

Volume

Number 4

Supplement to

**FLORIDA**  
**QUARTERLY**  
**BULLETIN**

OF THE  
**AGRICULTURAL DEPARTMENT**

OCTOBER 1, 1914.

**W. A. McRAE**

COMMISSIONER OF AGRICULTURE  
TALLAHASSEE, FLA.

**WOOD USING INDUSTRIES OF  
FLORIDA**

Entered January 31, 1903, at Tallahassee, Florida, as second-class  
matter under Act of Congress of June, 1900.

THESE BULLETINS ARE ISSUED FREE TO THOSE REQUESTING THEM

T. J. APPLEYARD, State Printer,  
Tallahassee, Florida

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no.4 suppl. [a]

# COUNTY MAP OF STATE OF FLORIDA.



**ARTICLES ON WOOD-USING INDUSTRIES  
OF FLORIDA.**



## NOTE

The investigation upon which this report is based was undertaken by the Forest Service in co-operation with the Department of Agriculture of the State of Florida, the work being done under the direction of O. T. Swan, in charge of Industrial Investigations, United States Department of Agriculture, Washington, D. C. The statistics were compiled from data collected in 1912, covering a period of one year. The State Department of Agriculture is authorized to publish the findings of the investigation.



# REPORT ON THE WOOD USING INDUSTRIES OF FLORIDA.

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By HU MAXWELL.

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## P R E F A C E.

Florida extends farther south than any other State, and approaches within sixty miles of the torrid zone. It covers six and one-half degrees of latitude. No part of the State has a cold climate, but many tree species which flourish in the cool Appalachian Mountain ranges extend into northern Florida, and there find the boundary of their ranges. The southern portion of the State has a sub-tropical climate, and the vegetation shows it. Where there are soil and fertility enough to support vegetation, it is very dense. Trees belonging to tropical regions have gained a foothold along the southern coasts and upon the hundreds of islands and reefs lying near the shores of the peninsula. Several tree species are found there and nowhere else in the United States.

The greatest length of Florida is 700 miles, and its average width is 90 miles. Its area is 58,680 square miles, of which 4,140 are water. Its coast line is longer than that of any other State, and notwithstanding much shallow water near the shore, there are a number of excellent harbors. No point in the State rises more than 300 feet above sea level. Delaware is the only State which does not at some point attain a greater elevation than Florida.

The surface of Florida is far from being a dead level, though the differences in elevation are small. The northern portion is diversified with rolling hills and gentle slopes. The south half has no hills, but irregularities of surface are numerous. Some of the red soils which

abound in Georgia seem to have overlapped into portions of northern Florida; but in the southern part of the State, the white sand worn from the coral reefs and limestone deposits covers most of the surface, and in some localities the great coral reef which forms the skeleton of south Florida, protrude through the thin sand covering, and appears at the surface. Low swales and depressions abound in places, and these have accumulated and they hold black muck which looks like wet pulverized charcoal.

The whole peninsula was originally wooded, except about ten thousand square miles of swamp and coral ledges known as the Everglades. A few trees of fair size grow in that region, but most of the Everglades is treeless, and during half of the year is covered with water from a few inches to several feet deep. Tall, reed-like grass grows out of the water, and at intervals over small flat islands, a few inches above water, on which grow thickets of myrtle, bay, and other bushes. Little, if any, of this growth ever attains a size fitting it for use, and the Everglades have never contributed to any considerable extent to Florida's lumber supply.

Tropical species are found in the rocky hammocks of the southern part, where they frequently grow in almost impenetrable jungles; but when the hammock land ends and the sand begins, the hardwoods give way to Cuban and sand pine, and the change from a rich and luxuriant vegetation to a thin and poor one is often almost instantaneous. The pines in the southern part of the State are generally but not always small. There is abundance of rain, but in many places the white sand contains so little humus that trees do not reach a large size.

Agriculture has not yet greatly lessened the timber areas of Florida. About one acre in eight has been cleared. In many parts, in the southern half of the State particularly, the forest cover is so thin that the woods afford about as good pasturage as if the trees were not



there. In the northern part, where the hardwoods of the Appalachian region overlap on Florida and soil is better, the forests are generally much heavier.

Many of the Florida rivers are ideal as driving streams for logs. The currents are sluggish, and the water usually deep. There are a few bars and no rapids. On small streams the chief obstacle in the way of log driving is frequently trees which grow along the banks and down to the extreme low water mark. These trunks sometimes so nearly close the channels that little space is left for logs to pass through. That difficulty is not often met on the larger rivers.

The study of the wood-using industries of Florida was made in the spring of 1912, and was carried out under the same plan as other similar State studies. All known manufacturers of wood commodities in the State were sent blanks to be filled, showing the extent and character of their operations, the kinds of woods employed, and the cost of the lumber used. Those who neglected to reply to the mail request were visited and the desired statistics were procured in nearly every instance. The accompanying tables will show summaries of the result. The total annual output of manufactured wood commodities in Florida ranks rather low compared with some of the other Southern States, but high compared with many of the Northern and Central States. The Southern States which exceed Florida in total product are Louisiana, Texas, Arkansas, Mississippi, Alabama, and North Carolina.

Florida is manufacturing its softwoods into flooring, ceiling, siding, sash and mill products, but is not yet doing much with its hardwoods. No States south of North Carolina, Tennessee, and Arkansas are active in the way of manufacturing their hardwoods. Florida is doing what other Gulf States are doing; that is, cutting pine and cypress, and leaving the rest. These species are most abundant, and under present conditions there

is more money in them than in the smaller and more dispersed hardwoods; but the people of Florida should not lose sight of the fact that they have a rare lot of hardwoods and that there is a good market for them if pains are taken to reach that market in the right way.

More than 95 per cent of the wood now passing through Florida's factories is pine and cypress. These species are exploited at the expense of all others. While they last, they will make the lumber business profitable, but when they are gone, the wood-worker's attention will turn to what is now being neglected—the hardwoods.

Florida appears to be suffering more from forest fires than most of the other Southern States. The fires are small and slow. They do not attract much attention as they creep along among the pine, but they get in their deadly work no less surely, though more slowly, than the forest conflagrations which wipe out many square miles in one stretch. The traveler in Florida, almost anywhere outside the boundaries of the swamps, is soon accustomed to the sight of long lines of fire which keep close to the ground. The blaze may not be more than a foot high, but when it has passed, it leaves every tree seedling dead. The mat of saw palmettoes, which nearly always casts a low shade to protect the ground, are scorched brown wherever the fire touches them. They may sprout again the next year, and tree seedlings may come up again, but the fire will follow, and every visitation leaves the ground more barren. No forests will stand fire indefinitely, and Florida's in every part of the State are showing the results of burnings.

The control of forest fires in Florida should be easier than in most States, because the country is flat, the woods often open and thin, and watercourses numerous. But efforts to control are infrequent. Persons well acquainted with customs in the State say that ten fires are purposely set, for every one extinguished. The Florida razor back hog is indirectly one of the forest's worst enemies.

It is a gaunt, ungainly animal, adapted for foraging and built for speed, and it roams the woods in a never-tiring search for something to eat. In the late winter the owners of the hogs go out with a box of matches and burn the range. That clears away old stalks, and tender shoots spring up with a plentiful supply of swine pasture for a few weeks. The men who set the fire care little for the young trees destroyed and the old trunks weakened. A thousand seedling pines perish that a hog may lay on a few pounds of fat; and Florida sentiment generally does not seem to oppose the process.

#### THE UNUSED WOODS OF FLORIDA.

Florida has 165 unused species of trees, a few more or a few less, depending upon whether some of the minor species are included or excluded. Trees which belong in northern latitudes reach into the northern part of the State and there have their southern limit, while others which are tropical or semitropical reach their northern limit somewhere in the State.

It is a wealth of species rather than a wealth of wood, because in a commercial sense many of the trees are not of much importance on account of scarcity, or the small size, or poor form of trunks. A few of the most abundant supply nearly all the lumber cut in Florida; while the scores of others contribute very small amounts now, with little prospect that the amount can ever be much increased. The State is at present an important lumber producer; but, with the depletion of the principal woods, it may be expected that the annual output of sawmills will fall to a much lower place. That will tend to bring into use the numerous scarce and small species, and the wood-using industries may be expected to undergo a change. The output of planing mill products will diminish as the pine and cypress grow scarcer; and the manufacture of articles from cabinet woods, which are numerous and at-

tractive, though in total amount not large, may be expected to increase until in time that will become the leading wood-using industry of Florida.

In view of what will probably be brought about in the future, it is opportune to examine the State's timber resources. In the first place, after excluding the pines, cypress, and a few other species which now furnish the bulk of Florida's sawmill output, it should be borne in mind that the State's timber consists for the most part of species which do not reach large size. Therefore, industries which shall make use of them must produce articles suited to the material. In the second place, most of this timber belongs to the hardwood class, and a large part of it is colored sufficiently to place it in the cabinet woods list. Therefore, it may be expected that the future wood-using industries of Florida will be such as can profitably handle small timber, and hard and colored woods. That will call for a rather unusual class of commodities. They will be selected from many industries. That phase of the State's development lies almost wholly in the future, for very little of it is now under way. The larger timber is being worked up, but the great wealth of small woods remains—more than one hundred species which at this time are scarcely touched at all.

A study of the kinds and character of the many woods suggests certain commodities which can be profitably manufactured in Florida. The list, however, should be considered simply as suggestive. Most of the articles have not been manufactured to much extent in the State, and in some instances a trial would probably show that they could not be profitably made; but the majority of the woods are valuable, and will some time attract manufacturers. The following list of commodities is suggested as probably suited to the character of many of the Florida species which at the present time are not in use:

Athletic goods,	Marquetry,
Balls,	Mathematical instruments,
Billiard cues,	Medicinal extracts,
Brackets,	Musical instruments,
Brush backs,	Pallettes,
Canes,	Panels,
Carved ornaments,	Parquetry,
Castors,	Picture frames,
Chairs,	Rulers,
Clothes pins,	Shuttles,
Curtain rings,	Small furniture,
Dyewoods,	Souvenirs,
Easels,	Spindles,
Games,	Sporting goods,
Grilles,	Toys,
Handles,	Trays,
Inlay,	Turnery,
Insulator pin,	Umbrella handles,
Knobs,	Veneer,
Manicure sets,	Wooden ware.

Various other commodities might be added to the list. For many of them a small tree may be used in that way to advantage, though not large enough for ordinary lumber. The list of species which follows includes only those woods which are not now reported by any manufacturer in Florida, according to returns secured in the recent wood-using study in the State. It shows a remarkable wealth of material waiting for manufacturers. It is impracticable in the space here available to describe each wood very fully. In each instance, however, the best available information is given concerning each species' average height, trunk diameter, hardness or softness, strength or weakness, weight, and color. Such general information will indicate to the prospective manufacturer what woods will likely suit his purposes. If favorably impressed with a sufficient number of them, he

can make further investigation for himself along his particular line.

*American Holly (Ilex opaca).*—The common holly that bears the red berries used in Christmas decorations. The tree may attain a height of forty feet and a diameter of a foot or more. The wood is nearly white when freshly cut, and changes to a brown with age.

*Andromeda (Andromeda ferruginea).*—It is often called titi, and attains a height of twenty feet and a diameter occasionally one foot, but usually smaller. The wood is heavy, hard, not strong, light brown, tinged with red. It grows on Cedar Keys and about Apalachicola.

*Angelica Tree (Aralia spinosa).*—Size is against much use for this tree, which is often called Hercules Club. The trunk may reach eight inches in diameter, and a height of thirty feet. The wood is light, soft, brittle, and brown with yellow streaks. It is found in the northern part of the State.

*Beech (Fagus atropunicea).*—The common and well-known beech is found in the western part of Florida, but the trees are small and rather poor, and are usually found on sandy hammocks.

*Bitternut (Hicoria minima).*—The bitternut species of hickory grows in western Florida, where it reaches its southern limit.

*Black Calabash (Crescentia ovata).*—It is found in Florida only in the south, and is too small to be of use for other than small articles. Its height is 15 or 20 feet, trunk diameter 4 or 5 inches, wood heavy and hard, and light brown or orange in color.

*Black Cherry (Prunus serotina).*—The ordinary cherry of which furniture and house finish are made is found only occasionally in Florida.

*Black Ironwood (Rhamnidium ferreum).*—This is one of several ironwoods found in the south of Florida. It is

among the commonest of the small trees in the region where it grows, and attains a height of 20 to 30 feet, and a diameter of six to ten inches. The wood is exceedingly heavy and hard, and is rich brown in color.

*Black Jack (Quercus marilandica).*—It is not one of the valuable oaks, but in some localities trees of usable size are found. It grows as far south as Tampa Bay.

