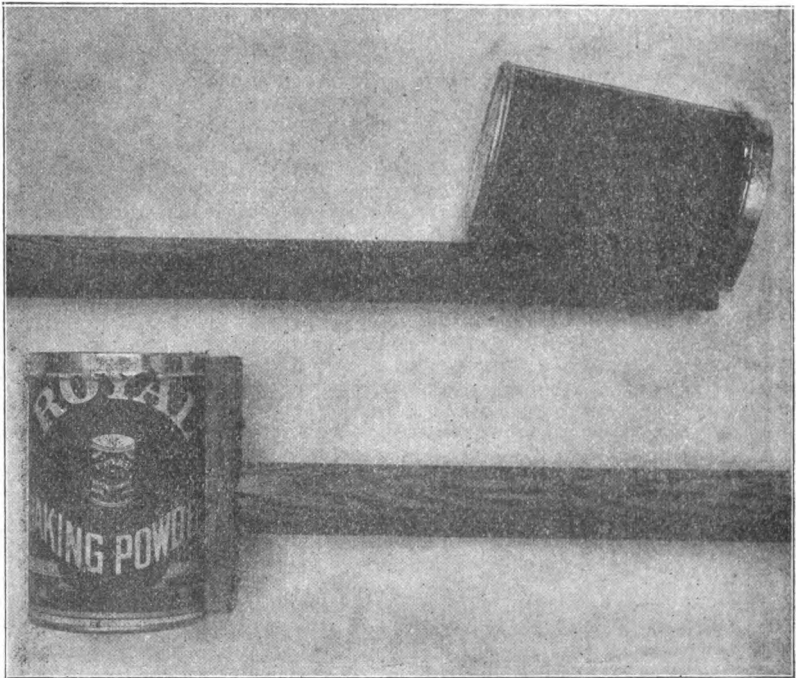


FIG. 2.—Home-made Fig Cups; upper form for perpendicular and lower form for horizontal work.

the rest of the plat, is thereby reduced. Yet it is well to be first assured that some actively injurious agency and not deficient nourishment is the operating cause. Therefore on noting any apparent weakness or deterioration the sickly individual should receive a top-dressing of nitrate of soda. If this fails to renew its vigor and the tree still maintains an abnormal appearance, grub it out and renew.

Fungous affections are fortunately few and do not affect a great amount of damage, if we except the operation of the ferment producing the fig "sour," which is almost always a concomitant of prolonged wet

weather. A leaf rust sometimes prematurely defoliates the trees, but does not do much harm. A root-rot, also (*Ozonium auricomum*) similar to the root-rot of cotton, is mentioned by Earle as causing some trouble; but the writer has never noticed this fungus at the Georgia Experiment Station on other than figs of the San Pedro subclass—a division of little practical value to this section.

9.—GATHERING AND MARKETING.

It is yet a disputed question as to which is the more valuable—a fig that ripens its crop gradually and continuously through an extended period or one that matures its crop within a circumscribed space of time and is over and done for the season. The practical peach grower would be quick to give his decision in favor of the latter, as by a judicious selection of varieties continued shipments could be maintained through the season without the costly process of re-picking a culled-over crop. For amateur culture, however, or for home use, a variety with a prolonged ripening period is unquestionably to be preferred.

Gathering the fig is a difficult and clumsy process when the fruit can not be reached by hand from the ground, on account of its very soft character. It is almost as troublesome to gather safely as is the persimmon, and the slightest fall ruins it. It mashes as flat as a dab of buckwheat batter. Yet the fig tree, while possessing brittle wood, and therefore not to be climbed, is fortunately not lofty, as a rule, and its fruit is readily reached by the help of a step-ladder. From the ground the fruit may be conveniently reached by means of a home-made "gatherer" or "fig-cup" as shown in Fig. 2, constructed very simply by tacking a baking powder can to a pole of any desired length—first filing a portion of the rim of the can to a cutting edge. For horizontal work—reaching out from the ladder for distant fruit—a modification may be made by tacking the can to a pole at a right angle to it, like a dip-net.

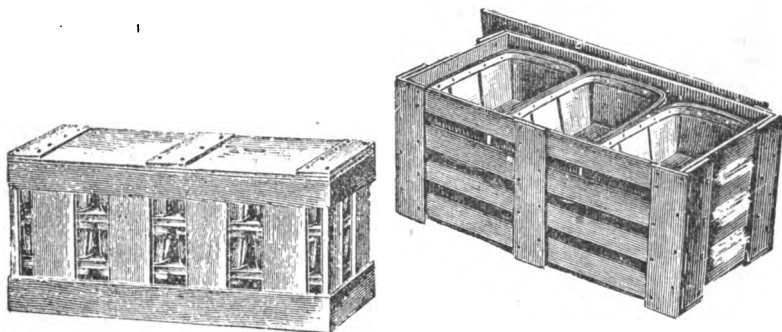


FIG. 3.—Shipping Packages for Figs; on left, 24-qt. crate; on right, six basket carrier.

Shipping must be effected in either berry cups or extremely shallow trays—preferably the former. The standard 24 quart strawberry crate is the best package to use. Only nearby markets are practicable, but of such there are now a sufficiency in this State to consume all the figs, at good prices, that are likely to be shipped for some time to come.

4. VARIETIES.

Experience with varieties differs so greatly with the locality that a definite recommendation is difficult, if not altogether inadvisable. Many considerations regulate a choice. It must be remembered that the chief difficulty in the way of successful fig culture has ever been its semi-tropical habit. Therefore in North Georgia only the hardier varieties should be selected, with secondary reference to quality and productiveness. It becomes a question of what we can get, not what we would like. *Brown Turkey* is perhaps the most suitable variety for that section, and it is by no means a bad selection anywhere, for it is a persistent breba-setter on account of its resistance to cold, a heavy bearer with its second crop, vigorous, healthy and of quite good quality. Its fruiting season is prolonged and it is a reasonably good shipper. Yet it is not early nor particularly handsome in appearance.

As we proceed southward the list presented for selection gradually enlarges—the more tender varieties becoming available. Among the “first early” sorts should be mentioned *Madeleine* and *White Neyrei*—the two almost identical, if not absolutely synonymous. Both are yellow figs, medium to large in size, sugary and of good quality, though soft and spongy. They are both superior to *Lemon*, considerably earlier, quite resistant to “fig sour” and ripen their second crop at the Experiment Station about July 20th. Their chief drawback is their tenderness. In very severe seasons they are winter-killed to the ground, though this has not happened here since 1899, and unless the mercury drops to the neighborhood of zero they generally escape with only frost-bitten terminals. In 1899 the temperature registered 8 degrees below zero. President P. J. Berckmans, of the State Hort. Society, characterizes both these figs as “unproductive,” but they have not been found so here; we have regarded them as quite prolific.

