SOIL SURVEY OF EAST CARROLL AND WEST CARROLL PARISHES, LOUISIANA.

By E. L. WORTHEN and H. L. BELDEN.

DESCRIPTION OF THE AREA.

East Carroll and West Carroll parishes are located in the extreme northeastern part of Louisiana. The Mississippi River forms the east boundary of the area and the Boeuf River the greater part of the western boundary, while the parishes themselves are separated by Bayou Macon. The area is bounded on the north by Arkansas, on the east by Mississippi, on the south by Madison and Richland parishes, and on the west by Richland and Morehouse parishes. It comprises a total area of 465,280 acres or 727 square miles.

The surface of the area presents a very level topography. The greatest elevation occurs just west of the Bayou Macon and constitutes an upland ridge running north and south the entire length of West Carroll Parish and having a width of 4 to 6 miles. The highest part of this ridge is adjacent to Bayou Macon and it slopes to the west, grading almost imperceptibly into the overflow land along Colewa Bayou and the Boeuf River.

Fig. 22.—Sketch map showing location of the East Carroll and West Carroll parishes, Louisiana.
The highest parts of East Carroll Parish are along the Mississippi River and some of the larger bayous, where continuous overflows have deposited such large amounts of sediment that distinct ridges have been built adjacent to the streams. Back from the river front or "front land" the surface dips down, forming a basin-shaped area between this higher land and the ridge in West Carroll Parish. Tensas, Macon, and Joes bayous all drain south through this depression, and together form the principal drainage outlets of East Carroll Parish. On account of numerous overflows in the past, a rather distinct ridge has been formed for some distance along each of these bayous. The one along Joes Bayou is especially prominent. West Carroll Parish drains largely west into the Colewa Bayou and the Boeuf River.

Fully two-thirds of the area is not sufficiently drained at present to allow agricultural occupation. The surface is so flat that the streams are sluggish, and the small ones particularly have not had sufficient fall to cut definite channels. The streams of West Carroll Parish consist largely of wide, shallow slashes which are wet and swampy much of the year.

Originally all of the area except the ridge just west of Bayou Macon was subject to frequent inundation by the floodwater of the Mississippi River. There is now an exceptionally strong levee along the Mississippi which has been constructed under National and State supervision. It is being strengthened continually, and it is hoped that this levee will soon be made strong enough to prevent any overflow whatever. The breaking of this levee has caused some very disastrous floods within the last twenty years. At such times the lower areas of both parishes were covered with from 4 to 12 feet of water.

Lake Providence, situated in East Carroll Parish, is the name of the principal town and also of the lake upon which it is situated. The lake represents an old river channel which has been left as an oxbow lake in the natural straightening of the river. It is about 7 miles long and a little over half a mile wide, but receives little drainage, as its banks have been built up higher than most of the surrounding country. The area as a whole drains south and west into the Red River and thence into the Mississippi.

The negroes greatly outnumber the white population in East Carroll Parish, but in West Carroll there are more whites. The census of 1900 gave the population of the parishes as follows: East Carroll, 11,373; West Carroll, 3,685.

The white population is largely of American birth, being descendants of the older settlers of Louisiana or those from the adjoining States to the east and north. Within recent years considerable northern capital has been invested in the area, but few people from the North have made their homes here. Most of the white people
of East Carroll Parish live in the town of Lake Providence. In West Carroll Parish, on the other hand, the white people are distributed throughout the better drained areas.

The greater part of each parish, or nearly three-fourths of the whole area, is still a dense hardwood forest.

Lake Providence, situated, as before stated, on the lake of the same name and the Mississippi River, is the only town of importance in the area, and is the parish seat of East Carroll Parish. It has a population of 2,000, about two-fifths of which are white. The town is progressive and has electric lights, waterworks, excellent schools and churches, and many handsome residences. Floyd, the parish seat of West Carroll Parish, is situated on Bayou Macon, in the southeastern part of the parish. The development of the town has been retarded by the position of the railroads, which were built on each side instead of running into the town. It has a population of perhaps 100. Oak Grove and Pioneer are small railroad towns in West Carroll Parish and have been built up largely within the last year, since the completion of the railroad.

The St. Louis, Iron Mountain and Southern Railway, completed in 1904, passes through East Carroll Parish from north to south. A branch of the same road extends from Eudora, Ark., nearly to the south line of West Carroll Parish. It is expected that on its completion this branch will form part of the main line from St. Louis to New Orleans. Practically all of the freight of East Carroll Parish, with the exception of lumber, is still shipped by water.