*Black Olive Tree (Terminalia buceras).*—A tendency to branch near the ground is characteristic of the black olive tree. Trunks may be two feet or more in diameter and forty feet high. The wood is exceedingly hard and heavy, and is usually light yellow brown. The tree is found on the southern keys.

*Black Sloe (Prunus umbellata).*—A Florida name for the tree is hog plum. The trunk is small and generally crooked, the wood reddish brown and heavy.

*Black Walnut (Juglans nigra).*—A little black walnut, the well-known cabinet wood, is found in the western part of the State.

*Black Willow (Salix nigra).*—Willow trees of commercial size are not abundant in the State, but specimens exist in many places.

*Blackwood (Avicennia nitida).*—This tree is often called black mangrove. It reaches a diameter of one or two feet and a height of 60 or 70. The wood is very heavy and hard, and is nearly black.

*Blolly (Pisonia obtusata).*—The blolly is found in the extreme south of the State, where it attains a height of 30 to 50 feet and a diameter 15 to 20 inches. The wood is heavy and weak, and yellowish-brown.

*Blue Beech (Carpinus carolinana).*—The wood of blue beech is strong, its color light, and the tree is generally small and of poor form for lumber.

*Blue Jack (Quercus brevifolia).*—Large trees of this

species are not often seen, and the wood is too coarse for any but rough uses.

*Buckthorn Bumelia (Bumelis lycoides)*.—Some call this tree mock orange, and some ironwood. It attains a trunk diameter of six inches and a height of 25 or 30 feet; wood is heavy and weak, and of yellow color.

*Bustic (Dipholis salicifolia)*.—Cassado is one of the names by which the tree is known in Florida. It attains a height of 50 feet and a diameter of 20 inches. The wood is red, exceedingly hard and heavy, and is found in the extreme south of the State.

*Cabbage Palmetto (Sabal palmetto)*.—The cabbage palmetto is abundant in many parts of the State, and trunks 40 feet high and a foot in diameter are not uncommon.

*Chinquapin (Castanea pumila)*.—This little chestnut tree grows in the northern part of the State, where it reaches the southern boundary of its range.

*Cinnamon Bark (Canella winterana)*.—A height of 25 feet and a diameter of eight inches are usual, and the wood is very heavy and exceedingly hard. Its color is dark brown. The species grows on the southern keys in the shade of other trees.

*Cockspur (Crataegus crus-galli)*.—This thornbush occasionally becomes a small tree. Its wood is heavy, hard and strong.

*Cocoa Plum (Chrysobalanus icaco)*.—Gopher plum is another name for this tree which may be 25 feet high and a foot in diameter, with strong, hard, heavy, brown-colored wood. It is confined in Florida to the southern part of the State.

*Corkwood (Leitneria floridana)*.—A small amount of this species is found in western Florida near Apalachicola. It is little more than a shrub in size, and the wood is soft and very light.

*Crabwood (Gynnanthes lucida)*.—The wood is dark



brown and rich in color; very heavy and hard. Trunks are six or eight inches in diameter and 20 or 30 feet tall. The species grows in the extreme south of the State.

*Cottonwood* (*Populus deltoides*).—This is common cotton wood.

*Dahoon* (*Ilex cassine*).—In practical use this holly is about the same as the common holly. It is neither abundant or of large size.

*Deciduous Holly* (*Ilex decidua*).—Most hollies are evergreen, but this sheds its leaves in winter. The wood is white like the others.

*Devilwood* (*Osmanthus americanus*).—It is often called wild olive, and reaches a height of 40 or 50 feet and a diameter of ten or twelve inches. Wood is dark brown, heavy, very hard, and difficult to work.

*Dogwood* (*Cornus florida*) is the common dogwood, a hard, heavy, smooth wood that may reach a trunk diameter of one foot and a height of twenty or thirty.

*Dwarf Sumach* (*Rhus copallina*).—This is generally quite small, but sizes large enough for use are found. The wood is richly colored with yellow and black or dark brown.

*Eucalyptus* (*Eucalyptus globulus*).—This is not a native tree, but has been introduced from Australia, and is often called blue gum.

*Fevertree* (*Pinckneya pubens*), called Florida quinine bark in some places, is so rare that the wood will probably not be much used, though the bark may possess value.

*Fiddlewood* (*Citharexylum villosum*) abounds on the southern keys, and is small. Trunks are four or five inches in diameter and fifteen or twenty feet high. The wood is bright red, heavy, and very strong.

*Florida Buttonwood* (*Conocarpus erecta*) grows on muddy tidewater shores in southern Florida. It is 20 to

30 inches in diameter and 40 to 60 feet high. The wood is very heavy, strong, hard, and burns slowly like charcoal. It is dark yellow-brown.

*Florida Bozewood* (*Schaefferia frutescens*) or yellow wood as it is occasionally called, is found on the southern keys, attains a height of 30 or 40 feet and a diameter of six to ten inches. The bright yellow wood is heavy and hard.

*Florida Caper* (*Capparis jamaicensis*), locally known as caper tree, is found in the extreme south of the State, and is usually quite small. The wood is tinged with red and is hard and heavy.

*Florida Cat's Claw* (*Zygia unguis-cati*).—Some call this tree longpod. It is found in the southern part of the State, where it attains a height of 20 to 25 feet and a diameter of 7 or 8 inches. The wood is a rich red, varying to purple, and very heavy and hard.

*Florida Maple* (*Acer saccharum floridanum*).—This is a small maple found in western Florida.

*Florida Plum* (*Drypetes lateriflora*), called also Guiana plum and whitewood, is found in the extreme southern part of the State where it reaches a height of 20 to 30 feet and a diameter of five or six inches. The wood is dark brown, brittle and hard.

*Florida Torreya* (*Tunion taxifolium*), is a scarce species found in western Florida near the Apalachicola River. The wood is yellow, and the tree is often called stinging cedar.

*Florida Yew* (*Taxus floridanum*), called also Savin and Chattahoochee pine, has its range on the east bank of the Apalachicola River in western Florida. The tree is seldom more than 25 feet high and one foot in diameter. Its wood is hard and is dark brown.

*Fraser Umbrella* (*Magnolia fraseri*), sometimes called water lily tree, ranges through portions of western Flor-

ida. It is thirty or forty feet high and 18 or 20 inches in diameter. The wood is soft, light, and weak.

*Garber Stopper* (*Eugenia garberi*) is scarce and is found in the extreme south of the State.

*Geigertree* (*Cordia sebestina*) is 25 or 30 feet high, six inches or less in diameter, and is scarce. The wood is brown, heavy, and hard.

*Golden Fig* (*Ficus aurea*) is a parasitic tree reaching its best development in the south of Florida, where it may be three or four feet in diameter and fifty or sixty high. It is one of the lightest, weakest woods in this country, and is subject to very rapid decay.

*Green Ash* (*Fraxinus lanceolata*) is found in small quantity in the northern part of the State.

*Green Haw* (*Crataegus viridis*).—This is generally a shrub, but is sometimes 30 feet high, with trunk a foot or more in diameter.

*Guettarda* (*Guettarda elliptica*), or nakedwood as some call it, grows on the southern keys, and is small, but the wood is heavy and hard.

*Guiana Plum* (*Drypetes keyensis*) has its range on the southern keys, where it develops a trunk five or six inches in size. The dark brown wood is hard, heavy, and brittle.

*Gumbo Limbo* (*Busera simaruba*), or West Indies birch, is sometimes 60 feet high and three in diameter. The wood is soft, weak, spongy, light, and of a brown color. Its range is in the southern part of the State.

*Gurgeon Stopper* (*Eugenia buxifolia*) is confined to the south of the State, where it is usually a shrub, but is sometimes twenty feet high and a foot in diameter. The wood is brown, shaded with red, and is very heavy and exceedingly hard.

*Gyminda* (*Gyminda grisebachii*), or false boxwood, grows on the southern islands, where it is occasionally 25 feet high and six inches in diameter. The wood is nearly black and is very heavy and hard.

*Hackberry* (*Celtis occidentalis*).—It grows in most parts of Florida and is of commercial size. The wood is light in color, rather soft, and not very strong.

*Hoptree* (*Ptelea trifoliata*), or wafer ash, is a northern species but reaches Florida, where it is too small to be of much use. The yellowish brown wood is heavy and hard.

*Inkwood* (*Exothea paniculata*), and also one of the numerous species locally called ironwood, is confined in the United States to the south of Florida. It is 40 or 50 feet high, a foot in diameter, and the wood is very strong, and bright red.

*Ironwood* (*Cyrilla racemiflora*).—This is likewise known as red titi. The tree may be thirty feet high and one in diameter. The wood is brown, tinged with red, and, though hard and heavy, is not strong.

*Jamaica Dogwood* (*Ichthyomethis piscipula*), grows in many parts of Florida, and may reach a height of 40 or 50 feet and a diameter of two or three. The yellow-brown wood is heavy, hard, and durable in contact with the ground.

*Joewood* (*Jaguinia armillaris*) is a rather scarce wood of southern Florida, and the trees are small. The wood is a rich brown and is beautifully marked with darker medullary rays. It is hard and heavy.

*Lancewood* (*Ocotea catesbyana*) is comparatively abundant in south Florida, and is a tree 20 or 30 feet high and a foot or more in diameter. The wood's color is rich dark brown, and it is hard and heavy.

*Largeleaf Umbrella* (*Magnolia macrophylla*) is known as cucumber tree in Florida. The wood is hard, but is light and weak. It is not abundant.

*Laurel Cherry* (*Prunus caroliniana*), or mock olive, is 30 or 40 feet high and six or eight inches through, and its hard, strong, heavy wood is dark brown.

*Laurel Oak* (*Quercus laurifolia*) attains largest size in eastern Florida, where trees 100 feet high and 3 or 4 feet in diameter are occasionally seen. The wood is heavy, very strong and hard.

*Leucaena* (*Leucaena glauca*).—The little of this species in the State is on the extreme southern keys.

*Lignum vitae* (*Guajacum sanctum*) is found on the Florida keys, where it forms a round-headed crown 25 or 30 feet high, and the trunk is two or three feet in diameter. The wood is exceedingly hard, and much of it is richly colored.

*Loblolly Bay* (*Gordonia lasianthus*), or tan bay, is a tree 60 to 75 feet high and a foot or more in diameter, with light, soft, not durable, red wood.

*Longstalk Willow* (*Salix occidentalis longipes*) is small and scarce in the State.

*Manchineel* (*Hippomane mancinella*).—This tree is small in Florida, though larger in the West Indies. It grows only in the immediate neighborhood of the ocean.

*Mangrove* (*Rhizophora mangle*) is usually only fifteen or twenty feet high and a few inches in diameter, forming with its aerial roots impenetrable thickets; but sometimes trunks are thirty or forty feet long, clear of branches, while the trees are 70 or 80 feet tall. The wood is exceedingly heavy, hard, and strong.

*Marlberry* (*Icacorea paniculata*).—This tree is small, but the wood is a rich brown beautifully marked with darker medullary rays. It is heavy and hard.

*Mastic* (*Sideroxylon mastichodendron*), or wild olive, has a trunk three or four feet in diameter and 60 or 70 tall. The hard, heavy wood is a bright orange yellow.

*Mockernut* (*Hicoria alba*) is a valuable and well-known species of hickory.

*Mountain Laurel* (*Kolmia latifolia*) does not often attain tree size, though it is sometimes 30 or 40 feet high

and a foot or more in diameter. The wood is hard, strong, and brittle.

*Naked Stopper* (*Anamomis dichotoma*) may be six inches thick and 20 feet high. It belongs in the southern part of the State. The wood is light brown or red, and is hard and very heavy.

*Naked-wood* (*Colubrina reclinata*), or soldierwood as it is sometimes called, is native in the extreme south of Florida, where it is 50 or 60 feet high and three feet or more in diameter. The hard, heavy wood is dark brown tinged with yellow.

*Narrowleaf Crab* (*Pyrus angustifolia*), or crabtree, as it is frequently called, in northwestern Florida is 20 or 25 feet high, with hard, heavy reddish brown wood.

*Odorless Myrtle* (*Myrica inodora*).—This small tree is very scarce in Florida.

*Overcup Oak* (*Quercus lyrata*) is a commercial species with its southern limit in western Florida. It is not abundant there.

*Paradise-tree* (*Simarouba glauca*), or bitterwood, is native of southern Florida, occasionally 18 or 20 inches in diameter and 40 or 50 feet tall. The brown wood is soft and light.

*Parsley Haw* (*Crataegus aplifolia*) is found in the northern part of the State, with a small trunk, seldom more than 20 feet high.

*Pawpaw* (*Asimina triloba*).—This tree is small and the wood is light, soft, and weak.

*Pigeon Plum* (*Coccolobis laurifolia*) attains a diameter of one or two feet and a height of 60 or 70. The wood is strong, heavy, and exceedingly hard. It is a rich dark brown, tinged with red.

