

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE STATE OF ALABAMA, CHARLES HENDERSON,  
GOVERNOR; J. A. WADE, COMMISSIONER OF AGRICULTURE AND  
INDUSTRIES; EUGENE A. SMITH, STATE GEOLOGIST.

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SOIL SURVEY OF PICKENS COUNTY,  
ALABAMA.

BY

A. M. O'NEAL, JR., IN CHARGE, J. L. ANDRESS, AND J. M. MOORE,  
OF THE ALABAMA DEPARTMENT OF AGRICULTURE AND  
INDUSTRIES, AND E. H. STEVENS, OF THE U. S.  
DEPARTMENT OF AGRICULTURE.

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W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

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[Advance Sheets—Field Operations of the Bureau of Soils, 1916.]



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.

1917.

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## LETTER OF TRANSMITTAL.

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U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF SOILS,  
*Washington, D. C., March 3, 1917.*

SIR: Field operations of the Bureau of Soils for 1916 included a soil survey of Pickens County, Ala., undertaken in cooperation with the Alabama Department of Agriculture and Industries. The selection of Pickens County for survey was made after conference with State officials.

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 1916, as authorized by law.

Respectfully,

MILTON WHITNEY,  
*Chief of Bureau.*

Hon. D. F. HOUSTON,  
*Secretary of Agriculture.*

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# SOIL SURVEY OF PICKENS COUNTY, ALABAMA.

By A. M. O'NEAL, Jr., In Charge, J. L. ANDRESS, and J. M. MOORE, of the Alabama Department of Agriculture and Industries, and E. H. STEVENS, of the United States Department of Agriculture.—Area Inspected by W. EDWARD HEARN.

## DESCRIPTION OF THE AREA.

Pickens County is situated in the western part of Alabama, its western boundary coinciding with the Alabama-Mississippi State line. The northwestern corner of the county is 7 miles east of Columbus, Miss., and the eastern boundary about 60 miles west of Birmingham, Ala. The county is bounded on the north by Lamar and Fayette Counties, on the east by Tuscaloosa County, and on the south by Greene and Sumter Counties, being separated from Greene County by the Sipsey River. It is approximately rectangular in shape, its greatest dimensions being 37 miles from north to south and 27 miles from east to west, and embraces an area of 875 square miles, or 560,000 acres.

Physiographically, Pickens County consists of an elevated plain, thoroughly dissected by streams that have cut channels ranging from 50 to several hundred feet below the crests of the highest hills. The greater part of the county is very hilly, broken, and rough, the remainder being level or gently rolling. Along the northern and eastern boundaries the topography is rough and broken and the valley walls and slopes are steep to precipitous. In other rough areas throughout the county the hills and ridges are more or less rounded and the slopes not so abrupt. Along the southern and eastern valley slopes of Magby, Kincaide, Coal Fire, Lubbub, and Bear Creeks, and some of the other large streams the surface is decidedly rough and broken, while a narrow strip of gently rolling country, from one-half mile to  $1\frac{1}{2}$  miles wide, borders these streams on the north and west. Small, almost level to gently rolling areas occur on the broad divides throughout the county, especially near Henrys Store, Stafford, Macedonia Church, Pine Grove Church, Zion Church, Archer, Sapps, Garden, Palmetto, and Flatwoods Church. In that part of the county southwest of the

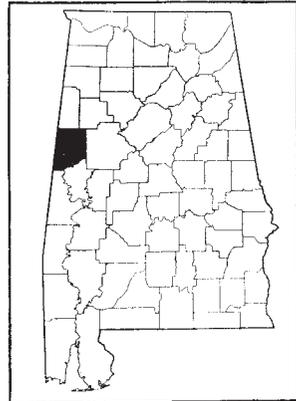


FIG. 1.—Sketch map showing location of the Pickens County area, Alabama.

Tombigbee River, locally known as the "Black Belt section," the topography is undulating to gently rolling. Broad second bottoms or terraces, in many places 4 or 5 miles wide, are developed along the Tombigbee and Sipsey Rivers, constituting the largest continuous level to undulating area in the county. Similar terraces occur along some of the larger creeks. First-bottom land is developed along nearly all the creeks and smaller streams.

Pickens County ranges in elevation above sea level from approximately 175 feet in the southwestern part to about 500 feet in the extreme northeastern corner, the elevation of the greater part of the county being between 200 and 400 feet. The elevation at Ethelsville, in the northwestern part of the county, is 415 feet and at Gordo in the eastern part, 346 feet, while at Reform, about midway between these two points, it is 308 feet. The prevailing slope of the county is southwesterly.

Most of the drainage is carried by the Tombigbee River, which flows through the southwestern part of the county. This stream has a sluggish flow and is navigable a part of each year. The level of the present flood plain is approximately 75 to 150 feet below the uplands 1 to 3 miles inland. The principal tributaries of the Tombigbee are the Sipsey River and Lubbub, Big, Coal Fire, Blubber, Bogue Chitto, and Fenache Creeks. All these streams have a rather sluggish flow, except the Sipsey River in the last 8 miles of its course. A small area in the northwestern corner of the county is drained by Magby, Ellis, Nash, and Kincaide Creeks, which flow westward. Numerous creeks and intermittent drainage ways branch through the uplands. In the rough, broken areas the run-off is often excessive. All the first bottoms are subject to overflow, but the water remains on the surface only for short periods. Drainage is poor along the more sluggish streams, especially where the forest growth is heavy. Water power was formerly developed at the old Sipsey Mill site on the Sipsey River, and at the present time water-power mills for grinding grain are operated on a few of the larger creeks.

The first settlement in the region now included in Pickens County was made near the site of the present town of Pickensville in 1817. Pickens County was formed from a part of Tuscaloosa County on December 19, 1820. While a majority of the early settlers were South Carolinians, a large number came from Tennessee, North Carolina, Georgia, and Virginia.

The population of the county, as reported in the 1910 census, is 25,055. It consists mainly of the descendants of the original settlers, although in recent years a considerable number of homeseekers have come in. A large percentage of the population is colored. Approximately one-fifth of the inhabitants live in towns, but the entire population is classed as rural. The agricultural population is rather

evenly distributed over the county. The least thickly settled regions are the northeastern and southeastern parts, while the densest settlement occurs along the railroads and in the northwestern part of the county.

Carrollton, the county seat, with a population of 444 in 1910, is located near the center of the county. Gordo, with a population of 707; Aliceville, with 640; Reform, with 550; Cochrane, 300; Pickensville, 214; Ethelsville, 200; and McShan and Dancy, with 100 each, are the principal towns. A number of other small towns occur scattered over the county along the railroads and main highways.

The Artesia-Montgomery branch of the Mobile & Ohio Railroad crosses the northern part of the county in a northwesterly direction. The Alabama, Tennessee & Northern, which runs from Reform to Mobile, connects with the Mobile & Ohio at Reform and traverses the southern part of the county in a southwesterly direction. In the extreme northeastern and southeastern corners of the county the transportation facilities are inadequate. A very small section along the northern boundary, in the vicinity of Henrys Store and Palmetto, is served by the Birmingham-Columbus Branch of the Southern Railway, which is but a few miles north of the county line. The Tombigbee River, which formerly was the principal means of transportation, is little used at present.

The county roads are generally in good condition in summer but in poor condition during the winter months. Increased interest is being taken in road improvement, however, and already two State-aid roads have been constructed. Telephones are in general use, and rural mail routes supply the greater part of the county. Churches and schools are conveniently located throughout the county.

The towns and numerous sawmill camps within the county afford a ready market for most of the farm products. Columbus, Tuscaloosa, Birmingham, and Mobile are the principal outside markets.

#### CLIMATE.

Pickens county has a temperate climate. The summers are long and warm, but the temperature rises above 100° F. only a few times in a decade. The mean summer temperature is 80.3° F. The winters are short and mild, with little snow or ice. Moderate ranges in temperature are frequent during the winter months, but severe cold spells are rare and of short duration. The mean winter temperature is 45° F. The average dates of the last killing frost in the spring and the first in the fall are March 23 and November 6, respectively, giving an average growing season of 228 days. The latest recorded killing frost in the spring occurred April 9 and the earliest in the fall, October 21.

The mean annual precipitation amounts to 49.35 inches. The rainfall is favorably distributed throughout the year. It is heaviest during the winter and spring months. Occasionally late spring rains delay the planting of cotton and corn, especially in the bottom-land areas.

The climate is well suited to a diversified system of agriculture. The most tender plants thrive during the average growing season of nearly eight months, while the hardier pasture grasses remain in good condition for at least two months longer. A number of farmers graze stock on Bermuda grass and wild cane through the entire winter. Differences in elevation may cause slight differences in climatic conditions over the county.

The data in the following table, compiled from the records of the Weather Bureau station at Tuscaloosa, which is only 33 miles from the center of Pickens County, are fairly representative of the climatic conditions in Pickens County.

*Normal monthly, seasonal, and annual temperature and precipitation at Tuscaloosa, Tuscaloosa County.*

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1900).	Snow, average depth.
	° F.	° F.	° F.	Inches.	Inches.	Inches.	Inches.
December .....	46.5	75	9	4.94	4.76	4.05	0.2
January .....	43.7	78	11	5.31	4.41	3.58	T.
February .....	44.8	83	- 7	4.98	2.21	5.54	1.0
Winter .....	45.0	83	- 7	15.23	11.38	13.17	1.2
March .....	56.0	88	17	5.78	3.71	6.08	0
April .....	63.1	94	30	4.60	1.67	15.67	0
May .....	72.1	100	40	3.50	1.24	1.43	0
Spring .....	63.7	100	17	13.88	6.62	23.18	0
June .....	78.9	103	48	4.19	1.39	13.53	0
July .....	81.3	106	59	4.45	2.76	5.18	0
August .....	80.6	105	59	3.83	6.28	.80	0
Summer .....	80.3	106	48	12.47	10.43	19.51	0
September .....	75.4	101	40	2.85	.38	3.31	0
October .....	63.4	97	30	1.86	T.	5.40	0
November .....	52.8	88	19	3.06	4.81	4.64	T.
Fall .....	63.9	101	19	7.77	5.19	13.35	T.
Year .....	63.2	106	- 7	49.35	33.62	69.21	1.2

## AGRICULTURE.

Agriculture is the leading interest of Pickens County. Homesteads were first taken up on the more desirable land along the Tombigbee River. The early methods of farming were rather crude. Cotton was then, as now, the chief money crop, fruits and vegetables being grown for home consumption. In 1818 corn was introduced into the county and four years later wheat was first sowed. The first corn mill was built near Pickensville, about 1820, and later a number of small mills for grinding corn and wheat were established along some of the creeks.

About this time the sale of land at low prices and on easy terms by the Federal Government attracted immigrants from some of the older States, who cultivated large tracts to cotton, corn, wheat, oats, fruit, and vegetables. Cattle and hogs were kept by nearly all the farmers and pastured the year round on the open range. Cotton and other products were shipped down the Tombigbee River to Mobile, where they were either sold or exchanged for commodities that could not be produced at home.

