

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.

SOIL SURVEY OF FAYETTE COUNTY,
ALABAMA.

BY

A. M. O'NEAL, JR., IN CHARGE, AND F. O. HOOTON, OF THE
ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES,
AND T. M. BUSHNELL, OF THE U. S. DEPART-
MENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1917.]



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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., October 7, 1919.

SIR: I have the honor to transmit herewith the manuscript report and map covering the soil survey of Fayette County, Alabama, and to recommend that they be published as advance sheets of Field Operations of the Bureau of Soils, 1917, as authorized by law. This work was done in cooperation with the Alabama Department of Agriculture and Industries.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

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

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MAP.

Soil map, Fayette County sheet, Alabama.

SOIL SURVEY OF FAYETTE COUNTY, ALABAMA.

By A. M. O'NEAL, Jr., In Charge, and F. O. HOOTON, of the Alabama Department of Agriculture and Industries, and T. M. BUSHNELL, of the U. S. Department of Agriculture.—Area Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Fayette County is situated in the northwestern part of Alabama. One county separates it from the State of Mississippi on the west. The eastern boundary is about 35 miles from the city of Birmingham. It has a maximum length of 27 miles north and south and an average width of 24 miles. Its area is 620 square miles, or 396,800 acres.

Fayette County lies partly in the southwestern extremity of the Cumberland Plateau and partly in the Coastal Plain, and consequently shows a wide variation in surface features. The topography ranges from almost level or rolling to strongly rolling or mountainous. Along the Walker County boundary, and especially throughout the extreme southeastern township, the topography is decidedly rough and broken, consisting of a succession of narrow winding ridges, semimountainous in appearance, and deep, V-shaped stream valleys, with steep and precipitous slopes. Small areas of similar rough topography occur in the extreme northwest corner, and along the east side of Sipsey River south of Fayette. In other rough areas the hills and ridges are more rounded and the slopes not so abrupt.

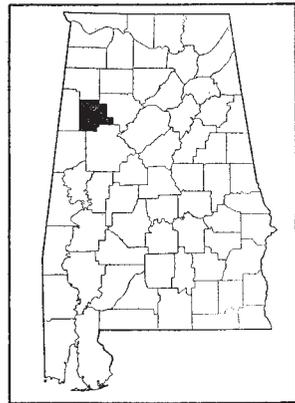


FIG. 1.—Sketch map showing location of the Fayette County area, Alabama.

Along the west side of Sipsey River level to gently undulating areas occur, which closely resemble in appearance a high terrace. One extends northward from Fayette for a distance of 7 miles, and varies in width from one-fourth to 1 mile. Another is developed at Newtonville. One mile south of Bazemore, along both sides of Sipsey River, are similar terracelike bodies. Narrow strips of gently rolling to rolling country from one-half mile to $2\frac{1}{2}$ miles wide occur along most of the larger streams of the county. On the broader divides and ridges the surface is level to undulating, the latter topography being developed in small areas, as near Freemans Mill, Berry, Johnsons School, Pea Ridge Church, Zion Church, Oak Ridge Church, Wesley

Chapel, Concord Church, north of Alta Church, and east of Fowler School.

Second terraces varying in width from a few feet to a mile occur along Sipsey River, Luxapallila Creek, and other large creeks, and first bottoms are developed along all the streams. Throughout the Coastal Plain region, which embraces the western two-thirds of the county, the first and second bottoms are decidedly broader than in the eastern third or Appalachian region.

In elevation above sea level Fayette County ranges from approximately 240 feet where the Sipsey River leaves the county to about 600 feet along the northern boundary near Glen Allen. Most of the county lies between 300 and 500 feet above sea level. The elevation at Fayette is 355 feet, at Bankston 358 feet, and at Glen Allen 595 feet. The general slope of the county is toward the south.

The greater part of the county is drained by Luxapallila Creek, Sipsey River, and North River, which flow in an approximately parallel southerly direction. The main channels of Sipsey River and Luxapallila Creek vary in width from 30 to 60 feet. These streams are meandering and have a sluggish flow. Their flood plains lie 100 to 250 feet below the general level of the uplands, one-half mile to $2\frac{1}{2}$ miles back. Their principal tributaries are Dodsen, Bear, Sugar, Jones, Studhorse, Boxes, Barron, Harris, Davis, Cane, and Cedar Creeks. These tributaries also have a rather sluggish flow. A small area in the northwest corner of the county is drained by Hell Creek and the headwaters of Yellow Creek, which flow southwesterly out of the county. A narrow strip along the Walker County boundary is drained by Yellow and Wolf Creeks, which have a southeasterly course. Numerous intermittent drainage ways reach all parts of the county, and drainage is ample almost everywhere. In the rough, broken areas and on slopes the drainage is excessive, and much damage is done by erosion. All the first bottoms and some of the second bottoms are subject to overflow. Along the smaller creeks the run-off is rapid, but along Sipsey River and Luxapallila Creek the waters spread out and stand after overflows for long periods.

Along some of the streams mills are operated by water power for grinding grain, sawing lumber, and ginning cotton. Considerable available water power is not used.

Fayette County was created in 1824. The first settlements were made prior to this time, about 6 miles south of the present town of Winfield, in Marion County, and near Newtonville. The early settlers were from the Carolinas. The population of Fayette County had increased to 16,248 in 1910. It consists principally of descendants of the original settlers, but many have come in recent years, settling for the most part in the towns. A very small percentage of

the inhabitants is colored. The population is all classed as rural. The agricultural population is small but rather evenly distributed over the county. The most thinly populated region is along the eastern and western boundaries and in the southwestern corner, and the most thickly settled lies along the railroads, in the northern part near Glen Allen and Winfield, and through the level to rolling areas near the larger streams.

Fayette, with a population of 636 in 1910, is the county seat and principal town. It is situated a little south of the west-central part of the county. Berry, with a population of 372; Bankston, with 200; Covin, Belk, and Glen Allen are the other important towns. A number of smaller places are scattered throughout the county along the railroads and principal highways.

The greater part of the county is served by a branch of the Southern Railway which extends east and west across the county a little south of the central part. Rail transportation also is available in the northern part, where a line of the St. Louis & San Francisco Railroad dips into the county at Glen Allen for a short distance. A logging road extending from Fayette along the west side of Sipsey River to Newtonville and Moores Bridge in Tuscaloosa County, supplies regular transportation for the southern part of the county.

Fayette County has lately expended considerable money in improving roads. About 40 miles of hard-surfaced turnpikes have been built, including the Jackson Highway, which extends across the western part. Other graded roads have been built but not surfaced. The average county road is generally good during the summer, but in poor condition throughout the winter.

Rural mail delivery service reaches nearly every section of the county. Throughout the most densely populated section telephones are in general use, and there are schools and churches at convenient places.

The towns and sawmill camps of the county constitute the principal home markets for farm products. Birmingham, Columbus, Miss., and Memphis, Tenn., furnish ready markets for all farm products.

CLIMATE.

The climate of Fayette County is mild and equable. The summers are long and rather warm. Alternating cold and warm spells are characteristic of the winters. The temperature seldom rises above 100° F. or falls below zero. The mean annual temperature is 63.4° F. Certain crops can be grown throughout the entire year. Tender plants do well for at least 8 months, and stock can easily be pastured for 10 months a year. The climate is well suited to diversified farming.

The average date of the last killing frost in the spring is March 19 and that of the first in the fall November 5, the average growing season thus being 231 days in length. The latest recorded date of killing frost in the spring is April 17, and the earliest date of killing frost in the fall, October 22.

The mean annual precipitation is 52.92 inches. The rainfall is heaviest during the winter, spring, and summer months. Heavy rains sometimes interfere with the planting of cotton and corn.

The table below, compiled from the records of the Weather Bureau stations at Birmingham and Cordova, the former in Jefferson and the latter in Walker County, give climatic data applicable to Fayette County:

Normal monthly, seasonal, and annual temperature at Birmingham and precipitation at Cordova.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	47.3	76	5	5.01	1.39	4.08
January.....	45.3	77	7	5.13	3.30	4.02
February.....	48.3	81	-10	5.31	5.49	6.43
Winter.....	47.0	81	-10	15.45	10.18	14.53
March.....	56.3	90	12	5.94	4.00	6.39
April.....	63.5	90	28	4.93	4.53	12.14
May.....	71.6	99	40	3.99	5.09	3.12
Spring.....	63.8	99	12	14.86	13.62	21.65
June.....	77.9	101	49	4.23	3.21	12.79
July.....	79.8	104	59	5.23	3.92	7.02
August.....	78.7	101	59	4.66	3.56	3.28
Summer.....	78.8	104	49	14.12	10.69	23.09
September.....	74.0	100	42	2.99	1.92	4.45
October.....	64.4	93	31	2.36	1.64	7.12
November.....	54.1	84	18	3.14	3.82	4.30
Fall.....	64.2	100	18	8.49	7.38	15.87
Year.....	63.4	104	-10	52.92	41.87	75.14

AGRICULTURE.

The early settlers in this region produced only the requisite food supplies of corn, wheat, and vegetables and other necessities, such as pork and beef. A few sheep were kept for wool. Cotton soon became a staple product and the principal source of income. Mills were built along some of the streams and the power used to grind corn and wheat. According to the older settlers, the yields up to

and for a few years after the Civil War were low. Crop rotations were not practicable and commercial fertilizer was not applied to the land. When the soil failed to produce profitable crops the field was abandoned and new land put in cultivation. During the last 40 years conditions have improved and more attention is paid to conserving the productiveness of the soil. Deeper plowing and the turning under of green vegetation for manure is practiced by a few farmers and many of the more rolling fields are terraced to prevent erosion. Stable manure is applied wherever available. Some cattle and hogs are kept on every farm.

The acreage in corn has gradually increased since 1880. From 1880 to 1890 the area in oats increased 977 acres, but in the next 10 years it decreased 1,375 acres. The area in wheat declined from 4,826 acres in 1879 to 217 acres in 1889, but increased to 644 acres in 1899. The area in cotton increased from 12,331 acres in 1879 to 23,311 acres in 1899, in which year the production amounted to 9,128 bales. The production of sweet potatoes, Irish potatoes, peas, peanuts, peaches, and apples is increasing. In 1899 there were 538 tons of hay produced. The production of sirup from sugar cane reached 7,037 gallons and from sorghum 33,910 gallons. The value of forest products amounted to \$38,253, and of animals sold or slaughtered to \$113,841. The value of dairy products reached \$92,509 and of poultry raised \$25,751.