The well-known *Celestial* follows next, with *Black Provence* close on its heels. Both continue bearing until late in September. *Celestial* is of better quality and hardier than *Black Provence*, but the latter has the tougher skin, (although both bear handling well) and its season is somewhat more prolonged—an important feature in any fig. But for their small size these two would stand at the very top of the fig list.

Another good “second early” is *Golden Narbus*, but its season is short. *Magnolia* and *Dalmatian*, brown figs of very large size (see vignette) and absolutely identical, so far as we can detect here, are not suited to this part of the country. Their earliest fruit is fairly good, but later, or on the advent of damp weather at any time, it splits and sours fearfully, and, whatever may be said of it in Texas or other regions, *Magnolia* (or *Dalmatian*) seems worthless here.

White Marseilles, usually regarded the best variety for attempting to dry in this section, is inferior by far to *White Adriatic*, which follows it in maturity, and is a large, handsome and desirable fig, though inclined sometimes to sour and not very hardy. Both are inferior to *White Ischia*, but *White Adriatic* is somewhat similar to it in general characteristics and appearance, though larger.

Lemon, the old standby of the Wiregrass region, comes next, and is possibly more widely planted than any other variety except *Brown Turkey* and *Celestial*. It sours, however, too readily in most localities for thorough dependence to be placed in it and its quality is also rather inferior, although it is a sure, prolonged and heavy cropper.

But the best of the entire list, varying from midseason to somewhat late, is *White* (or *Green*) *Ischia*. *Black Ischia*, its sister, closely resembles it in everything except color and productiveness and the shape of its leaf. The quality of both is the very best; the pulp is bright red and extremely sugary and high flavored, while the seed instead of being "mushy," crackle crisply between the teeth, like those of a dried fig, with a most delightful savor. Left on the tree in dry weather, instead of souring the fruit will shrivel and dry, becoming a bag of sugar—a natural bonbon. Too much cannot be said for its quality, and the growth, vigor and health of both varieties are all that could be asked. But *Black Ischia* is a shy bearer, while *White Ischia* is extremely productive. Both are hardy and stand considerable cold. While accused of splitting and souring in some localities and of poor quality in others, *White Ischia* has never been otherwise than perfect at the Station, even in some very trying weather, and it is pre-eminently (and justly) our favorite.

Among the late varieties are *Brown Turkey*, already mentioned, *Blue Genoa* and *Hirta du Japon*—one of Normand's introductions. The latter is of dwarf habit and an extremely slow grower, but very productive. Yet it is greatly over-rated, for its fruit is hard and insipid, never ripening up properly. *Blue Genoa* is probably the most attractive of all the figs in appearance, but is a shy bearer and of only fair quality, though soft and of large size—long and tapering.

B.unswick, a much vaunted late fig, of enormous size—as big, almost as the old time *Alicante*—does not do well here. It is a shy bearer and its fruit does not present that excellence of quality attributed to it in some other sections.

The foregoing presentation is the result of the Station's experience and the combined verdict of the general public so far as we can ascertain the average consensus of opinion. But every grower has his own individual preferences, and we are constantly forced ourselves to change our ratings, and both amend and emend from time to time.

All of these figs belong to the DOMESTICATED class and most of them to the Mission sub-class—a true "Mule" type, and the only one so far grown in the South. Not one of them dries successfully, and it is by no means certain that even with the introduction of the Smyrna fig, the drying process could be made profitable in our humid climate, although it would doubtless furnish many delicate varieties for the table.

LIST:

SHOWING AVERAGE DATE OF MATURITY OF "DOMESTICATED" FIGS AT
GEORGIA EXPERIMENT STATION.

1. Madeleine July 20.	9. Reed's Numbers Aug. 5.
2. White Nyreii July 21.	10. Du Roi Aug. 6.
3. Celestial July 23.	11. White Marseilles Aug. 7.
4. Black Provence July 24.	12. Hirta du Japon Aug. 16.
5. Golden Narbus July 29.	13. White Adriatic Aug. 21.
6. Dalmatian July 30.	14. White Ischia Aug. 22.
7. Magnolia Aug. 3.	15. Brown Turkey Aug. 24.
8. White Smyrna (?) Aug. 4.	16. Brunswick Aug. 25.
17. Black California (?) Sept. 5.	

5. LEAF TYPES.

On casting about for some process of comparison or correlation by which the classification of the different varieties of "Domesticated" or edible figs might be effected and their identification simplified, it was found that the *Leaf* afforded a readier index than any other feature. A close study of the foliage of some 25 or 26 varieties at the Station disclosed the fact that there are apparently *Five* distinct forms or types of leaf. Every fig we have may be referred to one or the other of these types or groups—the distinction resting entirely on shape or outline and not relating to any other feature, as surface, color or even size. This affords a simple and obvious method of arrangement or distribution and will frequently present the means of instantly confirming or disproving a disputed question of identification or synonymy.

Four out of the five groups by their configuration at once suggest as an appropriate name for each type the leaf of some familiar plant which they chance to respectively resemble, viz: *Okra*, *Grape*, *Maple* and *Oak*. One of them has no well-known leaf representative, and has been called, for want of a better descriptive term, the "*Spoonbill*" group. The different types are therefore as follows: (See Plate IV).

Group I—OKRA LEAF Type—6 varieties—example plate IV: *Dalmatian*.

Group II—GRAPE LEAF Type—4 varieties—example plate IV: *Brown Turkey*.

Group III—MAPLE LEAF Type—7 varieties—example plate IV: *White Ischia*.

Group IV—SPOON-BILL Type—4 varieties—example plate IV: *White Adriatic*.

Group V—OAK LEAF Type—4 varieties—example plate IV: *Brunswick*.

A detail of this division follows:

Group I.—OKRA LEAF Type (Plate V).

In general the leaf of this type is small, the foliage scanty and the trees of the different varieties composing it (if indeed, there is more than one) of slow and weak growth. The leaf is seven-lobed—the two ribs nearest the base forming distinct "back-spurs"; lobes long and slender, with deeply cut sinus; margin of lobes irregularly incised. Petiole rather short and slender. Members of group:

Dalmatian,	Magnolia,	White "Smyrna,"
Reed's No. 1,	Reed's No. 5,	Reed's No. 6.

All of these varieties, however, seem to be identical in every particular and absolutely synonymous.

