

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS—MILTON WHITNEY, Chief.
IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE,
ANDREW M. SOULE, PRESIDENT; DAVID D. LONG,
IN CHARGE SOIL SURVEY.

SOIL SURVEY OF PIERCE COUNTY, GEORGIA.

BY

E. T. MAXON, IN CHARGE, AND N. M. KIRK.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1918.]



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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., December 23, 1919.

SIR: Under the cooperative agreement with the Georgia State College of Agriculture a soil survey of Pierce County was carried to completion during the field season of 1918. I have the honor to transmit herewith the manuscript and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1918, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

HON. D. F. HOUSTON,
Secretary of Agriculture.

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MAP.

Soil map, Pierce County sheet, Georgia.

SOIL SURVEY OF PIERCE COUNTY, GEORGIA.

By E. T. MAXSON, In Charge, and N. M. KIRK.
Area Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Pierce County is situated in the southeastern part of the State of Georgia, about 85 miles southwest of Savannah and 70 miles northwest of Jacksonville. It is separated from Appling County and from part of Wayne County by Big Creek and Satilla and Little Satilla Rivers. The Satilla River also forms about 8 miles of the boundary with Ware County. A portion of the boundary line south of the Satilla River, between Pierce and Wayne Counties, has never been surveyed. The county is very irregular in outline. Its maximum length from north to south is 33 miles, and its greatest width from east to west is $29\frac{1}{2}$ miles. It has an area of 507 square miles, or 324,480 acres.

Pierce County lies entirely within the Coastal Plain, and most of it within the smoothest part of this province. The general topographic features are those of a low-lying, level plain, with several relatively small areas of rolling upland.

Most of the county falls within the "flatwoods" region of south Georgia, which is characterized by lack of topographic relief and by poor drainage. This section as a whole consists of a nearly flat plain, with no distinct ridges or elevations, and dotted with numerous irregular, shallow depressions, which contain water during some part of the year. The few distinct stream courses and low seepage areas that carry most of the water to the streams lie but a few feet below the surrounding land. Typical flatwoods areas are found in nearly all parts of the county.

The topography adjacent to the larger streams of the county is distinctly different from that of the flatwoods sections. It is characterized by undulating to rolling ridges, with either long and smooth or short and abrupt slopes to the stream courses. The smaller streams that extend back into these ridges empty into larger



FIG. 1.—Sketch map showing location of the Pierce County area, Georgia.

streams that have narrow, wet, or swampy areas along their courses. Undulating to rolling upland topography is typically developed along the Alabama River, along Hurricane, Otter, Crooked, Fishing, and Big Creeks, and Sixty Foot Branch, and to a smaller extent immediately north of Cross Swamp.

The alluvial strips along the larger streams are flat and intersected by numerous stream courses or "runs" and by old sloughs. These alluvial areas are subject to overflow. In the eastern and southern parts of the county the larger streams empty into wide, flat bottoms that remain inundated the greater part of the year. Numerous depressions, ranging in size from less than an acre to several square miles, are scattered throughout the uplands and the flatwoods. They support a growth of various kinds of water-loving plants and trees, and are locally termed cypress ponds, bays, or swamps. The largest are Johns Pond, Little Okefenokee Swamp, Okefenokee Swamp, Cross Swamp, and Zero Bay.

The entire county is less than 250 feet above sea level. The northern part probably has the highest elevation. At Blackshear the elevation is 106 feet; at Fort Mudge, 134 feet; at the Waycross-Blackshear Bridge, about 80 feet; at Offerman, 106 feet; and at Trudie, 55 feet.

The principal drainage system is formed by the Satilla River and its tributaries. The Little Satilla River drains that section of the county along the northeastern boundary through Big Creek, Fishing Creek, and Crooked Creek. Twenty Foot and Sixty Foot Branches, and Otter Creek drain part of the northeastern section, reaching the Little Satilla River through Cross Swamp and Zero Bay. The Alabama River receives the drainage of the central and western parts of the county through Hurricane and Little Hurricane Creeks, and finally empties into the Satilla River. The latter receives the runoff from the south-central part of the county through Buffalo and Big Creeks. The drainage of the southern portion reaches the Okefenokee Swamp. The smaller streams all flow through moderately wide areas of swamp, containing numerous channels, from which the water spreads out over areas supporting a growth of trees and brush. The rivers generally follow well-defined channels, and have a noticeable current.

Pierce County was established in 1857 from portions of Appling, Wayne, and Ware Counties. In 1914 part of the original territory was taken in the formation of Bacon County. The earliest settlers in this region located near Blackshear about 1830. The early settlers came from other parts of Georgia and from South Carolina. At a later period many settlers came in from the Carolinas and other near-by States. Practically no foreigners have settled in the county, and there have been few immigrants from the Northern States. In

1910 the total population of the county was 10,749. There has been a steady increase in the population and in development. The north-central and northern parts of the county are the most thickly settled and best developed. Blackshear, the county seat, is the largest town in the county, with a population in 1910 of 1,235. It is located near the center of the county and is the leading commercial town. It has a good system of waterworks and electric lights, and supports an oil mill, a fertilizer plant, and a large cotton gin. Important rural towns and trading points located on the railroads are Offerman, with a reported population of 483; Patterson, with 264; Bristol, with 198; and Hoboken, with 100. Waycross, in Ware County, with a population of 14,485, lies about 3 miles across the county line, and is an important railroad center and trading point for parts of Pierce County.

The railroad facilities of Pierce County are good. The Atlantic Coast Line between Montgomery and Savannah passes through the county from southwest to northeast. Blackshear, Patterson, and Offerman are on this line. Lines of the same system from Brunswick to Waycross and from Jacksonville to Waycross traverse the south-central and extreme southern part of Pierce County, Hoboken being on the former and Fort Mudge on the latter. The Atlanta, Birmingham & Atlantic Railroad crosses the northern part of the county, passing through Mershon, Bristol, Offerman, and Zirkle.

The public roads of the county are not in good condition, although several of the main roads have been straightened, cleared, and partially graded, and a few permanent bridges have been constructed. Better roads and substantial bridges would enable the farmers to market their crops at a lower cost.

Most parts of the county are reached by rural mail routes. Rural schools and churches are numerous. The farm houses and barns are gradually being improved, and wire fences are being put up in many places.

CLIMATE.

Pierce County, in common with all southeast Georgia, lies within a climatic belt characterized by long, hot summers and short, mild winters. In the winter of 1917-18, however, when conditions were unusual, the ground was frozen and the ponds were covered with ice on several occasions.

According to the records of the Weather Bureau station at Waycross, in Ware County, the average temperature for the summer months is 81.4° F., and the maximum recorded, 107°. July is the hottest month, with a mean temperature of 82.2° F., while June, August, and September are only a few degrees cooler. The average temperature for the winter months of December, January, and February is 51.1° F., with a minimum of 4° F.

The average date of the last killing frost in the spring is March 14, and that of the first in the fall is November 15, which gives a growing season of eight months. Killing frost has occurred, however, as late in the spring as April 15 or as early in the fall as October 21.

