

UNITED STATES DEPARTMENT OF AGRICULTURE

**Soil Survey**  
of  
**Mobile County, Alabama**

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## COUNTY SURVEYED

Mobile County is in the southwestern corner of Alabama (fig. 1). Mobile, Tensaw, and Middle Rivers and Mobile Bay form its eastern boundary, and on the south it borders the Gulf of Mexico and Mississippi Sound. The western county line forms part of the State line between Alabama and Mississippi. Petit Bois and Dauphin Islands, lying from 5 to 12 miles distant from the mainland, are a part of the barrier reef that encloses Mississippi Sound and are included within the county limits. Exclusive of the islands, the county has an extreme north-south length of more than 60 miles. It is about 30 miles wide from east to west at the northern end and narrows to 17 miles at the southern end. The total area is 1,226 square miles, or 784,640 acres.

The surface features consist of two plains. One ranges from low lying and nearly level to undulating and is commonly termed "flatwoods". It extends along the coast line and the entire eastern side of the county and ranges in width from 3 to 10 miles. The bluff line, or escarpment, of the second, or high-lying plain of the interior, which has lost most of its smooth features through erosion and deep stream dissection, rises from 25 to 50 or more feet above the first plain. Remnants of the high plain occur on the major stream divides at the level of the original land surface. They range in area from a few acres on the narrow divides to as much as 10 square miles or more on the broad divide extending southward from Citronelle to Saint Elmo through the west-central part of the county and constituting the smoothest land of the upland plain. Numerous saucerlike depressions, which are poorly drained the greater part of the year, are scattered throughout many of these nearly level areas.

The county has a general dip to the south, as reflected in the elevations of the remaining flat land surfaces. Citronelle, in the northern part, has an elevation of 331 feet above sea level (2)<sup>1</sup>; Wilmer,



FIGURE 1—Sketch map showing location of Mobile County, Ala.

<sup>1</sup> Italic numbers in parentheses refer to Literature Cited, p 47.

in the west-central part, 200 feet; and Saint Elmo, at the southern end of the high plain, 132 feet. South of this the country slopes rapidly to a final drop of about 50 feet to the flatwoods. Calvert, on the flatwoods at the northern boundary of the county, is 57 feet above sea level; Mount Vernon, 5 miles south, 49 feet; Creola, 14 miles farther south, 23 feet; Mobile, at the head of Mobile Bay, about 15 feet; and Bellefontaine, in the southeastern part, 18 feet. From this point the land slopes gradually downward until it merges with the tidal marshes along Mississippi Sound.

In the northwestern and northeastern parts of the county, erosion and stream dissection have been greatest, and here the larger streams have cut down to approximate base level, that is, from 150 to 250 feet below the original land surface. They have well-defined flood bottoms and terraces with a maximum width of more than a mile. The several drainage basins are characterized by a series of rolling or steeply sloping and sharp ridges which gradually increase in elevation as the drainage heads and stream divides are approached. Where the streams are still actively cutting down, the valleys are deep and V-shaped, gradually widening and the slopes becoming less steep as the main streams are approached. Through the central part of the county the hills are more rounded and the valleys not so deep, and toward the south the general surface features are more smooth and the local relief less sharp. Where streams have cut through the escarpment that marks the edge of the upper plain on the east and south, the valleys are narrow and have steep slopes, giving the appearance of a series of promontorylike hills overlooking the lower country.

The low country along the Gulf and Mobile Bay is indented by many tidewater rivers and estuaries, many of which are bordered by marshes that are subject to inundation at high tide. Along Mobile and Middle Rivers, extending from the city of Mobile northward to the county line and ranging in width from 1 to 5 miles, is an extensive area of swamp which is traversed by numerous stream channels and bayous.

The drainage of the eastern half of the county is chiefly through Chickasaw Creek, Cedar Creek, and a number of smaller streams into Mobile River and Mobile Bay; the western part drains into Escatawpa River and Big Creek, both of which cross the State line into Mississippi before flowing into Mississippi Sound; and in the southern part, drainage is directly into Mississippi Sound.

On all the better drained soils of both the flatwoods and higher uplands, the original timber growth was a dense covering of large yellow pine; some of the poorly drained soils supported good stands of Cuban, or slash, pine; and the muck and swamp areas supported a growth of deciduous trees and shrubs, principally gum, bay, cypress, titi, and some water oak. Small areas of hammock land occur locally throughout the county, but they are more common on well-drained areas adjacent to Mobile Bay and Mobile River. These hammock areas are characterized by a mixed hardwood and pine growth, the hardwoods consisting principally of red oak, white oak, dogwood, hickory, magnolia, and some live oak, in the more sandy sections near the coast.

After removal of the dense cover of pine from most of the land, continuous burning destroyed a large part of the remaining young trees, and second-growth pine has been slow in reforesting the cut-over land. Many of the rolling sand hills in the central and northern parts of the county now support a heavy cover of scrubby oaks, principally blackjack, turkey, and runner oaks, none of which has much value other than for fuel. In the southern part, large areas of nearly level imperfectly drained soils, that once supported a heavy growth of pine, have been burned over so continuously that much of the land does not contain a green tree but supports a heavy sod of coarse wild grasses that furnish very good grazing for cattle and sheep in spring and early summer.

The area in which Mobile County is located was visited in 1519 by the Spaniard, Pineda, and later, in 1640, by his countryman, De Soto (3). In 1699 the Frenchman, d'Iberville, explored Mobile Bay and the adjacent territory, and the first settlement was effected under his leadership in 1702 near the mouth of Dog River. In 1711, this site was abandoned for a new one somewhat higher up the bay, on the present site of the city of Mobile. In 1712 the population of Louisiana, of which Mobile was the capital, numbered about 324, and by 1813, the population of Mobile was about 500. On acquisition of this area by the United States and its subsequent political subdivision under the new conditions of government, Mobile County was created by proclamation of Governor Holmes of Mississippi Territory in 1813. Mobile County originally embraced a large part of the present State of Mississippi. In 1818, when part of Jackson County, Miss., was added to Alabama it became a part of Mobile County. That part of the county lying east of Mobile Bay was, in 1820, given to Baldwin County, and the district which lay between the Washington County line and the bay, which had formerly belonged to Baldwin County, was attached to Mobile County.

The census report of 1930 gives the population of Mobile County as 118,363, of which 68,202 people live within the corporate limits of Mobile, the county seat and principal city. Smaller towns are Citronelle, Theodore, Calvert, Mount Vernon, Wilmer, Grand Bay, Irvington, Coden, and Bayou Labatre. A number of suburbs are adjacent to Mobile, and other villages and shipping points are scattered throughout the county.

Mobile, Alabama's only seaport, is situated on Mobile Bay, at the mouth of Mobile River. The channel leading from deep water to the wharves at Mobile has a minimum depth of 30 feet and is increasingly being deepened to meet shipping demands. Advantageously located as a port, Mobile has achieved a high rank among commercial centers of the South. It has a large and increasing ocean and coastwise trade. Much of the produce of the surrounding country is brought in by boats that traverse the rivers to the north and by rail, and is handled through its markets. Excellent transportation facilities are afforded over the lines of the Southern Railway; Mobile & Ohio Railroad; Louisville & Nashville Railroad; Gulf, Mobile & Northern Railroad; Alabama, Tennessee & Northern Railroad; and the Bay Shore division of the Mobile & Ohio that serves the eastern and southern parts of the county, connecting with

the main line at Mobile and having terminals at Bayou Labatre and Dawes.

Although Mobile furnishes a ready market for a large quantity of farm produce, most of the truck crops are shipped to Chicago, St. Louis, Cincinnati, and other large centers of population outside the State.

Many of the main highways and county roads are paved, and the rest are graveled, sand-clay surfaced, or dirt roads that are kept in a reasonably good state of repair. Other projects for road improvement and paving are started when the demand becomes great enough.

Local and long-distance telephone service is reasonably good throughout most of the rural sections. The system of consolidated rural high schools, with bus transportation for pupils living in outlying districts, furnishes good educational advantages for all parts of the county. Well-kept churches of various denominations are located in or near all community centers.

There is a large number of manufacturing industries, most of them operating in or near Mobile. Turpentine and lumbering are the most widely scattered industrial operations carried on throughout the county. Commercial fishing is confined largely to the waters of Mississippi Sound and the Gulf.

#### CLIMATE

The climate of Mobile County is oceanic; that is, the range between the mean temperatures of winter and summer is less than 30°. The county lies in a section of high rainfall, with an annual average of more than 60 inches. The temperature is comparatively equable throughout the year. The summers are long and comparatively hot, but the heat is tempered by rather constant breezes from the Gulf, and the nights are usually pleasant. The winters are short and mild, with occasional short periods of subfreezing temperature, which usually occur in January or the first part of February and are accompanied by killing frost.

Although the rainfall is greater in the summer and least in the fall, it is well distributed throughout the year. The average frost-free period at Mobile is 293 days, from February 16 to December 6, inclusive, and it is 261 days, from March 6 to November 22, inclusive at Citronelle in the northern part of the county, although in some years the frost-free season is much longer. The northern part is much colder than the section around Mobile or in the southern part.

The climate is favorable to the production of a wide variety of crops. Cabbage, onions, radishes, lettuce, spinach, and other crops can be grown during the winter, or they may be planted late in the winter for the early spring market. Satsuma oranges are grown over the greater part of the county.

Tables 1 and 2 give the normal monthly, seasonal, and annual temperature and precipitation compiled from records of the Weather Bureau stations at Mobile and Citronelle, respectively. The mean temperature at Mobile is not noticeably different from that at Jacksonville, Fla., but the rainfall is greater. The snowfall is negligible.

TABLE 1.—Normal monthly, seasonal, and annual temperature and precipitation at Mobile, Mobile County, Ala.

[Elevation, 84 feet]

Month	Temperature			Precipitation		
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1904)	Total amount for the wettest year (1881)
	° F	° F.	° F.	Inches	Inches	Inches
December.....	52.2	80	14	5.02	2.77	9.15
January.....	51.5	78	11	4.85	3.77	8.97
February.....	54.7	80	-1	5.52	4.01	8.00
Winter.....	52.8	80	-1	15.39	10.55	26.12
March.....	59.7	91	25	5.98	2.51	10.41
April.....	66.3	90	32	4.63	1.21	9.21
May.....	74.4	98	46	4.32	2.12	1.44
Spring.....	66.8	98	25	14.93	5.84	21.06
June.....	80.3	101	50	5.43	1.64	4.85
July.....	81.4	102	64	6.89	7.98	2.77
August.....	81.0	101	57	6.92	8.72	15.22
Summer.....	80.9	102	50	19.24	18.34	22.84
September.....	78.1	97	48	5.00	1.92	11.71
October.....	69.3	95	34	3.60	3.29	3.23
November.....	58.6	83	25	3.64	2.56	7.36
Fall.....	68.7	97	25	12.24	4.77	22.30
Year.....	67.3	102	-1	61.80	39.50	92.32

TABLE 2.—Normal monthly, seasonal, and annual temperature and precipitation at Citronelle, Mobile County, Ala.

[Elevation, 331 feet]

Month	Temperature			Precipitation		
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1929)	Total amount for the wettest year (1925)
	° F	° F.	° F.	Inches	Inches	Inches
December.....	53.0	86	13	5.03	2.52	5.04
January.....	52.3	84	13	4.90	7.17	7.79
February.....	54.4	84	-2	6.15	5.50	14.74
Winter.....	53.2	86	-2	16.08	15.28	27.57
March.....	61.0	90	22	6.14	.91	19.56
April.....	67.0	92	29	4.92	1.46	4.28
May.....	73.6	98	43	4.47	4.38	3.69
Spring.....	67.2	98	22	15.53	6.75	27.53
June.....	79.7	104	53	5.29	2.42	8.03
July.....	80.9	106	63	6.68	8.21	6.95
August.....	80.8	102	55	6.31	1.93	3.60
Summer.....	80.5	106	53	18.28	12.56	18.58
September.....	77.8	100	46	4.74	1.99	4.27
October.....	68.7	96	31	3.36	5.65	7.92
November.....	59.5	87	22	3.27	3.19	6.12
Fall.....	68.7	100	22	11.37	10.83	20.31
Year.....	67.4	106	-2	61.26	45.42	93.99

## AGRICULTURE

The early agriculture of Mobile County consisted entirely of growing subsistence crops. Owen's History of Alabama (3) reports that by 1753 sufficient corn was grown in the vicinity of Mobile; that there were some orchards of oranges, pomegranates, apples, pears, and peaches; and sweetpotatoes, turnips, radishes, and all kinds of garden vegetables were also grown. Many cattle, horses, and hogs were raised near Mobile at that time.

The agriculture continued on a small scale until about 1900. The county was heavily timbered with longleaf and shortleaf pines, the land was generally held in large tracts, and the lumber and turpentine industries constituted the main sources of revenue and employment. It was not until these resources were nearly exhausted and the land was for sale in small tracts that the people began to turn to agriculture as a source of income.

During the period between 1900 and 1910, the number of farms increased about 50 percent and remained about constant for the next decade, but the amount of improved land a farm more than doubled. Between 1920 and 1930 the number of farms increased rapidly, from 1,240 in 1920 to 1,557 in 1930. The rapid increase in the number of farms just after the turn of the century was evidently owing to the land boom and speculation based on developing pecans, Satsuma oranges, and other orchard fruits that showed possibilities in this section. The next rapid rise in the number of farms came with an influx of farmers from sections of the State outside Mobile County, who developed lands for general farming, cotton growing, and vegetable growing. Prior to this, truck farming had been the largest source of cash income to the farmers.

Farming at present is diversified. Only a small number of growers of special truck crops in the vicinity of Mobile, Theodore, and Irvington depend on trucking for their main income. The larger number of farmers produce such general crops as corn, hay, cotton, peanuts, and other feed crops, and most of them have a small acreage devoted to truck crops, in order to provide a cash income during the spring and early summer. No specialized garden crop is grown from year to year, but, through organization and some market study, attempts are made to grow crops that seemingly will be most in demand for the current year.

Corn has always occupied the largest acreage, hay and forage crops ranking second, and vegetables third, whereas cotton was for many years of very little importance. The 1930 census report shows cotton as having reached second place in acreage in 1929 and hay crops occupying very little more than the acreage devoted to vegetables. In 1929, corn occupied 11,221 acres, cotton 6,355 acres, hay crops 5,049 acres, all vegetables other than potatoes 4,570 acres, and potatoes and sweetpotatoes combined 1,859 acres. Although the number of fruit trees has decreased greatly, pecans have made a correspondingly much greater increase, from 23,961 bearing trees in 1919 to 101,540 trees in 1929. This change has been, in part, brought about by the pecan trees supplanting the fruit trees with which they were interplanted, the pecan trees coming into

bearing after many of the fruit trees had passed their period of heaviest bearing.

The Satsuma-orange industry is on the decline. From a small beginning in 1898 the number of plantings increased rapidly until about 1920 when more than 1,000,000 trees were reported. In 1929, there were 364,212 orange trees of bearing age and 123,991 trees not of bearing age, nearly all of which were Satsumas. The decline in Satsuma orange growing is caused by the great expense of producing this crop, by diseases, and by periodic destruction of the trees or the fruit buds in cold weather.

The numbers of livestock, except sheep, declined between 1920 and 1930, sheep making a small gain during this 10-year period.

The average size of farms in Mobile County in 1890 was 177 acres, with 11.9 percent of the county included in farms, but only 12.9 percent of each farm classed as improved land. Since then the number of farms has trebled, but the size has decreased to 75.8 acres with the area included in farms remaining almost the same. Of the land in farms, 35.7 percent was classed as improved in 1920, and in 1930, 45.4 percent of the farm land was included in crop land and plowable pasture.

The number of tenant- and manager-operated farms has increased in the last 20 years until at present 74.5, 17.9, and 7.6 percent are classed, respectively, as being operated by owners, tenants, and managers. The average value of land and buildings a farm in 1930 was \$6,052, 72.1 percent of which was given as the value of land alone.

About 10 percent of the farms operated by owners are well equipped with good dwellings, large barns, and improved machinery. A few have electric lights and running water. The average farm home is usually unpainted, and there are small barns and sheds for the work animals. The farm implements consist principally of 1- and 2-horse turning plows and hand tools, although some farmers own improved riding and walking cultivators. The use of improved machinery is increasing. The work animals are mules and horses, and the number of each is about equal. A few of these are raised on the farms, but most of them are purchased from outside markets.