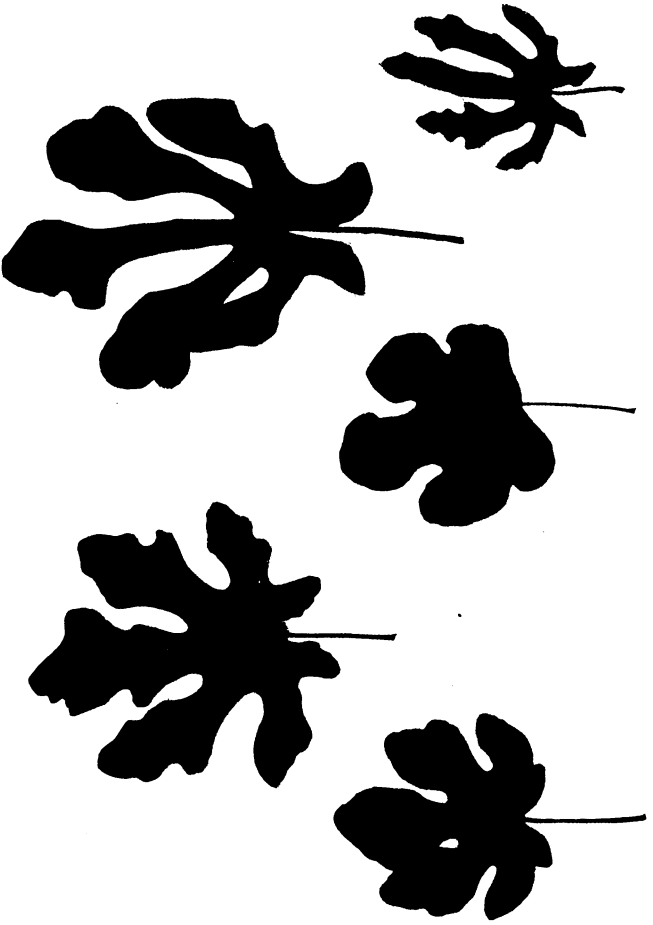
Group II.—GRAPE LEAF Type (Plate V).

This group is characterized by its heavy foliage and the vigor, robust growth and hardness of its members. The leaf is, as a rule, medium to large, leathery and three to five lobed—except one variety (*Golden Narbus*) which, counting its very inconspicuous "spurs", has seven lobes, and presents the transition to Group III. Lobes short and broad, sinus shallow; petiole full medium to long.

Members:

Brown Turkey,	Celestial,	Early Round Violet,
Golden Narbus (transition type.)		

PLATE IV.—LEAF TYPES.



1. "Olive Leaf" Group.
2. "Grape Leaf" Group.
3. "Maple Leaf" Group.
4. "Spoon-bill" Group.
5. "Oak Leaf" Group.

Group III.—MAPLE LEAF Type (Plate VI).

This is the largest of the groups and the most varied in form. Its general characteristic is full and abundant foliage, although there are some exceptions. Leaf medium to large, with from five to seven lobes—spurs, however, very inconspicuous; lobes medium in length and breadth, with sinus of medium depth; petiole medium. Frequently amorphous forms of leaf occur, as noted in plate VI with the ovate-entire leaf of *White Ischia*. Marginal dentation of lobes varies from entire (in the normal type) to a distinctly crenate margin in *Hirta du Japon*. Members of group:

White Ischia,	White Marseilles,	San Pedro,
White Neyreii,	Madeleine,	Hirta du Japon,
Black Ischia, (transition to Group IV).		

Group IV.—SPOON-BILL Type—(Plate VII).

The name given this group is rather awkward and clumsy but the most appropriate that has occurred. Any suggestion of a better term will be welcomed. Yet the purpose of differentiation would be effected were even the group numbers instead of the names employed. The foliage of the members of this group varies from somewhat open to dense but never light. Leaves medium to very large, seven lobed always, including spurs; lobes very long, flaring into an ovate enlargement at the tip; margin entire to crenate; petiole varying from long and stout to short and slender. All unite, however, in possessing the distinguishing "spoon-bill" flare, particularly in the main or central lobe. *Blue Genoa* forms the transition to the last group—that is, if the variety we have under this name is genuine; it has not yet fruited. Members of the group:

White Adriatic,	Black Provence,	Du Roi,
Blue Genoa (?)—transition.		

Group V.—OAK LEAF Type—(Plate VIII).

Characteristics of type, open foliage, but very large, thick, leathery leaf. Invariably seven-lobed, if spurs are reckoned; lobes rather long and narrow, usually "flaring" at apex, incised and crenate; sinus medium to deep; petiole medium to long, stout. The incised lobes, like the leaf of the oak family, form the distinguishing feature of the group. Members:

Brunswick,	Black California (?),	Pregussata,
White Four Season.		

The value of this system in identification and synonymy work has already manifested itself by enabling us to verify the genuineness of the varieties we are growing here as *Brunswick* and *Brown Turkey*, respectively, although Dr. Eisen states that the latter, outside of California, is known as *Brunswick*. In this he seems to be mistaken, so far, at least, as Georgia is concerned. Its advantages will become more apparent as we proceed with the Descriptive List concluding this Bulletin; and it is believed that it will prove of decided value, eventually, if used as a basis for description and comparison by the Horticultural Departments of such Experiment Stations as are interested in fig culture.

Like Price's system of differentiation with the peach by a compari-

son of the pit, the present scheme for the fig relates, it seems, to none of its other features. We find, for instance, that while Group I (the "Okra Leaf" Type) contains only varieties that are absolutely identical, the other groups possess members widely differing in color, size and quality of fruit and habit of growth and season. Even different sub-classes, as "San Pedro" and "Adriatic" are sandwiched between varieties of the "Mission" type in the same group. So the system is intended to apply to all members of the DOMESTICATED or "naturally edible" class alike, without reference to sub-class or character of fruit and plant. Mathematically speaking, it is merely an additional co-ordinate in the work of identification.

