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SOIL SURVEY

OF

WAYNE COUNTY, GEORGIA

BY

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SOIL SURVEY OF WAYNE COUNTY, GEORGIA

By G. L. FULLER, Georgia State College of Agriculture, in Charge, and S. O. PERKINS, U. S. Department of Agriculture

COUNTY SURVEYED

Wayne County is in the southeastern part of Georgia. It is irregular in shape. Altamaha River forms the northeastern boundary, and Little Satilla River and Big Satilla Creek form the southwestern boundary. The county has an area of 643 square miles, or 411,520 acres.

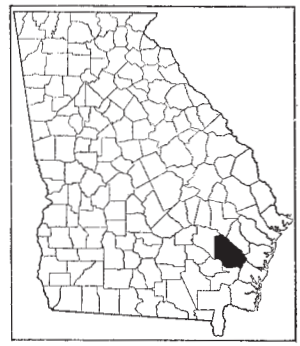

FIGURE 1.—Sketch map showing location of Wayne County, Ga.

Wayne County lies entirely within the coastal-plain region of the State, and most of it is in the flatwoods or seaward part. The general surface relief is that of a low-lying, nearly level plain. There is very little slope in the eastern and southern parts of the county, but relief is more marked where streams have cut below the general level of the plain in the northwestern and southwestern parts. This plain has a very gentle though uniform slope from northwest to southeast. The higher part of the county is near the northwest corner. The lowest part, which is only 11 feet above sea level, is southeast of Mount Pleasant near the Glynn County line. Mount Pleasant, 2 miles from the county line, has an elevation of 59 feet. The southern part of the county ranges from 20 feet to about 80 feet above sea level, except in the southwestern part. The elevation of Screven in the southwestern part, on the Atlantic Coast Line Railroad, is 124 feet. The elevation of the county gradually increases from east to west, as is evidenced by the elevations of the following stations on the Southern Railway: Mount Pleasant, 59 feet; Gardi, 62 feet; Jesup, 100 feet; Odum, 155 feet; and Brentwood, 167 feet. The greatest relief occurs along the bluff south of the Altamaha River swamp and along the tributaries to Altamaha River. The bluff ranges from 120 to 150 feet in height in the northwestern part of the county and gradually becomes lower toward the southeastern part. The relief in the southwestern part of the county, near Little Satilla River and Big Satilla Creek, is prominent, but it gradually decreases with distance up the tributaries.

All of the larger streams of the county meander through wide flood plains. That of Altamaha River is the widest. All the established stream channels have flood plains varying in width with the size of the stream. The smaller streams have poorly defined chan-

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nels, and it is difficult to determine the direction of flow of many of them. The flood plains along these small streams merge almost imperceptibly into the poorly drained uplands. Numerous depressions and swampy, undrained areas occur throughout the county. They are smaller and fewer in the northwestern and southwestern parts and larger and more numerous in the southern and southeastern parts.

The western half of the county drains southward into Little Satilla River through Big Satilla Creek, Colemans Creek, Reddy Creek, Little Satilla Creek, Dry Creek, Keene Bay Branch, and many small tributaries. The eastern half and the northern edge of the county drain into Altamaha River, principally through Penholoway, Goose, and Little Goose Creeks, and their tributaries. Most of the drainage of the eastern half of the county eventually reaches Penholoway Creek. In much of the southeastern part drainage is poorly established and there are several large undrained or poorly drained swampy areas, varying in size from 8 square miles to less than 1 square mile. The largest of these swampy areas are Penholoway Swamp, Big Cypress Swamp, Duck Pond Swamp, and Little Buffalo Swamp.

Wayne County was organized in 1803 from land acquired from the Creek Indians through the treaty of Fort Wilkinson and was named after Gen. Anthony Wayne. Early settlement was slow, and a county seat was not established until 1829. It was then located near Waynesville, which town is now in Brantley County. Since 1829 several counties have been taken entirely or in part from Wayne County. Early settlers came principally from elsewhere in Georgia and from the Carolinas. No figures are available for the present population of the county, because about 110 square miles were taken from the county to form Brantley County since the last census. The census of 1920 gave the total population as 14,381, of which 3,153 were negroes and 11,202 were native-born whites. The remainder were foreign-born whites. The population has increased steadily since 1880, when there were but 5,980 people in the county. Since 1920 a small group of Finns from some of the Northern States and from Finland has located at McKinnon, in the south-central part of the county. These people operate a cooperative farm, upon which they produce truck crops, poultry and dairy products, and hogs.

Settlement is thickest in the northwestern, north-central, and southwestern parts of the county, where the people are engaged both in agriculture and in the turpentine industry. In the south-central, southeastern, and eastern parts, where the population is sparsest, the people are engaged principally in the turpentine industry, and a few are engaged in lumbering. At present a distillation plant at Brunswick employs a large number of transitory laborers in extracting pine stumps throughout the county.

Jesup is the present county seat of Wayne County, and it had in 1920 a population of 1,941. This is an increase from 805 reported in 1900. It is located in the north-central part of the county, about 4 miles from Altamaha River, 43 miles from Brunswick, 45 miles from Waycross and 99 miles from Jacksonville, Fla. State highways lead to these cities and westward toward Macon. Jesup is on the

main line of the Atlantic Coast Line Railroad from Washington to Jacksonville. Another line of this railroad connects with Waycross, and a branch of the Southern Railway leads to Brunswick. About 35 or 40 trains stop daily at Jesup during the winter, affording exceptional facilities for shipping perishable produce. Freight may be moved on Altamaha River from Doctortown, about 4 miles from Jesup. Screven, in the southwestern part of the county, is the second largest town. It had in 1920 a population of 364. Odum, in the northwestern part of the county on the Southern Railway, had a population in 1920 of 309. Several other small towns and loading points in the county are Brentwood, Redland, Gardi, Grangerville, and Mount Pleasant, on the Southern Railway, and Doctortown, Broadhurst, and McKinnon, on the Atlantic Coast Line Railroad.

The county has a good system of consolidated country schools and many modern substantial brick school buildings. There are no hard-surfaced roads in the county, but it is reported that 62 miles of State highway have a sand-clay surface. Improved roads are found only in the northern and western parts of the county, and secondary roads and turpentine roads traverse the rest of the county. Practically all the towns and many of the rural communities have telephone service, and rural delivery of mail reaches the more thickly settled parts.

Jesup is the principal market for the products of the county. Cotton is also shipped from other towns and sidings along the railroads. Truck crops and poultry products are shipped to northern markets and to Florida.

CLIMATE

The climate of Wayne County is characterized by long, hot summers and by short, mild winters. The winters are usually pleasant. Though occasional cold days accompany rainy spells, freezing weather ordinarily is of short duration. Warm weather during the winter is frequently characterized by relatively high humidity. Gardens may usually be started in February with little risk of freezing.

The coldest day recorded at the Weather Bureau station at Glennville, in Tattnall County, about 25 miles north of Jesup, was 11° F., and the hottest was 104°.

The average date of the last killing frost is March 7, and the latest killing frost recorded occurred on April 10. The average date of the first killing frost is November 14, and the earliest killing frost recorded was on October 21. The average frost-free season of 36 weeks is adequate for the production of a great variety of crops.

The abundant rainfall is well distributed throughout the year, the largest amount normally falling during June, July, and August. Snow is rarely seen. The mean annual rainfall as recorded at Glennville is 47.36 inches. The precipitation during the driest year on record (1923) was 35.46 inches, and that recorded for the wettest year (1912) was 67.71 inches.

Table 1 shows the normal monthly, seasonal, and annual temperature and precipitation at Glennville in Tattnall County.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Glennville, Tattnall County*

[Elevation, 175 feet]

Month	Temperature			Precipitation		
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1923)	Total amount for the wettest year (1912)
	°F.	°F.	°F.	Inches	Inches	Inches
December	50.2	85	15	3.28	2.32	5.62
January	51.1	84	15	2.78	1.86	6.18
February	52.7	90	11	3.59	1.36	4.83
Winter	51.3	90	11	9.65	5.54	16.63
March	59.8	92	23	3.49	2.56	5.52
April	67.8	94	33	2.80	1.03	5.56
May	74.5	101	41	3.54	7.82	5.05
Spring	67.4	101	23	9.83	11.41	16.13
June	80.1	104	48	4.84	4.38	2.45
July	81.6	103	59	6.14	4.96	11.83
August	81.2	104	62	7.41	4.81	3.90
Summer	81.0	104	48	18.39	14.15	18.18
September	77.0	100	45	4.55	1.67	12.30
October	68.0	98	31	2.38	.34	2.48
November	57.4	87	23	2.56	2.35	1.99
Fall	67.5	100	23	9.49	4.36	16.77
Year	66.7	104	11	47.36	35.46	67.71

AGRICULTURE [1]

The early agriculture in Wayne County was largely of the self-sustaining type and was carried on in connection with lumbering and turpentine operations. As the pines were cut more land was cleared and devoted to agriculture. Much of the early agriculture was experimental, so far as the soil was concerned, and resulted in the abandonment of considerable land which proved unsuited to farming. Some islands in the Altamaha River swamp were among the early clearings, largely because they were easily accessible by way of the river. The soil was sandy and subject to overflow during periods of extremely high water, and all these clearings have been abandoned and now support a forest growth.

During the early agricultural development of the county cattle and hogs were pastured on the free range throughout the year. Even at the present time the county is without stock laws and land used for crops must be fenced.

Since the county was organized in 1803 the number of farms has steadily increased as has also the acreage of improved land to the farm. The average size of farms has decreased, although several tracts of land containing from 1,000 to 5,000 or more acres are still farmed. The census of 1925 reports 151,699 acres in farms in Wayne

[1] Few census figures prior to those of the 1925 census are used in this report, because about 110 square miles were taken from Wayne County since 1920 to form part of Brantley County.

County. This figure represents only 36.8 per cent of the land in the county. About 40,000 acres are under cultivation.

At the present time agriculture in Wayne County consists of the production of cotton, tobacco, truck crops, and pecans as the principal cash crops, and corn as a subsistence crop. A wide variety of crops and fruits is grown, some commercially, some for home use, and some experimentally. Considerable revenue is derived from the sale of turpentine and lumber. A few cattle are raised for sale.

The largest acreage of improved land is cultivated to corn and 20,486 acres produced 236,556 bushels of grain in 1924. The acreage in corn has increased steadily since 1879, but the present crop is barely sufficient to supply local needs. In 1924 the average yield for the county was about 11 bushels to the acre, but the better soils of the county, if properly tilled and fertilized, will produce a higher yield.

Cotton, the most important cash crop, occupies the second largest acreage. The acreage has been comparatively uniform since 1909. In 1924, 3,514 bales were produced on 10,109 acres. The county agricultural agent reported that more than 6,000 bales were produced in 1925. Cotton yields averaged about one-third bale to the acre in 1924. However, the better land in the county is capable of producing 1 bale to the acre if it is properly tilled. Much of the poorer land averages about a bale to 6 or 8 acres.

Bright-leaf tobacco has been introduced in the county during recent years and promises to be a valuable addition to the farm crops on the better land. The 1925 census reported 309 acres planted to this crop in 1924. The county agricultural agent reported about 800 acres planted in 1925, but owing to the dry season and the farmers' inexperience in growing and handling the crop it proved a failure on most farms. About 500 acres were planted to tobacco in 1926.

Within the last few years the acreage planted to sweet potatoes, potatoes, sugar cane, and peanuts has gradually increased. These crops are sold in distant markets. A considerable acreage is devoted to oats, which are cut green for feed. Other grains, some legumes, and forage crops are grown. Rice was formerly grown to a small extent, but now has been practically abandoned. Garden vegetables are grown for home consumption and to supply local demands. Peach orchards were set out a few years ago, but production has greatly declined. Pear orchards have suffered from blight, but recent experiments indicate that the Pine Apple pear is blight free and well adapted to the county.

