SOIL SURVEY OF JASPER COUNTY, MISSISSIPPI.

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DESCRIPTION OF AREA.

Jasper County, Mississippi, is located a little south and east of the center of the State, the south boundary line being approximately 100 miles north of the Gulf of Mexico. The county is bounded on the north by Newton County, on the east by Clarke County, on the south by Jones and Wayne counties, and on the west by Smith County. It is 24 miles wide from east to west and varies from 27 to 29 miles in length from north to south. It includes sixteen full townships north of the Choctaw base line and five fractional townships south, making a total area of 431,872 acres or about 675 square miles.

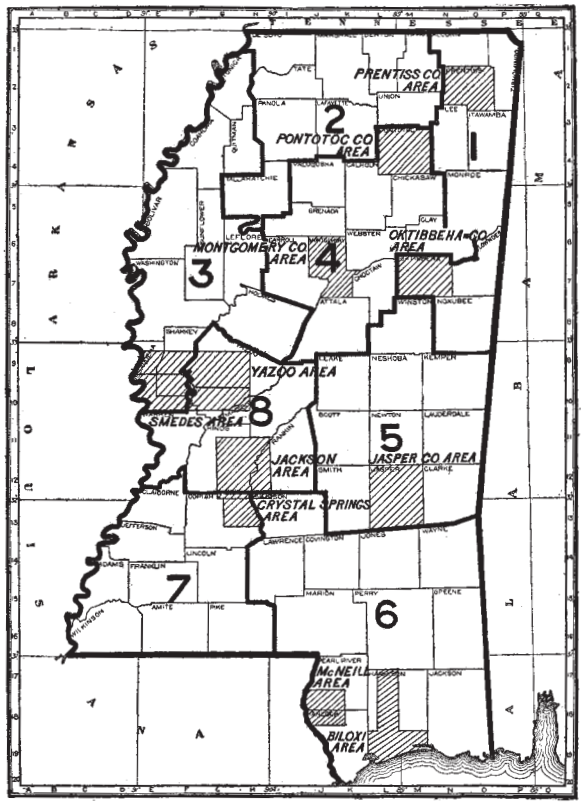

FIG. 17.—Sketch map showing location of the Jasper County area, Mississippi.

The surface of the county is generally broken and in places too rough for cultivation. The northern part is more level than the southern, and there occur numerous nearly flat "prairies" in this section, some of which are 2 or 3 miles in width. The southeast part of the county is especially rough and hilly.

Originally all the county was timbered, with the exception of a few open prairies near the north line. The larger part is still heavily forested, only the less broken land and the top of the ridges being farmed at present. The sandy land is timbered with pine and scrub oak, the flat "prairie" with black jack and post oak, with some scattering pine, while the bottom lands support a growth of hickory, water oak, gum, magnolia, beech, and some white oak. Lumbering is extensively carried on at the present time, especially in the western half of the area. The longleaf pine forests are rapidly being removed. The turpentine and lumber industries are receiving more attention in many sections than is farming, and the value of the land depends more upon the quantity of marketable timber found upon it than upon the character of the soil.

Tallahoma, East and West Tallahala, Bogue Homo, Etehomo, and Souinlovey creeks form the principal drainage systems of the county. The whole area drains south, the five creeks first mentioned flowing south into Leaf River and the last mentioned southeast into Chunkey Creek. The bottom lands of these creeks vary from one-half mile to 1 mile in width and are heavily timbered and subject to frequent inundations. The divide in the southeastern part of the county between Souinlovey and Tallahala is high and frequently very rough.

Jasper County was established December 3, 1833, and named after Sergeant William Jasper, a Revolutionary soldier. Soon after the establishment of the county white settlers began to move in rapidly, coming generally from the States farther east, including Alabama, North Carolina, South Carolina, and Georgia. These settlers brought their slaves with them, and at the present time the population is composed of about equal numbers of whites and negroes.

The towns of Jasper County are all of small size. Paulding and Bay Spring are the county seats. The former is situated in the east-central part of the county, and the latter near the western line. Paulding, Garlandville, Claiborne, Lake Como, and Montrose are the oldest towns. Since the completion of the railroads new towns have built up and are now of leading importance. Bay Spring is the largest town in the county, having a population of about 600. It is followed closely by Montrose and Heidelberg, each having about 400 population. Vosburg, Louin, and Stringer are all thriving little railroad towns.

There are two railroads in the county, the New Orleans and Northeastern and the Mobile, Jackson and Kansas City. Both of these roads run north and south. The latter, though completed but a few years, has already been a great factor in the development of the agriculture of the western part of the county.

Practically all the farm produce is sold on the local markets. In fact, most everything produced on the farm, with the exception of cotton, is consumed in the county, though some live stock is marketed

in New Orleans, Mobile, and St. Louis. The freight service offered by the New Orleans and Northeastern Railroad makes the development of the trucking industry a possibility in the southeastern section of the county. This road, however, influences only a very small section of the county. With the further extension of the Mobile, Jackson and Kansas City Railroad, the western part of the county will be in touch with the markets of the north and northwest.

CLIMATE.

The climate of Jasper County is that of the warm temperate zone of the United States. The summers are long and the winters short and mild. The temperature seldom rises above 100° F., and —10° F. is the absolute minimum, though such cold is extremely rare, and it is very seldom that the temperature gets as low as 15° F. above zero.

There is a rainfall of about 50 inches, which is well distributed throughout the year. The greatest precipitation generally occurs in the spring and early summer. The fall months are usually dry and favorable for harvesting cotton. Even with the large annual rainfall periods of drought of such duration as to injure crops may occur in July and August, especially on very sandy types of soil where prevailing methods of cultivation are not designed to conserve moisture. By careful tillage even in these sandy soils the crops would seldom if ever suffer.

Little snow falls in this section of the State, there being many winters with none at all. The ground never freezes below a few inches, and winter legumes and cover crops such as rye and oats would grow more or less throughout the winter.

The following tables were compiled from the records of the Weather Bureau stations at Meridian, Waynesboro, and Lake Como:

Normal monthly and annual temperature and precipitation.

Month.	Meridian.		Waynesboro.		Lake Como.[a]	
	Temperature.	Precipitation.	Temperature.	Precipitation.	Temperature.	Precipitation.
	°F.	In.	°F.	In.	°F.	In.
January	47.0	5.15	47.0	4.42	45.0	3.22
February	53.6	5.81	50.7	4.95	54.0	4.13
March	54.5	5.55	56.6	4.50	62.6	3.26
April	65.6	4.37	64.7	4.04	61.6	3.05
May	70.4	4.79	72.2	3.53	68.6	5.53
June	77.6	6.24	78.6	5.67	78.4	4.17
July	78.6	5.43	81.2	5.47	78.5	6.65
August	79.0	4.46	80.3	5.47	79.8	6.16
September	73.0	2.83	75.5	3.12	79.2	1.90
October	62.2	1.65	64.6	1.87	67.5	.08
November	53.4	3.09	54.9	2.80	51.6	2.81
December	50.5	5.29	49.1	4.01	49.0	4.45
Year	63.8	54.66	64.6	49.85	64.6	45.41

[a] The temperature and precipitation for Lake Como are for the year 1904, without departures from the normal.

Dates of first and last killing frosts.

Year.	Meridian.		Waynesboro.		Lake Como.	
	Last in spring.	First in fall.	Last in spring.	First in fall.	Last in spring.	First in fall.
1898	Apr. 8	Oct. 27	Apr. 8	Oct. 28	----------	----------
1899	Mar. 29	Nov. 3	Apr. 10	Nov. 3	----------	----------
1900	Apr. 1	Nov. 9	Mar. 17	Nov. 10	----------	----------
1901	Mar. 17	Nov. 6	Apr. 22	Nov. 16	----------	----------
1902	Mar. 6	Nov. 28	Mar. 6	Nov. 28	----------	Oct. 29
1903	Mar. 26	Oct. 25	Mar. 26	Oct. 25	Mar. 26	Oct. 25
1904	Mar. 4	Nov. 11	Mar. 5	Oct. 24	Mar. 15	Oct. 21
Average	Mar. 22	Nov. 7	Mar. 27	Nov. 6	----------	----------

AGRICULTURE.