The agriculture of Fayette County has been undergoing an important change within the last few years, owing to the invasion of the boll weevil and the consequent need for crop diversification. Farmers are breaking away from the old practice of raising cotton at the expense of all other crops, and a movement is under way to make the county more nearly self-sustaining, as far as agricultural products are concerned. At the present time, the agriculture consists of the production of general-farm crops for home use and for sale, hog raising, the feeding and pasturing of a small number of cattle, and the growing of vegetables and fruit for local use. Corn, cotton, and hay are the principal crops. Oats, cowpeas, velvet beans, peanuts, sweet potatoes, Irish potatoes, sorghum, sugar cane, and watermelons are more or less extensively grown.

Cotton occupies a slightly smaller acreage than corn, but it has always been considered the principal crop. The 1910 census reports 27,938 acres in cotton, with a production of 9,536 bales. Owing to damage by the boll weevil, cotton yields are uncertain, and there has been a great reduction in the cotton acreage since 1910.

Corn occupies a larger acreage than any other crop. In 1909, 30,496 acres were planted to this cereal, with a reported production of 369,372 bushels. The acreage at present is much larger than that in 1909. The entire production is used within the county, and certain

sections are not even self-sustaining. Generally speaking, the farmers who own their land grow enough corn for home use and to supply their tenants, while most of the renters have to buy corn for feed each year. The bulk of the corn crop is used to feed work stock and the few hogs kept on nearly every farm. Part of it is ground for meal. On at least one farm a small acreage is devoted to corn for ensilage.

The third crop of importance in Fayette County is oats. This is grown to a small extent on most of the farms and is the principal winter cover crop. The 1910 census reports 2,896 acres seeded to oats, with a production of 22,636 bushels. This grain is mostly fed in the straw to the work stock and the few head of cattle kept on the farm.

Hay is grown on practically every farm in the county. The 1910 census reports 1,170 acres in tame or cultivated grasses, with a production of 1,267 tons, and 757 acres in wild grasses and grains cut green, with a production of 749 tons. The hay crop consists principally of sorghum and cowpeas, or sorghum and corn, grown together. A small proportion consists of crab grass and "hurrah" grass,¹ which grow wild. Fayette County does not produce enough hay for its own use and large quantities of alfalfa and Johnson-grass hay are shipped in each year.

The 1910 census reports 7,274 hogs sold or slaughtered in 1909. A few hogs are raised on nearly every farm in the county, but the supply of pork products is not equal to the demand. The well-to-do farmers who own their own land generally produce enough meat to sell a small quantity in the near-by towns or to tenants in their neighborhood. The "razorback" hog is raised in steadily decreasing numbers. The introduction of hogs of the Poland-China, Berkshire, Duroc-Jersey, Essex, and other breeds is growing in favor, as the farmers realize that this blooded stock can be put in condition for market at less cost than the inferior native hogs.

During 1916, 90 cars of beef cattle were bought up by buyers traveling over the county, and shipped away. The more progressive farmers are stocking their farms with better breeds, the more popular being the Shorthorn for beef production and the Jersey for dairying. Purebred bulls are being brought in with a view to breeding up the native cattle. Forty private dipping vats have been built. A few head of cattle are kept on nearly every farm and pastured the greater part of the year on range. The census reports 2,823 cattle and 486 calves sold or slaughtered in 1909. Two small dairies are operated at Fayette and supply in part the demands of that town. Milk cows are kept by most farmers and by people living in and near the towns.

¹ Probably *Eleusine indica*.

The income from the sale of poultry and eggs was \$84,245 in 1909. In the northern part of the county, near the St. Louis-San Francisco Railway, where the market facilities are comparatively good, the poultry products are bought up by buyers and shipped to Birmingham and Memphis. Throughout the southern part of the county the eggs and chickens are sold in the towns or disposed of to merchants, who ship to Birmingham or Columbus, Miss., where good prices are obtained.

Cowpeas are grown to a small extent on most farms. The greater part of the crop is used on the farms, but a small proportion is disposed of to merchants, who ship to outside markets. In 1915 an effort was made to organize the farmers and to ship potatoes in car-load lots. Good yields were obtained, but owing to the prevailing low prices the project was abandoned.

Peanuts have been grown for a long time on a small scale, and with the installation of a peanut mill this year (1917) at Fayette the acreage will undoubtedly be largely increased. Peanuts give promise of becoming an important money crop. Velvet beans are becoming more popular as a forage crop and soil builder. Melons, plums, blackberries, bur clover, and soy beans are grown to a limited extent on most farms, and all kinds of vegetables are produced. Sugar cane and sorghum are grown on nearly every farm for sirup. The product is put up in 1 and 2 gallon cans and jugs, and the surplus is sold to the towns. A few small peach and apple orchards are scattered throughout the county.

It is recognized by the farmers of Fayette County that the Ruston, Norfolk, and Hanceville soils are best adapted to the growing of cotton. In wet years corn gives good yields on these soils, but it ordinarily suffers from drought. The Hanceville silt loam and loam are considered slightly stronger soils for cotton, small grain, and truck than the Ruston and Norfolk types. The Ochlockonee silt loam, Pope silt loam, Kalmia fine sandy loam, and Cahaba fine sandy loam are good corn soils, and the Ochlockonee fine sandy loam, Pope fine sandy loam, and Holston silt loam are recognized as the best corn soils in the county.

A movement is now under way to drain the extensive bottoms along Luxapallila Creek, and with this end in view a survey was made by the United States Office of Public Roads and Rural Engineering, and drainage associations formed under a recent State law. When this important project is completed the Ochlockonee silt loam will constitute the principal corn soil in the county.

Throughout the uplands the general practice is to let the fields lie fallow during the winter. The land is either broken the next spring with a 1 or 2 horse plow or a middle-buster is run down the old bed, throwing up a new bed over the water furrow of the preceding year.

In growing cotton a harrow is generally run over the field and the seed planted on the bed. Throughout the better farming sections the land is broken deep in the fall and either seeded to oats or left bare. The next spring it is rebroken or disked. Velvet beans and cowpeas are often seeded between the rows and in the rows of corn. On maturing, the beans are picked and the vines grazed off or turned under. Corn on the uplands is either planted in water furrows or given flat cultivation. The fields are sometimes laid off with furrows 35 inches apart and velvet beans planted in alternate rows. The bottom lands are seldom plowed in the fall, as winter freshets wash the soil more than where the field is left unbroken. Here corn is planted on slightly raised beds. Cotton is cultivated three to five times and corn two or three times. Winter oats generally follow cotton and corn. When the crop is harvested for grain the land is reseeded to sorghum and cowpeas for hay. The same crop is seldom grown on the same piece of land two years in succession.

Throughout the more progressive sections of Fayette County most of the dwellings are roomy, comfortable cottages, which are painted and neatly kept. Over the greater part of the county small one and two room houses and old-fashioned double log cabins are the rule. The barns are generally large enough for present needs. Some of the more progressive farmers have running water in their houses and barns, the supply being obtained by gasoline-driven pumps. The improved machinery in use consists of one and two horse plows, wheel plows, cultivators, disk harrows, cotton planters, tooth harrows, grain drills, manure spreaders, hay rakes, and mowing machines. The work stock consists of mules and horses of medium weight.

Crop rotations are practiced by the more progressive farmers. Under a rotation in general use cotton is followed by winter oats; the second year the oats are turned under and corn is planted, the land again being seeded to winter oats; the third year the oats are harvested and the field seeded to sorghum and cowpeas for hay.

According to the census, 2,030 of the farms used fertilizers in 1909, the expenditure amounting to \$53,010, or \$26.11 per farm. The consumption in recent years has been much less, owing to high prices. The brands in general use before the European war contained about 10 per cent phosphoric acid, 2 per cent nitrogen, and 2 per cent potash. Higher grade mixtures are ordinarily used on potatoes and other truck crops. At present the farmers are using scarcely any fertilizer except 16 per cent acid phosphate. Nearly all the fertilizer is applied to cotton land. Sugar cane is fertilized with 500 to 900 pounds of cottonseed meal per acre. Barnyard manure is used wherever it can be obtained, and more attention is paid to the growth and turning under of green-manuring crops than in former years. Lime is seldom used.

Farm labor is mostly white, as the negro population is quite small. At present labor is somewhat scarce, as numerous sawmills have been built throughout the county in the last few years and these have attracted labor from the farms. Agricultural laborers are generally paid \$20 to \$25 a month, with board. During cotton-chopping season and at harvest time laborers hired for short periods receive from 75 cents to \$1 a day and board.

According to the census, there were in 1910 2,896 farms in Fayette County, with an average size of 102.2 acres.¹ The size of farms varies from 30 to 350 acres. From 1880 to 1910 the percentage of farms operated by owners decreased from 79.4 to 58.1. The tenant usually rents the land for a period of one year. Under the prevailing system of tenancy the owner furnishes the land, implements, and stock and receives one-half the crop, or the renter furnishes his own stock and implements and gives the owner one-third of the corn and one-fourth of the cotton. In case fertilizers are used the owner and tenant share the expense equally.

The 1910 census reports 71.9 per cent of the total area of the county in farms. A little more than 30 per cent of the land in farms is improved. Much of the area of the county is in timber. Land values vary according to the location, improvements, and topography, and range from \$2 to \$60 an acre.

SOILS.

Fayette² County includes part of the Appalachian Mountain and Plateau and Coastal Plain provinces. Over approximately the eastern third of the county, or practically all that part east of a line drawn through Bazemore, Boxes Creek School, and almost due south near Freemans Mill, the soils have been derived from the weathering of the underlying sandstones and shales of Carboniferous age. These rocks consist of interbedded fine-grained, gray sandstones and argillaceous shales. Owing to this interbedding and to the fact that the sandstones are more resistant to erosion than the shales, this sec-

¹ Each tenancy is tabulated by the census as a "farm."