Practically all the farm owners keep one or more milk cows to supply milk for home use, but only a few tenant farmers keep cows. The most popular dairy cow is the Jersey, and some Holstein-Friesians are used. The greater number of beef cattle are non-descript or common scrub cattle. Hogs are raised on practically all the farms to supply meat for home needs, and a few farmers have a surplus for market. The hogs are a marked improvement over the once common "piny woods rooter." Duroc-Jersey is the most popular breed. Chickens are generally kept by both owners and tenants. Enough eggs are produced to supply home needs, and many farmers have a surplus for market.

According to the 1930 census, of the 278 tenants, 147 are cash tenants and 131 rent on a share basis, either on a half-and-half basis or a third-and-fourth. Where the farm is rented for one-half of the crops, the owner furnishes the land, equipment, and half the fertilizer, and where rented on a one-third and one-fourth basis, the

landowner receives one-third of the corn and one-fourth of the cotton. Cash rent ranges from \$1 to \$5 an acre, according to the character of the land, with an average rental of \$3.

White and colored laborers are hired. The average daily wage is about \$1, and the monthly wage ranges from \$10 to \$20, with board.

In 1929, 1,245 farms, or 80 percent of the total number, reported \$349.159 expended for fertilizer, or an average of \$280.45 a farm. In the same year, 873 farms reported an average expenditure of \$641.84 a farm for labor and 930 farms an average of \$480.07 a farm for feed. Some of the larger users of fertilizers buy materials and mix their own fertilizer, but most of the smaller users buy fertilizer ready mixed.

Fruits and nuts had the highest value of any class of crops in 1929—\$671.189—and the value of vegetables was only a few thousand dollars less. Dairy products, other than those for home use, were valued at \$544,332, which was about \$133,000 less than the value of all livestock. The value of all agricultural products for 1929 was \$3,330,426.

Agriculture is largely of the subsistence and cash-crop types. Little development of other types of farming has taken place, and only a few farmers have given any attention to livestock and livestock products as a source of revenue. Dairying in the vicinity of Mobile, to supply the whole-milk trade in the city, is a specialized type of farming operated by dairymen who depend largely on purchased feed for their cattle, as the pasture acreage is not adequate for their needs. At Citronelle the same general type of dairying is followed on a smaller scale, and through the rural sections only a home supply of milk and butter is produced.

Beef production has always been carried on under open-range conditions by rather haphazard methods, and little thought or care has been given to the cattle or to the quality of the beef produced. Much of the land is held in large tracts by companies or individuals who are not primarily interested in livestock, and some of the smaller landholders profit by this condition to keep rather large herds of cattle that range wherever they can find feed. Owing to compulsory dipping of cattle under the tick-eradication campaign, however, a number of these herds have been sold recently. Most of the beef animals are sold directly from the range to buyers for the slaughterhouses.

In recent years the introduction of purebred or grade Hereford bulls has resulted in considerable improvement in the quality of the beef produced. In the section around Grand Bay a number of Brahman bulls have been introduced, as they are known to be more resistant to injury from parasites and tick fever. The grade cattle resulting from this crossbreeding seem to grow more rapidly and carry better flesh than native cattle of the same age, under the same range conditions.

Winter feeding of beef cattle is practiced to only a small extent. Some cattle are run in fields where velvetbeans and soybeans have been interplanted with corn, and the beans and dried corn fodder bring the cattle through the winter in much better condition than

In the northern part of the county, a rather large number of sheep are run on the open range, and some small flocks are kept in all sections, but only a few farmers make any effort to care for or to provide better pasturage for their flocks. Some sheep are pastured in pecan groves, in order to help keep weeds down, or are run in fields after the crops have been harvested. Most of the sheep are kept only for the wool they produce, and little thought is given to the size of the animal or the quality of the wool. A few lambs are sold in Mobile for the Easter market. Losses from parasites, diseases, and dogs hold the annual increase of flocks to a minimum, and in some years the losses of sheep are equal to, or greater than, the increase of lambs.

Practically all the farmers raise some hogs, but many of them raise only enough for home use. On farms of the general type, where the crops are largely corn, peanuts, beans, and potatoes, the crops are marketed by feeding to hogs. Most of the hogs are raised on the open range, and most of them are of native stock that has been improved by introducing the heavier meat breeds. Better care is given to the herds on which the farm income depends. Many of the native hogs (razorbacks) range the open land in a semiwild state, and some of them are fattened on mast.

A few chickens are kept on nearly all the farms to supply the home needs, and the surplus chickens and eggs are sold in nearby villages or in Mobile. Some poultry farms, most of which are specialized for egg production, are located in the southern part of the county near Mobile and in the eastern part. All the eggs are used in supplying the local markets. A small number of the general farms derive a large part of their cash income from a side line of poultry and egg production, but not enough turkeys or other poultry are produced to supply local demands.

### SOILS AND CROPS<sup>2</sup>

Mobile County, bordering on the Gulf of Mexico and Mobile Bay, includes about 30 percent of flatwoods and 70 percent of well-drained uplands. The flatwoods extend across the southern end and along the eastern side, and large areas of cut-over poorly drained flatwoods soils are used only for open-range grazing for cattle and sheep. In the northern half, extensive areas of rough, broken, and hilly country, that are not farmed, could best be utilized for the production of timber, as this part, once heavily forested with pine, has had most of the large merchantable timber removed. Some good second-growth timber covers part of the land, but on most of it the trees are small and widely spaced. At present, turpentine and some lumbering are engaged in, and small trees are being cut for poles, piling, and pulpwood.

The principal farming areas are on the nearly level or gently rolling lands near Mobile, Theodore, Irvington, Saint Elmo, Grand Bay,

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<sup>2</sup>The soils shown on the boundary line between Mobile County, Ala., and George and Jackson Counties, Miss., apparently fail to join. For instance, Norfolk sand of Mobile County adjoins Ruston sand and its rolling phase in George County; and Bladen fine sandy loam in Mobile County adjoins Plummer very fine sandy loam in Jackson County. These apparent discrepancies are due to further, more detailed studies of the soils in this general area.

Union Church, Dawes, Wilmer, Georgetown, Turnerville, and Citronelle. The farming soils occur in widely scattered irregular areas, ranging from a few acres to 4 square miles in extent, in the more level sections and rolling sand hills of the central part of the county. Some of the swamp and muck areas of the flatwoods are continuous for as much as 10 square miles, or more. According to the 1930 census report, only 6.8 percent of the area of the county is classed as improved land which includes crop land and plowable pasture.

The present agriculture of Mobile County is as diversified as that of any county in the State. It consists of growing such staple crops as corn, cotton, beans, peas, sweetpotatoes, and some small grain. A large acreage is planted to pecans, Satsuma oranges, and special truck crops, such as cabbage, potatoes, green beans, peas, carrots, beets, radishes, cucumbers, tomatoes, and the leafy vegetables.

The better drained upland soils are well adapted to the production of cotton. This, with the need of a cash crop and the fact that a number of the farmers have come in from sections that have always depended on cotton for the farm income, has been the greatest influence in its selection as one of the main crops of the interior part of the county. Yields are good, with a maximum of 1 bale an acre. Therefore it is a profitable crop to grow. Also, the seasonal demand for cotton does not fluctuate as is sometimes true with truck crops, and this has been a factor in the selection of cotton as a money crop.

Corn, the leading crop as regards acreage, is grown because of the need of a home supply for meal, livestock feed, and a fattening ration for hogs. It is not especially well adapted to the sandy soils of this section, and it is necessary to use heavy applications of fertilizer in order to obtain good yields. The yields range from 15 to 30 bushels an acre, but when corn is planted after truck crops that have been highly fertilized, the yield may be 60 or more bushels.

Peanuts, velvetbeans, soybeans, and sweetpotatoes are well adapted to both soils and climate, but, since there is no present market for these crops in this section, they are grown only for home use.

With the prevailingly uniform climate throughout the county, all the smooth better drained soils are well suited to a great variety of truck crops, but the distance from railroad shipping facilities and the lack of a sufficient supply of labor for the quick handling of truck crops at harvest time have been limiting factors in the production of these crops in some sections. All the soils are low in organic-matter content and available plant nutrients, but they respond readily to applications of manure and commercial fertilizers.

Trucking, with the exception of a few special crops, is carried on more intensively in the vicinity of Mobile, because of the availability of hand labor, the requirements of which are largely seasonal, the nearness to local markets, and the accessibility of the several railroads radiating to all the principal markets of the country. These factors have had considerable influence in the clearing of a large acreage of imperfectly drained soils, just outside the city of Mobile and adjacent to the railroads, to be planted almost exclusively to truck crops, principally cabbage. Shallow surface ditches are dug in such soils in order to improve the drainage and to make conditions more favorable for crop growth.

The well-drained friable fine sandy loams are well adapted to the growth of Satsuma-orange and pecan trees. Injury to the orange trees due to cold weather occurs about once in every 5 to 7 years, and this has a tendency to curtail production until the trees have recovered. Tropical storms cause some damage to pecan trees, and at intervals of several years a crop of nuts is lost by storms whipping the nuts off the trees before maturity.

The relationship of the individual crops to soil groups and soil types will be more fully discussed under the groupings of soils that have been made on their common characteristics of color and drainage. According to these characteristics, the soils are placed in three broad groups, together with a fourth group of miscellaneous soil materials consisting of undifferentiated materials that have no definite or fixed characteristics and no soil development. These groups are as follows: (1) Light-colored well-drained soils, (2) light-colored poorly drained soils, (3) dark-colored or black poorly drained soils, and (4) miscellaneous soil materials.

In the following pages, the soils of Mobile County are described, and their agricultural relationships are discussed; their location and distribution are shown on the accompanying soil map; and table 3 gives their acreage and proportionate extent.

TABLE 3.—*Acreage and proportionate extent of soils mapped in Mobile County, Ala.*

Type of soil	Acres	Per-cent	Type of soil	Acres	Per-cent
Norfolk fine sandy loam	32, 448	4. 1	Cahaba fine sandy loam	128	0. 1
Norfolk fine sandy loam, flatwoods phase	17, 088	2. 2	Dunbar fine sandy loam	9, 600	1. 2
Norfolk loamy fine sand	82, 880	10. 6	Coxville fine sandy loam	5, 632	. 7
Norfolk loamy fine sand, flatwoods phase	32, 128	4. 1	Bladen fine sandy loam	5, 632	. 7
Norfolk sand	125, 760	16. 0	Bladen loamy fine sand	896	. 1
Norfolk very fine sand	10, 304	1. 3	Leaf fine sandy loam	2, 368	. 3
Ruston fine sandy loam	33, 920	4. 3	Myatt fine sandy loam	9, 088	1. 2
Ruston fine sandy loam, rolling phase	7, 296	. 9	Plummer fine sandy loam	17, 472	2. 2
Ruston loamy sand	53, 376	6. 8	Grady clay loam	2, 368	. 3
Red Bay fine sandy loam	9, 856	1. 3	Ochlockonee clay	29, 888	3. 8
Orangeburg fine sandy loam	11, 648	1. 5	Scranton fine sandy loam	3, 136	. 4
Irvington very fine sandy loam	21, 376	2. 7	Scranton loamy fine sand	15, 552	2. 0
Irvington very fine sandy loam, flat phase	384	. 1	Portsmouth fine sandy loam	16, 320	2. 1
Irvington very fine sandy loam, slope phase	12, 672	1. 6	Muck	20, 352	2. 6
Susquehanna fine sandy loam	2, 176	. 3	Guin soils (undifferentiated)	40, 192	5. 1
Guin fine sandy loam	0, 408	1. 2	Meadow	46, 076	6. 0
Eulonia very fine sandy loam	12, 096	1. 6	Swamp	48, 640	6. 2
Kalmia fine sandy loam	4, 160	. 5	Tidal marsh	17, 216	2. 2
Kalmia loamy fine sand	7, 360	. 9	Made land	1, 536	. 2
			Coastal beach	1, 920	. 2
			Unclassified city land	3, 302	. 4
			Total	784, 640	

#### LIGHT-COLORED WELL-DRAINED SOILS

The soils of this group cover an area of 760 square miles, which is more than 50 percent of the entire county. About 60 percent of the soils included in this group consists of the several types of the Norfolk series, consequently the group might be termed the Norfolk. Besides the Norfolk soils, it includes Guin fine sandy loam, and all the types of the Ruston, Orangeburg, Red Bay, Irvington, Susque-

hanna, Kalmia, Eulonia, and Cahaba series, which cover large irregular areas throughout the county.

The surface relief ranges from nearly flat or undulating to rolling. Natural surface drainage ranges from fair or good to excessive in the more rolling areas, and internal drainage of the Ruston, Orangeburg, Red Bay, Kalmia, and Cahaba soils, and of the Norfolk soils, except the phases occurring in the flatwoods, ranges from good to excellent. The heavy clay subsoils, or the semicemented condition of the substrata, cause poor or imperfect internal drainage in the Eulonia, Susquehanna, Guin, and Irvington members of the group. Sheet erosion and gullying are very active on the more rolling heavy-subsoil types. The sand and loamy sand types, even in their steepest parts, erode very little but are subject to severe leaching. The surface layers of the soils of this group range from gray or grayish yellow to light brown, and they are dominantly sandy, ranging from sands or very fine sands to fine sandy loams. The subsoils range from pale yellow to reddish brown and red and from friable fine sandy loams and fine sandy clays to heavy plastic or stiff clays.

The sandy texture of the surface soils renders them loose and friable and makes them easy to cultivate with light farm machinery of the hand or improved power types. These soils can be cultivated within a very short time after rains without danger of puddling or running together, and they do not dry out hard and bake on the surface. They are low in organic matter and plant nutrients, and they are slightly acid, but, owing to their good physical structure, they respond readily to applications of commercial fertilizers and manure.

The soils of this group dominate the agriculture of the county. On them are grown all the cotton, sweetpotatoes, and potatoes; all or nearly all the green beans, peas, tomatoes, and cucumbers; most of the corn; and a large part of the cabbage and other leafy and root vegetable crops. Satsuma oranges and pecans, with few exceptions, occupy soils of this group.

Cotton growing is confined largely to the broader and smoother areas of the fine sandy loam soils of the Red Bay, Orangeburg, Ruston, and Norfolk series of the central and west-central parts of the county, and, in connection with the cotton and other staple crops in these sections, most of the green beans and cucumbers are grown for outside markets. These vegetables are generally planted on soil that is somewhat more sandy than that used for cotton, as such soil warms up a little earlier and is easier to cultivate. These truck crops are grown only to the extent that the acreage can be handled by the farmer and his family at harvest time or with the aid of some labor from the nearby farms. This limited growing of truck crops, in connection with the production of cotton and general farm crops, was brought about by the need of cash crops that could be marketed in the spring and early summer to supplement the farm income.

In the vicinity of Citronelle, tomatoes and cucumbers are grown, largely on the Norfolk, Ruston, and Orangeburg fine sandy loams and loamy fine sands. The cucumbers are grown almost entirely on the loamy fine sand types. Potatoes and cabbage are grown largely south of Mobile, in areas adjacent to the Louisville & Nash-

ville Railroad and a branch line of the Mobile & Ohio Railroad, on the Irvington and Norfolk soils. Most of the potatoes are planted in the more sandy and better drained fields. Many of the root and leafy vegetable crops that do well on imperfectly drained soils are planted on the lower lying parts of the flatwoods phase of Norfolk fine sandy loam.

Even in the centers of the most intensive truck-crop growing, the agriculture is somewhat of the self-sufficing type. Corn, sweet-potatoes, and cowpeas for hay are planted following the spring and early-summer truck crops. This gives a supply of corn and hay for home use and of potatoes for sale during the winter and following spring. Part of the corn is fed to hogs to produce a home supply of meat.

**Norfolk fine sandy loam.**—Norfolk fine sandy loam is the best soil of the Norfolk series in Mobile County, although it occupies a much smaller acreage than either Norfolk sand or Norfolk loamy fine sand. Although low in plant nutrients and organic matter, which necessitates constant vigilance in order to maintain production, it is considered among the best soils of the county, well suited to any of the crops planted in this section, and it returns average or good yields of all crops. It is especially well adapted to truck crops, because of its mellow friable consistence and the ease with which it can be cultivated, but it does not warm up quite so early in the spring, and it cannot be plowed so soon after heavy rains as the more sandy soils. The fine sandy clay subsoil that makes it more retentive of moisture and less subject to leaching, together with the generally higher crop yields, causes this soil to be more sought for cropping than the lighter textured soils.