Agriculture progressed rapidly until the beginning of the Civil War. Large plantations were operated in all parts of the county, particularly in the Black Belt section, southwest of the Tombigbee River, where cotton was grown on an extensive scale. Deep plowing, subsoiling, and surface ditching were practiced. Stable manure was used, and lime was applied to a small extent. The Civil War resulted in a general demoralization of the agriculture, and only within the last 40 years have conditions begun to improve. The following table shows the acreage and production of the leading crops at the last four census periods.

*Acreage and production of principal crops, census years 1880-1910.*

Crop.	1880		1890		1900		1910	
	<i>Acres.</i>	<i>Bales.</i>	<i>Acres.</i>	<i>Bales.</i>	<i>Acres.</i>	<i>Bales.</i>	<i>Acres.</i>	<i>Bales.</i>
Cotton.....	52,651	17,283	59,949	18,904	65,726	21,485	62,184	14,000
		<i>Bushels.</i>		<i>Bushels.</i>		<i>Bushels.</i>		<i>Bushels.</i>
Corn.....	43,104	491,436	38,011	513,410	46,611	605,717	38,854	323,414
Oats.....	8,053	76,044	7,579	77,682	4,161	37,670	2,711	22,838
Wheat.....	2,220	11,985	7	70	116	860	2	2
Sweet potatoes.....	757	71,223	1,300	109,792	797	61,016	969	58,689
Irish potatoes.....		4,289	38	2,708	66	3,996	66	4,945
		<i>Tons.</i>		<i>Tons.</i>		<i>Tons.</i>		<i>Tons.</i>
Hay and forage.....	62	48	397	388	571	596	3,440	3,646

At the present time general farming is carried on, with cotton, corn, and hay as the principal crops. Oats, sugar cane, sorghum, wheat, cowpeas, peanuts, potatoes, peaches, and melons are grown on a rather small scale to meet in part the local demand.

While cotton still is the most extensively grown crop, its acreage and production have fallen off considerably in the last few years, owing to the boll weevil, and a further decline is likely until a successful means of combating this pest has been found. A number of varieties of cotton are grown. The strains that give the best results are Russells Big Boll and Texas Big Boll. The entire crop is shipped out of the county.

Corn ranks next in importance to cotton. This crop is grown on nearly every farm. With the decline in cotton production, corn is becoming more important. The larger part of the crop is utilized on the farm for feeding work stock and fattening hogs and cattle, while the remainder is ground into meal. A small acreage is cut green for ensilage. At present the supply of corn is not sufficient to meet the demand and a quantity is imported each year.

Hay is the third crop in importance. According to the census, 3,440 acres were devoted to hay and forage crops in 1909, with a production of 3,646 tons. About one-half the acreage cut is in tame grasses. In the last six years in all parts of the county north of the Tombigbee River cowpeas and sorghum or cowpeas and corn have generally been grown together. South of the Tombigbee River, in the Black Belt section, considerable attention is being paid to the growing of alfalfa and Johnson grass. The greater part of the hay is fed on the farms to work stock and cattle. Some of the alfalfa and Johnson-grass hay is sold to the sawmill camps within the county and a small quantity is shipped to Tuscaloosa and Birmingham. The production of hay is not sufficient to supply the local demand.

Both the acreage and the average yield of oats have increased within the last few years. As a rule fall-sown oats give the best yields, doing particularly well after corn and cowpeas. Where the crop follows cotton the latter is apt to be removed too late for best results. Texas Rustproof is the variety of oats most commonly sown. The oats are generally fed in the straw. A few farmers grow oats for sale to the sawmill camps in the county.

The growing of sugar cane and sorghum for making sirup has become an important industry. A fine grade of sirup is produced. The 1910 census reports 455 acres in sugar cane, producing 2,692 tons of cane, or 47,984 gallons of sirup, and 152 acres in sorghum, producing 622 tons of cane, or 7,896 gallons of sirup. The sirup is put up in 1 and 2 gallon cans and the surplus, after supplying home needs, is easily disposed of in the near-by towns.

Some hogs are raised on nearly every farm and a few farmers raise them on a commercial scale, shipping in carload lots to New Orleans or St. Louis each year. The census reports 7,410 hogs sold or slaughtered in 1909. In only a few sections of the county is the supply of pork products sufficient to meet the demand.

According to the census, 312 calves and 2,095 other cattle were sold or slaughtered in Pickens County in 1909. Cattle are usually grazed on the open range for about 10 months in each year and fed the remaining two months. The surplus animals are sold to buyers, who drive them to the nearest railroad points and ship them to Chicago and New Orleans.

Over 5,000 dairy cows are maintained in the county and the number is gradually increasing. At Reform a small dairy is operated in connection with the county high school, the products being sold locally. Increasing interest is being taken in the raising of cattle. Dipping is now compulsory and over 130 dipping vats have been erected at convenient points throughout the county. Blooded stock is being brought in by a few of the well-to-do farmers, with a view to improving the breeds of beef and milk cattle. Silos have been erected on a number of the dairy and stock farms.

The census reports 251 sheep and goats sold or slaughtered in the county in 1909. The rougher parts of the county afford a good range for sheep, which are permitted to run at large the greater part of each year.

The value of poultry and eggs as reported in the 1910 census was \$74,358. Poultry is raised on nearly every farm in the county. The products are brought to the towns and sold for cash or exchanged for merchandise. The local merchants sometimes ship the surplus poultry and eggs to Columbus and Tuscaloosa, where good prices are obtained the year round.

Peanuts, sweet potatoes, Irish potatoes, cowpeas, velvet beans, soy beans, Bermuda grass, bur clover, vetch, lespedeza, and rye are minor crops, grown in connection with cotton and corn to supply, in part, the local demand. Plums, grapes, all kinds of small fruits, and watermelons, cantaloupes, beans, and other vegetables, do well on most of the soil types. Small gardens are cultivated on nearly every farm. Pears do not thrive, on account of the blight, and the climate is not particularly well suited to the growing of apples, although the Horse and the Red and Yellow June varieties do well. Peaches yield well and a number of small orchards of this fruit are scattered over the county. Part of the crop is canned for winter use, and a small quantity is sold in the near-by towns. Very little attention is paid to the cultivation and protection of the trees. The best orchard sites are the crests of the higher ridges in the northern part of the

county. The chief difficulties in the way of the successful production of peaches are late spring frosts following earlier periods of warm weather. An average of one crop in every three years is destroyed in this way.

The farmers of Pickens County recognize that the bottom-land soils, including the Ochlockonee fine sandy loam and silt loam and the Trinity clay, where well drained, are best suited to the production of corn. The Ruston sandy loam and fine sandy loam and the Orangeburg fine sandy loam are considered desirable for corn in ordinary seasons, but in dry years the crop suffers from drought. As a rule cotton produces best on the upland soils. The areas of Ochlockonee fine sandy loam around the heads of drainage ways and along the smaller streams, locally known as "made land," are recognized as best adapted to sugar cane and the Orangeburg and Ruston fine sandy loams and the Ruston sandy loam to the production of peaches. In the Black Belt section the Houston clay and the Sumter clay are recognized as the best alfalfa soils, while the Oktibbeha clay affords the best native pasturage.

Except in the case of a few of the more progressive farmers, the present methods of soil management are practically identical with those that have been in use for years. The average tenant farmer in growing cotton allows his land to lie fallow during the winter. The next spring a middle buster is run down the old bed, throwing up a new bed over the water furrow of the previous year. Just before planting a harrow is run across the field to smooth the surface and the seed is planted on the bed. The more successful farmers, on the other hand, break the land in the fall to a depth of 4 to 8 inches with a 2-horse plow, later marking off and bedding with a 1-horse turning plow. Level cultivation is sometimes practiced. Corn land is prepared in a similar way, except that in the uplands the seed is planted in the water furrow and in the bottom lands on a bed. Cotton is cultivated 3 to 5 times and corn 2 or 3 times. Cowpeas, peanuts, and velvet beans are often planted between the rows of cotton and corn. On maturing the pods are often picked and the vines turned under to enrich the soil, although they are sometimes cut for hay. In the fall, after the corn and cotton are harvested, cover crops of oats, wheat, rye, bur clover, and occasionally crimson clover are sowed. These crops are sometimes pastured during the winter months and cut for hay the next spring, the land being then returned to cotton or corn. Bur clover gives best results after remaining on the land for two or three years.

The farm buildings range from the large substantial dwellings of the well-to-do planters to the 1 and 2 room tenant houses scattered over the county. The barns are generally ample and in a few cases large, with room for the stock as well as for the storing of hay and

feed stuffs. A few of the planters have running water in their homes and barns, the supply being furnished by small gasoline-driven pumps. Only a few rail fences remain. Most of the fences consist either of barbed wire or of barbed and woven wire combined and are in good condition. The work stock consists mainly of mules. The machinery in general use on the farms includes 1-horse and 2-horse turning plows, cultivators, cotton planters, grain drills, disk and tooth harrows, rakes, mowing machines, and manure spreaders.

More attention is now given to crop rotation than formerly. A rotation practiced to some extent is as follows: First year, corn followed by winter oats, which are harvested the next spring; second year, cotton followed by oats or some other winter cover crop; third year, corn. Where no definite rotation is used it is becoming the general rule never to use a field for the same crop two years in succession.

According to the census, 2,174 farms reported the use of fertilizer in 1909, with a total expenditure of \$67,436, or \$31.02 per farm reporting. Most of the fertilizer is applied to cotton land, but a small quantity is used for corn, oats, wheat, sugar cane, potatoes, and garden truck. For cotton a fertilizer mixture consisting of 10 per cent phosphoric acid, 2 per cent nitrogen, and 2 per cent potash is applied at the rate of about 200 to 400 pounds per acre. For potatoes and garden truck a higher grade mixture is used, consisting of 6 to 10 per cent phosphoric acid, 3 or 4 per cent nitrogen, and 4 to 9 per cent potash. Nitrate of soda is used inextensively at the rate of 500 to 1,000 pounds per acre. The price of potash has recently become so high as to be almost prohibitive, and at present very little complete fertilizer is used. A mixture of acid phosphate and cottonseed meal has in general been substituted for the complete fertilizers. Increased attention is being paid to the growing of green manures, and barnyard manure is used on corn land wherever available.

Farm laborers formerly were plentiful, but much of the labor supply has been attracted to the numerous sawmills that have been put in operation over the county within the last few years. Most of the laborers in the northern half of the county are white, negroes gradually increasing in percentage toward the south, until in the river terrace and Black Belt section they largely predominate. Monthly wages range from \$20 to \$25, with board, while day hands, employed in the cotton-chopping and picking seasons and at harvest time, are paid 75 cents to \$1.25 a day with board.

The 1910 census reports 4,144 farms in the county, of an average size of 89.4 acres.<sup>1</sup> The average area of improved land per farm is given as 36.5 acres. In the Black Belt section and around Aliceville and Pickensville there are a number of plantations ranging in size

<sup>1</sup> Each tenancy is tabulated by the census as a "farm."

from 800 to 1,500 acres. The northern half of the county is a section of small farms. In 1910, 38.9 per cent of the farms were operated by owners, 60.9 per cent by tenants, and 0.2 per cent by managers. There has been a gradual increase in the percentage of tenant farms since 1890.

