SOIL SURVEY OF CLAY COUNTY, MISSISSIPPI.

By E. L. WORTHEN.

DESCRIPTION OF THE AREA.

Clay County, Miss., is located in the northeastern section of the State, being approximately 80 miles south of the northern boundary line and 15 miles west of the Alabama state line. It is included between the parallels 33° and 34° north latitude and the meridians 88° and 89° west longitude. The county is bounded on the north by Monroe and Chickasaw counties, on the east by Monroe and Lowndes, on the south by Lowndes and Oktibbeha, and on the west by Webster and Chickasaw counties.

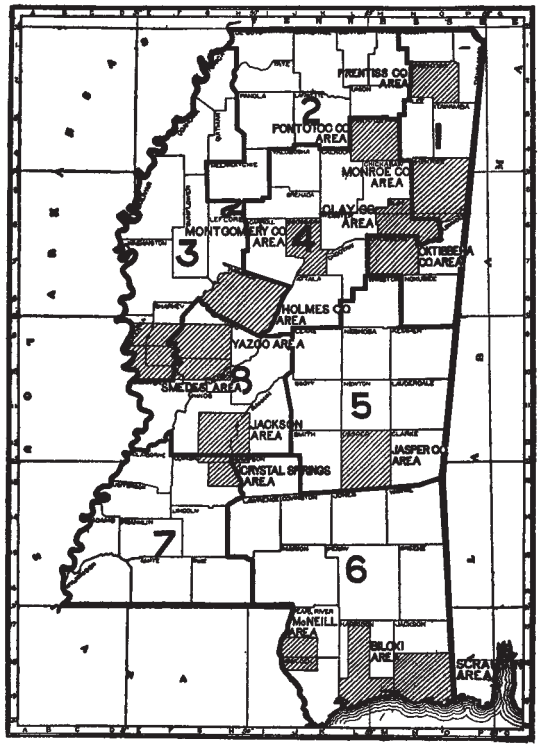

FIG. 28.—Sketch map showing location of the Clay County area, Mississippi.

In shape it is very irregular. The greatest length north and south is about 21 miles; east and west, 31 miles. The Tombigbee River forms part of the eastern boundary and Tibbee, Catalpa, and Line creeks part of the southern boundary. The total area of the county is 417 square miles, or 266,880 acres.

The surface of Clay County varies from level or undulating to very hilly. The largest area of rough land, known as the Kilgore Hills, is located in the northwestern part. Much of this section is too rough

for cultivation, and where attempted serious erosion has often followed. To the east the Tombigbee bluff, for a distance of 1 or 2 miles back from its crest, also presents so broken a topography that only a small percentage of the land is fit for farming. There are other less extensive areas scattered throughout the county which are so rough as to make successful cultivation difficult. These occur chiefly along the slopes of some of the larger streams and at the headwaters of many of the smaller ones. There are a few flat areas of poorly drained upland found in the flatwoods section in the western part of the county and along some of the gentle slopes on the north side of the larger streams. Most of the upland, however, is rolling enough to have satisfactory surface drainage without being too broken for profitable farming.

Along the larger streams there are broad, flat valleys which are poorly drained and subject to frequent flooding during the winter and spring months. These so-called swamps are heavily timbered, and will continue totally unfit for agriculture until artificially drained. This is being undertaken, and a survey has been made for draining all the larger swamps in the county into the Tombigbee River. When the ditching, which has already begun, is completed, the lands will be largely drained and put under cultivation. These ditches will probably not prevent an occasional overflow, but they will carry the water off quickly, the periods of inundation will be of short duration, and serious damage to crops will be avoided. Such ditches should satisfactorily carry off the surface water resulting from floods during the growing season.

Originally the greater part of the county was heavily wooded. The timber consisted largely of black-jack, red, white, and post oaks, pine, hackberry, gum, and elm. In the main, this growth is rather scrubby and of little commercial value, but there is still some pine scattered throughout the western part of the county and in the immediate vicinity of the Tombigbee River which is merchantable. There is much valuable hardwood timber in the larger river bottoms, consisting mainly of cow, white, and water oak, hickory, etc. Some valuable cypress also occurs along the Tombigbee River, but the best of this has been removed.

There are two extensive prairies in the county; one is north and east of West Point and the other immediately west of Sakatonchee River and south of Hoolka Creek. They cover an area of about 40 and 30 square miles, respectively, and support a rank growth of prairie grasses, with here and there a grove of black-jack and post oak. Only about one-half of these prairies is composed of black calcareous soils.

The drainage of the county flows in a general southeasterly direction into the Tombigbee River. The principal streams which form

this drainage system are Sakatonchee River and Tibbee, Line, and Hoolka creeks, with their tributaries. The larger creeks have low, flat bottom lands, often a mile in width. As already mentioned, the bottoms are subject to occasional overflows, and because of their poor drainage are locally termed swamps. The only extensive watershed lies between Sakatonchee River and its tributaries and Line Creek. This divide extends from the northwestern part of the county southeast to the junction of the two streams. It is high and rugged in the northern part, but to the southeast it passes gradually into a gently rolling, rather rounded divide. The highest altitude in the county is found in the region of the Kilgore Hills, near the northwestern corner.

A few settlers came to the county during the early thirties, before the completion of the original government survey, but it was not until the later thirties that any number of people moved to this section. These settlers came from the States farther east, especially North and South Carolina, Georgia, Alabama, and Virginia. The first settlements were made along the Tombigbee River and in the northwestern section of the county in the vicinity of what is now the village of Montpelier.

Clay County was organized in 1871 from parts of Lowndes, Webster, Chickasaw, Monroe, and Oktibbeha counties, and was at first called Colfax County. A few years later the name was changed to Clay County. The present courthouse was built in 1875.

The western part of the county was originally settled by people of very moderate means, who owned few, if any, slaves and farmed on a small scale. This flatwoods belt has never been thickly populated, and very little agricultural advancement was made before the completion of the Southern Railroad. Even in recent years it has been improving very slowly. In the prairie regions different conditions have existed since the earliest settlement. Large plantations have been the rule, but since the war most of the landowners live in towns, and the greater part of the land is rented to negroes, the result being that many farms have deteriorated. The county even at present is somewhat sparsely settled. According to the Twelfth Census the population in 1900 was 19,560, of which 13,633 were negroes.

The greater part of the prairie land around West Point is under cultivation, but with this exception the agricultural possibilities are not realized. Within comparatively few years many farmers from the North have settled on the black land east and north of West Point. The prairie section west of Sakatonchee River is generally under cultivation, but much of the timbered upland is still heavily forested, and the broad, fertile valleys along the streams have only here and there been cleared and drained.

The public roads are systematically and carefully worked, being kept in better condition than most of the county roads in the State. But even with the care given the roads, those through the prairie section become very bad at times during the rainy winter season. Much interest is being manifested in road improvement, and surveys are being made for macadamizing the main roads into West Point.

The county is very well covered by rural mail routes and telephone lines are found along many of the public roads. County schools for both white and colored children are numerous.

West Point, with a population of about 6,000, is the county seat and chief town of the county. It affords an excellent market and shipping point for all farm products. It has two large cotton-seed oil mills, a compress, and a cotton mill. Pheba, Cedarbluff, and Tibbee Station are small railroad towns, while Montpelier and Abbott are inland post-offices.

The eastern and southern parts of the county are well supplied with railroads, but the northwestern portion is greatly in need of them. The Mobile and Ohio traverses the eastern part from north to south and furnishes excellent shipping facilities to St. Louis, Mobile, and New Orleans. The Southern Railway crosses the southern part of the county from east to west, giving access to the markets of the east and those farther west in the State. The Aberdeen branch of the Illinois Central runs through the eastern part of the county. It affords another outlet to the South, especially New Orleans, and gives direct connections on the main line to Chicago.

CLIMATE.

The climate of Clay County is typical of the South Central States and taken the year round is very healthful. The changes in temperature are somewhat greater here than farther south in the State, where the influence of the Gulf is felt. The summers are long and warm. The average summer temperature is about 80° F., but the extremes are no higher than in many of the more northern States, a temperature of 100° F. being seldom reached. The winters are short and mild, with a temperature averaging about 46° F. Cold snaps of a few days' duration occur, when the temperature drops below freezing, but 10° to 15° above zero is exceptionally cold weather, and warm, springlike days occur throughout the winter months. The humidity of the atmosphere, however, intensifies both the summer heat and winter cold.

There is an annual rainfall of about 50 inches, which is well distributed throughout the year. The greatest precipitation generally occurs during the winter and spring months. The late spring and summer rains come as showers, while those of winter and early spring are more prolonged, frequently lasting three or four days.

The fall months are usually dry and consequently favorable for harvesting cotton and other crops. On account of rain considerable difficulty is experienced in curing hay cut in the spring and early summer months.

Even with the large rainfall, periods of drought frequently occur during the fall months and are often of such duration as to injure crops. This is especially true on the lighter soil types. By employing more efficient methods of tillage, crops would seldom suffer from lack of moisture even on the high sandy soils.

Very little snow falls so far south in the State. A light snowfall may occur, but it soon melts, never remaining longer than a few days, and there are many winters without any snow. The ground seldom freezes over an inch or two, so that winter legumes and cover crops, such as oats and rye, make more or less growth throughout the winter.

The average date of the last killing frost in the spring is March 27 and of the first in the fall about November 4, giving a growing season of more than seven months. During the long summers it is often possible to grow two crops on the same ground in one season. Owing to the short winters there is a long grazing period for cattle, hogs, and sheep, and the mild weather makes it possible for the farmer to do much of the farm work which farther north must necessarily be left until spring.