² Earlier surveys cover Lamar, Marion, Tuscaloosa, and Walker Counties, all of which abut on Fayette County. There are apparent discrepancies between the earlier maps and the most recent, different soils lying adjacent across the county boundary lines. Very generally this failure of the soils to join is due to a fuller knowledge of the soils of the State, and consequent changes in correlation. Thus there are border differences in Lamar, Marion, and Tuscaloosa that can only be adjusted by revision of these earlier maps. In Walker County the disagreement is not as great, the soils joining in many places, but in other places the Ruston sandy loam of Fayette County has been mapped against the Orangeburg sandy loam of Walker County. This is probably due to the fact that the reddish yellow color of the Ruston subsoil was typically developed in Fayette County, whereas the red or light red of the Orangeburg subsoil was typically developed in Walker County, and that these two soils merged into each other near the county boundary. Again, since Walker County was mapped it has been deemed advisable to establish certain phase differences in soil types to cover rough topography, and, as a result, the Hanceville silt loam, steep phase, of Fayette County is mapped against a faintly red subsoil phase of the Dekalb silt loam of Walker County.

tion of the county consists of a succession of sandstone benches and rounded shale hills. The weathered soil mantle is comparatively thin and the disintegrated parent rock often lies within 3 feet of the surface. The rocks here dip toward the southwest and gradually disappear beneath the Coastal Plain sediments.

Small areas of Coastal Plain soil cap some of the higher hills in this section of the county, indicating that formerly thick beds of Coastal Plain sediments extended for some distance inland from the present line of contact. To the west and south the Coastal Plain deposits gradually become thicker, extending farther and farther down the slopes until finally the sandstone and shale rocks are observed only in the deeper stream channels and disappear entirely from view west of the Sipsey River, except for one very small outcrop at McCollum Bridge. To the west of this line of contact the Coastal Plain materials were undoubtedly subjected to various forces of sedimentation at the time of deposition. Thick beds of gravel abruptly grade into fine deposits which in turn merge into coarser material. To the west the deposits of material are more uniform. Here the soils have been derived from unconsolidated beds of sands and clays which were brought down and deposited, under varying conditions of sedimentation, in the ancient sea. Since the former coastal waters have receded, this section, as well as all parts of the county, has been subjected to severe erosion, and the soils have been influenced by oxidation, aeration, the accumulation of vegetable matter, and the action of animal life.

Strips of alluvium varying widely in width occur along nearly every stream in the county. These areas represent the more recent deposits of the first bottoms, which are gradually being added to during overflows, and the more thoroughly weathered sediments of the second and third terraces. Along the streams in the eastern part of the county the alluvial deposits consist of reworked Appalachian material, while throughout the western two-thirds of the county the material represents Coastal Plain wash.

Weathering, disintegration, and decomposition of the rocks and unconsolidated sediments have resulted in a wide range of soils. On the basis of origin, color, structure, relief, and drainage the soils are classed into series, the members of which, or types, differ solely in texture.

The Hanceville soils are derived from the weathering of the sandstones and shales, while the Ruston, Norfolk, and Guin soils come from the unconsolidated Coastal Plain sediments. The Kalmia, Cahaba, Holston, Ochlockonee, and Pope series represent the old and recent alluvial deposits forming the first bottom and terraces along the streams.

The types in the Hanceville series have light-brown or grayish-brown to slightly brown surface soils, and red, moderately friable subsoils. This series is developed extensively throughout the eastern third of the county.

The types of the Ruston series are characterized by gray to grayish-brown surface soils and yellowish-red to reddish-brown, moderately friable subsoils. The members of the Norfolk series have light-gray to pale yellowish gray surface soils and friable, yellow subsoils. They occupy nearly level to rolling uplands. The Guin series represents a soil condition rather than a soil classification. The surface soils are predominantly gray and sandy, with friable, yellowish-red or reddish-brown to dull-red subsoils. Soils of this series occupy rough, broken uplands throughout the county.

The Kalmia series includes types with prevailing gray to grayish-yellow soils, and yellow or mottled yellow and gray subsoils. This series is developed on the second bottoms and terraces. In a number of places the soils lie only a foot or so above the first bottoms and are subject to overflow during high water. The material consists largely of reworked Coastal Plain sediments influenced by wash from the Appalachian Mountain province.

The types in the Cahaba series are characterized by brown to reddish-brown surface soils and brownish-red to yellow-red subsoils. They have been formed principally of material washed from the Coastal Plain and Appalachian Mountain province, and occur on the second bottoms and terraces above ordinary overflow. The soils are better drained than the associated Kalmia soils, as they occupy higher positions.

The types in the Holston series are characterized by yellowish-brown to brown surface soils and yellow to brownish-yellow subsoils. They represent Appalachian Mountain and Plateau material reworked and deposited on the alluvial terraces above ordinary overflow.

The Ochlockonee series includes types with dark-gray to brownish surface soils and mottled brown, yellow, and gray subsoils. These soils are formed principally of reworked Coastal Plain material, deposited along nearly all the streams of the western two-thirds of the county. The soils are subject to frequent overflow and where forested are generally poorly drained.

The Pope series includes types with grayish-brown to brown soils and brownish to mottled brown, gray, and yellow subsoils. These soils are composed of sediments brought down from the Appalachian Mountain and Plateau province and deposited along the first bottoms of the streams in the eastern third of the county. They are subject to overflow.

The following table gives the name and the actual and relative extent of the various soils mapped in Fayette County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ruston fine sandy loam.....	81,472	39.3	Rough broken land.....	6,464	1.6
Hilly phase.....	74,432		Guin gravelly sandy loam.....	5,760	1.5
Hanceville silt loam.....	11,968	14.4	Norfolk silt loam.....	4,736	1.2
Steep phase.....	45,184		Pope fine sandy loam.....	4,416	1.1
Ruston sandy loam.....	16,448	11.0	Pope silt loam.....	3,648	.9
Hilly phase.....	27,264		Cahaba fine sandy loam.....	3,072	.8
Hanceville loam.....	27,712	7.0	Ruston loam.....	2,944	.7
Ochlockonee fine sandy loam.....	25,088	6.3	Hanceville gravelly silt loam.....	2,624	.7
Ochlockonee silt loam.....	15,232	3.8	Holston silt loam.....	2,624	.7
Hanceville shale loam.....	12,928	3.3			
Ruston gravelly sandy loam.....	12,096	3.0	Total.....	396,800	-----
Kalmia fine sandy loam.....	10,688	2.7			

RUSTON GRAVELLY SANDY LOAM.

The surface soil of the Ruston gravelly sandy loam is a gray to grayish-brown, loose loamy sand, 6 to 10 inches deep. The subsoil is a reddish-brown, brownish-red, or yellowish-red, heavy sandy loam to friable sandy clay. Rounded quartz gravel occurs in abundance upon the surface and in varying quantities throughout the soil mass.

Included with this type are some small areas of Ruston fine sandy loam, Ruston sandy loam, and Guin gravelly sandy loam, too inextensive to separate on the map.

The Ruston gravelly sandy loam occurs to a small extent along the lower slopes to the streams and on the crests of ridges throughout the western two-thirds of the county. A few isolated areas remain on the crests of the higher ridges in the eastern third. The type usually forms a narrow band between the bottom areas and the uplands. It has a gently rolling to strongly rolling and hilly topography. Surface drainage is inclined to be excessive, but the subsoil is retentive of moisture and crops do not suffer except during prolonged drought.

A considerable part of this type is under cultivation. The remainder is in forest, consisting principally of shortleaf pine, white oak, red oak, Spanish oak, scrub oak, hickory, poplar, and gum.

This is a relatively small and unimportant type. Cotton, corn, and hay are the principal crops. Cotton yields one-third to one-half bale per acre, corn 15 to 25 bushels, and hay 1 to 1½ tons. Oats, peas, velvet beans, peanuts, sorghum, potatoes, and all kinds of garden truck produce fair returns. The crop value of this soil is slightly lower than that of the associated Ruston fine sandy loam.

The generous application of commercial fertilizers and the incorporation of organic matter result in increased yields.

The Ruston gravelly sandy loam is cultivated in practically the same way as the Ruston fine sandy loam. It is easily farmed. The land is valued at prices ranging from \$2 to \$15 an acre, according to the location and improvement. Where the type is sold in connection with the Ruston loam or fine sandy loam it brings a higher price.

This type washes and gullies badly and great care should be exercised to prevent erosion. The slopes should be carefully terraced, the furrows run at right angles to the prevailing slope, and cover crops grown at all times. The soil is deficient in organic matter, and the growing of green-manuring crops and the turning under of all stubble should be resorted to. Crop rotations including the legumes would be beneficial.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a grayish-brown loamy sand, 7 to 10 inches deep. The subsoil is a brownish-red to yellowish-red sandy clay loam to friable sandy clay. In a number of places throughout the type the subsoil is a heavy sandy loam which grades into a sandy clay below 30 inches. Small areas of Ruston fine sandy loam occur within the boundaries of this soil, but are too inextensive to separate on the map. Some very small gravelly areas are shown with gravel symbols. Included with the type, mainly on the highest ridges in the eastern part of the county, are small bodies of Orangeburg sandy loam, which differ very slightly from the Ruston sandy loam in color, texture, and agricultural value.

The Ruston sandy loam is developed principally in the western part of the county, although scattered areas are found throughout the eastern third. The most extensive bodies occur in the northwest and southwest corners as narrow, continuous areas along the crests of the divides and broader ridges, lying 150 to 200 feet above the stream levels. In only a few places is this soil developed along the lower slopes. The surface is undulating to rolling, and drainage is good. Crops suffer only during periods of prolonged drought.

Approximately 90 per cent of this type has been under cultivation for years. The forested areas support a growth of shortleaf pine, red oak, white oak, Spanish oak, hickory, chestnut, gum, and dogwood; with some poplar, persimmon, and walnut.

The principal crops grown are cotton and corn. The larger acreage heretofore has been occupied by the former crop, but this year only a very small percentage of the type will be in cotton. Oats are grown on nearly every farm. Best results are obtained with oats sown

in the fall. Velvet beans are extensively grown between the rows of corn. Cowpeas are seeded with sorghum as a hay crop. Soy beans, bur clover, potatoes, watermelons, and all kinds of vegetables do well. Sorghum and sugar cane are grown for sirup. A few hogs are raised each year on most farms. In general, the farms in the extreme southwestern part of the county are self-sustaining, while in the other sections large quantities of supplies are shipped in each year. Peaches are particularly well adapted to this type, as the elevation of 400 to 560 feet insures a more equable climate. The varieties which give best results are the Elberta, Belle of Georgia, Carman, and White Chinese Cling. Apples are grown to a small extent, but this fruit does not produce well.