The 4- to 6-inch surface layer of Norfolk fine sandy loam is gray loamy fine sand. It is underlain by pale-yellow or grayish-yellow loamy fine sand that extends to a depth ranging from 10 to 15 inches. The subsoil is yellow heavy fine sandy loam that extends to a depth of 20 inches, where it passes into yellow friable fine sandy clay that continues to a depth ranging from 3 to 4 feet. Below a depth of about 30 inches, the subsoil becomes faintly mottled with gray, brown, and, in some places, red. The mottlings increase with depth, until the underlying stratified sands and clays are reached at a depth ranging from 6 to 10 feet.

Some variations and differences occur in Norfolk fine sandy loam as mapped, none of which is of sufficient extent or agricultural importance to cause separation as a different soil type. From 3 to 4 miles southwest of Tanner Williams bordering the Mississippi State line, a flat area of this soil, a square mile or more in extent, is similar to the Caddo soils mapped in Mississippi and States farther west. The upper part of the surface soil is gray, and the lower part is dull grayish yellow. The subsoil is pale yellow which, below a depth ranging from 26 to 30 inches, becomes rather dull yellow and is mottled with gray. This layer is rather tight and compact in place and is lighter in texture than the layer above, but the material breaks easily and is friable when taken out. The agricultural value of this soil, owing to imperfect drainage, is not so high as that of most of the typical soil.

Other variations consist largely of differences in texture and of differences in the depth at which the sandy clay subsoil is reached. Where the Norfolk soil is associated with the Irvington soils, in places the surface soil texture is very fine sandy loam with a correspondingly heavier subsoil, and occasional spots of brown iron-cemented gravel occur on the surface or in the subsoil. In places the lower part of the subsoil becomes somewhat reddish yellow or brownish yellow. In some of the widely scattered small areas having steeply sloping surface relief, in the northern part of the county, where erosion is more active, the surface soil is only 10 or 12 inches thick over the yellow friable heavy fine sandy clay or clay subsoil, below which, at a depth ranging from 30 to 36 inches, the red, gray, and yellow mottled clay of the underlying geological formation is present. Such areas are of low agricultural value and could best be utilized for forestry.

Norfolk fine sandy loam occurs in fairly large areas south of Theodore, at or near Fowl River, Grand Bay, Laurendine, and a few miles north of Mobile, and in smaller bodies through the western part of the county.

About 60 percent of this soil has been cleared for cultivation. It is used principally for the production of cabbage, potatoes, turnips, carrots, beans, tomatoes, cantaloups, watermelons, and other truck crops. West of Theodore a small acreage is devoted to pecans and Satsuma oranges. Throughout the central, western, and northern parts of the county, the land is used largely for general-farm crops, with vegetable crops as a side line.

Cabbage yields about 10 tons an acre and is generally fertilized with about 2,000 pounds to the acre of a 4-6-4<sup>a</sup> mixture, and a side dressing ranging from 300 to 500 pounds of nitrate of soda is applied during the growing season. Potatoes produce from 100 to 125 bushels to the acre, and they receive an acre application ranging from 1,500 to 2,000 pounds of a 3-8-5 fertilizer. Corn, following truck crops which have been heavily fertilized, produces from 30 to 60 bushels to the acre, but yields are much lower when corn is planted in the spring and only small quantities of fertilizer are used. Sweet-potatoes when planted following truck crops receive only light applications of fertilizer, but when planted for an early market they receive an acre application ranging from 800 to 1,200 pounds of a 4-8-7 fertilizer, and they yield from 125 to 150 bushels an acre. Tomatoes, beans, cucumbers, turnips, and other truck crops return high yields on this soil where heavy applications of fertilizer are used. Some sugarcane is grown, producing from 200 to 400 gallons of sirup to the acre. From 800 to 1,200 pounds an acre of a 4-8-4 fertilizer is used for this crop. Cotton is fertilized with 300 pounds an acre of 3-10-8 and a side dressing of 100 pounds of nitrate of soda. Yields average about one-half bale an acre. Satsuma oranges and pecans reach their best development on this soil. A high-grade fertilizer is applied to the groves at a rate ranging from 5 to 20 pounds to a tree, depending on its age. Cowpeas planted after truck crops, either for hay or green manure, make an excellent growth.

<sup>a</sup> Percentages, respectively, of nitrogen, phosphoric acid, and potash.

**Norfolk fine sandy loam, flatwoods phase.**—The flatwoods phase of Norfolk fine sandy loam is gray or grayish-yellow loamy fine sand in the upper layer of the surface soil, with pale-yellow loamy fine sand below, which contains splotches or shades of gray and yellow. The subsoil is pale-yellow friable light fine sandy clay containing some reddish-brown mottlings. Below a depth ranging from 30 to 36 inches the subsoil becomes lighter in both color and texture and is mottled with gray, brown, and bright yellow.

East of Fowl River, where both surface and internal drainage are better established, the soil is developed to a greater depth. Here the lower part of the subsoil is yellow heavy fine sandy clay mottled with red, gray, and rust brown, rather than the material having the usual lighter color and texture. Such areas occur north of Mobile adjacent to the larger creeks and Mobile River.

The largest areas of the flatwoods phase of Norfolk fine sandy loam lie south and east of the town of Fowl River and adjacent to and north of Mobile. The surface relief ranges from nearly flat to undulating and gently sloping near the streams.

Soil of this phase differs from typical well-drained Norfolk fine sandy loam in that it is lighter in color and texture and of more open structure throughout. It is a much younger, or less well developed soil. The water table is much nearer the surface for a greater part of the year, which prevents the more complete oxidation and development of the bright color of the better drained soil. The looseness and open structure of the surface soil allows more rapid downward percolation of water, and the soil does not retain either moisture or plant nutrients so well as the typical soil.

Only about 25 percent of this land is cleared for cultivation. About 60 percent of the cultivated soil is used for growing early truck crops and the rest largely for growing pecans and Satsuma oranges. Yields of all vegetable crops average less than on the typical soil. On uncleared land the tree growth is mainly young longleaf pine, with an undergrowth of gallberry, blackjack oak, sedges, and coarse grasses. Carpet grass and lespedeza grow well in open places or abandoned fields.

**Norfolk loamy fine sand.**—Norfolk loamy fine sand differs from Norfolk fine sandy loam in that it consists of loamy fine sand to a depth ranging from 2 to 4 feet. The subsoil ranges from loamy fine sand to fine sandy loam, whereas Norfolk fine sandy loam has a friable fine sandy clay subsoil. The surface soil is gray to an average depth of 6 inches, below which the color changes to pale yellow and continues so to a depth of 12 or 14 inches. The subsoil is yellow loose loamy fine sand or fine sandy loam which, at a depth ranging from 30 to 40 inches, grades into grayish-yellow loamy fine sand that shows various shades of gray and yellow mottlings. This material extends downward to the interstratified clays and sandy clays which are present at a depth ranging from 6 to 15 feet below the surface.

In places, the surface soil is fine sand, and in some places the subsoil ranges from heavy fine sandy loam to fine sandy clay. On the steeper slopes, small spots or narrow bands of soil, that have a heavy red and gray mottled subsoil at a depth ranging from 24 to

36 inches, are included. Such areas probably would have been mapped as a phase of the Susquehanna soil had they been large enough to separate.

Norfolk loamy fine sand is widely scattered throughout the upland part of the county, occurring in areas which range in size from 10 acres to more than a square mile. It reaches its best development in that section extending northward from Theodore and Grand Bay to Union Church, Tanner Williams, Wilmer, and Citronelle.

The surface relief ranges from undulating to gently rolling, with short steep slopes occurring along some of the streams. Surface drainage is good, except in a few spots. The loose character of the soil material allows water to pass readily through the subsoil, which results in severe leaching and loss of plant nutrients in wet years. During droughty periods crops seem to do fully as well on this soil as on Norfolk fine sandy loam.

Only about 10 percent of the land is in cultivation. It is used to about an equal extent for early truck crops and general-farm crops of corn, velvetbeans, peanuts, field peas, sweetpotatoes, and some sugarcane. Satsuma oranges and pecans have been planted to some extent on this soil in the section north and east of Theodore. Fertilizer applications for truck crops are probably a little lower than on Norfolk fine sandy loam but for corn and general-farm crops are about the same. Where crop residue from legumes has been plowed under, truck crops, especially cucumbers, cantaloups, and water-melons, do well, but yields, generally, are not quite so high as on Norfolk fine sandy loam. Average yields of general-farm crops are somewhat less, sweetpotatoes showing the least decrease. Fertilizer and farming practices are largely the same on Norfolk loamy fine sand as on Norfolk fine sandy loam.

The tree growth consists of young yellow pine, some of which is large enough for turpentine, pulpwood, telephone poles, and piling. A number of different varieties of oaks are mixed with the pine, none of which has any commercial value except for fuel. A thin cover of coarse grasses grows on most of this soil.

**Norfolk loamy fine sand, flatwoods phase.**—The surface soil of the flatwoods phase of Norfolk loamy fine sand is similar in color and structure to that of typical Norfolk loamy fine sand of the uplands. The subsoil is lighter yellow and shows more gray mottlings, and below a depth of about 30 inches it becomes grayish-yellow fine sand.

The largest areas of this soil are south of Mobile in the section drained by the tidewater part of Dog River and its tributaries. South and east of the town of Fowl River, at Bayou Labatre, and at Creola are fair-sized bodies.

The surface relief ranges from nearly flat and gently undulating to gently sloping near the streams. The surface run-off of rain water is slow, especially on the flat areas. The soil absorbs water readily, and the surplus drains downward to the underlying clays, from whence much of it escapes by lateral movement toward the drainageways. The soil remains in a nearly saturated condition during rainy seasons, as the water table ranges from 6 to 10 feet below the surface. In most places drainage is sufficient during the cropping season, and the soil holds a fair supply of moisture for

plant use. Surface ditches, to facilitate drainage, have been established on much of the cropped area of this soil.

Probably about 5 percent of this land is cleared, but only a little more than half of the cleared land is now cultivated. The principal crops, most of which are grown on areas of this soil near Mobile, are cabbage, beans, turnips, carrots, beets, spinach, melons, and cantaloups. On the better drained small areas lying east of Fowl River and extending to Mobile Bay, some good Satsuma-orange and pecan groves have been established. Tree growth and crop yields are only slightly, if any, below those on the adjoining areas of the flatwoods phase of Norfolk fine sandy loam. Abandoned fields or orchards are covered with good sods of lespedeza and carpet grass. From fair to good stands of young pine grow in most of the wooded areas, together with an undergrowth of coarse grasses, bush palmetto, and gallberry.

The quantities and kinds of fertilizers used and the cropping practices are largely the same on this as on any other soil on which truck crops are grown.

**Norfolk sand.**—The surface soil of Norfolk sand, to a depth of 6 or 8 inches, is gray loose sand. Where the timber cover is fairly heavy and some organic matter has become mixed with the soil, the material in this layer is dark gray and slightly loamy. The subsoil is pale-yellow loose incoherent sand that extends to a depth ranging from 3 to 5 feet. A large number of small areas having a fine sand surface soil are included with this soil in mapping, as they are not of sufficient extent or sufficiently different in color, structure, or use to warrant their separation.

Norfolk sand occurs in large irregular bodies in the northern two-thirds of the high uplands of the county, with smaller and more widely scattered areas in the southern part. The surface relief ranges from hilly to rolling, for the most part, but gently rounded or nearly level areas occur on the broader stream divides. Owing to the open porous structure of the soil, there is little run-off of rain water, even on the steep slopes, but the water moves rapidly downward through the soil, causing extreme leaching.

Although this soil occupies by far the largest acreage of the Norfolk soils and is the most extensive soil in the county, very little of it has been cleared for cultivation, and probably not more than 1 percent is now farmed. The soil is loose and leachy and retains only small quantities of plant nutrients and moisture for growing crops. From fair to good yields can be obtained for the first few years after the land is cleared, but yields soon decrease and the fields are abandoned for new clearings. Probably not more than half of this soil that has been cleared is now in cultivation. On farms located on the smoother ridge tops where a great effort has been made to maintain the soil fertility by applications of manure and by turning under crop residues and legumes, crop yields are considerably above the average for this soil.

Corn, soybeans, field peas, peanuts, sweetpotatoes, and velvetbeans are the main crops grown. Corn yields range from 12 to 30 bushels an acre, depending on the quantity of fertilizer applied. Other crops make a fair growth and return low or average yields. The most

common mixture of fertilizer used is a 4-8-4, and it is applied at a rate ranging from 200 to 400 pounds an acre.

Most of the Norfolk sand remains as cut-over pineland and now supports scattered or fair stands of young longleaf pine, with black-jack oak and turkey oak as an undergrowth, together with dry-land ferns, bush palmetto, broomsedge, and numerous coarse weeds and grasses. Some of the ridge tops are covered with rather dense growths of scrubby oaks, almost to the exclusion of other trees, with only a scattered growth of bunch grass beneath. Considerable dogwood, live oak, and red oak grow in places. Most of the forests are open, with no thick undergrowth of briars and brush. Taken as a whole, this soil has a low or uncertain agricultural value, and it is best that it should remain in forest. As the wooded land is burned over annually, the trees and grasses have a hard struggle to survive or reseed themselves.

**Norfolk very fine sand.**—Norfolk very fine sand is uniform single-grained rather loose very fine sand from the surface downward to a depth ranging from 4 to 5 feet. The surface soil, to a depth ranging from 3 to 6 inches, is gray, and the subsoil is pale yellow and becomes mottled with shades of gray and yellow at a depth below 40 inches.

Norfolk very fine sand occurs only in that part of the county within a radius of 15 miles from the city of Mobile. The largest areas are from 6 to 8 miles west and northwest of Mobile, north of Union Church, and in a band of irregular disconnected areas extending northward from Orchard to Oak Grove.

This soil has an undulating or rolling surface relief and good or excessive drainage that results in severe leaching. The very fine texture of the soil material gives it a water-holding capacity slightly better than that of Norfolk sand.

Only about 1 percent of the land is now in cultivation, and it is used principally for general farm crops. Yields are less than on Norfolk fine sandy loam and are about the same as those obtained on Norfolk loamy fine sand. A 4-8-4 fertilizer is applied to corn and sweetpotatoes at the rate of about 400 pounds an acre.

With protection from fires, this soil would probably be more profitable for growing timber than for farming.

**Ruston fine sandy loam.**—Ruston fine sandy loam has about the same structure as Norfolk fine sandy loam, and it is of about the same extent, but it differs from the Norfolk soil in that the surface soil has a brown tinge, instead of the definite gray of the Norfolk surface soil, and it has a somewhat red subsoil.

The surface soil is light grayish-brown or grayish-brown loamy fine sand to a depth of 5 or 7 inches, and it is underlain by brown or yellowish-brown heavy loamy fine sand or fine sandy loam that extends to a depth ranging from 15 to 18 inches. The subsoil is yellowish-red or brownish-red friable fine sandy clay which becomes somewhat lighter in texture and structure, and, in some places, lighter in color below a depth of about 40 inches. In most places it is mottled with shades of darker brown, red, and some gray. As a whole the subsoil is very variable, ranging in color from nearly the yellow of the Norfolk subsoil almost to the red of the Orangeburg. In places the well-oxidized reddish-brown friable fine sandy clay

subsoil extends to a depth ranging from 6 to 10 feet. Southeast of Irvington an area of Ruston sandy loam is included with this soil as mapped, and other small areas of like character scattered throughout this section are also included, as the acreage of soil of this texture is too small to separate as a distinct type. Where Ruston loamy sand joins or is associated with Ruston fine sandy loam, small areas of either may be mapped with the other.

Ruston fine sandy loam occupies the smooth stream divides of the high upland plain in the western and west-central parts of the county. The bodies range in size from small irregular patchy areas to some more than a square mile in extent. Beginning at the point where the uplands break away to the flatwoods in the southwestern part of the county, the principal areas lie northward from Grand Bay, Saint Elmo, and Irvington to Union Church, Orchard, Semmes, and to a distance 5 or 6 miles north of Georgetown. There are some well-developed areas near Citronelle.