Cotton and corn were the principal crops produced by the early settlers of the county. Before the war, however, more diversified farming was practiced than at the present time. More of the home necessities, including fruits and vegetables, were produced, and tobacco was also universally grown for home consumption. The war temporarily changed the agriculture of the area; although corn and cotton remained the chief crops, wheat, rice, and other foodstuffs were grown. Their culture ceased, however, soon after the close of the war.

Since 1865 the agriculture of Jasper County, as that of much of the central South, has consisted of a one-crop system of farming. Cotton has been produced almost alone, corn not being grown in large enough quantities to supply local demand. Cotton did not, as is often supposed, yield heavier before the war than at the present time. As a rule, the yield was even less before the introduction of commercial fertilizers than it has been since they have become universally used. A larger area of the "prairie" types of soil was under cultivation during slavery times than at present. Because of their clayey texture and consequently more difficult tillage, these soils have been abandoned for the less fertile sandy types. Fertilizers were first introduced about twenty years ago, but they have not been generally used until within the last ten years.

Cotton and corn receive much the same treatment that they did before the war. The plowing is very shallow, irrespective of crop or soil. Very little fall or winter plowing is done, the fields generally being left bare between the harvesting and planting seasons. The ridge method of culture is commonly used for both corn and cotton. The seed bed is made by throwing two to four furrows together and subsequently harrowing with a small one-horse harrow. The fertilizer for cotton is either applied by hand while the seed bed is being prepared or drilled in as soon as completed, it often being applied two weeks or more before the cotton is planted. A standard

commercial fertilizer running high in phosphoric acid is commonly used. The application varies from 200 to 500 pounds per acre.

Corn generally receives an application of cotton seed as well as a phosphatic fertilizer, but sometimes no commercial fertilizer is used, cotton seed alone being applied. On the black prairies corn is seldom fertilized. The seed is generally drilled by hand in a furrow which has been opened up in the center of the seed bed, the fertilizer having been previously applied by hand. It is a common practice among the farmers to walk over the field and drop a handful of cotton seed in each hill, then apply a small amount of common fertilizer by hand, and finally go over it the third time and drop a few kernels of corn in each hill.

Cotton is generally planted between the 1st and the 10th of April. Some late cotton is planted in May. Corn is usually planted from the 1st to the 20th of March, though late corn, which is frequently grown, especially on the "prairies," may be planted as late as May 10.

Cotton is chopped when a week or two old and generally hoed a second time two or three weeks later. The "scraper" is used when the plants are small, and later two or three cultivations are given with the "diamond scooter." Corn is worked with a one-horse plow and seldom receives over two cultivations. The cotton is ginned at the small gins scattered throughout the county, and sold to local cotton buyers. The corn is snapped in the field, and is generally all utilized on the farm. The blades are frequently stripped from the stalks while green and tied into small bundles for forage. There is not enough corn produced in the county to supply the local demand, it being imported from the corn belt in large quantities.

Fall oats are grown to some extent, but the yield is always light. Cowpeas are about the only legume grown in the county, and this crop only in a limited way. Considerable wild hay is cut from the prairies. Sugar cane, sweet potatoes, and fruit are the other products of importance.

Because of this one-crop system of farming there is no systematic rotation practiced in the county. Cotton and corn are grown upon the same land year after year. They are sometimes rotated with each other to a limited extent, but such a rotation has very little beneficial effect. Cowpeas are frequently sown in the corn after the last plowing and are generally recognized as very valuable in improving the soil. Oats are occasionally rotated with corn or cotton. Not only does this exclusive production of cotton and corn prevent any systematic rotation, but it also prevents the adaptation of the crop to the soil. Cotton and corn are grown on practically every type of soil in the county. Corn is known to produce better on the black prairie, while sugar cane is grown on the low areas in the sandy types, where the soil is more productive and the moisture content

higher; still, little heed is given to the adaptation of soils to certain crops. The problem of securing farm labor is a difficult one, as it is in many parts of the country. The one-crop system of farming is partly to blame for this, and by adopting a more diversified system, giving a chance for more continuous employment, the labor conditions may be much improved. Where steady employment is now offered labor can be secured by the month for from $15 to $18 and board.

Of 294,657 acres in farms, according to the census of 1900, 82,259 acres were improved. The average size of farms in the county in this same year was 130.7 acres. This does not represent the average area owned by individuals, however, as the census classed each tenancy as a farm. There are a good many tenants who rent small areas of 10 or 15 acres, but there is little farm land owned in smaller tracts than 40 to 80 acres. There are a good many farms of 80 to 160 acres, while a rather large part of the county is owned in tracts of from 200 to 1,000 acres or more. Generally the farms are smaller in the east and in the central parts of the county. As stated, the longleaf pine forests are being rapidly cut at the present time, and the newly cleared land will probably be sold in small tracts, thus materially affecting the average size of the farms of the county. Many of the farms of 80 to 160 acres have only a small patch of ground, some 10 to 20 acres, under cultivation.

In 1900 more than 59 per cent of the farmers tilled their own soil. The crop system of renting is universally employed, the tenant giving a bale of cotton for so much land, generally what can be tended with one mule. The owner furnishes the tenant with food and other supplies until the crop is made.

The farm lands vary greatly in price, depending on the soil, the topography, the timber, the distance from a railroad station, and the improvements. The sandy types vary in value from $5 to $20, with an average price of about $8 to $10 an acre. The flat post-oak prairies sell for $5 or less an acre, while the black calcareous prairies bring $10 or more. The land generally has advanced greatly in price during the last eight or ten years, and in some cases it has doubled in value within the last five years. Land with a heavy growth of commercial pine is now worth $15 to $25, while a few years ago the greater part of the good timber land was purchased for from $2 to $5 an acre. The farm lands in the vicinity of the railroads are still advancing in price.

The agriculture of the county has been slowly improving within recent years. There is a tendency among the farmers to use more improved machinery. Two-horse plows are frequently seen, while ten years ago it is said they were unknown in the county. Mowers, sulky rakes, and other modern machinery are also in use.

More diversified methods of farming should be generally practiced. While cotton will probably always be the leading crop of this section, it should not be the only money crop. Where cotton is grown upon the same land years after year, much benefit will be derived from growing some winter legume after the cotton. Burr clover and vetch are well adapted for this purpose and either of these crops will make a good growth during the winter months. They can either be turned under in the spring or pastured and the resulting manure left on the land. However, a rotation involving a greater diversity of crops, as before mentioned, would prove more satisfactory to the farmer and more beneficial to the soil. A good three-year rotation, made up of crops already grown in the county, consists of cotton, corn, and oats, with a crop of cowpeas grown in the corn and another following the oats. It is very essential that in any rotation adopted, especially on the sandy types of the county, leguminous crops enter frequently. Cowpeas, melilot, lespedeza, and vetch, can all be used to advantage. Sweet potatoes and the winter cereals are also suitable for rotation in this area.

Hay production should receive more attention. Except on the Houston clay, where considerable wild hay is grown, little hay is produced in the county. Well-cured hay always brings a good price on the local market. Not enough hay is produced in many sections to feed the live stock now on the farms. Alfalfa would produce abundantly on the Houston clay, where the drainage is adequate, and it is a crop that should be introduced on this type of soil. Johnson grass gives a heavy yield of hay of fair quality on Houston clay, but the advisability of planting this grass is questionable, since it spreads rapidly and is very difficult to eradicate. Lespedeza, cowpeas, soy beans, Bermuda grass, and crab-grass should make good hay on the sandy soils, while Japanese rye-grass, orchard grass, and lespedeza are recommended for pastures.

The live-stock industry should receive more attention. The Houston clay prairies afford good pasture for eight months of the year, and as the soil is capable of producing 40 bushels or more of corn per acre and 3 to 6 tons of alfalfa hay, this region is well adapted to the production of beef cattle and dairying.

The ridge culture of cotton and corn so generally employed in the county could well be dispensed with in many cases. The practice, while perhaps necessary to keep weeds in check and hasten drainage on the Houston clay and heavy soils generally, exposes more surface of the soil to the sun and consequently increases evaporation considerably. Hence, on sandy soils, where conserving moisture is an important question, the flat culture of crops will give better results.