The highways through the area are very poorly cared for. Many of them are practically impassable much of the time, and it will require a large expenditure to construct good roads through the low sections.

New Orleans, Memphis, and Vicksburg, in the order named, are the leading cotton markets for the area. The rice is marketed almost wholly in New Orleans.

At the present time the two parishes are comparatively undeveloped but possess remarkably rich soils, which, with proper drainage and absolute protection from overflow, should produce agricultural products valued at many times the present output.

CLIMATE.

The climate is that of the warm temperate region of the United States and is favorable to a much more diversified farming than is at present practiced. The winters are short and mild; the summers long and hot. There are five months—May, June, July, August, and September—of summer weather, although numerous warm days also occur in March, April, October, and November. During the winter months there are occasional rather severe frosts, but freezing weather seldom lasts for over a few days at a time. The ground never freezes
more than a few inches and soon thaws. There are usually many warm, pleasant days throughout the winter, and often the change to freezing weather is so sudden that the cold seems very severe. The rather high humidity exaggerates the degree of cold. The temperature seldom falls more than 10° below the freezing point, and 20° below freezing is very exceptional, occurring only during the most severe winters. It seldom rises above 100° F. during the summer, but on account of the high humidity and the frequent long periods during July and August, when the temperature ranges from 90° to 100° F., the heat becomes oppressive.

The heaviest rains occur during the winter and spring months, and crops when properly cultivated seldom suffer from lack of moisture. The fall and early winter is the driest time of the year, and therefore favorable for the picking of the cotton crop. Killing frosts seldom occur before the first of November nor later than the last of March.

The following table, compiled from the records of the Weather Bureau station at Lake Providence, gives the normal monthly and annual temperature and precipitation, the absolute maximum and minimum monthly temperatures, and the average depth of snow:

<table>
<thead>
<tr>
<th>Monthly Period</th>
<th>Temperature (°F)</th>
<th>Precipitation (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Absolute</td>
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<tr>
<td></td>
<td></td>
<td>Maximum</td>
</tr>
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<tr>
<td>December</td>
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<td>February</td>
<td>48</td>
<td>55</td>
</tr>
<tr>
<td>Winter</td>
<td>48</td>
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</tr>
<tr>
<td>March</td>
<td>58</td>
<td>90</td>
</tr>
<tr>
<td>April</td>
<td>68</td>
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<td>May</td>
<td>78</td>
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</tr>
<tr>
<td>Spring</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>78</td>
<td>99</td>
</tr>
<tr>
<td>July</td>
<td>82</td>
<td>104</td>
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<tr>
<td>August</td>
<td>82</td>
<td>106</td>
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<tr>
<td>Summer</td>
<td>81</td>
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</tr>
<tr>
<td>September</td>
<td>76</td>
<td>100</td>
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<td>October</td>
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<td>November</td>
<td>57</td>
<td>89</td>
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<td>Fall</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>65</td>
<td>106</td>
</tr>
</tbody>
</table>

Date of latest killing frost in spring, March 30; earliest in fall, October 15. Average date of last in spring, March 14; first in fall, November 8.
Agriculture.

There was little agricultural development in the area prior to 1820, although the Indians and a few Spanish settlers had cleared and put under cultivation a few acres. The first permanent settlers arrived in the area in the early twenties, coming largely from States farther east, as well as from Kentucky and Tennessee, and made their homes along the west bank of Bayou Macon and at various points along the Mississippi River and the bayous of East Carroll Parish. It was not until about 1840 that settlers began to arrive in any great numbers. This date marks the beginning of a long period of agricultural prosperity.

These early settlers brought their slaves with them, and large, prosperous plantations soon developed, especially in the eastern section of the area. What is now West Carroll Parish was divided into smaller tracts, which were operated on a much less extensive plan, though there was an occasional large plantation even in this section.

Cotton was the important product at this time. Enough corn was produced, however, to supply the needs of the people and their livestock. This period of prosperity lasted for about twenty years and reached its height just before the outbreak of the civil war.

Since 1865 agricultural development has been very slow. It has been retarded by occasional almost complete crop failures, due to overflows, by trouble in securing satisfactory labor and the inability to secure settlers, by the one-crop system of farming, and by the lack of proper drainage. The natural fertility of the soils certainly justifies a much more rapid development than has taken place during the last forty years.