The rainfall is abundant and well distributed. The heaviest precipitation occurs during June, July, and August. The mean annual rainfall is 47.83 inches, and the total is remarkably uniform from year to year.

The following table gives the normal monthly, seasonal, and annual temperature and precipitation as recorded by the Weather Bureau station at Waycross:

Normal monthly, seasonal, and annual temperature and precipitation at Waycross, Ware County.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year, 1909.	Total amount for the wettest year, 1902.
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	50.8	84	12	2.92	2.39	3.00
January.....	51.0	82	16	3.49	.81	.92
February.....	51.5	85	4	4.41	1.98	4.32
Winter.....	51.1	85	4	10.82	5.18	8.24
March.....	62.2	95	23	3.59	4.04	9.02
April.....	67.0	96	32	2.67	2.81	2.63
May.....	74.7	100	41	3.46	1.80	6.65
Spring.....	68.0	100	23	9.72	8.65	18.30
June.....	80.3	104	58	5.67	5.38	9.59
July.....	82.2	102	58	5.98	6.89	8.36
August.....	81.6	107	56	6.45	5.31	4.45
Summer.....	81.4	107	56	18.10	17.58	22.40
September.....	77.3	102	41	4.28	2.47	8.92
October.....	68.1	99	29	2.78	2.20	5.07
November.....	59.5	89	21	2.13	1.02	3.62
Fall.....	68.3	102	21	9.19	5.69	17.61
Year.....	67.2	107	4	47.83	37.10	66.55

AGRICULTURE.

Agricultural development in this region began with the raising of cattle on the free range and the clearing of small patches of land for the growing of corn and vegetables. The live stock was generally driven to the larger markets. The county was covered with a heavy stand of longleaf pine and an important turpentine industry was

developed, followed by extensive lumbering operations. These industries are now in their last stages, and the removal of the timber has left large tracts of cut-over lands ready for agricultural development. Agriculture is relatively new, but the fields are being rapidly cleared of stumps.

Corn has always occupied the largest acreage in this county. Sea Island cotton was one of the first crops grown commercially, and it has steadily increased in acreage. Oats, peanuts, sugar cane, and sweet potatoes have occupied a large acreage since an early date, and the growing of these crops, as well as the raising of hogs and cattle, seems to be on the increase.

In common with all of south Georgia, the agriculture of Pierce County is somewhat unsettled. Cotton, as the chief source of revenue, has always been the basis of agriculture, but the appearance of the boll weevil makes its continued preeminence doubtful. A change toward crop diversification and the extension of the live-stock industry is taking place. The better farming land of the county is highly adapted to a balanced system of agriculture, while large areas throughout the county are suited to some form of animal husbandry.

Practically 90 per cent of the cotton produced has consisted of sea island varieties, and the remaining 10 per cent of upland short staple. According to the census there were 9,352 acres in cotton in 1909, and it is estimated that by 1916 the acreage had increased 60 per cent. Since then there has been a decrease of about 25 per cent. Yields vary according to the soil and the fertilization, and range from 200 pounds to as much as 500 pounds of lint per acre. The average yield on the sandy land is about 200 pounds of lint and on the heavier types approximately 260 pounds. The Socnosky is the leading long-staple variety. The Meade is being introduced, and seems well adapted to local conditions.

Corn ranks next to cotton in importance. In 1909 there were 15,951 acres devoted to this crop, with a production of 225,890 bushels. The acreage has greatly increased since that year. On the better types of soil corn yields 40 to 50 bushels per acre. Most of the crop is used for making bread and for feeding work stock and hogs, but some is sold outside the county. The leading varieties grown are the Hastings Prolific and Marlboro.

Peanuts are an important crop in Pierce County. In 1909 the total area in peanuts was 3,595 acres. Practically all of the crop is planted with corn, two rows of the latter crop alternating with one row of peanuts. Hogs are turned into the fields to harvest the crop. The North Carolina flat top is a favorite variety of peanuts.

Oats are reported grown in 1909 on 2,516 acres, with a total production of 29,558 bushels. The acreage has greatly increased since 1909. Oats are grown mainly for consumption on the farm.

Velvet beans are an important crop, grown as feed for cattle and hogs. The crop is especially valued for turning under to improve the soil. Cowpeas are grown to some extent, either for hay or to be turned under. Some fields of cowpeas are "hogged down."

Sweet potatoes are grown on nearly every farm, either for home use or to be shipped. In 1909 a total of 1,341 acres were devoted to this crop. The yields vary from 100 to 300 bushels per acre. For several years an average of 10 carloads of sweet potatoes have been shipped from the county to southern markets each year. Irish potatoes are grown for local use and in a few cases for shipment to outside markets. Sugar cane is grown in small patches on practically all the farms, and is used for making sirup for home use. Vegetables are produced on practically every farm.

Peaches are grown in only a small way commercially. There are several small pecan groves, and the trees seem to be vigorous.

The live-stock industry in Pierce County is becoming more important each year. The production of pork products is being undertaken by the more progressive farmers on a steadily increasing scale. Most of the hogs in the county are grade stock, but there are some pure-bred sires. Duroc-Jersey and Poland-China are the leading breeds of registered stock.

The cattle are largely scrub animals which range in the woods for subsistence. Some attention is being given to improving the quality of the cattle by the introduction of animals of recognized breeds, mainly Shorthorn, Angus, Jersey, and Holstein. A number of dipping vats are under construction, to free the stock from the cattle tick.

The differences in productive value and crop adaptation of the different soil types is clearly recognized. The Tifton sandy loam and the Norfolk sandy loam and fine sandy loam are generally considered the most productive soils for all crops. The Plummer and Leon soils are held in lower esteem.

The equipment on the farms is variable. Some farms have only a one-horse plow and sweeps, while others are equipped with two-horse plows or riding plows, disk harrows, binders, mowers, and rakes. Some of the cultivated land is fenced. The houses and barns or sheds are of fairly good construction.

Seed-bed preparation for all crops shows varying degrees of thoroughness. Land intended for cotton is usually not plowed until spring, when it is laid off in rows and the cotton planted on the bed. The field for corn is prepared in about the same manner. Cotton receives an average of six cultivations, and corn three or four.

The farmers usually practice a general rotation consisting of cotton followed by corn and the latter by oats. Peanuts and velvet beans are usually grown with the corn. Cowpeas sometimes follow the oat crop.

Large quantities of commercial fertilizers are used in this county. According to the census, \$72,849 was expended for commercial fertilizers in 1909, by 1,028 farmers, or an average of \$70.86 each. The bulk of the fertilizer is purchased ready mixed, and varies in analysis from 8-2-2¹ to 10-2-0. These grades of fertilizer are generally used on cotton, corn, and oats. Cotton receives from 200 to 600 pounds per acre, and corn and oats somewhat lighter applications.

The labor situation is unsettled, farm hands generally being scarce. Day laborers at the present time (1918) receive \$1 to \$1.25 a day. Labor hired by the month receives from \$20 to \$30. Cotton picking is usually paid for by the pound.