Pecans could be grown in Wayne County, especially on the better soils such as the Tifton and Norfolk fine sandy loams and Tifton sandy loam. The census of 1910 reported 1,271 bearing trees in the county in 1909, and this number increased to 3,993 in 1919, and to 6,163 in 1924. There were also 6,691 nonbearing pecan trees in 1924. In some of the older groves, the trees were set too close together. For best development young trees should be set about 60 feet apart each way, or 10 trees to the acre, and the grove should be clean cultivated. Trees planted on the better soils show decidedly better growth and production than those on poorer soils.

In addition to the fruits and nuts mentioned, 917 grapevines, 3,092 plum trees, 282 apple trees, and 238 fig trees were reported in 1919. Some experimental work with fruits and vegetables, including Satsuma oranges, Chinese dates (jujubes), Pine Apple pears, several varieties of grapes, cultivated huckleberries, dewberries, and other crops, is being done on a farm near Redland. More than 500 trees of Satsuma oranges are reported as doing well. Dewberries do well on Norfolk loamy sand, strawberries succeed on Plummer loamy fine sand, and grapes look thrifty on Norfolk loamy fine sand. Norfolk fine sandy loam and Norfolk loamy fine sand are preferred for asparagus. Although the crop grows equally well on the Tifton soils, the pebbles interfere with cutting the stalks. On this farm near Redland asparagus, cabbage, Big-Stem Jersey sweet potatoes, and strawberries for New York and Florida markets are produced. On a farm at McKinnon cabbage, lettuce, rutabagas, carrots, early sweet potatoes, and potatoes for outside markets are grown.

Cattle have been raised primarily for beef. Dairying is a comparatively recent development and is still unimportant, although a few dairies are selling milk in the larger towns and butter is sold both locally and in outside markets. As land for good pasture is abundant and marketing facilities are good, there is an opportunity for profitable milk production. Cream may be shipped by fast express to all eastern and southern Florida points, as well as to many northern cities. Good carpet-grass pasture may be established on Plummer sand and Plummer fine sand. At present most of the cattle are pastured on the free or open range. This practice is not conducive to the development of high-grade or purebred types of either beef or dairy animals. The native pasture grasses on the free range consist principally of wire grass. Most of the range cattle receive no feed in addition to the range grasses and consequently are in poor market condition. A few farmers fatten their cattle on home-grown corn. The census of 1925 reported 14,097 beef cattle and 141 dairy cattle in the county. Plans have been made to increase the number of dairy cattle and thereby take advantage of the Florida demand for dairy products.

The census of 1925 reported 15,548 hogs and 3,478 goats in the county. All are pastured on the free range. Hogs are usually fattened on corn or peanuts before killing, and some of the goats are fattened before shipping to northern markets.

In 1919, 1,567 hives of bees in the county produced 19,945 pounds of honey and 657 pounds of wax. Both extracted and comb honey are sold from several large apiaries in the county, and a few colonies of bees are raised for market.

The number of poultry in the county has increased rapidly. In 1920, 39,763 chickens were reported, whereas in 1925 there were about 44,722. The county agricultural agent estimated 75,000 in the county in 1926. Some other poultry is raised. Heretofore most of the eggs have been shipped to Florida markets, but efforts are being made to build up a stable market in New York and other northern cities. An average of 150 crates of eggs a week were shipped during April, 1926. The home-grown corn fed to poultry comprises about one-fifth of their feed, and the remainder of the feed is shipped into the county.

No figures are available to show the value of lumber now being cut in the county, but most of the land has been cut over at least once. However, one of the leading producers of turpentine estimated that approximately 10,000 barrels of turpentine, worth about $45 a barrel, and 30,000 barrels of rosin, worth about $17 a "round" barrel (280 pounds), were produced in 1925. The total value of turpentine and rosin in this year was approximately $960,000. These products were from land which has largely been cut over, burned over, and pastured. If this land were protected from fires and the young seedlings from destruction by goats and hogs, the number of trees could be greatly increased. This producer estimated that land supporting a good growth of pine trees would yield a yearly income of $20 an acre from turpentine. The present tendency is to work trees as small as 6 inches in diameter. It is recommended by the division of forestry, Georgia State College of Agriculture, that no tree less than 10 inches in diameter be worked; that trees ranging from 10 to 14 inches be worked with but 1 cup; trees varying from 14 to 24 inches with 2 cups; and those exceeding 24 inches in diameter with 3 cups. A bar at least 4 inches wide should be left between the worked faces.

Improved farm machinery is used. On many of the larger farms tractors are used for breaking the land. The better soils are uniformly very smooth and well adapted to the use of tractors and improved machinery. Mules are used exclusively for work animals. There were 1,541 in the county in 1925. A few 1-horse plows are still seen, but they have been replaced to a great extent by larger and heavier types. Better tillage implements, which are especially beneficial on the sandy loam soils, are being used. Better results are reported on the sands and fine sands with shallow, light tillage implements.

The Tifton and Norfolk soils, developed in the northwestern and southwestern parts of the county, dominate the agriculture of Wayne County. These are the best agricultural soils and, in the course of time, as they are improved, crop yields will increase. The best soils for the production of bright-leaf tobacco are Norfolk fine sandy loam, Norfolk loamy sand, Norfolk loamy fine sand, Tifton fine sandy loam, deep phase, and a small part of the Blanton fine sand. These soils are also admirably suited to the growing of peanuts, asparagus, truck crops, and pecans.

Vast areas of soils are unsuited, under present economic conditions, to general farming purposes. These soils include members of the Plummer, Leon, St. Johns, and Hoffman series, and meadow and swamp. Such soils, however, may be used profitably for reforestation, for the production of timber and turpentine, and as pastures. Conditions may arise under which these lands can be economically drained and utilized for crop production, but this will not be feasible until the better land has been utilized.

Definite crop rotations are followed on some farms, but repeated cropping to one crop is still practiced over parts of the county. A definite crop rotation is essential to obtain the best crop yields with the least injury to the soil and to derive the greatest benefit from fertilizers used. Various rotations are followed by different farmers to meet their individual needs. One successful farmer on Tifton

sandy loam and Norfolk loamy sand planted 100 acres of cotton, 100 acres of corn with every second or third row in peanuts or velvet beans, 30 acres of oats followed by cowpeas for hay, and 9 acres of bright-leaf tobacco. Potatoes, vegetables, and fruits were also raised for home use. Cotton was planted one year and followed by corn, oats, or tobacco the following year. The corn and tobacco were followed by cotton the third year, but the oats were followed by pea-vine hay the same year, and the land was planted to cotton the third year.

Cotton was planted in rows 3½ feet apart and chopped until plants were about 8 inches apart in the row. It received an application of 600 or 700 pounds of a 2–9–3 [2] fertilizer at the time of planting. After picking time, the cotton stalks were chopped and plowed under. Yields ranged from one-half to two-thirds bale to the acre, over a period of many years.

Corn also was planted in rows 3½ feet apart, with every second or third row interplanted with peanuts or velvet beans, or both. After the corn was picked from the standing stalks the field was pastured by cows and hogs. Corn received applications varying from 200 to 400 pounds of a 2–9–3 fertilizer to the acre and yielded about 20 bushels to the acre.

Oats were drilled in the fall after the cotton was picked. It is noticeable that drilled oats withstand the winter throughout south Georgia much better than broadcast oats. Cowpeas for pea-vine hay were planted in the spring after the oats were cut. The oats received no fertilizer.

Tobacco received 1,000 pounds of a 3–8–5 fertilizer to the acre at one application, and sweet potatoes received 1,000 pounds of a 2–9–3 fertilizer in addition to stable manure.

This farmer had 75 beef cattle and 100 hogs which were pastured on open range during the greater part of the year. The land was plowed in the fall or early winter. In the spring it was disked before planting, if possible, but as early planting of crops was considered of greatest importance, in later springs some crops were planted on land plowed but not disked.

A typical farm of 250 acres on Norfolk loamy fine sand, Tifton fine sandy loam, and Plummer fine sand was planted as follows: 22 acres to cotton, 35 acres to corn, and 23 acres to oats for hay, totaling 80 acres of Norfolk and Tifton soils cultivated. The remainder of the farm, which consisted of Plummer soils, was in forest and was worked for turpentine. A few cattle were kept for the home supply of beef and milk.

The fertilizing practices necessarily vary widely. Some fruit trees are fertilized. The special crops are fertilized according to their needs. There is also considerable variation in the fertilizing methods employed for general crops. A few farmers use home-mixed materials. One farmer mixed 200 pounds of kainit, 200 pounds of superphosphate (acid phosphate), and a small quantity of nitrate of soda and used 500 pounds to the acre on cotton. A better mixture would have been 1,000 pounds of superphosphate, 600 pounds of kainit, and 400 or 500 pounds of nitrate of soda, using 500 or 600 pounds to the acre.

[2] Percentages, respectively, of nitrogen, phosphoric acid, and potash.

A good fertilizer for cotton is a 4–9–4 or a 4–8–4 mixture applied in quantities varying from 500 to 700 pounds to the acre. This same mixture may also be used for potatoes and corn. Superphosphate in the fall and a top-dressing of nitrate of soda in the spring give good results with oats.

One of the greatest needs of the soils of Wayne County is an increased supply of organic matter. The more successful farmers supply this need by including legumes in their crop rotations. Many farmers not only do not grow legumes but they burn the crop residue after harvesting. Growing legumes and plowing under green-manure crops in a definite crop rotation provide the cheapest source of nitrogen and put the soil in the best physical condition. A few farmers use lime. This is very beneficial, especially where legumes and green-manure crops are grown.

SOILS

Wayne County is wholly within the Atlantic coastal plain region, and most of it is in what is known as the flatwoods or seaward part of the coastal plain. The county comprises gently rolling, well-drained uplands, and extensive, flat or nearly level, poorly drained areas. The elevation ranges from 10 feet to about 170 feet above sea level. The highest and best drained lands are in the northwestern and southwestern parts of the county, and the lowest land is along the county line east of Mount Pleasant.

The well-drained soils in the upland areas of Wayne County are dominantly light gray or grayish brown in the surface layer, whereas the poorly drained soils are gray or almost black. The soils have been developed under forest cover, which has not favored the accumulation of organic matter. In the virgin areas there is a slight accumulation of coarse, partly decomposed vegetable matter to a depth varying from 1 to 3 inches, but this has not become incorporated with the soil as has the vegetable matter in the grass-covered regions of the Central States. The black color of the St. Johns and Portsmouth soils is caused by the large amount of organic matter which has accumulated under semiswampy conditions.

In this region of rather heavy rainfall and warm temperatures, active leaching continues throughout the greater part of the year, because the soil is not frozen at any time as is that in many States farther north. This leaching of the alkalies and alkaline earths probably accounts for the fact that the surface soils do not contain so high a percentage of mineral plant food as the subsoils. Soil acidity tests show that the soils of the county vary from slightly acid to very acid.

The parent soil-forming material consists of unconsolidated beds of sands and clays, in which no uniformity in color, texture, or structure exists. In most places the substratum is mottled light red, brown, yellow, and gray and is rather hard but brittle. In the southeastern half of the county (east of a line extending diagonally across the county from Doctortown to Screven) the parent material lies in the Okefenokee and Satilla geologic formations which consist of marine and fluviatile sands, gravels, and clays of terrace origin. In the rest of the county the parent material lies in the Altamaha formation, which consists of irregularly bedded sands, clays, and gravels locally indurated.

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The most striking features of the texture profile of the well-developed or normal soils in the county is the presence of comparatively light-textured surface layers overlying subsoil layers of heavier material underlain by a layer which may vary considerably in texture but which is prevailingly lighter in texture than the subsoil and heavier than the surface soil. The Susquehanna soils are an exception. The actual texture of these layers varies greatly in the soils of the county, the surface layers ranging from fine sandy loams to sands and the subsoil layers from friable clays and heavy clays to very light sandy loams and sands. The third layer or substratum consists of unconsolidated geologic material and may be composed of materials varying greatly in texture, structure, and color. The thickness of these layers also varies widely, the surface ranging from a few inches in the fine sandy loams to a maximum of 2 or more feet in the most sandy soils.