Cotton has continued to be the leading crop, and is today about the only agricultural product not wholly consumed within the area. Even now the annual output of cotton is hardly half what it was for a long period before the war. Corn is the second crop in importance. It is the aim of the planter to produce enough to feed the plantation stock, but this is seldom accomplished and it is necessary to obtain considerable quantities of corn and oats from the corn belt. Rice growing was introduced in 1905 and since then the acreage planted to this crop has steadily increased. Oats, hay, potatoes, fruit, and livestock are other agricultural products of importance. The census of 1900 credits the area with a total production of 24,613 bales of cotton and 369,280 bushels of corn. Of this amount East Carroll Parish produced about 80 per cent of the cotton and 65 per cent of the corn.

Cotton is generally planted between the first and the middle of April. Some farmers plant as early as March 15 and others as late as the middle of May. The cotton is thinned when small and then
as a rule hoed twice. Most of the planters cultivate with a sweep plow once and then give the crop two or three subsequent plowings. Generally speaking, the methods employed in the culture of cotton are the same throughout the area, both on upland and bottom land. The yields vary from one-half bale to over a bale to the acre. Most of the cotton is the short-staple variety, though considerable long-staple is grown in East Carroll Parish.

Early corn is planted in March and late corn in May. It is always planted in ridges. The crop is often neglected and receives only one or two plowings. Cotton, being the favorite crop, is always given first attention. Corn yields from 15 to 40 bushels to the acre.

Rice has been grown to a limited extent for the last few years and gives promise of becoming an important crop on the alluvial lands adjacent to water. The present rice plantations are located along Lake Providence and the Mississippi River, which furnish abundant water for irrigation. These fields are laid off into squares by small levees or dikes, and are so arranged that water can be supplied from adjacent canals whenever needed. They are kept covered with water during the entire growing season. This water is pumped from the river or lake by large steam pumps. The rice is harvested with modern self-binders and thrashed with the ordinary thrashing machine. The yield varies from 15 to as high as 40 sacks per acre.

The raising of live stock is developing into an industry of some importance in the area. Cattle, hogs, sheep, and poultry are raised on a small scale. As yet, however, much meat is imported into the area and practically all of the work stock is obtained from outside. The live stock in East Carroll Parish is somewhat superior to that in West Carroll.

Very little fruit of any kind is produced in the area. Figs are grown in a small way for home use, and peaches, plums, and apples yield well on the upland in West Carroll. Vegetables and berries are grown on the lighter soils. Pecans grow wild on the better drained soils of East Carroll Parish and the production of improved varieties on a commercial scale would bring substantial returns.

Some sugar cane is grown and many of the soils are adapted to it, but the area is situated too far north for the profitable production of this crop.

Very little attention is paid to the rotation of crops. Cotton is commonly grown on the same land year after year, though it is occasionally rotated with corn. Rice is not well adapted for rotation and will probably be produced on the same land as long as profitable returns are secured.

The adaptation of crops to soils is not given much thought. This is not surprising, since the cultivated soils are about equally
suited to cotton and corn. Corn is more commonly planted on the heavier types in the bottom land, and the lighter phase of the Yazoo fine sandy loam is nearly always used exclusively for cotton.

Practically no fertilizers are used in the area. It is recognized that the growing of cowpeas improves any of the lighter soils, and that barnyard manure is very beneficial to the soil of the upland ridge in West Carroll Parish.

There are three distinct classes of farmers in the area—the large planter, the small renter, and the farmer who owns and operates his own place. The large plantations often include 500 acres or more of cultivated land. They are commonly rented in small tracts of 10 to 30 acres each to negro tenants, either for cash, for a definite amount of cotton per acre, or for a percentage of the crop produced. Often parts of these plantations are worked with hired labor and are always managed by the owner or a salaried overseer. The improvements on these large plantations commonly consist of the owner’s or manager’s residence, a plantation store, a modern cotton gin, and numerous one to three room negro cabins. The tenant rents his mules from the owner and purchases his goods at the plantation store on credit.

This method of farming is commonly practiced in East Carroll Parish. In West Carroll Parish, on the other hand, the farms are of smaller size; many of them are worked without negro labor, while others are rented to negroes. In this parish there are some white renters, but the negroes form the greater proportion of the tenants of the area.

Land rents for $4 to $7 an acre. Under the share system of tenancy the owner receives one-half of the crop when he furnishes the work stock, implements, and seed, and one-third when the tenant has his own equipment. A dwelling is always furnished free to the tenant. The negro is almost solely depended upon to supply the farm labor. The better class have been able to get ahead, have bank accounts, and occasionally own farm property.