Ruston fine sandy loam has a nearly level or very gently sloping and gently rolling surface relief, with some fairly steep short slopes adjacent to some of the streams. Drainage of both surface soil and subsoil is excellent.

Although this is an excellent general-purpose soil, only about 40 or 50 percent has been cleared and is now in cultivation, and the rest supports a fair or excellent stand of timber, mainly young longleaf pine. About 60 percent of the cultivated land is used for cotton, 15 percent for corn, and the rest for Satsuma oranges, pecans, peas, beans, peanuts, sweetpotatoes, some sugarcane, and truck crops. Yields are about the same as on Norfolk fine sandy loam but, with the exception of yields of pecans and Satsuma oranges, are not quite so high as on Red Bay fine sandy loam. In the central part of the county truck crops are grown in connection with general-farm crops, and near Mobile and Citronelle the production of truck crops is the main agricultural activity.

Farming practices and fertilizer applications on this soil are about the same as on Norfolk fine sandy loam. These practices are very nearly uniform on all the well-drained fine sandy loam soils of the county.

**Ruston fine sandy loam, rolling phase.**—Ruston fine sandy loam, rolling phase, occurs in close association with typical Ruston fine sandy loam. It is separated from that soil because of its steep rolling or hilly surface relief. The subsoil is very similar to that occurring in the smoother areas of the typical soil, but the surface soil is variable in depth, depending on the extent to which erosion has taken place. In some spots practically all the surface soil has been removed and the reddish-brown sandy clay is exposed, and in other places the surface soil may be from 15 to 20 inches thick. Included with this soil in mapping are small patches of Ruston sand, Norfolk sand, and Norfolk fine sandy loam.

This soil occurs in rather small bodies widely scattered through the upland part of the county. The largest are west and southwest of Cottage Hill, 2 miles southwest of Georgetown, and 3 miles southwest of Wilmer.

Drainage ranges from good to excessive, and erosion is active on most of this soil. Only a very small proportion of the land has

been cleared, and this was soon abandoned on account of severe erosion. Under present economic conditions this might be classed as a nonagricultural soil, and it can be best utilized as forest land.

**Ruston loamy sand.**—Ruston loamy sand differs from Ruston fine sandy loam mainly in texture and in the structure of the subsoil. The surface soil, to a depth ranging from 6 to 10 inches, is light-brown loamy fine sand or loamy sand. In wooded areas the topmost 2- or 3-inch layer is brown or dark brown, owing to an accumulation of organic matter. The subsoil, to a depth of about 40 inches, is brown or reddish-brown loose loamy sand, in some places loamy fine sand. Where associated with the Norfolk soils the subsoil is yellowish brown, and where associated with the Orangeburg or Red Bay soils it is more red and becomes heavier with depth, approaching fine sandy clay at a depth ranging from 30 to 40 inches. Some of the included spots and narrow bands of intermediate soils occurring between Ruston loamy sand and the well-developed Orangeburg fine sandy loam and Red Bay fine sandy loam, are mapped with Ruston loamy sand, but would have been mapped as Orangeburg loamy sand had they been more extensive.

Ruston loamy sand occupies broad irregular-shaped gently rounded hills and nearly level stream divides with gently sloping sides, although some rolling areas and steep slopes adjacent to streams occur in the deepest valleys. This soil has its greatest development north of Theodore, Irvington, and Grand Bay, and in the western part of the county near Wilmer and Georgetown.

Drainage is good or excessive. The soil absorbs rain water readily and retains more moisture than Norfolk sand but not nearly so much as Norfolk fine sandy loam and Ruston fine sandy loam. About 8 percent of the land is now under cultivation, probably 2 percent is in idle fields, and the rest is forested, principally with young longleaf pine intermingled with some thickets or scattered individuals of scrubby oaks. The ground cover consists of sedges and coarse grasses.

In the southern part of the county Ruston loamy sand is used largely for early spring crops, such as sweetpotatoes, watermelons, beans, peas, and the root and leafy vegetables. In this section and near Citronelle a number of Satsuma-orange and pecan groves are established on this soil. Through the central and northern parts the soil is used more extensively for general-farm crops, such as corn, peanuts, field peas, sweetpotatoes, and soybeans. Truck crops, including green beans, cucumbers, tomatoes, squash, green peas, and leafy vegetables, are produced near Citronelle.

With the possible exception of cucumbers and pecans, yields of all crops are lower than on Norfolk fine sandy loam and Ruston fine sandy loam and are about comparable or possibly a little higher than on Norfolk loamy fine sand, from which this soil differs little except in color. A high-grade fertilizer is applied to truck crops at a rate ranging from 400 to 1,000 pounds an acre, and for general-farm crops about one-half of this quantity is used.

**Red Bay fine sandy loam.**—This is the reddest soil in the county and is called "red land." The surface soil of Red Bay fine sandy loam consists of a 4- or 6-inch layer of brown or reddish-brown mellow friable fine sandy loam, below which, to a depth of 10 or 12

inches, the material is reddish-brown heavy fine sandy loam. The subsoil is rather uniform red or dark-red friable fine sandy clay, slightly sticky when wet, that extends to a depth ranging from 3 to 4 feet below the surface. Beneath this the subsoil becomes lighter in both color and texture and extends to a depth ranging from 5 to 10 feet, where it passes into the mottled sandy clay or clay from which the soil is derived.

Red Bay fine sandy loam occupies only a comparatively small total acreage in Mobile County, but it occurs in rather large bodies on the broader stream divides near Union Church and northward to Semmes, Wilmer, and Georgetown, and in one large area at Citronelle, on which a part of the town is built. A few small areas are widely scattered in other sections.

The surface relief ranges from nearly level or gently undulating to gently rolling. The slope is sufficient to afford good drainage, and the subsoil absorbs and retains a good supply of moisture for the use of plants.

This is one of the best general-purpose soils in the county and is adapted to a wide range of crops. It gives quick and good response to additions of organic matter and commercial fertilizers. About 80 percent of the land has been cleared and is under cultivation, of which at least 75 percent is used for cotton and the rest for pecans, Satsuma oranges, corn, field peas, peanuts, green beans, and other truck and field crops. Cotton, fertilized with 300 pounds an acre of a 3-10-8 mixture and a side application of 100 pounds of nitrate of soda during the growing season, yields from one-half to 1 bale an acre, depending on cultural methods and extent of damage from the boll weevil. The average yield is about 300 pounds of lint cotton, which is about 50 pounds an acre more than the average on Norfolk fine sandy loam. Corn receives from 200 to 400 pounds to the acre of a 4-8-4 fertilizer and returns an average acre yield of about 25 bushels. Green beans, as a supplemental early summer cash crop, in connection with the main money crop, cotton, yield from 70 to 90 bushels to the acre.

About 1 square mile of this soil at Citronelle is planted almost exclusively to pecans, and here they reach their best development, giving good yields of excellent-quality nuts. Satsuma oranges were interplanted with the pecans, but the periodical low temperatures damaged the trees more severely than in sections nearer the Gulf and Mobile Bay. This has resulted in abandonment of the Satsuma-orange crop as a reasonably safe cash crop for the northern part of the county. Peas, planted as a summer crop for hay, produce excellent forage, yielding about 1 ton or more an acre. This soil is well suited to peaches, and, no doubt, this fruit would prove a profitable crop, if the orchards were located near a shipping point.

**Orangeburg fine sandy loam.**—Orangeburg fine sandy loam, like Red Bay fine sandy loam, differs from the Norfolk soils in that it has a brown surface soil and a red subsoil. Orangeburg fine sandy loam is very similar to Red Bay fine sandy loam and is separated primarily on the difference of intensity of color in both the surface soil and subsoil. The upper surface soil layer of Orangeburg fine sandy loam is grayish-brown or light-brown friable fine sandy loam that extends to a depth of 6 or 7 inches, where it changes abruptly

to reddish-brown fine sandy loam extending to a depth of 12 or 14 inches. The subsoil is light-red or bright yellowish-red friable fine sandy clay which becomes somewhat lighter in both color and texture below a depth ranging from 40 to 60 inches, and may extend, without much additional change, to a depth ranging from 8 to 10 feet.

This soil is confined largely to the nearly level or undulating and gently rolling stream divides of the west-central part of the county. It occurs in close association with Red Bay fine sandy loam, but in not quite such large bodies. In many places it occupies an intermediate position between the Red Bay and Ruston soils. The largest areas are at or near Union Church, Semmes, Orchard, Tanner Williams, Wilmer, and Georgetown, and one well-developed fairly large body is at Turnerville Church in the northeastern part. Drainage is excellent, and the subsoil absorbs and retains a good quantity of moisture for growing crops.

This is an excellent soil for general-farm crops and trucking, and about 60 percent of it is now under cultivation. About 75 percent of the cultivated land is used for growing cotton, and a large part of the remainder is set to pecan trees, interplanted in most groves with Satsuma oranges. Possibly 10 percent of the cleared land is planted to corn and general-farm crops other than cotton. Some green beans, tomatoes, and cucumbers are grown in connection with general-farm crops, to be used as supplementary cash crops for sale in spring and early summer. A few small farms near Cottage Hill are planted almost wholly to truck crops. The same methods of fertilization and cultivation prevail as on the Red Bay and Ruston soils. Yields of cotton do not average quite so high as on Red Bay fine sandy loam, but yields of other crops are practically as good.

**Irrington very fine sandy loam.**—The color of the subsoil of Irrington very fine sandy loam is similar to that of the Norfolk fine sandy loam subsoil. This soil differs from the Norfolk soil in having a high proportion of silt and very fine sand throughout the entire soil mass and in having a brown and shallower surface soil and a yellow mealy subsoil that is slick when wet. The surface layer, to a depth of about 5 inches, is brown or grayish-brown very fine sandy loam. It is underlain by pale-yellow friable very fine sandy loam which extends to a depth of about 10 inches. The subsoil, to a depth of about 20 inches, is yellow mealy friable very fine sandy clay which is slick when wet. The lower subsoil layer, between depths of 20 and 40 inches, is light very fine sandy clay having about an equally proportioned mixture of yellow, light-gray, and brown colors. Below this and continuing to a depth ranging from 5 to 6 feet is pale-yellow very fine sandy clay that is streaked and mottled with red, reddish brown, brown, yellow, and light gray. The material in the upper part of this layer is very compact and hard and contains seams or streaks of partly cemented material that prevents the downward movement of moisture.

On the surface and distributed through the soil mass are various quantities of locally formed brown iron-cemented gravel and small rounded iron concretions. In places the surface is very nearly covered with them, and in spots they are almost entirely absent. In most places, however, the quantity ranges from 10 to 30 percent of the soil mass, with the greatest concentration between depths of 10

and 30 inches. The size of the pebbles ranges from one-eighth inch to 2 or more inches in diameter.

This soil occurs largely in one section of the county, the smoother uplands of the southern and south-central parts. Beginning near the edge of the uplands 2 miles north of Bayou Labatre, it extends northward in a broad belt of fairly large irregular bodies to Dawes, with smaller and more widely scattered areas occurring to a point 4 or 5 miles north of Orchard.

Most areas of this soil are flat, with gentle undulations and slight slopes that dip to shallow drains heading in or near areas of the soil. Surface run-off is very slow in the flatter parts. The compact and partly cemented clay or very fine sandy clay, underlying the soil at a depth ranging from 4 to 6 feet, retards or prohibits the downward movement of water, and practically the only escape for water is by evaporation or lateral movement toward the slopes and lower elevations.

About 30 percent of the land has been cleared, but only about 10 or 15 percent is now cultivated. Abandoned fields and patches are numerous. Many of them were set to Satsuma-orange and pecan trees at the time the land was cleared. The cultivated areas are used mainly for the production of potatoes, cabbage, corn, and some minor truck crops. Some of the better drained land supports fair or good Satsuma-orange and pecan groves. The yield of potatoes ranges from 60 to 100 bushels an acre. The land for potatoes is fertilized with applications ranging from 1,000 to 4,500 pounds to the acre of a 3-8-5 mixture and a side application of nitrate of soda at the rate of 200 or more pounds an acre. An acre application of about 2,000 pounds of a 4-8-4 fertilizer is used for cabbage, with an addition of 200 to 500 pounds of nitrate of soda during the growing season. Cabbage yields about 10 tons an acre, which is about equal to the yield on Norfolk fine sandy loam.

Corn usually follows cabbage and potatoes and yields from 30 to 60 bushels to the acre. Little or no fertilizer is applied to corn, but this crop utilizes the fertilizer that remains from the preceding truck crops. The small acreage planted to truck crops, such as tomatoes, green beans, onions, turnip greens, watermelons, cantaloups, and a few others, does not return quite such high yields as are obtained from the same crops on Norfolk fine sandy loam.

**Irvington very fine sandy loam, flat phase.**—Irvington very fine sandy loam, flat phase, occupies the extremely flat areas associated with Irvington very fine sandy loam. It is characterized by numerous saucerlike depressions that have no drainage outlets, and in many of which water remains for a good part of the year. The surface soil of the flat phase, in most places, is somewhat darker than that of the typical soil, the subsoil is lighter in color (pale yellow), shows more mottlings, and has a higher gravel content. Owing to the flat surface relief, the underlying water-impervious clay, and to the fact that little lateral movement of water takes place through the soil, the water table stands only 1 or 2 feet below the ground surface for the greater part of the year.

The largest areas of this soil are from 2 to 3 miles south of Dawes, and some small bodies extend southward from this place to Irvington and Saint Elmo. Only a few small patches are under cultiva-

tion. Other areas, that were cleared for truck and farm crops and a few small groves of pecans and Satsuma oranges, have been abandoned. Drainage can be established either by tiling or by surface ditches, and when this is done, the soil should produce yields about equal to those obtained on the typical soil.

**Irvington very fine sandy loam, slope phase.**—Irvington very fine sandy loam, slope phase, occurs on knolls and slopes of drainageways that head in Irvington very fine sandy loam. Having good surface drainage, the subsoil has oxidized to a red color. The 4- to 6-inch surface layer is grayish-brown very fine sandy loam, beneath which and continuing to a depth of 10 or 12 inches, is brownish-yellow very fine sandy loam having a slightly red tinge. The subsoil is light yellowish-red or reddish-yellow friable very fine sandy clay that extends to a depth ranging from 20 to 30 inches. Below this depth it changes to marbled or intensely mottled and streaked red, purplish-yellow, and gray very fine sandy clay. The red color is caused by a high concentration of iron, much of it taking the form of soft concretions which become harder near the surface.

Like the typical soil, the slope phase carries considerable varicolored iron-cemented gravel or nodules in both the surface soil and subsoil. The color of the subsoil varies somewhat, depending on the extent to which drainage has been established and on the degree of oxidation, and may range from yellowish brown to light red or red. Where this soil is closely associated with Ruston fine sandy loam, the surface soil may be fine sandy loam rather than the usual very fine sandy loam, with a correspondingly close approach to the Ruston color and structure in the subsoil.

Soil of this phase occurs as an outer border, or narrow band, around areas of the typical soil, or on rounded or sloping adjacent ridges, although through the central part of the county it occupies narrow ridges and rounded hill crests that are not associated with the typical soil. The largest bodies lie south of Grand Bay, Saint Elmo, and Irvington, and northward from Saint Elmo to Dawes and Semmes, and one area, about one-half square mile in extent, is 5 miles north of Georgetown.

Only about 2 percent of the land is under cultivation. It is used mainly for the production of cotton, corn, potatoes, and general-farm crops, and a small acreage is set to Satsuma oranges.

Erosion is active on some of the steeper slopes that have been cleared, and this has resulted in the abandonment of some fields and their return to forest. Cropping practices are about the same as on Ruston fine sandy loam. Yields are about comparable to those on the Ruston and Norfolk fine sandy loams. Yellow pine and coarse bunch grasses comprise the principal vegetation in the wooded areas.

**Susquehanna fine sandy loam.**—Susquehanna fine sandy loam is similar to Norfolk fine sandy loam in the surface soil and upper part of the subsoil, but the lower part of the subsoil differs from the Norfolk soil in that it is heavy tight or plastic red clay which is intensely mottled. Areas of this soil differ as regards the depth of the surface soil and the structure of the subsoil. The surface soil is gray fine sandy loam ranging in thickness from 4 to 10 inches. This material is underlain by pale-yellow friable fine sandy loam that extends to a depth ranging from 12 to 20 inches. The lower part of

the subsoil is reddish yellow and is tough, tight, and compact, plastic in some places and brittle in others. This material becomes mottled with shades of red, yellow, and gray. It is underlain, at a depth ranging from 3 to 4 feet, by unweathered varicolored clays and sandy clays.