The soils of Wayne County may be placed in two main groups on the basis of their profiles. The first group includes all the soils of the Norfolk, Tifton, and Blanton series. These are the normally developed soils of the county and have the threefold characteristics described. The uncultivated soils are marked by a color profile about as follows: (1) A layer of leaf mold mixed with the mineral constituents of the soil. If the soil be mainly sand, the grains will be gray or brown as a rule and in most places will be rather well mixed with the organic matter of the leaf mold. If the material be fine in grain it will be dark in color. The thickness of this layer ranges from a mere film to a maximum of about 4 inches. It is usually thickest in the sandy soils. (2) A pale-yellow or grayish-yellow layer which shows very little evidence of the presence of organic matter. This layer has a loose single-grained structure. In the sandy soils it continues to a depth of 2 or more feet. These two layers constitute the comparatively light-textured surface soil. (3) A yellow or reddish-yellow layer. This layer in soils of the Norfolk and Tifton series is yellow and in the Blanton soils is very pale yellow or creamy white. The subsoil layer of all soils in the county is heavier in texture than the surface layer. (4) A reddish, purplish, brownish, grayish, yellowish, or mottled layer similar to the subsoil layer. This layer is composed of the parent material, and its color varies not only in different soils but to some extent in different areas of the same soil.

In normally developed soils, such as members of the Norfolk, Tifton, and Blanton series, the intermediate or comparatively heavy layer is friable, crumbly clay, or sandy clay. The surface soils are typically very light textured, consisting of sand or light sandy loam. A markedly wide difference exists in the texture of the surface soils and the intermediate heavier layers. There is also much difference in the color, texture, and structure of the fourth layer or parent material. The characteristics of the soil profiles are described in more detail under the more important soil types and in the soil series descriptions.

The second group of soils includes soils in which the threefold arrangement or normal soil development is not present. These soils, including members of the Susquehanna, Hoffman, Leon, St. Johns, Plummer, Portsmouth, and Bladen series, and swamp and meadow, are characterized by the absence of a distinct subsoil layer. The

Susquehanna soils show a slight subsoil development, but most soils of this group have no subsoil layers.

The soils of Wayne County are grouped into series on the basis of similarity of color, origin, and structural characteristics. The soil types grouped in these series are differentiated on the basis of texture, or the proportion of sand, silt, and clay in the surface soil. The soil type is the unit of soil classification and mapping. Twenty-one soil types and three soil phases, representing ten soil series, in addition to the miscellaneous classifications, swamp and meadow, are mapped in Wayne County.

Series descriptions and descriptions of the profiles of the more important soils in definite locations follow.

Soils of the Norfolk series mapped in Wayne County include the sand, fine sand, loamy sand, loamy fine sand, fine sandy loam, and fine sandy loam, shallow-subsoil phase. The soils of this series conform in color and structure to the following description:

Norfolk fine sandy loam, 1½ miles southwest of Screven, from 0 to 4 inches, brownish-gray loamy fine sand, containing a small amount of organic matter; from 4 to 16 inches, pale-yellow loamy fine sand; from 16 to 40 inches, friable, mellow, crumbly yellow fine sandy clay which shows no cleavage lines or stains of color; from 40 to 52 inches, streaked light-red, yellow, and whitish friable fine sandy clay; and from 50 to 72 inches, light-red compact, hard but brittle sandy material blotched with yellow and white.

Soils of the Blanton series differ from those of the Norfolk principally in color. The surface layer of the Blanton soils is light gray to a depth of a few inches, and the subsurface layer is yellowish gray or grayish yellow and grades, at a depth varying from 6 to 12 inches, into light grayish yellow or creamy white. In most places at a depth of about 20 or 24 inches this layer grades into almost white sand showing faint stains of yellow or brownish yellow. Below a depth varying from 5 to 8 feet is mottled whitish and yellowish or grayish sandy material. Blanton fine sand is mapped in Wayne County.

Tifton sandy loam, fine sandy loam, and fine sandy loam, deep phase, are mapped in Wayne County. The profile of Tifton sandy loam, 1¼ miles southeast of Oglethorpe School, is as follows: From 0 to 4 inches, grayish-brown loamy sand which contains some organic matter and a large quantity of small, rounded, brown or reddish iron pebbles or so-called accretions; from 4 to 15 inches, deep-yellow or brownish-yellow light sandy loam, mellow and friable and containing numerous iron accretions; from 15 to 40 inches, reddish-yellow sandy clay, friable and crumbly, but of slightly sticky consistence and containing a few soft iron pebbles; below 40 inches, mottled or streaked purplish-red, gray, and yellow hard but brittle sandy material.

The Susquehanna soils in Wayne County have sandy surface soils and very heavy plastic clay subsoils. Susquehanna sandy loam is mapped.

Soils of the Hoffman series have light-textured sandy surface layers, immediately underlain by the parent material which consists of mottled pinkish, light-red, yellow, purple, light-gray, and whitish hard but brittle sandy material. Hoffman sandy loam is mapped.

The Plummer soils have dark-gray surface soils passing into mottled light-gray and yellow friable material, and the subsoils are mottled light-gray and yellow or brown friable sandy clays, which

grade into mottled light-gray and yellow, reddish-yellow, or bluish slightly plastic but friable material. The sand, fine sand, fine sand, cypress-pond phase, loamy sand, loamy fine sand, and fine sandy loam members of the Plummer series occur in Wayne County.

Soils of the Leon series are characterized by the presence of a hardpan layer in the profile. Leon sand and Leon fine sand are mapped. The following is a description of a typical profile of Leon fine sand, one-half mile west of Grangerville: From 0 to 3 inches, dark-gray fine sand; from 3 to 15 inches, light-gray or almost white, loose, incoherent, fine sand; from 15 to 21 inches, a dark-brown hardpan layer consisting of fine sand cemented with organic matter. The upper part of this layer is almost black and is very hard, but it grades into brown rather soft or mellow fine sand; from 21 to 50 inches, yellowish-gray, loose fine sand, mottled or stained with brown, and below 50 inches, dull bluish-gray or dull brownish-gray fine sand which is saturated with water.

The St. Johns soils differ from those of the Leon series in that the surface layer is black and has a thickness varying from 6 to 10 inches. The remainder of the profile is similar to that of the Leon soils. Only one member of this series, St. Johns sand, is mapped in Wayne County.

The Portsmouth soils have black surface layers and light-gray subsurface layers which are underlain by friable or fairly heavy mottled yellow or brownish-yellow and gray sandy clay. Portsmouth sand and Portsmouth fine sand occur in the county.

The Bladen soils occupy lower positions than any other soils in the county. The surface layer is dark gray or brown, and the subsurface layer is light gray. The subsoil layer consists of light-gray or bluish-gray, heavy plastic clay streaked with brownish yellow. In most places it is several feet thick.

Swamp and meadow comprise first-bottom areas along the larger streams and poorly drained, depressed areas which are covered by water much of the time.

In the following pages of this report the soils of Wayne County are described in detail and their relation to agriculture is discussed; their distribution is shown on the accompanying soil map; and their acreage and proportionate extent are given in table 2.

TABLE 2.—*Acreage and proportionate extent of soils mapped in Wayne County, Ga.*

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Tifton sandy loam	13,504	3.3	Plummer sand	23,104	5.6
Tifton fine sandy loam	11,712	3.7	Plummer fine sandy loam	704	.2
Deep phase	3,712		Susquehanna sandy loam	320	.1
Norfolk fine sandy loam	2,048	1.2	Hoffman sandy loam	8,000	1.9
Shallow-subsoil phase	2,816		Leon sand	10,432	2.5
Norfolk loamy sand	11,904	2.9	Leon fine sand	43,648	10.6
Norfolk loamy fine sand	12,160	3.0	St. Johns sand	6,656	1.6
Norfolk fine sand	14,144	3.4	Portsmouth fine sand	5,312	1.3
Norfolk sand	10,112	2.5	Portsmouth sand	4,224	1.0
Blanton fine sand	20,992	5.1	Bladen sandy loam	1,024	.3
Plummer loamy sand	6,336	1.5	Meadow	12,352	3.0
Plummer loamy fine sand	10,112	2.5	Swamp	70,016	17.0
Plummer fine sand	102,528	25.8			
Cypress-pond phase	3,648		Total	411,520	

TIFTON SANDY LOAM

The surface soil of virgin Tifton sandy loam consists of grayish-brown or brown loamy sand about 4 inches thick. This layer is underlain by a subsurface layer of deep-yellow or slightly brownish-yellow loamy sand or light sandy loam which extends to a depth varying from 10 to 14 inches. The subsoil is deep-yellow or slightly reddish-yellow sandy clay which is friable, crumbly, mellow but slightly sticky, and which continues to a depth ranging from 34 to 38 inches. Below this is the partly weathered parent material of blotched or streaked purplish-red, yellow, and whitish hard but brittle sandy clay. Scattered over the surface and distributed through both the surface soil layers and to much less extent through the subsoil layers are numerous small, nearly round, smooth, reddish-brown iron accretions or concretions which constitute about 30 per cent of the soil mass. Most of these pebbles range from one-eighth to one-half inch in diameter, but a few are 1 inch and some are as much as 3 inches in diameter. In cultivated fields the surface soil is brownish gray or brownish yellow to a depth varying from 5 to 7 inches, and many pebbles are in evidence. Owing to the presence of these accretions Tifton sandy loam is locally spoken of as red pebbly land.

The depth to which the sandy layer extends varies from 8 inches to 20 inches. The subsoil also varies in color from yellow to reddish yellow or brownish yellow and in thickness from 10 to 30 inches. It is in turn underlain by the mottled parent material. On the crests of knolls and ridges the largest quantity of pebbles is found, in some places amounting to as much as 40 or 50 per cent of the soil mass, whereas on some of the more level areas and gentle slopes the amount ranges from 10 to 20 per cent. Commonly where the soil is deepest, the fewest pebbles are found, and here the soil closely resembles Norfolk sandy loam. In many places in the subsoil the pebbles are very soft and crumble readily when rubbed between the fingers. On the crest of steep slopes the soil resembles Hoffman sandy loam.

Tifton sandy loam, although less extensive than some other soils of the county, is one of the most extensive of the better agricultural soils. It occurs mainly and in the best developed areas in the northwestern and southwestern parts of the county. Typical areas are on gentle slopes along well-established drainage ways or on ridges between converging streams. Large areas occur between Colemans Creek and Dry Creek in the southwestern part of the county, southeast and west of Oglethorpe School, west, south, and east of Consolidated School, and southeast of Piney Grove School in the northwestern part of the county. Areas also occur along both sides of Little Satilla Creek, north of Odum, and along Goose Creek, and many smaller areas are throughout the northwestern and southwestern parts of the county.

The position of this soil on low ridges and gentle slopes insures excellent surface drainage, and the internal drainage is also good. Approximately 90 per cent of the land is cultivated. The original tree growth consisted of mixed hardwoods and long-leaf pine. The tree growth has largely been removed except in small areas where the growth consists of long-leaf pine, loblolly pine, persimmon, shingle oak, blackjack oak, southern red oak, and willow oak. Wire grass is the predominant native grass.

Cotton and corn are the crops grown most extensively on this soil. Tobacco, sweet potatoes, oats, peanuts, and velvet beans are also extensively grown. All these crops produce good yields under proper cultural methods, for Tifton sandy loam is one of the most productive soils in the county. Applications varying from 500 to 700 pounds to the acre of a 2–9–3 fertilizer on cotton, from 200 to 400 pounds of 2–9–3 on corn, 1,000 pounds of 2–9–3 and manure on potatoes, and 1,000 pounds of 3–8–5 on tobacco have been used by one successful farmer and are reported as giving excellent results. Cotton yields from one-half to three-fourths bale to the acre, but under proper management 1 bale to the acre is commonly produced during favorable seasons. Corn yields vary from 15 to 35 bushels to the acre. The land is commonly flat broken during the fall and winter. This treatment gives better results than spring plowing.