Labor by the day receives from 80 cents to $1, and by the month from $15 to $18. Women are paid from 50 to 75 cents a day for field labor. Fifty and 60 cents per 100 pounds are the customary prices paid for picking cotton, though late in the season 75 cents and $1 per 100 is given in order to hasten the harvest.

The farm lands vary somewhat in price. The improved areas of East Carroll Parish are held at $25 to $40 an acre, while the cleared uplands of West Carroll can be bought for $12 to $25. The timbered sections throughout the area are valued at about $10 an acre, irrespective of the soil, but the price varies somewhat with the quality of the timber.
A more diversified farming should be practiced. Cotton and corn, instead of being grown on the same land year after year, should be supplemented with a systematic rotation in which some leguminous crop enters every few years. The credit system prevents the adoption of a more systematic crop rotation, because the planter or the merchant considers the cotton the only cash crop and the only one he can safely loan upon.

SOILS.

The area has two distinct physiographic soil divisions, both of which are of comparatively recent geological origin. They are the loess-covered upland of West Carroll and the broad, level country covered with Mississippi alluvium which forms all of East Carroll Parish and much of the lower parts of West Carroll.

Of these two formations the loess is the older. It forms a continuous covering over the upland of the area, and varies in thickness from 5 to 25 feet or more. The average thickness is probably between 10 and 15 feet. The origin of this material is probably not definitely determined, but at present it is conceded by most geologists that the loess along the Mississippi River has been formed by the combined action of wind and water. In this area it would appear that the latter agent has been largely responsible for the deposit.

This loess presents a remarkably uniform texture throughout its whole extent in the area. It consists of a loose, unconsolidated coarse silt loam to very fine sandy loam with a somewhat heavier subsoil. It has given rise to two important soil types—the Richland silt loam and the Carroll silt loam.

This upland seldom rises over 30 or 40 feet above the surrounding bottoms. It is of a level to gently rolling topography, being higher along the east side and sloping gently to the west. This ridge has not been gullied, as is the case with much of the loess of the Southern States.

The loess is underlain in most cases by a thin layer of reddish-brown sand of the Pleistocene age, which in turn rests upon a stratum of heavy, bluish, mottled clay. In some cases the sand layer is absent and the loess is found resting immediately upon the clay. This clay substratum, which is exposed in only a few places along the east edge of the ridge, is probably Eocene. These lower formations have very little influence on the soils, since the loess uniformly covers them to a depth of 10 feet or more.

The range of elevation within the flood plains is not over 20 feet. The soils are of very simple geological origin. They have been formed by the continuous deposition of sands, silts, and clays by the overburdened waters of the Mississippi River and minor streams during successive periods of inundation. This area is still in the
formative stage, as each succeeding inundation even now deposits new material which frequently alters the surface of certain small areas of the soil. Because of the origin of the soil of this section it is all locally spoken of as "made land."

This alluvium has given rise to five important soil types—the Yazoo fine sandy loam, the Yazoo loam, the Wabash and Sharkey clays, and the Waverly silt loam, as well as a few others of local extent.

The following table gives the name and area of each of the types of soil found in the parishes:

<table>
<thead>
<tr>
<th>Soil</th>
<th>Acres</th>
<th>Per cent.</th>
<th>Soil</th>
<th>Acres</th>
<th>Per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharkey clay</td>
<td>112,832</td>
<td>24.2</td>
<td>Yazoo fine sandy loam</td>
<td>24,376</td>
<td>5.3</td>
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<tr>
<td>Richland silt loam</td>
<td>87,104</td>
<td>18.7</td>
<td>Yazoo fine sand</td>
<td>768</td>
<td>.2</td>
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<tr>
<td>Wabash clay</td>
<td>86,120</td>
<td>18.3</td>
<td>Beauf fine sandy loam</td>
<td>320</td>
<td>.1</td>
</tr>
<tr>
<td>Carroll silt loam</td>
<td>83,584</td>
<td>18.0</td>
<td>Yazoo coarse sand</td>
<td>256</td>
<td>.1</td>
</tr>
<tr>
<td>Waverly silt loam</td>
<td>41,539</td>
<td>8.9</td>
<td>Total</td>
<td>465,280</td>
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</tr>
<tr>
<td>Yazoo loam</td>
<td>29,184</td>
<td>6.2</td>
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</tr>
</tbody>
</table>