Cotton under ordinary conditions, before the advent of the boll weevil, yielded one-third to one-half bale per acre, corn 15 to 25 bushels, oats 15 to 25 bushels, and hay 1 to 2 tons. Sugar cane yields approximately 150 to 200 gallons of sirup per acre.

Most of this type has been in cultivation for a number of years and responds readily to improved farming methods. It is handled and fertilized in practically the same way as the Ruston fine sandy loam. In general, the type erodes more readily than the fine sandy loam and a number of the fields have been terraced. The farmers use very little commercial fertilizer. Barnyard manure, whenever it can be obtained, is applied to corn land, and cover crops and nitrogen-gathering and soil-building crops are grown to an increasing extent.

This type of land, can be bought for \$8 to \$25 an acre, according to the location and improvements.

The suggestions given further on for improving the Ruston fine sandy loam can be equally well applied to the Ruston sandy loam. The excellent condition of the small peach orchards on this type would indicate that peach growing could well be extended. Wheat was formerly grown on this soil and gave good results.

Ruston sandy loam, hilly phase.—The Ruston sandy loam, hilly phase, consists of a gray to light brownish-gray, loamy sand, 8 to 14 inches deep, underlain to 36 inches by a reddish-brown heavy sandy loam to sandy clay. Very small quartz gravel is sparingly scattered over the surface and through the soil section. A few areas of Ruston fine sandy loam, hilly phase, may be included, as only the predominant soil was mapped throughout the rough areas. Gravelly areas too small to separate accurately on the map are indicated by gravel symbols.

The Ruston sandy loam, hilly phase, is developed principally in the southwestern corner of the county and west of Luxapallila Creek. In general, the crests of the broader ridges are occupied by the typical Ruston sandy loam, which gives way along the slopes to the hilly

phase. The topography varies from rough and broken to strongly rolling and hilly. Smooth, steep slopes and rounded, winding ridges are characteristic of the phase. Drainage is excessive and crops suffer during long dry spells.

This is not a very important soil. Only a few of the more gently rolling areas along the lower slopes are under cultivation, the greater part being forested with red oak, white oak, Spanish oak, hickory, shortleaf pine, and dogwood, with some gum and chestnut.

Where cultivated, the phase is handled and fertilized in practically the same way as the Ruston fine sandy loam, and the same crops are produced. Yields are lower than on the Ruston sandy loam. The cutting of cross-ties and lumber is quite an important industry at present.

The Ruston sandy loam, hilly phase, owing to the loose, incoherent texture of the surface soil and the heavy clay subsoil, erodes badly on being cleared, and the life of a field averages only about four years. The type should be left in forest and used for pasture.

RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam is a gray to grayish-brown loamy fine sand to light fine sandy loam, 7 to 10 inches deep. The subsoil consists of a reddish-brown, brownish-red, or yellowish-red, heavy fine sandy loam to fine sandy clay loam, grading into fine sandy clay at 24 inches. The redder color prevails upon the knolls and ridges, and the yellowish-brown color predominates in the more level areas. Faint mottlings of gray often occur in the lower subsoil in poorly drained areas. When very dry the surface soil has a light-gray to whitish appearance.

In small areas scattered throughout this type over all parts of the county the surface is more or less covered with small fragments of ferruginous sandstone. Similar areas differing only in that the rock fragments are scattered throughout the entire soil section and are more platy occur on some of the narrower ridges. Such areas are shown on the map by gravel symbols. In uncultivated tracts the accumulation of organic matter has imparted a dark-brown color to the upper few inches, but this disappears after a few years of cultivation. Throughout the more rolling areas and around the head of drainage ways the surface soil has a reddish-brown color, due to erosion. Such areas are locally known as gall spots. They are very small and their crop value is practically identical with that of the typical soil. Small areas of Orangeburg fine sandy loam are included on ridges. The larger of these bodies occur near Fayette, Mount Pleasant Church, Mount Vernon Church, and south of New Chapel. North of Salome Church a small area resembling the Greenville loam is included.

The Ruston fine sandy loam is extensively developed in large bodies over the entire western two-thirds of the county and on top of a few of the highest ridges south of Freemans Mill. The towns of Fayette, Covin, and Belk are situated partly on this type.

The topography varies from undulating or gently rolling to rolling and hilly. Undulating to gently rolling areas occur along the east and west banks of Luxapallila Creek from the vicinity of Bluff northward, and in the extreme southwestern corner of the county. Drainage is generally well established. In the more nearly level areas the run-off is somewhat deficient, but throughout the rolling to low hilly bodies which predominate the surface drainage is good. On the steeper slopes it is excessive, and the soil suffers from erosion. The subsoil is retentive of moisture and crops seldom suffer from lack of moisture when the proper methods of farming are employed, and then only during periods of prolonged drought.

The Ruston fine sandy loam is probably the most important soil in Fayette County, and about 85 per cent of it is under cultivation. The forested areas support a growth of shortleaf pine, white oak, red oak, Spanish oak, post oak, hickory, dogwood, gum, and some poplar.

Corn, cotton, oats, and hay are the principal crops produced. The largest acreage is in corn, and the next largest in cotton. Before the advent of the boll weevil cotton was the principal money crop, but corn now occupies first place. Oats and hay are grown to some extent on nearly every farm, oats constituting the principal winter cover crop. All of the corn, oats, and hay produced is used within the county, largely to feed the work stock and the few head of cattle and hogs kept on the farm for the production of meat. A small quantity of corn is ground for meal. The supply is not equal to the demand and each year large quantities of grain and hay are shipped in.

Peanuts and velvet beans do well on this type, and following the installation of a peanut-oil mill and velvet-bean crusher at Fayette a movement is under way to produce these crops on a commercial scale. Garden vegetables are grown for home use.

Small orchards to supply the home are scattered throughout the type. Fruits give best results on the high ridges.

Corn yields 10 to 30 bushels per acre, oats 12 to 18 bushels, and cowpea hay 1 to 2 tons. Under ordinary conditions cotton yields from one-third to two-thirds bale per acre. Sweet potatoes yield 180 to 250 bushels per acre, and sugar cane 200 to 350 gallons of sirup. Wheat yields 6 to 18 bushels per acre.

The main live-stock industries are the raising of a few hogs to supply in part the needs of the home and the raising and pasturing of a few head of cattle. The more prosperous farmers buy 12 to

15 yearlings each year. These are pastured the greater part of the year and sold to buyers who ship them out of the county. Milk cows are kept by most farmers.

Poultry raising is engaged in on a small scale, and there is a poultry farm on this soil 7 miles north of Fayette.

The Ruston fine sandy loam does not clod when plowed too wet or bake badly on drying. A large number of the farmers break their land shallow, and as a result crops suffer during periods of prolonged drought or of excessive rainfall. With improved methods of cultivation such as are practiced by the more progressive farmers, including deep plowing, thorough preparation of the seed bed, and frequent shallow cultivation, the productiveness is easily maintained. Crop rotation is growing in favor, but the alternation of crops remains the only form of rotation in general use. A rotation used by the best farmers consists of corn the first year, followed by winter oats; the second year the oats are harvested and peas and sorghum are sowed for hay, the field then being reseeded to oats; the third year the oats are pastured down or turned under and cotton is planted. Commercial fertilizers are sometimes used on cotton, at the average rate of 200 pounds per acre. The brands in general use in the past contained 10 per cent phosphoric acid, 2 per cent nitrogen, and 2 per cent potash. Owing to the high prices and the scarcity of potash, this complete mixture has been abandoned and 16 per cent acid phosphate substituted. Corn land is seldom fertilized, but nitrate of soda has been sparingly used, with good results, and stable manure is applied when available. Green-manure crops are grown in a few sections.

Land of the Ruston fine sandy loam sells at \$10 to \$40 an acre, according to the location and improvements. Along the pikes near Fayette and in the vicinity of Winfield improved farms bring \$30 to \$40 an acre, while away from the railroads and main roads the same soil sells at \$10 to \$30 an acre.

The Ruston fine sandy loam responds readily to improved methods of cultivation. The soil is deficient in organic matter, and the depletion of this, coupled with constant shallow cultivation, has greatly impaired the productiveness. Deeper plowing in the fall and the more thorough preparation of the seed bed, together with the growing of green-manuring crops, would prove very beneficial. Subsoiling and increasing the depth of the seed bed would enable the soil better to withstand prolonged drought as well as heavier rainfalls. Lime is seldom used, but this would improve the physical condition of the soil, and it is especially effective where applied in connection with green manures. Crop rotations in which vetch, cowpeas, velvet beans, bur clover, peanuts, soy beans, and other legumes play an important part should be followed. With the use of such rota-

tions, the plowing under of green-manuring crops, and the application of lime, the soil can be brought to a condition where commercial fertilizers containing nitrogen are almost unnecessary. This type should be terraced, even on the more gentle slopes.

The excellent condition of a few fields of wheat observed during the progress of the soil survey indicates that this crop would be profitable. The varieties grown are the Bluestem and Red May. Fruit gives best results on the crests of the higher ridges. The varieties of peaches that give the best results are the Elberta, Carman, Belle of Georgia, and White Chinese Cling. Blackberries, dewberries, and plums grow wild.

Ruston fine sandy loam, hilly phase.—The soil of the Ruston fine sandy loam, hilly phase, is a grayish-brown to light-brown loamy fine sand, 6 to 12 inches deep. The subsoil is a reddish-brown to brownish-red fine sandy clay which becomes heavier with depth. Small ferruginous sandstone fragments and rounded quartz gravel are sparingly scattered over the surface and through the entire soil section. Some very small gravelly areas and areas where the surface is more or less thickly covered with ferruginous sandstone fragments are shown on the map by gravel or rock symbols. Along the lower slopes the surface soil is generally deeper than on the steep hillsides.

The Ruston fine sandy loam, hilly phase, occurs somewhat extensively through the western two-thirds of the county, in both large and small areas. The topography varies from strongly rolling and hilly to rough and broken. Smooth steep slopes are characteristic of the phase. In the extreme northwest corner of the county and southwest of Fayette the slopes are more abrupt. Drainage is generally excessive and crops suffer during dry spells. The soil erodes badly, owing to the loose, incoherent nature of the surface soil and the heavy clay subsoil. This is particularly true where the land has been cleared. Only about 20 per cent of the phase is in cultivation, the larger part being forested with red oak, white oak, Spanish oak, post oak, hickory, pine, poplar, gum, dogwood, and maple.