Crop yields on Tifton sandy loam may be improved by following a definite crop rotation which includes a green-manure crop to be plowed under. A wide range of crops, including pecans, potatoes, onions, melons, and many truck crops, can be successfully grown. On cotton a 4–8–4 or 4–9–4 fertilizer should give best results if applied at a rate varying from 500 to 700 pounds to the acre. On corn applications ranging from 200 to 400 pounds of a 4–8–2 mixture, part of which is a side application of nitrate of soda, should give best results. For oats, superphosphate applied in the fall and nitrate of soda in the spring give excellent results. There are several suitable rotations for Tifton sandy loam. One which may be generally used is cotton the first year and oats the second year. The oats may be followed by cowpeas for hay or for a green-manure crop. The third year corn and velvet beans are commonly planted, and the beans are plowed under after pasturing. Another rotation successfully followed in the county consists of cotton one year, followed by corn, tobacco, or oats. Every second or third row in the corn is planted to peanuts or velvet beans. The land is then returned to cotton. The oats are followed by pea-vine hay, after which cotton is again planted. Tobacco is followed the next year by cotton. This rotation might be improved by including a green-manure crop to be plowed under. All crop residues should be plowed under rather than burned, as is the common practice.

The results of mechanical analyses of samples of the surface soil, subsurface soil, and subsoil of Tifton sandy loam are shown in Table 3.

TABLE 3.—*Mechanical analysis of Tifton sandy loam*

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
258418	Surface soil, 0 to 4 inches	6.6	19.5	12.3	37.1	12.0	8.3	4.7
258419	Subsurface soil, 4 to 14 inches	6.3	17.8	12.7	40.7	12.8	6.4	3.0
258420	Subsoil, 14 to 38 inches	3.3	9.9	8.0	21.0	6.3	7.6	44.4
258421	Subsoil, 38+ inches	2.9	14.3	13.5	19.3	5.9	8.0	36.2

TIFTON FINE SANDY LOAM

To a depth varying from 3 to 5 inches, virgin Tifton fine sandy loam consists of grayish-brown or brown loamy fine sand which contains a large quantity of grass and other fine roots. This is underlain by a slightly brownish-yellow loamy fine sand subsurface layer which continues to a depth varying from 10 to 14 inches. The subsoil consists of deep-yellow fine sandy clay which is friable, crumbly, mellow, and slightly sticky and which continues to a depth ranging from 34 to 40 inches. This layer is underlain by the parent material, which consists of blotched or streaked purplish-red, yellow, and whitish, hard but brittle sandy clay. Scattered over the surface and through the surface soil and to less extent through the subsoil are numerous small, rounded, smooth, reddish-brown iron accretions or concretions ranging in diameter from one-eighth to three-fourths inch and constituting about 30 per cent of the soil mass. In a few places, pebbles ranging from 1 to 3 inches in diameter are present. In cultivated fields the surface soil is brownish gray or brownish yellow and contains many pebbles. In places these pebbles may constitute 40 or 50 per cent of the soil mass and in areas which are adjacent to Norfolk fine sandy loam may constitute only 10 or 20 per cent.

As in Tifton sandy loam many variations occur in this soil. In some places the surface soil is about 8 inches thick, whereas in other places it continues to a depth of nearly 20 inches. The subsoil varies from yellow to reddish yellow or brownish yellow. It grades into the underlying parent material at a depth ranging from 15 to 40 inches.

Tifton fine sandy loam is less extensive than Tifton sandy loam. Although the total extent of this soil is not large, it is one of the most important and productive agricultural soils in the county. It occurs mainly in the southwestern part. The largest area is along the Appling County line north and south of Colemans Creek. The soil also occurs on both sides of Little Satilla Creek south from Odum to its mouth, on the east side of Dry Creek, and in many smaller areas in this part of the county.

This soil occupies low ridges and gentle slopes where drainage is good. Most of the land is cleared and cultivated. The original forest growth consisted of long-leaf pine intermixed with hardwoods. Now a few small patches of long-leaf pine, loblolly pine, blackjack oak, shingle oak, willow oak, southern red oak, and persimmon grow on this soil. The native grass consists mainly of wire grass.

Cotton and corn are the crops more extensively grown, although tobacco, oats, sweet potatoes, velvet beans, peanuts, pecans, potatoes, melons, and many truck crops yield well. Tifton fine sandy loam responds to green manures and proper fertilizers with more lasting results than does Tifton sandy loam. Crop rotations should include a green-manure crop to plow under. Applications varying from 500 to 700 pounds to the acre of a 4–8–4 or a 4–9–4 fertilizer would probably give best results for cotton. This is a good tobacco soil. It is adapted to the successful production of a much wider range of crops than are commonly grown. All crop residues should be plowed under rather than burned, as is the common practice.

Tifton fine sandy loam, deep phase.—Tifton fine sandy loam, deep phase, differs from the typical soil only in the greater thickness of the surface soil. This varies from 20 to 26 inches in thickness above the deep-yellow friable sandy clay subsoil. In some areas iron accretions are noticeably fewer over the surface and through the upper part of the surface soil layers.

This soil is inextensive in Wayne County. It occurs mainly in the southwestern part of the county in close association with Tifton fine sandy loam. The largest area is in the vicinity of Liberty Church, and smaller areas are west of Little Satilla Creek, a few are mapped along Dry Creek nearly to Reddishville School, a small area is 1 mile northeast of Odum, and another is 2 miles south of Bethel Church.

The surface of the land is smoother and more level than that of Tifton fine sandy loam, but drainage is equally good. Nearly all the land is cultivated, and it is in general similar to Tifton fine sandy loam in crop adaptations, fertilizer requirements, and cultural methods. It is well adapted to the production of peanuts and bright tobacco.

NORFOLK FINE SANDY LOAM

Norfolk fine sandy loam, in its virgin condition, has a surface soil, from 2 to 4 inches thick, of gray or grayish-brown loamy fine sand, which grades into pale-yellow loamy fine sand continuous to a depth varying from 12 to 20 inches. In cultivated fields, the surface soil consists of grayish-yellow or light-gray loamy fine sand. The subsoil consists of mellow, friable, yellow fine sandy clay which continues to a depth ranging from 37 to 60 inches. Underlying the subsoil is streaked light-red, yellow, and whitish, friable fine sandy clay from 8 to 20 inches thick. This grades into bright-red unweathered, compact but brittle sandy clay material, blotched and streaked with yellow, gray, and white.

A variation from typical occurs about 3 miles northwest of Jesup, south of the Southern Railway. Here the surface soil consists of loamy fine sand, which is dark brown when moist and light brown when dry and which varies in thickness from 8 to 10 inches. Underlying this layer is slightly reddish-brown friable and mellow fine sandy clay loam which continues to a depth of 25 inches and grades into yellow, friable fine sandy clay. Had this area been of greater extent it would have been mapped as Ruston fine sandy loam. It is one of the most productive small areas in the county. In the north-central, northwestern, and southwestern parts of the county, especially near Bethlehem Church, near the Lanes Bridge highway, near Fivemile Creek, 2 miles southeast of Piney Grove School, 2 miles east of Carter Grove Church, and 1½ miles east of County Line School are small areas of Norfolk sandy loam which have been included with Norfolk fine sandy loam in mapping. These soils differ from the fine sandy loam soils in that they contain more medium or coarse sand particles.

Norfolk fine sandy loam is not extensive in Wayne County, but it is one of the most productive of the better agricultural soils. It occurs in small areas, principally in the southwestern and north-central parts of the county. Two areas are southwest of Screven

along the road to Waycross, two are 1 and 2 miles south of Bethel School, respectively, one is northeast of and one 1¼ miles southeast of Gardi, one is on the south side of Penholoway Creek south of Bethlehem Church, and another is north of the point where the Southern Railway crosses Penholoway Creek.

This soil occupies almost level, undulating, or gently rolling areas, most of which are slightly higher than the surrounding soils. A few of the sandy loam areas have a hilly surface. Drainage is excellent. Nearly all the land is cultivated. The original forest consisted of long-leaf pine and mixed hardwoods. The soil is now used in the production of cotton, corn, tobacco, oats, sweet potatoes, potatoes, velvet beans, cowpeas, peanuts, and other crops. Norfolk fine sandy loam is one of the most productive soils of the county. It may be successfully used for the production of cotton, bright-leaf tobacco, peanuts, and all general crops. It will produce fine pecan and fruit trees, small fruits, and berries, and many medium and late truck crops. It is considered less suitable for early truck crops than Norfolk loamy fine sand or Norfolk fine sand. Cotton yields vary from one-fourth to three-fourths bale to the acre, and under exceptionally heavy fertilization as much as 1 bale is obtained. Corn yields from 10 to 30 bushels to the acre.

One of the chief requisites for increasing the fertility of this soil is to plow under all crop residues and to include in a definite crop rotation a green-manure crop to be plowed under in order to increase the organic-matter content of the soil. Various fertilizer practices are followed. One farmer reported good results with cotton after using 400 pounds of a 3–9–3 or 3–9–4 fertilizer at planting time and a side application of nitrate of soda and kainit at the second cultivation. Another farmer reported good results from cotton after using 600 pounds of a 3–9–3 fertilizer at planting time.

Norfolk fine sandy loam, shallow-subsoil phase.—Norfolk fine sandy loam, shallow-subsoil phase, differs from the typical soil mainly in that the parent material is near the surface and the yellow layers of friable fine sandy clay, in most areas, are very thin. The profile of a typical section of this soil in the virgin condition shows the following layers: (1) A surface soil of gray or dark-gray loamy fine sand which grades, at a depth of about 4 inches, into (2) a pale-yellow loamy fine sand subsurface layer which extends to a depth of 20 inches; (3) the subsoil, or the well-oxidized and uniform layer, of yellow friable fine sandy clay about 6 inches thick; (4) mottled reddish-brown, yellow, and whitish friable sandy clay parent material, throughout which there are many variations in color and structure. In cultivated fields the surface soil is gray loamy fine sand from 5 to 7 inches thick.

There is considerable variation in this soil. The dark surface layer ranges from 2 to 4 inches and the yellow subsurface layer from 10 to 30 inches in thickness. In some places the yellow fine sandy clay subsoil layer is very thin or entirely absent, and the yellow loamy fine sand of the subsurface layer immediately overlies the mottled parent material. In other places this kind of soil resembles Plummer fine sandy loam in the surface layers and the upper part of the subsoil. In such an area 1½ miles northeast of Broadhurst a 3-inch

layer of dark-gray loamy fine sand on the surface is underlain by a light-gray loamy fine sand subsurface layer, which continues to a depth of 8 or 10 inches. This layer grades into yellow loamy fine sand which continues to a depth of 25 inches where it is underlain by the mottled parent material.

Soil of this phase is inextensive in Wayne County. It occurs only in small areas, most of which are closely associated with areas of Plummer fine sand. It is mapped mainly in the eastern, southeastern, and southern parts of the county, and many small areas are between Jesup and Gardi. Soil of this kind occupies slightly undulating or gently rolling areas which are slightly higher than the associated Plummer soils. A few areas occur on gentle slopes. Drainage is adequate. Probably 40 or 50 per cent of the soil is cultivated. Forest growth consists principally of long-leaf pine, and the undergrowth is of thick wire grass, scattered saw palmetto, and gall berry.

This soil is used in the production of all general farm crops. The wetter or lower areas are better adapted to corn, cane, or carpet-grass pasture, and the higher areas may be used similarly to Norfolk fine sandy loam.

NORFOLK LOAMY SAND

Norfolk loamy sand is similar in color and structure to Norfolk loamy fine sand and differs from it mainly in that it contains a high percentage of medium and coarse sand particles which give the soil a medium texture. The dark-gray loamy sand of the surface layer is in most areas only from 2 to 4 inches thick. About 3½ miles southeast of Doctortown along the bluff above the Altamaha River swamp, wide local variations occur in this soil. In places in this locality a tough, plastic clay similar to that underlying Susquehanna sandy loam is present at a depth of about 30 inches, below the yellow loamy sand. In other places the soil overlying the yellow friable sandy clay is brown or reddish brown. Such brown areas would have been mapped as Ruston loamy sand had they been of sufficient size. In a small area about 2 miles southeast of Doctortown the texture is loamy coarse sand. In the vicinity north of Oglethorpe School, the soil resembles Norfolk sandy loam, deep phase, in areas where the underlying sandy loam or sandy clay occurs within a depth varying from 22 to 28 inches below the surface. Such areas are too small to be shown on the map. Norfolk loamy sand also resembles Tifton sandy loam, deep phase, in places where scattered, small, rounded iron accretions occur on the surface and increase rapidly in number with depth. Such an area is about 1 mile northeast of Redland.