Land generally is rented by the year on shares. In some localities, however, especially in the northwestern corner of the county, the farms are usually rented for cash, the rate ranging from \$2 to \$3.50 an acre. Various systems of share renting are followed. Under the arrangement most commonly employed the owner furnishes the land, implements, and stock and receives one-half the crops. Where the tenant furnishes his own stock and implements the owner receives one-third of the corn and one-fourth of the cotton produced. In both cases the cost of fertilizer is shared equally by the owner and tenant.

Land values vary according to the topography, improvements, and location with respect to towns and transportation facilities. Throughout the greater part of the county the price of land ranges from \$8 to \$35 an acre. In the Black Belt the range is from \$10 to \$40 an acre.

#### SOILS.

Pickens County lies entirely within the Coastal Plain province, a physiographic division extending along the Atlantic Ocean from Long Island to the southern end of the Florida peninsula, and thence along the Gulf of Mexico to the mouth of the Rio Grande.

The soils of the county fall into three main divisions: (1) Soils derived from unconsolidated deposits of sands, gravels, and clay; (2) soils derived from slightly consolidated, calcareous deposits; and (3) alluvial soils, derived from deposits laid down by streams.

The first group comprises all the types lying in the uplands north of the Tombigbee River. The soils here have been derived principally from unconsolidated beds of sand and clay deposited in former coastal waters over long periods of time and under varying conditions of sedimentation.

The soils of the second group, with the exception of three very small areas in the neighborhood of Pickensville, are confined to the section of the county lying southwest of the Tombigbee River. Here the soils owe their origin to the weathering of the underlying soft limestone, the Selma chalk formation.<sup>1</sup> The rock is high in calcium carbonate and, with the exception of the Oktibbeha clay, the resultant soils are highly calcareous. The parent rock often outcrops in road cuts and is exposed on the bluffs of the Tombigbee River. In the weathered state it has a pale yellowish gray to white color and in its unaltered state a bluish tint.

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<sup>1</sup> Report on the Geology of the Coastal Plain of Alabama, Geological Survey of Alabama, 1894. By Dr. E. A. Smith.

Along the Tombigbee and Sipsey Rivers and the larger streams of the county broad belts of alluvial soils are developed. These soils are derived from both old and recent deposits laid down by the streams during periods of overflow. The material in the first bottoms is quite recent and is gradually being added to, while that upon the second and third bottoms, or terraces, has undergone considerable weathering.

While the sediments giving rise to the soils of the county were being laid down they underwent considerable change through the sorting action of stream currents, waves, and tides, and since their elevation above sea level they have been greatly modified by erosion, oxidation, aeration, and the action of plant and animal life. This has resulted in materials of widely differing characteristics, giving different types of soil. The various kinds of soil are classified into types, and the types are grouped in series, which include types having common characteristics in origin, color and structure of the surface soil and subsoil, topography, and drainage conditions. The soils derived from unconsolidated sands, clays, and gravels are included in the Norfolk, Orangeburg, Ruston, Greenville, and Susquehanna series; those derived from the weathering of the underlying soft limestone in the Houston, Oktibbeha, and Sumter series; and the alluvial soils in the Amite, Cahaba, Kalmia, Ochlockonee, and Trinity series.

The types in the Norfolk series are characterized by light-gray to grayish-yellow surface soils and yellow, friable subsoils. The soils of this series occupy nearly level to rolling uplands throughout the Coastal Plain. Only one type of this series, the silt loam, occurs in this county.

The Orangeburg series includes types with gray to reddish-brown surface soils and red, friable clay subsoils. One type, the fine sandy loam, is mapped in Pickens County.

The surface soils of the types in the Ruston series are gray to grayish brown and the subsoils reddish brown to yellowish red or reddish yellow. The series is represented in the county by two types, the sandy loam, with a hilly and a gravelly phase, and the fine sandy loam, with a hilly phase.

The Greenville soils are closely associated with those of the Orangeburg series in point of distribution and formation. The soils are characterized by a dark-brown to reddish-brown color, and the subsoils are generally a deep-red to slightly brownish red sandy clay. The series occupies level to very gently rolling areas in the Coastal Plain uplands. One type, the loam, is mapped in Pickens County.

The Susquehanna series includes types having gray to reddish-brown surface soils and mottled red, gray, and yellow, plastic, heavy clay subsoils. Red is generally the predominating color in the subsoil. In many places mottlings of gray, yellow, brown, and purple

occur in the lower part. Iron concretions are sometimes encountered throughout the 3-foot soil section. This series is represented in Pickens County only by the fine sandy loam, hilly phase.

The Houston soils are brown to dark brown or almost black in the surface section, with a lighter colored, heavy, tenacious clay subsoil. They are calcareous and in many places concretions of lime carbonate are scattered throughout the entire soil section. One type, the clay, is mapped in this county. It is derived from the weathering of the underlying soft limestone.

The types included in the Oktibbeha series prevailingly have dull-brown to yellowish-brown surface soils and yellowish-brown to mottled yellow, gray, and red, plastic silty clay subsoils. The members of this series are developed in close association with the Houston soils and are derived from or modified by the underlying soft limestone, although they are very seldom calcareous, showing a reaction only below the depth of 3 feet or more. Two types, the fine sandy loam and clay, are mapped in this survey.

The Sumter series includes types having yellow to pale yellowish gray surface soils and subsoils that are slightly brighter in color and contain an abundance of partially weathered limestone fragments. Some shells and fragments of lime carbonate are often encountered in the surface soil. The soils of this series are derived from the breaking down and weathering of the underlying soft limestone. One type, the clay, is encountered in this survey.

The types of the Amite series have reddish-brown to brown surface soils and reddish-brown to red subsoils. These soils occur on stream terraces lying above normal overflow. The fine sandy loam is the only representative of the series in Pickens County.

The surface soils of the types classed in the Cahaba series are prevailingly reddish brown to brown and the subsoils yellowish red to reddish brown. The material forming these soils consists principally of wash from the Coastal Plain soils, with an admixture of Appalachian-Piedmont sediments. The soils of this series occupy old stream terraces that now lie above ordinary overflow. There are three types developed in this county, the fine sand, fine sandy loam, and clay loam.

The Kalmia series includes types characterized by the grayish-yellow to gray color of the soils and the yellow to yellow and gray color of the subsoil. The soils of this series are developed on alluvial terraces lying largely above overflow. Like the associated Cahaba soils, they are derived from a mixture of Coastal Plain and Appalachian-Piedmont material. They differ from the Cahaba soils in that the subsoils are more poorly drained and less thoroughly oxidized. The fine sandy loam is the only type mapped in this series in Pickens County.

The Ochlockonee series includes types with dark-gray to brownish surface soils and a brownish to mottled brown, gray, and yellow subsoil. These soils occupy the first bottoms along streams and are subject to overflow. They are composed of reworked Coastal Plain material. Three types, the fine sandy loam, silt loam, and clay are mapped in this survey.

The surface soils of the types classed in the Trinity series are predominantly dark brown to black. The subsoils are generally slightly lighter brown, although the dark-brown to black surface color may extend to a depth of 3 feet or more. Both surface soil and subsoil are quite plastic and sticky when wet, but bake and disintegrate when dry, owing to the high lime content. The organic-matter content also is high. These soils are derived mainly from material washed from the associated Houston soils. The clay is the only type of the series mapped in this survey.

In the following table are given the actual and relative extent of the various soils mapped in Pickens County.

*Areas of different soils.*

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ruston fine sandy loam . . . . .	141,824	} 36.0	Norfolk silt loam . . . . .	11,200	2.0
Hilly phase . . . . .	59,840		Ochlockonee clay . . . . .	11,200	2.0
Susquehanna fine sandy loam, hilly phase . . . . .	97,344	17.4	Houston clay . . . . .	6,208	1.1
Ochlockonee fine sandy loam . . . . .	54,336	9.7	Trinity clay . . . . .	4,928	.9
Kalmia fine sandy loam . . . . .	36,800	6.6	Cahaba fine sand . . . . .	2,880	.5
Ruston sandy loam . . . . .	5,952	} 6.0	Greenville loam . . . . .	2,240	.4
Hilly phase . . . . .	22,208		Cahaba clay loam . . . . .	1,600	.3
Gravelly phase . . . . .	5,184		Oktibbeha fine sandy loam . . . . .	1,408	.3
Ochlockonee silt loam . . . . .	32,704	5.8	Sumter clay . . . . .	1,216	.2
Cahaba fine sandy loam . . . . .	25,792	4.6	Amite fine sandy loam . . . . .	768	.1
Oktibbeha clay . . . . .	19,136	3.4			
Orangeburg fine sandy loam . . . . .	15,232	2.7	Total . . . . .	560,000	.....

NORFOLK SILT LOAM.

The surface soil of the Norfolk silt loam consists of a light-gray to pale yellowish gray silt loam, grading at a depth of 4 to 6 inches into a grayish-yellow to yellow, rather heavy silt loam, which extends to a depth of 10 to 12 inches. The subsoil is a yellow, friable silty clay loam or clay, more or less mottled with gray in the lower part. Noticeable quantities of soft iron concretions occur below 24 inches. In the more level areas, where drainage is deficient, the gray mottlings are most pronounced, while in the rolling areas, where the under-drainage is good, the yellow or cottonseed-meal colored clay extends to a depth of 3 feet or more. The content of very fine sand is quite

high in the surface soil and in a few places the type includes small areas of Norfolk very fine sandy loam.

The Norfolk silt loam is confined to the uplands north and east of the Tombigbee River. It is most extensively and typically developed in the extreme northwestern corner of the county and around Sapps, where it occupies the broader, nearly level divides. Other conspicuous bodies occur in the neighborhood of Archer and between Sapps and Garden. Small isolated areas are scattered throughout the uplands.

The topography ranges from flat to gently undulating. Drainage is often deficient in the level, flatter areas and a number of open ditches have been constructed. Where the surface is gently rolling to undulating, drainage is generally good.

The Norfolk silt loam is considered a valuable soil and approximately 95 per cent of it is under cultivation. Where forested it supports a tree growth consisting mainly of shortleaf pine, red oak, white oak, Spanish oak, and dogwood, with some hickory and gum. Lespedeza, broom sedge, and Johnson grass grow wild over uncultivated fields, affording good pasturage for a few years.

Cotton, corn, oats, and hay are the principal crops. Cotton is the money crop and occupies the largest acreage, while corn is second. Sugar cane, sorghum, wheat, rye, cowpeas, velvet beans, melons, peanuts, sweet potatoes, Irish potatoes, and all kinds of garden truck are grown on most of the farms. In the northwestern corner of the county, near the Mississippi State line, Irish potatoes are grown as a money crop, the product being hauled to Columbus.

Cotton yields from two-thirds to three-fifths bale per acre, corn 15 to 40 bushels, oats 15 to 40 bushels, Irish potatoes 200 to 300 bushels, hay 1 to 2 tons, and sugar cane 200 to 300 gallons of sirup.<sup>1</sup>

The soil is generally well handled. Many of the farmers practice definite crop rotations. A rotation in general use is as follows: First year, corn, with velvet beans planted between the rows, followed by oats; second year, cotton followed by winter oats; third year, cowpeas for hay. Bur clover is sown in small fields by most farmers. The land is usually plowed in the fall.