The following table gives the normal monthly, seasonal, and annual temperature and precipitation, the absolute maximum and minimum temperatures, the snowfall, and the amount of precipitation for the driest and wettest years for the Weather Bureau Station at Palo Alto, Clay County:

Normal monthly, seasonal, and annual temperature and precipitation at Palo Alto.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*	*Inches.*
December	47	76	6	4.6	4.2	3.6	0.9
January	45	79	6	5.7	1.6	2.5	2.3
February	47	78	−10	5.4	4.2	5.9	2.1
Winter	46	.....	.....	15.7	10.0	12.0	5.3
March	55	85	18	7.3	2.1	7.2	.7
April	64	93	29	3.6	4.3	7.7	.0
May	73	96	44	3.4	7.7	5.5	.0
Spring	64	.....	.....	14.3	14.1	20.4	.7

Normal monthly, seasonal, and annual temperature and precipitation at Palo Alto—Con.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*	*Inches.*
June	79	99	48	4.1	2.3	15.3	0.0
July	81	104	59	5.0	1.2	4.6	.0
August	80	103	52	4.2	3.8	3.8	.0
Summer	80			13.3	7.3	23.7	.0
September	75	100	38	3.4	8.2	1.8	.0
October	64	93	32	2.5	.4	10.4	.0
November	54	89	19	2.6	2.4	1.2	T.
Fall	64			8.5	11.0	13.4	T.
Year	64	104	−10	51.8	42.4	69.5	6.0

AGRICULTURE.

The agricultural history of Clay County is very similar to that of a large proportion of the Central South. Cotton and corn were the leading crops grown by the early settlers. They were cultivated in a crude fashion, but, in general, along the same lines as they are to-day. Because of the lack of transportation facilities, more of the home necessities, including wheat, vegetables, fruit, and pork were produced during the early days of settlement, and for this reason a more diversified agriculture was practiced at that time than in recent years.

The Tombigbee River and its tributaries furnished the only means of transportation prior to the completion of the Mobile and Ohio Railroad about 1860. Steamers ascended the river as far as Columbus, but there were frequent periods of the year, each of several months' duration, when the river was too low to be navigable. The staples required by the settlers were brought in and large cargoes of cotton were taken to Mobile, which was the chief cotton market of the section.

Early in the history of the area two distinct systems of farming were evolved. On the prairie sections, which were the first to be put under cultivation, and along the edges of the wider stream bottoms there were developed large plantations worked exclusively with slave labor, while in the wooded sections the land was divided into smaller farms, which were farmed largely by the owner and his family. This same division exists to-day in a modified form, since, broadly speaking, the eastern part of the county is still held in com-

paratively large tracts by white planters, most of whom live in adjoining towns and rent their plantations, while in the western section of the county the land is now owned in comparatively small bodies by white farmers who live on their own farms. The proportion of negroes to whites on the farms in the western part of the county is much smaller than in the eastern section. There are several negro settlements, however, in the northwestern part of the county, where they own and operate their own farms.

The agriculture of this section of the State has not materially changed since its early settlement. Cotton has remained the leading product and is considered the only money crop. Corn ranks next in importance, though there is not enough produced to supply the home demand, and each year large quantities are shipped in from the corn belt. Although the farmers of the county are very much inclined to prepare their land and cultivate their crops in precisely the same way as has been the custom since the section was first settled, there has been a steady improvement in the agricultural conditions of the area during the last ten or fifteen years.

Cotton and corn are universally planted on ridges, but in most cases the seed bed is not thoroughly prepared. In the prairies the breaking is largely done with two-horse breaking plows, but in the hill section the one-horse diamond plow is still in common use. Both crops are planted with one-horse drills and cultivated with one-horse implements. The cotton crop generally receives pretty thorough cultivation, but in order to do this the corn is usually neglected. About the only attention given the latter crop after planting is to run through it hastily two or three times with a small plow.

Besides cotton and corn, the crops of the area are oats, hay, cowpeas, sweet potatoes, sorghum, and peanuts. Peaches, figs, pears, and plums constitute the principal fruits, but they are seldom grown except for home use. Oats are never thrashed, but are cut just before ripening and utilized for forage. Alfalfa and Johnson and Bermuda grass form the principal hay crops, though cowpeas and lespedeza are grown to some extent for forage. Johnson grass was introduced a number of years ago and has proved a profitable hay crop, but on account of the rapidity with which it spreads and the difficulty encountered in its eradication it has become very much of a pest in the cotton and corn fields. Alfalfa was first grown about 1900, since which time it has increased in popularity very rapidly. It is now extensively grown on the calcareous prairie soils.

Very little attention has been given to the live-stock industry. Some mules and hogs have always been produced, but the local demand for these far exceeds the supply. In general, the dairy stock is raised at home and the quality of the milch cows is superior to those found in many sections of the State. According to the census of 1900 the total value of live stock in the county was $567,625.

It is impossible at this time to give any very recent statistics showing the relative importance of the different crops of the county. The following figures, which are for the year 1899, were taken from the census report of 1900. There were at this time 45,484 acres in cotton, yielding 15,909 bales, or approximately one-third bale per acre. This same year 39,759 acres were in corn, giving a total yield of 618,320 bushels, or 20 bushels to the acre. The same report gives a total of 1,750 acres in grasses, clovers, and grains cut for hay, with a yield of 2,380 tons, which is a little less than 1½ tons per acre. The value of all orchard products is given at $7,502.

It is only in a very general way that the adaptation of crops to certain soils is recognized. Cotton is grown throughout the county on every soil type cultivated. While it is true that this crop, more than any other important one of the area, adapts itself to a great diversity of soil conditions, very frequently other crops could probably be grown with more profit on certain types, and surely others should be introduced in a rotation with this staple.

Corn is generally planted only on the richer upland types and on the fertile stream bottoms. Alfalfa is seldom sown except on the calcareous soils, where it almost invariably does well, unless the drainage is inadequate. Occasionally some of the acid soils have unfortunately been seeded to this legume.

Very little attention is given to the rotation of crops in the county. The majority of farmers plant cotton or corn on the same ground year after year. Occasionally these two crops are rotated with each other, but with little if any profitable results. It has been proved that cowpeas are very beneficial to the soil, especially on the sandy types, but they are not grown nearly as extensively as they should be. Alfalfa has not been produced long enough in the area to demonstrate its effect on the following crop. In the few cases where alfalfa meadows have been broken up, the succeeding crop of corn or cotton has been far superior to that on the same ground preceding the alfalfa. The lack of any systematic crop rotation is due largely to the universal system of making cotton the only money crop. The advance of the boll weevil upon this section, together with the rapidly decreasing productivity of the lands continually planted to cotton, will naturally force diversification of crops upon the farmers of the county and necessitate the adoption of some system of crop rotation.

While it is true that there has been a steady improvement in the agriculture of Clay County during the last decade, and fewer farms are mortgaged now than there were ten years ago, too much interest money is being paid out by the farming class. Planters will very commonly borrow on their crops in the spring and pay a high rate of interest throughout the summer while these crops are maturing. However, there are many who have broken away from the prevailing

system and who are able to meet as they arise the expenses of growing their crops. The tenants are universally "run" either by the plantation owner or by some merchant. The rent for the land and the liens for the supplies advanced are paid for with cotton, the landlord's claim being met first and then the merchant's. No cotton can be sold by the tenant until all sums charged against him, with a high rate of interest, have been paid. This universal credit system is doing much to retard the agricultural development of the section.

Very little fertilizer is used in the county. That applied consists mostly of cotton-seed meal or barnyard manure. Commercial fertilizers are used to a very limited extent. Considerable interest in this question is being manifested by the better farmers, and the indications are that the fertilization of field crops will be more generally practiced in the near future.

Negroes constitute practically all the farm labor. When furnished a comfortable house and given fair wages, it is seldom difficult to secure any number desired. They are not particularly skillful, except in the production of cotton, and require more or less supervision in the growing of this crop. Many prefer to rent small tracts of ground on shares rather than to work for wages. The average day wage is 75 cents for men and 50 cents for women. During cotton-gathering time laborers are paid according to the weight of cotton picked. Labor can be secured by the month for $10 to $15, with rations. The total expenditure for farm labor in the county, as given by the census of 1900, was $18,950.

According to the Twelfth Census there were 198,929 acres in farm land in Clay County in 1900, of which 111,929 acres were improved. The valuation of all farm lands and improvements was $2,014.160, and $419,040 of this was credited to buildings. The average size of the farms, as given by the same report, was 70.6 acres, but each tenancy is enumerated as a farm, so that the actual size of the average individual holdings is much greater than these figures would indicate. Farms of less than 40 to 60 acres are uncommon, and many tracts of 500 to 1,000 acres are owned by one individual or an estate.

The most popular form of tenancy is to rent the land in tracts of 20 to 40 acres. Such tracts are commonly termed "one-mule farms," meaning that this is the amount of land a man can tend with one mule. In case the tenant furnishes everything needed to produce the crop, he gives the landlord one-third of the produce; but when the landlord furnishes the work stock and tools, he receives two-thirds of the crop. Some land is rented for cash, the rate varying considerably with the quality of the land, but averaging about $3 an acre. Alfalfa fields in the vicinity of West Point, however, bring as much as $7.50 to $10. In all forms of tenancy either the landlord or the merchant furnishes the necessaries of life while the crops are

being grown. Many tenants failing to make full payment from the proceeds are carried from year to year by merchants.

The values of farm lands are comparatively low, though they have been advancing rapidly within the last few years. The sandy soils range in price from $8 to $20 and the black prairie lands from $50 to $60 an acre. More definite values are given under the description of the various soil types.