Norfolk loamy sand is not extensive, but it is one of the more important soils for agriculture. It occurs mainly in the north-central, northwestern, and southwestern parts of the county, but a few scattered areas are in the central part and near the west county line. The areas are closely associated with areas of Plummer sand, Hoffman sandy loam, Norfolk sand, and Tifton sandy loam. Some of the largest areas are south and west of Oglethorpe Bluff, near Consolidated School, 3 miles southeast of Doctortown, south of Rich Church, and 1 mile south of Farm Life School.

The surface features are similar to those of Norfolk loamy fine sand. Surface drainage is good, but subdrainage is somewhat more free than in Norfolk loamy fine sand and consequently Norfolk loamy sand has lower water-holding and lower fertilizer-retaining power. Seventy-five or eighty per cent of the land is cultivated to crops similar to those grown on the loamy fine sand member of the Norfolk series. Crop yields are also similar. The addition of organic matter to Norfolk loamy sand is even more important than it is to the loamy fine sand member. Through plowing under green-manure crops in a definite crop rotation and through plowing under the crop residue, the fertility of the land will not only be increased but the physical condition of the soil will be improved and the moisture holding and fertilizer-retaining power will become greater.

NORFOLK LOAMY FINE SAND

The surface soil of virgin Norfolk loamy fine sand varies from 3 to 6 inches in thickness. It consists of dark-gray loamy fine sand in which the dark color results from the presence of organic matter. In cultivated fields the surface soil is grayish-yellow loamy fine sand. The surface layer is underlain by pale-yellow fine sand or loamy fine sand which continues to a depth ranging from 15 to 20 inches. At this depth the soil grades into bright-yellow loamy fine sand which continues to a depth varying from 28 to 34 inches. Underlying this layer is brownish-yellow light fine sandy loam which in many places contains a small quantity of small, rounded, soft iron accretions varying from one-fourth to one-half inch in diameter.

This layer continues to a depth ranging from 40 to 55 inches and is underlain by the coarsely mottled and blotched gray, purple, red, yellow, and brown, friable sandy clay parent material. The texture of the parent material is extremely variable, and some of the gray spots are very plastic clay, whereas some of the red and purple spots contain a high percentage of sand. Considerable variation also exists in the upper part of the soil. In some small areas the fine sandy loam layer occurs within 22 or 24 inches of the surface. Had these areas been of sufficient size, they would have been mapped as the deep phase of Norfolk fine sandy loam. Small rounded iron accretions occur throughout the soil. Few are at the surface, but the quantity increases with depth, especially in areas where the soil is closely associated with the Tifton soils.

Although Norfolk loamy fine sand is a rather inextensive soil in Wayne County, it is one of the more important agriculturally. It occurs mainly in the north-central and southwestern parts of the county. Fairly large areas are in the vicinity of Redland and northwest of that place, on the west side of Little Satilla Creek south of Bethel Church, northwest of Rich Church, west of Screven, and between Reddy Creek and Little Satilla Creek northwest of Screven.

This soil has an undulating or gently rolling surface, and most of it is higher than the Tifton, Plummer, and Hoffman soils with which it is associated. Most areas are on the smooth and level crests of small ridges and slopes. Surface drainage is good, and subdrainage is good or slightly excessive in some places, but the soil does not leach so badly as Norfolk fine sand. It does not retain

moisture so well as Norfolk fine sandy loam. Probably 75 per cent or more of it is farmed.

The original forest growth consisted of long-leaf pine and a few mixed hardwoods. Second growth consists of long-leaf pine, willow oak, turkey oak, and southern red oak, with scattered loblolly pine, hickory, and other hardwoods, and an undergrowth of wire grass and scattered saw palmetto. Practically all of the soil may be profitably cultivated to the general crops of the county, to fruit, and to a wide range of truck crops. Most of the land will produce a fine quality of bright-leaf tobacco, and it is suitable for peanuts. Pecans and fruit trees also do well. One of the chief needs of this soil is more organic matter, which will not only improve the fertility of the land but will also assist in conserving moisture by improving the physical condition. A supply of organic matter can best be obtained by plowing under all crop residue instead of burning it and by adopting a definite crop rotation which will include a green-manure crop to be plowed under. Moisture may also be conserved by working a shallow surface mulch over land in cultivated crops.

NORFOLK FINE SAND

Norfolk fine sand in wooded areas has a surface layer, from 1 to 4 inches thick, of dark-gray fine sand in which the dark color is caused by accumulated organic matter. In some places a ⅛-inch or ¼-inch film, consisting of white fine sand, is present on the surface. In cultivated fields, the surface soil consists of grayish-yellow fine sand. Underlying the surface layer is loose, incoherent, yellow fine sand, which continues to a depth varying from 36 inches to 10 feet.

Along the eastern side of the county near Mount Pleasant areas of Norfolk fine sand, occurring in association with Blanton fine sand, are very light colored at a depth ranging from 28 to 36 inches, and in many places no definite boundary exists between the two soils. These areas are not uniformly developed. In an area near Lower Sansaville in the eastern part of the county, the fine sand carries a fairly large quantity of fine material and the underlying sandy clay is in many places within 36 or 40 inches of the surface. This area of Norfolk fine sand is therefore of slightly greater agricultural value than the typical soil.

Norfolk fine sand occupies a larger acreage in Wayne County than any other Norfolk soil. It occurs most extensively in the north-central part, and the largest area is between Linden Bluff, Redland, Jesup, and Doctortown. This area is cut by areas of other soils. Other comparatively large areas are on the eastern side of Little Satilla Creek, west of Slover; scattered south from Jesup for a distance of about 6 miles; along the Glynn County line south of Mount Pleasant; and scattered south of the Altamaha River swamp, and elsewhere throughout the county in close association with Blanton fine sand, Leon fine sand, Plummer fine sand, and the other Norfolk soils.

Norfolk fine sand has an undulating or rolling surface and is higher than the soils with which it is associated. Surface drainage is good, but subdrainage is free or excessive, as much of the soil in which the underlying clay material lies deepest is leachy and becomes

excessively dry during continued dry weather. However, most farmers report that cultivated areas of the soil produce better crops in moderately dry seasons than in wet seasons.

About 10 or 15 per cent of this soil is cultivated. The original forest growth consisted of long-leaf pine, all of which has been cut. Second growth consists almost entirely of scrub oak, mainly turkey oak, with a few willow oak, southern red oak, and long-leaf pines. A noticeable exception to this growth occurs on the better part of the soil near Lower Sansaville, where large hickories, dogwood, and other hardwoods are growing. There is a sparse undergrowth of wire grass and scattered saw palmetto. Although hardwoods have followed the original pines, the division of forestry at the Georgia State College of Agriculture recommends that this soil be allowed to reseed itself to long-leaf pine by cutting out the hardwoods and protecting the young pines. Sufficient long-leaf pines are left over most of the land to reseed the areas if the hardwoods are cut out and not allowed to smother the pine seedlings. It will also be necessary to keep out fires and to prevent damage to the seedlings by hogs and goats. In places where there are not enough pines to reseed the area, seeds may be scattered according to instructions from the division of forestry.

The cultivated areas of this soil are used in the production of cotton, corn, oats for hay, velvet beans, cowpeas, peanuts, and all the general crops of the county. Yields are generally low, except in favorable seasons on areas that are heavily fertilized with high-grade complete fertilizers. This kind of soil has been successfully used elsewhere in the production of early truck crops, small fruits, and berries, for which it is considered especially well adapted. One of the chief requisites for the improvement of this soil is the incorporation of more organic matter. This can be accomplished by plowing under all crop residue and by including a green-manure crop to be plowed under in a definite crop rotation. Such practice will not only improve the fertility of the soil but will also improve the physical condition and tend to conserve moisture and fertilizers. Shallow working of a surface mulch will also help to conserve moisture for the cultivated crops.

Norfolk fine sand is not recommended for general farm crops but under present economic conditions is better suited to reforestation to long-leaf pine or for growing early truck crops. Peanuts and bright-leaf tobacco do well on areas where the fine sandy clay is within 40 inches of the surface.

NORFOLK SAND

Norfolk sand differs from Norfolk fine sand in that it contains a large proportion of medium and coarse sand particles which give rise to a medium sand texture. The dark-gray surface layer in most areas is thinner than in Norfolk fine sand and in some places is absent. Norfolk sand is subject to the same variations as Norfolk fine sand where it lies near the Blanton soils. Along Goose Creek, extending from a point southwest of Consolidated School, are a number of small level areas above overflow of the creek which would have been mapped as Kalmia sand had their extent been greater.

Norfolk sand is one of the less important soils of the county and is less extensive than Norfolk fine sand. It occurs principally in the north-central, northwestern, and southwestern parts of the county. Scattered areas near the bluff above the Altamaha River swamp from Penholoway Creek to the northwest corner of the county at Fivemile Creek are closely associated with Hoffman sandy loam, Norfolk loamy sand, and Norfolk fine sand. Other areas are scattered through the central part of the county, principally south of Slover and southwest of Flint Branch School. Areas in the southwestern part of the county above the swamp of Big Satilla Creek are mapped from the Atlantic Coast Line Railroad to the southern county line.

Areas of Norfolk sand are undulating, rolling, or in places somewhat hilly. Surface drainage is good, but subdrainage is too free. Very little of the land is cultivated, but it supports a growth similar to that on Norfolk fine sand and can be reforested to long-leaf pine in the same manner. Because of its coarser texture, Norfolk sand leaches readily and does not retain moisture or fertizilers so well as Norfolk fine sand. Therefore it is less desirable for the production of early truck crops. It is best adapted to reforestation.

BLANTON FINE SAND

Blanton fine sand has a surface soil, varying in thickness from 1 to 3 inches, of gray fine sand which contains many fine roots. This layer is underlain by cream-colored or grayish-yellow loose incoherent fine sand which, at a depth varying from 10 to 15 inches, is faintly streaked with light gray or white. This layer continues to a depth ranging from 40 inches to 10 feet below the surface but averaging about 50 inches. Old exposed cuts are almost white. Underlying this deep layer is a layer, about 20 inches thick, of grayish-yellow loamy sand blotched with brown. Some of the brown spots are slightly indurated. This layer grades into partly weathered sandy clay material about 8 inches thick, whch is mottled brown and gray with small spots of red. Most of the brown spots are indurated, and horizontal iron crusts ranging from one-eighth to one-fourth inch in thickness occur throughout, making this layer appear as a zone of iron concentration. This layer is abruptly underlain by the hard, brittle but friable, reddish, unweathered parent material, which is blotched with light-gray, yellowish, purplish, brown, and whitish spots. In places the surface soil, to a depth of 15 inches, resembles that of Norfolk fine sand in its bright-yellow color, but this color becomes paler with depth until at the 30-inch depth it is very pale yellow or almost white. In the area between Screven and Duck Pond Swamp, as well as in a few other places, the surface soil is darker than typical to a depth varying from 5 to 7 inches, but the rest of the soil is typical. In the northwest part of the county between Brentwood, Odum, and Friendship Church are several small areas in which the texture of the sand is medium. These would have been mapped as Blanton sand had their extent been greater. Many of the areas in this section resemble Plummer sand in that they have a darker surface soil than typical and a poorly drained and almost white subsoil. Included with Blanton fine sand in mapping are small

marginal areas of the Leon and Plummer soils. The zone of iron concretions varies in thickness, in some places being only an inch or two thick and in others as much as 15 inches.