The phase is not very important agriculturally, and it is for the most part left in forest. Where it is cultivated the same crops are grown as on the typical Ruston fine sandy loam, but the returns are slightly lower. A few hogs and several head of cattle are kept by most farmers, and small gardens are maintained to help supply the homes. Watermelons, peanuts, and cowpeas are produced on a small scale, and blackberries and plums grow wild. The thrifty condition of the few small orchards seen would indicate that the growing of peaches could be profitably extended. Yields have been poor during the last few years, and the farmers have turned to forest industries for support, particularly during the winter months. The cutting and

marketing of lumber and crossties is an important industry. The soil is fertilized and handled in practically the same way as the typical Ruston fine sandy loam. More attention is generally given to terracing. Where care is exercised in preparing and handling the phase the yields approach closely those obtained on the typical soil.

Land of the Ruston fine sandy loam, hilly phase, sells at prices ranging from \$2 to \$15 an acre, according to the location and improvements.

Methods suggested for improving the typical soil apply as well to this phase, though as the soil washes badly when cleared it would better be left in forest. Careful terracing is necessary and the soil should be protected with some crop at all times to prevent washing. Deeper plowing is advisable, as a deeper seed bed more readily absorbs the rainfall and lessens the run-off. The soil is deficient in organic matter. The phase is well adapted to stock raising. Wild grasses do well and afford good pasturage the greater part of the year.

RUSTON LOAM.

The surface soil of the Ruston loam is a brown to slightly reddish brown, mellow loam, 7 to 10 inches deep. The subsoil to a depth of 36 inches is a brownish-red to yellowish-red, friable silty clay loam. In flat, sinklike areas the surface soil approaches a silt loam. Scattered throughout the type are very small bodies in which the content of fine sand is relatively high. The subsoil is uniform in color, and has a richer, deeper color than that of the associated Ruston fine sandy loam.

The Ruston loam covers a relatively small area in Fayette County. It resembles a high terrace in topography. The largest bodies occur along the west side of Sipsey River, extending northward 6 miles from a point near Fayette. Small areas are developed at Newtonville, 1 to 2 miles south of Beard Church, and along the east and west banks of Luxapallila Creek and a mile or so south of the Marion County line.

The topography varies from level and undulating to gently rolling. Surface drainage is generally good except in the sinklike areas, where ditching is necessary for best results. The subsoil is retentive of moisture.

The Ruston loam, notwithstanding its small area, is an important agricultural soil. Practically 95 per cent of it is either under cultivation or in pasture. The tree growth consists principally of oak, hickory, gum, pine, beech, and hackberry.

Corn and cotton are the principal crops. The money crop has heretofore been cotton, but the uncertainty of good yields of this staple and the necessity of growing more food crops has brought about a decided change in the agriculture of the county. The pres-

ent year (1917) the largest acreage will probably be in corn, with only as much land in cotton as can be given the most careful attention. The acreage in cotton in recent years has averaged between 3 and 6 acres per farm.

The varieties of corn giving the best results are the Mosby, Hastings Prolific, and Tennessee Favorite. Nearly all the corn crop is used to feed the work stock and the few hogs and cattle on the farm. The remainder is either ground for meal, sold to farmers on other types, or disposed of in the towns. Hog raising and the feeding of steers constitute the principal live-stock industries. One farmer north of Fayette is engaged in stock farming on a large scale. Oats are an important crop, the fall-sown varieties giving best results. Velvet beans or cowpeas are generally seeded between the rows of corn. Cowpeas and sorghum or cowpeas and corn form the principal hay crop. Bur clover, sorghum for sirup, soy beans, peanuts, watermelons, and all kinds of garden truck are grown to some extent. Lespedeza and crab grass grow wild.

On the Ruston loam corn yields 15 to 35 bushels per acre, cotton under normal conditions one-half to two-thirds bale per acre, oats 15 to 20 bushels, and hay 1 to 2 tons. Sweet potatoes yield 150 to 200 bushels, with the use of about 400 pounds of high-grade fertilizer per acre, and wheat 10 to 20 bushels.

The farmers on this type are as a whole more prosperous than in other sections. The dwellings are more substantial and better kept and improved machinery is in more general use. The land is broken deep in the fall with a 2-horse plow. Winter oats are generally sown, but if oats are not sown in the fall the land is rebroken the next spring and prepared for seeding. Oats, rye, and wheat are the principal winter cover crops. Cotton one year and corn the next, each followed by winter oats, constitute the rotation in general use. In preparing the land for corn the field is sometimes laid off in rows 33 inches apart, every alternate row being seeded to velvet beans.

The Ruston loam responds readily to good farming methods, and its productiveness is easily maintained. Commercial fertilizer is generally used on cotton but seldom on corn. The brands formerly in general use contained 10 per cent phosphoric acid, 2 per cent nitrogen, and 2 per cent potash, but the present high prices of potash are almost prohibitive, and 16 per cent acid phosphate has been substituted for mixed fertilizer. This is applied to cotton land at the rate of about 200 pounds per acre. Stable manure is largely used on corn with good results. The growing and turning under of green-manuring crops has improved the condition of the soil and increased the yields. Lime is seldom used.

This type sells at \$30 to \$60 an acre, according to the location and the improvements.

The suggestions made for improving the Ruston fine sandy loam can be applied equally well to this type. Surface ditching throughout the flatter areas would prove very beneficial. The excellent condition of the few small orchards would indicate that the growing of fruit, especially peaches, might become an important industry as marketing methods are improved. Wheat formerly occupied a much larger acreage than at present and should prove a profitable crop.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Ruston loam:

Mechanical analyses of Ruston loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
415605.....	Soil.....	0.4	3.2	5.0	25.9	8.8	44.9	11.8
415606.....	Subsoil.....	.4	2.2	3.6	22.4	7.6	41.7	21.6

NORFOLK SILT LOAM.

The surface soil of the Norfolk silt loam consists of a gray silt loam passing at 3 or 4 inches into yellowish-gray to pale-yellow silt loam which extends to a depth of 8 to 12 inches. The subsoil is a yellow to pale-yellow, friable silty clay loam to very fine sandy clay. Frequently a little small rounded quartz gravel is scattered over the surface and through the soil mass. In the flat, more poorly drained areas the lower subsoil is faintly mottled with gray, while in the higher areas it has a bright-yellow to cottonseed meal color and is free from mottlings. The content of very fine sand is relatively high, and some small areas of Norfolk very fine sandy loam are included.

The Norfolk silt loam is developed mainly in the northern part of the county, along the Sipsey River. It resembles a high terrace and occupies a position 30 to 40 feet above the second terrace. The largest connected areas lie south of Bazemore and Beard Church and in the vicinity of Boxes Creek School and north of Jones Mill. Small areas occur near Fayette and Freemans Mill and in the extreme southwestern corner of the county. The type has an almost flat to undulating topography. Drainage is inclined to be inadequate, especially in the flatter areas, and ditching is necessary in preparing the land for cultivation.

This type is considered a very good agricultural soil, especially where well drained. Approximately half of it is in cultivation. The remainder is forested with shortleaf pine, red oak, white oak, Spanish oak, hickory, gum, and beech, with some poplar, maple, and dogwood. Bay grows in the more poorly drained areas.

Corn, cotton, and hay are the principal crops, the largest acreage being in corn. Very little cotton is being planted this year (1917),

owing to the boll weevil and to the necessity for growing more food crops. Oats, velvet beans, and cowpeas have an important place in the rotations, oats constituting the principal winter crop and velvet beans and cowpeas being grown between the rows of corn. Peanuts are grown on a small scale mainly as feed for hogs. Sugar cane and sorghum produce an excellent grade of sirup on this type. A few head of cattle and hogs are kept on most farms, as well as cows to supply the home demand for milk. Melons and all kinds of vegetables do well.

Cotton under ordinary conditions yields one-third to one-half bale per acre, corn 15 to 25 bushels, oats 15 to 20 bushels, and hay 1 to 2 tons. Irish potatoes and sweet potatoes yield 150 to 200 bushels per acre. Sugar cane yields 200 to 250 gallons of sirup per acre with the use of about 500 pounds of fertilizer.

The Norfolk silt loam is not considered quite as strong a soil for most crops as the Ruston loam. It is handled and fertilized in practically the same way, and can be improved by the same methods.

Land values on this type vary from \$10 to \$35 an acre, the price depending on the location and improvements.

GUIN GRAVELLY SANDY LOAM.

The surface soil of the Guin gravelly sandy loam is a gray to light-brownish gray loamy sand, 7 to 10 inches deep. The subsoil is a brownish-red or yellowish-red to dull-red, friable sandy clay. Both soil and subsoil contain large quantities of waterworn gravel, and varying quantities of ferruginous sandstone slabs, fragments of conglomerate, and quartz gravel are scattered over the surface. The color of the soil and subsoil varies from place to place. Broadly speaking, the type represents an intricate mingling of small areas of Orangeburg, Ruston, and Susquehanna soils.

This type is not extensive. It occurs in the western two-thirds of the county, usually on the crests of the higher and narrower ridges. The largest connected bodies are developed in the vicinity of Pleasant Hill Church and southeast of Fayette along the east side of the Sipsey River. The surface is rough and broken, consisting of narrow hogback ridges and steep slopes. Drainage is excessive, and the type suffers badly from erosion and gullyng.

All of the Guin gravelly sandy loam is in forest. It has an extremely low agricultural value, owing to its rough surface. The tree growth is principally red oak, mountain oak, white oak, scrub oak, pine, hickory, and dogwood. Wild grasses afford good pasturage during the larger part of the year. By carefully terracing the more gently rolling areas, where the gravel content is not so great as to interfere with cultivation, fair yields of the staple crops can be obtained. The type is deficient in organic matter.

HANCEVILLE SHALE LOAM.