This soil occurs mainly in the northern part of the county, on comparatively low hills and slopes leading down to drainageways. The largest area is about 2 miles northeast of Chunchula, and smaller bodies occur along the Washington County line, northeast of Earlville, north of Wilmer, and northwest of Oak Grove.

The surface run-off of rain water is rapid. The heavy subsoil absorbs water slowly and gives it up slowly to shallow-rooted plants. Very little of the land is now under cultivation, and the few patches in cultivation are planted mainly to cotton, corn, velvetbeans, and field peas. Yields average much lower than on Norfolk fine sandy loam. Although timber grows comparatively slowly on Susquehanna fine sandy loam, a more satisfactory income could be obtained from this source than from cultivated crops, under present economic conditions.

**Guin fine sandy loam.**—Guin fine sandy loam has a surface soil very similar to that of Norfolk fine sandy loam, but it is much more variable in thickness than in the Norfolk soil and overlies a heavy clay subsoil. Guin fine sandy loam is separated from Guin soils (undifferentiated), on account of its smoother surface relief and more uniform character of soil material.

The surface layer is gray sandy loam or very fine sandy loam about 5 or 6 inches thick. It is underlain by pale-yellow loamy fine sand or fine sandy loam, that rests on heavy clay at a depth ranging from 1 to 2 feet below the surface. The subsoil is reddish-yellow or yellowish-red hard compact but brittle clay or very fine sandy clay, which changes rather abruptly, at a depth ranging from 2 to 3 feet, to marbled or mottled red, yellow, and gray compact but brittle clay or silty clay material that is more friable than the material above.

Some small areas of very good Norfolk fine sandy loam are included with this soil in mapping. In some places the surface covering of sandy material is very shallow, and the reddish-yellow clay subsoil is exposed on the steeper slopes, and in other places the reddish-yellow clay material lies at a depth ranging from 2 to 3 feet beneath the surface.

This soil occurs on low rounded hills, gentle slopes, and rolling areas in the northern half of the county, in widely scattered small patches throughout the western and southern parts of this section. The larger areas are between Citronelle and Mount Vernon and southward to Gulferest, Turnerville Church, Chunchula, and Oak Grove.

Surface drainage is excessive over most of this soil, but the downward movement of water is retarded by the compact impervious clay. About half the land has possibilities for agricultural development, if properly handled to prevent erosion after clearing. About 1 percent of the land—the smoother areas—is now cultivated to general farm crops, principally cotton and corn. Yields are hardly comparable to those obtained on Norfolk fine sandy loam but are

more nearly equal to those produced on Norfolk loamy fine sand. On all this soil, except the eroded spots, pine and hardwood trees make a good growth, and, as a whole, the land could be used more profitably for the production of timber than for farming.

**Eulonia very fine sandy loam.**—In surface appearance Eulonia very fine sandy loam is identical with the flatwoods phases of the Norfolk soils. The main difference is the somewhat red color, toughness, and compactness of the subsoil. The color of the subsoil is somewhat like that of Ruston fine sandy loam. The 3- or 4-inch surface layer of Eulonia very fine sandy loam is gray or yellowish gray, and it is underlain, to a depth of about 10 or 12 inches, by pale-yellow or brownish-yellow mellow friable very fine sandy loam. The subsoil, to a depth of 18 or 20 inches, is tough compact reddish-brown clay, mottled with shades of red and yellow, which breaks up into irregular-shaped lumps. Below this is dull brownish-yellow clay, mottled with shades of brown, yellow, and red, which, at a depth of about 30 inches, grades into mottled yellow, brown, and dull-red clay that is not quite so hard and tough as the material in the layer above.

This soil occupies a flatwoods position and differs from the associated Coxville, Scranton, and Dunbar soils, in that it consists of tough tight compact clay throughout the subsoil. It occupies a slightly higher position than the associated soils and has better surface drainage, but internal drainage is very slow, owing to the toughness and compactness of the subsoil material.

Eulonia very fine sandy loam occurs on the flatwoods plain extending from Mobile northward to the Washington County line. The largest bodies are mapped at Axis and Calvert, and some small patches occur throughout the northern upland section, occupying low flat benchlike positions near drainageways.

Only about 5 percent of the land is cleared, and this is used principally for cotton, corn, and general-farm crops. The generally shallower surface soil and the tight clay subsoil render crops on the Eulonia soil more subject to the adverse effects of drought and excessive rainfall than those grown on the associated flat Norfolk fine sandy loam. Consequently, yields of all crops average lower than on the Norfolk soil.

**Kalmia fine sandy loam.**—Kalmia fine sandy loam is very similar in color, texture, and structure to Norfolk fine sandy loam, but it occupies a different physiographic position and has a higher water table than the well-drained Norfolk soil. The 4- to 6-inch surface layer is gray or grayish-brown loamy fine sand or fine sandy loam, that changes rather quickly to pale-yellow friable fine sandy loam extending to a depth ranging from 12 to 15 inches. The subsoil is yellow friable fine sandy clay that extends to a depth of about 40 inches, and below a depth ranging from 20 to 24 inches it is mottled with yellow, yellowish brown, and light gray. Below a depth of 40 inches, the material, in most places, grades into fine sandy loam and in other places into loamy fine sand. This material is mottled with gray and brown.

This soil occupies a terrace, or high-bottom, position along the larger streams and lies above normal overflow. It occurs in scattered areas ranging from a few acres to one-half square mile in extent.

The largest bodies lie along Escatawpa River in the northwestern part of the county. The surface relief is nearly level or gently undulating, with some small depressed spots that are not so well drained as the surrounding soil. Drainage ranges from fair to good.

About 8 percent of the land is cleared and planted to general-farm crops and some truck crops. Yields average about the same as on Norfolk fine sandy loam under similar cultural methods and equal applications of fertilizer.

**Kalmia loamy fine sand.**—The color of Kalmia loamy fine sand is similar to that of Kalmia fine sandy loam. This soil differs from the fine sandy loam in that it is loamy fine sand from the surface downward to a depth of 3 feet or deeper. It occurs along the larger streams, associated with Kalmia fine sandy loam, and the surface relief and drainage are about the same. The best developed areas are on Big Creek, from 2 to 4 miles south of Tanner Williams, and southeast of Mount Vernon on Cedar Creek.

Practically none of this soil is under cultivation. It has some possibilities as an agricultural soil but at present can be used more profitably for growing timber.

**Cahaba fine sandy loam.**—Cahaba fine sandy loam has a brown surface soil and a reddish-brown subsoil, and it is very similar to Ruston fine sandy loam, but it occupies a different topographic position. It occurs in high-terrace positions along Mobile River, in a few small areas near Mount Vernon. The surface relief is smooth, but there is enough slope to provide good drainage. Although this soil is very inextensive, it is a good agricultural soil and is practically all used for general-farm crops. Yields are higher than those obtained on the associated Kalmia and nearby Eulonia soils and are comparable to those obtained on the Norfolk and Ruston soils of the uplands.

#### LIGHT-COLORED POORLY DRAINED SOILS

The soils of this group comprise the poorly drained rather highly acid soils occurring in small areas widely scattered throughout the high upland part of the county and in larger bodies in the flatwoods section along the southern and eastern sides. The soils of this group constitute slightly more than one-sixth of the combined area of the light-colored well-drained soils. Included in this group are the fine sandy loam types of the Dunbar, Coxville, Leaf, Bladen, Plummer, and Myatt series, Bladen loamy fine sand, Grady clay loam, and Ochlockonee clay.

All these soils have flat or slightly undulating surface relief or occupy slightly depressed areas, many of which have no drainage outlets. The Dunbar, Coxville, and Leaf soils have more favorable surface drainage than the other members of the group, but their rather heavy clay or fine sandy clay subsoils, or the tight clay substrata which underlie them, prevent the rapid downward movement of water; hence they are in a more or less saturated condition during prolonged rainy spells. Owing to its flat surface, low position along the coast, and heavy subsoil, Bladen fine sandy loam is wet practically throughout the year. The Myatt, Grady, and Plummer soils occupy depressed areas or seepy flats around drain heads in the well-drained uplands or on the broader stream terraces. Ochlockonee clay occupies a flood-bottom position along Mobile River above the head

of Mobile Bay, and it extends northward to the Washington County line.

All members of the group have gray surface soils, and all are loamy fine sand or fine sandy loam in texture, except Grady clay loam and Ochlockonee clay. The subsoils range in color from gray and grayish yellow to pale yellow, from slightly to intensely mottled with gray, yellow, rust brown, and red, and in texture from heavy fine sandy loam to fine sandy clay and clay.

Under natural drainage conditions, none of these soils, except small patches of the better drained parts of the Leaf, Dunbar, and Coxville soils, is suitable for farming. The Dunbar soil occupies the most favorable position for cultivation. With adequate drainage, by a good system of open ditches and tiling, most members of this group will return from fair to good yields of a large variety of crops, especially the leafy and root vegetable crops. Lespedeza, carpet grass, and a few other grasses furnish good grazing when the land is cleared and sufficiently drained by open ditches to carry away the excess rain water. Because there is a rather extensive acreage of undeveloped well-drained soils in the county, only a small acreage of the light-colored poorly drained soils has been put into cultivation.

Several good truck farms are on Dunbar fine sandy loam south and southwest of Mobile, because of the proximity to local markets and railroad shipping facilities. Corn and cowpeas are usually planted following the harvest of spring truck crops. With equivalent quantities of fertilizer, yields of all crops grown on this soil are comparable to those obtained on the closely associated flatwoods phase of Norfolk fine sandy loam of the group of well-drained soils. Other than Dunbar fine sandy loam, only a few small patches of soils included in this group are cleared for farming. The total areas occupied by the individual members in the group range from 4 to 15 square miles, except Ochlockonee clay which covers an area of 46.7 square miles.

**Dunbar fine sandy loam.**—Dunbar fine sandy loam, in surface appearance, is similar to the closely associated flatwoods phases of the Norfolk soils. It is the best drained member of the group of light-colored poorly drained soils. It differs from Norfolk fine sandy loam in that it occupies a lower topographic position and has a highly mottled heavy clay subsoil. The surface soil, to a depth of 5 or 6 inches, is gray fine sandy loam that grades into pale-yellow heavy fine sandy loam, slightly mottled with shades of brown, and extends to a depth of 16 or 18 inches. The subsoil is pale-yellow light fine sandy clay, mottled with light gray, red, yellow, and brown, which, at a depth ranging from 24 to 28 inches, changes to gray or yellowish-gray clay mottled with shades of red, yellow, and rust brown. This material is hard, compact, and tough when dry and is plastic when wet. It consists largely of the partly weathered clay material that is present at a depth ranging from 4 to 5 feet below the surface.

This soil, although not extensive, occupies fairly large irregular areas of the flatwoods near Mobile and around Bayou Labatre, and smaller areas occur throughout the eastern and southern sides of the county.

The surface relief is flat, gently undulating, or gently sloping near stream courses. The surface run-off of rain water is slow on the flat areas, and the movement of water through the soil is retarded by the heavy subsoil and heavy underlying clay. In order to facilitate the removal of water and insure the normal development and growth of crops, it is necessary to establish open ditch or tile drains, or a combination of the two.

About 10 percent of this land is cleared and under cultivation or in pasture. The cultivated part is used largely for the production of cabbage and some potatoes, and other truck crops are grown on a small scale. Corn or cowpeas are usually planted following the spring truck crops. Corn yields range from 25 to 50 bushels an acre, and cowpeas cut for hay yield from 1 to 1½ tons. Vegetable crops receive an acre application ranging from 1,000 to 2,000 pounds of a 4-6-4 fertilizer, and cabbage receives in addition from 200 to 400 pounds of nitrate of soda during the growing season. Where drainage is well established, yields are about equal to those obtained on Norfolk fine sandy loam.

Some areas of this soil have been cleared for pasture, and others, on which farming was attempted without ditching, have been abandoned and are now used as pasture. A good or excellent sod of carpet grass, lespedeza, and Dallis grass is established on all cleared areas of this soil that are not under cultivation. No artificial drainage is necessary where the land is used for pasture. The uncleared areas support a fair or good mixed growth of yellow, slash, and loblolly pine, together with a heavy undergrowth of gallberry and briars in places. The more open parts support a sod of coarse grasses, sedges, and some semiaquatic plants.

**Coxville fine sandy loam.**—Coxville fine sandy loam occurs on the flatwoods in slightly lower topographic positions than Dunbar fine sandy loam, and the land is less well drained. It differs from the Dunbar soil in that it is gray throughout the entire soil mass rather than pale yellow in the lower surface soil and upper subsoil layers. The surface soil consists of a 4- to 6-inch layer of gray fine sandy loam underlain by light-gray fine sandy loam mottled with brownish yellow, that extends to a depth ranging from 12 to 15 inches. The subsoil, to a depth ranging from 24 to 36 inches, is light-gray fine sandy clay mottled with ocherous yellow, and it is slightly plastic when wet. This is underlain, to a depth of 5 feet, by steel-gray heavy plastic clay or fine sandy clay material mottled with ocherous yellow, rust brown, and bright red.

The principal areas are mapped at Calvert and Salco, in the northern part of the county, and in the southeast corner.

The nearly flat surface relief prevents the quick run-off of rain water, and the heavy subsoil and underlying clays check the downward movement of water, so that the land remains in a more or less saturated condition, except during dry periods in summer. A good system of open-ditch drains is necessary to make this soil suitable for growing truck and general-farm crops. Areas mapped in the southern part of the county range from only 3 to 6 feet above tidewater and would be rather difficult to drain. Those farther north occupy positions ranging from 10 to 40 feet in elevation and have possibilities for future agricultural use if properly drained.

At present only about one-half of 1 percent of this land is in cultivation. It is planted to truck and garden crops, much of which is grown by, or for sale to, fishermen, and for sale in the villages along Mississippi Sound. Coxville fine sandy loam in South Carolina, when drained, is considered a very good soil for truck crops and especially good for strawberries. Corn, cotton, soybeans, and other general-farm crops return only average yields.

Much of the Coxville fine sandy loam supports a growth of young longleaf and slash pines, together with some gum, bay, cypress, and other trees. Large areas have been so continuously burned over since lumbering operations ceased that very few green trees remain. Such areas support a compact sod of coarse grasses, sedges, and plants tolerant to wet conditions, which furnish good spring and early summer grazing, but the grass becomes tough and fibrous in late summer.

**Bladen fine sandy loam.**—The surface soil of Bladen fine sandy loam consists of a 4- to 6-inch layer of brownish-gray or grayish-brown fine sandy loam, splotted with shades of brown, underlain by light-gray loamy fine sand mottled with yellow and brown, and this, at a depth of 10 or 12 inches, passes into mottled gray and yellow fine sandy loam that extends to a depth of 18 or 20 inches. The subsoil is mottled bluish-gray and ochereous-yellow heavy sticky fine sandy clay or plastic clay, which, at a depth ranging from 30 to 36 inches, grades into bluish-gray clay streaked with ochereous yellow and having some brown mottlings. This material extends to a depth ranging from 4 to 5 feet, where the tight heavy underlying clays are reached. The material in this layer is not quite so sticky and plastic as that in the layer above.

This is a very young soil and represents the more recently weathered interstratified deposits of marine sands and clays. It is closely associated with Coxville fine sandy loam, differing from that soil mainly in that the clay subsoil is not nearly so stiff, tight, and water impervious, or so intensely mottled.

Bladen fine sandy loam is developed only south of Mobile along the Bay and along Mississippi Sound. It has a nearly flat or slightly undulating surface relief. Surface run-off of rainfall is very slow, and the movement of water downward through the soil is retarded by the heavy subsoil and impervious underlying clays.

Only about 1 percent of this soil is under cultivation. It is used mainly for the production of Satsuma oranges interplanted with pecans. Where these crops are grown, a good system of open ditches has been established, in order to remove the excess water from the land. Trees on this soil make a strong vigorous growth, produce good crops, and seem to withstand cold better than those on some of the higher lying naturally well-drained soils of the nearby uplands.