**YAZOO FINE SAND.**

The Yazoo fine sand, to a depth of 36 inches, consists of a gray, incoherent sand of fine texture. Occasionally the surface few inches contains a small quantity of organic matter, but in most cases it is of the same structure throughout the profile. This sand consists largely of quartz, though close inspection always reveals a small percentage of feldspar and mica grains. It is of very limited extent, there being only a few small patches, with a combined area of less than 2 square miles, situated about 5 miles south of Lake Providence. It has been formed at recent breaks in the levee, where the swift intruding current has deposited this sandy material inside the levee. The type is of little agricultural value, the greater part being covered with a dense growth of young willows.

The results of a mechanical analysis of this type of soil are given in the following table:

**Mechanical analysis of Yazoo fine sand.**

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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19638</td>
<td>Soil</td>
<td>Per cent. 0.0</td>
<td>Per cent. 0.3</td>
<td>Per cent. 5.5</td>
<td>Per cent. 90.7</td>
<td>Per cent. 1.9</td>
<td>Per cent. 1.0</td>
<td>Per cent. 1.0</td>
</tr>
</tbody>
</table>

**YAZOO COARSE SAND.**

The Yazoo coarse sand comprises a few local deposits of 10 to 100 acres each of coarse sandy material east of Lake Providence. In
most cases it consists of a coarse sand to fine gravel 36 inches deep. The surface few inches is occasionally colored brown by small amounts of humus, and frequently considerable clay is found mixed throughout the type. It was deposited in a very swift current at the time the river occupied the old bed and has never received a subsequent covering of finer material. The extent of this soil is so limited and its character so variable that it hardly deserves to be considered a soil type. It is of practically no agricultural value.

**YAZOO FINE SANDY LOAM.**

The soil of the Yazoo fine sandy loam consists of a light-brown very fine sandy loam with an average depth of about 9 inches. It is of a loose, friable structure, absorbs water readily, and dries rapidly after rains, thus making it a very desirable soil to cultivate. The subsoil is a yellow, gray, or mottled-yellow fine to very fine sandy loam and very frequently becomes distinctly heavier at about 30 inches. In fact, the heavier subsoil occasionally consists of a clay loam or clay adjacent to the heavier soil types.

The type is found occupying the higher parts of the land fronting on the Mississippi River and narrow bands or ridges adjacent to many of the bayous. This soil is rather variable, due largely to the rapidity of the flow of water during its formation and somewhat to the age of the deposit. Along the bayous and in the vicinity of Lake Providence the soil varies, being uniformly deeper and of a lighter texture along the lake and bayou banks and becoming gradually heavier as the loam or clay types are approached. Along sharp bends of the bayous, and especially along the river in the extreme northern part of the parish, the surface assumes a ridgy character and the texture of the soil is very variable, the tops of these small ridges being a loamy sand and the depressions between a heavy loam or possibly a clay loam. Along the bayous this condition is due to the flood waters cutting across the bends, while the surface in the northeast corner of the area owes its character to frequent annual inundations. An old break in the levee was left unattended for a considerable period and at each high stage of the river the water would flood the lower area along the Bayou Macon.

Near the bayous and in the vicinity of the lake the soil seems to be of older formation and has more organic matter mixed with the surface soil than along the river front in the north and south parts of the parish.

The type occupies the higher parts of the Mississippi flood plain. It is of a very level character, with a gentle slope away from the streams. It is the best drained of the alluvial soils and is least liable to inundation. Where the type occurs along the river front the
seepage water often becomes injurious for a quarter of a mile or more back from the levee at times of high water.

The type is wholly of alluvial origin. It represents the coarser deposits of the bottom lands and consequently the first one laid down when the current in any way became checked. Thus when the river or swifter flowing bayous became swollen and began to overflow their banks the carrying power of this overflow water was suddenly lessened and the coarser material deposited near the streams, while the finer particles were carried farther inland and deposited only as the current became very sluggish. These inundations, occurring continually as they did year after year, built up distinct ridges of this fine sandy loam along many of the bayous and the river front.

This was the first of the alluvial soils to be put under cultivation. The early settlers chose it because of its light texture, its elevation affording better drainage and better protection from overflow, and because of its proximity to the streams. Some areas of the type have been under cultivation for at least eighty if not one hundred years. The type was much more extensively cultivated before the war and has partly gone out of cultivation.