The Hanceville shale loam consists of a brown to yellowish-brown silt loam, 6 to 8 inches deep, underlain to 36 inches by a yellow or red to brick-red, silty clay loam or silty clay. On the surface and throughout the soil and subsoil there are scattered varying quantities of weathered shale fragments, the content usually increasing with depth. Generally a mass of broken shale fragments is encountered at 24 to 30 inches. In the forested areas the first few inches have a dark-brown color. Where the type has been in cultivation a number of years the surface soil is reddish brown. Owing to differences in the weathering of the parent shales, the color of the subsoil varies widely, from yellowish brown or brownish red to brick red or red. Throughout the areas of this type there occur many small bodies of Hanceville loam, silt loam, and gravelly silt loam, too small to map. As a rule the Hanceville shale loam has not weathered deep. The disintegrated shale fragments are more abundant on the steeper slopes and in the rougher areas.

The Hanceville shale loam is developed throughout the eastern third of the county. The largest bodies occur in the northeast corner. The surface is gently rolling to rolling, with occasional steep slopes, especially in the northeast corner. Drainage is generally good, and often excessive on the slopes, where the type gullies badly.

Within a radius of 5 miles of Berry practically 90 per cent of the Hanceville shale loam is under cultivation, while in other sections only about 50 per cent of the type is cultivated. The forested areas support a growth consisting principally of red oak, white oak, Spanish oak, post oak, hickory, gum, poplar, and field pine.

The principal crops are corn, cotton, and hay. Corn occupies the largest acreage. All the crops except cotton are used on the farm, and the supply is not equal to the demand. A few hogs are raised for meat. Cowpeas, oats, and velvet beans are grown on nearly every farm. The oats are fed in the straw. Melons, sorghum for both hay and sirup, and all kinds of garden truck give fair yields. Corn yields 10 to 25 bushels per acre, cotton one-third to one-half bale, and hay about 1 ton.

The Hanceville shale loam is farmed and fertilized in practically the same manner as the Hanceville loam. The land sells at \$8 to \$25 an acre.

This soil is not as productive as the Hanceville silt loam and Hanceville loam, with which it is associated. In the steeper areas care must be exercised, upon clearing the land, to prevent leaching and wash. The methods suggested for the improvement of the Hanceville loam and silt loam apply equally to this type.

The thrifty condition of the few wheat fields observed during the survey would indicate that this crop could be profitably grown.

Peaches and some varieties of apples do well. Bur clover is grown by some farmers and should be universally used as a soil builder and forage crop.

HANCEVILLE GRAVELLY SILT LOAM.

The Hanceville gravelly silt loam to a depth of 6 to 8 inches is a light-brown to slightly reddish brown silt loam, with a high content of very fine sand. The subsoil is a reddish-brown to red, friable silty loam or silty clay. Scattered over the surface and throughout the entire soil section are varying amounts of angular silicious shale and sandstone fragments, and the bedrock is usually encountered within the 3-foot section. Where erosion has been active the surface soil has a reddish-brown color. The rock fragments over the surface vary in size from pieces a few inches in diameter to large slabs a foot or more across.

This type has a small total area in Fayette County. It occurs in small disconnected bodies along some of the streams in the eastern part of the county. In some places it occurs in strips so narrow that they could not be shown on the map without exaggeration, and they are indicated by gravel symbols. Surface drainage is generally excessive, and, owing to the nearness of the parent rock, crops suffer from drought. Practically all of this type is in forest, the principal growth consisting of oak, scrub pine, and hickory. The small part that is under cultivation is farmed in conjunction with the associated Hanceville silt loam and loam, and practically the same crops are grown. The yields, however, are lower. The type is handled and fertilized in practically the same manner as the Hanceville silt loam. For its improvement it requires much the same treatment as that type.

HANCEVILLE LOAM.

The surface soil of the Hanceville loam is a light-brown or grayish-brown to brown, friable loam, grading at 6 to 8 inches into a chocolate-brown or reddish-brown loam or clay loam which extends to 12 or 18 inches. The subsoil is a brownish-red to dull-red, friable clay.

Included with the type are some areas of Hanceville very fine sandy loam too small to separate. In the depressions throughout the larger, more nearly level areas, the surface soil approaches a mellow silt loam in texture, while along the edges of the sandstone benches, where the disintegrated sandstone occurs within the 3-foot section, small rock fragments are scattered in varying quantities over the surface and throughout the soil. Where sufficiently large such areas are mapped as Hanceville gravelly silt loam. On a few scattered knolls quartz gravel is distributed over the surface and throughout the soil section.

The Hanceville loam is an important type. It occurs in large areas in the eastern third of the county, where it commonly occupies

the broader sandstone benches. The town of Berry is situated on this type. The topography in general is undulating to gently rolling, with rolling to broken areas along the margin of the benches. On narrow ridges the surface is more rolling. The larger areas have a slight southwesterly slope.

Surface drainage is adequate except in the flatter areas and sink-like depressions, where ditching is necessary for the best results in farming. The subsoil is retentive of moisture, and crops do not suffer from lack of moisture except during periods of prolonged drought.

Approximately 85 per cent of the type is under cultivation. The original timber growth consists of oak, hickory, poplar, pine, gum, dogwood, maple, and persimmon. The most important crops produced are corn, cotton, oats, and hay, with the largest acreage in corn. Cotton apparently will occupy a small acreage this year (1917), approximately 2 to 6 acres to the plow. Cotton has always been the principal money crop. Practically all the corn, oats, and hay produced is fed to the work stock, cattle, and hogs. A small quantity of corn is ground for meal. The more progressive farmers produce enough supplies for their own use and to supply the needs of their tenants. Dairy cows are kept on most farms to supply the home demand. There are no specialized crops. Velvet beans, cowpeas, peanuts, sorghum (both for hay and sirup), soy beans, watermelons, and all kinds of garden truck do well. The condition of the few orchards observed would indicate that fruit growing could be extended with profit.

Corn ordinarily yields from 15 to 35 bushels per acre, and much larger yields have been obtained. Cotton yields one-third to three-fourths bale per acre, oats 15 to 25 bushels, hay 1 to 2 tons, and wheat 12 to 20 bushels.

The Hanceville loam is easily tilled, and can readily be improved. Crop rotations are practiced by the best farmers. The following rotation is popular: (1) Cotton one year, (2) winter oats, for grain or hay, (3) cowpeas and sorghum for hay, (4) winter oats, turned under, and (5) corn. Velvet beans or cowpeas are almost universally grown between the rows of corn. Commercial fertilizer is applied to cotton, but seldom to corn. Owing to the scarcity of potash and the high price of nitrates, 16 per cent acid phosphate is about the only fertilizer in present use. It is usually applied at the rate of 200 to 300 pounds per acre. Stable manure is used on corn land with good results.

Land of the Hanceville loam sells for \$10 to \$25 an acre, according to the location and improvements.

Deeper plowing should be done on this type. More organic matter should be incorporated in the soil, definite crop rotations, including

the legumes, should be followed, and winter cover crops should be grown. Better preparation of the seed bed is a general need. The use of lime would prove beneficial.

HANCEVILLE SILT LOAM.

The surface soil of the Hanceville silt loam is a brown to pale yellowish brown, smooth, slightly friable silt loam, 6 to 8 inches deep. The subsoil consists of a yellowish-red, reddish-yellow, or brownish-red, heavy silt loam to silty clay loam, passing at about 24 inches into silty clay. Very small sandstone and shale fragments are sparingly scattered throughout the soil and subsoil in most places.

In forested areas the soil in the first 2 or 3 inches is dark brown, owing to the accumulation of organic matter. Under cultivation this dark color soon disappears. Old fields that have remained fallow for several years have a pale-yellowish surface soil, while in those areas where better methods and deeper plowing are the rule the surface soil is reddish brown. The subsoil varies widely in color throughout the county, owing to differences in the weathering of the underlying sandstones and shales. Included with the type are a few very small areas of Hanceville loam, shale loam, and gravelly loam that could not be mapped separately without greatly exaggerating their size.

The Hanceville silt loam is confined to the eastern third of the county, where it generally occupies the lower slopes to streams and the broader, more gently rolling divides. The largest areas occur in the vicinity of Berry. The topography varies from rolling to hilly, and surface drainage is generally good. The subsoil is retentive of moisture.

This is a valuable soil. From 85 to 90 per cent is in cultivation. The small forested areas support a growth of red oak, white oak, Spanish oak, hickory, gum, poplar, beech, and pine.

Corn, cotton, and hay are the principal crops. The largest acreage now is in corn, although in the past cotton occupied a larger area than any other crop. Oats, velvet beans, and cowpeas do well on this type. The last two are generally grown between the rows of corn. The seed is picked and the vines either pastured or cut for hay. Very little of the crop is turned under. A few head of cattle are sold to buyers each year. Hogs are raised on every farm to supply in part the demands of the home. Cowpeas and sorghum are generally grown together for hay. The excellent condition of gardens on this type shows its adaptation to all kinds of truck crops. Corn yields 15 to 30 bushels per acre, cotton one-third to three-fourths bale, and hay 1 to 2 tons. Oats yield 15 to 25 bushels per acre. Wheat, which is grown in a few fields, yields 12 to 18 bushels per acre.

Farms on the Hanceville silt loam are valued at \$10 to \$30 an acre, the price depending on the location and improvements.

The farmers recognize that the Hanceville silt loam is a slightly stronger soil for cotton than the Ruston types. It is handled and fertilized in practically the same way as the Ruston fine sandy loam and loam. Deeper plowing, the incorporation of organic matter, and better preparation of the seed bed are essential for best results. Rotations in which the nitrogen-gathering crops play an important part should be followed, and fields should be carefully terraced.

Hanceville silt loam, steep phase.—The Hanceville silt loam, steep phase, resembles closely the typical soil except in topography. The surface soil consists of a brown to grayish-brown silt loam, 6 to 8 inches deep. In scattered areas throughout the phase it has a high content of very fine sand. The subsoil is a yellowish-red or brownish-red to dull-red silty clay loam, grading into a silty clay in the lower part.

The phase is developed throughout the eastern third of the county, the most extensive bodies occurring in the northeast and southeast corners. It typically occupies the steeper slopes or an intermediate position between the typical Hanceville silt loam along the lower slopes and the areas of Hanceville silt loam and Coastal Plain material on the crests of the ridges.

The topography varies from strongly rolling to broken. Drainage is thorough, and where cleared the type suffers from erosion. The forested areas support a growth of oak, hickory, pine, gum, persimmon, dogwood, and maple. About 95 per cent of the type is in forest, from which considerable quantities of lumber and crossties are cut annually.