Blanton fine sand is rather extensive in Wayne County. Large areas are north, east, and south of Screven; in and around Jesup and extending in a semicircle to Slover; 1 mile north of Jesup; and north of Grangerville along the border of the river swamp. Numerous small areas occur throughout the county.

This soil occupies slightly undulating or gently rolling areas a little higher than the Leon and Plummer soils but slightly lower than the Norfolk soils with which it is associated. Surface drainage is good, and subdrainage is excessively free.

Approximately 20 per cent of this soil is cultivated. The original forest was long-leaf pine, but second growth consists of a mixture of long-leaf pine and turkey oak, with an undergrowth of wire grass and saw palmetto. Over much of the soil the second growth is very sparse. However, by cutting out the oaks, preventing fires, and keeping out hogs and goats, an excellent and profitable growth of long-leaf pine for lumber and turpentine may be obtained.

The general crops of the county, together with garden and early truck crops, are grown on Blanton fine sand. It is reported that this soil produces better in moderately dry seasons. The land will produce moderate yields of oats, corn, cotton, cane, peanuts, velvet beans, sweet potatoes, and other crops if it is properly fertilized. In some areas the subsoil is too dry and leachy to allow successful farming to general crops. A definite crop rotation, which includes a green-manure crop to be plowed under, should be followed, because one of the greatest needs of the soil is an increased supply of organic matter which not only improves the fertility but also the physical condition of the soil. The soil is as well adapted to early truck crops as Norfolk fine sand. Much more of it could well be used for truck crops, and some of the better areas could be used for tobacco. Only high-grade fertilizers carrying a high percentage of nitrogen, phosphoric acid, and potash should be used, as the soil is deficient in all these elements.

PLUMMER LOAMY SAND

Plummer loamy sand differs from Plummer loamy fine sand only in the presence throughout of a larger proportion of medium and coarse sand particles which give rise to the loamy sand texture. Where it is associated with the Leon and Blanton soils, this soil is subject to the same variations as Plummer loamy fine sand.

Plummer loamy sand is one of the least extensive soils in the county. It occurs only in the northwestern part in small areas in close association with Plummer sand and Leon sand.

The surface features, drainage, and native vegetation of Plummer loamy sand are similar to those of Plummer loamy fine sand, but a somewhat larger acreage of the loamy sand is cultivated. The soil is adapted to long-leaf pine and slash pine reproduction, and to carpet-grass pasture. A few small areas which have the best surface drainage may be used for the production of corn and similar crops.

PLUMMER LOAMY FINE SAND

Plummer loamy fine sand in its virgin condition has a surface layer of dark-gray loamy fine sand, varying from 1 to 4 inches in thickness. This is underlain by slightly yellowish-gray or steel-gray fine sand which continues to a depth ranging from 5 to 9 inches. The dark color of the surface soil is caused by accumulated organic matter. The surface soil is underlain by steel-gray fine sand, spotted with yellow and brownish yellow. At a depth varying from 24 to 30 inches, this grades into saturated light-gray fine sandy loam or fine sandy clay spotted and streaked with yellow and brownish yellow. In most places at a depth ranging from 35 to 50 inches this layer grades into mottled light-gray, brown, red, and yellow sandy clay which is crumbly and friable. In cultivated areas, the surface soil consists of dark-gray or light-gray fine sand. The color varies in different areas and in different parts of a field, according to the length of time since the land was cleared. The older parts of the field are lighter colored. In places sufficient organic matter is in the surface layer to give the soil a loamy feel when rubbed between the fingers. The lower part of the light-gray fine sand layer overlying the fine sandy clay is saturated with water in most places.

In places a dark-brown layer, ranging from 2 to 4 inches in thickness, has formed at a depth varying from 6 to 10 inches. This layer is not cemented, but the soil resembles Leon fine sand in such places. On the crests of some of the slight ridges occurring in this soil the subsurface layer above the fine sandy clay is lighter colored and resembles that in soils of the Blanton series. Had such areas been of sufficient size, they would have been shown as Blanton loamy fine sand. In some places numerous small, rounded iron accretions are present in the fine sandy loam overlying the parent material at a depth ranging from 30 to 40 inches. This feature indicates a concentration of iron.

Plummer loamy fine sand is one of the less extensive soils of the county. It occurs throughout the county in small areas in close association with Plummer fine sand, Leon fine sand, and Blanton fine sand. Areas have a slightly undulating surface and lie a little higher than tracts of the closely associated Plummer fine sand. Surface drainage, though poor, is somewhat better than on Plummer fine sand. Subdrainage is inadequate.

This is the only member of the Plummer series which has been farmed with any degree of success in Wayne County. Probably 15 per cent of it is cleared and cultivated. Most of it supports a scattered growth of long-leaf pine and slash pine, an undergrowth of scattered palmetto and gall berry, and a heavy growth of wire grass. If the pine seedlings are protected, the soil will support an excellent and profitable stand of long-leaf pine and slash pine. The cultivated areas are used for the production of corn and similar crops. During dry seasons a fair crop of corn may be obtained through the use of 300 or 400 pounds to the acre of a 4–8–2 or similar fertilizer. Cotton has been grown on this soil, but production has been very poor on the typical soil, and only mediocre results have been obtained on the best areas. The land may be profitably used as carpet-grass pasture, in connection with the dairy industry. A few truck crops, especially strawberries, do well.

PLUMMER FINE SAND

Plummer fine sand has a surface layer of dark-gray loamy fine sand varying from 2 to 5 inches in thickness. The dark color is caused by accumulated organic matter. This layer grades into steel-gray fine sand which continues to a depth ranging from 20 to 30 inches where it is underlain by light-gray or almost white fine sand saturated with water. In places, at a depth varying from 36 to 45 inches, light-gray light sandy clay spotted with yellow and brown occurs. On the north and west sides of Little Buffalo Swamp in the southeastern part of the county, the surface soil in places consists of a layer of very fine sand 14 or more inches thick. In some places a brown layer of fine sand, varying from 2 to 4 inches in thickness, occurs at a depth ranging from 6 to 12 inches. Here the soil is slightly better drained and resembles Leon fine sand.

Plummer fine sand is the most extensive soil in Wayne County. It occurs in large areas throughout the county, except in the north-central, northwestern, and southwestern parts. Most of this soil occupies nearly flat areas, but it also occurs along the lower part of gentle slopes. Drainage is very poor. Water stands on the surface part of the time, and the water table is always close to the surface.

None of the typical Plummer fine sand is successfully farmed in Wayne County. On the north and west sides of Little Buffalo Swamp where the soil resembles Plummer very fine sand, the natural surface drainage is slightly better, and the land has been ditched. Here corn, velvet beans, cowpeas, and similar crops are grown during dry seasons, but yields are low.

The original tree growth consisted of a heavy stand of slash pine on the moderately wet areas, with slash pine and a little long-leaf pine intermingled on the slightly better-drained areas. The present tree growth consists of slash pine and long-leaf pine on the better-drained areas, slash pine only on the moderately wet areas, and slash pine, cypress, and a few pond pine, black gum, and other water-loving hardwoods on some of the wettest areas. In some places the only tree growth consists of scattered cypress, (*Taxodium imbricarium*). Pitcher plants grow on this soil, and other undergrowth consists of wire grass, broom sedge, and gall berry. Over much of the land crawfish holes and chimneys are numerous.

Plummer fine sand is adapted to use as pasture and to reforestation to slash pine and long-leaf pine for the production of lumber and turpentine. Practically all the land has been cut over, and the present tree growth is very scattered over most areas. Reproduction has been very poor, owing to the prevalent practices of frequent burnings and of pasturing hogs and goats. The slash pine seedlings are especially sensitive to fires, and goats and hogs attack the long-leaf pine seedlings. Although this soil is not adapted to cultivated crops, it may be used profitably. One of the successful and up-to-date turpentine producers in the county reported that he realized an average profit of $20 an acre from turpentine on land which had been cleared of trees about 20 years ago. His trees and seedlings were protected from damage by fire or livestock. Excellent advice on reforesting this land may be obtained from the division of forestry, Georgia State College of Agriculture.

Experiments by the Coastal Plain Experiment Station at Tifton, Ga., and by the Central of Georgia Railway on their experiment plots have shown that Plummer fine sand will produce an excellent carpet-grass pasture. In many sections of the county close to the railroad lines, where marketing facilities are adequate, some of this soil may be profitably used for pasture in connection with dairying. Small areas of pasture land are coming into use near Jesup.

Plummer fine sand, cypress-pond phase.—Plummer fine sand, cypress-pond phase, differs from the typical soil only in its lower position and wetter condition. It occupies sinklike depressions and is under water practically all of the year. This soil is not extensive, but the areas are conspicuous. Most areas occur in close association with Plummer fine sand and Plummer sand, although a few are surrounded by other soils. The largest areas are in the northwestern part of the county about 2 miles east of Brentwood and about 1 mile west of New Hope Church. This soil is nonagricultural and would not be desirable for farming even if it were possible to drain the depressions. These areas are covered with small cypress trees, and in some places support a few gum trees.

PLUMMER SAND

Plummer sand differs from Plummer fine sand only in having sufficient medium and coarse sand throughout the surface soil and subsoil to give the medium sand texture. In a few small areas near County Line School the subsoil consists of gray heavy sandy clay streaked with yellow and brown. Such areas would have been mapped as Plummer sandy loam had their extent been greater.

Although Plummer sand is not so extensive as Plummer fine sand, it is one of the more extensive soils of Wayne County. It occurs mainly in the northwestern part of the county and south of Slover in the central part. The low, nearly flat surface causes very poor drainage. None of the land is successfully farmed. It supports a growth similar to that on Plummer fine sand and is best suited for forestry.

PLUMMER FINE SANDY LOAM

The surface soil of Plummer fine sandy loam consists of dark-gray loamy fine sand, from 3 to 6 inches thick, which owes its dark color to accumulated organic matter. A large quantity of grass roots is present in this layer. Underlying the surface soil is gray loamy fine sand continuing to a depth varying from 8 to 15 inches. This layer grades into gray, fine sandy clay streaked and spotted with brown and yellow. This material is sticky when wet but friable and crumbly when dry. This layer is variable in thickness, in some places being very thin or absent and in others continuing to a depth of 30 inches. Underlying the surface layers is mottled red, purplish, gray, brown, and yellow sandy clay material which is slightly plastic in the upper part but which becomes hard and brittle with depth. About 1¾ miles northwest of Consolidated School and one-half mile north of Empire School the mottled parent material is present at a depth of about 15 inches.

Plummer fine sandy loam is one of the least extensive soils mapped in the county. It occurs chiefly in small areas such as those 2 miles

northwest of Consolidated School, one-half mile west of MacFishery Landing, and one-half mile west of Bethlehem Church. The largest area borders Tenmile Swamp.

Most of this soil occupies slight depressions and lower positions than the surrounding soils. Drainage is poor, and none of the land is cultivated. The tree growth is slash pine and long-leaf pine, and the undergrowth is scattered small saw palmetto, gall berry, broom sedge, pitcher plant, and a heavy growth of wire grass. Crawfish holes are numerous.

Plummer fine sandy loam will make excellent carpet-grass pasture if it is protected from trampling when wet. It is also capable of supporting a good growth of slash pine and long-leaf pine. It should be utilized as pasture and for forestry.

SUSQUEHANNA SANDY LOAM

The surface soil of Susquehanna sandy loam, to a depth of about 3 inches, consists of gray loamy sand which contains many fine roots. This layer is underlain by pale-yellow loamy sand which continues to a depth varying from 12 to 18 inches. The subsoil is reddish-brown, heavy, slightly plastic clay which contains a small quantity of sand and continues to a depth ranging from 15 to 22 inches. At this depth it grades into heavy plastic, impervious clay mottled brown, purplish red, red, gray, and whitish. When dry this material cracks and breaks into irregular pieces. The purplish-red spots contain a large quantity of sand particles, probably quartz, and the gray spots are plastic. The surface soil varies considerably in thickness, being 25 inches thick in some places whereas in small areas on some slopes it has been completely eroded, and the subsoil is exposed. The upper or reddish-brown part of the subsoil also varies in thickness. It is lacking in a few areas, whereas in other places it is 10 or more inches thick.