Even with the rather rapid improvement in the agricultural conditions within recent years, it is still apparent that agriculture has not reached a stage of development corresponding to that of a large part of the farming districts of the country. This is due to various factors which bear directly on farming rather than to any unproductiveness of the soil, for the soils of Clay County are rich enough to warrant a more productive agriculture and a more prosperous rural population. More diversified farming should be practiced. Cotton should be continued as the leading crop, but attention should be given the production of crops other than cotton and corn. A systematic effort should be made to abolish the present credit system. All these changes would tend to hasten a better development and bring greater prosperity to all concerned.

The soils and climatic conditions of Clay County are exceptionally favorable for the production of a great variety of crops. In fact, the growing season is so long that two crops may be produced in one season on the same land, and the winters are seldom too severe to allow the growing of winter forage or at least a winter cover crop. Among the crops other than cotton and corn which are worthy of the attention of the farmers of this community are alfalfa, cowpeas, bur clover, oats, lespedeza, velvet beans, vetch, peanuts, sorghum for forage, and redtop, Bermuda, and various other grasses. More attention should be given to growing garden and orchard crops on the soil types to which they are adapted.

Large sums are expended annually for work animals. There is no reason why mules should not be produced as cheaply in Mississippi as they are in the States to the north, and of equal quality, too. With a little care, excellent pastures could be established on most of the soils of the county, and with the long growing season they should furnish grazing the greater part of the year. Hogs also should be raised in greater numbers than at present. There is no excuse for the importation of a large part of the pork products consumed in the area. With the elimination of the Texas-fever tick, the production of all grades of cattle should rapidly increase.

There are various crop rotations that can be worked out for the different soils. A good three-year rotation for the sandy types would be corn and cowpeas the first year, cowpeas and lespedeza the second, and cotton the third. For the calcareous prairies the follow-

ing four-year rotation is a good one: First and second years, alfalfa; third year, corn and cowpeas; and fourth year, cotton. It would be well gradually to lengthen this rotation to six or eight years, since the seeding of alfalfa is so expensive that when a good stand is once secured it seems advisable to leave it for three or four years. The velvet bean is an excellent crop to bring into the rotation on the sandier types, as it makes a luxuriant growth and materially enriches the soil. Bermuda grass is valuable as a winter forage crop. It makes a good growth in the late winter and early spring, thus furnishing a very valuable early pasture for stock.

The interest manifested and the success already attained in growing alfalfa on the Houston and Trinity clays is very gratifying. There seems to be a tendency, however, to grow this crop exclusively on certain lands, just as cotton has been grown year after year in the past. It would be a better practice to produce hogs and corn in connection with the alfalfa, and to plant the fields occasionally in cotton, to secure the benefit of the enrichment of the land by the alfalfa.

In many sections of the county greater care should be taken to prevent erosion. Often the steeper slopes should have been left in timber and not cleared and allowed to gully until practically worthless, as has frequently been the case. Deep plowing, the incorporation of larger amounts of organic matter in the surface soil, and pasturing the rolling areas instead of planting them to cultivated crops would materially lessen destructive washing. In other sections the soils need more thorough drainage. It is only within comparatively recent years that drainage has received any great attention, and even now very little underdraining is done.

Many of the soils of the county are deficient in humus and the method of farming generally practiced tends to lessen continually this supply. Leguminous crops should be grown more frequently and occasional growths of these turned under. Such treatment, combined with the application of all available farmyard manure, would soon restore a normal amount of humus to the surface soils. Level cultivation could often replace ridging or bedding to advantage. In this case the plowing should be deep on most of the types. The adoption of a more thorough and economic system of cultivation, as well as a better preparation of the seed bed before planting, and the use of more carefully selected seed are matters worthy of the serious consideration of the farmers of the area.

SOILS.

There are four geological formations which have entered into the formation of the soils of Clay County. They are the Selma Chalk, the Lignitic clay, the Lafayette sands, and the Yellow Loam formations. The present surface covering in many places, especially

along the streams, has been modified by more recent alluvial deposits of the Quaternary period.

The Selma Chalk belongs to the Cretaceous period and is the oldest formation influencing the soils of the area. It underlies much of the county, but is only found at the surface in two extensive areas, one east and north of West Point and the other west of Sakatonchee River and south of Hoolka Creek. They have a combined area of about 75 square miles and are known as the West Point and Abbott prairies, respectively.

The Selma Chalk consists of a rather soft shaly limestone, which was deposited in the deep waters of the Gulf of Mexico when it covered this region. It is found in all stages of decomposition. Usually the upper strata where exposed have weathered into a rotten limestone or chalky material, though exposures of the hard blue limestone occur in the Abbott prairie. These exposed rock surfaces are generally strewn with cretaceous shells, the most common of which are Ostrea, Exogyra, and Gryphæa. This formation gives rise to the Houston clay as a direct result of weathering. In conjunction with some of the later formations it is responsible also for the derivation of the soils of the Oktibbeha series. The type called the Houston chalk includes those areas which have only partly weathered into soil. This formation also gives rise at least partially to the Houston loam.

The Lignitic formation, immediately succeeding the Selma Chalk, belongs to the Eocene epoch of the Cenozoic era. It consists of very plastic laminated clay which occasionally is of a noticeably slaty nature. It is of a characteristic gray color and underlies practically all of the flatwoods section in the western part of the county. In some of the eastern sections of the county it has influenced the soils locally. The Lufkin clay has been derived directly from these Lignitic clays, while the Lufkin fine sandy loam owes its origin partly at least to this same formation. It underlies the Yellow Loam formation in the western part of the county, and occasionally influences the subsoil of the Pheba silt loam, especially where the silty covering is shallow. It may have played a part also in the formation of the mottled clays overlying the Selma Chalk which give rise to Oktibbeha types.

The Lafayette formation, sometimes called the Orange sands, very probably at one time covered the surface of the greater part of the county, but it has been removed from much of it by erosion. It belongs to the Pliocene epoch of the Cenozoic era. These Lafayette sands have influenced to a more or less extent practically all the sandy types of the area. The Orangeburg series owes its origin directly to this formation, while the surface soils of the other upland sandy types very probably have been partly derived from it.

The Yellow Loam formation, which is of Pleistocene time, is the latest formation deposited over the area. It was originally a comparatively shallow loesslike unstratified, silty deposit, and has been removed from the surface of much of the county by erosion. It is of a uniform yellowish-brown color, and has given rise to the extensive areas of Pheba silt loam in the western part of the area. It has also very probably influenced some of the Oktibbeha types, but to just what extent is not definitedly known, since the derivation is still somewhat in question.

The alluvium along the streams has given rise to the most recently formed soils of the area. They consist of the surface wash from the uplands and consequently are made up of reworked material of all the previously discussed formations. The Ocklocknee clay is the most extensive bottom-land type in the area. It has been derived largely through the wash of the Lignitic clay and the Selma Chalk, though more or less influenced by the reworked material from the Yellow Loam formation. The Trinity clay is composed almost exclusively of the alluvium derived from the Selma Chalk, while the Ocklocknee silt loam consists of wash from the Yellow Loam. The Ocklocknee loam is derived largely from wash from the Lafayette, and the alluvial types along the Tombigbee River consist of water-separated material from various upland formations. The alluvium along many of the smaller streams of the area is extremely variable, and could be separated only in a general way. In most cases, however, the small stream bottoms resemble very closely in texture the adjoining uplands.

The table following gives the names of the several soils and the area which each covers:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ocklocknee clay	63,360	23.8	Ocklocknee loam	4,800	1.8
Oktibbeha fine sandy loam	29,632	11.1	Orangeburg find sandy loam	4,352	1.6
Houston clay	28,608	10.7	Houston chalk	3,328	1.3
Norfolk fine sandy loam	25,152	9.4	Ocklocknee clay loam	3,264	1.2
Pheba silt loam	22,336	8.4	Lufkin silt loam	2,496	.9
Trinity clay	20,032	7.5	Cahaba fine sandy loam	1,472	.6
Lufkin fine sandy loam	15,360	5.8	Cahaba fine sand	1,152	.4
Oktibbeha clay	12,608	4.7	Houston loam	448	.2
Lufkin clay	10,176	3.8			
Ocklocknee silt loam	9,408	3.5	Total	266,880	.....
Oktibbeha clay loam	8,896	3.3			

HOUSTON CLAY.

The Houston clay, to a depth of 9 to 15 inches, consists of a dark-drab to very dark gray clay loam to clay. The surface soil becomes very sticky and tenacious when wet, but if plowed when the moisture content is near the optimum it breaks into a granular loamy soil. This granulation is due largely to the high lime content. Small lime concretions are commonly scattered over the surface, and on eroded areas, where the partly weathered limestone forms the top soil, numerous shells of the Selma Chalk formation are found. The soil grades gradually into a lighter drab to yellowish-brown subsoil, which in most cases has a higher lime content, but contains less organic matter than the surface soil. In fact, in the lighter phase of the type, rotten limestone is encountered between 1 and 3 feet below the surface.

The type presents considerable variation, according to the surface topography and its proximity to other types. In general, the Houston clay of the area can be divided into two distinct phases—shallow and deep. The prairie region west of Sakatonchee River is generally composed of the former phase. Here the underlying limestone has not weathered deeply and it seldom has a covering of over 5 or 6 feet, and it is not uncommon to find this limestone in a more or less weathered condition within 12 to 36 inches of the surface, with occasional local outcroppings. Areas of sufficient extent, where the limestone forms the surface or is covered by only a few inches of soil, have been mapped as Houston chalk. The West Point prairie, on the other hand, is made up largely of the deeper phase. The limestone in this section has weathered to a greater depth and outcrops only on a few steep slopes or in some of the deeper stream cuts. The type occurs only in the two regions indicated. Abbott post-office is situated in the heart of the area west of the Sakatonchee River.