The census of 1910 reports a total of 1,312 farms in the county, comprising about 60 per cent of its area. The average size of the farms is given as 178.2 acres. Approximately 18 per cent of the area of the county, or an average of 31.6 acres per farm, is reported as improved land. In 1910, 72.7 per cent of the farms were operated by owners. Most of the farmers, both land owners and tenants, are white persons.

The selling price of land in Pierce County varies widely, depending upon the soil type, drainage, and location. Land of the Norfolk sandy loam, fine sandy loam, and loamy fine sand, and the Tifton sandy loam ranges from \$20 to \$40 an acre. Areas of the Norfolk sand and Blanton soils range from \$8 to \$25 an acre. The Leon and Plummer soils range from \$8 to \$20. The 1910 census gives the average assessed value of farm land as \$6.88 an acre.

SOILS.²

Pierce County lies in the Coastal Plain soil province. Uplands occupy by far the larger part of the county and include the agricultural soils. The soils of the flood plains are at present not under cultivation. Pierce County lies in what is known as the Altamaha Upland and the Okefenokee Plain. The boundary between these two divisions probably runs along the western side of Zero Bay near Offerman, along the northern boundary of Cross Swamp, down the Alabama River to the Satilla River north of the Altman Bridge, and thence in a westerly direction along the Satilla River. The Altamaha Upland lies north of this line, and geologically is made up of irregularly bedded sands, clays, and gravels, locally indurated. The Okefenokee Plain is formed of marine and fluvial sands,

¹ Fertilizer formulas are stated in the order of percentage of phosphoric acid, nitrogen, and potash.

² Pierce County adjoins Ware County on the west. In most places the soils along the boundary do not agree. This is due to the changes in classification and correlation resulting from a fuller understanding of the soils of this portion of the Coastal Plain of Georgia since the survey of Ware County in 1906.

gravels, and clays. The northern part of the county has a more pronounced topographic relief, although extensive flatwoods are common in that section.

The upland soils of the county, of the Coastal Plain province, are of sedimentary origin, while the soils of the flood plains are alluvial. The former have been derived from unconsolidated deposits of sands and clays. These original deposits, to form true soils, have been modified by different agencies, such as weathering, erosion, and the growth and decay of vegetation.

In the differentiation of the soils a number of characteristics are considered, color, texture, structure, and topography being the most important. Difference in color in the soils of this county is largely a matter of difference in the degree of oxidation to which the soil material has been subjected, and is not due to any original difference in color of the soil material. Content as well as character of organic matter is likewise a factor in producing color differences. The color of the soils and their topography are closely related. The soils occupying the highest positions and having the best drainage are the brightest colored, while those occurring in the poorly drained or flat situations show considerable mottling of gray and yellow.

The soils of Pierce County are grouped into eight series—the Norfolk, Tifton, Blanton, Plummer, Leon, Susquehanna, Myatt, and Kalmia. All but the Myatt and Kalmia series and Swamp are upland, sedimentary soils. Each series includes a number of types differing in texture or the relative proportion of sand, silt, and clay.

The Norfolk series comprises types with light yellowish gray to light brownish gray surface soils and yellow, friable subsoils. They are well drained, occupying undulating to gently rolling areas. This series is important agriculturally in Pierce County, and includes the sand, loamy sand, fine sand, loamy fine sand, sandy loam, and fine sandy loam types.

The Tifton series is characterized by grayish-brown soils and bright-yellow subsoils. It differs from the Norfolk in the presence of an appreciable number of small, rounded iron concretions or ferruginous pebbles, scattered over the surface and throughout the entire soil section. One type, the sandy loam, is mapped in this county.

The soils of the Blanton series are characterized by a light-grayish surface soil and a dull dingy-white subsoil. They occupy flat or nearly level positions, where the natural drainage is not well developed. The Blanton sand and fine sand types are mapped in this survey.

The soils included in the Plummer series have a dark-gray or bluish-gray color in the surface portion, and a lighter colored subsoil, often mottled with brown, yellow, and gray. This series is uniformly

poorly drained. Two types, the Plummer fine sand and sand, the latter with a phase, are encountered in Pierce County.

The Leon series is represented by two types—a sand and fine sand. The surface soils are light gray, becoming dingy white in the sub-surface portion. The subsoils are gray or whitish. The characteristic feature of this series is the presence of a so-called hardpan layer, which occurs at 8 to 20 inches below the surface and consists of a dark-brown or black layer, 4 to 8 inches thick, composed of various grades of sand loosely cemented by organic matter or iron salts.

The Susquehanna soils are grayish brown in color, underlain by heavy sticky clay. The base color of the subsoil is dull red or rusty brown, but it is mottled with yellow, gray, and red. The sandy loam type is mapped in Pierce County.

The alluvial types are derived from both old and recent alluvium, the former occupying narrow first bottoms and the latter occurring on terraces along the larger streams. The alluvium consists of materials washed from the surrounding Coastal Plain soils, and reworked and deposited by the streams. The old alluvium, on the second bottoms or terraces, gives rise to the Myatt and Kalmia soils, while the recent alluvium, in the first bottoms, is mapped as Swamp.

The Myatt series comprises types with gray surface soils and mottled gray and yellow, sticky subsoils. Drainage is poorly developed. The Myatt sandy loam and fine sandy loam are encountered in Pierce County.

The Kalmia series is similar to the Norfolk of the uplands in color, the surface soil being brownish gray and the subsoil yellow. Drainage is better than in the areas of Myatt soils. The Kalmia fine sandy loam is the only member of the series mapped in this county.

In the following pages of this report the various soils of Pierce County are described in detail and discussed in their relation to agriculture. The table following shows the actual and relative extent of each type:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Plummer sand.....	40,640	} 22.0	Tifton sandy loam.....	11,776	3.6
Depression phase.....	30,976		Norfolk fine sand.....	11,584	3.6
Swamp.....	53,248	16.4	Norfolk loamy fine sand.....	7,552	2.3
Leon sand.....	42,816	13.2	Myatt sandy loam.....	5,248	1.6
Plummer fine sand.....	18,496	5.7	Blanton sand.....	4,416	1.4
Norfolk loamy sand.....	18,496	5.7	Norfolk fine sandy loam.....	4,288	1.3
Norfolk sand.....	16,192	5.0	Susquehanna sandy loam.....	1,856	.6
Leon fine sand.....	15,040	4.6	Kalmia fine sandy loam.....	1,472	.5
Norfolk sandy loam.....	14,528	4.5			
Blanton fine sand.....	13,504	4.2	Total.....	324,480
Myatt fine sandy loam.....	12,352	3.8			

NORFOLK SAND.

The Norfolk sand to an average depth of 3 to 6 inches is a yellowish-gray or light-gray sand, underlain by yellowish or pale-yellow, medium sand to a depth of 3 feet or more. The entire 3-foot section is a loose, incoherent mass. In cultivated areas the color of the surface soil varies according to the organic content.