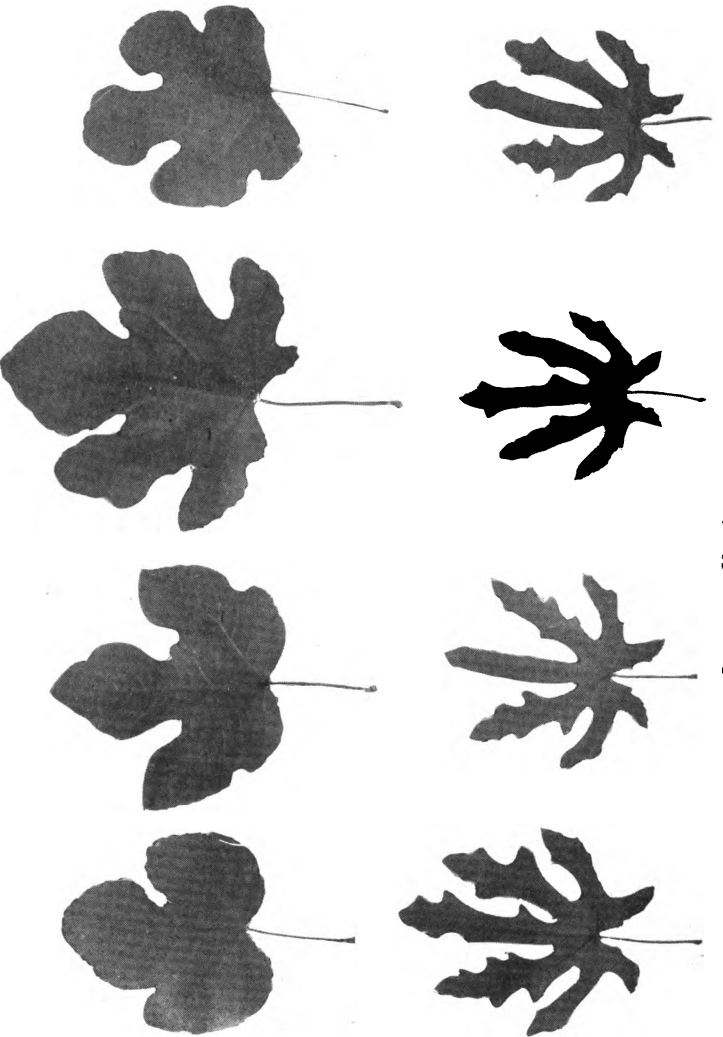
6. DESCRIPTIVE LIST.

[NOTE.—In this list are included only those varieties of the "Domesticated" class that have been actually tested at the Georgia Experiment Station, with the object in view of putting on record their detailed features and characteristics in order that assistance may be derived therefrom in the attempt to build up a more correct nomenclature than that now obtainable in and for our section. In several respects the details are not exhaustive, particularly with reference to iris, scales, neck, and meat, as the importance of these minor features was not fully realized at the time the notes were taken. Yet the description will serve for a beginning or basis and may be elaborated and corrected hereafter. It should be noted that the different varieties are described under the names they were obtained by and grown at the Station, and it is not claimed that the nomenclature is necessarily correct. In some instances we may prove to have varieties untrue to name. The list must be taken for what it may be worth—a starting point, at any rate, for a more correct identification and synonymy.]

Adriatic, White.—Synonyms: *White Adriatic; Grosse Verte; Nebian; Strawberry.*—Growth strong and vigorous. Not very hardy, as it often is winter-killed. Health here perfect. Foliage beautiful; leaf the largest of all the figs, deep green, glaucous; "Spoon-bill" type—seven lobed, counting spurs. Lobes very long and flaring at tip; sinus very deep; petiole extremely long.—Fruit quite large, short pyriform, apex generally truncate—axes *61x50 mm. Neck short, generally obtuse—sometimes acute. Stalk short, thick, persistent. Ribs obscure. Eye large, open; iris red. Skin greenish-yellow, rather thick; peels readily. Pulp red; meat white, with purplish streaks, firm. Seed-rudiments large, crisp. Quality very good to best—rich, sweet and highly flavored. Productiveness rather light. No brebas. Main crop begins to ripen about August 21st. At this Station an excellent variety.

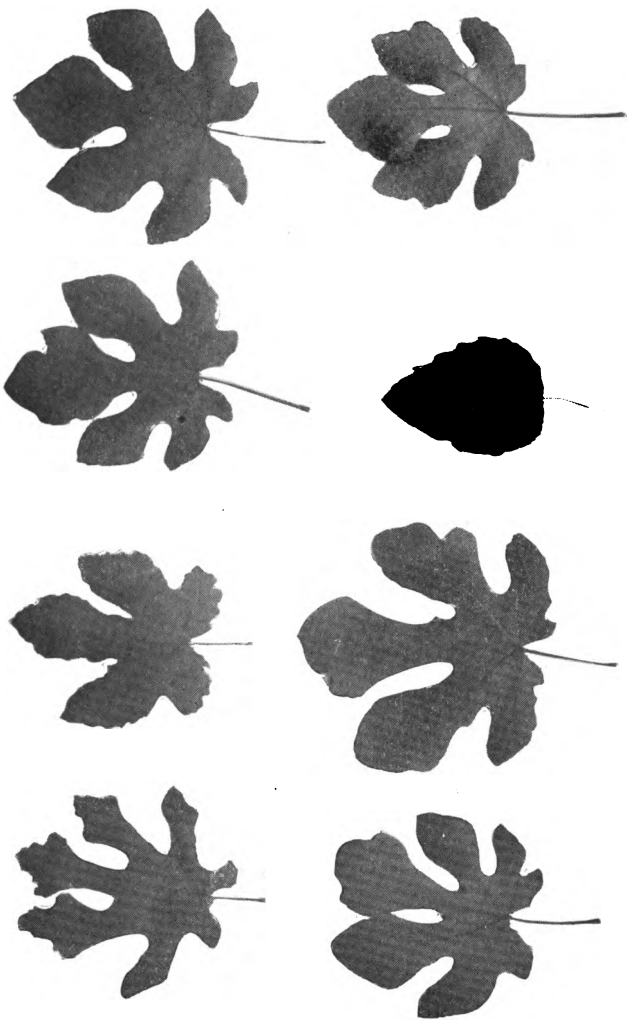
*In all measurements the perpendicular axis is given first, the transverse axis next; mm.=millimetres.

PLATE V—Leaf Types—Groups I and II.



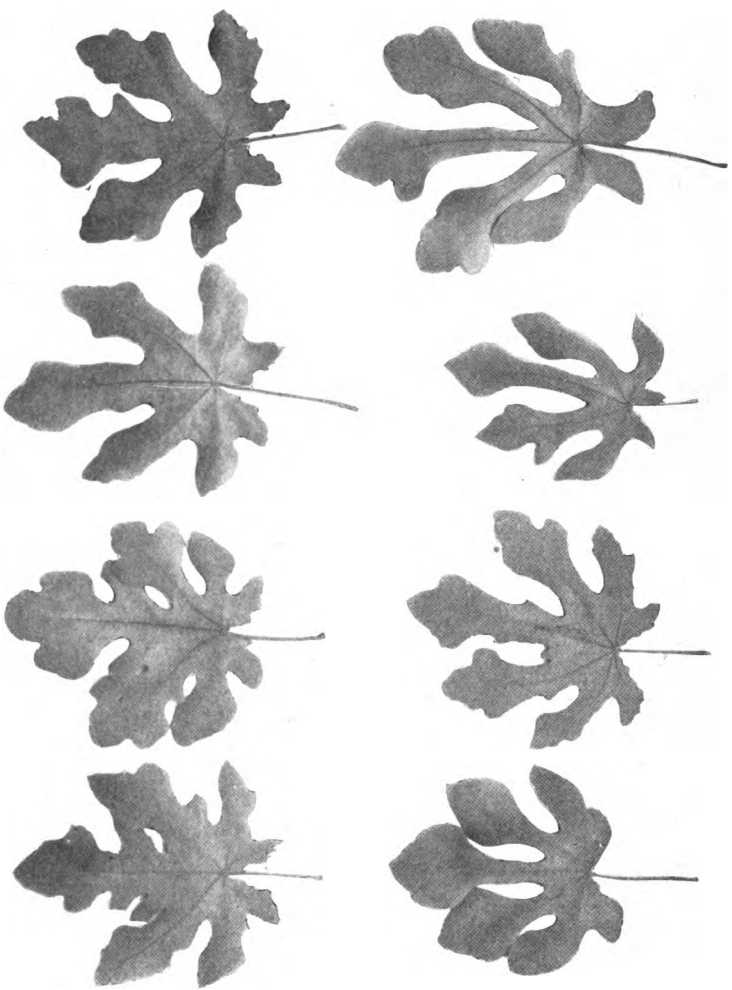
Upper Row—Group I, "OKRA LEAF" Type—Dalmatian, Magnolia, White "Smyrna" and Reed's No. 1, respectively.
Lower Row—Group II, "GRAPE LEAF" Type—Brown Turkey, Golden Narbus, E. Round Violet and Celestial, respectively.