The prairies have an undulating to gently rolling topography, with some comparatively level areas on the divides and some rather rough surfaces along their borders. The natural drainage is generally very good, but the more level and lower lying areas would be benefited by tiling. Some of the rougher areas have been allowed to erode until they are almost worthless, but this is not the case over much of the type. In most instances such eroded areas have been separated and mapped as Houston chalk.

The Houston clay is derived from the Selma Chalk formation of Cretaceous time. The upper part of this formation has weathered into a calcareous clay in which large amounts of organic matter have been incorporated from the rank native growth of prairie grasses. The type has never been extensively timbered, and since the country was first settled it has been generally cultivated. Much of it was thrown out of cultivation during and immediately following the civil

war, and even now considerable areas, especially where the surface is rolling, are utilized only for pasture.

The Houston clay is one of the most productive upland soils of the Southern States and, in fact, it ranks in agricultural possibilities with the prairie soils of the North Central States. It is well adapted to a variety of crops; corn, cotton, alfalfa, cowpeas, red clover, melilotus, Johnson grass, and Bermuda grass, as well as the native prairie grasses, can all be grown successfully. Profitable yields of wheat have been obtained in past years, but this crop is no longer grown, as the climatic conditions are not favorable for its successful culture. While it is practicable to grow fruit and vegetables for home use, the type is not well suited to the production of these crops for market.

A soil adapted to such a diversity of field and pasture crops should produce a far greater number of live stock. Hog raising especially would prove a very profitable industry, and with the elimination of the cattle tick there is no reason why the production of live stock should not be successfully and profitably carried on.

Cotton still forms the leading crop, followed by corn. The average yield of cotton is only about one-half bale per acre, but the best planters occasionally obtain as much as 1 bale, while the less thrifty ones allow their yield to remain as low as one-third bale. Corn yields from 25 to 50 bushels per acre, with an average of perhaps 30 bushels. This type has never been fertilized, but has been continually cropped largely to cotton and corn for the last half century. Even after such exhaustive cropping, the indications are that the type can be built up so as to produce 1 bale of cotton and 50 bushels or more of corn per acre, by systematic crop rotation and thorough cultivation. Johnson grass has been grown on the Houston prairies for a number of years, and it has proved a profitable hay crop, but the difficulty of eradicating it when once established, or even preventing it from spreading over the whole plantation, has made the wisdom of its introduction very questionable. Alfalfa was first introduced about 1900, and the acreage has since rapidly increased. It is proving a profitable crop, yielding from 2½ to 4¼ tons per acre, and always bringing a good price on the local market.

The yields of all crops would be greatly increased by thorough cultivation. The cotton crop as a whole is more carefully tended than any other, and almost invariably the cultivation of the corn is neglected in order to do this. The ridge method of culture of both corn and cotton is still universally practiced, but the general topography of the type is such that level culture combined with deep plowing is much better adapted to the growing of corn, and this method can be successfully employed even in cotton production. A more diversified agriculture combined with deep and thorough level

cultivation and a systematic rotation of crops are desirable on areas of the Houston clay.

This type is owned in extensive bodies largely by town people who rent it to negroes. There are comparatively few white people living on it. If it were possible to divide these large holdings into small farms operated by their owners the agricultural conditions would rapidly improve.

The Houston clay varies considerably in price, but as a whole its value is advancing rapidly. The type can not be bought for less than $50 or $60 an acre within the radius of 6 miles of West Point, and where in alfalfa it brings as high as $75 an acre or even more. In the Abbott Prairie it is worth from $20 to $30 an acre, but much of this is the shallow phase, and its distance from the railroad in this section also lessens the value. From $3 to $4 an acre rent is received for the corn and cotton land, but where in alfalfa and near a railroad the rents range from $7.50 to $10 an acre.

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

Mechanical analyses of Houston clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20498, 20500.....	Soil.....	0.9	2.4	2.5	6.7	2.1	52.1	33.5
20499 20501	Subsoil.....	.5	1.6	2.6	10.0	3.7	47.2	34.4

HOUSTON CHALK.

The Houston chalk includes the areas in the Selma Chalk formation where the limestone forms the surface or has such a shallow covering of soil that it is not adapted to cultivation. The surface of this type varies from bare rock, on the more sloping and eroded areas, to a dark-gray clay from 4 to 6 inches deep. The dark colored surface soil occurs on the more level areas, and in the small stream valleys. The tops of the ridges are frequently covered with a shallow deposit of red clay formed from fragmentary remains of the Yellow Loam formation or possibly from a laminated clay member of the limestone in some sections. The gray chalk or limestone invariably comes within a few inches of the surface. This substratum is generally impenetrable to roots. Occasionally the hard, blue limestone is found near the surface. There are some areas where the limestone is much more completely disintegrated, and here the subsoil is a gray chalky material readily crumbled in the hand.

The Houston chalk occurs in the more broken areas of the calcareous prairies, and is confined to the deeply eroded sections about the

heads of the small streams. The most extensive and only important body is found along the south bluff of Hoolka Creek in the north-central part of the county.

This soil was originally open prairie, but it has never been cultivated to any extent. There are some small areas of a few acres each that are farmed. These are confined to the small valleys or more level ridges where a few inches of clay cover the limestone. Johnson grass and melilotus could possibly be grown on this type to a limited extent. It is of very little agricultural value and can be bought for a few dollars an acre.

HOUSTON LOAM.

The Houston loam has a grayish-brown loam surface soil containing considerable fine sand. This varies in depth from 8 to 10 inches and is underlain by a lighter gray or slate colored sandy clay. The type varies considerably. On the slopes the surface soil is lighter and the subsoil somewhat mottled, merging into the Oktibbeha fine sandy loam, while in the flat areas the soil is heavier and darker, being more like the Houston clay.

This type is of very limited extent, the only important body being located about 2 miles southeast of West Point. It contains less than 1 square mile. In formation the Houston loam seems to be closely associated with the Houston clay, apparently being derived largely from the Selma Chalk formation, although modified by more recent sand deposits. As would be expected from its derivation, it is of a distinctly calcareous character.

The Houston loam is a very productive soil, and is adapted to a variety of crops. Corn, cotton, oats, alfalfa, lespedeza, and cowpeas should all do well. The lighter phase is well adapted to sweet potatoes and other vegetables. Corn and cotton are the principal crops. The former yields from 20 to 35 bushels per acre, and the latter from one-half to three-fourths bale or more per acre.

Being located near West Point this soil has a higher value than the other sandy types of the county. It is held at $25 to $35 an acre.

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

Mechanical analyses of Houston loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium. sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20550	Soil	0.0	1.8	4.4	28.6	13.0	34.1	19.1
20551	Subsoil	.0	1.8	3.6	21.5	13.4	41.4	18.0

PHEBA SILT LOAM.

Where most typically developed the surface soil of the Pheba silt loam consists of 6 to 10 inches of a yellowish-gray to light-brown silt loam. The subsoil is a yellow silt loam somewhat heavier in texture than the surface soil. Frequently below 24 inches the color becomes more or less mottled with gray, and where the drainage is poor this mottling may extend into the surface soil. The silty formation giving rise to this type has a depth of from 3 to 10 feet or more. It is underlain by the heavy Lignitic clay. The subsoil becomes very heavy near the areas of Lufkin clay, and frequently these types merge into each other so gradually that it is difficult to draw a definite boundary between them. The surface is remarkably friable, and where well drained, can be prepared for crops with but very little more work than is required for the fine sandy loam types.

The Pheba silt loam is confined to the extreme western part of the county, and includes the better drained areas of the "flatwoods" belt. There are a few level divides which are poorly drained, but the greater part of it is sufficiently rolling to allow the surface water to run off rapidly. The rolling areas are much more productive than the flat, poorly drained ones.

This type owes its origin to the Yellow Loam formation, which overlies the Lignitic clay in much of this section of the county. The soil is frequently of a distinctly acid nature, especially where insufficiently drained. The native vegetation consists largely of post oak, black-jack oak, and pine. The type supports more merchantable pine than any other soil in the county.

The Pheba silt loam is not a very productive type. When first cleared it gives fair yields of cotton for a few years, but unless heavily manured its productiveness declines rapidly. The greater part of it is still in virgin timber. Cotton, the principal crop, produces from one-fourth to one-half bale per acre. Sorghum, fruit, and potatoes are also grown in a limited way. Corn is almost invariably planted on the adjoining bottom-land types.

Very little fertilizer is used on this soil. Its unproductiveness seems to be due largely to the insufficient supply of organic matter. The application of barnyard manure, or the growing of leguminous crops, such as cowpeas, lespedeza, and winter vetch, would do much to improve it. Some systematic crop rotation, which should include the frequent growing of legumes, combined with stock raising would afford a means of restoring humus to the soil. Very probably light applications of lime would also prove beneficial on the more level areas, which are always somewhat acid. With proper care good pastures could be secured on this type.

This is one of the cheapest soils in the area. Cleared areas can be purchased for $8 to $12 an acre, while the areas supporting forest

growth are held at about $5 an acre. Where the timber is of commercial value the prices are higher.

The following table gives the average results of mechanical analyses of the soil and subsoil:

Mechanical analyses of Pheba silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20526, 20528.....	Soil.....	0.5	1.3	1.6	12.5	9.6	63.9	10.4
20527, 20529.....	Subsoil.....	.2	1.0	1.1	9.1	5.7	58.9	23.9

OKTIBBEHA FINE SANDY LOAM.