Included with this type are several small areas of less than 300 acres, adjacent to the Satilla River and north of the Waycross-Blackshear Bridge, where the surface soil is light gray to a depth of 5 inches and the subsoil is a lighter gray or white, medium sand. These areas have a rolling topography and are well drained. They are covered with a stand of scrub oak. Several small areas, mostly near the Waycross-Blackshear Bridge, differ from the typical Norfolk sand in having a light-gray surface soil and a pale-brown subsoil. A few patches of typical Sandhill also are included with this type, in the vicinity of Shiloh Church, 2 miles east of Woodward Ferry Bridge, and in other widely separated localities throughout the county.

The largest areas of the Norfolk sand occur along the principal streams. Extensive areas are mapped east of the Satilla River in the western part of the county, east of Alabama River and Hurricane Creek, north of Cross Swamp, and south of Big Creek in the vicinity of Tyre Bridge. Smaller typical areas are found in the central and northern parts of the county.

The type varies from nearly level to undulating. It occurs on slight rises and on slopes in the flatwoods, and on low ridges and knolls in the uplands. The natural drainage is well established.

This type originally supported a stand of longleaf pine, with a few oaks. Most of the pine has been removed, leaving a scattered stand of scrub oak and a covering of wire grass. The value of the type for farming depends largely upon the location with respect to adjoining soil types, it being regarded as "poor sandy land" where associated with the heavier types of the Norfolk and Tifton series, while in the flatwoods section, in association with the Leon and Plummer soils, it is held in high esteem. Only a few small patches are under cultivation.

Corn, Sea Island cotton, and peanuts are the chief crops grown. Yields are low and depend largely upon the methods of cultivation and fertilization. Corn yields from 8 to 12 bushels and cotton from one-fifth to one-third bale per acre. Larger yields are obtained with sufficient applications of stable manure and commercial fertilizer.

The price of this land depends largely upon the location and improvements, and ranges from \$3 to \$20 an acre. The average is probably about \$8 an acre.

The Norfolk sand is adapted to the growing of early truck rather than general farm crops. Lettuce, radishes, beans, early Irish potatoes, strawberries, etc., should do well under proper management. Applications of stable manure or the turning under of such crops as velvet beans and cowpeas, together with moderate applications of commercial fertilizers and lime, should prove beneficial.

NORFOLK LOAMY SAND.

The Norfolk loamy sand, to a depth of 6 or 8 inches, consists of a brownish-yellow to yellowish-gray, friable loamy sand, underlain by a yellow loamy sand to a depth of 30 to 36 inches. A light sandy loam is often encountered at 30 inches and this may pass into a sandy clay within or immediately below the 3-foot section. Small areas of light sandy loam occur throughout the type, especially along the narrow brows of the slopes.

The Norfolk loamy sand is encountered in scattered areas along the upland ridges throughout the county. It is typically developed in well-defined areas south of Blackshear, south of Patterson in the vicinity of Otter Creek and Griffin Branch, west of Offerman, and along the larger streams in the vicinity of Mershon.

The type has an undulating to level topography. It occurs both along gentle slopes and on the level, broad divides. Run-off and internal drainage are well developed.

Practically 80 per cent of this soil is under cultivation, all the farm crops of the county being grown. Sea Island cotton ordinarily yields only one-third to one-half bale per acre, although yields of 1 bale are often obtained. Corn yields 8 to 25 bushels per acre, and oats 15 to 25 bushels. Peanuts, cowpeas, and Irish potatoes do well.

Stable manure and commercial fertilizers are used to some extent on all the crops, especially cotton. Applications of 200 to 400 pounds per acre are often made.

The average price of land of this type is \$25 to \$35 an acre, depending upon the location, the condition of the buildings, the fences, and the amount of land under cultivation.

This soil could be improved by the adoption of crop rotations and by turning under such crops as velvet beans, cowpeas, and crimson clover.

NORFOLK FINE SAND.

The soil of the Norfolk fine sand consists of a light brownish gray to yellowish-gray mellow fine sand to an average depth of about 7 inches. The subsoil is mellow, loose fine sand, of a light-yellow color, and it sometimes becomes loamy in the lower depths. In local areas the texture varies toward a very fine sand.

The Norfolk fine sand is most extensively and typically developed in the south-central part of the county. The largest areas occur south of, and adjacent to, the bottom land along the Satilla River between the Rawlerson Swamp and the Woodward Ferry Bridge. Typical areas are also mapped near High Bluff Church.

The topography is nearly level to undulating. The more rolling areas occur along the streams, while back from them the type is either level or slightly undulating. In some of the flat areas the soil approaches the character of the Blanton fine sand. The sandy texture and open structure of the type insure good internal drainage.

Less than 50 per cent of this soil is cleared and under cultivation. It has been almost entirely cleared of the original forest growth, which consisted of longleaf pine, and is now covered with scattered pine, a thick growth of oak, and some hickory. The uncultivated cleared areas support a growth of wire grass.

All the staple crops of the county are grown on this soil, and the yields vary widely according to the methods of cultivation and fertilization. Sea Island cotton yields from one-fifth to one-half bale per acre. Corn yields from 8 to 20 bushels. Peanuts, cowpeas, and velvet beans do fairly well. This soil is highly valued for the growing of sugar cane, the sirup from which is of light color and fine flavor. Sweet potatoes and Irish potatoes are grown for home consumption.

The price of land of the Norfolk fine sand ranges from \$5 to \$20 an acre, depending upon the location and buildings.

The productiveness of this soil can be increased by careful management. Short rotations, together with the addition of organic matter in the form of green manure or stable manure, would be beneficial. Farmers close to the railroads or local markets might successfully grow early truck, such as cucumbers, strawberries, and Irish potatoes.

NORFOLK LOAMY FINE SAND.

The Norfolk loamy fine sand consists of a grayish or yellowish-gray fine sand, with a depth of about 7 inches, underlain by a light-yellow loamy fine sand to a depth of about 30 inches. The color becomes more distinctly yellow with increasing depth. From 30 to 36 inches or more the material is a friable fine sandy loam of a bright-yellow color. The type as mapped in Pierce County is intermediate between the Norfolk fine sand and fine sandy loam, and it may include small areas of each.

There are no large areas of this soil in Pierce County. Small scattered areas are mapped in the south-central part, in the vicinity of and north of Hacklebarney Creek, and southeast of Alabama School.

The topography in general is level to gently undulating, but the type often occurs along the slopes of low ridges. The natural drainage, both surface and internal, is adequate for proper crop development.

Practically all of this soil is cleared and under cultivation to the general farm crops, principally Sea Island cotton, corn, oats, peanuts, and sweet potatoes. Yields approach those obtained on the fine sandy loam type.

Land values on the Norfolk loamy fine sand depend largely upon the location with respect to markets and upon the character of the adjoining soil type.

The following table gives the results of mechanical analyses of samples of the soil, subsoil, and lower subsoil of the Norfolk loamy fine sand:

Mechanical analyses of Norfolk loamy fine sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
255409.....	Soil.....	0.3	4.0	5.7	55.0	26.3	5.8	2.8
255410.....	Subsoil.....	.1	4.4	5.1	54.2	26.4	4.7	5.0
255411.....	Lower subsoil...	.3	3.2	3.3	55.3	22.5	4.0	11.5

NORFOLK SANDY LOAM.