PLATE VI—*Leaf Types*—Group III.



“MAPLE LEAF” Type { *Upper Row*—White Ischia, amorphous form of same, San Pedro and White Marseilles, respectively.
Lower Row—White Neyrei, Madeleine, Hirta du Japon and Black Ischia (transition), respectively.

PLATE VII—*Leaf Types*—Groups IV and V.



Upper Row—Group IV, "Spoon-Hill" Type—White Adriatic, Black Provence, Blue Genoa (?) and Du Roi, respectively.
Lower Row—Group V, "Oak Leaf" Type—Brunswick, Black California (?), White Four Season and Pugnassaia, respectively.

Angelique.—Syns.: *Yellow Angelique; Jaune Hatve; Early Yellow; Early Lemon; Vendome.*—A medium sized yellow fig of fair quality in this State, but the specimens planted at the Station proved untrue to name and hence a detailed description is omitted.

Black California.—See *California, Black.*

Black Havana.—Planted at the Station in 1889 but proved too tender and was discarded in 1895.

Black Ischia.—See *Ischia, Black.*

Black Provence.—See *Provence, Black.*

Blue Genoa.—See *Genoa, Blue.*

Brown Ischia.—See *Ischia, Brown.*

Brown Turkey.—See *Turkey, Brown.*

Brunswick.—Syns.: *Madonna, Bayswater, Boughton,* etc. but NOT *Magnolia* or *Brown Turkey.*—Growth variable, sometimes rapid; tree rather small and straggling; wood long jointed; winter-kills considerably. Leaf medium to large, "Oak Leaf" type, seven lobed, including spurs; sinus deep; petiole medium to long.—Fruit of largest size, 70x 54 mm.; broad pyriform, with swollen cheeks, one generally larger than the other; apex truncate or depressed. Neck usually obtuse or wanting. Stalk short to medium, slender, persistent. Ribs prominent, highly colored. Eye medium to large, open; iris with rosy red scales. Skin smooth, thick, tough, color varying from greenish-mahogany to lilac or violet, darker on ribs, amber about neck. Pulp, pink, soft. Seed-rudiments few, large, soft. A light and uncertain cropper in this section. Quality only fair. No brebas in 1903; main crop began to bipen August 25. Entirely distinct from *Brown Turkey* or *Magnolia*, rut practically the same as *Black California* of our plat.

California, Black.—Synonyms: *Black California; Mission; Black Mexican.*—Growth rather poor, straggling; winter-kills here, though otherwise healthy. Wood long jointed, open; foliage scant. Leaf full medium to large, "Oak Leaf" type, seven lobed, including spurs; deep sinus; petiole long.—Fruit very large, pyriform; apex truncate. Neck variable, sometimes obtuse or even acute—sometimes entirely wanting. Stalk rather long, slender. Eye, small, open. Ribs numerous, distinct. Skin smooth, glistening, leathery, greenish-amber to mahogany-brown, with a lilac or violet tint, lighter on the neck and darker on ribs. Pulp amber-pink, soft and juicy. Seed-rudiments medium, soft. Quality mild, sweet and from fair to good. Extremely shy bearer. Ripened here September 5th. These notes, independently made, tally sufficiently with *Brunswick* to warrant the conclusion that the two, as we have them, are identical. Both are probably *Brunswick*, and neither the true *Mission* fig.

Celestial.—Synonyms: *Sugar; Celeste; Blue Celeste; Violette; Celeste Violette,* etc. Growth excellent, open, free, though wood is rather short-jointed. Hardy—resisting more cold than any other variety except *Brown Turkey.* Perhaps the most universally planted of any in this section—again excepting *Brown Turkey* and possibly *Lemon.* Thoroughly healthy. Foliage dense. Leaf small to medium,

"Grape Leaf" type, three lobed; lobes short, broad with shallow sinus; petiole medium.—Fruit ovate-turbinate, small, 50x29 mm. Neck long, narrow to acute, sometimes obtuse. Stalk medium, slender, fugacious. Ribs few, but distinct. Eye small, closed; iris elevated; scales small and pink. Skin, thin, very persistent, in color pinkish-violet, sometimes amber and lilac; bloom pale blue, quite noticeable. Pulp rose, fine-grained; meat amber, soft. Quality pleasant and very sugary, but with little flavor or character. Enormously productive; seldom or never matures brebas here, but the main crop ripens about July 23rd and continues for over two months. Reputed edible without peeling, which is difficult; it may be—from the standpoint of a billy-goat! But for its small size *Celestial* would easily lead the entire list.

Dalmatian.—Synonyms: *Dalmatia*; *Magnolia*; *White "Smyrna."*—Growth slow, but fairly good; short-jointed, open; healthy. Foliage light; leaf small; "Okra Leaf" type, seven lobed, including spurs; lobes long, narrow; sinus deep; petiole short, slender.—Fruit large to very large, 55x56 mm., axes practically equal; shape pyriform, apex truncate or slightly rounded. Neck very obtuse or wanting. Stalk very short and thick. Ribs indistinct. Eye very large, open. Skin thick, tough, greenish-amber, overspread with brown; would be popularly styled a "brown" fig. Pulp pinkish-amber. Meat amber-white. Seed-rudiments medium to large, soft. Quality good at first but the fig sours frightfully with wet weather and is consequently of no practical value in this locality. Quite productive; begins to ripen July 30th and continues in bearing*—such as it is—till frost. This fig is absolutely identical with that we are cultivating here as *Magnolia*, and also with *White "Smyrna"* (so-called) and with *Reed's Nos. 1, 5 and 6*.