The Oktibbeha fine sandy loam has a gray to light-brown fine sandy loam surface soil. This is underlain by a brownish-yellow subsoil, which below 18 or 24 inches invariably becomes grayish, with yellow, brown, and red mottlings. The texture of the subsoil is that of a rather tenacious sandy clay, much less friable than that underlying the Norfolk or Orangeburg fine sandy loam. In the virgin state the surface soil has a brown to grayish-brown color, but after continuous cropping to cotton and corn it becomes distinctly gray, as a result of the depletion of organic matter.

This is one of the most variable types in the area, there being many local variations caused by erosion and differences in drainage conditions. In the more rolling areas the subsoil has a much browner or redder color, while on the flat and poorly drained areas it becomes mottled gray and pale yellow. The Selma Chalk occasionally outcrops along the steeper slopes, and where the surface has eroded and left the subsoil exposed, which is frequently the case on the hillsides, the type merges into the Oktibbeha clay. Local spots of Norfolk fine sandy loam occur, and these were separated and mapped where of sufficient extent.

The type is developed most extensively in the vicinity of West Point and is usually rather closely associated with the prairie sections of the county. The definite derivation of this type is somewhat doubtful, but deep sections will usually reveal the calcareous Selma Chalk overlain by the red and gray or brown and gray mottled clays which have been formed either from argillaceous materials characterizing the upper part of the Selma Chalk deposit or from a commingling of this and the material of the Yellow Loam formation. In some localities this is capped by a thin layer of the Lafayette, which forms the surface soil and the upper stratum of the subsoil. The type does not extend very far west in the county, but passes gradually into the Norfolk fine sandy loam, which forms the corresponding type in the western section of the county. There is along

the northern county line a rather extensive area of the type which is here associated with the prairie in Chickasaw County.

The Oktibbeha fine sandy loam has a rolling topography, giving good drainage without being too hilly for cultivation. Although the type is closely associated with the calcareous chalk formation and often underlain by limestone, the subsoil is invariably distinctly acid. Originally this soil supported a thick native growth of oak and other hardwoods, such as hickory and maple.

Where rightly farmed the Oktibbeha fine sandy loam gives very good results with cotton, which produces from one-half to 1 bale per acre. Much of the soil has been farmed to this crop alone for many years without receiving any fertilizers, so that to-day it is in a very much run-down condition, producing only from one-fourth to one-half bale per acre. It is not very well adapted to corn, though it is frequently planted to this crop. The yields, however, are rather light. Cowpeas do well, and their more general use in rotation with other crops would materially aid in maintaining the productiveness of the soil. Peaches, figs, pears, and other tree fruits produce well. This soil is also well suited to the production of sweet potatoes and strawberries, both of which are extensively grown in the vicinity of West Point.

Deeper plowing and the incorporation of organic matter, either in the form of barnyard manure or green leguminous crops, would do much to increase crop yields. Fertilizers are seldom used, although the soil is one that readily responds to fertilization.

The Oktibbeha fine sandy loam is held usually at $10 to $25 an acre, but in the immediate vicinity of West Point it has sold for $40 or more an acre.

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

Mechanical analyses of Oktibbeha fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20530, 20532, 20534.	Soil.....	0.3	4.9	7.3	34.4	15.9	31.6	5.0
20531, 20533, 20535.	Subsoil.....	.3	3.7	4.3	19.3	9.6	39.4	23.3

OKTIBBEHA CLAY.

The Oktibbeha clay has a gray to reddish-brown heavy clay loam to clay surface soil, 4 to 6 inches deep. This is underlain by a mottled gray, yellow, and red or brown clay subsoil, which becomes grayer with depth, so that at 3 feet it is seldom mottled except with blotches of pale-yellow clay. Where the drainage is poor, the subsoil becomes very gray, but in the more sloping areas it has a deep

reddish-brown color, slightly mottled with gray and yellow. The surface soil varies considerably in texture. On the slopes it is very shallow, and the mottled clay practically forms the top soil, while on the more level areas there may be a covering of grayish loam or silt loam a few inches in depth. This latter phase merges into the clay loam type. The heavy mottled clay is generally near enough the surface to be encountered in plowing, making the soil very difficult to handle.

The type occurs closely associated with the Houston soils. The largest bodies are found in the prairie sections north and east of West Point and north and west of Abbott. It occupies the higher elevations in these prairies, and is consequently well drained; in fact it is in many cases so hilly that unless care is taken it washes badly when cultivated.

The Oktibbeha clay is very probably derived in part from the argillaceous shaly formation of Cretaceous age. Geologists have included this with the Selma Chalk, but the character of the soils derived from it is so markedly different from those originating from the limestone, that they must be considered distinct from the Houston soils. It is very probable that the material of the lower Yellow Loam formation has entered largely into the making of this soil, and in some localities it is evident that the lower subsoil at least is composed of the Lignitic clays. This heavy clay, of whatever formation it may be, overcaps the Selma Chalk, and since it is only a few feet in thickness, the latter formation frequently outcrops on the eroded hills, and some small patches of the poor phase of the Houston clay or Houston chalk are occasionally included in this type. When typical, however, the soil is of a distinctly acid nature, and consequently has a decidedly different crop adaptation from the type derived wholly from the Selma Chalk formation.

The Oktibbeha clay was originally timbered with post and blackjack oak, the greater part of which has been cut and the land put under cultivation. It is a very good cotton soil, but is not adapted to alfalfa. Cotton is the chief crop, with corn and oats of secondary importance. Cotton yields from one-half to three-fourths bale per acre where well tended, and corn from 20 to 30 bushels. Manuring would improve the soil for cotton and corn, as would also the growing of leguminous crops such as cowpeas, lespedeza, and vetch. Frequent applications of lime would be beneficial especially to these latter crops. Some fruit is grown, and where the drainage is adequate it does well. Peaches, plums, and pears are the most successful.

The soil holds fertilizers well, and responds very readily to their application. Those running high in phosphoric acid and nitrogen seem to give the best results. The nitrates can undoubtedly be more cheaply supplied by the occasional growing of clover or cowpeas.

The price of this soil varies considerably. The gently rolling areas, where in a high state of cultivation, are valued at $25 to $35 an acre, while the timbered areas and those too rough for successful cultivation can be bought for $10 to $15 an acre.

The following table gives the average results of mechanical analyses of typical samples of the soil and subsoil

Mechanical analyses of Oktibbeha clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20540, 20542	Soil	0.2	3.1	3.1	6.7	3.8	46.4	36.6
20541, 20543	Subsoil	.0	1.3	1.4	3.1	3.1	34.5	56.5

OKTIBBEHA CLAY LOAM.

The Oktibbeha clay loam consists of a dark-gray to brown surface soil having a heavy loam or silt loam texture, underlain at a depth of from 8 to 10 inches by a mottled gray, yellow and red or brown heavy, tenacious clay. The mottling of the subsoil decreases with depth, and frequently at a depth of 3 feet the color is a uniform gray. In texture the subsoil is identical with that of the Oktibbeha clay, but the color is somewhat grayer. Some difficulty is found in its cultivation, but owing to the deeper and lighter surface soil it is more tractable than the clay type.

This soil is found in proximity to the Oktibbeha clay areas. The larger areas occur northeast of West Point and southeast of Abbott. It is also closely associated with the clay type in derivation although the surface soil seems to have been slightly modified by materials of the Lafayette formation. The surface is not so broken as that of the Oktibbeha clay, but in most cases it is rolling enough to give good drainage. Likewise it is of a distinctly acid nature and in the native state heavily timbered with oak. The crop adaptations and yields, as well as the value, are about the same as those of the type last described.

The following table gives the results of mechanical analyses of typical samples of both the soil and subsoil:

Mechanical analyses of Oktibbeha clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20544	Soil	0.4	3.2	2.4	5.5	11.0	61.6	15.7
20545	Subsoil	.1	.6	.6	1.8	5.5	35.6	55.6

The following sample contained more than one-half of 1 per cent of calcium carbonate ($CaCO_3$): No. 20544, 3.58 per cent.

ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam has a light fine sandy loam surface soil of a gray to pale-yellow color, varying in depth from 4 to 12 or 14 inches, with an average of about 10 inches. The subsoil is a deep-orange or red rather friable sandy clay, which very frequently becomes mottled with gray below 3 feet. There is a distinct line of demarcation between the surface soil and the subsoil. Where the steeper slopes have been cultivated the surface soil has been washed away and small spots of the subsoil are exposed here and there. These spots, which were not large enough to be indicated in the map, are fairly typical of the Orangeburg clay. The soil proper is from 3 to 5 inches deep, which is about the depth to which it is cultivated. The loose sandy structure of the surface soil makes it easy to till and permits its cultivation under a wide range of moisture conditions.

The largest area of Orangeburg fine sandy loam in the county is found in the northwestern section, where it forms a high broken divide between Line and Hoolka creeks. The more broken portions of this watershed are known as the Kilgore Hills, and it is in these hills that this soil is most typically developed. There are two smaller areas in the eastern part of the county bordering the Tombigbee Valley.

The type has a very rough topography, being washed and gullied so that little of it is fit for farming. Much of the land at present under cultivation should have been left in timber, for it is almost impossible to prevent serious erosion on the steep slopes. The surface drainage is always well developed; in most cases too much so for farming purposes and the type requires careful handling if serious erosion is to be avoided.

The Orangeburg fine sandy loam is derived from the Lafayette formation, but it has been noticeably modified in certain localities by earlier formations. Rather large amounts of mica are found in the subsoil in the northern section of the Kilgore Hills.