*Pignut* (*Hicoria glabra*) is one of the commercial hickories and grows in northern Florida.

*Planertree* (*Planera aquatica*) is 30 or 40 feet high and a foot or more in diameter. The wood is light and soft, and light brown in color.

*Poisonwood* (*Rhus metopium*), or coral sumach, grows on the southern keys. It attains a height of 30 or 40 feet and a diameter of one or two. The wood is heavy and hard, but is not strong. It is dark brown, streaked with red, and within its range it is abundant.

*Pond Apple* (*Annona glabra*), or custard apple, ranges through south Florida, and may be 30 or 40 feet high, with a trunk often much swelled at the base. The weak, light wood is brown, streaked with yellow.

*Poplarleaf Fig* (*Picus populnea*), or india-rubber tree, is found in southern Florida, and is 40 or 50 feet high, and a foot or more in thickness of trunk. The orange-brown wood is light and soft.

*Pond Pine* (*Pinus serotina*), sometimes called loblolly pine in Florida, though it is not the true loblolly, is of moderate size, the wood is resinous and heavy, and of dark orange color. It occurs in the northern part of the State.

*Post Oak* (*Quercus minor*) is one of the commercial trees of northern Florida and the wood resembles white oak.

*Prickly Ash* (*Xanthoxylum clavaherculis*) is also called stingtongue and toothache tree. It is from 25 to 30 feet high and a foot or more through the trunk. The wood is soft and light.

*Princewood* (*Exostema caribaeum*) is found on the southern keys, with trunks 10 or 12 inches in size and 20 or 25 feet high. The wood is very heavy and exceedingly hard and strong, light brown, and handsomely streaked with different shades of yellow and brown.

*Pumpkin Ash* (*Fraxinus profunda*) is too scarce in Florida to be attractive to wood users.

*Queensland Pine* (*Casuarina torulosa*) is an Australian tree, which has been introduced in southern Florida, where it grows with great rapidity.

*Red Bay* (*Persca barbonia*), sometimes called sweet bay and Florida mahogany, attains a height of 60 or 70 feet and a diameter of 2 or 3 feet. The bright red wood is strong, hard, and heavy.

*Redbud* (*Cercis canadensis*), or Judas tree, is sometimes 50 feet high, but is generally small. The wood is not strong, but is hard and heavy. It is rich dark brown, tinged with red.

*Red Ironwood* (*Reynosia latifolia*), often called darling plum, is a southern Florida species of a height of 20 feet and six or eight inches in diameter, with rich dark brown very hard and heavy.

*Red Maple* (*Acer rubrum*) grows as far south as Indian River, but is not important or plentiful.

*Red Mulberry* (*Morus rubra*) occasionally reaches commercial size in the State. The wood is dark reddish, hard and strong.

*Red Stopper* (*Eugenia procera*).—Height 20 to 25 feet, diameter one foot; wood light brown, heavy, and hard.

*River Birch* (*Betula nigra*) reaches commercial size; the wood is plain, strong, and medium heavy.

*Royal Palm* (*Oreodoxa regia*).—Height 80 to 100 feet, diameter 1 or 2 feet. The wood is spongy.

*Saffron Plum* (*Bumelia angustifolia*), also known as downward plum and antswood, is 20 feet high with a six-inch trunk. The wood is hard and heavy, brown or orange colored.

*Sargent Palm* (*Psuedophoenix sargentii*) grows on the southern reefs, but is very scarce.

*Sassafras* (*Sassafras sassafras*) reaches the southern limit of its range in central Florida, and is not commercially important.



*Satinleaf* (*Chrysophyllum monopyrenum*).—Height 20 feet, diameter one foot, wood hard and heavy, light brown, shaded with red. The tree is not plentiful.

*Satinwood* (*Xanthoxylum cribrosum*).—This tree attains a height of 30 or 35 feet and a diameter of one or more. The wood is brittle, heavy, hard, and of light orange color.

*Scarlet Haw* (*Crataegus coccinea*); height 18 or 20 feet, diameter 4 inches, wood hard and heavy.

*Sea Grape* (*Coccolobis utifera*), or seaside plum. The wood is hard and heavy, and of dark brown or violet color. The trees are small, seldom more than fifteen feet high.

*Shagbark Hickory* (*Hicoria ovata*).—This is a valuable and common species of hickory.

*Skittimwood* (*Bumelia lanuginosa*) reaches its southern limit in the northern part of the State, and is not of much commercial importance.

*Silktop Palmetto* (*Thrinax parviflora*), also called silver thatch, grows on the southern keys, and reaches a diameter of eight or ten inches and a height of 20 or 30 feet.

*Silverbell-tree* (*Mohrodendron carolinum*), also known as snowdrop tree, extends into northern Florida, which is the southern limit of its range. The light brown wood is soft, and sometimes finely figured.

*Silvertop Palmetto* (*Thrinax microcarpa*), or brittle thatch, is native among the southern keys, where it may reach a height of 30 feet.

*Slippery Elm* (*Ulmus pubescens*) is found in western Florida, where the tree reaches commercial size. The wood is strong and without much figure.

*Small-leaf Haw* (*Crataegus uniflora*); in northern part of State.

*Snowdrop-tree* (*Mohrodendron dipterum*); height 20 or

25 feet, diameter 6 or 8 inches, wood light brown, soft, strong.

*Soapberry* (*Sapindus saponaria*), also called false dogwood in the southern part of the State, is 23 or 30 feet in height, and 12 inches or less in diameter. The wood is hard and rather heavy, light brown tinged with yellow.

*Sour Tupelo* (*Nyssa ogeche*), sometimes called gopher plum, has the southern limit of its range in northern Florida, where it is 50 or 60 feet high and two feet or less in diameter. The wood is weak and soft, and light in color.

*Sourwood* (*Oxydendron arboreum*) grows in northwestern Florida, but is of small size. The wood is heavy and hard, and is brown, tinged with red.

*Southern Red Juniper* (*Juniperus barbadensis*).—This species closely resembles the common red cedar.

*Southern White Cedar* (*Chamacyparis thuyoides*).—This is a swamp cedar extending its range from the North into northern Florida. The wood is light and soft.

*Spanish Oak* (*Quercus digitata*).—This tree is sometimes called red oak in Florida. It grows as far south as the center of the State. There are several oak species in this country which are called Spanish oak in some part of their range.

*Spruce Pine* (*Pinus glabra*).—A number of trees are called spruce pine in some parts of their range. The species here listed as spruce pine grows in the Chattahoochee region. The wood is tolerably white and soft. It is sometimes called poor pine and white pine.

*Stopper* (*Chytraculia chytraculia*); height 20 feet, diameter 4 inches, wood very heavy, hard, brown tinged with red.

*Strongback* (*Bourveria havanensis*), also called strongbark, grows on the Florida Keys to a height of 30 or 40

feet, with a buttressed trunk 8 or 10 inches in diameter. The wood is brown, strong, and hard.

*Sugarberry* (*Celtis mississippiensis*) is very similar to hackberry and often passes as such.

*Summer Haw* (*Crataegus aestivalis*); or apple haw; height 18 or 20 feet, diameter 12 or 18 inches.

*Sicamp Bay* (*Persea pubescens*); 30 or 40 feet high and up to one foot in diameter; wood heavy and soft, but strong; orange in color, streaked with brown.

*Sweet Birch* (*Betula lenta*).—This is one of the birches used for furniture in the North. A little grows in western Florida.

*Sweetleaf* (*Symplocos tinctora*), also called Florida Laurel and horse sugar, attains a height of 30 or 35 feet, with a slim trunk. The wood is light red, and soft.

*Sycamore* (*platanus occidentalis*).—A little of this species grows in the northern part of the State.

*Titi* (*Cliftonia monophylla*), or buckwheat tree, is found in northern Florida; height 40 feet, diameter a foot or more, wood heavy, hard, and brittle.

*Torchwood* (*Amyris maritima*).—This is a south Florida tree, 40 or 50 feet high, and rarely a foot in diameter. The wood is exceedingly hard, heavy, and strong, very resinous, extremely durable, light orange color.

*Tough Bumelia* (*Bumelia tenax*), also called ironwood and black haw, reaches a height of 20 or 30 feet, with a bole not above 6 inches. The wood is heavy and hard and is light brown, streaked with white.

*Tree Huckleberry* (*Vaccinium arboreum*), also known as sparkleberry, farkleberry, and gooseberry, is 20 feet high and 8 or 10 inches in diameter, with wood heavy and hard.

*Tupelo* (*Nyssa aquatica*) is a wet-land tree that attains large size, and its wood is serviceable for many purposes.

*Turkey Oak* (*Quercus catesbaei*), sometimes called forked leaf, is generally a small tree of little commercial importance, but occasionally is 60 feet high and two in diameter. The wood is hard and heavy.

*Wahoo* (*Evonymus atropurpureus*), is a small slender tree with heavy hard wood, and reaches its southern limit in Florida.

*Water Ash* (*Frazinus caroliniana*), called also pop ash and swamp ash, is seldom 40 feet high or more than a foot in diameter. The wood is light, soft, weak, and nearly white.

*Water Gum* (*Nyssa biflora*).—This is a small tree of little commercial value.

*Water Hickory* (*Hicoria aquatica*), or swamp hickory. This is one of the commercial hickories, and is sometimes 80 feet high and two in diameter.

*Water Locust* (*Gleditsia aquatica*), or thorn tree, reaches a height of 50 or 60 feet, with trunk large enough for sawlogs. The wood is strong and hard, and a rich brown, tinged with red.

*Water Oak* (*Quercus nigra*) is often called red oak. The wood is strong, hard, and heavy.

*Wax Myrtle* (*Myrica cerifera*).—This small tree has many names, among them being puckerbush, candleberry, and bayberry. The dark brown wood is brittle, soft, and light.

*West India Cherry* (*Prunus sphaerocarpa*); height 25 or 30 feet, diameter 5 or 6 inches, wood clear red, heavy and hard.

*White Elm* (*Ulmus americana*).—This is the common

and most abundant elm in most regions of the United States east of the Rocky Mountains.

*White Buttonwood* (*Laguncularia racemosa*), or white mangrove, grows in southern Florida. Height 30 feet or more, diameter one foot and upward. The wood is heavy and hard, dark yellow brown.

*White Ironwood* (*Hypelata trifoliata*).—This species grows on the southern keys, but is rare; height 35 or 40 feet, diameter 18 or 20 inches; wood rich dark brown, hard and heavy.

*White Stopper* (*Eugenia monticola*).—This tree is occasionally 25 feet high, with a 12-inch trunk. The wood is strong, heavy, hard, and is brown with red tinge.

*Wild China* (*Sepindus marginatus*) is sometimes called soapberry. It may reach a trunk diameter of two feet and a height of 50. The brown, yellow-tinged wood is strong and heavy.

*Wild Lime* (*Xanthoxylum fagara*); height 25 or 30 feet; wood heavy and hard; range, southern Florida.

*Wild Sapodilla* (*Mimusops sieberi*); only on the southern keys and not abundant; height 30 feet; wood very heavy, hard, and strong; rich very dark brown.

*Wild Tamarind* (*Lysiloma latisiliqua*).—This species in Florida is confined to the keys where it occasionally is 3 feet in diameter and 50 feet high. The wood is heavy, hard, and tough, but not strong, and is of a rich dark brown color.

*Willow Oak* (*Quercus phellos*), often called red oak in Florida, is one of the State's commercial woods which seldom appears under its own name as lumber.

*Wing Elm* (*Ulmus alata*).—This wood goes into lumber simply as elm. The name refers to a flattening of the small twigs.

*Witch Hazel* (*Hamamelis virginiana*).—This is generally a shrub, but it may attain a height of 25 or 30 feet, with a diameter of a foot or more. The wood is hard and heavy, and light brown in color.

*Yaupon* (*Ilex vomitoria*).—This species of holly is often called cassena. The trees are small, the wood white, hard, and strong.

*Yellow Buckthorn* (*Rhamnus caroliniana*), or yellow wood, is seldom more than six inches in diameter. The wood is rather hard, but is light and weak.

*Yellow Haw* (*Crataegus flava*).—This tree is small, seldom more than 20 feet high, and 8 or 10 inches in diameter.

*Yellow Oak* (*Quercus velutina*).—This is one of the large commercial oaks, and its wood often passes for red oak.