In the great majority of cases deeper plowing is to be recommended, especially on the clay soils. The repeated and frequent use

of the moldboard plow run at the same depth tends to compact the subsoil, forming a plowsole at the depth reached by the plow. This is often as shallow as 3 or 4 inches, and the feeding zone of the crops is thus limited and droughty conditions are induced. Deep plowing also helps materially to prevent soil washing, and should be one means, among others, employed to lessen the rapid erosion of soils on the rolling areas. The plowing under of green crops, the application of manure, or increasing in any other way the organic content of the soils, would likewise lessen the washing of the broken areas and at the same time increase their productiveness. Terracing and embanking should be employed on the slopes, and the more rolling areas should either be seeded to pastures or left in forest.

SOILS.

Originally, before the area was uplifted above sea level, the surface of Jasper County was probably covered with the Lafayette sands and gravels. This formation still makes up the surface of practically all of the south part of the county, and is generally underlain by the Vicksburg, except in the southwestern corner of the county, where the Grand Gulf formation is found.[a]

Though remnants of the Lafayette may still be found on the tops of the higher hills, the materials have been largely removed from the north section of the county, exposing the clays of the underlying formations, and giving rise to what is known as the "Central Prairie Belt of Mississippi." This belt apparently represents an old shore line which existed during the period of uplift. At this time the sands and gravels were more or less washed and eroded away by wave and current action.

The soils may be divided into three distinct groups; the so-called "prairie region" of the north and east parts, the sandy or piney woods soils of the central and southern parts, and the alluvial bottoms along the streams throughout the area.

The soils of the prairie region are derived from the oldest formation in the county, and constitute three distinct series—the Houston, the Montrose, and the Susquehanna. Though they are closely associated, they are all of slightly different formation. The Houston series, represented only by the Houston clay, is the oldest of these. It is of sedimentary formation, being derived from the Eocene Tertiary limestone which underlies it. This type is locally known as "black" or "shell prairie." It is generally of a slightly rolling topography and occasionally gullied on the slopes. It is a distinctly calcareous soil and is underlain within a few feet of the surface by chalk or rotten limestone. The Montrose clay includes the greater part of the

[a] Geological Survey of Mississippi. Bulletin No. 3.

clay areas of this " prairie " region. It is of slightly more recent formation than the Houston clay and is probably underlain at from 10 to 20 feet by the limestone. It possesses a characteristic flat topography and is universally poorly drained. It is locally called " flatwoods " or " hog wallow prairie," and is heavily timbered with scrubby black-jack and post oak and some pine. The subsoil is generally of a distinctly acid character, and this, along with its characteristic yellow color, distinguishes the type from the clays of the other series. The Susquehanna clay is closely associated with the Montrose clay. It seems to be of similar formation, though it very probably is of more recent origin as in almost all cases it is found overlying material like that of which the Montrose is formed. The drainage is invariably better than that of the Montrose soil, and it is very probable that this factor has been influential in causing the difference in the character of these two soils. It differs from the Houston clay in that the calcareous formation occurs at a greater depth, that the surface soil is red rather than a brown color, and that the subsoil is mottled red instead of a yellow or drab colored clay. It is not as calcareous as the Houston, nor has it the acid character of the Montrose clay. The characteristic gray and red mottled clays which give rise to this type seem to dip to the south and are frequently seen exposed under the Lafayette sands of this region. The Susquehanna series is also represented by small areas of the fine sandy loam type. The Montrose sandy loam which occupies rather level areas in this section is found closely associated with the Montrose clay. The subsoil is of very similar character, except that it is rather sandy. It is of practically the same formation as the Montrose clay. Numerous high limestone hills and ridges are also found throughout the " prairie section " of the county. These ridges are often 100 to 200 feet above the surrounding " prairies." They are generally covered by a deposit of the Lafayette sands and gravels, giving rise to soils of the Orangeburg type. The sides and frequently the depressions of these elevations present soils of the Susquehanna or Montrose series. These sand-covered ridges are frequently badly eroded, the Lafayette sands and gravels being cut through and the underlying clays exposed. There are also seeps and springs around the sides of these ridges, the water readily passing down through the sand and following the clay stratum until it emerges along the hillsides, where the contact between the two strata is exposed.

The Vicksburg and the Grand Gulf formation are exposed to some extent, but have little influence on the soils, for the reason that the surface is generally composed of a covering of Lafayette sands. The topography where the Vicksburg is the underlying formation is rolling to hilly. The streams have often cut down 50 to 75 feet into the

Lafayette. In the Grand Gulf formation, however, the surface is more level and the soil seldom badly eroded. The soils are generally of the Orangeburg or Norfolk series, the former prevailing on the high, broken divides. but giving way to the latter as the topography becomes more level. The Norfolk series is more extensively developed as one goes south, and it replaces the Orangeburg soils almost entirely in the Grand Gulf formation. The Orangeburg series includes the soils having a red sandy clay subsoil, while the Norfolk series is composed of those with yellow or orange subsoils. The variation in texture and in the depth of the surface soils of this region have given rise to numerous soil types. Orangeburg clay, loam, sandy loam, fine sandy loam, and sand, and Norfolk sandy loam, fine sandy loam, sand, and coarse sand have been found. The Norfolk series in some instances seems to be of post-pleistocene formation. Areas which are apparently of this formation are found adjacent to stream bottoms, especially in the northeast corner of the county.

The third soil region of the county, the alluvial flood plains along creeks, is of recent formation and is still being slowly modified by frequent inundations. These bottom lands present two soils of very different textural characteristics. In the "prairie" region, where the bottoms have been formed from the wash of the heavy clay types, the Ocklocknee clay is found. As the sandy section of the county is entered, the texture of these alluvial deposits changes gradually into a loam or sandy loam. In this way the Ocklocknee loam has been formed. Practically all the stream bottoms are subject to frequent inundations. They are low, and during the rainy seasons swampy. The bottoms along the larger streams are locally called swamps, but in most cases they are not true swamps. They are all heavily timbered and seldom cultivated.

The following table gives the names and extent of the several soil types encountered in the survey:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk fine sandy loam	96,192	22.3	Orangeburg clay	8,256	1.9
Orangeburg fine sandy loam	85,184	19.8	Orangeburg sand	6,656	1.5
Orangeburg sandy loam	52,992	12.3	Susquehanna fine sandy loam	6,080	1.4
Montrose clay	43,840	10.1	Orangeburg fine sand	2,304	.5
Ocklocknee loam	42,432	9.9	Orangeburg loam	1,984	.5
Ocklocknee clay	23,040	5.4	Norfolk sand	1,536	.3
Montrose sandy loam	20,928	4.8	Norfolk coarse sand	448	.1
Norfolk sandy loam	16,128	3.7			
Susquehanna clay	12,480	2.9	Total	431,872	
Houston clay	11,392	2.6			

ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam consists of a fine gray sand or sandy loam surface soil, 4 to 15 inches deep, underlain by a red sandy clay subsoil. The surface soil frequently contains some gravel and in small local areas it is covered with iron concretions and rock fragments. The subsoil is more sandy below 30 inches and is frequently of a mottled red and yellow color.

In some sections, especially in the vicinity of the Susequehanna soils, the red sandy clay subsoil of the Orangeburg fine sandy loam becomes heavier and often where it grades into the Susquehanna clay or fine sandy loam it is very plastic. Much of the Orangeburg fine sandy loam in the northeast part of the county is of this phase. In this section the deposit which gives rise to this type is very thin and frequently the underlying mottled clays, which weather into soils of the Susquehanna series, are exposed.

On the cultivated slopes the surface is badly washed in places and spots are frequently seen scattered through the fields where the red subsoil is exposed. On the other hand, at the lower edge of the slopes the sand has often accumulated to a depth greater than 15 inches.

The Orangeburg fine sandy loam is invariably a well-drained soil, the topography being rolling to very broken and hilly. A large percentage of its area is too broken for cultivation, and much of that under cultivation is eroded. Areas of this soil are found throughout the southern and central parts of the county. It gives way to the Norfolk fine sandy loam to the south as the topography becomes more level.