The Yazoo fine sandy loam is a very productive soil and adapted to a diversity of crops. Cotton, corn, vegetables, and small fruits are all suited to this soil. It is very probable that the lighter phases, especially where they have been farmed to corn and cotton for a number of years, would be benefited by fertilization. Cowpeas and soy beans would both grow well, and by turning under a heavy growth of these legumes every few years the productivity of the type would be greatly increased. There is a tendency for the surface soil to be slightly deficient in humus and any method of farming that would economically increase the content of this material would be advisable.

Cotton and corn are the only crops of importance being produced on this soil. The former yields as high as a bale to the acre during favorable seasons when well cultivated. Corn produces from 15 to 30 bushels per acre. The rice fields are generally made up partly of this type, but for this crop the loam or clay soils are superior. The fine sandy loam is often of such an open structure that it allows too easy percolation, and consequently there is loss of irrigation water in the cultivation of this crop. Small home gardens are found in which some peaches, pears, and figs are produced, but commercial fruit growing should never be attempted on this type. Extensive market gardening, however, should prove profitable, provided suitable markets were obtained. Pecans are peculiarly adapted to this soil and the commercial production of improved varieties affords attractive inducements.

Because of good drainage and the ease of cultivating the crops grown on this soil, they receive better culture than the crops upon
any of the other alluvial soils. There is a much larger percentage of it under cultivation than of any of the other types, with the possible exception of the Yazoo loam, which apparently ranks about on a par with it in this respect. By far the best farm improvements are to be found on this type.

It is valued at $25 to $40 an acre. The variation in price depends upon the improvements, the state of cultivation, and the accessibility to market. The improved areas of the type rent for $5 and $6 an acre.

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

**Mechanical analyses of Yazoo fine sandy loam.**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Fine gravel</th>
<th>Coarse sand</th>
<th>Medium sand</th>
<th>Fine sand</th>
<th>Very fine sand</th>
<th>Silt</th>
<th>Clay</th>
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</thead>
<tbody>
<tr>
<td>18632, 18634</td>
<td>Soil</td>
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<td>0.6</td>
<td>0.4</td>
<td>4.0</td>
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<tr>
<td>18633, 18635</td>
<td>Subsoil</td>
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<td>0.0</td>
<td>1.1</td>
<td>1.5</td>
<td>23.4</td>
<td>69.0</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**YAZOO LOAM.**

The Yazoo loam is the most variable type of the area. The surface soil to a depth of 8 or 10 inches consists of a rather heavy brown loam. The sand which it contains is of very fine texture and in many cases the structure resembles a silt loam more than it does a loam. The subsoil in most cases is heavier than the surface soil and consists of a drab or yellow mottled heavy loam to clay loam. It sometimes happens, however, that the surface is heavier than the subsoil. Near Benham post-office, for instance, there is a rather extensive area that has a heavy silt loam to clay loam surface 10 inches deep underlain by a light loam to fine sandy loam. The surface 6 or 8 inches may be of a very sandy nature and the subsoil almost a clay. This phase occurs in the vicinity of Stamboul post-office, where it seems to be a shallow layer of light material deposited directly on heavy clay.

The type occupies an intermediate position between the Yazoo fine sandy loam and the Wabash clay. It is generally found in narrow strips between these two types. It includes the areas where there is a gradual merging of the fine sandy loam into the clay. Frequently this change is very pronounced and there is not enough loam to indicate on the map, but, nevertheless, almost invariably there occurs a strip at least a few rods wide.

There is a somewhat different phase of this soil occurring in a few small areas along Joes Bayou ridge. Here the surface is often a very dark-brown to almost black heavy sandy loam with a yellow heavy
loam subsoil. In the depressions it grades into a clay loam and on
the higher knolls into a lighter fine sandy loam.

The Yazoo loam occupies somewhat lower ground than the Yazoo
fine sandy loam and in consequence does not possess quite as good
drainage. It has been formed in the same manner as the fine sandy
loam type, except that deposition has taken place in somewhat stiller
waters, so that the material of which it is composed is of a little
finer texture.

It is adapted to corn, cotton, cowpeas, soy beans, and pecans, but
is a little too heavy in most cases for vegetables and small fruits.

It should prove a more lasting soil than the Yazoo fine sandy
loam, and with equally good drainage should produce fully as good
yields of the crops to which adapted. It is somewhat harder to
cultivate and can not be worked so soon after rains as the type first
described, but with thorough drainage these disadvantages would be
greatly lessened. Because of its heavier subsoil and its relatively
greater fertility, it is a much better rice soil than the fine sandy loam.
The phase having the lighter subsoil, however, is not to be recom-
mended for this crop.