The Norfolk sandy loam consists of a light brownish gray loamy sand or light sandy loam, grading at 6 or 8 inches into a light-yellow light sandy loam or loamy sand which extends to a depth of 18 to 20 inches. This is immediately underlain by yellow, friable sandy loam which becomes heavier, or a friable sandy clay, at a depth of about 30 inches.

This type as mapped includes some small bodies of Norfolk loamy sand, which are so closely associated that separation is impracticable. The sandy loam type sometimes carries a small percentage of rounded ferruginous concretions, and in fact differs from the Tifton sandy loam type only in the quantity of such pebbles present.

The Norfolk sandy loam is one of the more important types of the county agriculturally. It is widely distributed in small bodies throughout the central and northern parts of the county. Typical areas occur east and south of Patterson and north of the Atlanta, Birmingham & Atlantic Railroad in the northern part of the county.

The type invariably occurs on the higher slopes and ridges throughout the uplands. The topography is generally sloping, and drainage is well developed.

This is considered one of the best soils in the county for general farming, and it is estimated that 85 per cent of it is under cultiva-

tion. Sea Island cotton is extensively grown, and corn comes next in acreage. Peanuts, oats, velvet beans, and sweet potatoes are important crops. Cowpeas are grown for hay and to some extent for the seed.

Sea Island cotton ordinarily yields from one-third to three-fourths bale per acre, and yields of one bale or more are reported by some farmers. Corn yields 10 to 30 bushels, and oats 15 to 35 bushels. Peanuts yield well on this soil, but most of the crop is grown to supply forage for hogs. Sweet potatoes yield 100 to 300 bushels, and Irish potatoes 75 to 125 bushels per acre. Small fields of wheat seem to do well on this soil.

Commercial fertilizers are generally used for all crops. Cotton usually receives the heaviest application, from 250 to 450 pounds per acre of an 8-2 or 10-2 mixture. Corn usually receives 200 to 350 pounds of the same grade of fertilizer. Oats, cowpeas, and peanuts receive light applications.

Farms on the Norfolk sandy loam have increased in price during the last few years, and at present much of this land is held at \$25 to \$45 an acre. Some farms desirably located are held at higher valuations.

This soil is very responsive to the use of the proper fertilizers and to good cultural methods. It is in need of organic matter, which can be supplied by the growing and plowing under of leguminous crops, such as cowpeas, velvet beans, and crimson clover.

NORFOLK FINE SANDY LOAM.

The soil of the Norfolk fine sandy loam consists of about 8 inches of loamy fine sand to light fine sandy loam varying in color from light yellowish gray to light brownish gray. The subsoil is a light yellow, friable fine sandy loam to a depth of about 30 inches, below which it becomes heavier in texture and gradually passes into a friable fine sandy clay. A few local areas throughout the type have a small percentage of rounded pebbles on the surface and throughout the 3-foot section.

This soil is typically developed in scattered areas throughout the county. Numerous well-defined areas are mapped along Hacklebarney Creek, 3 miles northwest of Blackshear, and 1½ miles south of Aspinwall Siding. It occurs along gentle slopes and low ridges. The topography is undulating or gently rolling, and drainage is generally well established.

Practically all of the type has been cleared and is under cultivation. It originally supported a heavy growth of longleaf pine, and on some of the uncleared areas there is now a stand of second-growth pine.

All the crops common to the county are grown. Yields vary according to the methods of cultivation and fertilization. Sea Island cotton returns one-third to three-fourths bale, corn 12 to 30 bushels, and oats 20 to 30 bushels per acre. Cowpeas are usually grown for hay, and good yields are obtained. The peanut crop is seldom harvested, hogs generally being turned into the fields. Garden vegetables do well. The soil is cultivated and fertilized in about the same manner as the Norfolk sandy loam. Land values range from \$20 to \$35 an acre.

TIFTON SANDY LOAM.

The surface soil of the Tifton sandy loam is a brown or light yellowish brown to brownish-gray light sandy loam, ranging in depth from 6 to 9 inches. The subsoil is a yellowish sandy loam to a depth of about 18 inches, passing into a bright-yellow to deep-yellow, moderately friable, heavy sandy loam or light sandy clay. Red and yellow mottling is sometimes encountered in the lower subsoil, especially where the percentage of iron concretions is high. A characteristic feature of this type is the occurrence of rounded, ferruginous gravel or concretions scattered over the surface and mixed through the soil section. This type is locally termed "pebbly land." In some areas the pebbles are very abundant, while in others they are relatively few.

The largest area of Tifton sandy loam is mapped in the immediate vicinity of, and northwest of, Blackshear. Large typical areas are found northwest of Walkersville, on the ridges about Hurricane Creek, and south of Big Creek in the northern part of the county.

The type has an undulating to rolling topography. It occurs chiefly on sloping ridges or divides between streams, and has good surface and internal drainage. Some of the areas along the more abrupt slopes around stream heads are subject to erosion during heavy rains, and on such fields terraces are necessary.

Practically all of this type is cleared and under cultivation, and it supports some of the best improved and most productive farms in the county. All the staple crops are grown. Sea Island cotton yields one-fourth to three-fourths bale and in some cases 1 bale per acre. Corn yields 15 to 40 bushels per acre, and cowpeas one-third to three-fourths ton of hay. Peanuts and velvet beans do well. Oats are grown to some extent, and make a good stand of straw and a fair yield of grain. There are several successful pecan groves on this soil.

Land values depend largely upon the location and improvements, and range from \$25 to \$75 an acre.

This soil is held in high esteem and as a matter of fact it is one of the best soils in this part of the State. It can be used for a wide

range of crops, including general truck as well as the ordinary farm crops of the region. The productiveness can generally be improved by the addition of some form of organic matter, by the growing of legumes, and by following short, systematic crop rotations.

BLANTON SAND.

The Blanton sand to an average depth of about 6 inches is a very light gray or dingy-gray, medium-textured sand. The subsoil from 6 to 36 inches is a very light gray or dingy-white sand. There are some included areas in which the surface soil contains more organic matter than typical, these areas grading toward the Plummer series.

Several conspicuous areas having a loamy upper section to a depth of about 30 inches, grading into a sticky loamy sand or light sandy loam of a gray or yellowish-gray color, and heavily mottled with yellow or brown, occur about $1\frac{1}{4}$ miles northwest of Hopewell Church, and north of the Atlanta, Birmingham & Atlantic Railroad in the vicinity of Mershon. The topography is nearly level or only gently undulating, these areas occupying gentle ridges throughout the flatwoods. They are better drained than the areas of typical Blanton sand, but are used mostly for pasturage.

The Blanton sand is not an extensive type. It occurs in relatively small bodies scattered throughout the northern part of the county. Isolated areas are mapped about $1\frac{1}{2}$ miles southwest of Bristol, $1\frac{1}{2}$ miles south of Mershon, and 1 mile west of Owen. The type occurs in nearly flat or level positions in the flatwoods section of the county, and is only fairly well drained.

A small proportion of this soil is under cultivation. It is usually farmed in small patches. The uncleared areas support an open stand of sapling pine, with an occasional clump of saw palmetto and gallberry. There is a growth of wire grass.