The Orangeburg fine sandy loam, like most of the sandy types of the area, has been derived from the Lafayette formation, which is of considerable depth in many sections. The deposit becomes deeper in the southern part of the county.

The Orangeburg fine sandy loam is one of the characteristic "piney wood" soils. Originally it was all heavily forested, mostly with shortleaf and longleaf pine, though different species of oaks are common on this soil. Much marketable pine has been cut in the county from this type, and invariably where the pine is removed and the land left idle a thick growth of post and scrub oak springs up to take its place.

The Orangeburg fine sandy loam is an excellent truck soil, being capable of producing nearly all varieties of vegetables and small fruits. Melons, strawberries, and sweet potatoes do especially well. It requires rather heavy fertilization for the cereals and for cotton. This is one of the best peach soils found in the South, and peaches and pears do well locally.

Cotton is the leading crop at present, and although commercial fertilizer is used, produces on an average hardly one-half bale to the acre. With heavier fertilization and especially careful cultivation a yield of 1 bale or more is often secured. Corn and oats are also grown, but the yields are generally light. Although corn sometimes produces 25 bushels or more, the average yield is about 12 bushels. Some cowpeas are grown either alone or in the corn. They are practically the only legume produced in the county. Sugar cane is grown in the low areas, where the wash from the hills has accumulated, but generally the soil requires heavy applications of manure to produce this crop.

The Orangeburg fine sandy loam is plowed to a shallow depth, seldom over 2 or 3 inches. The plowing generally follows the contour of the land and unplowed ridges are left on these slopes by the better farmers to prevent erosion. Generally deeper plowing should be practiced on this type and more leguminous crops should be grown and turned under. Such practices would greatly improve the productiveness of the soil and at the same time tend to lessen the damage from erosion, which is a very important matter. Many fields are already past reclamation, while others recently placed under cultivation should have been left uncultivated, as they are so broken that they will rapidly gully even with the most careful treatment.

Commercial fertilizers have been used to some extent in the cultivation of the Orangeburg fine sandy loam for the last fifteen years and are now in general use. Various brands are found on the local market. Those running high in phosphoric acid seem to give the best results. Stable or green manure is seldom used, but cotton seed has been found a valuable aid in crop production.

This is one of the best of the sandy types found in the county. It sells for from $5 to $10 an acre, though the broken areas distant from the railroads may be secured for less. On the other hand, the better-improved farms on this type are held at $15 or more an acre.

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

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.*
15511, 16733	Soil	0.5	5.2	8.0	37.5	11.9	32.1	4.5
15512, 16734	Subsoil	.3	3.3	5.5	29.3	7.3	24.8	29.1

ORANGEBURG SANDY LOAM.

Like the preceding type, the Orangeburg sandy loam consists of a sand or sandy loam surface soil, 4 to 15 inches deep, underlain by a

red sandy clay subsoil. The sand of both the surface and subsoil is coarser than that of the Orangeburg fine sandy loam. The surface is often of yellowish to brown color, while on the slopes the subsoil is of a deeper red color and of a slightly looser structure than that of the fine sandy loam type. The surface soil is very low in organic matter, except in depressions, where the humus content runs fairly high. The soil is more fertile and produces larger crops where the subsoil is within 6 or 8 inches of the surface.

The Orangeburg sandy loam is very closely associated with the Orangeburg fine sandy loam. They have been formed in practically the same manner, the difference in texture being due largely to the differences in the rapidity of the currents at the time of deposition.

The Orangeburg sandy loam is found in areas of varying size throughout the county. It occupies large areas around Pauling and forms one of the common types on the sand ridges in the north part of the county. The topography is often very rough and much of this type is badly gullied. It is naturally a well-drained soil, but owing to the hilly character of the surface, a considerable proportion of the area can never be put into cultivation.

Not only is the natural vegetation nearly identical with that of the Orangeburg fine sandy loam, but the crops adapted for cultivation are also similar. The timber consists largely of shortleaf pine and is of less commercial importance than either the shortleaf or longleaf pine found on the Orangeburg fine sandy loam. It is not as good a truck soil as the Orangeburg fine sandy loam, but like it, it is an excellent peach soil, and in some sections of the south it has proved a fine soil for growing a high-grade cigar tobacco. As found in this area, however, it is probably not as well adapted to tobacco as in some other sections of the country.

Cotton and corn are the leading crops, the former yielding from one-third to 1 bale and the latter from 8 to 25 bushels per acre. Cowpeas produce well. The crop yields in general are about the same as on the Orangeburg fine sandy loam, though on the whole corn and cotton do a little better. There is an impression among the farmers that this soil is more readily affected by drought than is the Orangeburg fine sandy loam. This would naturally be expected on account of the coarser, more sandy surface and the looser structured subsoil.

This soil is usually fertilized for corn and cotton, commercial fertilizer and cotton seed being applied to the first-named crop and commercial fertilizer alone to the latter. Few legumes are grown and little organic matter turned under.

The Orangeburg sandy loam is generally valued at $5 to $10 an acre. Near the Orangeburg loam areas, where the surface is less

sandy, it sells for as high as $15, while the very rough areas can be bought for less than $5 an acre.

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

Mechanical analyses of Orangeburg 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.*
16729, 16731	Soil	2.6	18.9	16.6	31.7	3.0	24.7	4.3
16730, 16732	Subsoil	.8	12.7	14.1	23.3	1.7	24.6	22.8

ORANGEBURG CLAY.

The surface soil of the Orangeburg clay is rather variable. It frequently consists of from 4 to 6 inches of brown to red sandy loam or sandy clay, but sometimes there are 2 to 4 inches of sand or fine sand on the surface, while again the surface may be a heavy sandy clay nearly identical with the heavy red clay or sandy clay which forms the subsoil.

This soil is locally known as red prairie land, and although most of it has been timbered, some few areas were naturally open prairie. It occupies gentle to rather steep slopes adjoining streams, and the surface is always rolling enough to give good drainage.

Some areas of the Orangeburg clay are unquestionably derived from the Lafayette formation and owe their origin to the washing away of the finer surface sand materials, which weather to form the Orangeburg sandy loam and the Orangeburg fine sandy loam. Other areas seem to be of different origin, since they are underlain by limestone. The area southeast of Heidelberg is of this character.

The Orangeburg clay is found most extensively in the southeastern part of the county in the vicinity of Heidelberg, and occurs only in small scattering areas in other sections of the county. Where well tended it is very productive, and is better adapted to the growing of corn than are the other Orangeburg soils of the county, with the possible exception of a few small areas of Orangeburg loam. It is also a very good cotton soil, but requires thorough and careful cultivation to maintain a good tilth. With careful treatment most of the Orangeburg clay could be made to produce a bale of cotton to the acre. At present cotton and corn are about the only crops grown. Corn yields 15 to 30 bushels and cotton from one-third to three-fourths bale per acre. The greater part of the type is still in timber, while some is used as pastures.

The Orangeburg clay receives the same cultural treatment and practically the same fertilizers, though in smaller amounts, as are used on the sandy soils. It is much more difficult to get into condition for a

crop than are the sandy types, and it can not be worked as soon after a rain as the more open-textured soils.

Owing to the unimproved condition of this soil it has generally a low value, selling for $4 to $10 an acre.

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

Mechanical analyses of Orangeburg 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.*
16737	Soil	0.9	2.8	3.5	20.2	2.8	42.1	27.3
16738	Subsoil	1.0	1.2	1.2	8.1	1.8	31.5	55.0

ORANGEBURG SAND.

The Orangeburg sand, as found in this area, consists of brown to yellow sand having a depth of 12 inches or more, which grades into a brown or red sandy loam, in turn underlain by a red sandy clay or a red sand. Frequently the stratum of sandy loam is absent, and the soil in that case consists of a medium sand from 15 to 30 inches deep, underlain by a red sandy clay subsoil. In this case it is identical with the Orangeburg sandy loam, except that the surface soil is of greater depth.

The Orangeburg sand is not a very important type of soil in Jasper County, the total area being only a few square miles. It is frequently found on the steep slopes along small streams, while much of it is closely associated with the Orangeburg sandy loam, occupying areas where the surface sand has a depth of over 15 inches.