The type was originally forested with oak, hickory, and other hardwoods, which still cover much of it. There is also some pine along the Tombigbee bluff, but little of it is of commercial value.

This would be a very good agricultural soil if it were not for its rough topography. It is especially well adapted to the growing of fruits and vegetables, and where level enough to permit thorough cultivation cotton and cowpeas produce well. The latter crop is always beneficial, and should be more generally grown on this soil. Cotton and oats, the principal crops grown, give very light yields. From one-third to one-half bale of cotton, and about 1 to 2 tons of oat hay are average yields. Corn is also grown to some extent, but the yield is light. The productivity of this soil could be greatly

increased by practicing crop rotation, and by applying barnyard manure or some good commercial fertilizer.

Probably the most backward agricultural conditions in the county exist on this type, where the hilly topography makes the use of improved farm machinery impossible. The plowing and harrowing are done largely by one-mule implements. The country occupied by this soil is sparsely settled, whites predominating.

The value of the Orangeburg fine sandy loam depends largely on the topography. Where it is more gently rolling farms can not be bought for less than $10 to $15 an acre, but much of the rough timbered land is on the market at $5 to $8 an acre.

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

Mechanical analyses of Orangeburg fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20538	Soil	0.0	0.3	0.7	61.4	13.3	19.0	5.0
20539	Subsoil	.0	.1	.5	50.3	13.6	7.3	28.0

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam is the lightest-textured soil in the county. There are two distinct phases of the type in the area, which owe their difference to drainage conditions. The surface soil of both phases consists of a gray fine sand to light fine sandy loam, with an average depth of about 10 inches. On the rolling uplands this material is underlain by a yellow sandy loam which becomes more or less mottled with depth. The other phase, which is confined to the more level areas, has a yellow and gray subsoil, but its texture is the same as that of the better drained phase. Near areas of Oktibbeha or Lufkin fine sandy loam the subsoil becomes somewhat heavier and occasionally grades into a light sandy clay. The color also changes to orange yellow near the boundaries of the Orangeburg fine sandy loam.

Owing to the light sandy texture of both surface and subsoil, the type is able to absorb large amounts of rainfall. This moisture rapidly percolates into the subsoil, allowing the surface to be worked soon after rains, and it is never too compact to plow in the driest weather. Although the more level areas remain wet for a considerable period after hard rains, the greater part of the type occupies rolling areas and the surface drainage is adequate. The surface seldom becomes broken enough for serious erosion to take place.

The most extensive developments of this type occur in the northwestern part of the county along the northern side of Line Creek

swamp, and between Hoolka Creek and Sakatonchee River, in the extreme northern section of the area. The type owes its origin largely to the Lafayette sands and gravels, which represent one of the latest geological formations of the upland. The level bodies adjoining Line Creek bottom appear to have been influenced to some extent by alluvium from this stream. In such places the soil resembles the Lufkin fine sandy loam in color, but differs from it in having a distinctly lighter textured subsoil.

The native vegetation consists of oak, hickory, and gum, with some scattering pine, and there are extensive areas which have never been cleared.

The Norfolk fine sandy loam is not a productive soil, and owing to its light-textured subsoil it does not hold fertilizers as well as the other sandy types. It is better adapted to garden crops and small fruits than to field crops. Lespedeza and cowpeas should grow well on this soil, and unquestionably would increase the yields of the other crops, especially if turned under in a green state.

Cotton and sweet potatoes are about the only important crops grown. Cotton seldom produces over one-half bale, unless heavily fertilized, and the average production is little more than one-fourth bale. Peanuts are also grown in a limited way and have proved well adapted to the soil. Watermelons are being successfully grown. The soil is not fertile enough to produce corn economically, but the continued growing and turning under of legumes or the frequent application of well-rotted barnyard manure would greatly improve the crop-producing power of even the lighter phases of the soil. The type brings from $5 to $15 an acre.

The following table gives the average results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Norfolk fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20514, 20516.....	Soil.....	0.3	3.9	9.1	40.8	13.5	29.6	2.6
20515, 20517.....	Subsoil.....	.3	3.1	6.3	27.9	10.1	42.9	9.4

LUFKIN CLAY.

The Lufkin clay has a gray to light-brown surface soil, with a depth of 3 to 6 inches. The texture varies from a heavy silt loam or clay loam to clay. The subsoil to a depth of 36 inches consists of a very sticky and tenacious gray to mottled gray and yellow clay, which changes to a more compact steel gray clay at about 3 feet. The structure is so compact that water does not readily permeate the soil, and consequently the drainage is poor, except on the sloping areas. The surface also becomes very hard during dry weather, so that there

is only a short period when the type can be cultivated satisfactorily, and even then it requires considerable work to get it into condition for planting.

This soil is confined wholly to the "flatwoods" section. It occurs commonly where the Lignitic clay is exposed, which is generally along the streams. The most extensive area is found in the northwestern part of the county along Prairie Creek. Smaller areas are scattered throughout the western part of the county.

The greater part of the type is gently rolling, and the rain water drains from the surface rapidly. There are some flat areas, however, where water remains in the depressions until it evaporates. The wagon roads through this type become almost impassable during the rainy season.

This soil is derived from the Lignitic clay formation, which has been exposed over extensive areas by the removal of the more recent formations by erosion. The type is distinctly acid and requires heavy liming before leguminous crops can be grown.

The Lufkin clay is largely forested with scrub oak. Very little of it has ever been put under cultivation, and that which is farmed gives very poor yields. The type is settled largely by negroes, many of whom own their own farms. This is especially true on the area along Prairie Creek.

Cotton and corn are the leading crops. The former seldom yields as much as one-half bale per acre, and the latter usually produces 10 to 20 bushels. More thorough drainage, and the incorporation of organic matter into the soil would greatly improve the productiveness. In its present condition the land is valued at about $5 an acre.

The following table gives the average results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Lufkin clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20506, 20508.....	Soil.....	0.0	1.3	1.6	10.5	6.3	49.7	30.4
20507, 20509.....	Subsoil.....	.0	1.1	.8	5.8	4.8	32.8	54.4

LUFKIN FINE SANDY LOAM.

The Lufkin fine sandy loam has a gray rather heavy fine sandy loam surface soil, 6 to 12 inches deep, underlain by a very plastic gray or gray and yellow mottled sandy clay. Both the soil and subsoil are commonly streaked or mottled with iron stains and frequently small iron concretions are scattered over the surface. This type is more difficult to cultivate than would be expected from

the texture of the surface soil. This is due to the heavy impervious subsoil and poor surface drainage, as well as to the low organic content of the top soil.

This is not a very important type of the county, as it is never found in large bodies. It occurs scattered over the county generally along the edges of the larger bottom lands. There is usually only a very slight topographic distinction between this type and the first bottom land proper. It often occupies very gently sloping areas from the higher upland to the alluvium, and although occasionally covered with a shallow sheet of water in rainy seasons it never occurs as true bottom land.

In origin the Lufkin fine sandy loam is very closely associated with the Lufkin clay. The heavy clay subsoil undoubtedly owes its origin in most cases at least to the Lignitic clay formation. The surface soil very probably has been derived from a shallow deposit of the Lafayette sands.

Like the Lufkin clay, this type is of an acid nature, and is covered with practically the same timber growth. Very little of the type has ever been put under cultivation, most of it being timbered with a native growth of willow oak, post oak, red oak, and gum. It is not a fertile soil, but where adequately drained produces fair crops of cotton. Corn is also grown to some extent, but the yield is always light. The subsoil is too acid for the growing of alfalfa, but lespedeza and cowpeas could be produced profitably and would materially improve the soil if grown for a few years. If thoroughly drained, the type could be utilized for truck gardening, but it is not adapted to fruit.

The heavy subsoil combined with the poor drainage of the type prevents the deep rooting of crops, and because of this they frequently suffer during drought. It is very essential to drain thoroughly this type, as crops are injured on it at present either by excessive or insufficient moisture. Liming would also greatly improve it, especially for leguminous crops.

Where under cultivation, the Lufkin fine sandy loam brings from $10 to $20 an acre, but the timbered areas can be bought for $3 to $8 an acre.

The following table gives the results of mechanical analyses of the soil and subsoil of this type:

Mechanical analyses of Lufkin fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20504	Soil	0.0	0.5	1.2	49.1	14.2	26.0	8.9
20505	Subsoil	.0	.4	.9	34.7	11.0	25.3	27.5

LUFKIN SILT LOAM.

The Lufkin silt loam consists of about 8 inches of a gray silt loam, underlain by a yellow and gray silty clay. The type is often stained more or less with iron, and frequently small iron concretions are scattered over the surface. The heavy Lignitic clay is encountered at 2 to 6 feet below the surface.

The total area of the type in this county is not as great as that of the Lufkin clay. The largest body is located between Line and Johnson creeks, in the extreme western part of the county. Other smaller patches are scattered throughout the "flatwoods" portion, occupying the flattest and most poorly drained sections of the area covered by the Yellow Loam formation. The surface soil owes its origin directly to this formation. The chief difference between it and the Pheba silt loam is the result of its continued poor drainage and the influence of the underlying Lignitic clay.

The type is heavily forested with oak, gum, and hickory. It is not cultivated at all, being too flat and wet. Besides, it is a very poor soil and could not be expected to produce profitable crops unless heavily fertilized. Rice very probably could be successfully grown, however, if sufficient water for irrigation were provided. Land of this character can be bought for $5 an acre or less.