Irish potatoes are fertilized with a mixture of cottonseed meal and potash. Of the varieties of potatoes grown the Early Rose and Early Triumph seem to give the best results. Two crops are easily grown each year. The methods of fertilization followed on the Ruston fine sandy loam can be used equally well on this type.

Land of the Norfolk silt loam is valued at \$15 to \$35 an acre.

This soil is deficient in organic matter, which can be supplied by plowing under stable manure and green-manure crops. The application of lime would also prove beneficial. The poorly drained, flatter

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<sup>1</sup> The yields given in this report are based on information obtained from farmers.

areas should be ditched to insure better drainage. Deeper plowing, especially in the fall, and more thorough preparation of the seed bed are necessary for best results. Cultivation and plowing on this type must be carried on when the soil is in the proper moisture condition, as it has a tendency to clod if plowed when too wet. It is well to harrow immediately after plowing, in order thoroughly to break all clods.

ORANGEBURG FINE SANDY LOAM.

The surface soil of the Orangeburg fine sandy loam consists of a light-brown to grayish-brown loamy fine sand, grading at a depth of 5 to 7 inches into a brownish-yellow to yellowish-red, light fine sandy loam, which extends to a depth of 9 to 12 inches. The subsoil is a bright-red friable fine sandy clay, retentive of moisture. In uncultivated areas the upper 2 inches of the surface soil generally has a dark-brown color, while throughout the cultivated bodies there are small patches that have a reddish-brown surface soil. Included with this type are areas of the Orangeburg and Ruston sandy loams that are too small to separate on a map of the scale used.

The Orangeburg fine sandy loam is developed mainly in small, scattered areas throughout the uplands north and east of the Tombigbee River. It generally occurs on the crests of the broader ridges and near the break to the river terraces. The largest bodies are encountered around Aliceville, Garden, and Bethany, and west of Union Chapel. The topography is gently rolling to rolling, and surface drainage is good.

The greater part of this type, probably 85 per cent, is under cultivation. The remainder supports a forest consisting of shortleaf pine, red oak, white oak, post oak, Spanish oak, hickory, dogwood, and chestnut.

The Orangeburg fine sandy loam, although inextensive, is an important type. Cotton is the principal money crop and occupies the largest acreage. Under ordinary methods cotton yields one-third to three-fourths bale per acre, although by the liberal use of commercial fertilizer as much as 1 bale to the acre is obtained. Corn, which ranks second in importance, yields ordinarily 15 to 25 bushels per acre, and with the application of nitrate of soda at the rate of about 75 pounds per acre, 30 to 60 bushels. Oats, cowpeas, beans, bur clover, velvet beans, watermelons, cantaloupes, sugar cane, peanuts, and all kinds of garden truck do well and are grown for home use. Peaches are particularly well adapted to this type. A few hogs and some cattle are raised.

The value of land of the Orangeburg fine sandy loam ranges from \$10 to \$30 an acre, according to the improvements and to the location with respect to railroads and towns.

Methods of improving the Ruston fine sandy loam apply equally well to the Orangeburg fine sandy loam. Under similar climatic conditions a good grade of cigar-filler tobacco has been grown elsewhere on this type, and the cultivation of alfalfa has proved successful. In central Mississippi and northeastern Texas tomatoes are grown on a commercial scale on this type.

#### RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a gray to light grayish brown loamy sand, 8 to 12 inches deep. The subsoil is a reddish-brown, heavy sandy clay loam to sandy clay. Included with this type are a few areas of Orangeburg sandy loam too small to separate on the map.

The Ruston sandy loam is confined mainly to the extreme northeastern and southeastern corners of the county. A few small areas occur north of Reform and along Lubbug and Wild Goose Creeks and Hog Branch. The type usually occupies the crests of the broader divides and ridges, lying 125 to 200 feet above the nearest stream valleys. The topography is undulating to rolling and surface drainage is good. The subsoil is friable, but retentive of moisture.

The Ruston sandy loam is not extensively developed, but practically all of it is under cultivation. The forested areas support a growth of white oak, post oak, red oak, Spanish oak, hickory, pine, poplar, and dogwood.

Cotton and corn are the principal crops. All of the corn, except a small quantity utilized for making meal, is fed to the work stock and to the few hogs and cattle found on the farm. Milch cows are kept by most of the farmers. Watermelons, cantaloupes, strawberries, grapes, and all kinds of garden truck do well. Very good yields of cane sirup are obtained. Owing to the favorable elevation of the greater part of the type, which lies 350 to 500 feet above sea level, it is especially well suited to the production of peaches. The varieties that give the best results are the Elberta, Carman, White Chinese Cling, and Belle of Georgia, which mature between July 10 and 25. Wheat is grown on a small scale by most farmers for making flour for home use.

Cotton yields from one-third to three-fourths bale per acre, corn 15 to 25 bushels, wheat 10 to 15 bushels, and oats 10 to 20 bushels. Sugar cane yields 150 to 200 gallons of sirup per acre.

This soil responds readily to cultivation, and can be improved by the methods suggested for the Ruston fine sandy loam. Winter cover crops should be grown more extensively to prevent wash, and more attention should be paid to terracing the fields.

Land of this type sells at \$10 to \$25 an acre, according to improvements and location.

*Ruston sandy loam, hilly phase.*—The Ruston sandy loam, hilly phase, consists of a grayish-brown to light brownish gray loamy sand, 12 to 18 inches deep, underlain by a reddish-brown, heavy sandy loam to sandy clay. In the rougher areas a very few small quartz pebbles occur scattered over the surface and through the surface soil. In extensive areas east and southeast of Palmetto large, ferruginous sandstone slabs are scattered over the surface and throughout the entire soil section in sufficient quantity to make boring almost impossible. Such areas are shown on the map by rock-outcrop symbols.

This phase is confined to the extreme northeastern corner of the county, the largest connected bodies occurring around the headwaters of Lubbub Creek. The surface is rough and hilly and is characterized by steep slopes. Drainage is good to excessive and crops suffer during periods of drought.

The Ruston sandy loam, hilly phase, is inextensive and not of great importance. Almost all of it is forested, mainly with post oak, white oak, red oak, hickory, shortleaf pine, and dogwood. The cultivated areas occupy the lower, more gentle slopes and a few narrow ridges. The same crops are grown as on the Ruston fine sandy loam, but the yields are lower. The cutting of timber is quite an important industry on this phase at present.

The same methods that are used to improve the Ruston fine sandy loam, hilly phase, are applicable to this soil. The land should be left in forest, as it erodes very badly when cleared. Bermuda grass and other grasses do well, and the best agricultural use of the phase is as pasture land.

*Ruston sandy loam, gravelly phase.*—The Ruston sandy loam, gravelly phase, consists of a gray to grayish-brown loamy sand to light sandy loam, 8 to 12 inches deep, underlain by a yellowish-red to reddish-brown, friable sandy clay, which extends to a depth of 36 inches or more. Large quantities of small, rounded quartz gravel lie on the surface and are mixed with the soil and subsoil.

This phase is developed in small areas in all parts of the upland north of the Tombigbee River. It occurs generally on the lower slopes to streams, although a few small bodies are encountered on the crests of narrow ridges.

The topography is gently rolling to slightly hilly. Surface drainage is good and in some localities inclined to be excessive, though in general the subsoil is retentive of moisture and crops do not suffer except during prolonged droughts.

The natural forest growth on this soil consists of shortleaf pine, red oak, white oak, post oak, hickory, poplar, and gum. The phase as a whole is largely unimproved, but in the southeastern part of the county, around Pleasant Grove, and in the extreme northwest corner a large part of its area is under cultivation. It is considered a good

soil for general farm crops. Cotton leads in acreage, followed by corn. Cotton yields one-half to four-fifths bale and corn 20 to 30 bushels per acre. Peanuts, cowpeas, oats, wheat, Irish potatoes, sweet potatoes, and all kinds of truck do well.

The Ruston sandy loam, gravelly phase, is handled and fertilized in much the same way as the Ruston fine sandy loam, with which it is often closely associated.

Farm land of this phase is valued at \$6 to \$15 an acre.

Owing to the open, porous structure of the surface soil and the more or less impervious nature of the subsoil, this soil washes badly, and more attention should be paid to terracing. Deeper plowing, the incorporation of more organic matter in the soil, and the use of more definite crop rotations to include nitrogen-gathering plants are recommended.

#### RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam consists of a gray to grayish-brown, loamy fine sand to light fine sandy loam, extending to a depth of 8 to 12 inches. The material usually becomes reddish yellow in color at a depth of 4 to 6 inches. The subsoil consists of a reddish-brown, yellowish-brown or yellowish-red, heavy fine sandy loam, which grades into a fine sandy clay below 24 inches. Faint mottlings of gray are often encountered in the lower part of the subsoil. In uncultivated areas the soil has a decidedly brown color in the first 2 or 3 inches, due to the presence of organic matter. In the rolling areas, where weathering and oxidation have been more complete, the subsoil is redder than usual, while in the more level areas it is prevailingly yellowish brown, and in poorly drained situations it is conspicuously mottled. Small spots scattered throughout the type, especially on knolls and along the steeper slopes where erosion has been active, have a reddish-brown surface soil. Around the heads of drainage ways in the more rolling areas there are occasional gall spots, with numerous chert pebbles and iron concretions scattered over the surface. These spots are too small to show on the map as a distinct type of soil.

The Ruston fine sandy loam is an extensive soil. With the exception of one small area at Memphis it is confined to that part of the county lying north of the Tombigbee River. It occurs generally in large, connected bodies. The towns of Gordo, Reform, Ethelsville, and Carrollton are located on this type.

The topography ranges from gently undulating to slightly hilly. Around Garden, Aliceville, Carrollton, south of Ethelsville, and at Gordo undulating to gently rolling areas are encountered. Surface drainage is generally well established, and on some of the steeper slopes the run-off is excessive, but careful terracing prevents erosion.

The subsoil is retentive of moisture and only during periods of prolonged drought do crops suffer.

The Ruston fine sandy loam is one of the important soil types of Pickens County. The larger part of it, approximately 85 per cent, is under cultivation or in pasture. Where forested it supports a growth of pine, gum, oak, hickory, dogwood, persimmon, elm, and poplar.

The principal crops are cotton, corn, oats, and hay. Cotton occupies the largest acreage, while corn is second. Oats are grown on nearly every farm, and in a few cases are grown commercially. A small number of hogs and a few head of cattle are kept on practically every farm. Wheat, bur clover, vetch, cowpeas, all kinds of garden truck, watermelons, and cantaloupes are grown on nearly every farm for home use. No special crops are produced commercially on this type. Peaches are grown in a small way. The best results with this fruit are obtained in the northern part of the county, where the orchards occupy the crests of the higher ridges. The varieties that give the best results are the Elberta, Carman, White Chinese Cling, and Belle of Georgia. The type is well suited to the production of strawberries, and dewberries, blackberries, and plums grow wild. On one farm on this type in the extreme northwestern corner of the county Irish potatoes are grown on a commercial scale. Two crops are grown in a year. The potatoes are of very fine quality and have a smoother skin than those grown on the associated Norfolk silt loam. The varieties of potatoes that do best are the Triumph and Early Rose.