Sea Island cotton and corn are the principal crops grown. Yields are relatively low, being slightly below those obtained on the Norfolk sand. Only a small quantity of commercial fertilizer is used, and the methods of cultivation are only fair.

Land values range from \$8 to \$20 an acre, according to the location and the improvements or the quality of standing timber.

Below are given the results of mechanical analyses of samples of the soil and subsoil of the Blanton sand:

Mechanical analyses of Blanton sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
255443.....	Soil.....	3.2	14.3	10.9	45.2	19.3	6.0	1.9
255444.....	Subsoil.....	4.6	19.2	9.2	38.1	21.2	6.6	1.0

BLANTON FINE SAND.

The Blanton fine sand consists of a light-gray or dull-gray fine sand to an average depth of 6 inches, underlain to a depth of 36 inches or more by a light-gray or dingy-white fine sand. Occasionally, in poorly drained areas, the surface color is darker than typical, and in certain small areas the subsoil tends toward that of the Norfolk fine sand in color, but on account of their small extent these bodies can not be shown separately on a map of the scale used.

Small areas of loamy fine sand also are included, consisting of a gray fine sand or slightly loamy fine sand to an average depth of 7 inches, underlain by pale-gray to dingy-white loamy fine sand which grades into a pale-gray, light fine sandy loam, invariably mottled with yellow and brown. The largest areas of this variation are found south of Aspinwall Siding.

The Blanton fine sand occurs in the northern, central, and south-central parts of the county. The largest areas are mapped about 3 miles south of Blackshear, and along the Atlantic Coast Line Railroad between Schlatterville and Hoboken. Typical areas are mapped east of Aspinwall Siding in the northern part of the county, and smaller areas are scattered throughout the flatwoods section.

The type occupies practically level areas, and in general is imperfectly drained, the moisture escaping by seepage through the loose, open subsoil.

There was originally a stand of longleaf pine, a very little of which remains. At present there are some scattered pine, a growth of pine saplings, a few scrub oak trees, and an occasional saw palmetto. The stand of wire grass is fairly good. Approximately 30 per cent of this soil is under cultivation, devoted to the staple crops of the region. Sea Island cotton is the most important crop. It yields one-fifth to one-half bale per acre. Corn yields 5 to 20 bushels per acre, and sugar cane, sweet potatoes, and peanuts do fairly well. Yields depend largely upon the methods of cultivation and the fertilizer practices.

Land values on this soil depend upon the location and the character of the improvements. Prices range from \$10 to as much as \$35 an acre.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Blanton fine sand:

Mechanical analyses of Blanton fine sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
255412.....	Soil.....	0.3	2.4	4.5	59.8	25.0	4.6	3.2
255413.....	Subsoil.....	.3	2.4	4.3	61.8	24.5	3.8	2.8

PLUMMER SAND.

The Plummer sand has a surface soil of dark-gray to dull-gray sand, which averages about 6 inches in depth. The subsoil is lighter in color, consisting of a drab to bluish-gray sand which extends to a depth of 3 feet or more.

Several included areas, in the vicinity of Offerman, and southeast of Patterson, occupying slopes along small drainage ways, have a soil of gray to bluish-gray sand or loamy sand to a depth of 8 to 10 inches, underlain by a drab, light sandy loam which grades at about 20 inches into a mottled gray and yellow or rusty-brown, sticky sandy clay. The depth of the heavier subsoil is variable.

Probably the largest area of Plummer sand is mapped in the western part of the county south of Little Hurricane Creek. Other extensive areas are found 2 miles south of Mershon, 1 mile north of Mershon, and immediately west of the Little Okefenokee Swamp. The type occupies low, flat, poorly drained positions in the flatwoods section, and is found along stream courses in gently rolling parts of the county. A large number of small cypress ponds are scattered throughout the type. In general it supports a growth of longleaf pine with an undergrowth of gallberry, broom sedge, wire grass, and pitcher plant.

The type is not cultivated to any extent except in small strips along the edges of fields which are laid out mainly on better drained land. It affords some grazing for cattle during part of the year.

Most of this type is held in large tracts from which all the timber has been removed, and it is valued at \$5 to \$10 an acre.

Plummer sand, depression phase.—The surface soil of the Plummer sand, depression phase, is usually a light grayish drab sand which becomes somewhat lighter colored with depth, but in some areas the color is dark gray. The texture is also variable, ranging to a fine sand in places.

This soil is mapped in all parts of the county in irregular, flat areas which lie from one to several feet below the surrounding country. The depressions receive much seepage, and during the rainy seasons are filled with water.

This soil supports a scattered growth of cypress and occasionally some slash pine and swamp pine, with an undergrowth of myrtle, huckleberry, and water sedge. The larger areas, which occupy Johns Pond, Cross Swamp, and Zero Bay, have a thick, tangled undergrowth which renders passage extremely difficult. None of this soil is under cultivation. It is regarded as waste land by the inhabitants. Some of the larger areas afford a little pasturage during part of the year.

PLUMMER FINE SAND.

The surface soil of the Plummer fine sand is a dark-gray or drab-bish-gray fine sand, extending to an average depth of about 6 inches. The subsoil is a dull-gray to drab fine sand, somewhat lighter in color than the surface material.

This is one of the most extensive soils in the county. The largest area occurs south and southeast of Bristol, and the second largest is mapped northwest of Homestead. Smaller, typical areas are mapped in all parts of the county.

The Plummer fine sand occurs in the nearly level to slightly undulating region lying between the typical flatwoods and the upland, especially around the headwaters of streams and along their courses. Extensive areas occur entirely within the flatwoods section, and are typical of the latter. Most of the type is poorly drained, but some areas lying along the tops of low ridges have better drainage. Crawfish mounds are characteristic of this type. A noticeable feature is the large number of depressions, some rounded and others long and sinuous, that dot the surface. These depressions are wet, often containing water for long periods of time, and support a growth of cypress or sedges. They act as storage basins for water which keep the surrounding soil wet during long periods.

The Plummer fine sand formerly supported a growth of longleaf pine, but practically all of this has been removed, and the type is now cut-over land with some scattered pine and deadened stumps. The sod is largely composed of wire grass, which grows well and affords pasturage during part of the year. Pitcher plant is a characteristic growth.

This type is probably best adapted to grazing, for which it is now used. Only a few areas are cultivated. The land is valued at \$5 to \$10 an acre.

LEON SAND.

The surface soil of the Leon sand consists of a light to dark gray, loose, incoherent sand, varying from 8 to 15 inches in depth. Over much of the type the soil in the first 1 or 2 inches is medium gray, owing to the presence of organic matter. The color becomes lighter with depth, a distinct white being characteristic of the subsurface material. At an average depth of 15 inches there is a chocolate-brown to black stratum, termed "hardpan," consisting principally of sand cemented with organic matter and ferruginous compounds. When wet this layer is easily broken through, but upon drying it becomes decidedly hard and impervious. It averages about 4 inches in thickness. Beneath the hardpan the subsoil is a rusty-brown sand which becomes lighter with depth. The Leon sand as mapped may include a few small bodies of Plummer or Blanton sand.