This soil is not subject to intense leaching, holds fertilizers well, and carries a good supply of moisture for the trees during dry periods of summer. When well drained, this is an excellent soil for the production of cabbage, potatoes, strawberries, and other truck crops. In Florida and South Carolina it is considered one of the best soils for potatoes. Water passes through the subsoil more rapidly than through the subsoil of Coxville fine sandy loam,

making the soil more easily drained by artificial means, hence its greater desirability as a farming soil. Yields of truck crops on Bladen fine sandy loam are as good as, or better than, on Norfolk fine sandy loam.

The native vegetation is typical of the wet lands, and it consists principally of slash pine, together with some gums, bay, and cypress, an undergrowth of gallberry, myrtle, and other shrubs, and a sod of broomsedge, rushes, and many other coarse grasses and weeds.

**Bladen loamy fine sand.**—Bladen loamy fine sand differs little from Bladen fine sandy loam except in texture. It is gray loamy fine sand or fine sandy loam to a depth of 3 feet or deeper, and the heavy sticky sandy clay is present at a depth of about 4 feet.

The principal areas occur at Mann and in the southeastern part of the county. Some of the bodies along Mississippi Sound slope very gently from some distance inland and gradually merge with tidal marsh.

Where this soil occurs along the Gulf shore it lies so little above sea level that it is impractical, if not impossible, to drain the land sufficiently for farming. Near Mann, where drainage possibilities are more favorable, about 40 acres of this soil have been cleared and drained by open ditches and set to Satsuma oranges, with pecans interplanted. The trees have made an excellent growth. The oranges are giving good yields, and the pecans are just coming into bearing. This grove seems to be as vigorous and produces as good crops as groves nearby on Bladen fine sandy loam.

**Leaf fine sandy loam.**—Leaf fine sandy loam is associated with *Kalmia* fine sandy loam on the broader stream terraces, and it occupies a slightly lower topographic position than the *Kalmia* soil. It differs from the *Kalmia* soil in having a tough mottled clay subsoil. The 4- to 6-inch surface layer is gray or dingy-gray fine sandy loam which grades into pale-yellow fine sandy loam that becomes heavier with depth until the subsoil is reached at a depth of 16 or 18 inches. The subsoil is pale-yellow heavy tough fine sandy clay splotted with red, gray, and bright yellow. The red color fades with increasing depth, and, at a depth ranging from 24 to 30 inches, the material becomes gray, mottled with yellow and rust brown, rather tough fine sandy clay which extends to a depth below 4 feet.

Some variations in texture and structure occur within mapped areas of this soil. On the west side of Escatawpa River in the northwestern part of the county, the surface soil is gray silt loam and the subsoil is silty clay. The soil material here is compact but more friable than typical. Similar areas of silt loam occur along Fowl River south and north of the town of Fowl River, in which the subsoil is heavy plastic fine sandy clay or clay. Formerly, the subsoil material taken from these locations was manufactured into bricks.

Leaf fine sandy loam occupies small areas or strips along some of the larger streams. The surface relief is flat, gently undulating, or gently sloping streamward. Surface drainage is only fair in most places, and the movement of water through the soil is slow. Some of this soil is subject to overflow during high flood stages of the streams.

This is an inextensive and agriculturally unimportant soil, as only a few small patches are under cultivation. The better drained areas are fairly well adapted to farm crops, but, as a whole, artificial drainage is necessary to insure profitable yields. Under the most favorable conditions yields are lower than on Norfolk fine sandy loam and are also lower than on the Dunbar and Bladen members of the light-colored poorly drained soils, in which group the Leaf soil is included.

**Myatt fine sandy loam.**—Myatt fine sandy loam, in association with the Kalmia and Leaf soils, occupies the lowest and most poorly drained parts of the stream terraces. The surface soil is gray loamy fine sand or fine sandy loam to a depth ranging from 5 to 7 inches, where it changes to yellowish-gray fine sandy loam, mottled with yellow and brown, and extends to a depth ranging from 18 to 24 inches below the surface. The subsoil is light-gray heavy fine sandy loam or light fine sandy clay, mottled with shades of yellow and brown. This material in places, at a depth ranging from 32 to 38 inches, changes to sticky and slightly plastic fine sandy clay containing mottlings of about the same shades as those in the overlying material.

This soil occurs along the rivers and larger creeks of the northern half of the county, in irregular patches or in strips continuous for a mile or more. It occupies low flat positions near the streams or slightly depressed areas at the foot of hill slopes, where the Kalmia or Leaf soils join it on the streamward side. Much of the land is covered with a swamplike growth of gum, cypress, and water oak, together with a tangle of underbrush and vines. The more open areas are covered with coarse semimarsh grasses and pitcherplants and a scattered stand of slash pine and cypress.

This soil is of small extent, and none of it is in cultivation. Owing to its low position, drainage would be difficult. Under present economic conditions it can best be used for timber growing, with the better drained parts possibly used for pasture.

**Plummer fine sandy loam.**—Plummer fine sandy loam has a 4- to 6-inch surface layer of gray or dark-gray fine sandy loam underlain by gray or yellowish-gray loamy fine sand showing mottlings of gray, yellow, and brown. The gray color becomes more pronounced with depth, the material becomes a little heavier, and, at a depth ranging from 3 to 6 feet below the surface, it rests on stratified varicolored impervious clays.

This soil occurs mainly in low-lying areas, although in places narrow fingerlike strips extend to the crests of the surrounding low-lying ridges. Drainage is extremely poor, even on the slopes, and the soil remains saturated for a long time after rains. During prolonged droughts the soil may dry and become hard, compact, lifeless material. Drainage is difficult to establish because the banks cave in and fill the ditches.

Plummer fine sandy loam occurs mainly in the northern part of the county, in very small areas or long fingerlike strips, occupying a belt ranging from 4 to 6 miles in width just south of the Washington County line. None of this land is in cultivation. It supports a scattered growth of loblolly, slash, and yellow pines, together with some bay, black gum, and gallberry. A dense sod, consisting

mainly of sedges, pitcherplants, trumpet plants, and other semi-aquatic weeds and grasses, covers most of the land. Crawfish chimneys are thickly scattered over the surface. The best use of this land is forestry.

**Grady clay loam.**—Grady clay loam occupies small sinks or depressions in the upland soils, mainly in the south-central part of the county, where stream dissection has not been complete. The surface soil varies greatly, ranging from fine sandy loam to silt loam, clay loam, and clay in texture, and from gray to dark gray in color. The subsoil ranges from gray to bluish-gray heavy sandy clay, silty clay, or clay and is mottled with shades of gray, yellow, and brown.

None of this soil is cultivated. Water stands on the surface in most places throughout the rainy season, and it escapes only by evaporation or downward movement through the soil. Some of the sinks support a growth of cypress, gums, and loblolly pine, and sedges and coarse grasses grow around the borders. Where possible to establish drainage, this soil will produce excellent lespedeza and carpet grass. It should remain forested or be used for pasture.

**Ochlockonee clay.**—Ochlockonee clay represents material that has been carried by drainage waters and deposited along Mobile River during periods of overflow. The soil is brown silty clay loam or clay, showing some mottlings of rust brown, to a depth ranging from 8 to 12 inches, where it changes into lighter colored or drab material which continues downward without much change to a depth ranging from 3 to 4 feet.

In some of the poorly drained places the soil is dark gray or dark brownish gray, mottled with rust brown, and is underlain by gray or dingy-gray clay showing various shades of brown, gray, and yellow mottlings. These low-lying areas are semiswampy in places and are covered by overflow waters for longer periods than the higher lying areas adjacent to the streams.

This soil occurs in large continuous areas along the eastern side of the county, from Mobile northward to the Washington County line. It is traversed by a large number of old cut-off stream channels, bayous, and smaller streams coming in from the nearby uplands, and numerous lagoons and lakes are scattered throughout the larger areas. Normally, the higher lying parts of this soil are adjacent to the main stream channel and have a slight slope toward the outer edges of the bottoms, and the lowest parts occur near the foot of the upland slopes.

Only a small proportion of the higher land is under cultivation, mainly to corn and hay crops. Yields of corn range from about 20 to 40 bushels an acre, and peavine hay yields from 1½ to 2 tons. Some of the cleared areas support a growth of carpet grass, lespedeza, and Bermuda grass and are used for pasture land.

Ochlockonee clay consists of rich alluvium and is normally a highly productive soil. In Mobile County, however, most of it lies at comparatively low elevations with respect to the normal stream overflow and is subject to inundation at intervals throughout the year. Consequently, the hazard of crop loss from this source offsets the desirable qualities of the soil for cropping purposes.

A dense tree growth, consisting principally of hardwoods, such as red gum, black gum, beech, water oak, pin oak, white oak, swamp

chestnut oak, water maple, and cypress, together with some loblolly and swamp pines, covers nearly all this soil. Wild grape, bamboo, and crossvine form dense tangles on the higher knolls.

#### DARK-COLORED OR BLACK POORLY DRAINED SOILS

The soils of this group are characterized by the dark or black appearance of their surface soils. Wet conditions, conducive to the accumulation of large quantities of organic matter in the surface soil or on top of the soil, have been the determining factor in making these soils different from large areas of adjoining poorly drained soils that have light-colored surface soils.

This group includes Scranton fine sandy loam, Scranton loamy fine sand, and Portsmouth fine sandy loam, in addition to areas of muck that consists largely of an accumulation of rather well decomposed organic matter. With the exception of the Scranton soils during the dry summer months, these soils remain in a more or less saturated condition throughout the year.

The surface relief is nearly level or slightly undulating, and many of the small bodies occur as slight depressions or catch basins within areas of light-colored soils. The soils of this group occur mainly in large bodies; in some places they are continuous for a distance of 5 or 6 miles and are as much as a mile or more wide. Small patches are scattered throughout the flatwoods section. Long narrow bands of muck extend from the flatwoods, in places for a distance of 6 or 8 miles, into the uplands, bordering on streams that have cut down to approximate base level.

**Scranton fine sandy loam.**—Scranton fine sandy loam differs from Norfolk fine sandy loam in that it has a dark-colored surface soil and a lighter colored and more mottled subsoil. It is associated with the Norfolk soil on the flatwoods and on the more level areas of the uplands. Oxidation and soil development are inhibited by poor drainage. The 6- or 8-inch surface layer is dark-gray or almost black fine sandy loam. This layer is underlain by gray fine sandy loam that extends to a depth of 12 or 14 inches. The subsoil is pale-yellow friable light fine sandy clay, showing faint gray and brownish-gray mottlings, which, at a depth of 24 inches, grades into grayish-yellow fine sandy loam or heavy loamy fine sand mottled with shades of gray, yellow, and red. The gray color increases with depth, and, at a depth ranging from about 36 to 40 inches, the material is gray loamy fine sand mottled with shades of gray, yellow, and brown. This material is underlain, at a depth ranging from 6 to 8 feet, by gray interstratified sandy clay and clay.

The surface relief is flat or gently undulating. Although the soil absorbs water readily, the surface run-off of surplus water is slow, and thorough drainage downward is retarded by the underlying heavy clays.

Scranton fine sandy loam is of small extent. It occurs as scattered small areas in the flatwoods and on some of the adjoining uplands south of Mobile.

Only about 2 percent of the land, largely the small patches or long, fingerlike strips mapped within large smooth areas of Norfolk fine sandy loam south of Theodore, is now under cultivation. Such spots were cleared and drained, mainly to eliminate wet places in the large

truck farms, that otherwise would tend to hamper plowing and cultivation. The crops grown on the surrounding soils, principally cabbage, are grown on the cultivated areas of Scranton fine sandy loam, and fertilization and farming practices are the same as on the associated soils. Yields are generally lower than on Norfolk fine sandy loam, as the Scranton soil is later warming up in the spring and crops are slower in starting growth.

The tree growth, unlike that on the Bladen and Coxville soils having similar drainage, consists largely of yellow pine. A scattered undergrowth of gallberry and myrtle grows on much of this soil, together with a dense sod of sedges, coarse grasses, and weeds. When drained and reclaimed this would be a good soil for late truck crops.

**Scranton loamy fine sand.**—Scranton loamy fine sand differs from Scranton fine sandy loam in that it has a loamy texture and loose consistence to a depth of 3 feet or deeper and shows more mottlings in the subsoil. The dark-gray surface layer ranges from 5 to 8 inches in thickness and grades quickly into yellowish-gray loamy fine sand that extends to a depth of 12 or 14 inches. The subsoil, extending to a depth of about 24 inches, is pale-yellow loamy fine sand showing indefinite shades of gray and yellow, together with a few light-brown mottlings. Below a depth of 24 inches, the material grades into gray loamy fine sand, mottled with yellow, brown, and, in places, considerable red. The gray color continues downward to the interstratified red, gray, and yellow sandy clays lying at a depth of 6 feet or deeper.

Like all the poorly drained flatwoods soils, the surface relief is flat or gently undulating, and the movement of drainage waters is slow from both the surface soil and subsoil.

Scranton loamy fine sand occupies a rather large acreage south of Mobile and across the southern end of the county, some of the larger irregular areas covering as much as 2 or 3 square miles. Owing to the low-lying position and the caving in of ditch banks, it is difficult to establish drainage necessary to make the land suitable for crop production, and only about 1 percent of it is cultivated. Like Norfolk loamy fine sand, this is a leachy soil that does not hold plant nutrients well, and the original organic matter in the surface soil is quickly dissipated when the land is cleared and cropped. Practically all of the cleared land is planted to truck crops, but yields are much lower than on the Norfolk, Dunbar, or Bladen soils. Some attempts have been made to grow Satsuma oranges on this soil, but with very little success.

Originally a dense stand of yellow pine covered most of this soil, but, since timber-cutting operations, the land has been burned over annually, which has, in large measure, prevented the reseedling of pine. At present there is a sparse stand of pine on most of the land, together with a dense sod of coarse grasses, trumpet plant, and water-loving vegetation. Forestry is, perhaps, the best use for this soil.

**Portsmouth fine sandy loam.**—Portsmouth fine sandy loam, to a depth of 10 or 15 inches, is dark-brown or black loam or fine sandy loam, carrying a high percentage of well-decomposed organic matter. This material is underlain by gray slightly sticky light fine

sandy clay which, at a depth of about 30 inches, grades into gray sticky fine sandy clay or clay, mottled with yellow. This material continues downward to the gray, brown, and red interstratified sandy clays lying at a depth ranging from 4 to 6 feet below the surface.

A number of small areas of Portsmouth loamy fine sand and Portsmouth loamy sand are included with Portsmouth fine sandy loam in mapping, as they are not of sufficient size to separate as different soil types. A fairly large area of Portsmouth silt loam, lying 2 or 3 miles east of Bayou Labatre, is also included.

This soil occupies depressions or sinks or occurs as intermediate flats between muck or swamp areas and the higher lying soils. It is mapped in large irregular bodies in the flatwoods part of the southern half of the county, smaller areas are north of these, and a few patches are scattered through the upland sections.

Natural drainage is very poor, and water stands over much of the surface during wet seasons. Only a few small patches are now under cultivation. When drained the soil gives excellent yields of cabbage and other truck crops, usually higher than those obtained on the light-colored soils. Drainage of several of the large areas in the southern part of the county could probably be effected by canals and lateral ditches, but this would necessitate the organization of drainage districts, because of the large number of small tracts in which the land is held and the inadequate outlets for ditches from the individual holdings.

The principal tree growth is cypress, slash pine, bay, gum, and some other hardwoods. The land supports a thick undergrowth of titi, sand cypress, and other shrubs, together with bamboo vines and briars. In the more open places, ferns, coarse grasses, rushes, and mosses form a dense mat. In its present condition the land has little value except for the timber it will produce and the turpentine from the pine trees.

**Muck.**—Muck is an accumulation of vegetable matter occurring along some of the streams and depressions. It consists of a 1- to 6-foot layer of black finely divided or well-decomposed organic material and carries less than 50 percent of sand, silt, and clay. It is underlain by mineral soil ranging in texture from loamy sand to clay, which in most places is gray. Muck is permanently wet and remains saturated throughout the year.

Large areas of muck occur in the flatwoods south of Mobile, bordering the foot of steep upland slopes. One such area north of Bayou Labatre is continuous for 8 miles and averages a mile in width. The slightly lower position of these large areas causes them to act as catch basins for seepage water and numerous small streams coming in from the uplands. The water is disseminated through the soil, a part of which eventually reaches the streams heading from the coastward side of the areas.