Susquehanna sandy loam is the least extensive soil in the county, occurring only in the northwestern corner. The largest area is 1 mile north of Friendship Church. The land is rolling or hilly. Surface drainage is good, but subdrainage is inadequate. None of the soil is cultivated, but it supports a scattered tree growth consisting of long-leaf pine on the ridges and slash pine, bay, black gum, dogwood, and gall berry along the draws or drainage channels. Small areas where the surface soil is deep might be used for crop production, but on account of the heavy subsoil and numerous seepy draws cutting the areas, this soil is best suited to the production of long-leaf pine and slash pine for the production of lumber and turpentine. It may also be used for grazing land. Although the soil supports a fairly good stand of larger trees, nearly all the pine seedlings have been killed by fires and livestock. If the seedlings are protected, an excellent and profitable stand of slash pine and long-leaf pine may be established.

HOFFMAN SANDY LOAM

Hoffman sandy loam has a surface layer of gray or brownish-gray loamy sand from 2 to 4 inches thick, underlain by a pale-yellow or slightly brownish-yellow loamy sand subsurface layer which con-

tinues to a depth ranging from 8 to 30 inches. The subsoil is streaked or mottled purplish-red, pink, yellow, gray, and white hard but very brittle sandy material continuing to a depth ranging from 6 to 10 feet. In many places below this depth, pink, yellow, or almost white sand more or less streaked with purplish red is present.

The subsoil of Hoffman sandy loam varies greatly in color, texture, and structure. In some places it begins as streaked purplish-red and yellow sandy material which grades, at a depth of 3 or 4 feet, into mottled or streaked white, light-gray, and yellow smooth silty clay having a rather soapy feel when rubbed between the fingers. In other places the subsoil is yellowish-red or mottled light-red and yellow sandy material. In a few places scattered over the surface and mixed to some extent with the first few inches of the soil are small, brown, rounded accretions similar to those found on Tifton sandy loam, and a few fragments ranging from 6 to more than 10 inches in diameter. Here and there thin layers of iron crust occur at varying depths in the lower part of the subsoil. Two miles east of New Hope School along the bluff of the Altamaha River swamp the surface soil consists of gray coarse sand from 4 to 6 inches thick. This is underlain by yellow loamy coarse sand which continues to a depth varying from 15 to 20 inches. This layer immediately overlies a heavy, plastic, sticky clay layer which contains pockets of coarse sand and which is mottled purplish-red, pink, yellow, and white. Below the 30-inch depth is the brittle mottled sandy parent material. Northwest of MacFishery Landing the surface soil is fine sandy loam.

Hoffman sandy loam is one of the inextensive and unimportant soils in Wayne County. The largest occurrence is as a broken border of varying width extending along the bluff above the Altamaha River swamp. It also occurs along Goose Creek, Little Goose Creek, Holstein Branch, and in small areas along some other creeks. It occupies steeply sloping rough, broken areas. Internal drainage is adequate, and in many places surface drainage is excessive. Very little of the land is under cultivation for, owing largely to the surface relief and to the variable character of the material lying immediately under the soil, it is predominantly a nonagricultural soil. It is adapted to forestry for the profitable production of lumber and turpentine. Most of the original growth has been removed. In many places second growth is sparse and consists of long-leaf pine, loblolly pine, flowering dogwood, persimmon, water oak, white oak, sweetgum, haw, red oak, pignut hickory, and willow oak. Slash pine, live oak, holly, and magnolia grow along the bottom of the slopes, and the undergrowth is wire grass. The soil can be easily and profitably reforested by cutting out the hardwoods and keeping out fires, hogs, and goats, thereby allowing the remaining long-leaf and loblolly pines to reseed themselves.

LEON SAND

Leon sand differs from Leon fine sand only in its greater content of medium and coarse sand particles throughout. It is subject to the same variations as Leon fine sand where it is associated with the Plummer soils. In the northwestern part of the county north of

Brentwood, Leon sand resembles Blanton sand in the better-drained areas. Such areas have a well-developed brown layer which is not cemented and hard as in typical Leon sand. It also resembles the Plummer soils in the more poorly drained parts of the areas where the hardpan layer is also poorly developed. As mapped in this vicinity Leon sand includes small areas of both Blanton sand and Plummer loamy sand. Included with Leon sand along Big Satilla Creek southwest of Screven are a few small areas in which white sand extends to a depth of 3 or more feet. These areas would have been mapped as St. Lucie sand had their extent been greater.

Leon sand is one of the less extensive soils of the county. It occurs in many small areas in the northwestern part, from Brentwood north to Friendship Church. It also occurs between Broadhurst and Slover in a few well-developed areas, and numerous small areas are mapped elsewhere throughout the southern and southwestern parts of the county.

Areas have a slightly undulating relief and lie slightly higher than the associated Plummer and Portsmouth soils. Because the land is almost level, surface drainage is slow. The hardpan layer hinders subsurface drainage. These conditions cause the soil to remain wet for some time following rains. Thereafter it becomes excessively dry.

None of the typical Leon sand is successfully farmed, although a few attempts at farming it have been made. It is adapted to the same uses as Leon fine sand. Original tree growth and second growth are similar to those on Leon fine sand, and this soil should be reforested in the same manner.

LEON FINE SAND

The surface soil of Leon fine sand is dark-gray fine sand from 1 to 5 inches thick. It is underlain by light-gray or almost white fine sand which continues to a depth varying from 12 to 30 inches. This layer directly overlies a so-called hardpan layer which consists of fine sand cemented principally with organic matter. This hardpan layer ranges in thickness from about 4 to 12 inches and averages about 7 inches. The upper inch or two of this layer is almost black and is harder than other layers of the soil. The lower part of the layer grades into brown or yellowish-brown material and is soft and mellow. The hardpan layer is impervious to water and air, and, especially in the harder layers, plant roots do not penetrate it readily. In some places this layer is very hard, but in others it is merely a compact dark-brown layer. Underlying the hardpan is grayish-yellow, yellowish-gray, or dull-gray fine sand mottled or tinged with brown and streaked with brown fine sand. At a depth ranging from 40 to 60 inches this material grades into dark brownish-gray fine sand having a faint purplish cast. The fine sand below the hardpan layer is wet for a few inches and finally grades into fine sand saturated with water. The dark-gray layer of the soil is deeper near the boundary between the Leon and the Plummer soils and is thinner or absent in the highest areas. In the vicinity of Broadhurst, Leon fine sand is intricately cut by many small narrow bands of Plummer fine sand in a network too small to show on the map. These areas are included with Leon fine sand, because it is the predominating soil.

Leon fine sand is one of the more extensive soils of Wayne County. It occurs in the eastern, southeastern, and southern parts of the county in close association with Plummer fine sand. In the southern part it is also closely associated with St. Johns sand and Portsmouth fine sand. As the areas are level or slightly undulating, surface drainage in many places is slow. However, areas of Leon fine sand are sufficiently higher than the Plummer soils, with which they are associated, to become drained and very dry during moderately long rainless periods. Movement of water from the surface downward or from the lower layers to the surface is prevented by the hardpan layer. The fine sand underlying the hardpan layer is wet, and much of it is saturated for a long time following rainy spells.

None of the typical Leon fine sand is successfully farmed in the county, although numerous attempts at farming have been made. However, in a few places where the hardpan layer is not well developed or occurs at a greater depth below the surface, a poor or mediocre crop of corn or of oats has been grown. Under economic conditions warranting the cultivation of this soil, some areas in which the hardpan does not occur too near the surface could be used during favorable seasons for the production of truck crops, if heavy applications of lime and high-grade complete fertilizers were used and ample green-manure crops were plowed under. Overhead irrigation would also be necessary.

Leon fine sand in this climate is adapted primarily to forestry for the production of lumber and turpentine, and at the prevailing prices of these commodities such utilization is most profitable. The original tree growth was long-leaf pine, and second growth is long-leaf pine with no admixture of hardwoods or any other pines on typical areas. Where the hardpan is less perfectly developed and where the soil is associated with the Plummer soils an admixture of slash pine occurs, and an occasional water oak or willow oak and a few other hardwoods are seen. An undergrowth of large saw palmetto, scrubby gall berry bushes, and wire grasses grows over this soil. If fires are kept out and goats and hogs are kept off, the soil will produce an excellent stand of long-leaf pine. Growth may possibly be slower than on other soils, especially during the early life of the trees, but a close, well-developed stand of the trees will grow under natural conditions where given an opportunity. However, under existent conditions fire kills many of the seedlings, goats eat the buds from many more, and hogs dig out and eat the roots. Consequently reproduction is very scattered over much of the soil.

ST. JOHNS SAND

St. Johns sand has a surface layer of dark-gray or black loamy sand, varying from 6 to 12 inches in thickness. The dark color is caused by the high content of organic matter. This layer grades into gray or light-gray loose incoherent sand which continues to a depth ranging from 17 to 20 inches. At this depth it is immediately underlain by a so-called hardpan layer. This hardpan layer varies from 6 to 10 inches in thickness and consists of sand cemented mainly by organic matter. The upper part of the hardpan layer is almost black and very hard but grades into brown or yellowish brown and is soft and mellow in the lower part. Below the hard-

pan layer is compact drab or brownish-gray loamy sand with brown stains, which contains just enough clay to make it slightly sticky when wet. Below the 50-inch depth it becomes lighter colored and streaked with yellow. Where the hardpan layer comes in contact with this underlying material, the sand is saturated with water. The thickness of the surface layer varies. In places the soil is mucky on the surface and continues so to a depth of 14 or more inches, but in other areas it resembles Leon sand. The gray sandy layer under the black surface soil varies from 3 or 4 inches to 15 inches in thickness. The underlying hardpan layer also varies in thickness from 6 to 18 inches. In some areas the hardpan is underlain by pale grayish-yellow or drab wet sand which is streaked with brown, and in other areas the soil consists of fine sand throughout and would have been mapped as St. Johns fine sand had the total area been greater. Such areas are south of Duck Pond Swamp, 3 miles north of Broadhurst, and 3 miles north of Mount Pleasant, and numerous smaller areas are mapped north and northeast of Grangerville in close association with Plummer fine sand and Leon fine sand.

St. Johns sand is one of the less extensive soils in Wayne County. It occurs mainly in the southern and central parts, west and north of Duck Pond Swamp and west of Little Penholoway and Walker Creeks. The flat surface causes slow surface drainage. However, this soil is better drained than the Plummer and Portsmouth soils, with which it is associated. Vertical movement of water is retarded or inhibited by the hardpan layer, but there is some slow lateral movement below the hardpan. None of the soil is cultivated. It is best adapted to the production of pine for lumber and turpentine. Under economic conditions which would warrant its use for crop production, it could be used similarly to the Leon soils, during favorable seasons, for growing truck crops, such as cabbage and onions. Owing to the high content of organic matter in the surface soil, it would probably be more productive than the Leon soils if it were treated with heavy applications of lime. The presence of the hardpan layer and the poor drainage are serious hindrances to its development. Long-leaf pines grow on the better-drained areas and slash pine on the more poorly drained land. The predominant undergrowth is wire grass, saw palmetto, and gall berry. Soap weed, bay, and huckleberry grow in a few places. The present tree growth is very scattered in most places but the land is capable of producing an excellent and profitable stand of slash pine and long-leaf pine if fires are kept out and hogs and goats are prevented from injuring the seedlings.

PORTSMOUTH FINE SAND

The surface soil of Portsmouth fine sand consists of dark-gray or black fine sand varying from 10 to 25 inches in thickness but averaging about 18 inches. This layer is underlain by light-gray or nearly white fine sand, which is saturated by water in many places and is streaked with brown. The black color and loamy texture of the surface soil are caused by accumulated organic matter, and in many places this layer is mucky. Especially is this true in the vicinity of Jesup where in some peaty areas the peat or muck extends to a depth of 20 inches. Such areas would have been mapped

as peat and muck had their extent been greater. North of Jesup much of the peaty surface has been burned to a depth varying from 10 to 14 inches, and tree roots have been left exposed. In a small area northeast of Broadhurst finely decomposed muck from 9 to 12 inches thick overlies light-gray fine sand. East of Jesup sandy clay is reached below the gray fine sand at a depth of about 30 inches.