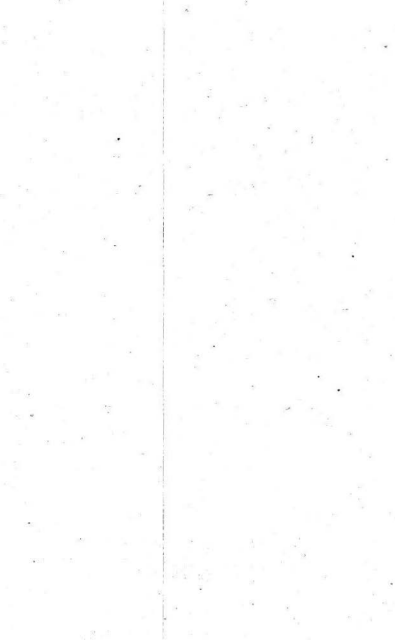


TABLE NO. 1—SUMMARY OF KINDS OF WOOD USED IN FLORIDA.

KIND OF WOOD.		Quantity Used Annually.		Average	Total cost	Grown in	Grown out
COMMON NAME.	SCIENTIFIC NAME.	Feet b. m.	Per Cent.	cost per 1,000 ft.	Each factory.	Florida. Per cent.	of Florida. Per cent.
Longleaf pine.....	<i>Pinus palustris</i> .....	265,729,572	73.19	\$11.00	\$4,229,580	92.19	7.91
Cuban pine.....	<i>Pinus heterophylla</i> .....	65,562,000	12.29	11.94	782,710	99.99	1.10
Loblolly pine.....	<i>Pinus taeda</i> .....	37,949,000	9.24	11.77	399,933	99.41	19.59
Cypress.....	<i>Taxodium distichum</i> .....	22,529,727	0.89	17.59	377,372	99.99	.94
Shortleaf pine.....	<i>Pinus echinata</i> .....	18,775,000	2.97	11.00	204,000	100.00	.....
Spanish cedar.....	<i>Cedrela odorata</i> .....	99,183,206	1.94	24.95	254,185	.....	100.00
Evergreen magnolia	<i>Magnoia foetida</i> .....	2,028,000	.51	8.00	21,399	100.00	.....
and gum.....	<i>Liquidambar styraciflua</i> ..	902,000	.19	11.52	11,499	87.19	12.00
White oak.....	<i>Quercus alba</i> .....	761,179	.12	23.91	29,178	1.14	99.86
White oak.....	<i>Fraxinus americana</i> .....	299,000	.95	25.97	7,820	49.94	50.30
Red pine.....	<i>Pinus resinosa</i> .....	359,000	.95	11.20	3,990	100.00	.....
Yellow poplar.....	<i>Liriodendron tulipifera</i> ..	194,244	.92	29.02	9,290	1.92	98.17
Hickory.....	<i>Hicoria</i> .....	192,500	.92	22.99	3,495	99.72	0.28
Sweet magnolia... ..	<i>Magnolia speciosa</i> .....	90,000	.92	22.99	1,200	100.00	.....
White pine.....	<i>Pinus strobus</i> .....	79,071	.92	21.94	6,592	.....	100.00
Haleogy.....	<i>Scirpus haleogyl</i> .....	22,495	"	194.29	5,992	31.47	68.50
Black gum.....	<i>Nyssa sylvatica</i> .....	22,000	"	19.00	300	100.00	.....
Live oak.....	<i>Quercus virginiana</i> .....	22,000	"	59.00	1,999	100.00	.....
Birch.....	<i>Betula</i> .....	21,000	"	79.71	1,999	.....	100.00
Red oak.....	<i>Quercus rubra</i> .....	9,200	"	22.58	459	.....	100.00
Sugar maple.....	<i>Acer saccharum</i> .....	5,000	"	39.00	159	.....	100.00
Spruce.....	<i>Picea</i> .....	5,000	"	37.99	189	.....	100.00



Maplewood.....	<i>Faba Americana</i> .....	2,000	*	35.00	70	.....	100.00
Maplewood.....	<i>Lupinus sativus</i> .....	1,000	*	108.75	210	.....	100.00
Yeast.....	<i>Pictoria grandis</i> .....	1,000	*	227.00	233	.....	100.00
Red cedar.....	<i>Juniperus virginiana</i> .....		*	41.00	23	100.00	.....
Rosewood.....	<i>Myrica crinita</i> .....	100	*	400.00	40	.....	100.00
Total.....		321,541,750	100.00	\$12.41	\$5,454,903	34.45	8.72

\*Less than 1-100 of 1 per cent.

## WOODS USED IN FLORIDA.

Table 1 contains a list of 27 woods used in Florida last year, according to reports made by manufacturers. It is shown in the table also that some of these woods were procured wholly in the State, others wholly from without, while some came partly from within and partly from the outside. The average cost of each and all at the factory is stated in the table, together with the amounts. The table is a summary which shows in condensed form the principal statistics of the wood-using industries of the State. The detailed statistics are shown in the industry tables which follow.

Preceding pages of this report list and briefly describe a large number of unused woods in the State, those which manufacturers either do not now employ, or use them in so small amounts that they do not consider them worth reporting. It now remains to take up in a similar way the woods that are used. Longleaf pine leads in amount, and rosewood is least. Rosewood is highest in price, madeira next, mahogany third, and evergreen magnolia is cheapest. Seven of the woods come wholly from the State, ten entirely without, and the others are divided.

*Longleaf Pine.*—More than half of the entire wood supply of the State, as shown in Table 1, is longleaf pine. It is reasonably certain that some Cuban pine and some loblolly are listed as longleaf, but it was not practicable to ascertain how much or to separate them from longleaf. If the length of the needles alone is taken as a means of identifying the several species of the Southern yellow pines, it is not always a reliable test; for needles of the same species vary in length, depending upon environment. Longleaf pine has thin sapwood and abundance of heart; the other Southern pines may be expected to show very thick sapwood in proportion to the heart. That fact helps to distinguish longleaf logs and lumber

from other species. Some lumbermen have only two names for Southern pines: "heart pine" for longleaf, and "sap pine" for the others. These terms express pretty clearly the chief difference which lumbermen recognize in the Southern pines. Of course there are other differences, some of which do not appeal so directly to the eye. Longleaf pine is harder than the others, and stiffer, stronger, and heavier than most. It is of slower growth and the annual rings are narrower. The wood is generally but not always of darker color than that of the other pines associated with it. The longleaf pine occurs in the northern two-thirds of Florida. Its reproduction is not generally vigorous, but in some sections many young trees are taking possession of vacant places. As a whole, it is doubtful if young growth can to any appreciable extent make good the loss through sawmill operations, and the result seems inevitable that longleaf pine supplies will decline in the State, as in other regions, until scarcity results. The habit of frequently burning forest lands perhaps works more harm to longleaf pine than to any other tree, by killing the young growth.

*Cuban Pine.*—Next after longleaf, this species shows longest use in the State. The same difficulties as in the case of longleaf pine are met in separating it from associated pines. One is often mistaken for another. The Cuban pine is known under several names. It grows in nearly all regions of Florida where any pine grows. It has thick sapwood and is resinous; the rings of annual growth are wide; the wood is stiff and strong. As the southern part of the State is approached, the Cuban pine becomes smaller. A good many stands exist in which the mature trees are too small to attract sawmills. It responds to good soil, and patches of merchantable timber may be found, surrounded by scrub growth.

*Loblolly Pine.*—This valuable timber tree belongs in northern Florida, extending south to about the center of the State. In quantity of timber manufactured in Flor-

ida it is third largest, its total falling a little short of one-tenth that of longleaf, and its average price per thousand being practically the same. It grows rapidly, reproduces vigorously, and is one of the softest and whitest of the yellow pines. It is known by so many names that the name alone is not a certain means of identification. It holds its ground better than longleaf pine, and is more promising as a source of supply. The softness of its wood places it in a line of uses somewhat different from those of longleaf. It is popular for doors and for window frames. It attains merchantable size in less time than longleaf.

*Cypress.*—Fourth for quantity in the list of Florida woods is cypress. It is a very little below loblolly pine, but the average cost is considerable higher. Cypress is one of the substantial, all-round woods of the South, and one of the largest species. The small trees are symmetrical and graceful, but the old ones are not attractive with their thin, ragged foliage, and dying tops. They are among the longest-lived trees of the South, and an age of two or three centuries is not unusual. At least a hundred years are required under ordinary circumstances to produce a trunk large enough for sawlogs. It is a swamp species. Trees live standing in water much of the year. Some of the best cypress timber in Florida grows along the margin and about the mouths of large rivers, where the land is frequently flooded. Some of the cypress forests near the mouths of the Chattahoochee, Apalachicola and Suwannee rivers are dense and dismal in the extreme. When these forests disappear under the operation of lumbermen, there will not be much young cypress coming on to take their place, for it is not a tree that reproduces vigorously. It is not of much commercial importance south of the center of the State.

*Shortleaf Pine.*—The Shortleaf pine is supposed to be the opposite of the longleaf species, so far as needles are concerned; for its leaves are shortest of the four leading

Southern yellow pines. The tree grows rapidly when young, but after it reaches an age of forty or fifty years it is apt to increase its size more slowly. For that reason the annual rings in a characteristic shortleaf trunk are broad near the heart and narrower as the bark is approached. The sapwood is thick, the heartwood comparatively small. The wood is rather soft. The commercial range of shortleaf pine extends into the northern part of the State, its best development being in regions farther north.

*Spanish Cedar.*—All of this wood is imported, as it does not grow in the United States. It comes from Cuba, Mexico, and adjacent regions. Most of that used in Florida was cut in Cuba.

*Evergreen Magnolia.*—It appears in Table 1 as the cheapest wood in Florida, and more than two and a half million feet were used. It is an evergreen of beautiful foliage, and with wood varying much in value. The best has been compared with yellow poplar, but the poorest is intersected with hard streaks and black patches. The largest trees are 80 or more feet high and three or four feet in diameter; but an average size is scarcely half that. It does best in rich, wet ground. In early lumber operations it was frequently left standing because its conversion into lumber was not profitable; but in recent years uses have been found for the wood and it is now cut when lumbermen come to it. In Florida the boxmakers are largest users of magnolia.

*Red Gum.*—Red gum is cut in most parts of the northern half of Florida, but it is not as important as in some of the more northern and western States. It attains large size and is of good form for sawlogs, but it does not usually occur in thick stands like the pine, and it goes to the mills along with other hardwoods. Its chief use in Florida is for boxes and crates, but farther north its greatest importance is as furniture material and house finish.

*White Oak.*—A small quantity of this wood is credited to Florida in the reports by manufacturers who use it, but nearly all comes from outside the State. It is one of the best known and most substantial of the oaks. It is used for nearly all purposes for which any American wood is used. The chief part of that reported in the State went into car construction. While some of the Florida white oak is of excellent quality, many users are of the opinion that the average quality of the State-grown oak is much beneath that of some of the Northern States.

*White Ash.*—The southern limit of the white ash's range lies in northern Florida. It is of the most common of the same species of ash in many parts of this country. The wood is characterized by stiffness and strength. Its chief uses are for farm tool handles, boat oars, and vehicles.

*Sand Pine.*—In certain localities only does this tree grow large enough for sawlogs. Trees of small pole size are often numerous over considerable tracts. It extends two-thirds of the distance down the Florida peninsula from the north. Its most common name is spruce pine.

*Yellow Poplar.*—Some of the yellow poplar manufactured in the State was cut there, but most came from the outside. The largest poplar timber comes from the mountains of Tennessee, Kentucky, and West Virginia. It is among the highest priced of American woods. The average reported in Florida was \$89.02.

*Hickory.*—Several species of hickory are generally considered as one wood when they reach the factories. In the forest, the lumberman knows the species separately, but the wood of one so much resembles another that all go together under one common name. Its toughness, elasticity, strength, and hardness unite in such a remarkable degree that hickory has been called the indispensable wood. No substitute has yet been found anywhere in

the world for this wood, particularly for parts of small vehicles, hammer and ax handles, and some kinds of athletic goods. The State supplies nearly all home demands for hickory.

*Sweet Magnolia.*—The entire quantity of this wood went to a single industry and was made into boxes at an average cost of \$22 a thousand. That is a high price for box lumber, but magnolia is an attractive wood, and much of it went into high grade boxes. All was cut in the State. The heartwood of this tree is a pleasing red or brown, which takes a fine polish.

*White Pine.*—Florida has no native white pine, and all that was reported came from the Lake States. It grows in several of the Northern and Northwestern States, as far south as eastern Tennessee. Next to yellow poplar, it was the highest-priced native wood reported in Florida. A number of other woods in this country are called white pine with a modifying term. Western white pine grows in Idaho; California's white pine is the western yellow pine; Mexican white pine comes from Arizona and Mexico, and is a white pine. The Norway pine of the Lake States is often mixed with white pine and sold with it.