Doree Narbus.—See *Golden Narbus*.

Du Roi.—Growth strong and vigorous, though not very hardy. New wood straight and long jointed, but tree not large. Health good. Foliage dense and heavy. Leaf large and glaucous; "Spoon-bill" type, seven lobed, counting spurs, which are sometimes obscure; lobes not so long as with others of this group and their diameter is broader, closely resembling the type of the "Maple Leaf" group; sinus, however, deep; petiole medium.—Fruit large, 56x59 mm., pyriform or obovate, with its transverse axis the greater. Apex turbinate. Neck acute, sometimes long. Stalk short, thick, persistent. Ribs obscure or wanting. Eye medium, open. Skin thin, yellow. Pulp amber, inclined to pink; meat white. Seed-rudiments small, numerous, soft. Consistency soft and spongy. Quality good, but lacking in character. Extremely productive. Ripe August 6th, and bears till frost. Does not sour readily. If this is the true *Du Roi* it is better here than it is generally reported elsewhere.

Early Round Violet.—See *Violet, Early Round*.

Four Season, White.—Syn.: *White Four Season*—an absurd name, as it evidently belongs to the "San Pedro" sub-class and hence matures only brebas. Has never ripened a second crop here. Growth strong and vigorous; healthy. Foliage full and handsome, "Oak Leaf" group, seven lobed, including spurs, which are pronounced; sinus medium; petiole medium.—Bore in 1898 a full crop of brebas, ripening in June, since which date they have been annually destroyed

*Dates of bearing given throughout this list refer to the maturity of the first ripe figs of the second crop, unless otherwise noted.

by cold. Fruit (brebas) large, yellow, soft, with amber pulp, but coarse and tasteless. Of little value.

Genoa, Blue.—Syns.: *Blue Genoa*; *Black Genoa*; *Black Spanish*.—Our trees of this variety proved untrue to name, but throughout this section the "*Big Blue*" fig, as it is popularly known, is a tall, strong but rather straggling grower and a shy bearer of extremely handsome, large, long, soft fruit, with a blue skin which peels readily. Its quality is only fair to good, as it lacks both sweetness and flavor. Yet its fine appearance is sufficient to recommend it for amateur culture.

Genoa, White.—See *Marseilles, White*.

Golden Narbus.—Syns.: *Doree Narbus*; *Doree Norbus*, *Doree Nobis*.—An excellent "first early." Growth very vigorous and pronounced. Health perfect. Foliage dense and heavy; canopied. Leaf very large and leathery, of "Grape Leaf" group, though marking transition from that to the "Maple Leaf" group; has from three to five lobes and occasionally obscure spurs in addition; lobes broad; sinus shallow; petiole long to very long.—Fruit medium, ovoid, 45x54 mm., the transverse axis the greater. Neck wanting, as a rule, though sometimes present in obtuse form in very ripe and elastic specimens. Stalk short and thick. Ribs close and obscure. Eye small and closed. Skin bright, waxy, golden yellow; attractive. Pulp clear amber; meat white. Seed-rudiments, small, soft. Consistency spongy. Quality good when fully ripe. Maturity July 29th. Crop heavy, but bearing season short. This would be a recommendation in a commercial succession for a nearby market.

Green Ischia.—See *Ischia, White*.

Hirta du Japon.—Syns.: *Hirtu du Japon*; *Hirta*; *Hirtu*; *Japanese*.—Growth slow, but very dense; healthy; habit dwarfish, adapting it to culture in city back-yards and tubs. Leaf medium; "Maple Leaf" group; distinctly five lobed; lobes short and broad, margin noticeably crenate—a unique characteristic; sinus shallow to medium; petiole short.—Fruit medium or below, turbinate, with distinct acute neck. Stalk medium, slender. Ribs very obscure. Eye medium, open; scales small, reddish. Skin smooth and thin but tough, violet red. Pulp, amber; meat white. Seed-rudiments small, numerous, soft. Consistency rather hard. Quality poor, insipid—the most inferior of all our figs. Very productive, however, and a sure cropper, ripening August 16th.

Ischia, Black.—Syns.: *Black Ischia*; *Blue Ischia*.—A strong, vigorous, open, healthy grower, but not so hardy as its sister, *White Ischia*, with equally handsome foliage, but differing from it considerably in form of leaf, which marks the transition from the "Maple Leaf" to the "Spoon-bill" group. It has seven lobes, including spurs, rather narrower than the lobes of the other members of the "Maple Leaf" group, with a deeper sinus; petiole short. Fruit violet-black, but otherwise practically the same in characteristics with *White Ischia*, which see. Immeasurably less productive, however, and in consequence worthless, as it possesses no merit in which it is not surpassed by its sister.

Ischia, Brown.—Syn.: *Brown Ischia*.—Said to be a color variation of *Black Ischia*. Our specimens did not live to fruiting age.

Ischia, Green.—See *Ischia, White*.

Ischia, White.—Synonyms: *White Ischia*; *Green Ischia*; *Brockett Hall*; *Singleton*.—Robust, vigorous, healthy, rather open grower. Foliage thick; leaf medium, "Maple Leaf" group, seven lobed, counting spurs, which are small and indistinct, making it practically five lobed; lobes short, broad; sinus shallow to medium; petiole medium to long. Bears sometimes amorphous forms of leaf entirely without lobes, but with crenate or sinuous margin.—Fruit medium—in favorable locations and seasons full medium—by no means small as generally accredited, as it will average 55x56 mm., the transverse axis the greater. Form turbinate with acute neck; apex rounded. Stalk very short, weak. Eye small, open; scales rosy. Skin smooth, greenish-yellow—more distinctly green than any other variety, even when fully ripe. Pulp rosy red; meat white. Seed-rudiments few and small, crisp. Consistency soft, melting. Quality rich and sugary—the best of all Georgia figs. The fruit shrivels and dries naturally on the tree in anything like favorable weather and does not sour except under continually moist atmospheric conditions. Extremely productive, beginning to ripen August 22nd and continuing until cut short by frost. Decidedly the first choice for this locality, though rather late.

Japanese.—See *Hirta du Japon*.

Madeleine.—Syn.: *White Neyrei*.—Not in any way identical with *Magdalene*—Growth vigorous, strong and healthy, but sensitive to severe cold. Foliage rather open, but abundant; leaf full medium, "Maple Leaf" type, with seven lobes, including its inconspicuous spurs; lobes short and broad; sinus medium; petiole full medium to long.—Fruit medium or above, 42x51 mm., obovate, transverse axis the greater. No neck; apex truncate or depressed. Stalk long and slender. Ribs not prominent, shallow. Eye medium, open; scales large. Skin thick, spongy, greenish-yellow; quite yellow and waxy when fully ripe. Pulp amber; meat white and rather coarse. Seed-rudiments large, few, soft. Consistency spongy. Quality fair; has little flavor, but is a very desirable variety. Quite productive at the Station though reported otherwise elsewhere. Ripens July 20th; season short. There is practically no difference between this fig, as we have it, and *White Neyrei*.