Below are given the results of mechanical analyses of typical samples of this type of soil:

Mechanical analyses of Lufkin silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20502	Soil	0.0	1.3	0.7	5.6	4.5	67.7	20.2
20503	Subsoil	.0	.6	.4	4.2	3.2	56.5	35.1

OCKLOCKNEE CLAY.

The Ocklocknee clay consists of a shallow brownish surface soil varying from 4 to 8 inches in depth, and having either a heavy clay loam or clay texture, underlain by a drab and yellow mottled to gray and brown mottled plastic clay. This mottling becomes less pronounced with depth and often the subsoil is almost gray at 36 inches. Throughout the profile this type is mottled and streaked with yellow and reddish-brown iron stains.

Generally the surface soil is very difficult to cultivate, owing partly to its tenacious structure and partly to its inadequate drainage. During the wet season the roads over this type become almost impassable and upon drying the surface bakes and cracks badly.

As a rule this soil is very impervious. That along the upper part of Sakatonchee Swamp has a darker surface soil and consequently

more closely resembles the Trinity clay than is usually the case. Small ridges supporting a heavy growth of cane have been built up along the streams in some instances. The soils on these are much lighter in texture, varying from a clay loam to loam, but it was impossible to separate these small bodies on account of the dense vegetation covering the type.

The Ocklocknee clay forms the greater part of the large bottom-land areas. These bottoms vary in width from a few rods along the smaller streams to a mile or more along the rivers. The most extensive bodies are located along Sakatonchee River and Line, Hoolka, and Tibbee creeks. The areas are flat and poorly drained and as a whole subject to inundation. The bottoms along the small streams are seldom flooded for more than a few hours at a time, but along the large streams they are often covered for several days to a depth of 3 to 8 feet. Surveys have been completed for the dredging of all of these larger swamps, and work has already been started in Hoolka and Sakatonchee swamps, and it is hoped that within a few years this work may be extended to the Tombigbee River. Most of the smaller bottoms have already been ditched and are now cleared and under cultivation.

The Ocklocknee clay is strictly alluvial in formation, and represents the deposition by streams of the wash from the clay uplands. It is heavily timbered with oak, gum, and hickory, with a dense undergrowth composed largely of cane.

Corn and cotton are the principal crops grown on the cleared areas and they will probably remain so, though they could well be rotated with some legumes. The soil is not as productive as the Trinity clay or the Ocklocknee silt loam. Corn yields from 20 to 30 bushels per acre, and cotton from one-half to three-fourths bale. Alfalfa may possibly be produced on some parts of the type where thorough drainage is established, but in most cases the soil is too acid for this crop.

The value of the Ocklocknee clay has advanced since ditching was begun in the large swamps. Areas under cultivation are valued at $10 to $25 an acre. Timbered lands in the large swamps may still be secured for $10 to $20 an acre.

Below are given the average results of mechanical analyses of typical samples of this type:

Mechanical analyses of Ocklocknee clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20522, 20524.....	Soil.....	0.0	1.4	3.6	9.9	6.1	42.1	37.0
20523, 20525.....	Subsoil.....	.1	1.0	3.1	8.6	5.4	35.2	46.2

OCKLOCKNEE LOAM.

The Ocklocknee loam is the most variable alluvial type in the area, having been derived from the sandier uplands. As most extensively developed, the surface soil consists of a light-brown fine sandy or silty loam to loam, and the subsoil of a yellow to gray and yellow mottled heavy loam or clay loam. The type as mapped here also includes areas of sandy loam, silt loam, and clay loam, as well as loam. This has been necessitated by the lack of uniformity in the soils in the small valleys which extend through the sandy upland region.

The type is found along most of the small streams in the sandy regions of the county. It is distinctly of alluvial origin, being composed of the sand, silt, and clay washed from the upland.

Most of the small bottoms occupied by this soil have been cleared and put under cultivation. They are planted mainly to cotton and corn, and on account of the variable character of the soil the yields vary widely. Corn produces from 15 to 20 bushels per acre on the lighter phases to as much as 40 bushels on the typical loam or clay loam phase. Cotton yields range from one-third to about three-fourths bale to the acre. Oats and sugar cane are also grown to some extent. The sandier areas of this type should be well adapted to cowpeas and vetch. Deeper plowing would often improve the yields on this type.

A thin covering is added each year to the surface soil by frequent overflows, which materially assists in maintaining the productiveness of the fields. These overflows usually occur during the winter and spring months, and are not often injurious to the crops. Many of the streams through this soil are being straightened and deepened to enable them to carry off the water except when the rainfall is abnormal. As the areas of this type are very narrow they are generally sold with the adjoining uplands. The present value of this soil alone, however, is probably about $15 or $20 an acre.

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

Mechanical analyses of Ocklocknee loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20518, 20520.....	Soil.....	0.0	1.8	2.2	23.7	8.2	53.7	10.4
20519, 20521.....	Subsoil.....	.6	4.1	4.1	28.6	8.9	39.0	14.6

OCKLOCKNEE CLAY LOAM.

The Ocklocknee clay loam consists of a light-brown loam to clay loam surface soil from 4 to 10 inches deep, underlain by a light-brown to gray and yellow mottled clay loam or clay. The surface is uneven, consisting of long narrow ridges with flat swamps between. The soil is very heavy, stiff, and plastic, and difficult to work under the present conditions of poor drainage. Only on the crests of the low ridges does the surface become loamy.

This type occurs in the Tombigbee River bottom and occurs here and there in limited areas along the slopes of some of the other streams or as ridges in the swampy areas bordering their courses. Much of the type is still in forest, consisting largely of oak, hickory, and cypress. Considerable areas have been cleared and put under cultivation, and all would be valuable farm land if they could be protected from overflow.

Under present conditions much of the type is of little agricultural value except for pasture. In places considerable cane is found, which makes excellent winter grazing. The better drained areas are well adapted to corn and cotton, which are the important crops at present. Corn yields from 25 to 40 bushels and cotton from three-fourths to 1 bale per acre when the season is such that thorough cultivation has been possible. With the establishment of thorough drainage the better phases of the type should produce regularly 1 bale of cotton and 40 bushels of corn to the acre, and oats and cowpeas could well be brought into the rotation when the type is drained.

Land of this class is valued at $10 to $20 an acre, but with the drainage it will advance materially in value.

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

Mechanical analyses of Ocklocknee clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20510	Soil	0.0	0.8	0.9	20.5	8.1	42.8	27.0
20511	Subsoil	.0	.4	.7	17.8	8.7	39.6	33.1

OCKLOCKNEE SILT LOAM.

The surface soil of the Ocklocknee silt loam is a light-brown or chocolate-colored silt loam, with a depth of 10 to 15 inches, underlain by a yellow or gray and yellow heavy silt loam to clay loam. This is generally a rather plastic soil for a silt loam, but when good drainage has been established it becomes more friable and a good mellow seed bed can be secured with little difficulty.

The type varies considerably, as do the others found in the bottoms of the smaller streams. It is most typically developed in the "flatwoods" section of the county. The most important areas of the type are found along Standing Reed, Little Cane, Bluff, Sun, Double Cabin, Long Branch, and the headwaters of Line and Johnson creeks. This type is alluvial, being derived largely through wash from the Yellow Loam formation. Locally it has been influenced by wash from heavy clay and the light sandy uplands, and it becomes very heavy as it approaches the Ocklocknee clay and correspondingly lighter as influenced by the Ocklocknee loam material.

Originally the type was timbered with oak and gum, but the greater part is now cleared and under cultivation. It is a very fertile soil and highly prized by the farmers. It is well adapted to both corn and cotton, as well as cowpeas, cane, and pasture grasses. Corn and cotton are the chief crops grown. The former yields from 20 to 50 bushels per acre and the latter between one-half and 1 bale. During the winter months the streams frequently inundate this soil, depositing each time a thin layer of silt and organic matter. This tends to maintain the productiveness of the areas.

Since the type is located only in the narrow valleys, it is seldom sold alone, being usually included with the upland. A fair price at present is $20 to $40 an acre.

Below are given the average results of mechanical analyses of representative samples of the soil and subsoil of this type:

Mechanical analyses of Ocklocknee silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20494, 20496.....	Soil.....	0.1	1.0	1.2	6.5	6.5	69.7	15.1
20495, 20597.....	Subsoil.....	.1	1.9	2.3	9.9	7.6	57.7	20.5

TRINITY CLAY.

The Trinity clay has a deep, dark, gray-black surface soil, which is generally of a distinctly calcareous nature and rich in organic matter. This material has a depth of about 12 inches and grades gradually into a somewhat lighter colored clay. The large amount of lime combined with the abundance of humus gives the surface soil a remarkably friable structure for a soil having such a heavy texture. It becomes very sticky when wet, but cracks and crumbles when dry. Because of its granular structure it is commonly known as "Buckshot land."

Along the stream courses which extend from the prairie section into the sandier upland region the type is more or less influenced by

sandy wash. This soil, however, is confined almost exclusively to the bottom lands along the streams in the calcareous prairies. It also occurs along the edges of the larger swamps, where the Selma Chalk outcrops along the bluff, or where the tributaries from surrounding prairies have deposited their sediment.

Many of the smaller streams in the prairie section have been ditched, so that only the lower parts of their bottom lands overflow. Along the margin of the larger swamps where this type also frequently occurs, the level is much higher than that of the bottom lands; consequently overflows are exceptional, taking place only during extremely high water The greater part of the type is thus too high for serious overflow and possesses better drainage than most of the alluvial soils in the county.

The Trinity clay owes its origin entirely to the wash from the Selma Chalk formation. It represents the reworked materials from the upland soils that have been formed through the disintegration of the limestone. Much of this type was treeless in its virgin state, though along the larger streams it was originally timbered with oak, maple, and gum. At present it has practically all been cleared and put under cultivation.