*Mahogany.*—More than ten thousand feet of mahogany were reported cut in the forests of south Florida last year, and used by industries in the State. Nearly one-third of all this wood used was home-grown. It has been popularly supposed that mahogany long ago ceased to exist as a commercial wood in Florida, though it was well known that botanical specimens were still obtainable. The present investigation in Florida has shown that such is not the case, and that the wood is still cut and marketed there. More than half a century ago mahogany cutters, who were likewise operating in the Bahama Islands, invaded the keys south of the Florida mainland, and also the mainland itself, and cut all the mahogany trees within reach of water, and shipped the logs to Eu-

rope. Some trees escaped discovery in the dense hammock forests; and some that were then small have since grown to merchantable size.

Mahogany trees are now being cut, and the logs reach Miami, and other points, where boat builders and others buy them. The number thus reaching market is not large. Logs generally come in one or two at a time. They are cut by negroes, for the most part, who find a tree here and there. The logs are rolled or hauled to the nearest water and are towed by a canoe or boat through narrow and obscure channels, often several miles, to open water, and are thence taken to some point designated by the buyer.

*Black Gum.*—This tree is not in much favor anywhere, but when it is convenient, the sawmills cut it, and it finds its way to the factories. The whole reported quantity used in Florida is only two carloads. Sometimes there is doubt as to what is meant when black gum is reported. That name is applied to water gum (*Nyssa biflora*) in Florida.

*Live Oak.*—Considering the abundance of this wood in Florida, its use is small. Formerly it was in much demand for ship knees, and a flourishing business was carried on in this State; but it is not so used now. It is not a tree of good form for lumber. The trunk is short, and is generally rough; but the wood is hard, strong, and when carefully selected, is of good grain and color.

*Birch.*—Two species of birch grow in the State, but none of either was reported by manufacturers. All came from the outside of the State, and the high price indicates that it was the sweet birch or yellow birch of the North. These two species go to market together, and little attempt is made to keep them separate. For that reason birch is listed in this report without the species being designated. The river birch of Florida was not reported for any purpose.



*Red Oak.*—The true red oak (*Quercus rubra*) does not grow in Florida. Other oaks pass by that name. The red oak listed in Table 1 is the Northern tree, one of the highest grade of the many species of oak. There is much confusion in classifying oak lumber. A dozen different species are called white oak, and so many others are known as red oak.

*Sugar Maple.*—The maple sugar and syrup of commerce is made from the sap of this tree; and from this species is cut the hard maple lumber, or most of it. The tree is found in Florida, but it is not abundant, and none was cut in the State, according to reports of manufacturers. Very little was used.

*Spruce.*—Spruce is in the list with birch and hickory in one respect—several species are often grouped under one name. When the word spruce is used in Florida it generally refers to the black or red spruce of the Northern States, but it might be the Sitka spruce of Oregon and Washington. There are other spruces occasionally found in the lumber markets, or woods which pass by that name.

*Basswood.*—The demand for this soft, white wood is so small in Florida that it is hardly worth taking note of. It is a Northern species, the largest quantity of lumber coming from the lake States and the central Appalachian region.

*Madeira.*—This wood from the West Indies was used to a small extent by Florida boat builders. It ranges in price with mahogany, and is of a dark color and is hard. Other tropical woods sometimes pass by that name, and it was once applied to mahogany in some parts of this country.

*Teak.*—Boat builders brought this Asiatic wood into use in the State because it is regarded by many as one

of the best woods in the world for some parts of boat building. It is very hard and not very heavy.

*Red Cedar.*—Much red cedar is cut in Florida, and scarcely any is used for manufacturing purposes. Pencil makers take much of the best.

*Rosewood.*—This is the most expensive and least used wood reported by manufacturers in Florida. A number of trees in different countries are called rosewood. That reported in Florida came from Africa.

#### PLANING MILL PRODUCTS.

This industry is much larger than any other among the wood uses of Florida. More than 92 per cent of all the material considered in this report is found in the output of planing mills. Not only in quantity, but in value it surpasses all the other industries. The cost of the rough lumber laid down at the planing mills ready for the machine to work on, was \$4,747,165; and the cost of all the rough lumber used in the State was \$6,464,863. Planing mill lumber averaged cheaper than the other, but that does not mean that it is of poorer grades.

Planing mill products are the simplest forms of manufacture after lumber leaves the sawmill. In fact, the planing mill is usually an adjunct of the sawmill that cuts the logs. The product that comes from the machines consists of flooring, ceiling, and siding. Stock sizes and kinds are made and put on the market. It is a commodity which goes from the mill that makes it without having any particular market or buyer in view, and thus differs from those commodities which are largely made to order and for a particular place or purpose.

Longleaf pine leads by long odds all the other woods appearing in Table 2. Nearly 77 per cent consists of longleaf, which is at present usually regarded as the most abundant timber tree of Florida, and among the

best. Its great strength makes it suitable for flooring, its grain, figure, and color fit it for ceiling, and its lasting properties qualify it for siding. The mills that turn it out are generally those of large capacity, and it is lumbered and otherwise handled by the most advanced scientific methods, from the felling of the trees to the completion of the finished product.

Cuba pine is second in quantity for planing mill products. This species is known under several names, and it is not infrequently called longleaf, though the men who work it know very well the difference between it and the genuine, thin-sap longleaf yellow pine. Some call it slash pine. That alludes to its habits of coming up in old cuttings when fire is kept out, which, unfortunately, does not happen as often as it should. The relative abundance of Cuban pine increases southward in the State.

Loblolly pine falls somewhat under Cuban pine in quantity, according to the reports supplied by manufacturers. Very probably that is a fact, but a good deal of confusion exists at some of the mills as to what is Cuban and what is loblolly; for the species bear considerable resemblance both in the standing tree and in the wood. Both are frequently called loblolly. The ground for confusion does not extend far southward through the peninsula, for loblolly gradually disappears.

Ten million feet of shortleaf pine was reported by mills in the northern part of the State. This species does not range far south, and it is probable that some of that listed under the name of shortleaf was loblolly or Cuban.

Four-fifths of the sand pine reported in the State was listed with this industry. The trunk of this pine is usually quite small, but occasionally groups of trees are found large enough for good sawlogs. The wood has thick sapwood which is nearly white, while the heartwood is light yellow. It is moderately light in weight and not very strong. It is likely that a good deal of this wood is mar-

keted under some other name. When the trunk is seen at a distance of thirty or forty yards it resembles the red or the black spruce of the North, though it is usually more limby than the spruce which grows in the deep shade of Northern forests. The foliage, being light and thin, looks somewhat like that of spruce when too far away for the individual needles to be seen. This similarity is responsible for the name spruce pine which is commonly given it.

The birch and the yellow poplar in Table 2 are the most costly woods listed. They were imported from the North.

Nearly half of the cypress reported in the State is found in this table.

TABLE 2.—PLANING MILL PRODUCTS.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost f. o. b. Factory.	Grown in Florida, Feet b. m.	Grown Out of Florida, Feet b. m.
	Feet b. m.	Per cent.				
Longleaf pine .....	112,760,000	56.71	\$11.26	\$12,587,290	286,523,310	26,576,000
Cuban pine .....	23,715,000	9.54	13.40	317,725	23,815,000	700,000
Loblolly pine .....	20,270,000	7.43	12.98	263,080	20,770,000	2,500,000
Cypress .....	15,945,000	3.43	11.50	183,160	13,900,000	.....
Shortleaf pine .....	20,775,000	2.69	11.50	238,950	10,775,000	.....
Southern pine .....	200,000	.85	14.00	2,800	200,000	.....
Hick .....	12,000	*	65.00	780	.....	12,000
Yellow poplar .....	12,000	*	65.00	780	.....	12,000
Total .....	197,713,000	100.00	\$11.24	\$1,747,145	277,251,310	30,000,000

\*Less than 1-100 of 1 per cent.

## PACKING BOXES AND CRATES.

Cuban pine leads in Table 3. That is because this species is most abundant in the south of Florida where the large market gardens and citrus orchards are located. Boxes are made near where they are needed, when it is practicable to do so. The demand for large quantities of shipping crates and boxes draws upon the most available supply of timber, and Cuban pine's geographical range makes it convenient and cheap for the orange and grapefruit growers, and for the gardens which ship early vegetables.

Longleaf pine is so close a competitor of Cuban pine that the latter has very little advantage in quantity. The longleaf averages forty cents a thousand feet cheaper, which, in all likelihood, is due to better facilities for logging it rather than to any weaker demand. The average is low for all woods used in box and crate making in Florida, but three of them run fairly high. They are Spanish cedar, sweet magnolia, and hickory. The last named was made into crates for shipping vehicles and machinery, and was employed to meet the demand for a strong, tough wood.

Spanish cedar and sweet magnolia are handsome woods suitable for high-grade boxes for fancy commodities.

Sand pine supplies fifty thousand feet to the industry. This rather small tree should be able to contribute liberally to the supply of cheap box and crate material in the future. In some localities it is abundant, and much of the best is within easy reach of orange, pineapple, and vegetable lands where crates and boxes in large numbers are needed. Though it is not a very strong wood, it possesses enough strength to answer all ordinary purposes of Florida fruit and vegetable shippers.

Evergreen magnolia is the cheapest material used by the box and crate makers, and many persons consider it

about as good as the best, unless some particular property is required; but it does not run even in color. Some trees have wood much darker than others, and where printing and stenciling of the packages are necessary, the magnolia must be graded, and the dark wood thrown out. Some of it is sufficiently white to meet all requirements of a good stenciling wood. Now and then the wood of a certain tree contains hard, flinty streaks which may be objectionable, and there may be black knots which detract from appearance and value.

Black gum is used in less quantity than any other wood on the box maker's list. It is plain material, never sought after, but is cut when it is found among other woods. In some localities the name black gum is applied to tupelo and water gum, but never under the mistaken notion that they are the same species. Their leaves bear some resemblance, but the characteristic swell in the tupelo trunk near the ground is not found in the black gum.

The abundance and cheapness of cypress in Florida ought to lead to its more extensive employment by box makers.

TABLE 2.—BOXES AND CRATES, PACKING.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost, U. S. b. Factory.	Grown in Florida, Feet b. m.	Grown Out of Florida, Feet b. m.
	Feet b. m.	Per Cent.				
Cuban pine .....	25,000,000	42.52	89.82	\$2,225,125	25,000,000	.....
Longleaf pine .....	25,250,000	41.75	82.95	2,085,125	25,250,000	.....
Loblolly pine .....	2,750,000	4.86	84.53	231,742	2,750,000	.....
Evergreen magnolia .....	2,625,000	4.78	83.82	219,225	2,625,000	.....
Spanish cedar .....	2,125,000	3.81	22.43	47,625	.....	2,125,000
Red gum .....	725,000	1.23	8.85	6,400	725,000	.....
Hickory .....	50,000	.14	25.85	1,293	50,000	.....
Sweet magnolia .....	50,000	.14	22.84	1,142	50,000	.....
Yard pine .....	50,000	.09	18.85	943	50,000	.....
Cypress .....	45,000	.08	1.71	770	45,000	.....
Black gum .....	25,000	.06	18.89	472	25,000	.....
Total .....	55,385,000	166.64	82.82	\$5,161,125	55,165,000	2,220,000



SASH, DOORS, BLINDS, AND GENERAL MILL  
WORK.

Longleaf pine and cypress make up nearly the whole amount of material reported in Table 4. Six other species are represented, but altogether do not constitute a quarter of one per cent of the total of the nearly 36 million feet made into sash, doors, blinds, and general millwork in Florida.

The presence of a little live oak in this industry is unusual, for the wood is almost universally rejected by manufacturers of these commodities in the Southern States; and the rejection is often without just cause. The lumber does not come in as good form as white and red oak; the logs are always short and frequently of poor shape, but when live oak is carefully selected it is handsome and serviceable. The people have not been accustomed to use it, otherwise it would enjoy a better reputation. It is strong, and though it does not show the variety in figure of some of the other woods, it has a color that is pleasing. The lighter flecks in the wood, dispersed in profusion, show well in furniture and finish. The live oak reaches its best development in northern Florida, and good logs of large size may be had in many localities. Manufacturers would do well to investigate its possibilities, and see if a trade in this wood can not be developed.

The industry shown in Table 4 differs from that in Table 2 in being more highly developed. Four kinds of machines are needed to make flooring and siding; but more specializing is required, and machinery with greater range of uses is needed in producing doors, frames, sash, stairwork, panels, turned posts and balusters, spindles for grills, and the many other commodities included in the general term mill work.

Few doors other than pine and cypress are produced in Florida. White oak, live oak, and birch are employed

to some extent, but chiefly as thin veneers covering soft-wood cores. The average cost of the hardwood employed in this industry is about five times as much as in soft-woods.

A large part of the product is sold outside of Florida, some of it reaching Northern cities and some going to foreign countries.