Magnolia.—Syn.: *Dalmatian*.—This variety is so palpably identical in every feature with *Dalmatian* (q. v.) that the same description will serve for both. Neither is worth cultivating here on account of the readiness with which they split and sour in wet weather.

Marseilles, Black.—See *Provence, Black*.

Marseilles, White.—Synonyms: *White Marseilles*; *White Marseillaise*; *White Genoa*; *White Naples*.—Growth fair, healthy. Foliage abundant. Leaf medium, "Maple Leaf" group, seven lobed, including its inconspicuous spurs; lobes rather short and broad; sinus medium to deep; petiole medium.—Fruit full medium to large. 46x50 mm., transverse axis the greater. Form obovate or turbinate-pyriform; neck obtuse or sometimes wanting; stalk short to medium,

thick, terete; Ribs numerous, rather prominent. Apex truncate or slightly rounded. Eye large, open; scales small, greenish. Skin greenish-yellow; pulp amber, meat white, seed-rudiments few, large, soft. Consistency soft and spongy. Quality sweet, juicy and delicious, somewhat resembling *Du Roi*, but better. Ripens August 7, but is not productive and its season is short. Said to be one of the best varieties for drying, but this is of little moment to our section.

Narbus Doree.—See *Golden Narbus*.

Neyreil, White.—Synonyms: *White Neyreil*; *Madeleine*.—Growth strong and free, open, but with healthy and sufficient foliage. Leaf large, "Maple Leaf" group, seven lobed, spurs quite distinct; lobes medium broad; sinus medium deep; petiole medium.—Fruit full medium to large, 47x53 mm., slightly larger than *Madeleine* and slightly differing in shape, though not sufficiently to make them separate varieties; form obovate with distinct though extremely obtuse neck. Stalk somewhat shorter and thicker than with *Madeleine*. Apex depressed. Ribs obscure. Eye medium, open. Skin greenish-yellow. Pulp amber; meat white. Seed-rudiments medium, few, soft. Consistency soft and spongy. Quality fair to good. Ripens July 21st, but its season is brief.

Pregussata.—Synonyms: *Pregussata*; *Pegustrata*; *Pegustrata*.—Probably "San Pedro" sub-class. Has never matured a crop here and supposition is that brebas have been annually destroyed by cold and of course no second crop could mature. Growth poor and weak. Foliage "Oak Leaf" type, very similar to that of *White Four Season*. Leaf large, petiole medium. From U. S. Dept. Agriculture and evidently worthless here.

Provence, Black.—Syns.: *Black Provence*; *Black Marseilles*; *Black Marseillaise*.—Growth vigorous and rapid—one of our largest trees. Foliage healthy and handsome, open below but dense and canopied above. Leaf of "Spoon-bill" type, rather small for that group, seven lobed, including its spurs; lobes long, slender; sinus deep; petiole short and slender.—Fruit small, 41x34 mm., pyriform, neck narrow or acute; apex rounded. Stalk long, thick and very persistent. Ribs slight, wavy, irregular. Eye medium, partly closed; scales large, red. Skin thin but tough, violet-black. Pulp rosy red; meat white. Seed-rudiments small, soft. Of rather firm consistency. Quality good; quite sweet but with little character; not so delicate as *Celestial*, but almost equally as valuable, as it ripens July 24th, and bears continuously until stopped by frost. Likely to prove a good shipper—for a fig. Enormously productive and desirable.

Ronde Violette, Hative.—See *Violet, Early Round*.

Reed's No. 1.—Syns.: *Dalmatian*; *Magnolia*.—Differs in not the minutest particular from that variety. "Reed's Numbers" are a fraud on their very face, since the origination of new varieties from Southern figs is a manifest botanical impossibility. They could at best pretend to be only "selections." As it is they are all precisely the same, are absolutely identical with *Dalmatian* and equally as worthless.

Reed's No. 5.—Identical with *Reed's No. 1*.

Reed's No. 6.—Identical with *Reed's No. 1*.

San Pedro, White.—Synonyms: *White San Pedro*; *San Pedro*; *White St. Peter*; *Brebas*.—Growth rapid and vigorous as to wood, but foliage unhealthy. Attacked here by both *Ozonium* and nematodes. "San Pedro" sub-class, and hence can mature only *brebas*, which in Mexico, according to Eisen, has given it one of its synonyms. It has never borne here. Leaf very large, but drawn and crumpled with disease; of "Maple Leaf" type, with five distinct lobes and obscure additional spurs. Lobes long, broad, obovate, with deep sinus; petiole medium. Entirely worthless here.

"Smyrna," White.—Syns.: *White Smyrna*; *Magnolia*; *Dalmatian*.—Absolutely identical with *Dalmatian* (q. v.) Fruit very large, 66x75 mm., with the distinctive "swollen cheek" characterizing the type, and splits and sours similarly. Of no value here. It would be interesting to know its true name and origin. Price ascribes the introduction of *Magnolia* into Texas to a peddler selling magnolia trees which turned out to be "excellent figs." It is reasonably certain that this fig is Price's *Magnolia*, but its characteristics in this section are not such as to commend it.

Turkey, Brown.—Syns.: *Brown Turkey*; *Turkey*; *Ashridge Forcing*; *Walton*.—A strong, good grower, robust, handsome, hardy, and healthy. Stands more cold than any other variety. Foliage heavy; leaf medium, "Grape Leaf" group, three to five lobed; lobes short, broad and rounded, with shallow sinus and medium petiole. —Fruit medium to full medium, turbinate-pyriform with distinct acute neck; 56x46 mm. Stalk very short and thick, persistent. Apex usually truncate, sometimes depressed, and shape of body occasionally distorted or "lop-sided" but seldom. Ribs few and only moderately prominent. Eye small to medium, partially closed. Skin thin and tough, light greenish-brown, sometimes coppery, tending to violet; color popularly termed "brown." Pulp pink or rosy; meat white or amber-white, soft. Seed-rudiments small, soft. Consistency firm—a good shipper for a fig. Quality good—its *brebas* especially so—and it also sets them well. Very productive also, with its second crop. One of the hardiest and most generally planted throughout this entire section.

Violet, Early Round.—Syns.: *Early Round Violet*; *Ronde Violette Hatve*, etc. A miserably straggling grower; foliage of "Grape Leaf" type; leaf full medium, three to five lobed, broad with shallow sinus and medium petiole. Has never borne at the Station and seems entirely worthless.