The total area of Portsmouth fine sand in the county is small. The soil occurs mainly throughout the central part of the county. The largest area is northwest and west of Long Ford School toward Walker Creek. Smaller areas are north and east of Jesup, south and 3 miles north of Grangerville, and scattered throughout the southern and eastern parts of the county. The soil occupies flat, level areas and depressions. Drainage is poor, as no natural drainage has been established. None of this soil in Wayne County is cultivated. Most of it is covered by a dense growth of water-loving trees, vines, and shrubs. Slash pine, pond pine, bay, sweetgum, magnolia, red maple, titi, haw, swamp white oak, cypress, and gall berry are among the prominent growths. Titi grows chiefly on the Portsmouth soils in Wayne County.

Drainage is possible on some of the Portsmouth fine sand. The drained areas could be used for growing such truck crops as celery, lettuce, onions, and cabbage if heavy applications of lime and high-grade fertilizers were used.

PORTSMOUTH SAND

The surface soil of Portsmouth sand consists of dark-gray or black sand varying from 10 to 25 inches in thickness but averaging about 18 inches. The black color and slightly loamy texture of the surface soil are caused by accumulated organic matter. This layer grades into light-gray or nearly white sand which is saturated in many places and is streaked with brown in some places. One mile northeast of Jesup many small included areas of Leon sand cut the larger Portsmouth areas in bands too narrow to show on the map.

Portsmouth sand is less extensive than Portsmouth fine sand. It occurs mainly in the north-central part of the county. Well-developed areas are west of Walker Creek, 1 mile southeast of Jesup, and northeast of Jesup toward the river swamp, and smaller areas occur over the southern half of the county. This soil occupies flat, level areas and depressions and is inadequately drained. None of the land is cultivated, but the wetter places are covered with a dense growth of water-loving plants, predominantly slash pine, pond pine, bay, sweetgum, magnolia, red maple, cypress, haw, swamp white oak, titi, and gall berry.

Some areas of Portsmouth sand may be economically drained. Such areas will produce celery, lettuce, onions, cabbage, spinach, and probably other truck crops, if they are properly fertilized and tilled. Heavy applications of lime and high-grade fertilizer will be necessary for successful crop production.

BLADEN SANDY LOAM

The surface soil of Bladen sandy loam in wooded areas consists of drak-gray or brownish-gray sandy loam, from 2 to 5 inches thick. This layer is underlain to a depth varying from 8 to 15 inches, by

gray slightly sticky loam mottled with brownish yellow. The subsoil is bluish-gray, mottled or streaked with brownish-yellow, heavy, tough, plastic clay which contains a small quantity of sand particles and continues to a depth ranging from 5 to 10 feet. Old exposed cuts assume a rust-brown color in the subsoil. The soil dries and cracks into a finely granular structure. The 1-inch or 2-inch layer immediately underlying the surface soil layers shows slightly more numerous brownish-yellow mottles than does the rest of the surface soil. In some places the surface soil is very dark or almost black. A few areas of clay loam and fine sandy loam and also areas with a deeper sandy surface soil, all too small to differentiate on the map, are included with Bladen sandy loam.

Bladen sandy loam is one of the least extensive soils in the county. It occurs only along the Glynn County line in the southeastern part of Wayne County, both north and south of the Southern Railway. It occupies low, flat areas somewhat higher than the Portsmouth soils with which it is closely associated. Surface drainage is poor, owing to the lack of relief, and internal drainage is slow on account of the heaviness of the subsoil.

None of this soil is cultivated in Wayne County, but the land supports a heavy growth of slash pine and a scattered growth of loblolly pine, willow oak, black gum, titi, pond pine, long-leaf pine, and sweetgum. This soil may be easily reforested to a profitable stand of slash pine. However, it would be one of the most productive and strongest soils of the county were it drained and reclaimed. It is well adapted to the production of potatoes, and has been profitably used for that crop from North Carolina to Florida. It is also a good soil for corn and sugar cane, and good yields of a wide variety of truck crops may be produced. It can be profitably used for forage crops and pasture. When cultivated, care must be taken not to plow or work the soil when too wet, especially where the heavy clay subsoil is near the surface.

MEADOW

Meadow includes the material occurring along intermittent and poorly established drainage ways. In many places a layer, a few inches thick, of dark-gray sand or fine sand on the surface overlies gray saturated sand. Meadow is variable in texture, color, and structure. It is wet or saturated and is covered by water after rains. Most of the meadow areas are narrow. They support a scattered growth of small cypress, poplar, and slash pine, and here and there bay, titi, sweetgum, black gum, and gall berry are seen. Meadow may be utilized for the production of lumber and firewood or as pasture for cattle and hogs.

SWAMP

Swamp is the term applied to the alluvial soils which are wet practically all the year and are subject to frequent and heavy overflow. The material is too variable in texture, color, and structure to separate into soil types. Three kinds of soil are mapped as swamp in Wayne County.

On the soil map, swamp symbols are not shown on all areas mapped as swamp. They are shown where indicated on the United States Geological Survey quadrangles but have not been extended to that part of the base map constructed by the Bureau of Chemistry and Soils.

The largest swamp area is that along Altamaha River. This area consists mainly of Georgetown and Congaree material, of variable texture, with a small amount of coastal-plain material along the margin of the swamp where streams enter. A few high sand ridges, all of which are subject to overflow during periods of high water, occur throughout the area. Most of the swamp land is pastured by hogs and cattle during the driest weather. It is covered by a dense growth of vines, shrubs, and trees along the margin, but the growth is more sparse within the swamp. Among the trees which grow in the Altamaha River swamp are pond pine, slash pine, spruce pine, willow oak, swamp white oak, water oak, swamp chestnut oak, live oak, haw, sweetgum, tupelo gum, water elm, ironwood (hornbeam), red maple, bald cypress, holly, magnolia, red mulberry, dogwood, and bay. Much of the merchantable timber has been or is being cut. The soil is, in its present condition, entirely nonagricultural. To reclaim this land levees would have to be built against flood water.

Another kind of swamp occurs along the larger creeks of the county which rise in the coastal plain and largely within the flatwoods part of it. The material along these streams is wholly of coastal-plain origin, but is too variable in texture and color to separate into soil types. The largest swamp areas of this kind occur along Big Satilla Creek, Penholoway Creek, and Little Satilla Creek. Here the material consists in part of heavy mottled clays and includes areas of low Myatt material and of deep sandy materials of variable texture. The Myatt material occurs along Penholoway and Big Satilla Creeks in semiswampy areas, which are subject to overflow during high water. It is entirely nonagricultural, except for pasture in some places. The growth on most of this swamp is similar to that on the Altamaha River swamp, with the addition of tulip poplar.

The third kind of swamp occurs in bays and depressions in the southern part of the county. Treeless, grassy areas and deep pond areas are here. Such areas include Penholoway Bay, Little Buffalo Swamp, Big Cypress Swamp, and Duck Pond Swamp. Water covers these areas practically all the year. The predominant growth is cypress, but scattered slash pine, pond pine, and other swamp vegetation are also seen. In many places the soil is gray sand containing a varying amount of organic matter in the surface soil. Such areas are nonagricultural.

SUMMARY

Wayne County is in the southeastern part of Georgia. It has an area of 411,520 acres. Jesup, the county seat, is 43 miles distant from Brunswick and 99 miles from Jacksonville, Fla. The county has excellent railroad facilities.

The climate is characterized by long, warm summers and short, mild winters. The mean annual temperature is 66.7° F. and the average annual precipitation is 47.36 inches.

The general farm crops of Wayne County consist of cotton, corn, oats, cowpeas, velvet beans, peanuts, tobacco, sweet potatoes, potatoes, and sugar cane. A small quantity of truck crops, including asparagus, strawberries, dewberries, lettuce, carrots, and rutabagas are produced for shipment. Some beef cattle, hogs, and goats are raised on the free range. A few peach, pear, apple, and a large number of pecan trees have been planted.

Agriculturally the soils of Wayne County may be divided into two main groups. The first group comprises the soils of the Norfolk, Tifton, Blanton, Susquehanna, and Hoffman series. These occur in the north-central, northwestern, and extreme southwestern parts of the county. Norfolk fine sandy loam, Norfolk loamy fine sand, Norfolk loamy sand, Tifton sandy loam, and Tifton fine sandy loam are the best agricultural soils of the county. The soils of the second group, including members of the Plummer, Leon, St. Johns, Portsmouth, and Bladen series, occur in the central, northeastern, and southeastern parts of the county. The soils have developed in what is known as the flatwoods region. With the exception of small areas, here and there, only a very small percentage of these soils is devoted to the production of farm crops. They are used extensively for the production of turpentine and to less extent for cattle and hog pasture.

Wayne County offers inducements to the homeseeker in the way of cheap lands, favorable climate, and good transportation facilities for shipping all kinds of farm produce.

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[PUBLIC RESOLUTION—No. 9]

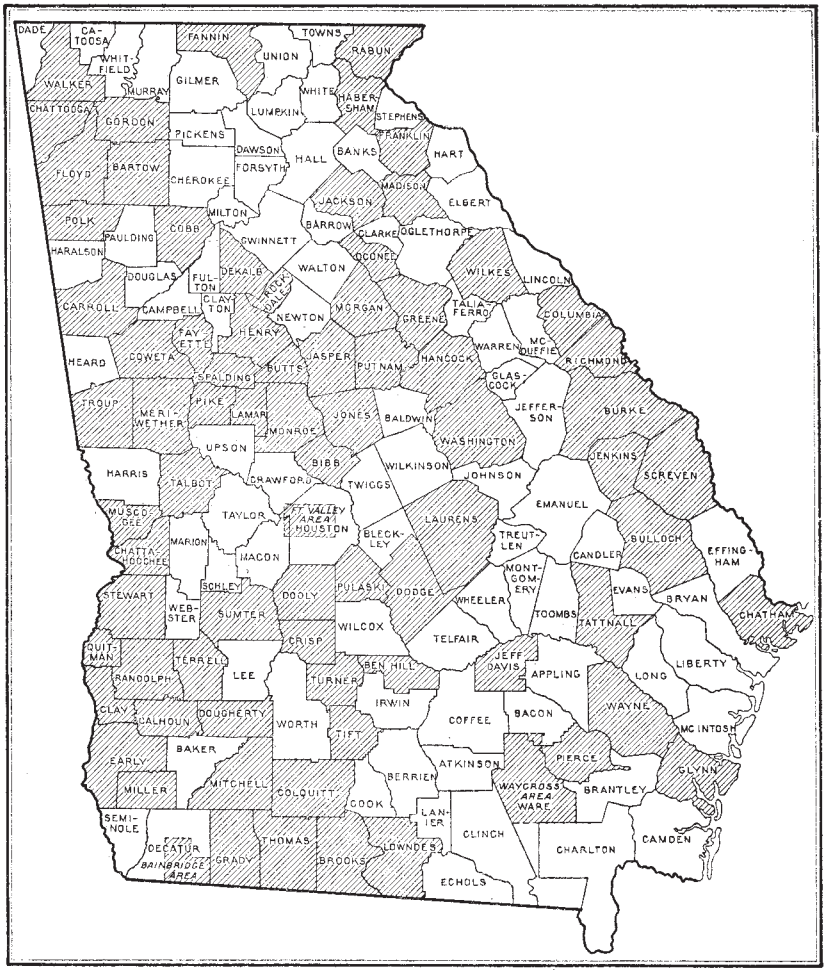
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-second Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided,* That in addition to the number of copies above provided for 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 area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils, and on July 1, 1927, the Bureau of Soils became a unit of the Bureau of Chemistry and Soils.]



Areas surveyed in Georgia, shown by shading

U. S. GOVERNMENT PRINTING OFFICE: 1930

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