Cotton and corn are the principal crops grown, and the yields are
about the same as on the fine sandy loam. From three-fourths bale
to 1 bale of cotton is often produced without fertilization, and corn
yields from 25 to 35 bushels. Rice produces 20 to 30 sacks per acre
where properly cultivated.

This type is seldom sold alone, but generally in connection with
larger areas of the Yazoo fine sandy loam and Wabash clay. The
value placed on the type itself ranges from $25 to $40 an acre where
improved. There are some good improvements on this type, but
generally they are placed on the Yazoo fine sandy loam because of
its higher position and relatively better drainage.

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

\[
\begin{array}{cccccccc}
\text{Number.} & \text{Description.} & \text{Fine gravel.} & \text{Coarse sand.} & \text{Medium sand.} & \text{Fine sand.} & \text{Very fine sand.} & \text{Silt.} & \text{Clay.} \\
\hline
18628, 18630 & Soil & 0.0 & 0.4 & 0.2 & 1.4 & 3.0 & 72.4 & 22.5 \\
18629, 18631 & Subsoil & 0.0 & 0.1 & 0.1 & 1.2 & 3.2 & 73.4 & 23.0 \\
\end{array}
\]

**WABASH CLAY.**

The Wabash clay consists of a dark-drab to nearly black surface
clay soil about 6 inches deep, underlain by a plastic yellow and drab
or sometimes bluish subsoil. The subsoil below 20 inches is very fre-
quently of a lighter texture, contains considerable very fine sand, and often grades into a loam at 24 to 36 inches.

There are two phases of this type in the area, known locally as "black buckshot" and "blue buckshot" land. The former has a larger amount of organic matter in the surface and is generally better drained than the latter. The "blue buckshot" land is very flat and has a blue-drab surface soil and a heavy blue to slate-colored subsoil. The loam substratum is seldom present in this phase. The term "buckshot" is applied to this type because the surface upon drying breaks into small cubical-shaped granules about the size of buckshot.

The type is found along many of the bayous, frequently occurring as an intermediate type between the Yazoo loam and the Sharkey clay. Very often, too, it forms the entire ridge along these bayous. When found on these ridges the soil has as good drainage as the lighter types of the bottom land. On these ridges the subsoil is more likely to contain larger quantities of sand and the surface soil more organic matter. This "black buckshot" phase with its granular surface soil is more easily cultivated and yields better than the heavier "blue buckshot." Practically all the ridge along Joes Bayou is of this darker, more granular phase and has a yellower subsoil than is typical of the soil as a whole.

Like other bottom-land types it is wholly of alluvial origin. The under parts of the ridges along many of the streams appear to have been deposited in more rapidly moving water than the surface. The type in general, however, consists of a deposit laid down by rather slow moving water, and represents the third grade of alluvial soils in point of texture—the Yazoo loam and fine sandy loam being coarser and the Sharkey clay somewhat finer and more compact.

The native vegetation consists of hardwood similar to that found on the Sharkey clay. A very dense undergrowth of cane is often found on the uncleared areas.

The Wabash clay is the best cotton and corn soil of the area. In fact, the dark, granular phase—"black buckshot land"—constitutes without doubt the strongest cotton soil of the country. It is also well adapted to rice. Cowpeas, Bermuda grass, and, on the better drained areas, alfalfa should prove profitable crops. It is not adapted to fruit nor to the growing of vegetables, except perhaps onions, turnips, and the like, which do well on a heavy soil.

Cotton, the leading crop, under favorable conditions produces a bale or more to the acre, while in exceptional cases nearly 2 bales have been grown without fertilization. Corn is about the only other crop grown on this type. It yields from 25 to 40 bushels and seldom if ever receives the proper attention. Some Bermuda hay is also produced, and from 1 to 2 tons per acre are frequently cut.
There are still considerable areas of this type uncleared. Some extensive areas were abandoned after the war and they are now covered with a dense second growth of native trees.

It often happens that this soil is worked when too wet and is invariably injured thereby. It holds water longer and consequently can not be worked as soon after rains as the lighter soils.

The selling price of this type of soil varies considerably. When improved it sells for $30 and $40 an acre, but the uncleared areas more remote from the river front can be bought for $15 to $20 an acre. In the vicinity of Lake Providence the cleared areas of the type rent for $5 or $6 an acre.