White Adriatic.—See *Adriatic, White*.

White Four Season.—See *Four Season, White*.

White Genoa.—See *Marseilles, White*.

White Ischia.—See *Ischia, White*.

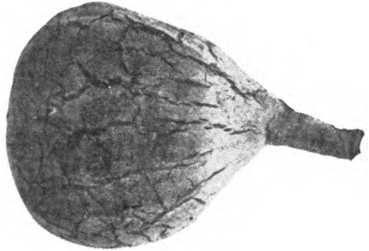
White Marseilles.—See *Marseilles, White*.

White Neyreil.—See *Neyreil, White*.

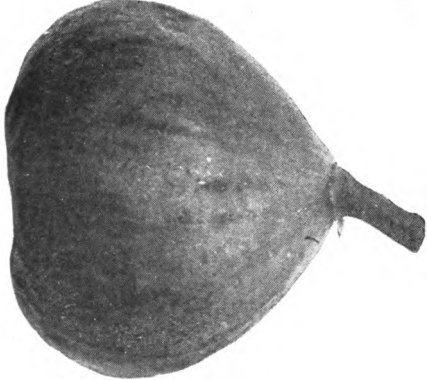
White San Pedro.—See *San Pedro, White*,

White Smyrna.—See "*Smyrna*," *White*.

PLATE VIII.



CELESTIAL.

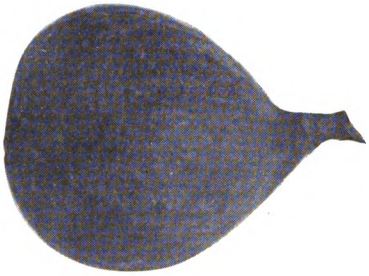


WHITE NEYRELL.



MADEIRA.

PLATE IX.



BLACK PROVENCE.



GOLDEN NARBUS.



DALMATIAN.

PLATE X.



MAGNOLIA.



WHITE "SMYRNA."



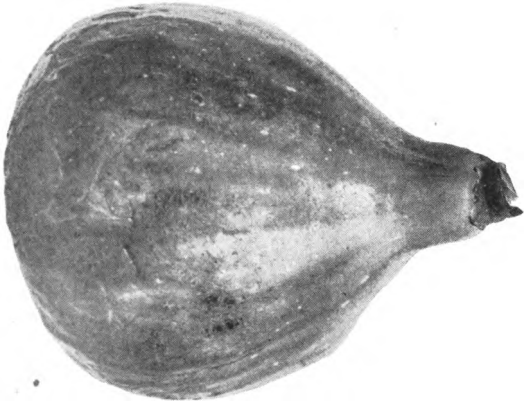
DALMATIAN.

PLATE XI.

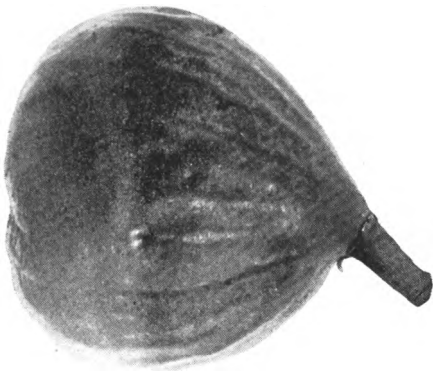


REED'S NO. 1.

PLATE XII.



DU ROI.

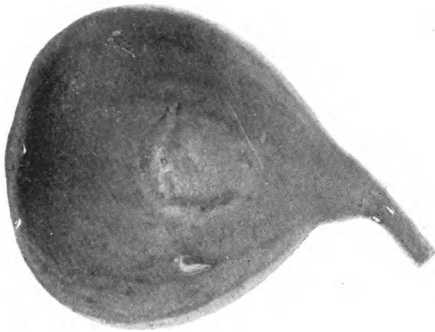


WHITE MARSEILLES.

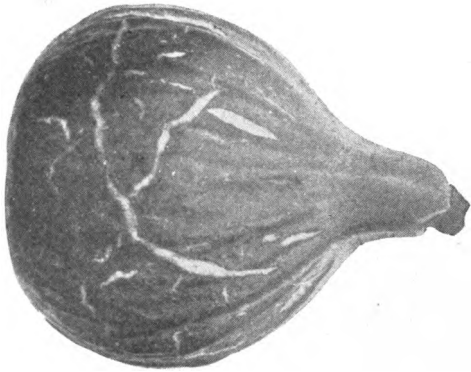
PLATE XIII.



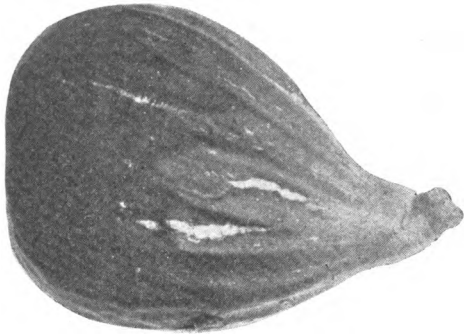
WHITE ADRIATIC.



HIRTA DU JAPON.



WHITE ISCHIA.



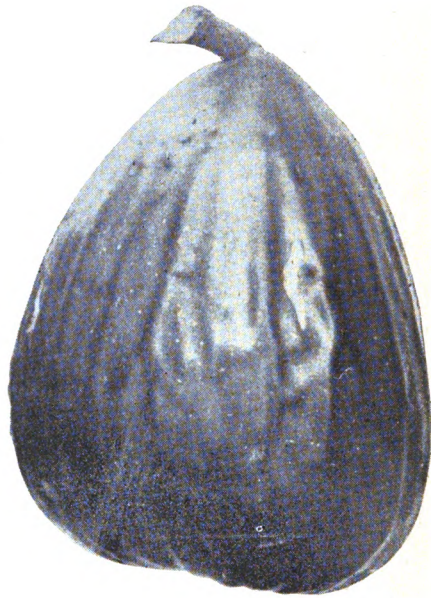
BROWN TURKEY.

PLATE XIV.

PLATE XV.



BLACK CALIFORNIA (?)



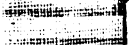
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 - 41.—OCTOBER, 1898.—Corn Culture.
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 - 53.—JUNE, 1901.—Second Report on Grapes.
 - 54.—JULY, 1901.—The Pickle Worm.
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 - 56.—JANUARY, 1902.—Cotton Culture.
 - 57.—AUGUST, 1902.—Cantaloupe Culture.
 - 58.—DECEMBER, 1902.—Corn Culture.
 - *59.—DECEMBER, 1902.—Cotton Culture.
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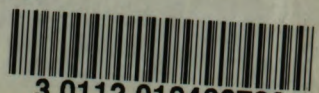




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