There is little doubt that most of this type occurring in the county is formed from the Lafayette the same as the other types of the Orangeburg series. It seems hardly reasonable to attribute this deeper deposit of sand wholly to any one cause, since, in some places it appears to have been formed by the deposition of a deep layer of sand, while in other places there are indications of the clay having been wholly or partly removed by drainage waters, leaving a sandy stratum on the surface. The surface is generally rolling to hilly, and, with the open texture, this secures good drainage. In its native state the Orangeburg sand was forested with shortleaf pine and oak. The pine generally is of rather stunted growth and of little commercial importance.

Very little of the type is under cultivation at the present time. The soil is fairly well adapted to peaches, where underlain by red sandy clay within 2 or 3 feet of the surface. Corn and cotton are produced upon this soil, but they generally require heavy applications of fertilizer, and are more quickly affected by drought than on the

sandy loam soils. Watermelons and sweet potatoes produce well, but most of the other vegetables suffer during dry spells. This droughty condition could be lessened by the application of well-rotted stable manure or other forms of partly decayed organic matter. Even by better cultural methods alone much moisture that now evaporates could be conserved.

It is difficult to place an average value on this soil, since it is found in such small areas. Generally the value runs a little lower than that of the Orangeburg sandy loam, varying from $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 Orangeburg 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.*
16725	Soil	1.3	20.3	26.7	31.0	6.5	9.1	5.0
16726	Subsoil	1.2	16.9	19.2	20.8	5.1	13.5	23.5

ORANGEBURG FINE SAND.

The surface soil of the Orangeburg fine sand is a fine sand to fine sandy loam having an average depth of about 24 inches. In texture it is practically identical with the surface of the Orangeburg fine sandy loam, the separation being based upon the greater depth to the subsoil. The subsoil consists of a red fine sandy clay.

There are only a few patches of this soil in the county, and only two areas of any size, one just south of Louin and the other about 5 miles east of that town. The Orangeburg fine sand is generally rolling and well drained. It is still practically all timbered with good commercial longleaf pine, but it should make a good truck soil. It is rather light for cotton and corn, though by careful cultivation and heavy fertilization fair yields of cotton can be obtained.

At the present time this soil is valuable on account of the timber upon it, but without this it would probably be valued at $4 to $8 an acre.

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

Mechanical analyses of Orangeburg 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.*
16727	Soil	0.0	0.4	2.4	59.9	11.2	21.9	3.2
16728	Subsoil	.0	.3	1.4	43.2	7.9	14.4	32.8

ORANGEBURG LOAM.

The Orangeburg loam consists of about 12 inches of brown loam resting on a subsoil of a light-textured red sandy clay or heavy loam. The character of the surface soil varies somewhat with the topography, tending, on the slight elevations, toward a sandy loam, and, in the depressions or level areas, toward a silt loam.

There are only a few small areas of this soil. It occurs in the vicinity of Lake Como and also in a few places in the northeast part of the county. It occupies gently rolling areas, somewhat resembling table-lands. The drainage is generally adequate, and seldom is the topography rolling enough to cause erosion.

The areas of the Orangeburg loam are generally well improved, and some of the most highly improved farms in the county are seen on this soil. It is productive and adapted to a great variety of crops. Corn and cotton both produce well. The yield of oats is also good. It is not as early a soil as some of the more sandy types, but it is naturally more productive, as its loamy nature gives it a better water-holding capacity, while the more level topography prevents erosion and allows the use of modern machinery.

A higher valuation is placed upon this type of soil than upon any other in the county. It is held at from $10 to $30 an acre, the difference in price depending upon the improvements.

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

Mechanical analyses of Orangeburg 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.*
16735	Soil	0.5	14.5	16.1	16.8	0.6	39.1	12.6
16736	Subsoil	.3	13.8	14.6	16.8	.6	34.8	19.2

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam consists of a gray or yellow fine sand to fine sandy loam, with an average depth of about 15 inches. The surface 6 to 10 inches is a gray fine sand which grades into a more compact pale-yellow fine sandy loam, and this, in turn, at from 12 to 20 inches, into the yellow or light orange sandy clay subsoil. Below 30 inches the subsoil becomes mottled, and in the more level areas this mottling occurs throughout the profile below the soil. The yellow subsurface stratum, while often abnormally developed, is frequently almost entirely absent, in which case the gray fine sand rests directly upon the yellow subsoil. In the virgin state the surface 2 or 3 inches contains considerable organic matter and is often of a brown

color and of a heavy texture, but when cropped for a few years these characteristics disappear. There are some small areas scattered through this type where the surface soil contains iron concretions and quartz gravel, while occasionally ferruginous sandstones are mixed with the finer material throughout the profile.

The Norfolk fine sandy loam occurs in nearly every township in the county. It is generally associated with the Orangeburg fine sandy loam, occupying the more level areas. In the south part of the county, below the base line, it is the predominating type of soil. The topography is generally rolling, seldom becoming too rough for cultivation, while the many level areas are generally well drained. The more broken areas are eroded somewhat, but this type is not generally as badly washed as is the Orangeburg fine sandy loam. In most cases this soil is derived from the Lafayette formation, as is the Orangeburg fine sandy loam; the marked difference in color and the slight difference in texture being due partly to different drainage conditions. There are, however, adjacent to streams, some rather flat areas of this type, which seem to be derived from Pleistocene deposits, having resulted from the weathering of an old alluvium. In the southwestern part of the county this type of soil seems to have been formed from certain materials of the Grand Gulf formation. The areas are generally timbered with longleaf and shortleaf pine. In the southwestern part of the county, especially, heavy growths of the longleaf pine are found. These forests are being rapidly removed and the partly cleared land generally left to grow up in post and blackjack oak.

The crops produced and yields are similar to those of the Orangeburg fine sandy loam. It is generally recognized that the Norfolk fine sandy loam is not as productive, under the same conditions, as is the Orangeburg fine sandy loam. However, there is little difference in the agricultural value of these two types in Jasper County, since the Norfolk fine sandy loam is generally more level and consequently is more economically cropped.

This can not be considered as an especially good corn and cotton soil, yet these two crops are almost exclusively grown upon it. They both receive annual applications of fertilizer at the rate of from 200 to 400 pounds per acre. Cotton produces from one-fourth to three-fourths of a bale and corn from 8 to 20 bushels per acre. Frequently larger yields than these are obtained, but it is only where the soil has received especially good treatment.

The Norfolk fine sandy loam is a good truck soil and the few vegetables grown upon the type in this county produce well. Fruits, including peaches, figs, pears, and the small fruits, also do well.

As in the case of the other light sandy soils of the county, the Norfolk fine sandy loam is naturally deficient in organic matter, and

that which exists in the surface few inches of the virgin soil is exhausted by a few years cropping to corn or cotton. Barnyard manure is especially beneficial, and leguminous crops, such as cowpeas, soy beans or lespedeza, should be adopted as a regular part of the crop rotation, and as far as possible turned under or fed to live stock and the manure returned to the soil.

Where improved this type sells for $8 to $10 or more an acre. The unimproved areas from which the commercial pine has been removed, can be bought for $5 an acre.

The following table gives the results of the mechanical analyses of samples of 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.*
16721	Soil	0.1	0.7	1.4	52.4	10.8	30.1	4.7
16722	Subsoil	.1	1.1	1.8	32.5	8.0	33.3	22.5

NORFOLK SANDY LOAM.

The Norfolk sandy loam consists of a gray sandy loam surface soil with an average depth of about 15 inches, resting upon a subsoil which to the depth of 36 inches is a yellow sandy clay or sandy loam. Where the drainage is poor this subsoil frequently becomes a mottled gray and has some iron concretions scattered through it. The surface few inches of the virgin soil often contains considerable organic matter, but this is rapidly exhausted by cultivation and the soil becomes low in humus.

Two distinct phases of this type are found in the county—that occupying rolling areas and consequently well drained, and that found on the level, poorly drained areas adjacent to the streams. The latter phase frequently has a rather heavy subsoil where adjacent to the Montrose clay areas and resembles in some ways the Montrose sandy loam.