Under ordinary methods of cultivation cotton yields from one-third to one-half bale per acre. With heavy fertilization or manuring as much as 1 bale per acre is obtained. Corn yields 12 to 35 bushels, oats 15 to 20 bushels, and hay crops from 1 to 2 tons per acre. Sweet potatoes yield from 200 to 300 bushels, sugar cane 200 to 400 gallons of sirup, and wheat 12 to 20 bushels per acre.

The Ruston fine sandy loam is easily tilled. It does not clod when plowed too wet or bake upon drying. Its productiveness is easily maintained under ordinary methods of cultivation, and can be increased by improved methods, such as are practiced by some of the more progressive farmers.

Until the last few years large quantities of commercial fertilizers were used on this type, but at present, owing mainly to the high price of fertilizer, home mixtures and stable manure are largely depended upon.

The price of land of the Ruston fine sandy loam type ranges from \$8 to \$40 an acre, depending upon the improvements and the location with reference to towns and railroads.

The Ruston fine sandy loam is generally deficient in organic matter. This should be supplied by growing and turning under green-manure

crops and by adding stable manure. A definite system of crop rotation in which the legumes have an important part should be practiced. Yields are greatly increased by deeper plowing and more thorough preparation of the seed bed. Liming is also beneficial. Terracing is very important, even on the more gentle slopes.

The excellent condition of a number of fields of wheat observed on this type during the progress of the survey indicates that this soil is well adapted to this grain. The varieties that give the best results are the Blue Stem and Red May. The production of peaches on a commercial scale would be profitable if a suitable market could be provided. The results obtained with Irish potatoes on this type indicate that this industry also could be advantageously extended.

*Ruston fine sandy loam, hilly phase.*—The Ruston fine sandy loam, hilly phase, consists of a light-brown to grayish-brown loamy fine sand to light fine sandy loam, 8 to 16 inches deep, underlain by a reddish-brown to yellowish-red fine sandy clay. Quartz gravel generally occurs scattered sparingly through the surface soil and subsoil. As a whole the hilly phase has a deeper surface soil than the main type. Patches of soil having fragments of ferruginous sandstone on the surface and in the soil and subsoil, as well as a few small gravel areas, are scattered through this phase of the Ruston fine sandy loam. Where sufficiently large and conspicuous these are shown on the map with rock outcrop and gravel symbols.

The Ruston fine sandy loam, hilly phase, is extensively developed over the northern two-thirds of the county, occurring in large, connected bodies. It differs from the Ruston fine sandy loam mainly in topography. As a rule the typical soil occupies the broad crests of ridges, merging into the hilly phase on the steeper slopes. In places the lines separating the two soils on the map are necessarily rather arbitrary. The surface is strongly rolling to rough and hilly, much of the land being too steep for profitable cultivation. Surface drainage is good to excessive. Cultivated fields are often injured by erosion and crops suffer during periods of drought. The greater part of the phase supports a forest growth consisting of shortleaf pine, oak, hickory, gum, persimmon, maple, dogwood, poplar, and chestnut.

Most of the farms on this phase are operated by the owners. Practically the same crops are grown, and in the same relative proportions, as on the typical soil. The average number of hogs and cattle raised is somewhat larger. Peaches, watermelons, cantaloupes, peanuts, and all kinds of small fruit do well. The cutting and milling of pine timber has developed into an important industry. Yields are somewhat lower on the phase than on the typical soil. The methods of handling and fertilizing the two soils are similar.

Land of the Ruston fine sandy loam, hilly phase, is valued at \$6 to \$15 an acre, the price depending upon the location and improvements.

Erosion is the most serious problem with which the farmers on this phase have to cope. More attention should be paid to the building of terraces and the growing of winter cover crops. The more hilly areas should be left in forest. Bermuda grass does well on this soil and is a good binder as well as an excellent pasture grass. Deeper plowing and more thorough preparation of the seed bed should be employed to increase the capacity of the soil to absorb and hold water. The addition of larger quantities of organic matter is essential.

#### GREENVILLE LOAM.

The Greenville loam consists of a dark-brown to reddish-brown loam, 8 to 12 inches deep, underlain by moderately friable, dark-red clay. Throughout the type there are areas of Greenville fine sandy loam too small to map. In the small, sinklike depressions the surface soil approaches a silt loam.

The Greenville loam is not extensively developed. The largest bodies are encountered in the vicinity of Garden, while a few small areas occur between Pickensville and Sapps and near Union Chapel. Two small bodies are developed near Union School, one near the headwaters of Magby Creek, and one near Archer. The town of Pickensville is located on the Greenville loam.

This soil occupies broad divides and has a nearly level to gently rolling topography. Drainage generally is well established. The open structure of the soil allows the excess moisture to percolate readily and the gentle slope favors ready run-off. The subsoil, although heavy and retentive of moisture, is slightly pervious.

The Greenville loam is among the most productive upland soils north of the Tombigbee River, and practically all of it is under cultivation. Cotton, corn, oats, and hay are the principal crops, ranking in the order named. Cowpeas, velvet beans, sweet potatoes, Irish potatoes, bur clover, peanuts, crimson clover, and rye do well and are grown on a small scale. Watermelons, cantaloupes, sugar cane, and all kinds of vegetables are grown on nearly every farm to supply the home demand. Most of the corn, oats, and hay is fed to the work stock on the farms, some of the corn being utilized for fattening cattle and hogs. Large numbers of hogs are raised. The surplus meat is sold in the near-by towns and to farmers in other sections of the county. Milch cows are kept on most farms.

Cotton yields ordinarily one-half to three-fourths bale per acre, although much larger yields have been obtained. Corn yields 30 to 50 bushels, oats 16 to 35 bushels, and hay 1 to 2 tons per acre.

The soil is handled and fertilized in practically the same way as the Ruston fine sandy loam. Commercial fertilizer is used on most of the farms. The type as a whole is plowed deeper and more thoroughly cultivated than the associated Ruston and Orangeburg soils, and more attention is paid to crop rotation.

The value of land of the Greenville loam ranges from \$25 to \$50 an acre, depending upon improvements and location.

The Greenville loam responds readily to good farming methods and is easily maintained in a high state of productiveness. Deeper fall plowing, more thorough tillage, the incorporation of larger quantities of organic matter, and the use of rotations to include leguminous crops should be practiced. During prolonged dry spells frequent shallow cultivations will prove beneficial. In some of the flatter areas surface ditching or tile drainage would give good results. In other counties, where climatic conditions are similar alfalfa does well on well-drained areas of this type.

#### SUSQUEHANNA FINE SANDY LOAM, HILLY PHASE.

The surface soil of the Susquehanna fine sandy loam, hilly phase, consists of a grayish-brown, light fine sandy loam, 6 to 8 inches deep. The subsoil is a heavy, plastic, tenacious, brownish-red to yellowish-red clay, mottled with steel gray and yellow in the lower part. Small mica flakes are abundant throughout the subsoil, in many places giving it a smooth, greasy feel. When wet the subsoil is exceedingly sticky and plastic, but on drying it becomes stiff, baking and cracking into angular lumps in road cuts. Over the upper slopes, where erosion has been most active, the surface soil is shallower than usual and has a brown to reddish-brown color. This is particularly true where the type is under cultivation. In forested areas the surface soil in the upper few inches has a dark-brown color, due to the presence of organic matter. Around Olney and near Pleasant Grove the surface soil passes directly into the mottled red, yellow, gray, and purple clay. Iron concretions usually occur on the higher elevations, and fragments of iron crust are thickly scattered over a few small areas, which are indicated on the map by outcrop symbols. On the slopes the surface soil is often deeper than elsewhere.

The Susquehanna fine sandy loam, hilly phase, is an extensive type. It occurs in both large, connected bodies and small, isolated patches over that part of the county lying north of the Tombigbee River. The largest connected areas are encountered around Olney, Liberty Church, Hebron Church, along the east side of Lubdub Creek, near Carrollton, and northeast of Ethelsville. Smaller areas are developed in the neighborhood of Spring Hill Church and along Magby and Kincaide Creeks.

The topography is rough and broken, consisting of a succession of narrow, winding ridges and deep, V-shaped stream valleys, with steep slopes. Only two small areas, one in the neighborhood of Palmetto and the other north of Mill Branch School, have a gently rolling surface. The surface drainage is sufficient, but the clay subsoil retards underdrainage. Notwithstanding this, the phase is inclined to be droughty during prolonged dry spells.

This phase is not very important from an agricultural standpoint. Only about 10 per cent of it is under cultivation. The native timber growth consists principally of shortleaf pine, with some gum, red oak, white oak, Spanish oak, hickory, dogwood, and cucumber.

The principal crops are cotton, corn, and hay. Cotton occupies the largest acreage. Peanuts, oats, potatoes, cowpeas, sugar cane, wheat, and vegetables are grown for home use. A few hogs are raised. The cutting of pine timber is the most important industry on this phase, and has reached very large proportions. The timber is sawed at the numerous sawmills scattered over the county and hauled to the nearest railroad points, where it is shipped to northern and western markets.

Yields on the Susquehanna fine sandy loam, hilly phase, are lower than on the Ruston fine sandy loam and sandy loam, although naturally it is a strong soil. Soon after the Civil War wheat was grown on this soil and gave yields of 15 to 20 bushels per acre. Shallow plowing, clean cultivation, and the lack of crop rotation have reduced the yields, and some farms have been abandoned. Very little commercial fertilizer is used. Stable manure, wherever it can be obtained, is applied to the corn land.

Land of this phase sells at \$2 to \$20 an acre, the price varying with the improvements and location. The land should be left in forest, as it gullies and washes badly when cleared. With proper care a stand of pine timber can be grown every 15 or 20 years. Where the soil is cultivated, methods should be employed that will improve its physical condition and increase its power to hold moisture. Deeper plowing, especially in the fall, is advisable. Winter cover crops should be grown, and definite rotations, with the plowing under of green manures, is very essential.

#### HOUSTON CLAY.

The surface soil of the Houston clay, locally known as "black prairie land," is a grayish-brown to dark-brown, heavy clay, 6 to 8 inches deep. The subsoil to a depth of 36 inches is a light-brown, grayish-brown, or olive-green, stiff, adhesive silty clay to clay, becoming heavier with depth. In areas where erosion has not been active the surface soil is dark brown to almost black. When dry or

moderately moist the soil is crumbly, but it becomes quite plastic and sticky when wet. The type is generally calcareous and concretions of lime carbonate are present in many places in the soil and subsoil. In places the subsoil passes into the rotten, white, calcareous rock within 3 feet of the surface.

Scattered throughout the type, particularly on the knolls and steeper slopes, are a few small areas in which lime-carbonate concretions and fragments are scattered in abundance over the surface and throughout the entire 3-foot section. These concretions are generally more abundant in the lower subsoil, where the entire soil mass is in places made up of the partially weathered parent rock. Such spots are locally known as "buckshot land."

With the exception of one small area near Pickensville, the Houston clay is confined to that part of the county lying southwest of the Tombigbee River. It occurs in large, connected bodies having generally a northwest-southeast trend and occupying the broad-crested divides and the gentle slopes to the stream courses. The topography is undulating to gently rolling. Surface drainage is good except along the lower slopes, where seepage water from the adjoining higher lying land sometimes accumulates. The run-off from the more level areas is sometimes deficient, especially where the surface is covered with grass.