TABLE 4.—SASH, DOORS, BLINDS, AND GENERAL MILL WORK.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost U. S. D. Factory.	Grown in Florida. Feet S. M.	Grown Out of Florida. Feet S. M.
	Feet S. M.	Per Cent.				
Longleaf pine .....	21,234,000	58.18	414.34	\$8,812,800	20,490,000	650,000
Cypress .....	14,245,000	48.37	27.58	392,800	14,545,000	.....
White oak .....	34,000	.19	92.05	3,150	.....	34,000
Loblolly pine .....	25,000	.07	20.00	500	25,000	.....
Birch .....	24,000	.04	75.00	1,800	.....	24,000
White pine .....	12,000	.05	27.50	330	.....	12,000
Live oak .....	2,000	.....	41.00	82	2,000	.....
Red cedar .....	500	.....	44.00	22	500	.....
Totals .....	25,364,500	100.00	\$12.45	\$927,924	25,792,000	104,000

\*Less than 1-100 of 1 per cent.

## TOBACCO BOXES.

The manufacture of cigar boxes is the fourth in size in Florida's wood-using industries, and is shown in Table 5. More than nine and a half million feet are listed. As far as shown by statistics of wood manufacturers thus far collected in the United States, Florida far surpasses any other State in the amount of wood converted into cigar boxes. The center of this industry is at Tampa.

In most of the Northern States where cigar boxes are made, the Spanish cedar, which is the leading material, is usually sliced in thin veneer which is glued over other woods in making boxes. The prevailing custom in Florida is to use the Spanish cedar solid. It is sawed in thin lumber and is handled that way.

Most of the Spanish cedar comes from Mexico and Cuba. Some of the large Florida users procure their supplies in Cuba. The Spanish cedar grows to large size when circumstances are favorable and time is sufficient. Early explorers in the West Indies spoke of cedar canoes large enough to carry twenty or more men, and the Carib Indians made long journeys in vessels of that kind. Cedars of large size are not often found now. The supply within reach of the sea was cut long ago. The cigar box wood imported into Florida comes from trunks about the size of telegraph poles. These are carried to Florida in the rough form, the knots being trimmed, and the bark generally peeled from the logs. A whole tree often comes in one piece. The larger box factories buy that way, and have sawmills of their own for converting the logs into box lumber. Small box makers purchase lumber partly manufactured.

Spanish cedar enjoys the prominent place it holds in the cigar box business because the wood has an odor which adds to the value of the cigars packed in the boxes. It is handsome, and increases the attractiveness of the wares. It is not a high-priced wood, considering that it is an

import from foreign countries and is not very plentiful there. It is lumbered by cheap labor and is brought from the interior mountains where it grows. Transportation from the stump to the seashore is often by oxen. The average cost in Florida is \$24.02 per 1,000 feet log measure. It is too cheap to offer much temptation to the imitator.

A million and a half feet of cypress was reported for this industry in Florida, but the cost per thousand was less than half that of Spanish cedar.

TABLE 1—BOXES, TOBACCO.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet b. m.	Total Cost T. b. b. Factory.	Gross to Florida, Feet b. m.	Gross Out of Florida, Feet b. m.
	Feet b. m.	Per Cost.				
Spanish cedar.....	8,049,208	\$2.91	\$24.00	\$193,435	.....	2,049,208
Cypress .....	1,547,027	16.09	11.00	17,017	1,547,027	.....
Total .....	9,596,235	196.00	\$35.00	\$210,452	1,547,027	2,049,208

## CAR CONSTRUCTION.

No large car factories are located in Florida, but a considerable amount of building and repairing is done. Twelve woods are listed, but more than 81 per cent of all is longleaf pine. For many parts of car building it is ideal. It is strong, stiff, lasting. It is made into sills and frames where it carries loads and sustains jars and strains. It is good for car floors and siding, for braces and roofing. It may be had in long pieces, measurably free from knots and defects, and with little or no sap.

No loblolly pine was reported by car builders, but it grows of proper size and form in the State, and likely some of that passing as longleaf is loblolly. It is not considered quite as strong as longleaf, but for a number of purposes it is as good, and for some it is preferred.

Cypress is an all-round car timber, but it lacks some of the longleaf's strength and rigidity, and was not used in one-tenth of the amount of pine in Florida, but what was bought cost more by the thousand. The small amount of white pine reported in Table 6 was for patterns. It cuts so easily and holds its shape so well that it stands pre-eminent among pattern woods.

There is so much difference in the cost of the red oak and white oak used by car builders in Florida that an explanation is necessary. These two woods, if of the same grade and in the same market, cost about the same; but in Table 6 the white oak is less than nineteen dollars and the red oak more than seventy-two. They were not of similar grade. The white oak was used for repair of freight cars, and the red oak was for high-class finish. Both came from outside the State. By reversing the grades, the costs might have been reversed—the red oak would have been cheap and the white oak expensive.

Mahogany was the most costly lumber in the industry. It is a cabinet wood and is employed for fine finish in passenger cars, chiefly as veneer laid upon cheaper woods.

Yellow poplar is second lightest in cost, and it is used much the same as mahogany. The smoothness of its grain makes it among the best of woods for fine painting.



TABLE 4.—CAR CONSTRUCTION.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost L. & A. Factory.	Grown in Florida, Foot S. M.	Grown Out of Florida, Foot S. M.
	Foot S. M.	Per Cent.				
Longleaf pine .....	4,374,868	81.37	\$17.52	\$122,100	5,294,628	1,240,459
Cypress .....	884,000	5.81	20.25	50,225	255,500	250,000
White oak .....	457,679	1.38	18.95	5,528	.....	457,679
White ash .....	257,000	1.80	21.50	5,525	178,000	257,000
Red Gum .....	250,000	2.35	20.00	5,000	225,000	250,000
Yellow poplar .....	72,344	.85	96.19	5,959	.....	72,344
Cuban pine .....	5,000	.09	20.00	100	5,000	.....
Hickory .....	4,500	.09	177.25	800	.....	4,500
Red oak .....	4,200	.07	72.58	429	.....	4,200
Spruce .....	3,000	.06	37.00	285	.....	3,000
Sugar maple .....	3,000	.05	30.00	150	.....	3,000
White pine .....	1,800	.03	60.00	30	.....	1,800
<b>Total .....</b>	<b>5,348,588</b>	<b>100.00</b>	<b>\$18.76</b>	<b>\$169,373</b>	<b>5,717,958</b>	<b>2,247,859</b>

## SHIP AND BOAT BUILDING.

With more length of coast line than any other State; with several fine harbors for large vessels, and with almost innumerable small harbors; with hundreds of miles of navigable rivers flowing through semitropical scenes of rare beauty; with many lakes of ample size and with romantic surroundings to invite the pleasure seeker; with a climate so mild and equable that the waters are enjoyable the whole year round, Florida holds a very low place in the boat-building industry. It is not because boats are not used. The harbors, rivers, lakes, and passageways swarm with vessels during many months of the year, and the landscape, with its interlocking waters, are scenes of the greatest activity; but the boats seen by thousands are nearly all made elsewhere than in Florida.

The resources for boat building are ample, and the market for high pleasure boats ought to be among the best in the United States. A large proportion of the winter visitors in Florida are possessed of means sufficient to buy yachts, canoes, dories, and craft of every kind that the place and climate call for. Vessels in large numbers ply the waters, but they are not made in Florida. They come from New England, New York, Michigan, Maryland, and many other places where lumber is not as plentiful or cheap as in Florida.

A few manufacturers have taken advantage of the opportunities, and are building boats. Table 7 shows the amount of wood used and the kinds. The total is a million and a half feet, which is about one-fourth as much as Maryland demands annually. The Maryland market calls chiefly for business boats, while Florida demands pleasure vessels. Yet boats for business purposes are by no means few in Florida. The tradesmen about Pensacola, the sponge fishermen in the shallow water off Apalachicola, the lumber tugs which load the sea-going vessels, the many fishermen on both the east coast and the

west, and the barges which transfer freight up and down its rivers—all of these constitute a market for home-built boats.

Eleven woods were used last year by Florida boat builders, and longleaf pine constituted about seventy per cent of it all. Some vessels are built almost wholly of this wood, and all that was used was grown in Florida. It makes both inside frame and outside covering. It possesses the required strength, and its lasting properties insure long service. The price of longleaf pine is higher in this than in any other industry in Florida. High-grade material was demanded, and price goes with grade.

Cypress is next in quantity, and is higher in price than long leaf. It is used for finish and deckwork. The difference in price between it and longleaf is largely responsible for keeping cypress below that wood in quantity in boat building.

White pine, which is soft, white, and expensive, is employed only when some customer demands it.

Live oak is reported to the amount of 30,000 feet, at \$60 a thousand. It was made into rudder stock, and is bought in hewed logs eighteen inches square. These logs are sawed into heavy stuff for rudders. Live oak is hard and strong, and lasts well under water.

Nearly 27,000 feet of mahogany is reported in this industry, and more than a third of it is native of Florida. This is the species cut in the West Indies and Mexico, and it is not found growing in any other State than Florida. This and other expensive woods listed in the boat industry show that high-class work is being turned out of the yards.

TABLE 1.—SHIP AND BOAT BUILDING.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost L. o. b. Factory.	Gross In Florida. Feet S. M.	Gross Out of Florida. Feet S. M.
	Feet S. M.	Per Cent.				
Longleaf pine.....	1,150,000	48.76	\$29.35	\$33,574	1,150,000	.....
Cypress .....	177,000	12.28	41.63	7,366	177,000	25,000
White oak .....	177,000	11.13	64.01	11,330	.....	177,000
Cuban pine .....	40,000	2.51	48.80	1,950	40,000	.....
Live oak .....	30,000	1.88	65.80	1,980	30,000	.....
Mahogany .....	20,000	1.49	170.74	3,415	10,000	10,000
White pine .....	5,000	.41	60.00	300	.....	5,000
Madras .....	1,000	.10	165.75	165	.....	1,000
Teak .....	1,000	.04	225.00	225	.....	1,000
White ash .....	1,000	.05	85.00	85	1,000	.....
Basswood .....	500	*	400.00	200	.....	500
Total .....	1,891,500	100.00	\$35.38	\$61,373	1,863,000	227,000

\*Less than 1/100 of 1 per cent.

## VEHICLES AND VEHICLE PARTS.

Table 8 presents statistics of vehicle manufacturers in Florida. The quantity of wood demanded is small, but the shops are well distributed over the State. There are only a few factories which make buggies and wagons as a business. The shops occasionally make a few vehicles, but their principal work is repairing. Nearly all country blacksmith shops, and practically all in the towns, repair wagons. A considerable part of the 167,095 feet in Table 8 was used for repair work. The same woods which enter into new vehicles serve for repairs of old. The average price is higher than in any other of the wood-using industries of Florida. The species are the same as in other industries, but the grades are better. Cypress is third from highest; and is twenty-nine dollars above the cost of the wood in any other table. The other woods higher in this table than in any other are hickory, loblolly, pine, mahogany, and white ash. One of the contributing causes of the high cost of wood to the Florida vehicle makers is that many of them buy in small amounts, and at retail, and must pay more than if they took advantage of wholesale prices.

TABLE 1.—VEHICLES AND VEHICLE PARTS.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost L. o. S. Factory.	Grows in Florida, Feet b. m.	Grows Out of Florida, Feet b. m.
	Feet b. m.	Per Cent.				
Longleaf pine .....	20,000	22.24	\$24.26	\$ 485	40,000	.....
White oak .....	20,500	18.25	64.28	1,328	8,000	22,500
Cypress .....	27,800	14.18	70.00	1,946	27,800	.....
Hickory .....	22,500	14.66	59.79	1,405	27,000	4,500
White ash .....	22,000	12.77	66.14	1,455	22,000	8,000
Yellow poplar .....	20,000	22.97	77.20	1,545	4,000	16,000
Loblolly pine .....	4,000	2.29	25.80	103	4,000	.....
Mahogany .....	25	.06	189.47	47	50	75
Total .....	147,000	160.60	\$56.00	\$9,361	111,000	51,075

## MISCELLANEOUS.

Table 9 is made up of four woods and contains something over two million feet. This represents the odds and ends left over after all that properly belongs with industries has been taken care of. Some commodities are not manufactured in amounts large enough to entitle them to be called industries, and they go in this miscellaneous table. Among some which fall in that class in Florida are lard buckets, candy tubs, water pails, patterns, trunks, sample cases, and wooden ware of several kinds.

TABLE 9.—MISCELLANEOUS.