The Norfolk sandy loam is found most extensively in the northeastern part of the county. In the vicinity of Rose Hill and Hero there occur gently rolling areas of this soil that are well improved and in a good state of productiveness. Frequently these areas tend toward a loam in character and resemble somewhat the Orangeburg loam. The flat areas along the streams are poorly drained and are seldom farmed. Practically all these areas can be put under cultivation if properly drained.

The rolling areas of Norfolk sandy loam seem to be derived from the Lafayette formation, having practically the same origin as the rolling areas of Norfolk fine sandy loam. The low, flat areas along

the streams also are of similar formation as the corresponding phase of the Norfolk fine sandy loam, seeming to owe their origin to a Pleistocene alluvial deposit of the streams.

A very large part of the gently rolling phase of the Norfolk sandy loam is under cultivation, but the lower areas are still heavily timbered. Cotton forms the leading crop and where the drainage is good yields from one-third to three-fourths bale per acre. The yield of corn is only 10 to 15 bushels per acre, being relatively lower than that of cotton. On the more loamy areas larger yields of both these crops are obtained. Oats do not do as well on this type as on the Orangeburg sandy loam. The type is well adapted to vegetables and the more rolling areas to fruit.

Farms of this soil bring from $5 or less to $25 an acre. Some of the best farms of the county are found on this soil.

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

Mechanical analyses of Norfolk 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.*
16719	Soil	0.9	4.9	9.6	37.1	10.4	32.0	4.9
16720	Subsoil	.3	3.0	7.6	33.6	9.8	31.4	14.4

NORFOLK SAND.

The Norfolk sand is of practically the same texture throughout the 3-foot profile. It is a nearly pure quartz sand, containing little material finer than fine sand and seldom any large quantity coarser than medium sand. The surface 6 inches is a grayish yellow, though frequently a light-brown shade is found, owing to the presence of a small quantity of organic matter. There is seldom enough, however, to give the material a loamy texture. The subsoil has a yellow color.

This soil occurs as hills and ridges, many of which resemble sand dunes, and it is possible that the wind has played an important part in its formation. The sand itself is traced to the Lafayette formation, but it is very probable that these deep deposits have been formed by more recent forces which have materially changed the character of the original deposits.

The Norfolk sand is of minor importance, occupying only a few small areas, most of which are situated in the immediate vicinity of Paulding or southeast of this place. Very little of the type is cultivated. It is generally timbered with a light growth of scrubby blackjack and post oak and a few scattering pines. It is too light a soil for the common farm crops, but by heavy applications of commercial fertilizer and organic matter it could be made a fair truck soil. It is

naturally droughty, owing to its deep, loose subsoil. This type can be bought for a few dollars an acre.

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

Mechanical analyses of Norfolk 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.*
16715	Soil	0.3	8.2	48.1	36.5	1.4	3.2	2.9
16716	Subsoil	.2	9.1	48.0	36.9	1.2	2.5	2.3

NORFOLK COARSE SAND.

The Norfolk coarse sand consists of a yellowish coarse sand 36 inches or more in depth. A surface layer a few inches in depth contains a very small quantity of clay—just enough to hold the sand particles together when wet. There is often a small quantity of organic matter in the top soil, which gives it a light-brown color, but there is no marked difference in the material throughout the profile. The type contains considerable gravel scattered through it, and a few small gravel beds occur. In some areas the subsoil is cemented into a ferruginous sandstone or conglomerate. The type is generally underlain at from 3 to 20 feet by a red gravelly or sandy clay. In some cases, however, it seems to have been deposited under the red clays of the Orangeburg series and forms the surface soil on the slopes where these clays have been eroded away. It is very similar to the preceding type, differing from it mainly in the proportion of sand of coarser grades.

The type is of very local occurrence, being found in small areas on the ridges in the vicinity of Baxter. It is seldom farmed and has very little agricultural value.

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

Mechanical analyses of Norfolk coarse 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.*
16717	Soil	6.4	61.1	18.4	5.9	1.8	3.4	3.3
16718	Subsoil	11.1	56.9	19.6	5.5	1.3	3.3	2.7

HOUSTON CLAY.

The Houston clay, to a depth of from 4 to 12 inches, is a light-brown to black heavy clay loam. It is shallow and of a yellow color on the higher areas, while along the gentle slopes it is deeper and of a

brown to black color. The surface is frequently covered with lime concretions and Tertiary shells. When wet the surface becomes very sticky, but upon drying the lime causes flocculation of the clay particles and it assumes a loose granular structure. The subsoil consists of a yellow calcareous clay or a gray chalky limestone. This chalky clay is generally within 3 feet of the surface and over much of the type there are gray spots where this material practically forms the surface soil. Such areas are low in organic matter and not as productive as where the surface soil is deeper and darker in color. In the ravines the underlying limestone rock is occasionally exposed.

When wet this soil is difficult to cultivate, but when the moisture conditions are favorable it is a very friable soil. This is largely due to its high lime content, but the relatively large proportion of organic matter generally present also has a marked influence upon the tilth.

The Houston clay occupies gently rolling areas in the north-central part of the county. They are seldom more than a few square miles in extent and are usually surrounded by either the Montrose clay or the Susquehanna clay. The surface drainage is generally good. Many of the slopes where the run-off is rapid have been allowed to gully until they are almost worthless.

The Houston clay is a residual soil, having been derived from the disintegration of Tertiary limestone. This limestone may be seen in nearly all stages of disintegration in the numerous exposures in cuts and ravines. The same Tertiary shells are found in the underlying limestone as in the surface soil. This limestone probably belongs to the Jackson stage of the Eocene Tertiary.

The Houston clay areas are commonly spoken of as bald prairies. They were originally partly timbered, though much of the area was naturally open and covered with a heavy growth of prairie grass. The greater part of the forested area was originally covered with sturdy-growing black-jack oak, shortleaf pine, and wild plum. As soon as cleared the land naturally seeds to wild prairie grasses. At the present time sweet clover (*Melilotus alba*) may be seen growing wild on the prairies.

This is an exceptionally good corn and hay soil. It is not only adapted to the growing of grasses, but likewise to leguminous crops. Melilotus, vetch, cowpeas, and alfalfa all give heavy yields. It also affords excellent pasturage for the greater part of the year. Because of this wide crop adaptation, the Houston prairies are well suited to the live-stock industry, though at present this line of farming is receiving little attention.

Very little of the type is cultivated, the greater part of it being used as pasture or mowing land. During early times it was exten-

sively farmed, but since the war it has gone out of cultivation. Corn is the principal crop produced and yields from 20 to 40 bushels per acre. Cotton is also grown to some extent on the deeper phase of the type. The yield under careful methods of cultivation varies from one-half bale to 1 bale per acre. Much wild grass is cut for hay, but the greater part of this soil is used for pasture. A few fields of alfalfa were seen. This legume gives in a single season from 3 to 5 cuttings of about 1 ton to the acre each.

The soil is seldom well prepared for the crops. Corn is frequently dropped on the unbroken surface and a furrow plowed over it, and seldom receives more than two cultivations. Fertilizers are rarely used. There is a great chance for the employment of improved methods. Deeper plowing and a more thorough preparation of the seed bed should be practiced. Corn should receive more frequent tillage with improved surface cultivators. Alfalfa and other legumes could well enter more often in the crop rotation. Stock raising offers an excellent opportunity for the development of the Houston clay area.

There are practically no farm improvements on the Houston clay. Where farmed, the owner lives on some adjoining sand ridge, where good water may be secured. Desirable water can not be had in shallow wells in the Houston clay, and this fact, along with the muddy roads, makes this soil undesirable as a site for the homestead.

The price of this type has advanced within the last few years, but it can still be secured for from $5 to $10 an acre.

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

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.*
16707, 16709	Soil	0.1	2.5	3.3	9.0	3.2	47.6	34.6
16708, 16710	Subsoil	.2	.8	1.3	13.9	7.1	48.7	27.6

The following samples contained more than one-half of 1 per cent calcium carbonate ($CaCo_3$); No. 16708, 42.68 per cent; No. 16709, 2.04 per cent; No. 16710, 16.61 per cent.

MONTROSE CLAY.

The Montrose clay consists of a grayish-drab clay, with a depth of from 2 to 6 inches, underlain by a yellow or yellow and gray very plastic clay, which generally becomes mottled red and gray below 20 inches. The subsoil is very heavy and has a somewhat greasy feel when wet. The surface sometimes has an inch or two of sandy loam covering.