The Houston clay is an important soil type, even though it is comparatively inextensive. Approximately 95 per cent of it is under cultivation. The type is naturally a prairie soil and the tree growth consists only of scattered hackberry, cedar clumps, wild-plum thickets, and osage orange (bois d'arc) planted many years ago for hedges.

The most important crops produced on this soil are hay, cotton, and corn. Cotton was formerly the principal money crop, but in recent years considerable areas have been planted to alfalfa and Johnson grass, which are now grown on a commercial scale. The bulk of the hay is used to feed the work stock on the farms, some is sold in the near-by towns, and a little is shipped to Birmingham and Mobile. All the corn is used on the farms. A few hogs and cattle are raised on most farms. One farmer in the neighborhood of Cochran ships several carload lots of hogs out of the county each year. Shetland ponies are raised on a small commercial scale.

This type is considered the best alfalfa soil in the county. With proper care three or four cuttings can be obtained each year, the yields ordinarily ranging from  $2\frac{1}{2}$  to 3 tons per acre per season. Corn yields 15 to 55 bushels and cotton one-third to one-half bale per acre. Oats, peanuts, soy beans, melilotus, wheat, and rye do well.

Care is generally exercised in handling this type to avoid working it when not in the proper moisture condition. It is a very durable

soil, but the continuous growing of cotton has impaired its productivity. It responds readily to improvement. The method used by the better farmers in preparing the land for alfalfa requires considerable care and labor. The soil is broken as deeply as possible in the fall, then harrowed and sowed to oats. The following spring after the oats are harvested, the land is disked and cowpeas are planted. The pods are in some cases picked, but the vines are turned under and the field planted to oats. The next spring the oats are plowed under and alfalfa sowed. Some farmers plant cowpeas, soy beans, and peanuts between the rows of cotton and corn. Commercial fertilizer is seldom used.

Land of the Houston clay sells at \$10 to \$40 an acre, the price varying with the location and improvements.

The soil can be improved by the incorporation of organic matter in the form of green and stable manures. The growing of leguminous crops, such as cowpeas, velvet beans, soy beans, bur and crimson clover, and alfalfa is very beneficial. Acid phosphate has given good results when used in connection with stable manure. Deeper fall plowing and the use of winter cover crops are very important.

#### OKTIBBEHA FINE SANDY LOAM.

The surface soil of the Oktibbeha fine sandy loam consists of a gray to brownish-gray loamy fine sand to light fine sandy loam, 7 to 9 inches deep. The subsoil is a yellowish-brown fine sandy clay loam which becomes heavier with depth, until at about 24 inches it grades into a heavy fine sandy clay, mottled with red, yellow, and gray. In a few very small areas the subsoil has a pronounced reddish color.

The Oktibbeha fine sandy loam is inextensive, and is confined to that part of the county southwest of the Tombigbee River. Small areas occur in the vicinity of Memphis and southeast of Cochrane, while one small body is encountered southwest of Dancy, along the Sumter County line. The topography is level to very gently rolling and the surface drainage is good.

This type is relatively unimportant and only about half of it is under cultivation. The native vegetation consists largely of oak, pine, wild plum, blackberry, and broom sedge. Under ordinary conditions cotton yields one-fourth to one-half bale and corn 10 to 18 bushels per acre. Watermelons, peanuts, soy beans, oats, and all kinds of vegetables are grown for home use and do well.

The Oktibbeha fine sandy loam is much easier to cultivate than the Oktibbeha clay. Although the soil responds well to fertilization, commercial mixtures are seldom used.

Land of this type sells for \$10 to \$15 an acre, the price depending upon the location, the improvements, and the value of the surrounding soils.

Under boll-weevil conditions this should prove to be a valuable cotton soil, as its excellent drainage favors early maturity. With intensive cultivation and the use of rotations, including leguminous crops, yields can easily be increased. Deeper plowing, especially in the fall, is advisable.

#### OKTIBBEHA CLAY.

The surface soil of the Oktibbeha clay is a brown to grayish-brown, moderately heavy silty clay loam or clay, 5 to 7 inches deep. Small bodies with a reddish-brown or dull-red surface soil are scattered throughout the type, particularly in cultivated areas where the soil covering is thin. The subsoil, to a depth of 36 inches, is a mottled yellow, gray, brown, and red, heavy, plastic clay. In areas where drainage is poor mottlings of gray and white are conspicuous in the lower subsoil. Where the type occupies knolls and higher elevations, the decomposed soft limestone is sometimes encountered within the 3-foot section. Only two such areas occur within the county. The type is locally referred to as "red post-oak land" or "red prairie."

The Oktibbeha clay is confined to that part of Pickens County southwest of the Tombigbee River. The type generally occupies broad divides, although it is sometimes encountered on the gentle slopes to streams. It occurs in large, connected bodies having a general northwest-southeast trend. The topography is flat to gently sloping. Surface drainage is sufficient, except in some of the flatter areas, where water accumulates and stands after rains. Under-drainage is poor, owing to the impervious nature of the subsoil.

Only a small part of this type is in cultivation. The remainder is forested mainly with post oak, with a scattering growth of other oaks, hickory, ash, maple, dogwood, cedar, and pine. The forested area is nearly all used as pasture.

The principal crops are cotton and corn, the larger acreage being devoted to the former. Cotton yields ordinarily one-fourth to one-half bale per acre and corn 15 to 20 bushels. Cotton yields have been greatly reduced by the boll weevil. Cowpeas, soy beans, oats, wheat, and sorghum do well. Watermelons, cantaloupes, strawberries, and all kinds of vegetables are grown for home and local use. Large areas are devoted to Bermuda grass, which supplies good pasturage during the warm months. The type is considered the best natural pasture land in the county. Lespedeza, German clover, and melilotus grow wild, and lespedeza is sometimes cut for hay. Johnson grass is sometimes sowed on this soil, and yields 1½ to 2 tons of hay per acre. A small number of cattle and hogs are raised for home use. Around Cochrane and south of Dancy there are some beekeepers, and the shipping of melilotus honey has proved quite profitable. The honey has a fine flavor and commands a high price.

The methods of handling this soil are practically the same as those employed on the Houston clay. Commercial fertilizer is used for cotton at the rate of about 200 to 300 pounds per acre.

The Oktibbeha clay is valued at \$10 to \$25 an acre, although the land has been sold for as much as \$35 an acre, owing to its association with the Houston clay.

The suggestions for improving the Houston clay apply equally well to this type, but in addition the use of lime, especially in connection with manure, would probably be beneficial. The excellent condition of a few peach orchards would seem to indicate that peaches could be grown on a commercial scale. The varieties that give the best results are the Elberta, Carman, White Chinese Cling, and Belle of Georgia. Alfalfa has been grown on this type in Lowndes County, Miss., and would probably do well in Pickens County, provided the soil were heavily limed. Under boll-weevil conditions it is very essential to cut and burn or turn under the cotton stubble. Where drainage is poor surface ditching or tiling should be resorted to.

#### SUMTER CLAY.

The Sumter clay, locally called white or light prairie, consists of a yellowish-gray to whitish clay, 5 to 8 inches deep, underlain by a pale-yellow, sticky, plastic, impervious clay, faintly mottled with white, usually below the depth of 16 to 24 inches. Small particles and fragments of the soft limestone are generally scattered over the surface and more abundantly throughout the soil and subsoil. Both soil and subsoil are decidedly calcareous. On some of the knolls the partially disintegrated parent rock is encountered within the 3-foot section, and outcrops caused by erosion are common.

Included with the type are a few small gall spots which would have been separated on the map had they been sufficiently large and numerous. Such spots occur on knolls and along the steeper slopes where erosion has been active.

The Sumter clay is developed in the Black Belt section, or that part of the county to the southwest of the Tombigbee River, and occurs in large, connected bodies having a general northwest-southeast trend. The topography ranges from gently rolling to rolling. The run-off of the rain water is rather rapid, but, owing to the impervious character of the subsoil, underdrainage is not very well established.

Practically 95 per cent of this type has been cleared and about 75 per cent of it is under cultivation. Where properly handled it is considered a valuable soil. The timber growth consists of clumps of cedar and wild plum, and a few scattered hackberry and Osage orange trees. Blackberries grow wild along the fence rows.

Hay, corn, and cotton are the principal crops. Hay crops occupy the largest acreage. Alfalfa and Johnson grass do well and are grown

on a large scale, the surplus production being shipped to near-by points and to Birmingham. The soil is well suited to melilotus. Oats, cowpeas, soy beans, velvet beans, and peanuts are also grown. A few hogs are raised.

Corn yields ordinarily from 15 to 30 bushels per acre, and cotton one-third to one-half bale. Alfalfa yields  $2\frac{1}{2}$  to 3 tons per acre per season and Johnson grass 2 to 3 tons.

The Sumter clay is handled and fertilized in practically the same way as the Houston clay. Owing to the continuous growing of cotton on the same land for many years, its productiveness has been greatly impaired.

The value of land of this type ranges from \$10 to \$30 an acre, depending upon its location with reference to railroads and towns and upon the improvements.

The Sumter clay is deficient in organic matter, which can be supplied by growing and plowing under green-manure crops. Deeper plowing, especially in the fall, and better preparation of the seed bed are very essential. Care should be exercised to plow the land under proper moisture conditions.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Sumter clay:

*Mechanical analyses of Sumter clay.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
415431.....	Soil.....	0.0	0.4	0.4	9.8	10.2	42.7	36.8
415432.....	Subsoil.....	.4	.6	.4	7.0	8.2	39.6	43.9

The following samples contained more than one-half of one per cent calcium carbonate ( $\text{CaCO}_3$ ): No. 415431, 69.18 per cent, and No. 415432, 65.36 per cent.

AMITE FINE SANDY LOAM.

The Amite fine sandy loam consists of a brown to reddish-brown, light fine sandy loam, 6 to 8 inches deep, underlain by a deep-red to slightly brownish red fine sandy clay.

The Amite fine sandy loam is confined to the third terraces of the Sipsey and Tombigbee Rivers, and occupies a position 10 to 30 feet above the Cahaba fine sandy loam. The largest bodies occur 1 to 2 miles due south of Aliceville. Two small areas are developed in the vicinity of Anna Chapel. The topography is flat to very gently sloping. Drainage is good.

Although inextensive, this type is considered a valuable one and practically all of it is under cultivation. The principal crops are cotton and corn, at least three-fourths of the cultivated area being devoted to cotton. Oats, cowpeas, velvet beans, peanuts, and water-

melons are produced, and vegetables are grown on nearly every farm to supply the home.

Cotton yields one-half to two-thirds bale per acre and corn 20 to 40 bushels.

The Amite fine sandy loam is handled and fertilized in practically the same way as the Cahaba fine sandy loam. On a number of farms a compost of leaf mold and stable manure is used. As a rule the soil is in better physical condition and in a higher state of cultivation than the Cahaba fine sandy loam.

Land of this type is valued at \$25 to \$40 an acre, depending upon the location and improvements. The suggestions given for the improvement of the Cahaba fine sandy loam apply equally well to the Amite fine sandy loam.