Most of the muck areas bordering streams that drain from some distance inland are of slighter depth to underlying mineral soil, and they contain the highest percentage of sands and clays. Some spots and narrow strips of sandy stream-wash material border the channels that meander through these areas. In most places the stream level is only 1 or 2 feet below the surface level of the muck,

and during rainy seasons the surface is covered with water a foot or more deep.

Locally the large areas of muck occurring in the flatwoods are termed "titi swamps", because of their permanently wet condition and the dense growth of titi (an evergreen shrub) that covers most of them.

None of the muck is under cultivation. Some of it could be drained with comparative ease by canals and open ditches, but some areas near the coast are so nearly at sea level that drainage would be difficult and expensive. Titi and scattered slash pine constitute the principal vegetation on much of this land, but some of it supports considerable bay, gum, cypress, and other trees.

#### MISCELLANEOUS SOIL MATERIALS

This group, termed miscellaneous soil materials, consists of geological material that has not yet been affected by soil-forming processes and of soils that have been changed by erosional or other mechanical processes and are too badly mixed to separate as soil types. It includes Guin soils (undifferentiated), meadow, swamp, tidal marsh, made land, and coastal beach.

Guin soils, meadow, and swamp have some value as forest lands, and the Guin soils include some small areas that might be farmed, but little or no use could be made of the rest of these lands for such purposes. Made land comprises areas of swamp and marsh in the vicinity of Mobile, that have been reclaimed for industrial purposes.

**Guin soils (undifferentiated).**—The soils included in Guin soils (undifferentiated) are small areas of the Norfolk, Ruston, Greenville, Orangeburg, and Susquehanna soils so intricately mixed and of such low agricultural value that type separations have not been made. Many platy iron-crust fragments and angular gravel fragments are scattered over the surface, and some of the hills are capped by thick beds of the same kinds of rock. In many places the gray or multicolored heavy clays, interstratified with thin beds of sand and iron crust, crop out on the slopes or lie near the surface.

These soils occupy hills and steep slopes in the northern part of the county where the surface relief ranges from rolling to hilly. On many comparatively short slopes the soil, from the hill crest downward, includes patches of Greenville, Orangeburg, or Ruston fine sandy loams, Norfolk sand, Susquehanna fine sandy loam, a strip of interstratified sands and clays, and seepy sandy strips of soil along the foot of the slope, that may or may not be underlain by heavy clay.

Numerous wet-weather drains and gullies caused by erosion cut through much of this soil, and surface drainage is excessive, in many places causing severe sheet erosion. None of this soil is under cultivation, although some small patches might be used for general farm crops if they were properly handled or terraced to prevent erosion.

Most of this land supports a growth of longleaf pine, shortleaf pine, hickory, red oak, white oak, post oak, poplar, and other trees which produce a profitable revenue when they are protected from fire and are cut under the latest approved methods. This land should remain in forest.

**Meadow.**—Meadow is a classification given to material washed down from the uplands and deposited along the streams. It is so variable in color, texture, and structure that no type name can be given to it.

Meadow is subject to overflow by streams and receives seepage water from the uplands, therefore it is permanently wet. None of it is under cultivation in Mobile County, but in other sections of the State areas that have been drained return profitable yields of corn, sorgo, sugarcane, peas, beans, and hay crops. Wet-land grasses, such as carpet grass, lespedeza, and Dallis grass, afford good pasture if the land is cleared and the surface water removed. Tree growth is of the swamp-land type, consisting of cypress, gum, bay, magnolia, water oak, and shrubs, together with a tangle of vines and brambles. Meadow should remain in forest or, if cleared, be used for pasture.

**Swamp.**—Swamp occurs along some of the streams and in low parts of the flatwoods. It is subject to overflow and is covered with water or remains in a saturated condition throughout the year.

This material is, in general, more uniform than meadow. The surface soil ranges from gray to dark gray, and even black in places, and the texture ranges from fine sandy loam to clay. The subsoil is gray and ranges from loamy fine sand to silty clay and clay, showing mottlings or shades of gray and brown.

All the swampland is covered with a dense growth of bay, cypress, gums, water oak, loblolly pine, swamp pine, and numerous other wet-land trees and grasses. It would be difficult and expensive to drain this soil, and even if it were drained the agricultural value would be doubtful. It should remain forested.

**Tidal marsh.**—Tidal marsh occurs along the Gulf coast and bayous of the southern part of the county, along the shores of the adjacent islands, and along the rivers, creeks, and bayous at the head of tide-water on Mobile Bay. The material is principally gray or bluish-gray heavy clay or silty clay, showing streaks and mottlings of yellow and brown. Numerous burrows of fiddler crabs literally honeycomb most of this material.

Tidal marsh is subject to inundation by salt water from the Gulf or backwater on the streams at periods of high tide. The land is treeless but supports a dense covering of marsh cane, marsh grasses, tules, and numerous rushes. Some of the coarse grasses and rushes furnish winter grazing for cattle, especially when the adjoining uplands have been largely burned over during the winter.

**Made land.**—Made land represents the gray sands that have been pumped from the bay and stream channels and spread over areas of tidal marsh or swamp, immediately adjacent to or within the city of Mobile. The depth of the material ranges from 3 to 6 feet. It is the result of reclamation work, in connection with the industrial development of Mobile and nearby sections.

**Coastal beach.**—Coastal beach represents sand that has been deposited by wave action along the coast, part of it being reworked by winds that have drifted the material back some distance from the shore, forming a range of low sand dunes. It occurs as narrow ribbonlike strips along lower Mobile Bay and on Dauphin and some other islands offshore. It is treeless and has no agricultural value.

## AGRICULTURAL METHODS AND MANAGEMENT

Farming practices in Mobile County are governed largely by the character of the soil, the kind of crops grown, the size of the farm, and the location of the farm in respect to markets. On the larger farms tractors and heavy machinery are used for much of the work, and on the smaller ones, mules, the predominating work animal, and light machinery or single plows and walking cultivators are used. On many of the small owner-operated or tenant farms, nearly all the land is prepared and the crops are cultivated with single mule-drawn plows. Cultivation of cotton is done largely with the single-stock sweep plows that require two trips to each row for one cultivation.

Much of the plowing, disking, and harrowing in the cultivation of the pecan and Satsuma-orange groves is done with tractors and power machinery. On the large cabbage and potato farms south of Mobile, much of the breaking and harrowing of the land is done with tractors, but the cultivating is done with the walking single-stock plow and hand hoes.

Not many attempts are made to establish a system of crop rotation, even on farms where the crops are more or less diversified. The best land is planted to cotton, and the rest is planted indiscriminately to all other crops. On the specialized truck farms, winter truck crops are followed by spring truck crops and these by corn, cowpeas, or sweetpotatoes, as summer crops. The kinds of summer crops are determined largely by the home needs of hay or grain, by the possible market demand for these crops, or by the necessity or desirability of a pea-vine crop for green manure. In seasons when the winter or early spring crops are damaged or destroyed by frost or freezing, this system of crop succession is upset, and the crops are adjusted in the best way possible to meet the emergency. In years of a general depression in the markets for various vegetables, one of the season's crops may be dropped altogether.

Owing to the loose friable consistence of the sandy soils in this county, the land is not difficult to prepare for planting. As most of the residue from truck crops is green and tender when plowed under, and quickly decomposes, it never interferes with the planting and cultivation of the succeeding crops. The land usually receives only a light harrowing after it has been plowed, and even this is not necessary where corn is to be planted.

On farms where cotton and corn are grown, the stalks are generally thoroughly cut before the land is plowed, and the land rarely requires disking before another crop is planted. Some land that is plowed in the fall or winter needs disking before the spring crops are planted, in order to break any crust that might have formed or to destroy weeds. On some of the small farms, the farmers who do not have stalk cutters or disks still resort to the practice of burning all grass, cotton stalks, and cornstalks, that remain on the land at the time of plowing.

Land for crops is generally flat broken with disk or bottom turn plows some time before planting is to be done, in order that the soil may settle, thereby assuring better moisture conditions at the

time of planting. Cotton, corn, peanuts, and beans on the general-crop farms are usually planted on flat-broken land with single- or double-row planters. Fertilizers are either put on some time before or at the time of planting with a combined planter and fertilizer distributor or with a separate machine. Cabbage land to be planted in corn is relisted, and the corn is planted in the cabbage row. Following potatoes, corn is planted in the furrow made at the time of harvesting the potatoes. Potatoes are planted on the flat in well-drained fields and on slightly raised beds in places where the soil is poorly or imperfectly drained.

All the cabbage and leafy and root vegetable crops grown in the southern part of the county are planted on medium- or high-listed beds, in order to insure better drainage during the rainy winter and spring months. This is especially necessary on the flatwoods soils or the flat uplands having slow subsoil drainage. The high beds receive more sunshine than a similar field of level soil, and the furrows between the beds act as shallow drainage ditches to carry away excess water. In the central and northern parts of the county, where the land is high and well drained, it is not necessary to guard against the possible excessively wet condition.

All crops receive adequate cultivation to insure good development. Corn is plowed 4 or 5 times and cotton from 5 to 7 times, but quick growing and early maturing truck crops are given only sufficient cultivation to keep down the weeds and to conserve moisture during dry periods. Much of the hoeing is done by hand on most of the truck crops, peanuts, and cotton. Tomatoes are staked and tied up to prevent rotting and to insure more uniform development and ripening of the fruit. Cucumbers, cantaloups, watermelons, and tomatoes are sprayed, in order to check injury from insects and fungous diseases.

Cabbage and turnips for greens are planted both as winter and spring crops for shipping to markets outside the county, and some of the other more hardy leafy and root vegetable crops are planted as winter crops, principally for local markets. Potatoes are grown almost wholly as a spring crop, largely for shipping, and a small acreage is planted as a fall crop to supply a part of the local needs. Carrots, spinach, beets, English peas, and greens are planted in late winter for the early spring markets, both local and outside. Tomatoes, cucumbers, beans, squash, and lima beans (for local sale and shipping) are planted as soon as danger from frost is past. Other vegetables of many varieties are grown throughout the season to supply the Mobile markets.

Little or no work has been done by the State agricultural experiment station in variety tests or fertilizer requirements of the large number of vegetables grown in Mobile County. The county agricultural agent, in cooperation with the truck growers, through field study, has determined that widely different fertilizer mixtures, applied in different quantities, are necessary to the best development and highest yields of the different crops. General recommendations<sup>4</sup> for acre applications for the different crops are as follows: For lettuce, turnips, mustard, cabbage, spinach, and kohlrabi, 2,000

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<sup>4</sup> From printed sheets given by the county agent during the progress of the survey.

pounds of a 6-8-4 mixture; for carrots, okra, cucumbers, cantaloups, watermelons, beans, squash, and sweetpotatoes, 2,000 pounds of 4-8-6; for collards, peppers, eggplant, and lima beans, from 1,000 to 1,600 pounds of 4-8-4; for potatoes and chard, 2,000 pounds, and for rutabagas, from 1,200 to 1,600 pounds of 3-8-5; for tomatoes and beets, 1,600 pounds of 5-8-6; and for radishes, 1,500 pounds, and for sweet corn, 800 pounds of 8-6-3.

Applications of well-rotted manure give good responses on all crops, and, in a measure, reduce the fertilizer requirements, especially of potash and nitrogen. Where legume and green-manure crops are grown, increased yields are noted. On the poorly or imperfectly drained highly acid soils, applications of ground or burned oystershells or of hydrated lime give the soil a better structure. The crops on limed soils showed a better and more uniform development and increased yields.

Fertilizer experiments on corn (6) planted on soils of the coastal plain, similar to those of Mobile County, resulted in conclusions that an acre application of a fertilizer mixture composed of 100 pounds of nitrate of soda, 200 pounds of 16-percent superphosphate, and 25 pounds of muriate of potash gave good returns. An increased quantity of nitrates gave a greater and more profitable increase than did increased quantities of phosphate and potash. Nitrate of soda applied as a side dressing to corn proved to be most effective when applied at the time the corn was 2½ feet tall (1).

From fertilizer experiments on cotton (5) on the coastal-plain soils, conclusions were drawn that a mixture of 200, 400, and 50 pounds, respectively, of nitrate of soda, 16-percent superphosphate, and muriate of potash, gave high yields at a maximum profit. Nitrate of soda, as a source of nitrogen for cotton, gave more profitable results on all soils of the State than did cottonseed meal (7).

Satsuma orange trees are planted about 20 feet apart and are generally interplanted with pecan trees which are set from 60 to 100 feet apart. This practice is considered more profitable by most growers than groves of either tree alone. The cost of planting an acre of Satsuma orange trees (including plowing) ranges from about \$40 to \$45, and the cost of cultivating and fertilizing bearing trees is about \$100 an acre. An acre application of about 2,000 pounds of a 4-10-8 commercial fertilizer is made to the trees yearly. When not injured by freezing, Satsuma orange trees produce good crops when from 5 to 7 years old.

The principal varieties of pecans planted are Schley, Stuart, Moore, Moneymaker, and Success. The orchards are plowed in the fall just before or just after the crop is harvested, and harrowing or disking is practiced in many orchards in spring and summer. Summer cover crops are mainly natural grasses, and in many orchards a winter cover crop of vetch, Austrian winter peas, bur clover, or crimson clover is planted, which is either left on the ground throughout the summer or is disked down in the spring.

#### SOILS AND THEIR INTERPRETATION

Mobile County, in the southwestern corner of Alabama bordering the Gulf of Mexico, lies in the humid region of the United States. This is a region of high rainfall, long hot summers, and short mild

winters, with only short periods of subfreezing weather. The county is in the southern pine belt and was originally heavily forested, principally with longleaf, or yellow, pine (*Pinus palustris*). It lies within that part of the Gulf Coastal Plain that is made up of unconsolidated noncalcareous marine sands and clays.

The county is marked by two distinct physiographic features, one, a low nearly flat or undulating plain extending along the southern and eastern sides and constituting about one-third of the total area; the other, a high plain that rises within a short distance to an elevation ranging from 50 to 100 feet above sea level and beyond this, with a gradual rise to the north and northwest, to a maximum elevation of 352 feet at Citronelle.

The low plain, owing to the nearly flat surface relief and shallow stream dissection, is occupied by soils of poor or imperfect drainage. The interior, or high, plain is, in most places, deeply and thoroughly dissected, giving it a rolling or hilly surface relief. The major stream divides are undulating or very gently rolling remnants of the old plain, which evidently remain near the original level. Some of the broader remnants contain numerous scattered shallow catch basins, or saucerlike depressions, that have not been reached by stream dissection, and which form wet or poorly drained spots in the otherwise normally well drained soils.

The soils are developed from deposits of unconsolidated sands, sandy clays, and clays. The deep deposits of interstratified sands and sandy clays that once covered the upland part are classed as the Citronelle formation (4). This is underlain by the Hattiesburg clay. Erosion and stream cutting through the Citronelle formation and well down into the Hattiesburg clay expose a rather variable geological material, from which the soils are derived. The flatwoods, classed as recent flood-plain and terrace deposits, consist largely of sandy material, ranging from 2 to 10 feet in thickness and underlain by heavy clays.

The county is included within the Red and Yellow soils region of the United States. It is, however, near the southern line that has been suggested as separating this region from the lateritic soils of the tropical countries. Without doubt the processes that most affect soil development in the county are those of a podzolic character, but it is also evident that the lateritic processes have had a marked influence on the development of some of the soil materials. The soils range from slightly to strongly acid, are low in plant nutrients, are generally low in organic matter, and are light colored.

The well-drained soils are members of the Norfolk, Ruston, Orangeburg, Red Bay, Cahaba, Susquehanna, Irvington, Guin, Eulonia, and Kalmia series. Of these, the first four are the only soils that have normally developed mature profiles. The other members of the group have been arrested in their normal development, either by a high water table, underlying stratum, or the character of the parent material.

The deep sand, loamy sand, and loamy fine sand types of the Norfolk and Ruston series, developed from deep beds of sandy material, show very little change in their respective profiles, in texture, color, or structure below their 6- to 8-inch surface layers. The Kalmia soils and the flatwoods phases of the Norfolk soils have

water tables lying at a depth ranging from 3 to 4 feet below the surface, thereby preventing normal development of these soils. The Susquehanna, Guin, and Eulonia soils have heavy stiff or plastic clay subsoils at a depth ranging from 2 to 4 feet below the surface, that retard oxidation and hold soil-development processes practically at a standstill. Irvington very fine sandy loam and its phases have an underlying semicemented hardpan layer, at a depth ranging from 4 to 6 feet, that holds ground water near the surface for long periods and that has a tendency to arrest oxidation, giving the soil, below a depth ranging from 15 to 20 inches, a gray and brown mottled appearance not present in the mature soils of the region.