This type occupies flat, poorly drained areas throughout the "prairie section" of the county. It is locally called "hog-wallow prairie." It has received this name because of the numerous low places scattered through it, which in size and shape resemble hog wallows. The drainage is poor, water standing in the depressions for weeks at a time during wet weather. In summer the soil dries out and cracks badly. Because of the very clayey texture of both the surface and subsoil and the very low humus and lime content, this soil is very difficult to cultivate. The poor drainage also prevents its being put into cultivation. The small tillage implements now in use in the county are inadequate for working a soil as heavy as this one.

The Montrose clay is derived from the Jackson Eocene formation. It appears to be similar in this respect to the Susquehanna clay, though in some instances it apparently has been derived from older sediments. Where associated with the Susquehanna clay it immediately overlies material similar to that forming the Houston clay. Like the other clay types, it has probably been covered by the Lafayette at some past time, but by wave and current action these materials were subsequently removed.

The type is generally timbered with scrawny post and black-jack oak. Some shortleaf pine and other species of oak are also found. The oaks have a characteristic tall and open form of growth, but as the soil becomes darker and more calcareous, as it does adjoining the Houston clay area, the trees assume a more sturdy growth and are less open and spindling. Practically none of this type is farmed. This is due partly to the great outlay necessary to clear and prepare the land. The roots of the trees have not penetrated down into the subsoil, but have spread just below the surface, forming a thick network that is very difficult to remove.

The Montrose clay is not a productive soil. It will produce one or two good crops of corn when first cleared, but the yield quickly declines. The area under cultivation is so insignificant that it is difficult to determine anything definite as to the crop production. Similar methods of culture are employed on this type as on the sandy lands of the county. The soil is generally distinctly acid, as shown by litmus tests. The application of manure and lime or of lime and green vegetable matter would greatly improve the physical condition of the soil. Much of it would first have to be thoroughly drained, however, before it could be brought into cultivation. The Montrose clay has a low agricultural value at present and can be bought for from $2 to $5 an acre.

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

Mechanical analyses of Montrose 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.*
16711, 16713	Soil	1.0	2.7	2.8	5.8	2.4	50.6	34.3
16712, 16714	Subsoil	.2	1.8	2.1	6.3	3.4	46.0	35.3

MONTROSE SANDY LOAM.

The Montrose sandy loam has a gray sand or sandy loam surface soil varying in depth from 4 to 16 inches. The sand is frequently rather coarse in texture and some gravel is commonly present. The immediate surface and extending to a depth of a few inches is very often of rather dark brown color, the result of the accumulation of organic matter. The subsoil consists of a plastic gray and yellow or gray and red mottled sandy clay, the proportion of red coloring generally increasing with depth.

This type of soil is found scattered through the so-called "prairie region." Large areas occur in the vicinity of Montrose. It has also been found in the northeastern part of the county, where it occupies flat areas adjacent to Twistwood and other creeks. It is closely associated with the Montrose clay, occupying the higher, better-drained areas, yet the topography is generally level and frequently the drainage is inadequate. This is especially true of some of the narrow strips along the streams. These areas, locally known as hummocky or canebrake land, are covered with water for days at a time during rainy periods. The better-drained areas around Montrose are timbered with a fine growth of longleaf pine. There is less commercial pine on the type in the northeast part of the county, it being replaced largely by oak.

The Montrose sandy loam owes its origin to the same geological formation, the Jackson Eocene, as the Montrose clay. Sand and gravel have been deposited with the mottled clays in the case of this type and have caused the present textural difference between it and the Montrose clay.

Practically all of the type is still in timber, there being only small patches here and there under cultivation. Cotton is the principal crop grown, but seldom produces over one-third to one-half bale per acre. Some corn is also grown, but after the first few crops the yields are low. The type is not as productive as the Orangeburg and Norfolk sandy loams, and because of its low, wet nature it is not so desirable an agricultural soil. Vegetables will do fairly well on it, but it is not adapted to fruit.

The areas of this type of soil are valued principally for their timber. The better areas sell for from $10 to $25 an acre. Agriculturally the land is valued at from $2 to $5 an acre.

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

Mechanical analyses of Montrose 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.*
16739	Soil	3.9	15.6	16.2	22.9	1.7	32.2	7.7
16740	Subsoil	2.4	12.6	9.7	15.1	1.8	32.3	26.0

SUSQUEHANNA CLAY.

The surface soil of the Susquehanna clay, which has an average depth of about 6 inches, consists of a red or slightly red and gray mottled plastic clay. The top 2 to 4 inches is often a brownish clay loam and frequently a sandy or gravelly clay. The sandy or gravelly covering occurs where the type adjoins sand-covered hills. The subsoil to a depth of 36 inches is a mottled red and gray or red and yellow plastic clay. It generally becomes more gray or yellow below 24 inches and in some instances the red mottlings almost entirely disappear. The subsoil is frequently underlain by rotten limestone, which is occasionally found within 36 inches of the surface. Owing to its red surface it is locally called "red prairie."

The areas of this soil are generally rolling and often too rough for good farming land. Because of this topography and of the heavy surface soil cultivation is very difficult. The application of lime or stable manure or the turning under of green crops would improve the soil in this respect. The Susquehanna clay seems to have practically the same origin as the Montrose clay, though there are indications of its being of rather more recent origin. The differences between it and the Montrose clay are due probably more to difference in drainage conditions than in the materials from which they are derived. When associated with the Montrose clay, it occupies the higher, better drained areas and is never found underlying the Montrose soils. It also seems closely associated with the Houston clay, which it often surrounds in narrow strips.

The Susquehanna clay does not occur in large areas, but is found here and there throughout the "prairie region," where the mottled clay may be seen outcropping around the sides of most of the hills. Very often these areas around the sand hills are too narrow to be indicated on a map of the scale used in the survey. The type is also found occupying clay hills which have little or no sand covering.

The same mottled red and gray clay is seen throughout most of the central and southern parts of the county, outcropping from beneath the Lafayette sand and gravel.

Very little of the type is farmed, most of it still being forested with oak and shortleaf pine. It is not as productive as the Houston prairies, but gives higher yields than the Montrose clay. Corn yields from 10 to 25 bushels and cotton from one-fourth to one-half bale per acre. It is considered of low agricultural value and sells for from $3 to $5 an acre.

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

Mechanical analyses of Susquehanna 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.*
16743	Soil	1.4	5.3	2.8	2.5	0.2	17.1	70.4
16744	Subsoil	.3	1.2	.7	.9	.3	11.9	84.2

SUSQUEHANNA FINE SANDY LOAM.

The surface soil of the Susquehanna fine sandy loam consists of a gray fine sand or fine sandy loam having a depth varying from 4 to 16 inches and averaging about 12 inches. This is underlain by a very heavy reddish clay which becomes distinctly mottled red and gray below 20 inches. There is sometimes a relatively small quantity of sand in the subsoil. This is not an important type of soil, there being only a few rather small areas in the county. The larger of these occur southeast of Louin and northeast of Rose Hill, along Twistwood Creek. They occupy rolling to hilly country and are always well drained. Much of this soil is still timbered and considerable commercial longleaf pine is found on the areas southeast of Louin.

The surface soil of the Susquehanna fine sandy loam is practically identical with that of the Orangeburg fine sandy loam and has probably been derived from the same formation—the Lafayette. The subsoil, however, consists of the heavy red and mottled clay which underlies much of the Lafayette at varying depths.

The crops grown and the yields obtained are similar to those of the Orangeburg fine sandy loam. The soil is well adapted to vegetables and small fruits. The humus content is at present low and the cultivated areas would be greatly benefited by the growing and turning under of leguminous crops. Cotton yields about one-third to one-half bale and corn 10 to 15 bushels per acre. Land composed of this type of soil may be secured for $5 to $8 an acre.

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

Mechanical analyses of Susquehanna 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.*
16741	Soil	0.0	0.3	0.6	40.4	12.1	40.5	5.6
16742	Subsoil	.1	.3	.1	1.4	2.5	41.4	53.6

OCKLOCKNEE CLAY.