KIND OF WOOD.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost F. O. B. Factory.	Grown in Florida. Feet b. m.	Grown Out of Florida. Feet b. m.
	Feet b. m.	Per cent.				
Cypress .....	1,000,000	62.00	150.00	\$150,000	1,000,000	
White Pine .....	50,071	2.66	30.00	1,502.13		50,071
Red gum .....	2,000	.14	30.00	60.00		2,000
Hardwood .....	2,000	.10	30.00	60.00		2,000
Totals .....	2,004,071	100.00	\$21.50	\$42,122.13	2,000,000	64,071

10



### APPORTIONMENT OF WOOD AMONG INDUSTRIES.

Of the twenty-seven woods reported by Florida manufacturers, and listed in Table 10, ten are used by only one industry each, and also one in all the industries. Cypress is that one, and as far as Florida is concerned, it is the universal wood. The makers of vehicles use the smallest quantity, the planing mills the most. Some of the industries take woods because they are cheap, others because of particular properties desired. Boxes and crates afford an instance of the first kind, vehicles of the second. Certain boxes make exacting demands upon lumber, generally whatever is convenient and cheap is used.

TABLE 19.—PERCENTAGE OF THE DIFFERENT KINDS OF WOOD USED BY EACH INDUSTRY.

KIND OF WOOD.	Boxes and Crates (packing.)	Boxes (staves.)	Car Construction.	Miscellaneous.	Packing Mill Products.	Sash, Doors, Blinds and General Mill Work.	Ship and Boat Building.	Vehicle and Vehicle Parts.
Hardwood .....				100.00				
Birch .....					42.88	97.14		
Black gum .....	100.00							
Cuban pine .....	31.45		9.82		65.45			
Cypress .....	.15	4.71	1.54	9.09	22.14	84.23	30.85	0.16
Evergreen magnolia .....	100.00							
Hickory .....	71.29							23.71
Live Oak .....						0.15	95.77	
Loblolly pine .....	9.25				91.25	.04		.01
Longleaf pine .....	9.26		1.91		92.61	2.61	.01	.01
Maple .....							100.00	
Mahogany .....			19.41				80.59	.01
Red cedar .....							100.00	
Red gum .....	74.20		25.20	.20				
Red Oak .....			100.00					
Sourwood .....							100.00	

Red pine .....	20.00				80.00			
Shortleaf pine .....					100.00			
Spanish cedar .....	20.01	75.25						
Sycamore .....			100.00					
Sugar maple .....			100.00					
Sweet magnolia .....	100.00							
Tank .....							100.00	
White ash .....			21.75				.50	7.00
White oak .....			53.27			5.14	19.74	4.55
White pine .....			1.00	74.50		15.25	8.35	
Yellow poplar .....			69.33		11.50			13.17
<b>Total per acre .....</b>	<b>10.07</b>	<b>1.84</b>	<b>1.84</b>	<b>.40</b>	<b>75.25</b>	<b>6.59</b>	<b>.81</b>	<b>.83</b>

TABLE 11.—COSTS OF THE DIFFERENT KINDS OF WOOD USED BY EACH INDUSTRY.

KIND OF WOOD.	Booms and Crates (per cubic ft.)	Booms (tobacco.)	City Construction.	Miscellaneous.	Packing Mill Products.	Sacks, Doors, Blinds and General Mill Work.	Ship and Boat Building.	Vehicles and Vehicle Parts.
Aspenwood .....				16.00				
Birch .....					65.00	77.00		
Black gum .....	18.00							
Cuban pine .....	9.24		59.00		12.00		69.00	
Cypress .....	9.71	12.00	59.11	50.00	12.00	12.00	67.00	77.00
Evergreen magnolia .....	8.00							
Hickory .....	22.00							60.00
Live oak .....						44.00	67.00	
Loblolly pine .....	8.25				12.00	20.00		64.00
Longleaf pine .....	8.90		12.00		12.00	16.00	39.00	64.00
Maple .....							160.00	
White oak .....			137.00				170.00	160.00
Red cedar .....						44.00		
Red gum .....	8.58		59.00	49.00				
Red oak .....			72.00					
Redwood .....								

East pine .....	19.00								
Shortleaf pine .....								100.00	
Spanish cedar .....	23.47	24.82				14.00			
Spruce .....			27.00			12.00			
Sugar maple .....			20.00						
Sweet magnolia .....	22.00								
Tank .....								225.00	
White ash .....			21.50					48.00	08.34
White oak .....			18.50				91.00	64.01	04.38
White pine .....			60.00	99.54		21.00	88.00		
Yellow poplar .....			24.15			65.00			77.80
Total Average costs .....	\$ 9.82	\$ 11.82	\$ 18.76	\$ 21.50	\$ 11.44	\$ 15.00	\$ 24.35	\$ 64.01	\$ 64.01

## COST OF SPECIES BY INDUSTRIES.

Table 11 is a companion of 10. One shows the apportionment of woods among the industries, the other shows the cost per 1,000 feet of the several woods by the industries. A cursory examination will show that wood is not fixed in price, as wheat and cattle, or many other staple commodities are. Differences in prices for the same species are not due to differences in freight and handling charges, as is the case with many other wares. The red gum for cars costs more than twice that bought by box makers. Ash employed by vehicle manufacturers is three times as expensive as what car builders use. The white oak which goes to the door manufacturers is five times as high in price as that purchased for car shops. Cypress varies in cost as four to one, depending upon what the manufacturer is buying it for.

These instances are representative of the rule. The cost of wood depends on quality to a larger extent than with most commodities. Cypress good enough for boxes would fall far below the requirements of the vehicle maker who uses it in tops for light business wagons. Hickory which will make satisfactory crates is too cross-grained or knotty for buggy spokes or carriage poles, consequently the buyer of wood for those purposes must pick his grades and pay the price, while the crate maker takes the refuse at less than half the cost.

## SUMMARY BY INDUSTRIES OF WOODS USED IN FLORIDA.

Table 12 is arranged to show at a glance the quantity of wood used by each of the industries in Florida, together with the average price paid by each industry, and the per cent of the material grown in the State and out. The average cost of the wood demanded by the Florida manufacturers does not differ much from the reported average cost in other States which grow large amounts of yellow pine. Following are averages:

Arkansas .....	\$11.49
Louisiana .....	11.63
Mississippi .....	12.22
Alabama .....	12.24
Florida .....	12.41
Texas .....	13.30

In the six large lumber-producing States of the South the average cost of material varies only \$1.81 per thousand between the highest of the States, Texas, and the lowest, Arkansas. No such agreement in price as this could be found in an equal number of the Northern States.

TABLE 12.—SUMMARY OF WOODS USED BY INDUSTRIES IN FLORIDA.

INDUSTRIES.	Quantity Used Annually.		Average Cost per 1,000 Feet.	Total Cost L. & V. Factory.	Grows in Florida. Per Cent.	Grows Out of Florida. Per Cent.
	Feet b. m.	Per Cent.				
Finishing mill products.....	487,712,607	78.52	\$11.64	\$4,747,166	95.32	7.42
Boxes and crates, packing.....	55,659,099	29.67	9.52	528,125	94.26	2.25
Shed, doors, blinds, and general mill work.....	35,354,566	4.59	18.49	652,326	94.24	1.66
Boots, tobacco.....	9,824,228	1.84	21.92	216,842	24.69	81.91
Car construction.....	3,545,538	1.64	18.78	66,370	65.91	33.66
Miscellaneous.....	2,464,271	.49	22.56	57,491	94.26	3.16
Ship and boat building.....	1,591,169	.21	28.28	45,073	55.79	14.26
Vehicles and vehicle parts.....	567,696	.52	24.62	13,911	47.44	22.54
Totals.....	521,141,794	100.00	\$12.51	\$4,164,893	91.48	8.52



## APPENDIX.

There are other wood-using industries in Florida than those shown in preceding tables and statistics of this report. The Bureau of the Census, in co-operation with the Forest Service, collects certain data each year and publishes it. These statistics show the quantity of lumber cut annually by the sawmills in the State; the number of lath and shingles; the extent of the wood distilling industries; amount of tanbark and tanning extracts produced; railroad ties bought; staves and headings for barrels; cut of veneer and the kinds of wood used; and other facts of interest.

In order to make this report for Florida more complete, an abridgement of the several census reports is presented below. The total cut of lumber in the State for 1910 was 922,091,000 feet, apportioned among species as follows:

Yellow pine .....	921,323,000
Cypress .....	66,117,000
Yellow poplar .....	1,306,000
Red Cedar .....	1,275,000
Hickory .....	1,119,000
Oak .....	298,000
Cottonwood .....	240,000
Ash .....	238,000
Tupelo .....	153,000
Red gum .....	11,000
Maple .....	11,000

Lath used by plasterers are made at many sawmills from large slabs and defective logs, which otherwise would be wasted. Most of the lath are pine, but any wood, except the hardest, will answer. The output in Florida in 1910 was 42,404,000 lath.

Shingles in Florida are nearly all manufactured from

cypress and pine, the former predominating. A considerable part of the output is a by-product of sawmills, made from crooked or faulty logs, or from large slabs. There are mills which make shingles only, and they use good timber as well as poor. The latest returns give Florida's yearly cut at 171,421,000 shingles.

Two classes of cooperage are made, one for liquids, the other for dry substances. The former is called tight cooperage, the latter slack. The former is much more exacting in its demand for wood, and the material costs more. Good tight cooperage should not only be free from knots and other defects which might cause leakage, but the wood must be dense. Otherwise the contents of the barrel or cask may escape through the pores of the wood. Most woods are of such open structure that they will not hold alcoholic liquors. Slack cooperage is not so exclusive. Nearly any wood will do for some classes of slack cooperage, while others are more exacting. A considerable part of Florida's cooperage stock is bought by the naval dealers who ship rosin in cheap, but strong barrels. Fruit growers and truck gardeners use many barrels for their products, and oyster rakers and fishermen are pretty large users.

The output of tight cooperage staves in the State in 1910 was 1,350,000 staves and 61,000 sets of heading. Slack staves were largely pine and totaled 24,451,000. There were produced 1,122,000 sets of heading and 1,029,000 hoops.

The production of veneers in Florida was seven and a half million feet less in 1910 than in 1909. The output for four years was: 1907, 18,183,000 log feet; 1908, 28,256,000; 1909, 33,293,000; 1910, 25,842,000. Most of the veneer is rotary cut; that is, it is produced by pressing a heavy knife against the rim of a revolving log, and peeling off long ribbons of wood, round and round, until the log is reduced to a small center piece called a core. Statistics do not show what species of wood are used in

making the Florida veneers, but it is known that most of it is pine, and that the veneer is manufactured into baskets, boxes, crates, and other shipping containers.

There are higher classes of veneer than this, but little of it is made in Florida. It is made by sawing or slicing hardwoods very thin, and is used principally by makers of furniture, fixtures, and interior finish. The thin sheets of the costly veneer are glued upon backing of cheaper woods. Most furniture, except the cheapest and the most expensive kinds, is veneered. The cheapest kinds are of plain, inexpensive material, while the most costly sorts are often made of solid in order that the carver's ornaments may be cut in the wood.

Statistics of tanning materials are not compiled in a way to show what each of the States contribute, but the country is considered as a whole. The listing of mangrove, however, shows that Florida is an important contributor to the general supply, because that is the only State producing it. The principal supply comes from foreign tropical countries, and is of record among the imports. In 1909, 18,925 tons of mangrove bark, and 1,401,000 pounds of extract were used in this country for tanning and dyeing purposes. The imports of the bark that year were 12,263 tons, leaving a balance of 6,662 tons which was presumably obtained in Florida. Complete statistics later than 1909 have not been published; but the imports of mangrove bark in 1910 were 17,088 tons.

Next after Alabama, Florida contributes more to the softwood distillation industry than any other State. Most of the wood used in Florida is longleaf and Cuban pine. The total amount in 1910 was 52,144 cords, which was 27,000 cords more than was reported the year before. Both kinds of distillation are used, the destructive process, which destroys the wood by burning, and the steam process which employs heat, but not enough to char the wood. The principal products secured by the destructive

process are charcoal, tar, and turpentine; and by the steam method, turpentine and heavy oils. Owing to the difference in the resinous content of pine wood, the yield per cord of the several products varies greatly. About one-half of the material was body wood, the remainder was limbs, stumps, slabs, sawdust, and other mill waste.

Florida contributes largely to the country's output of naval stores. Almost half of the whole product of spirits of turpentine in 1909 came from Florida, and it led all the other States in rosin.

### WOOD USES BY SPECIES.

The manufacturers who reported the woods which have been tabulated in this report, reported likewise the purposes for which they were used. That information is given in the following list:

#### Basswood.

Sample cases.

#### Birch.

Blinds.	Finish.	Sash.
Ceiling.	Flooring.	Siding.
Doors.	Molding.	Stairs.

#### Black Gum.

Fruit boxes.	Vegetable packages.
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#### Cuban Pine.

Ceiling.	Finish.	Molding.
Crates (veneer).	Flooring.	Siding.

#### Cypress.

Blinds.	Coach roofs.	Pails.
Boats.	Counters.	Sash.
Cabinets.	Doors.	Tanks.
Car lining.	Furniture.	Tubs.
Car repairs.	Interior finish.	Wagon bodies.
Car siding.	Molding.	Wagon panels.
Cases for cigars.	Packing cases.	