The soils having the best developed profiles occur on the broader stream divides of undulating or very gently rolling surface relief or on the better drained parts of the Mobile River terrace. They have mellow friable fine sandy loam surface soils that show considerable leaching and are lighter in color than the subsoils. The subsoils are friable fine sandy clays or sandy clays, which are redder than the surface soils and show a concentration of clay particles and alumina and iron colloids. Below this, at different depths, the material becomes lighter in both color and texture but not so light as in the surface soil.

Norfolk fine sandy loam is the most extensively developed mature soil in the county. Following is a description of a profile of this soil as observed 1 mile south of Theodore:

- A<sub>1</sub>. 0 to 4 inches, gray loamy fine sand changing rather abruptly to the layer below.
- A<sub>2</sub>. 4 to 8 inches, pale-yellow loamy fine sand containing an abundance of gray worm casts.
- A<sub>3</sub>. 8 to 20 inches, yellow heavy fine sandy loam that gradually changes into the underlying material.
- B<sub>1</sub>. 20 to 42 inches, yellow friable fine sandy clay containing some faint gray and brown mottlings below a depth of 30 inches.
- B<sub>2</sub>. Below 42 inches, the fine sandy clay continues downward with decreasing yellow color and increased mottlings until the parent material of stratified sandy clay and clay is reached at a depth ranging from 6 to 10 feet.

Ruston fine sandy loam is very much the same in the surface layer as Norfolk fine sandy loam. It has a yellow or brownish-yellow upper subsoil layer and a reddish-brown or rust-brown lower subsoil layer. The darker color in this soil is probably caused by an increased iron content or the more complete oxidation of the iron. In most places, the subsoil seems to carry a higher percentage of clay than does the Norfolk subsoil.

Red Bay fine sandy loam and Orangeburg fine sandy loam each occupy an area of about 15 square miles. They belong to the red group of coastal-plains soils and are among those having the most highly colored subsoils. Following is a description of a profile of Red Bay fine sandy loam, as observed 4 miles south of Wilmer:

- A<sub>1</sub>. 0 to 5 inches, dark reddish-brown friable fine sandy loam containing numerous red or reddish-brown worm casts. This material changes rather abruptly to the layer below.
- A<sub>2</sub>. 5 to 11 inches, dark reddish-brown heavy friable fine sandy loam containing a large number of brown worm casts brought down from the layer above.

- B<sub>1</sub>. 11 to 20 inches, dark-red friable fine sandy clay, slightly sticky when wet, which imperceptibly grades into a slightly heavier and somewhat lighter colored layer below
- B<sub>2</sub>. 20 to 48 inches, red heavy friable fine sandy clay which is uniformly red and breaks into lumps that are easily crushed into a friable mass.
- B<sub>3</sub>. 48 inches +, red friable light fine sandy clay material underlain by interstratified fine sands and sandy clays, continuing to a depth ranging from 5 to 20 feet.

Orangeburg fine sandy loam, classed with the red soils, is of a lighter color through the entire soil profile than Red Bay fine sandy loam. It is gray-brown fine sandy loam in the surface layer, yellowish brown in the subsurface layer, and yellowish-red or light-red friable fine sandy clay in the subsoil, which in many places becomes heavy fine sandy loam below a depth of 40 inches. The depth of soil development is about comparable to that of the Red Bay soil.

Cahaba fine sandy loam is derived from stream-wash material deposited along Mobile River. It has lain in place long enough for weathering processes to give it a definite profile development. Like Ruston fine sandy loam, it has a gray or grayish-brown friable fine sandy loam surface soil and a reddish-yellow or reddish-brown friable fine sandy clay subsoil.

The fine sandy loam types of the Dunbar, Leaf, Scranton, and Coxville series and Scranton loamy fine sand make up a group of imperfectly drained soils. All types, except the Leaf, which occupies a stream-terrace position, are developed in the flatwoods part of the county. All these soils have an undulating or nearly level surface relief. They are developed from a more recent geological formation than the well-drained soils. The inadequate subsoil drainage and slow surface drainage give these soils a high water table for a greater part of the year, and this inhibits oxidation, bacterial action, and other soil-forming processes, slowing up the rate at which the soils advance toward maturity.

All the fine sandy loam soils of the group have gray or dark-gray surface soils, and grayish-yellow, pale-yellow, or yellow subsoils that are heavier than the surface soils. However, below a depth ranging from 20 to 30 inches, their respective subsoils show their lack of oxidation by their slightly to extremely mottled condition and their close resemblance to the underlying parent material.

Dunbar fine sandy loam is the best drained soil of the group. As observed in a recently cut ditch bank 2 miles north of Farnell and west of Mobile, this soil showed the following profile:

- A<sub>1</sub>. 0 to 5 inches, gray fine sandy loam
- A<sub>2</sub>. 5 to 16 inches, pale-yellow heavy fine sandy loam showing some faint mottlings of brown and containing a few brown soft iron nodules.
- B. 16 to 24 inches, pale-yellow light fine sandy clay mottled with light gray, reddish yellow, and brown or rust brown.
- C. 24 to 42 inches, gray clay material mottled with red and yellow and various shades of these colors. This material is hard and compact when dry and plastic when wet.

Coxville fine sandy loam is derived from geological material similar to that of the Dunbar soil, but it occupies a slightly lower and less well drained position. The profiles of the two soils are very similar, except that the subsurface soil and subsoil of the Coxville soil are paler yellow and the red-mottled gray clay material is reached at a depth of about 20 inches below the surface.

Leaf fine sandy loam is very heavy in the B horizon, and the parent material is heavy clay. The Scranton soils are dark gray or black to a depth ranging from 8 to 10 inches. The pale-yellow light fine sandy clay subsoil gives way, at a depth ranging from 30 to 36 inches, to gray or yellowish-gray fine sandy loam or loamy fine sand. This material extends to a depth of several feet, where the clay beds lie.

The poorly drained soils occupy flat poorly drained positions in the flatwoods part of the county, depressions and seepy areas on the uplands and stream terraces, and low-lying flood bottoms. The group includes the Bladen, Portsmouth, Plummer, Grady, Myatt, and Ochlockonee soils. All, except the Ochlockonee, have gray or nearly black surface soils and slightly to intensely mottled gray subsoils. Ochlockonee clay, a flood-bottom soil, is grayish brown or brown in the surface soil and drab gray or grayish brown in the subsoil which is mottled with rust brown, gray, and yellow.

Following is a description of a profile of Bladen fine sandy loam, as observed at Bellefontaine:

- A<sub>1</sub>. 0 to 4 inches, brownish-gray fine sandy loam mottled with shades of gray and brown.
- A<sub>2</sub>. 4 to 10 inches, light-gray loamy fine sand mottled with shades of light yellow and brown.
- A<sub>3</sub>. 10 to 22 inches, marbled gray and yellow or ochreous-yellow fine sandy loam.
- B<sub>1</sub>. 22 to 36 inches, marbled bluish-gray and ochreous-yellow heavy sticky fine sandy clay or clay.
- B<sub>2</sub>. 36 to 44 inches, bluish-gray clay streaked or splotched with ochreous yellow, with an occasional red or brown marking. The material in this horizon is not quite so heavy as in the B<sub>1</sub> horizon.

Plummer fine sandy loam and Myatt fine sandy loam occupy low seepy wet areas associated with the well-drained Norfolk and Kalmia soils, respectively. Their gray and mottled appearance is owing to lack of drainage rather than to lack of time for maturity.

Grady clay loam occupies depressions in flat uplands. Its saturated condition for long periods prevents normal soil development.

Portsmouth fine sandy loam, which shows the least development of any of the Mobile County soils, occupies extremely flat areas or lies a little lower than the surrounding soils. Water covers the surface for long periods, and the land remains wet throughout the greater part of the year. The wet condition of the soil results in slow oxidation of plant residues and is conducive to the accumulation of large quantities of organic matter on the surface and in the upper soil layer.

#### SUMMARY

Mobile County, in the southwestern corner of Alabama, comprises an area of 1,226 square miles, or 784,640 acres.

The county is marked by two distinct physiographic features—(1) a generally level low coastal-plain and river terrace, the elevation of which averages less than 50 feet above sea level, characterized by soils largely of poor or imperfect drainage; and (2) a high coastal plain that has been deeply dissected by streams, giving the land a rolling or hilly surface relief, with an average elevation of approximately 200 feet above sea level. The major stream divides are

remnants of the old plain and have an undulating or gently rolling relief.

Drainage to the east is into Mobile River, to the west into Pascagoula River in Mississippi, and some small streams empty directly into Mobile Bay and the Gulf.

The county is served by five railroads. A good system of paved State and county highways serves all sections. Consolidated schools and good churches are within easy reach of all families in the rural sections.

Mobile, with a population of 68,202, as reported by the 1930 census, is the county seat and principal town. It is located at the head of Mobile Bay and is an important railroad and industrial center. It ranks high as a seaport, handling both coastwise and ocean shipping. Large quantities of coffee, sugar, and tropical fruits enter this port.

The most important natural resources are timber and timber products. Commercial fishing in Mobile Bay and coastal waters and the canning of shrimp and oysters bring in a large revenue.

Climatic and seasonal changes are rather equable. Long warm or hot summers and short mild winters are the general rule. A high rainfall is well distributed throughout the year.

The soils are sandy, generally light colored, deficient in organic matter and plant nutrients, and range from slightly acid to very acid. For discussion they are divided into four groups—(1) well-drained soils, (2) imperfectly drained soils, (3) poorly drained soils, and (4) miscellaneous soil materials.

The well-drained soils cover more than 50 percent of the county. About 25 percent of this area is too rough or too steep for use as agricultural land, and other large areas of rolling sand hills could probably be used more profitably for forests than for crops. Only a small acreage of the imperfectly drained soils and none of the poorly drained soils can be profitably used for agricultural purposes without first draining by surface ditches or tile.

Twenty soil series, including 27 soil types and 5 phases, are mapped. In addition, there are 7 classifications of miscellaneous materials.

Probably 10 percent or less of the county is in cultivation. Considerable areas of well-drained soils are still available for farming purposes, and with various degrees of reclamation additional soils of the flatwoods section could be made tillable.

The agriculture is of two types—general farming and truck farming. Some of the general farms produce small side-line crops of vegetables, and the truck farms produce some corn and hay as feed for the work animals. Corn occupies the largest acreage, with hay ranking second, and cotton, vegetables, and potatoes are the next crops, named in order of their total acreage. The larger part of the farm income is derived from the last three crops.

Mobile supplies a local market for large quantities of farm products. Cabbage, potatoes, beans, cucumbers, tomatoes, and all vegetables classed as greens are the principal crops planted for shipping to outside markets.

Dairying is of sufficient extent to supply home needs and the whole-milk market in Mobile, and enough chickens and eggs are

produced to supply local needs. The poor quality of beef cattle, hogs, and sheep, and the methods under which they are handled, result in supplying only a small quantity of the meat used.

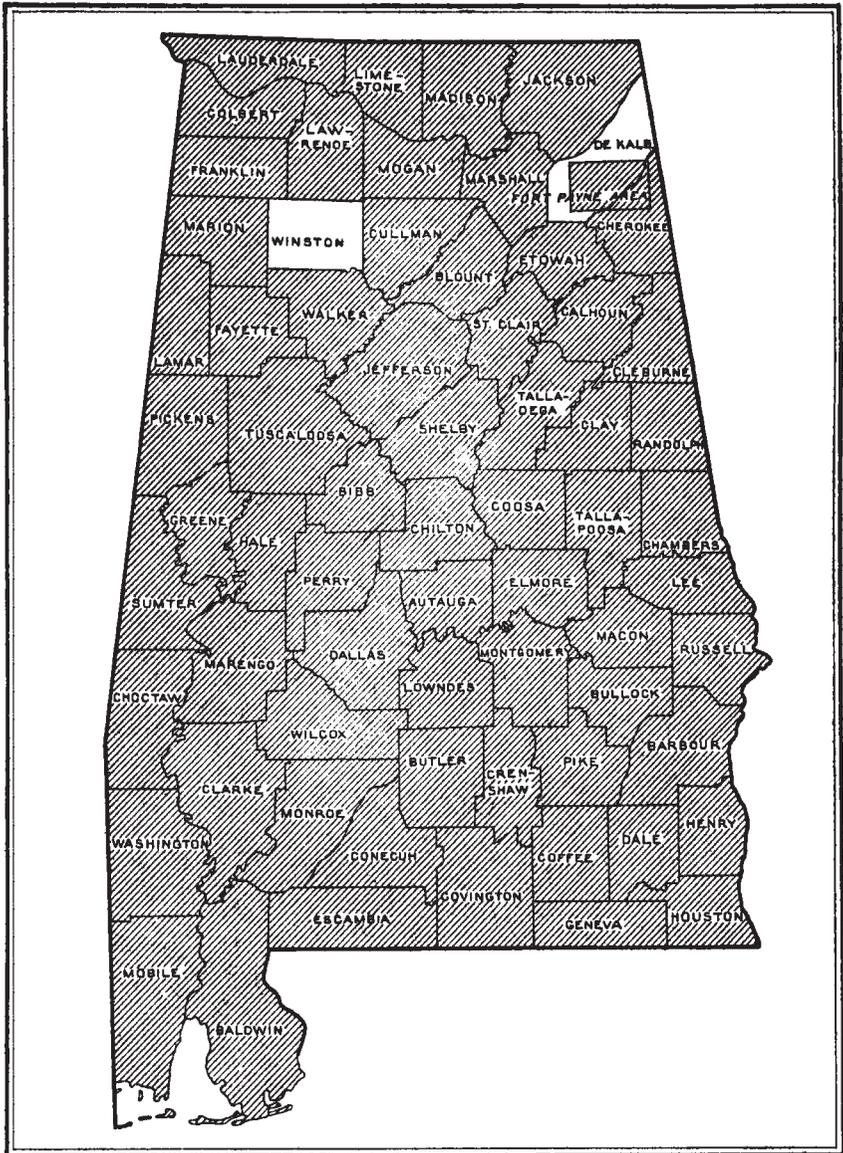
### LITERATURE CITED

- (1) CAUTHEN, E. F., and WILLIAMSON, J. T.  
1920. TIME OF APPLYING NITRATE OF SODA TO CORN. Ala. Agr. Expt. Sta. Bull. 210, 16 pp.
- (2) GANNETT, H.  
1906. A DICTIONARY OF ALTITUDES IN THE UNITED STATES. U. S. Geol. Survey Bull. 274, Ed. 4, 1072 pp.
- (3) OWEN, T. MCA.  
1921. HISTORY OF ALABAMA AND DICTIONARY OF ALABAMA BIOGRAPHY. 4 v., illus. Chicago.
- (4) SMITH, E. A., JOHNSON, L. C., and LANGDON, D. W., JR.  
1894. REPORT ON THE GEOLOGY OF THE COASTAL PLAIN OF ALABAMA. 759 pp., illus.
- (5) WILLIAMSON, J. T.  
1929. FERTILIZER EXPERIMENTS WITH COTTON. Ala. Agr. Expt. Sta. Bull. 228. 31 pp.
- (6) ——— APPLETON, W. H., and HELMS, H. B.  
1927. FERTILIZER EXPERIMENTS WITH CORN. Ala. Agr. Expt. Sta. Circ. 52, 12 pp.
- (7) ——— and FUNCHESS, M. J.  
1923. FERTILIZER EXPERIMENTS WITH COTTON. Ala. Agr. Expt. Sta. Bull. 219, 24 pp., illus.



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There shall be printed, as soon as the manuscript can be prepared with the necessary maps and illustrations to accompany it, a report on each soil area surveyed by the Bureau of Chemistry and Soils, Department of Agriculture, in the form of advance sheets bound in paper covers, of which not more than two hundred and fifty copies shall be for the use of each Senator from the State and not more than one thousand copies for the use of each Representative for the congressional district or districts in which a survey is made, the actual number to be determined on inquiry by the Secretary of Agriculture made to the aforesaid Senators and Representatives, and as many copies for the use of the Department of Agriculture as in the judgment of the Secretary of Agriculture are deemed necessary.



Areas surveyed in Alabama shown by shading. Detailed surveys shown by northeast-southwest hatching.

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