Mechanical analyses of samples of soil and subsoil give the following results:

*Mechanical analyses of Amite fine sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
415421.....	Soil.....	0.1	1.0	1.4	33.6	14.6	38.6	10.9
415422.....	Subsoil.....	.1	.4	.8	25.6	10.9	37.6	24.8

CAHABA FINE SAND.

The Cahaba fine sand consists of a brown, loose, incoherent medium to fine sand, 10 to 12 inches deep, underlain by a reddish-brown medium sand which extends to a depth of 3 feet or more.

This type is confined to the terraces along the Tombigbee and Sipsey Rivers. The largest bodies occur in the bend of the river southwest of Pickensville and near Cochrane Ferry. The surface is nearly level and has about the same elevation as the Cahaba fine sandy loam. Drainage is excessive. The type is overflowed only during periods of very high water.

The Cahaba fine sand is a relatively inextensive and unimportant type. Only about 20 per cent of it is under cultivation. The forest growth has been removed from much of the remainder, but owing to its low agricultural value, the land has been allowed to grow up in broom sedge, weeds, and clumps of wild plum. Where forested the type supports a scant growth of shortleaf pine, gum, and scrub oak.

Peanuts, watermelons, cantaloupes, and vegetables are the principal crops. Under conditions of sufficient moisture cotton and corn give fair yields.

This type is handled in practically the same way as the associated Kalmia and Cahaba soils. The addition of large quantities of green

and stable manures would render the soil less subject to drought and increase its productiveness.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam, to a depth of 8 to 10 inches, consists of a grayish-brown to slightly reddish brown, light fine sandy loam or loamy fine sand. The subsoil is a yellowish-red to reddish-brown, heavy fine sandy loam which grades into a fine sandy clay, faintly mottled with gray. The reddish-brown color of the subsoil is quite uniform, and the mottling becomes more pronounced in the poorly drained areas. A few areas of Cahaba sandy loam too small to separate are included with this type.

The Cahaba fine sandy loam occupies the second terraces, and in a few cases the third terraces, of the Tombigbee and Sipsev Rivers and the larger creeks, lying slightly higher than the associated Kalmia fine sandy loam. It is beyond the reach of ordinary overflows, and has an elevation of 35 to 55 feet above the normal level of the Tombigbee River and 8 to 15 feet above that of the creeks. The topography is level to very gently undulating. Drainage is generally good, and crops sometimes suffer from drought during prolonged dry periods.

About 95 per cent of this type has been cleared for years, but owing to the scarcity of farm labor not over 75 per cent of it is under cultivation at present. The forested areas support a growth of shortleaf pine, oak, dogwood, hickory, and gum.

Cotton and corn are the principal crops, the larger acreage being devoted to cotton. The boll weevil has brought about a change in the crop system and the farmers are paying more attention to the growing of food crops and produce to help supply the home demand. Sweet potatoes, watermelons, sugar cane, sorghum, and all kinds of vegetables do well and are grown on nearly every farm. Oats, cowpeas, peanuts, crimson clover, and rye are grown more extensively than formerly. Wheat, which is grown on a small scale, does well. The Velvet bean gives excellent results and is a valuable forage crop.

Cotton yields one-third to one-half bale and corn 20 to 50 bushels per acre. Oats yield 20 to 50 bushels per acre, the larger yields being obtained with the use of about 75 pounds of nitrate of soda per acre.

The Cahaba fine sandy loam is cultivated in about the same way as the upland soils. A mixture of acid phosphate and cottonseed meal is sometimes applied to cotton and corn land at the rate of 200 to 400 pounds per acre.

The price of land of this type ranges from \$10 to \$25 an acre.

The methods suggested for the improvement of the Kalmia fine sandy loam apply equally well to the Cahaba fine sandy loam. Liming is a good practice, as it sweetens the soil and improves its

physical condition. The excellent condition of a small patch of German rape observed in the course of the survey indicates that this would be a profitable crop in feeding hogs.

#### CAHABA CLAY LOAM.

The Cahaba clay loam consists of a light-brown to dark-brown, moderately friable clay loam, 8 to 10 inches deep, underlain to a depth of 36 inches by a pale yellowish brown to slightly reddish brown silty clay. In one small area near the mouth of Big Creek the subsoil grades into a fine sandy clay below the depth of 24 inches.

The Cahaba clay loam is an inextensive type. It occurs in small areas scattered throughout the second terraces of the Tombigbee River, occupying slightly lower situations than the Cahaba fine sandy loam. The largest areas are encountered north and south of Pickensville and at the mouth of Big Creek. The topography is level to very gently undulating. The type is subject to overflow in periods of extremely high water. Drainage under ordinary conditions is good, but crops are liable to injury from lack of moisture during prolonged dry periods.

Practically 85 per cent of this type is forested, the growth consisting of water oak, red oak, white oak, swamp pine, gum, hickory, beech, and ironwood. The cutting of timber is extensively carried on.

Cotton and corn are the principal crops. Corn yields 30 to 70 bushels and cotton one-third to one-half bale per acre.

This type is handled in practically the same way as the Cahaba fine sandy loam. No commercial fertilizer is used. The methods suggested for improving the associated Cahaba and Kalmia soils can be equally well applied to this type.

#### KALMIA FINE SANDY LOAM.

The surface soil of the Kalmia fine sandy loam consists of a gray to pale yellowish brown loamy fine sand, passing at a depth of 4 or 5 inches into a pale-yellow fine sandy loam, which extends to a depth of 8 to 12 inches. The subsoil consists of a yellow fine sandy clay, slightly mottled in the lower part with gray. Where drainage is poorest the mottlings are more intense than elsewhere, while in the better drained areas the material has a pale-yellow to yellow color to a depth of 3 feet or more. Included with the Kalmia fine sandy loam are a few areas of Kalmia silt loam, too small to warrant separation on the map.

The Kalmia fine sandy loam is extensively developed on the broad second terraces of the Tombigbee and Sipsey Rivers and along some of the larger creeks. The largest areas occur south of Aliceville. The surface is level to very gently sloping, and for the most part lies about 25 to 50 feet above the normal level of the Tom-

bigbee River. The type is seldom overflowed. The last flood is said to have occurred in 1892. Drainage is inclined to be inadequate, except in a few places where the type lies higher than usual, occupying a distinct third-terrace position. Water sometimes stands on the surface of the flatter areas after heavy rains.

The Kalmia fine sandy loam is a comparatively important agricultural soil, and approximately 85 per cent of it is cleared, although the cleared land is not all under cultivation at present. The natural forest growth consists of shortleaf pine, live oak, red oak, white oak, Spanish oak, maple, gum, and hickory.

Cotton is the leading crop. Corn ranks next in importance, although not enough is produced to supply the home demand. Wheat is grown by a few farmers and does well. Some hay is grown, consisting principally of a mixture of cowpeas and sorghum. A little crab grass is cut for hay. A very fine grade of cane sirup is produced on this type. Sugar cane is generally planted in the damp areas bordering the smaller drainage ways. Sorghum is grown both for sirup and forage. Watermelons, cantaloupes, sweet potatoes, Irish potatoes, peanuts, cowpeas, and oats do well. Gardens are cultivated on nearly every farm. Hogs are raised on nearly all the farms, but not enough meat is produced to supply the home demand. A few head of cattle are pastured on the type for the greater part of each year. Cotton under ordinary conditions yields one-third to two-fifths bale per acre, corn 10 to 25 bushels, and sugar cane 250 to 400 gallons of sirup.

The Kalmia fine sandy loam is cultivated and fertilized in about the same way as the Ruston fine sandy loam. Most of the type is farmed by negro tenants. The land sells for \$10 to \$25 an acre.

This soil is deficient in organic matter and the turning under of green manure is advisable. Deeper plowing, especially in the fall, more thorough preparation of the seed bed, and the use of systematic crop rotations would prove beneficial. Artificial drainage by means of tiles or ditches is necessary for best results.

#### OCHLOCKONEE FINE SANDY LOAM.

The Ochlockonee fine sandy loam, as is often the case in bottom land types, is a soil of considerable textural variation. In its typical development the surface soil is a light-brown to brown loamy fine sand to light fine sandy loam, 8 to 12 inches deep, quite high in silt content in many places. The subsoil is a gray or brown, fine sandy clay loam to fine sandy clay, mottled with yellow and rusty brown, the mottlings being most conspicuous in the more poorly drained areas. Frequently strata quite different in texture from the typical material are encountered in the subsoil.

This type is developed in the first bottoms of the Tombigbee and Sipsey Rivers and along nearly all the other streams of the county,

generally occurring in broad strips. It is subject to overflow and is poorly drained except along some of the smaller streams and in places where it occupies a position 4 to 10 feet above ordinary water level.

The Ochlockonee fine sandy loam, where well drained, is considered a valuable soil. At the present time only about half of it is under cultivation, the remainder being forested with gum, bay, pine, willow, water maple, redbud, and oak. There is a luxuriant growth of native grasses.

This type is recognized as one of the best corn soils in the county, and a larger area is devoted to this crop than to any other. Oats are grown extensively, and by many farmers on a commercial scale. Some cotton and wheat are produced, and the area devoted to the latter is gradually increasing. The soil is well suited to the production of sugar cane, from which a fine grade of sirup is obtained. Peanuts, sweet potatoes, Irish potatoes, sorghum, cowpeas, and all kinds of vegetables are grown. Sorghum and cowpeas are generally planted together and cut for hay. A few milch cows and a small number of cattle are kept on most of the farms.

Corn yields 40 to 50 bushels, oats 30 to 50 bushels, cotton one-third to one-half bale, sweet potatoes 300 to 400 bushels, and sugar cane 200 to 400 gallons of sirup per acre.

The Ochlockonee fine sandy loam is easily tilled and does not clod if plowed in a wet condition. It can be readily improved. Systematic crop rotations are practiced by a number of the farmers, and winter cover crops are planted by many. Shallow plowing is the general rule, although a few of the better class of farmers practice deep fall plowing. Commercial fertilizer is seldom used, but stable manure is applied whenever it can be obtained. In growing sugar cane an acreage application of 500 to 1,000 pounds of cottonseed meal is made. Land of this type is valued at \$10 to \$25 an acre.

In the improvement of this soil deeper plowing and more thorough preparation of the seed bed are important. Good drainage, which can be established by deepening and straightening the stream channels and leading lateral ditches into them, is essential for best results. In the northern and northeastern part of the county, where the hillsides are steep, it is sometimes necessary to ditch along the foot of the hills to prevent the inwash of sand and the accumulation of seepage water.

#### OCHLOCKONEE SILT LOAM.

The Ochlockonee silt loam consists of a grayish-brown to dark-brown silty loam, 8 to 12 inches deep, underlain by a mottled gray, yellow, and brown silty clay loam to silty clay. The subsoil in many places contains strata of light-textured material. Included with this type are some areas of Ochlockonee fine sandy loam and clay too inextensive to separate.

The Ochlockonee silt loam occurs in broad strips in the first bottoms of some of the larger and more sluggish streams. The largest areas are encountered along Coal Fire, Lubdub, and Bear Creeks. The type is subject to overflow.

Only about 15 per cent of this type is under cultivation. Most of it supports a growth of gum, oak, bay, willow, holly, hickory, and pine. Corn and oats are the principal crops, the larger acreage being devoted to the former. Mixed cowpeas and sorghum are often grown for hay. Where well drained this soil is suited to the production of all kinds of forage crops, as well as cotton.