The soil found along the smaller stream valleys in the calcareous prairie is generally more productive than that along the edges of the larger swamps. In the latter localities the subsoil is grayer and not so high in lime. However, it is one of the most productive types in the area wherever found and is adapted to a variety of crops. It is unquestionably better adapted to the production of corn and cotton than any other type of the county. Johnson grass makes a luxuriant growth when once established. Alfalfa, cowpeas, vetch, and other legumes are also crops that give excellent results. It is not, however, a good fruit or vegetable soil.

Cotton, corn, alfalfa, oats, and Johnson grass are at present the leading crops. Cotton yields from one-half to over 1 bale to the acre, but if given the proper care it should average 1 bale and frequently reach 1½ bales. Corn yields from 30 to 60 bushels and oats cut about 2 tons of hay to the acre. Alfalfa is being extensively sown on this soil, and where the drainage is adequate it grows luxuriantly, giving five cuttings of nearly 1 ton each a year. When baled this hay brings about $15 a ton f. o. b. at West Point, and occasionally $18 to $20 is realized. The tendency of the farmers on this type is to grow more hay and corn and less cotton.

This is one of the most valuable soils in the area, and sells at $40 to $60 an acre. When in alfalfa it can not be bought for less than $75 to $100 an acre.

The following table gives the average results of mechanical analyses of representative samples of the soil and subsoil:

Mechanical analyses of Trinity clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20546, 20548.....	Soil.....	0.0	0.5	1.2	9.7	9.9	61.4	17.4
20547, 20549.....	Subsoil.....	.1	.2	.7	9.3	5.0	54.6	30.1

The following sample contained more than one-half of 1 per cent of calcium carbonate ($CaCO_3$): No. 20546, 2.57 per cent.

CAHABA FINE SANDY LOAM.

The Cahaba fine sandy loam consists of from 8 to 14 inches of a gray-brown or yellowish-brown fine sand or light fine sandy loam, underlain by light reddish-brown to orange-colored sandy loam, which frequently becomes mottled below 24 inches. The type is very uniform, except that the areas on the lighter ridges are covered with fine sand to a greater depth. There is also a departure from the type in the narrow undrained swampy areas along old stream channels, where a heavy sticky soil is found. These would have been mapped as another type had they been large enough.

The Cahaba fine sandy loam is found along the Tombigbee River. The largest area occurs about 2 miles north of Waverly, and the only other body of importance is located just south of the same place. Topographically these areas are slightly undulating, with fairly good drainage. They owe their origin to the alluvial deposits and to large extent form second bottoms. While practically all subject to overflow, this takes place only when the river is at unusually high flood stages.

The type was originally timbered, but it is now largely cleared and under cultivation. Cotton forms the chief crop and yields from one-third to three-fourths bale per acre. Corn is also grown to some extent, though the yields are rather light. The type is well adapted to cowpeas, peanuts, vetch, and all truck crops, especially sweet potatoes and melons. The turning under of green crops or heavy applications of barnyard manure would greatly improve the soil. The value of land of this character ranges from $15 to $20 an acre.

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

Mechanical analyses of Cahaba fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20554.....	Soil.....	0.0	0.3	2.4	44.5	19.3	25.1	8.2
20555.....	Subsoil.....	.0	.0	1.4	51.7	16.9	17.1	13.0

CAHABA FINE SAND.

The Cahaba fine sand has practically the same texture throughout its profile. The surface soil, extending to a depth of 6 or 8 inches, consists of a light-brown to yellow fine sand which has a grayish appearance when thoroughly dry. This is underlain by a reddish-yellow or brownish-yellow fine sand to a depth of 30 inches or more. Occasionally a yellow sandy clay, like that forming the subsoil of the Cahaba fine sandy loam, is found at 24 to 36 inches.

The type is closely associated with the Cahaba fine sandy loam, and like the latter occupies what is probably the second bottom of the Tombigbee River. It is of the same origin, occupies practically the same level, and is inundated occasionally. It is a much lighter soil, however, and does not give nearly as heavy yields as the Cahaba fine sandy loam. Cotton is the only important crop grown, and its yields are very light—usually considerably less than one-third bale to the acre. Sweet potatoes, peanuts, melons, and cowpeas are much better adapted to this soil than cotton.

Farms composed of this type of soil can be bought for $5 to $10 an acre.

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

Mechanical analyses of Cahaba fine sand.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20552	Soil	0.0	2.5	18.3	56.8	11.5	7.2	3.8
20553	Subsoil	.0	1.8	19.7	58.7	10.9	5.3	3.5

SUMMARY.

Clay County is located in the northeastern section of Mississippi and has a total area of 266,880 acres, or 417 square miles.

The surface in general is rolling enough to give good drainage, and with the exception of the Kilgore Hills in the northwestern part of the county is seldom too rough to be tilled. The drainage is in a general southeasterly direction into the Tombigbee River. The greater part of the county was originally heavily wooded, though extensive prairies occur in the vicinity of West Point and Abbott.

The first settlers came in the early thirties, but the county was not organized until 1871. The negroes outnumber the whites in the prairie sections, but in the remainder of the county the whites and negroes are about of equal numbers. West Point, a railroad center, is the chief town.

The climate is healthful and favorable to the production of a diversity of crops.

Cotton is the leading and practically the only money crop. Corn is extensively grown, but not in sufficient quantities to supply the home demand. Fruits and vegetables are grown in a limited way for home use. The average yield of cotton is about one-third bale and of corn, 20 bushels per acre. Alfalfa has been introduced recently and is proving a profitable crop on the calcareous prairies.

The live-stock industry should receive more attention and a more diversified agriculture should be followed by the farmers of the area. Deep, level cultivation, combined with underdrainage and the adoption of systematic crop rotations are to be recommended in place of present practices.

The soils of Clay County are derived largely from the Selma Chalk, Lignitic clay, Lafayette, and Yellow Loam formations. The alluvium along the streams is of Quaternary age.

The Houston clay is the important prairie type of the county. It is a productive soil adapted to a great diversity of crops. Cotton, corn, and alfalfa all give excellent yields. The soil is not suited to orchard or garden crops. Better cultural methods, including deep, level cultivation and a systematic crop rotation, would materially increase the yields.

The Houston chalk includes areas where the Selma Chalk formation outcrops or is covered by only a few inches of soil. It is not adapted to the general farm crops, but is of some value as pasture land. Melilotus and Johnson grass are recommended for this soil.

The Houston loam is a type of minor importance. It is derived partly, at least, from the Selma Chalk formation. It is a very productive soil.

The Oktibbeha fine sandy loam produces good crops of cotton and is well adapted to orchard and garden crops. It responds readily to fertilization and is greatly improved by growing cowpeas and other legumes.

The Pheba silt loam is the most extensive type in the "flatwoods" region. Its productivity declines rapidly with continuous cropping. A more frequent growing of leguminous crops and the application of barnyard manure are recommended for this soil, since it is naturally deficient in organic matter. Liming is also suggested as a means of improving the more acid areas.

The Oktibbeha clay is found closely associated with the Houston clay. It is a heavy soil and tends to clod badly when cultivated. It is adapted to cotton and corn, but will not produce alfalfa

The Oktibbeha clay loam differs from the Oktibbeha clay in having a lighter surface soil. It has about the same crop adaptations.

The Orangeburg fine sandy loam is confined almost entirely to the northwestern part of the county. The more level areas give good yields of cotton. The type is adapted to the production of pears,

peaches, and small fruits. Much of it, however, is too rough for cultivation.

The Norfolk fine sandy loam is a light sandy soil well adapted to the growing of garden crops, peanuts, and small fruits. Cotton gives fair yields when fertilized.

The Lufkin clay is a heavy clay soil of low productivity. Very little of it is cleared. The soil is acid and requires liming.

The Lufkin fine sandy loam occupies flat, poorly drained areas bordering the larger stream bottoms. It is a rather heavy, sandy loam and, as a rule, is not very productive. Cotton and corn are the principal crops. The yields may be increased by thoroughly draining the land and applying lime.

The Lufkin silt loam occurs only in the "flatwoods" belt in the western part of the county. It is flat, poorly drained, and largely forested with oak and gum.

The Ocklocknee clay is a heavy alluvial soil found along the larger creeks of the area. It is a very poorly drained soil and is subject to frequent overflows. Extensive drainage projects have recently been started and when completed much of the type will be reclaimed. Where adequately drained it produces fair yields of corn and cotton.

The Ocklocknee clay loam is also alluvial, the areas being found along the outer edges of some of the larger creek bottoms. Where well drained it produces excellent yields of corn and cotton. Considerable difficulty is frequently encountered in tilling this type.

The Ocklocknee loam is a light loam to sandy loam occupying the flood plains of the small streams in the sandy sections of the county. It is overflowed only during periods of exceptionally heavy rainfall. The greater part of the type is under cultivation and gives good yields of cotton and corn.

The Trinity clay, another alluvial type, is composed of the wash from the Houston clay. It is an exceptionally strong soil and well adapted to the production of corn, cotton, and alfalfa. Where well drained, it gives the largest yields obtained in the county.

The Ocklocknee silt loam is a heavy alluvial silt loam made up of the wash from the Yellow Loam formation. It is largely under cultivation and produces large crops of corn and cotton where well tended.

The Cahaba fine sandy loam and the Cahaba fine sand form the bottom lands of the Tombigbee River. These types are extensively farmed to cotton. The fine sandy loam gives fairly good yields, but the Cahaba fine sand is too light for the general farm crops. It is well adapted to truck crops.

NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.