The Leon sand occurs only in the flatwoods section of the county. The largest area is mapped in the southeastern part, in a strip extending from Race Pond in Charlton County to the Satilla River at Rawlerson Swamp and thence north to the bottom land near Zero Bay. Another large typical area is mapped along the Atlantic Coast Line Railroad between Owen and Patterson. Smaller typical bodies are scattered throughout the county. The type in general occupies broad, flat, featureless areas in which the drainage is poorly established, but some small bodies occur on low ridges, where the drainage is somewhat better. The type as a whole is better drained than the Plummer soils, which are found at a lower level. Vegetation usually suffers from drought during dry seasons and from too much moisture during wet spells. The native vegetation at present consists of a scattered growth of longleaf pine, most of the merchantable timber having been cut several years ago. The undergrowth is composed of saw palmetto, runner oak, and scattering clumps of wire grass.

Several small fields on this soil are under cultivation. Sea Island cotton, corn, oats, and potatoes are grown, and moderate yields are obtained. Most of the type is used for grazing scrub cattle. Its value for general farming is low.

The following table gives the results of mechanical analyses of samples of the soil, subsoil, and lower subsoil of the Leon sand:

Mechanical analyses of Leon sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
255420.....	Soil.....	4.9	21.6	15.0	40.0	12.1	4.4	1.7
255421.....	Subsoil.....	2.2	11.7	8.8	52.1	14.2	5.5	5.4
255422.....	Lower subsoil...	3.9	13.3	8.8	54.9	11.7	3.8	3.7

LEON FINE SAND.

The upper 2 or 3 inches of the Leon fine sand is a grayish fine sand, its moderately dark color being due to the presence of a small amount of organic matter. This dark layer is underlain by a white, loose, incoherent fine sand, which grades at any depth between 8 and 20 inches into a chocolate-brown or almost black, compact layer, termed hardpan, and composed of fine sand cemented with organic matter and iron salts. This hardpan layer is 4 to 8 inches in thickness and underlain by rusty-gray or whitish fine sand which becomes whiter with depth. The surface soil often appears quite dark because of the moisture. Included with the type are small areas of soil that resemble the Plummer fine sand.

The Leon fine sand occurs throughout the flatwoods section of the county. The largest area is mapped southwest of Hoboken. Typical areas are scattered throughout the county. The type occupies broad, level areas and in some cases low ridges and gentle slopes along drainage courses. Small cypress ponds dot the surface and drainage is poorly established, although better than that of the adjoining Plummer soils.

The original forest of longleaf pine has practically all been removed. The undergrowth is composed of saw palmetto, runner oak, sorrel, and some wire grass. Small areas are under cultivation to Sea Island cotton, corn, oats, and garden vegetables. Yields vary widely with the weather, the cultural practices, and the fertilization. Most of the type is used for pasture. Its selling price depends largely upon the location and improvements, and ranges from \$5 to \$20 an acre.

SUSQUEHANNA SANDY LOAM.

The soil of the Susquehanna sandy loam is a grayish to brownish-gray loamy sand to light sandy loam, changing in the lower part of the 8 to 10 inch surface-soil section to a yellowish-gray or yellow sandy loam. The subsoil is variable, but typically consists of a yellow sandy clay to a depth of about 18 inches, underlain by a heavy, stiff, plastic, mottled clay, whose base color is dull rusty red, mottled with gray, drab, and yellow. The heavy nature of the subsoil is a determining characteristic. The type as mapped in this area is not typical of the Susquehanna soils in areas farther north in Georgia.

There are some local variations throughout the type. The surface material varies from medium to coarse. Small knolls occur where the surface layer has been removed, exposing a subsoil of sticky, heavy sandy clay, mottled yellow and gray or red. Some areas have, scattered over the surface, a high percentage of small iron concretions, similar to those which are abundant in the Tifton soils. All these variations occur in areas so small that it is impracticable to make separations. There are also included with the type some patches of the Norfolk and Plummer soils.

The Susquehanna sandy loam is found in small areas throughout the county. It occurs mainly along the slopes bordering the larger streams, mainly the Alabama River and Little Hurricane Creek west of the Shiloh Bridge. Small bodies are mapped south of Big Creek, west from Tyre Bridge.

The type occupies irregular knolls, ridges, and corresponding depressions. The sharply undulating topography favors good surface drainage, but the impervious nature of the subsoil prevents the free downward movement of moisture, so that parts of the type are inadequately drained.

The Susquehanna sandy loam originally supported a heavy stand of longleaf pine, most of which has been removed. Only a small percentage of the type is under cultivation, farmed in connection with the adjoining soils.

MYATT SANDY LOAM.

The surface soil of the Myatt sandy loam consists of about 8 inches of grayish loamy sand, the top layer of which is dark from organic matter. The subsoil from 8 to 36 inches or more is a mottled gray, drab, and yellow sandy loam. The texture of the type is more or less variable, ranging from fine sand to medium sand.

The Myatt sandy loam occurs in irregular areas in the second bottoms along the Satilla and Alabama Rivers. The topography is nearly level, and drainage is not well developed over much of the type. In addition, it is subject to overflow during periods of high water.

This land was formerly timbered with a good stand of longleaf pine, but all the merchantable timber has been removed. Wire grass grows luxuriantly, and the type affords some pasturage for cattle and hogs. None of it is under cultivation.

MYATT FINE SANDY LOAM.

The top layer of the surface soil of the Myatt fine sandy loam is often very dark gray, owing to the presence of organic matter. Below this upper few inches and extending to a depth of 4 or 6 inches there is a gray loamy fine sand. The subsoil from 6 to 36 inches is a mottled drab, gray, and yellow, sticky fine sandy loam, which often becomes a plastic fine sandy clay in the lower portion. As mapped, the type is somewhat variable in color and texture and may include areas of any one of several bottom soils, which are not separated because of their intricate association and small extent.

The Myatt fine sandy loam is mapped along the river bottoms of the county, the largest areas occurring along the Satilla River between the Dowling Bridge and Trudie.

The type occupies a level terrace or second bottom more or less intersected by depressions and sloughs. These depressions are filled with water during high-water stages, and the entire bottom is sometimes overflowed during freshets. The type is usually flanked by a distinct escarpment, which separates it from the upland, except where the adjoining region is flatwoods, in which case the change in elevation is less noticeable.

Most of the Myatt fine sandy loam has been cut over, leaving a scattered stand of longleaf pine and an undergrowth of wire grass and sedge. None of the type is under cultivation, but it affords pasturage for hogs and cattle.

KALMIA FINE SANDY LOAM.

The surface soil of the Kalmia fine sandy loam consists of a grayish-brown to yellowish-brown, light fine sandy loam, which becomes pale yellow at about 6 inches and extends to a depth of 12 to 16 inches. The subsoil typically is a light-yellow, friable fine sandy loam, sometimes mottled with gray and red in the lower part. Included with the type, on account of their small extent, are numerous areas of fine sand, sand, and sandy loam. Those of sand and fine sand are found on narrow ridges slightly elevated above the surrounding type. These included patches are widely scattered in small bodies throughout the bottom lands of the Alabaha and Satilla Rivers, and none are under cultivation.