To a depth of 6 to 10 inches the Ocklocknee clay consists of a brown to light-drab clay or clay loam and below this depth of a heavy yellow or yellow and gray clay, which is frequently mottled with red in the lower depths. With the present poor drainage conditions cultivation of this soil is seldom practicable.

This type should receive careful culture even where well drained, for it bakes and puddles if worked when wet, and it often takes two or three years to overcome the injury done by one plowing. The Ocklocknee clay includes the first bottoms along the streams in the "prairie region." These bottoms, nearly a mile wide in places, are low, flat, cut by old channels and bayous, and subject to frequent overflows. On the whole, however, it has better drainage than the Ocklocknee loam.

This soil is of recent alluvial formation, resulting from the deposition by the streams of the clay carried from the surrounding "prairie" types. It is generally heavily timbered with gum, hickory, white and water oak, and some shortleaf pine and magnolia. Practically none of the type is under cultivation. If drained it would prove a productive cotton and corn soil, though excepting those areas resulting from the wash of the Houston prairies, which have a darker surface and give higher yields, it is not as productive as in some other parts of the State. The dark-colored phase occurs in rather large areas along the upper courses of Twistwood Creek. Some excellent pastures are to be found on this soil along a few of the small streams, but as a rule it is held at a low value at the present time, and will be used but little for agricultural purposes until the creeks are put under better control and the drainage improved. From $3 to $10 an acre is asked for land of this type of soil, the price depending upon the character of the timber growth.

The following table gives the results of mechanical analyses of samples of soil and subsoil 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.*
16745	Soil	0.1	0.6	0.7	3.6	1.4	46.0	47.4
16746	Subsoil	.0	.1	.2	.9	1.8	42.3	54.4

OCKLOCKNEE LOAM.

The surface soil of the Ocklocknee loam consists of a brown sandy loam to heavy loam having a depth of from 4 to 8 inches. This is underlain by a yellow and gray or brown and gray mottled sandy clay or sandy loam. Red mottlings are sometimes present below 24 inches. Frequently pockets of sand occur in the subsoil, while small areas may be found where the surface consists of a nearly pure yellow or brown sand. In other instances very distinct stratification is found, there being alternate layers of sand and sandy clay or sandy loam throughout the profile. The surface soil contains only a moderate quantity of humus and for this reason the type does not seem to be as productive as it has often been found to be in other areas.

The Ocklocknee loam occupies the flood plains of the creeks in the south and central parts of the county. It is also found in some of the creek bottoms in the northeastern part. The bottom land along the larger streams is often nearly a mile in width. The soil is formed by the wash of the sandy soils of the Lafayette uplands and consequently occupies the creek bottoms flowing through this formation. It grades into the Ocklocknee clay toward the "prairie section" of the county.

The surface is level, though it is frequently cut by old channels and bayous. Along the larger streams the bottoms are very low and flat and subject to frequent inundation. They are more or less swampy during the rainy seasons. Along the minor creeks in the central part of the county the type is not so flat and parts of it are subject to overflow only at times of exceptionally heavy rainfall. In the southern part of the county, however, all the creek bottoms are low and somewhat swampy.

Practically all the Ocklocknee loam is still heavily timbered. Some small areas along the minor streams are farmed. The timber consists of white and water oak, gum, hickory, magnolia, shortleaf pine, and a dense growth of underbrush. Because of the heavy timber growth and the frequency of overflow, it would require large expenditures to put it into cultivation and prevent injury to crops by inundation. The soil when well drained will produce good crops of both corn and cotton.

At present this type is valued only for its timber. Much of the hardwood is being cut and utilized for the manufacture of barrel staves and wagon spokes.

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

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.*
16705	Soil	0.2	0.3	1.3	36.6	11.6	27.3	22.6
16706	Subsoil	.0	.2	1.5	41.7	13.1	19.2	23.4

SUMMARY.

Jasper County, Miss., is situated southeast of the center of the State. It has a total area of 431,872 acres, or about 675 square miles.

In general the topography is rather broken. Level "prairie" areas intermingled with high clay hills and sand hills occur in the north part, while the high divides in the central and eastern sections are very pronounced. The entire area is drained by small creeks, the more important of which head in the "prairie section" of the north part of the county and flow in a south or southeasterly direction.

The greater part of the area is still heavily timbered. Much shortleaf and longleaf pine and some marketable hardwood may still be found in the county. Lumbering is one of the chief industries.

The population consists mainly of native-born whites and negroes. The towns are small, the largest not exceeding 1,000 population. The Mobile, Jackson and Kansas City Railroad runs north and south through the western part of the county and the New Orleans and Northeastern passes through the southeast corner.

The climate is healthful, especially in the upland sections. The winters are mild, the summers long and hot. The rainfall is sufficient for agricultural purposes and generally well distributed throughout the year.

Cotton and corn form the chief products of the farms. The former is the money crop. Oats, sugar cane, sweet potatoes, fruit, and vegetables are produced for home consumption. With the exception of hogs, very little live stock is raised in the county. Fertilizers are universally used on the sandy types for corn and cotton. Much of the farm labor is done by negroes.

There are three distinct soil sections in the county—the "prairie" section of the north and east parts of the county, the sandy section, and the alluvium along the streams. The "prairie" section is largely made up of heavy clay soils, the Montrose, Houston, and Susquehanna clays being the most important types. They are of older formation

than the soils of the sandy hill regions, and have been derived from the Jackson Eocene.

The Montrose and Susquehanna series are timbered with black-jack and post oak. The Montrose clay is generally flat, poorly drained, and of an acid nature. It is locally called "hog-wallow prairie." These two series are of little use for agricultural purposes at present.

The Houston clay is found on the open prairies or those timbered with sturdy growing black-jack oak. It is a distinctly calcareous soil, being underlain by chalk or rotten limestone, which frequently comes within a foot or two of the surface. Considerable wild hay is produced on this type. It is the best corn soil in the county, yielding 25 to 40 bushels where carefully cultivated. It gives good yields of cotton with little fertilization. It is capable of growing excellent alfalfa.

Some level sandy areas with heavy mottled subsoils occur in this section and have given rise to the Montrose sandy loam. This type is closely associated with the Montrose clay. It is of little agricultural value at present.

There are also some high limestone hills and ridges scattered through the "prairies." These are covered with Lafayette sands, and the soils are similar to those in the south part of the county.

The soils of the central and south parts of the county are derived from the Lafayette formation and are generally of a distinctly sandy nature. The Orangeburg and Norfolk series occur in this section. The former comprises soils with a red and the latter soils with a yellow sandy clay subsoil.

These sandy soils run very low in humus and require continual fertilization for the production of cotton and the grain crops. In the more rolling areas the soils of these two series are badly eroded. The surface sands vary in depth and coarseness, giving rise to fine sandy loams, sandy loams, and sand.

The Orangeburg fine sandy loam is extensively developed. It is a good vegetable and fruit soil. Cotton and corn give only fair yields.

The Orangeburg sandy loam is similar to the fine sandy loam except that the sand is of coarser texture. It is adapted to about the same crops and gives the same yields as the Orangeburg fine sandy loam.

The Orangeburg clay is a heavy red clay soil. It gives fair yields of corn and cotton where well tended.

The Orangeburg loam, fine sand, and sand are other types of this series. They occur only in small areas. The former is one of the most productive soils of the county. The fine sand and sand are light soils and of lower agricultural value than the types of the series with shallower surface soils.

The Norfolk fine sandy loam is not quite as good a soil as the Orangeburg fine sandy loam, but its more level topography compensates for the difference in productiveness. Corn and cotton, which form the exclusive crops, require heavy fertilization, and the type is much better adapted to vegetables and fruits.

The Norfolk sandy loam has about the same agricultural value as the Norfolk fine sandy loam. The drainage in some places is poor.

The Norfolk sand and coarse sand are other types of the series. They consist of sand deposits over 36 inches deep and are of little agricultural value when considered in the light of cotton and corn production, being unfertile and easily affected by drought.

The bottom land found along the streams is low and subject to frequent inundation. It is practically all heavily timbered. In the "prairie" section the Ocklocknee clay is the type occupying the bottoms, while in the sandy regions the Ocklocknee loam is the representative type.

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