This type is handled in practically the same way as the Ochlockonee fine sandy loam. No fertilizer is used. If protected from overflow and improved along the lines suggested for the improvement of the Ochlockonee fine sandy loam, excellent results can be obtained.

#### OCHLOCKONEE CLAY.

The Ochlockonee clay consists of brown to dark-brown, heavy clay to silty clay, underlain by a brownish, stiff, rather plastic clay, mottled with gray, rusty brown, and yellow. When dry the surface soil is moderately crumbly.

This type is developed along the first bottoms of the Tombigbee and Sipsev Rivers and some of the other large streams. The surface is generally pitted with a large number of shallow depressions and swales. The type is subject to frequent overflows. In a few small areas surface drainage is sufficient for agriculture, but over the type as a whole it is poor. All the land is in forest, consisting of cypress, hickory, and bay.

This type is naturally very rich and productive. If protected from overflow and properly drained by building levees and straightening the stream channels, it would make one of the best corn soils of the county. Wild cane grows luxuriantly over large areas and affords excellent pasturage for stock during the winter.

#### TRINITY CLAY.

The Trinity clay to a depth of 8 to 10 inches consists of a dark-brown to black, heavy, tenacious clay, underlain by a dark-brown, bluish-black, or steel-blue, very plastic, heavy clay, frequently mottled with brown below the depth of 2 feet. In many places the dark-brown to black, tenacious clay extends to a depth of 3 feet or more. When wet the soil is very sticky, but on drying it bakes and crumbles. When dry the soil is much darker than the associated Houston clay. Along a few of the smaller streams that have their sources in the Sumter clay the soil is lighter in color than usual, while in areas where drainage is poor the color of the subsoil varies from light gray to olive.

The Trinity clay is developed to a small extent in the first bottoms of streams flowing through that section of the county lying south of

the Tombigbee River. It consists largely of materials washed from the Houston and Sumter soils. In a number of areas material from the Oktibbeha soils is included.

The type lies 6 to 8 feet above the normal level of the streams and as a rule has fairly good surface drainage. It is subject to overflow. The topography is flat, with a slight gradient toward the streams.

Where well drained the Trinity clay is considered one of the strongest soils of this region. It is especially valued for its durability. Practically 85 per cent of the type is under cultivation. Corn is the principal crop. Cotton is grown in the bottoms along Bogue Chitto Creek and does well in favorable seasons, although the plant has a tendency to develop foliage at the expense of the fruit. When the season is too backward for the planting of cotton, corn can be used in its stead, as it can be planted as late as June. Johnson grass, oats, and lespedeza are grown. Alfalfa gives good results where the soil is well drained. Under normal conditions corn yields 30 to 65 bushels per acre, cotton one-half to three-fifths bale, and Johnson grass 2 to 3 tons of hay.

Great care is exercised in handling this soil, as it must be plowed under the proper moisture conditions. Fall plowing is the rule, as the overflows and freezes in the winter put the soil in good physical condition for spring seeding. The growing of cover crops and green manures is practiced by only a few farmers. Commercial fertilizer is never used.

Land of the Trinity clay is valued at \$25 to \$50 an acre.

The methods used to improve the Houston clay can be equally well applied to the Trinity clay. The use of kainit on cotton land would have a tendency to prevent rust.

#### SUMMARY.

Pickens County is situated in the western part of Alabama, bordering the State of Mississippi. It has an area of 875 square miles, or 560,000 acres.

The topography is prevailingly very rolling to hilly, with broad, level terraces along the Tombigbee and Sipsey Rivers and a few of the larger creeks and broad, flat first bottoms along all the streams.

The elevation above sea level ranges from about 175 to 500 feet, the greater part of the county having an elevation of 200 to 400 feet.

The county is drained by the Tombigbee River and its tributaries. Drainage is generally well established.

Pickens County had a population in 1910 of 25,055, all of which was classed as rural. The agricultural population, while comparatively small, is evenly distributed.

Carrollton, with a population in 1910 of 444, is the county seat, and Gordo, with a population of 707, is the largest town.

Except in the extreme northeastern and southeastern corners of the county, the transportation facilities are fairly adequate. The public roads in general are maintained in good condition during most of the year.

The climate is mild and healthful. The mean annual temperature is about 63° F. and the mean annual precipitation about 49 inches. There is an average growing season of 228 days.

The agriculture of Pickens County consists mainly of general farming. Cotton, corn, hay, and oats are the principal crops. Hog raising, cattle feeding, and fruit growing are carried on to some extent. The farm products, except cotton, are mainly used within the county. Birmingham, Tuscaloosa, Columbus, and Mobile are the principal outside markets.

The 1910 census reports 4,144 farms in the county, 60.9 per cent of which are operated by tenants and 38.9 per cent by owners. The average size of the farms is 89.4 acres. Farm lands sell for about \$8 to \$35 an acre.

Pickens County lies entirely within the Coastal Plain province. The soils are derived principally from unconsolidated beds of sand and clay deposited in former coastal waters. The soils that owe their origin to this source are included in the Norfolk, Orangeburg, Ruston, Greenville, and Susquehanna series. In that section of the county southwest of the Tombigbee River the weathering of the underlying limestone has given rise to the Houston, Oktibbeha, and Sumter soils. The alluvial soils are classed with the Amite, Cahaba, Kalmia, Ochlockonee, and Trinity series.

The Norfolk silt loam, though comparatively inextensive, is considered a valuable soil, and approximately 95 per cent of it is under cultivation. It is devoted to a wide range of crops.

The Orangeburg fine sandy loam is also an inextensive but important type. This soil is well adapted to peaches.

The Ruston sandy loam is inextensive, but practically all of it is under cultivation. Cotton and corn are the principal crops. The hilly and gravelly phases of this soil are comparatively undeveloped agriculturally.

The Ruston fine sandy loam is the most extensive and probably the most important agricultural soil in the county. It is well suited to cotton, corn, and all the other crops common to this region. The hilly phase of this type has an unfavorable topography.

The Greenville loam is a strong and desirable soil north and east of the Tombigbee River and practically all of it is under cultivation.

The Susquehanna fine sandy loam, hilly phase, is extensive, but only about 10 per cent of it is under cultivation.

The Houston clay, though inextensive, is an important soil type. Approximately 95 per cent of it is under cultivation. Hay is the

most important crop, cotton and corn ranking next. It is considered a natural alfalfa soil.

The Oktibbeha fine sandy loam is confined to the section south of the Tombigbee River. About one-half the type is under cultivation. Cotton, corn, watermelons, peanuts, soy beans, oats, and all kinds of vegetables are grown.

The Oktibbeha clay is mainly uncultivated. It is considered one of the best natural pasture types in the county.

The Sumter clay is confined to the section south of the Tombigbee River. About 75 per cent of it is under cultivation. When properly handled it is a valuable soil. Hay is the most important crop, corn and cotton ranking next.

The Amite fine sandy loam is inextensive, but practically all of it is under cultivation. At least three-fourths of the cultivated area is devoted to cotton.

The Cahaba fine sand is relatively unimportant. Only about 20 per cent of it is under cultivation. Peanuts, watermelons, cantaloupes, and vegetables are the principal crops. Drainage is excessive and the type is subject to overflows. Crop failures are common.

The Cahaba fine sandy loam occupies terraces along the Tombigbee and Sipsey Rivers and the larger creeks. It is well drained and lies above ordinary overflows. About 75 per cent of the type is under cultivation.

The Cahaba clay loam is subject to overflows in periods of extremely high water, yet during prolonged dry spells crops are likely to suffer from lack of moisture.

The Kalmia fine sandy loam is seldom overflowed and is an important agricultural type. Cotton, corn, and hay are the principal crops.

The Ochlockonee fine sandy loam is developed in first-bottom situations, subject to overflows. Where well drained it is considered a valuable soil. It is recognized as one of the best corn soils in the county.

The Ochlockonee silt loam is also subject to overflow. Only about 15 per cent of the type is under cultivation. Corn and oats are the principal crops. Where well drained it is suited to the production of all kinds of vegetables, as well as cotton.

The Ochlockonee clay remains in forest. It is naturally a very productive soil and if protected from flood and properly drained would make one of the best corn soils of the county.

The Trinity clay is developed in the first bottoms of streams south of the Tombigbee River. It is fairly well drained, but is subject to overflow. About 85 per cent of the type is under cultivation. Where well drained it is considered one of the stronger soils of the county.

[PUBLIC RESOLUTION—No. 9.]

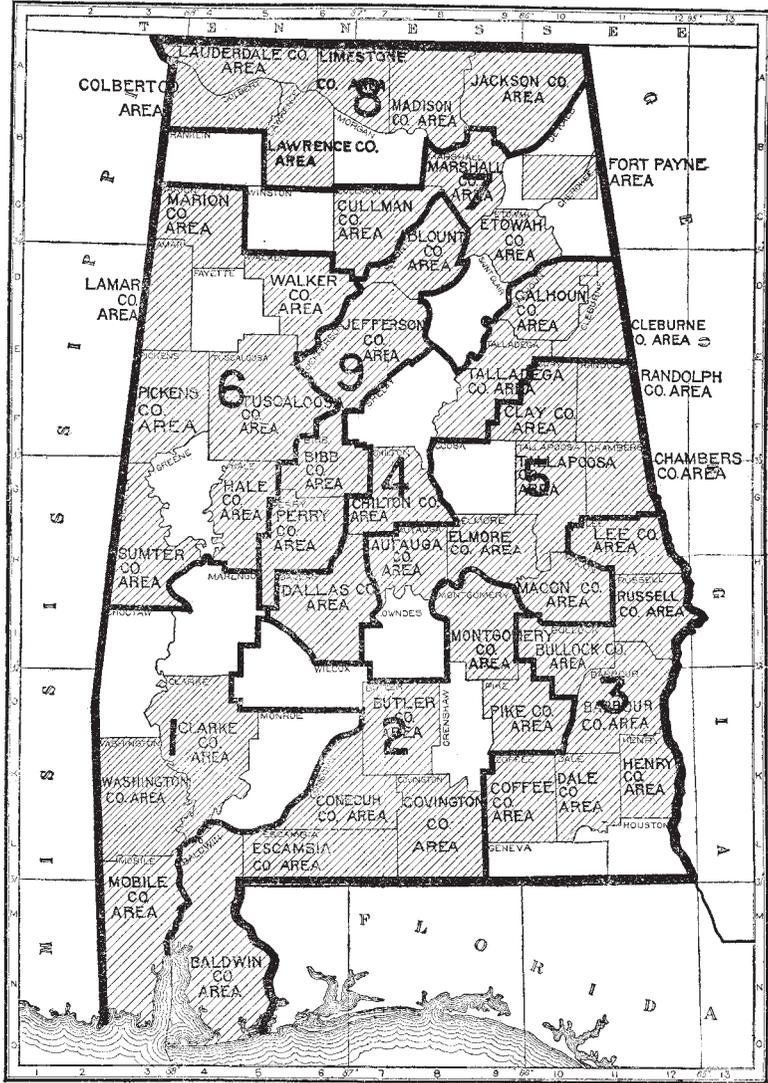
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

*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 Alabama.

# Accessibility Statement

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