The same crops are grown as on the typical Hanceville silt loam, but the yields are lower. Unless great care is exercised in protecting fields against wash the soil covering is almost entirely eroded away within 3 years. The methods of cultivation and fertilization used on the typical soil are followed on this phase, with more attention to terracing. Land values vary from \$2 to \$10 an acre, according to the location, improvements, and character of forest.

The methods suggested for the improvement of the Ruston fine sandy loam, hilly phase, and the Ruston sandy loam, hilly phase, can be applied to this phase.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the typical Hanceville silt loam:

Mechanical analyses of Hanceville silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
415625.....	Soil.....	5.3	2.4	0.9	3.2	25.4	49.2	13.5
415626.....	Subsoil.....	1.4	1.2	.5	1.8	16.0	47.0	32.0

KALMIA FINE SANDY LOAM.

The surface soil of the Kalmia fine sandy loam is a gray to pale yellowish gray, loamy fine sand to light fine sandy loam, 7 to 10 inches deep. The subsoil is a yellow fine sandy clay loam to fine sandy clay, slightly mottled in the lower depths with gray. In the flatter, more poorly drained areas the mottlings are more intense than on the higher elevations, where the subdrainage is good. Here the subsoil has a pale-yellow to bright-yellow color to a depth of 3 feet or more. This type includes areas of silt loam too small to map.

The Kalmia fine sandy loam is confined to the second terraces of the Sipsey River, Luxapallila Creek, and a few of the larger creeks in the western two-thirds of the county. The largest bodies occur along the Sipsey River. The surface is level to very gently sloping. The greater part of the type lies only a few feet above the first bottoms and 8 to 15 feet above the normal level of the streams and is subject to overflow during high water. Drainage is inadequate. Owing to the flat surface and the slow run-off, water stands on the surface after heavy rains. In the vicinity of Jones Mill and in a few other localities the type occupies a distinct third terrace about 10 to 15 feet above the second terrace level. Here the drainage is good.

About 80 per cent of the Kalmia fine sandy loam is cleared, and most of this is under cultivation. The forested land supports a growth of shortleaf pine, live oak, red oak, white oak, Spanish oak, maple, gum, and hickory, with some bay in the more poorly drained areas.

Corn and hay are the principal crops grown, the former occupying the larger acreage. Not enough corn and hay are produced ordinarily to supply the home demand, but a few of the more progressive farmers produce enough for their own use and to supply their tenants. Cotton gives good results in the better drained areas. It has always been the important cash crop. The hay consists principally of peas and sorghum grown together. Considerable crab grass, "hurrah" grass, and sedge is cut each year for hay. Cow-peas and velvet beans are grown on almost every farm, being seeded between the rows of corn. The seed is picked and the vines either pastured or turned under for manure. Sugar cane and sorghum are grown for sirup, of which an excellent grade is produced. The cane gives best results on the damp areas around the heads of drainage ways. Cantaloupes, watermelons, sweet potatoes, Irish potatoes, peanuts, and soy beans do well. Hogs are raised on all the farms, but not enough meat is produced to supply the demand. A few head of cattle are raised and sold to buyers who ship them out of the county.

Corn yields from 10 to 25 bushels per acre, cotton one-third to one-half bale, sugar cane 200 to 350 gallons of sirup, and hay 1 to 2 tons.

The Kalmia fine sandy loam is handled in practically the same way as the Ruston fine sandy loam and Norfolk silt loam. Commercial fertilizer is used on cotton land at the rate of about 200 pounds per acre, but fertilizer is seldom applied to corn. The fertilizer in general use at present (1917) is 16 per cent acid phosphate. Stable manure is applied to corn land whenever it can be obtained, with good results.

Land of this type sells at \$8 to \$25 an acre, according to the location with reference to towns and railroads and the condition of the farm.

The methods of improvement suggested for the Ruston fine sandy loam are applicable also to this type. Surface ditching in the more nearly level areas is very necessary for best results.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam consists of a grayish-brown to brown, light, fine sandy loam, 7 to 9 inches deep. The subsoil is a reddish-brown to yellowish-brown fine sandy clay loam to fine sandy clay. In the more poorly drained areas gray mottling occurs in the lower subsoil. Throughout the areas of this type there occur small bodies of Cahaba silt loam and very fine sandy loam too inextensive to map separately.

The Cahaba fine sandy loam occurs in small areas throughout the second terraces of the Sipsey River and Luxapallila Creek. The type lies slightly higher than the Kalmia fine sandy loam and is above ordinary overflow. The topography varies from level to undulating. Surface drainage is generally good. The subsoil is retentive of moisture and crops do not suffer except during periods of prolonged drought.

The Cahaba fine sandy loam is of small extent. It is considered a good agricultural soil and practically all of it is under cultivation. The few existing forested areas support a growth of oak, pine, hickory, maple, dogwood, and gum.

Corn occupies the largest acreage. Only a small acreage will be in cotton this year (1917), as most of the farmers recognize the importance of growing food crops to supply the local demand. Oats rank next in importance. The fall-sown varieties of oats give best results. This crop is generally fed in the straw. Cowpeas and sorghum or cowpeas and corn grown together constitute the principal forage crop. On some farms volunteer crops of crab grass, hurrah grass, and lespedeza are harvested. Velvet beans and cowpeas are

nearly always grown between the rows of corn. Sweet potatoes, Irish potatoes, watermelons, sugar cane, sorghum, and all varieties of garden vegetables do well, and are grown on a small scale by most of the farmers. A few hogs are raised and several head of cattle are kept on almost every farm.

Corn yields from 15 to 35 bushels per acre, cotton one-third to one-half bale, oats 15 to 25 bushels, and hay about 1 ton.

The type is fertilized and handled in practically the same manner as the Ruston loam and fine sandy loam. Very little commercial fertilizer except 16 per cent phosphoric acid is used at present, owing to high prices of mixed goods. Stable manure gives excellent results on corn land and is applied whenever it can be obtained. Green-manuring crops are grown to a small extent.

The suggestions made for the improvement of the Ruston fine sandy loam and Ruston loam can be applied to this type with good results. Deep plowing and the incorporation of more organic matter are very essential. Lime would improve the condition of the soil. Wheat has been grown on this type with good results and could be made a profitable crop.

Farms on this type sell for \$10 to \$30 an acre.

HOLSTON SILT LOAM.

The surface soil of the Holston silt loam is a brown or grayish-brown, mellow silt loam, 8 to 10 inches deep. The subsoil is a brownish-yellow to light-brown silty clay loam to silty clay. Slight elevations occur throughout the type, and in such areas the content of fine sand is likely to be relatively high.

This type occurs in strips along the larger streams of the eastern third of the county. The largest area, lying in the vicinity of Bazemore, occupies a second-terrace position 10 to 20 feet above the normal level of the stream, and only 1 to 3 feet above the first bottoms. It is thus slightly lower than the Cahaba and Kalmia soils. The Holston silt loam is subject to frequent overflows and crops are often damaged. The surface is level to gently sloping. Drainage is generally good. The subsoil is retentive of moisture.

The Holston silt loam is not extensive in Fayette County, but it is considered a valuable soil, and approximately 80 per cent of it is in cultivation. The forested areas support a growth consisting principally of pine, oak, hickory, gum, poplar, and maple.

The type is generally considered the best corn soil in the county, and practically the entire acreage is in this crop. Hay and forage, the crop of next importance, consist of cowpeas and sorghum grown together and of volunteer crops of crab grass, hurrah grass, and sedge grass. Cotton is seldom planted, but good yields have been obtained. Velvet beans and cowpeas are seeded between the rows of corn. Oats

are grown to some extent. Spring oats give best results. A few head of cattle are pastured each year.

Corn yields 30 to 75 bushels per acre, cotton one-third to three-fourths bale, oats 15 to 35 bushels, and hay 1 to 1½ tons. Commercial fertilizer is used only on cotton, mainly to make the crop mature earlier. It is applied at the rate of about 200 pounds per acre.

The Holston silt loam is handled in about the same manner as the Ruston loam and fine sandy loam. It has been improved on the better farms by ditching. The land sells at \$8 to \$40 an acre.

Deeper plowing and more thorough preparation of the seed bed would prove very beneficial on this soil. Levees and breakwaters should be built in places to prevent wash and overflows.

OCHLOCKONEE FINE SANDY LOAM.

The surface soil of the Ochlockonee fine sandy loam is a grayish-brown to brown loamy fine sand to light fine sandy loam, 7 to 10 inches deep. The subsoil is a brownish fine sandy clay loam to fine sandy clay, mottled with rusty-brown, gray, and yellow. As is generally the case in first bottom areas, the color and texture of the soil and subsoil vary widely from place to place, owing to differences in drainage and in the various forces of sedimentation during periods of overflow. The predominant soil, however, is a fine sandy loam in texture.

The Ochlockonee fine sandy loam is one of the alluvial soils of the Coastal Plains division. Along the creeks and smaller streams it occurs as narrow strips of first bottom and it is developed in the bottoms of the Sipsey River and Luxapallila Creek in larger areas.

The surface is flat, with a slight gradient toward the streams. The type is subject to frequent overflow. Along the smaller creeks the run-off is rapid and where the type lies 4 to 8 feet above the normal water level drainage is good. In other areas drainage is poor.

The forest on this soil consists of oak, pine, hickory, gum, beech, maple, redbud, bay, and ironwood. About 70 per cent of the type has been cleared, and most of the cleared land is in cultivation. Where well drained it is highly prized for the production of corn, being counted, next to the Holston silt loam, the best corn soil in the county. Practically 80 per cent of the acreage under cultivation is in this cereal. Hastings Prolific and Mosby are the favorite varieties.

Hay and forage are the crops of secondary importance. Sorghum, cowpeas and sorghum grown together, and crab grass are the principal forage and hay crops. Oats are gradually becoming more important in the rotations. The crop is generally fed in the straw. Cotton produces well, but is seldom grown on this type. Sweet potatoes, cowpeas, peanuts, velvet beans, and all kinds of garden vegetables do well. Sugar cane produces a fine grade of sirup. Wild

grasses flourish and afford excellent pasturage for the few head of cattle ordinarily kept. A few hogs are raised on most farms.