#### Evergreen Magnolia.

Hoops.	Fruit boxes.	Vegetable packages.
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**Hickory.**

Crating.

Handles.

Vehicles.

**Live Oak.**

Dredges.

Friction blocks.

Rudder stock.

**Loblolly Pine.**Balusters.  
Blinds.  
Baskets.  
Brackets.  
Cabinet work.  
Car repairs.  
Cases.  
Ceiling.  
Columns.  
Crates.Door frames.  
Doors.  
Finish.  
Flooring.  
Framing.  
Molding.  
Porch Work.  
rosts.  
Ralls.  
Sash.Scroll work.  
Siding.  
Store Fixtures.  
Tables.  
Vegetable packages.  
Veneer.  
Veneer boxes.  
Window frames.**Longleaf Pine.**Balusters.  
Baskets.  
Blinds.  
Boxes.  
Brackets.  
Cabinets.  
Car decking.  
Car finishing.  
Car repairs.  
Car siding.  
Ceiling.  
Columns.  
Crates.  
Deadwoods.  
Door frames.Doors.  
Finish.  
Flooring.  
Fruit boxes.  
Keels.  
Lighters.  
Molding.  
Novelties.  
Packing cases.  
Porch work.  
Posts.  
Ralls.  
Sash.  
Scows.  
Scroll work.Siding.  
Sills.  
Store fixtures.  
Stringers.  
Table legs.  
Tables.  
Tanks.  
Vegetable packages  
Vehicles.  
Veneer.  
Veneer boxes.  
Wagon beds.  
Window frames.**Madeira.**

Boats.

**Mahogany.**Auto shields.  
Auto trim.Boat finish.  
Car finish.

Interior finish.

**Red Cedar.**Ceiling.  
Finish.Flooring.  
Moldings.

Siding.

**Red Gum.**Boats.  
Crates.  
Boxes.  
Furniture.Hoops.  
Shook veneer.  
Store fixtures.  
Trunks.Vegetables.  
Packages.

Furniture.	<b>Red Oak.</b>	
	Car sills.	
Boat finish.	Rosewood.	
	Sand Pine.	
Blinds.	Doors.	
Boxes.	Sash.	
	<b>Shortleaf Pine.</b>	
Balusters.	Crates.	Rails.
Baskets.	Door frames.	Sash.
Blinds.	Doors.	Scroll work.
Boats.	Finish.	Siding.
Brackets.	Flooring.	Store fixtures.
Cabinet work.	Framing.	Tables.
Car repairs.	Fruit packages.	Vegetable packages.
Cases.	Moldings.	Veneer.
Ceiling.	Porch work.	Veneer boxes.
Columns.	Posts.	Window frames.
	<b>Spanish Cedar.</b>	
Cigar boxes.	Cabinets.	
	<b>Spruce.</b>	
Finish.	Sugar Maple.	
Car building.		
	<b>Sweet Magnolia.</b>	
Hoops.	Cabinets.	
	<b>Teak.</b>	
Boats.	<b>White Ash.</b>	
	Launches.	Wagon bodies.
Boats.	Store fixtures.	Wagon gears.
Cabinets.	Trim.	Wagon panels.
Furniture.	<b>White Oak.</b>	
	Ceiling.	Moldings.
Blinds.	Doors.	Sash.
Boat ribs.	Flooring.	Siding.
Boats.	Frames.	Sills.
Cabinet work.	Gunwales.	Stairs.
Car repairs.	Interior finish.	Vehicles.
Cases.	<b>White Pine.</b>	
	Doors.	Patterns.
Blinds.	Finish.	Sash.
Boats.	Flooring.	Siding.
Ceiling.	Molding.	
Coach repairs.		

## Yellow Poplar.

Car repairs.  
Interior finish.

Vehicles.  
Wagon bodies.

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 DIRECTORY.

Below is a list of Florida wood-using manufacturers who supplied much of the data contained in this report. Those manufacturing several products classified under different industries will appear in the list, with their addresses, under more than one industry.

## BOXES AND CRATES, PACKING.

Consumers Lumber & Veneer Co. ....	Apopka
Archer Crate & Basket Co. ....	Archer
E. O. Carver .....	Carters
J. J. Mendenhall .....	Clearwater
Biscayne Box Co. ....	Cocoanut Grove
A. T. Kelley & Co. ....	Gainesville
Standard Crate Co. ....	Gainesville
The Irvine Crate & Basket Co. ....	Irvine
Lakeside Veneering Mills .....	Kissimmee
Leesburg Saw & Planing Mill .....	Leesburg
Overstreet Crate Co. ....	Lockhart
King Lumber Co. ....	Nocatee
The McDowell Crate & Lumber Co. ....	Oak
Ocala Mfg. Co. ....	Ocala
J. R. Pounds & Son .....	Ocala
L. Warnell Veneer Co. ....	Plant City
W. M. Bothamly .....	Sanford
D. N. Holway & Co. ....	Tampa
The Shelp-Weidman Co. ....	Tampa
Wauchula Mfg. Co. ....	Wauchula
Newsom Mfg. Co. ....	Williston

Williston Mfg. Co. ....	Williston
Wolfenden & Co. ....	Worthington

## BOXES, TOBACCO.

D. N. Holway & Co. ....	Tampa
Sheip & Weidman Co. ....	Tampa
Tampa Cigar Box Co. ....	Tampa

## CAR CONSTRUCTION.

John Marshall Co. ....	Apalachicola
Gress Mfg. Co. ....	Jacksonville
Jacksonville Electric Co. ....	Jacksonville
Seaboard Air Line Ry. ....	Jacksonville
Florida East Coast Ry. ....	St. Augustine
Tampa Electric Co. ....	Tampa
Edge-Dowling Lumber Co. ....	Taylorville
Atlantic Coast Line Railroad ....	Wilmington

## MISCELLANEOUS.

Florida Trunk Mfg. Co. ....	Jacksonville
Merrill Stevens Co. ....	Jacksonville
G. M. Davis & Son ....	Palatka
Florida Woodenware Co. ....	Palatka
Florida East Coast Ry. ....	St. Augustine
C. E. Wittmayre ....	Tampa

## PLANING MILL PRODUCTS.

L. R. Davis ....	Alachua
Standard Lumber Co. ....	Alton
Cypress Lumber Co. ....	Apalachicola
Aycock Lumber Co. ....	Aycock
J. W. Bevis ....	Bascom
Blountstown Mfg. Co. ....	Blountstown
Bonifay Lumber Co. ....	Bonifay



Southern Saw Mill Co. ....	Bonifay
The Alger-Sullivan Lumber Co. ....	Century
Carolina-Florida Lumber Co. ....	Corey
Ingram-Dekle Lumber Co. ....	Dade City
Beach Rogers & Co. ....	DeFuniak Springs
McCormick Lumber Co. ....	DeLand
Browning Lumber Co. ....	East Palatka
Dantzler, Williams Lumber Co. ....	Edenfield
Geneva Lumber Co. ....	Eleanor
Gainesville Planing & Coffin Co. ....	Gainesville
Holmes Lumber Co. ....	Glen
Bond Lumber Co. ....	Glenwood
Simpson & Harper ....	Graceville
E. D. Abernathy ....	Graham
V. D. Eddy ....	Green Cove Springs
Wager, Von Horn & Wager ....	Green Cove Springs
Greenville Yellow Pine Co. ....	Greenville
Union Mfg. Co. ....	Greenville
J. L. Greer ....	Greer
Gulf Lumber & Railway Co. ....	Helen
West & Reaves Lumber Mills ....	Inverness
Cummer Lumber Co. ....	Jacksonville
The Doscher-Gardner Co. ....	Jacksonville
Enterprise Planing Mill Co. ....	Jacksonville
Forsyth Street Planing Mill ....	Jacksonville
J. C. Halsema Mfg. Co. ....	Jacksonville
Middleburg Lumber Co. ....	Jacksonville
Morgan Lumber Co. ....	Jacksonville
Renfroe & Williams ....	Jacksonville
Upchurch Lumber Co. ....	Jacksonville
Hamilton Lumber Co. ....	Jasper
Strickland Lumber Co. ....	Kathleen
J. Mizell & Bro. ....	Kings Ferry
Kissimmee Lumber Co. ....	Kissimmee
Osceola Lumber Co. ....	Kissimmee
The E. W. Bond Co. ....	Lake Helen
Britton Lumber Co. ....	Lakewood

J. S. Hussey .....	Largo
Leesburg Saw & Planing Mill .....	Leesburg
McGehee Lumber Co. ....	Levon
Geo. E. Porter, Jr. ....	Marianna
Marianna Mfg. Co. ....	Marianna
Martel Lumber Co. ....	Martel
Martin & Co. ....	Martin
Scotland Mills .....	Middleburg
German-American Lumber Co. ....	Millville
Alabama & Florida Lumber Co. ....	Noma
E. E. Converse .....	Ocala
Gulf Pine Co. ....	Odessa
A. L. Beck Lumber Co. ....	Orlando
Orlando Novelty Works .....	Orlando
Pounds Bros. ....	Orlando
Otter Creek Lumber Co. ....	Otter Creek
Escambia Land & Mfg. Co. ....	Pace
Wilson Cypress Co. ....	Palatka
Battle Bros. ....	Pasco
Florala Saw Mill Co. ....	Paxton
The DeSilva & Ferriss Co. ....	Pensacola
B. C. Duvall .....	Pensacola
Florida & Alabama Land Co. ....	Pensacola
Joel Frater Lumber Co. ....	Pensacola
S. H. Peacock .....	Perry
McMillan Mill Co. ....	Pine Barren
Bay Point Mill Co. ....	Pinewood
S. J. Fletcher .....	River Junction
Rodman Lumber Co. ....	Rodman
Canfield Co. ....	St. Augustine
Gulf Novelty Works .....	St. Petersburg
W. P. Carter & Co. ....	Sanford
E. P. Rentz Lumber Co. ....	Silversburg
Childs Bros. ....	Tallahassee
Tallahassee Lumber Yards .....	Tallahassee
Gulf Pine Co. ....	Tampa
Kirkland Lumber Co. ....	Tampa

T. W. Ramsey .....	Tampa
Southern Lumber & Supply Co. ....	Tampa
Tarpon Springs Lumber Co. ....	Tarpon Springs
Hall Lumber Co. ....	Terrell
East Coast Lumber Co. ....	Watertown
West Bros. ....	Westlake
Roess Lumber Co. ....	Zuber

### SASH, DOORS, BLINDS AND GENERAL MILL WORK.

Cypress Lumber Co. ....	Apalachicola
Lamb & Price .....	Arcadia
Carters Mfg. Co. ....	Carters
Joe M. McCormick & Co. ....	Eustis
The Lumber Mfg. Co. ....	Gainesville
The Doscher-Gardner Co. ....	Jacksonville
The Duval Planing Mill Co. ....	Jacksonville
Paul & Wayman .....	Lakeland
M. G. Rushton .....	Manatee
Marianna Mfg. Co. ....	Marianna
Seminole Novelty Works .....	Miami
C. S. Marcy .....	New Augustine
Orlando Novelty Works .....	Orlando
Selden Cypress Door Co. ....	Palatka
E. T. Roux & Son .....	Plant City
Quincy Variety Works .....	Quincy
G. E. Hood & Son .....	St. Augustine
W. H. Mitchell .....	St. Augustine
St. Petersburg Novelty Works .....	St. Petersburg
Tracy & Richardson .....	Taft
Empire Novelty Works .....	Tampa
Jetton Lumber Co. ....	Tampa
T. W. Ramsey .....	Tampa
Southern Lumber & Supply Co. ....	Tampa
D. B. Whittle .....	Tampa
Ybor City Novelty Works .....	Tampa
W. H. Lambert .....	Wauchula

## SHIP AND BOAT BUILDING.

Merrill-Stevens Co. ....	Jacksonville
W. I. Huffstetler .....	Miami
Southside Boat Works .....	Miami
Al McCabe .....	South Jacksonville
St. Johns River Ship Building Co. ...	South Jacksonville
South Jacksonville Dry Dock Co. ...	South Jacksonville
Thiebaud & Lundstrom .....	South Jacksonville
Tampa Steam Ways .....	Tampa

## VEHICLES AND VEHICLE PARTS.

Chapman's Carriage Factory .....	Jacksonville
McMurray & Baker .....	Jacksonville
Smith & Neil Co. ....	Jacksonville
Terrill Wagon Works .....	Lakeland
J. A. Dann Wagon Works .....	Miami
K. M. Large .....	Miami
G. M. Dykes .....	Miami
Magic City Wagon Works .....	Miami
Florida Hickory Wagon Works .....	Tallahassee