The Kalmia fine sandy loam is of small extent in Pierce County. It occurs on the terraces along the Satilla and Alabaha Rivers, the largest areas being mapped in the vicinity of the Altman Bridge over the Satilla River.

The surface is nearly level to gently undulating, but the type lies slightly above the Myatt soils and is correspondingly better drained. Water from the river seldom stands upon the surface for any length of time.

This soil supports some scattered longleaf pine and small clumps of saplings. There is a good growth of wire grass. None of the type is now under cultivation, but it could probably be used to advantage for growing the general farm crops of the region. The main drawback is the danger of high water. The land is valued at \$5 to \$12 an acre.

SWAMP.

Swamp is the term applied to alluvial areas which are wet most of the year and are subject to frequent overflow. The soil material varies from light to dark in color, and from a fine to medium sand.

Swamp is found to some extent along all the stream courses of the county. The largest areas wholly within the county are found in the eastern and southern parts in the vicinity of Zero Bay, Cross Swamp, Rawlerson Swamp, and Little Okefenokee Swamp, and along the Alabaha and Satilla Rivers. These areas support a growth of cypress, bay, slash pine, and ash, with a dense undergrowth of huckleberry, myrtle, bamboo, and water-loving grasses. Most of the virgin timber has been cut off.

The Okefenokee Swamp, which comes into one corner of the county, consists of an irregular shaped area with a thick fringe of undergrowth, slash pine, and cypress along the edge and an open, prairielike area, covered with water, and filled with aquatic vegetation beyond. Small islands are scattered throughout this prairie.

On account of its low position and liability to frequent overflows, Swamp has no agricultural value in its present condition, and it could be made suitable for crop production only by a very expensive system of ditches and levees. It is probably best suited for forestry, but care must be taken to prevent the disastrous fires overrunning the areas each year.

SUMMARY.

Pierce County is situated in the southeastern part of Georgia. It has an area of 507 square miles, or 324,480 acres.

This county lies in the flatwoods section of south Georgia—a flat, featureless plain characterized by areas of loose sandy soils and poor drainage. Small areas of rolling upland occur throughout the central and northern parts of the county. The drainage is carried by the Satilla River.

Blackshear is the county seat and largest town. The population of the county in 1910 was 10,749, all classed as rural. The county has good transportation facilities by means of the Atlanta, Birmingham & Atlantic and the Atlantic Coast Line Railroads. The public roads of the county are poor.

The climate of this region is characterized by long, hot summers and short, mild winters. The rainfall is abundant and favorable for growing all the common crops.

The agriculture of the county is relatively new, and only 60 per cent of its area is in farms. Most of the merchantable timber has been removed. The character of the agriculture is undergoing a change on account of the presence of the boll weevil. It has heretofore been almost solely dependent on cotton, but corn, oats, peanuts, and velvet beans are now important crops, and the live-stock industry is gaining in importance.

The methods of farming are steadily improving, modern equipment gradually coming into more general use. Commercial fertilizers are largely depended upon for maintaining crop production.

Besides Swamp, 17 distinct types of soil and one phase are mapped in Pierce County. They are all upland, sedimentary types with the exception of the Kalmia and Myatt soils, which occupy second bottoms, and Swamp, which occupies first bottoms.

The Norfolk sand, fine sand, loamy sand, loamy fine sand, sandy loam, and fine sandy loam are typically developed in Pierce County. The sandy loam, loamy sand, fine sandy loam, and loamy fine sand are the main agricultural types. Sea Island cotton, corn, oats, and peanuts are the most important crops on these soils.

The Tifton sandy loam is a strong, productive soil for the general farm crops of the region.

The Blanton series is represented by two types, the sand and fine sand. The fine sand is cultivated to some extent and returns fair yields.

The Plummer and Leon soils are the most extensive in the county. Their area has been cut over and they are used mostly for grazing.

The Susquehanna sandy loam is not extensive, and it is of low agricultural value.

The Myatt and Kalmia soils occupy terrace positions along streams. They are not under cultivation, on account of their liability to overflows.

Swamp is at present nonagricultural, on account of its poor drainage. It supports a mixed forest with a heavy undergrowth.



[PUBLIC RESOLUTION—No. 9.]

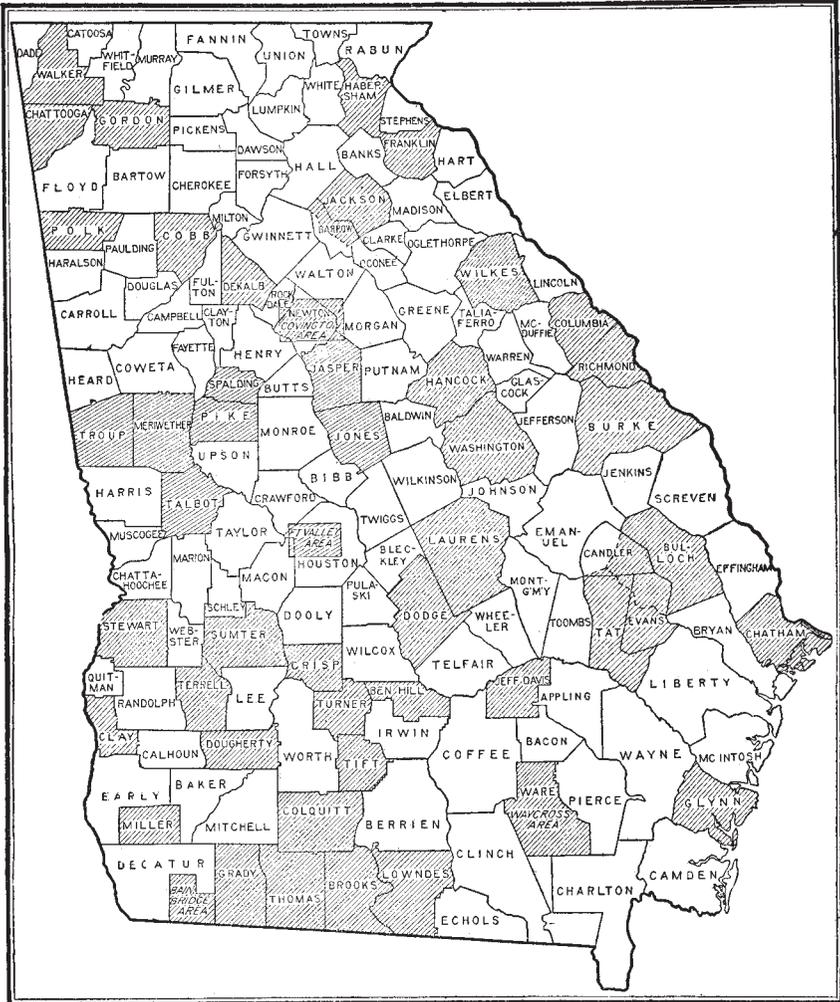
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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.]



Areas surveyed in Georgia.

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