Corn on this type yields from 20 to 40 bushels per acre. With the application of 800 pounds of a 10-2-2 mixture as much as 102 bushels per acre has been produced. Cotton yields one-third to one-half bale per acre; oats, 15 to 30 bushels; and hay, 1 to 2 tons. Sweet potatoes yield 250 bushels per acre and sugar cane 200 to 300 gallons of sirup. Commercial fertilizer is seldom used, applications being confined to cotton. The type is handled in practically the same way as the associated Ruston fine sandy loam.

Land of the Ochlockonee fine sandy loam is valued at \$10 to \$25 an acre.

Deeper plowing and the adoption of definite rotations, including nitrogen-gathering crops, will prove very beneficial on this soil. The stream channels should be straightened and cleaned out, and ditches cut along the lower slopes of the uplands to prevent inwash of sand.

OCHLOCKONEE SILT LOAM.

The Ochlockonee silt loam consists of a brown, rather compact silt loam, 6 to 8 inches deep, underlain to 36 inches by a brownish or grayish silty clay loam to silty clay, mottled with gray, rusty brown, and yellow. On the higher elevations the surface soil is light brown and lighter textured than typical, while in depressions it approaches a silty clay loam. The mottlings in the subsoil are more pronounced in the low, poorly drained areas. Included with the type are small areas of Ochlockonee fine sandy loam, Ochlockonee clay loam, and Bibb silt loam, too inextensive to separate. The most prominent area of Bibb silt loam occurs near the point where the road between Fayette and Winfield crosses Luxapallila Creek, 3 miles north of Fayette. Here the soil is a gray silt loam and the subsoil is mottled light gray, white, and yellow.

The Ochlockonee silt loam occurs in large first-bottom areas along the Sipsey River and Luxapallila Creek, marking broad timbered flats along these sluggish streams, where water stands for long periods after overflow and rains and where the run-off is slow.

As this type is subject to frequent overflow very little is in cultivation. The greater part supports a growth of gum, oak, bay, hickory, pine, holly, and maple. Large quantities of hardwood are being cut in the forests on this soil at present.

Corn is the principal crop. Oats are sometimes grown in the better drained areas. Crab grass and hurrah grass grow wild, and are either pastured or cut for hay. The large canebrakes on this type furnish excellent winter pasturage.

This type is farmed in practically the same way as the associated Ruston fine sandy loam. When the proposed plans for drainage along Luxapallila Creek have been carried out the extensive areas

of this type along that stream will form the richest and most valuable part of the farm lands of Fayette County. The type should be the best corn soil in the county, as it represents the accumulation of wash from other soils and is rich in organic matter.

POPE FINE SANDY LOAM.

The surface soil of the Pope fine sandy loam is a light-brown to brown, loamy fine sand to light fine sandy loam. The subsoil is a mottled brown, rusty-brown, gray, and yellow, heavy fine sandy loam to fine sandy clay loam grading into a fine sandy clay below 30 inches. The mottlings are more intense where the drainage is poor, and in areas where the subdrainage is good a uniform brown color may extend to 3 feet or more. Included with the type are some areas of silt loam too small to separate on a map of the scale used in this survey.

The Pope fine sandy loam occupies first bottoms along the streams which have their source in and flow through the Appalachian Mountain and Plateau region. It generally occurs in narrow strips. The type is subject to frequent overflow, but the water drains off quickly when the floods subside.

Approximately 80 per cent of this type is cleared, but not over 60 per cent is in cultivation at present. The tree growth consists mainly of gum, oak, beech, maple, bay, and ironwood.

The same crops, ranking in acreage in approximately the same order, are grown on this soil as on the Ochlockonee fine sandy loam, which it closely resembles. Practically the same yields are obtained. The Pope fine sandy loam is generally farmed in connection with the Hanceville loam and silt loam, and it is handled and fertilized in practically the same manner. The type has practically the same value as the associated Hanceville soils.

Recommendations made for improving the Ochlockonee fine sandy loam and silt loam will apply equally well to this type.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Pope fine sandy loam :

Mechanical analyses of Pope fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
415627.....	Soil.....	3.2	9.4	9.4	32.4	16.5	22.6	6.5
415628.....	Subsoil.....	1.6	8.0	7.8	18.6	18.7	30.5	14.7

POPE SILT LOAM.

The surface soil of the Pope silt loam is typically a light-brown to brown silt loam, 8 to 10 inches deep, with variations of dark-brown mellow loam in some areas. The subsoil is a brownish-yellow, silty

clay loam, mottled with rusty brown, gray, and yellow, the mottling being most intense in the more poorly drained areas. Frequently below 24 inches the subsoil passes into a silty clay, while in other areas it is a heavy silt loam. Included with this type are small areas of fine sandy loam and loam. It represents reworked Appalachian material.

The Pope silt loam occurs principally in the first bottoms along North River and the smaller streams in the northeast corner of the county. The largest areas are developed in the vicinity of Boones Mill. The type lies only 2 to 6 feet above the streams and is frequently flooded, but the water does not remain on the surface for long periods.

Where this soil is well drained it is considered valuable for corn and small grains. About 50 per cent is in cultivation, the remainder being forested principally with oak, hickory, gum, bay, willow, ironwood, and beech.

Corn occupies the largest acreage. Cotton is seldom grown, although where the type is well drained good yields are obtained. Forage and hay crops follow corn in importance. Cowpeas and sorghum are the chief forage crop. Hay is made from the native wild grasses. Oats, grown to a small extent, are fed in the straw. Velvet beans and cowpeas, peanuts, and soy beans are being grown more extensively both for feed and for soil improvement. A few hogs and some cattle are kept on most farms.

The Pope silt loam is farmed in practically the same way as the associated Hanceville silt loam and loam, though fertilizers are never applied. The yields are practically the same as on the Ochlockonee silt loam.

Land of this type is always sold in connection with the Hanceville loam and silt loam, and is valued at about the same price.

With deeper plowing, the rotation of crops, more thorough preparation of the seed bed, and the incorporation of green manures, yields on this soil can be greatly increased. The streams should be ditched and straightened and levees thrown up to prevent inwash of undesirable sediments and erosion of the surface.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Pope silt loam:

Mechanical analyses of Pope silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
415623.....	Soil.....	0.9	1.4	0.9	7.2	24.0	50.6	14.9
415624.....	Subsoil.....	.7	3.6	4.1	18.9	15.0	39.5	18.1

ROUGH BROKEN LAND.

Rough broken land comprises steep broken areas unfit for farming. The slopes are precipitous and the ridges narrow and winding. In many places the soil covering has been eroded away and the parent sandstone and shale exposed. The type is confined to the extreme southeastern township. A few areas, too small to map, are scattered through areas of the Hanceville silt loam, steep phase.

Rough broken land is of no value except for the small amount of timber that can be cut and the scanty pasturage it affords.

SUMMARY.

Fayette County is situated in the northwestern part of Alabama, in the second tier of counties from the Mississippi line. It has an area of 620 miles, or 396,800 acres.

The topography varies from level and undulating to strongly rolling and hilly. This rougher topography prevails over the greater part of the county. Level to undulating areas are developed along some of the streams and on the tops of the broader divides. The elevation of the county above sea level ranges from 240 to 595 feet. The greater part has an elevation of 300 to 500 feet. The prevailing slope is toward the south. The county is drained by Luxapallila Creek, Sipsey River, North River, and their tributaries. Drainage is almost everywhere good.

Fayette County in 1910 had a population of 16,248, the greater part of which is engaged in agriculture. About 14 per cent of the population consists of negroes. The principal towns are Fayette, Bankston, Berry, Belk, Covin, and Glen Allen. Transportation is afforded by several lines of railroad. Approximately 40 miles of hard-surfaced highways have been built. Telephones are in general use in some sections, and rural mail routes serve most of the farmers.

Schools and churches are located at convenient places throughout the county. Most of the farm products are used at home. Birmingham, Columbus, Miss., and Memphis, Tenn., are the principal outside markets.

The climate of Fayette County is mild and equable. The mean annual temperature as reported at Birmingham is 63.4° F., and the mean annual precipitation as reported at Cordova, which is about 34 miles due east of the center of the county, is 52.92 inches. The average growing season is 231 days in length.

The agriculture of Fayette County consists of the growing of general-farm crops, including corn, cotton, hay, and vegetables. A few hogs and cattle are raised and some fruit is produced on almost every farm. Throughout the greater part of the county the farm dwellings are small, but in the more progressive sections more substantial

improvements are the rule. The barns are mostly small. The work stock consists of medium-weight horses and mules.

Definite crop rotations are practiced only in the better developed sections of the county. The use of commercial fertilizer has fallen off in the last few years. Sixteen per cent acid phosphate is about the only kind in general use, and practically all of this is used on cotton.

The supply of farm labor is hardly sufficient. Many tenants have left the farms to work around the numerous sawmill camps. The size of farms ranges from 30 to 350 acres. Most of the farms comprise 40 to 120 acres. Farm lands range in price from \$4 to \$60 an acre. In the level to undulating areas near Fayette and south of Winfield the price is much higher than elsewhere, ranging from \$40 to \$60 an acre.

Fayette County lies within the limits of the Appalachian Mountain and Plateau province and the Atlantic and Gulf Coastal Plain province, the latter embracing practically the western two-thirds of the area. The soils of the Appalachian Mountain and Plateau province are derived from the underlying sandstones and shales of Carboniferous age. These rocks give rise to the Hanceville soils. The Ruston, Norfolk, and Guin soils are derived from unconsolidated deposits of sands and clays, laid down in ages past in coastal waters. The alluvial deposits along the streams are classed with the Kalmia, Cahaba, Holston, Ochlockonee, and Pope series.

The Ruston fine sandy loam is the most extensive type mapped and the principal agricultural soil. The Hanceville silt loam, Hanceville loam, and Ruston loam also are highly prized by the farmers. Corn, cotton, and hay are the principal crops on these types. The bottom land soils are best adapted to corn, and the Holston silt loam and Ochlockonee fine sandy loam are by far the best corn soils in the county.

The soils of Fayette County respond readily to improvement and can be built up to a high state of productiveness. The rough, broken areas should be left in forest or devoted to pasture.

United States engineers have completed a survey of Luxapallila Creek with a view to draining and reclaiming the broad first bottoms. This area when improved will constitute a most important agricultural section 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.]

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