The average results of mechanical analyses of soil and subsoil of the Wabash clay are shown in the following table:

**Mechanical analyses of Wabash clay.**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Fine gravel</th>
<th>Coarse sand</th>
<th>Medium sand</th>
<th>Fine sand</th>
<th>Very fine sand</th>
<th>Silt</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>18524, 18526...</td>
<td>Soil.........</td>
<td>0.0</td>
<td>1.0</td>
<td>0.4</td>
<td>3.3</td>
<td>4.2</td>
<td>50.3</td>
<td>40.1</td>
</tr>
<tr>
<td>18525, 18527...</td>
<td>Subsoil.....</td>
<td>0.0</td>
<td>3.1</td>
<td>1.6</td>
<td>2.1</td>
<td>58.6</td>
<td>36.6</td>
<td></td>
</tr>
</tbody>
</table>

**SHARKEY CLAY.**

The Sharkey clay consists of 3 to 5 inches of drab to light-brown, waxy clay, underlain by a somewhat lighter drab, very tenacious clay to a depth of 3 feet or more. This subsoil often changes from a drab to a blue or slate-colored clay below 20 inches. There is very little difference between the surface and subsoil of this type.

The Sharkey clay is the heaviest soil of the area and occupies the low basinlike depression extending from the higher front lands along the Mississippi River west to the ridge of upland in West Carroll Parish. It is the most extensive type in the area, and includes fully one-half of East Carroll Parish. Crooked bayous drain a large part of this type, and continual overflow has built ridges of varying size along their courses. These ridges are always of a somewhat lighter texture than the low-lying areas between them and often constitute areas of Wabash clay. There are numerous other low, narrow cane ridges scattered through the type, which are also of somewhat lighter texture, but do not differ enough to warrant separation.

The type has been formed by alluvium brought down by the Mississippi River. Its deposition has taken place in a very sluggish current. It is all subject to overflow when the levee breaks, and often at such times much of it is covered with 8 to 10 feet or more of water. It is very poorly drained, and during most of the winter and spring months the rain water remains on the surface for long
periods, giving to the area a semiswampy nature. Because of this poorly drained condition the type is locally termed "swamp."

The Sharkey clay is still heavily timbered with hardwood, including white ash, red gum, hackberry, cottonwood, and water, willow, overcup, and cow oak. There is also some cypress along the bayous and in the swampy depressions. The small ridges are covered with a very dense undergrowth of cane. The hardwood timber is of considerable commercial value.

This is a very fertile soil, and with proper drainage and absolute protection from inundation it could be made to produce good yields of cotton, corn, and rice. It would require such an enormous outlay to place this soil under cultivation that it appears to be beyond private means, and its development, if ever undertaken, must be carried out by some corporation with extensive resources or through the aid of State or National Government. The soil is of such a heavy nature that even with the best of drainage it will always be difficult to maintain it in good tilth.

Little if any of the type is under cultivation. It has advanced in value from $2 to $10 an acre within the last ten years. Its value is determined almost wholly by the quality of the timber growth which it supports.

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

**Mechanical analyses of Sharkey clay.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18614, 18616...</td>
<td>Soil........</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>2.0</td>
<td>5.2</td>
<td>44.6</td>
<td>47.4</td>
</tr>
<tr>
<td>18613, 18617...</td>
<td>Subsoil......</td>
<td>.0</td>
<td>.0</td>
<td>.2</td>
<td>1.6</td>
<td>6.3</td>
<td>50.4</td>
<td>41.1</td>
</tr>
</tbody>
</table>

**Richland silt loam.**

The surface soil of the Richland silt loam is a light-brown coarse-textured silt loam, with an average depth of about 8 inches. There is considerable very fine sand in the surface soil and it commonly merges into a very fine sandy loam. The subsoil to a depth of 15 or 20 inches is of similar texture but of a dark-yellow to reddish-brown color. Below this depth it becomes heavier, and in most cases there is a layer, 10 or 12 inches thick, of a stiff, heavy silt loam. At 24 to 30 inches the texture becomes somewhat lighter and the color commonly changes to a mottled gray and yellow. Iron concretions are frequently found below 30 inches.

The Richland silt loam occurs only in West Carroll Parish. It is the major type of the upland ridge running north and south through the parish. It occupies smaller areas in the vicinity of the Bœuf
River in the northwest section of the parish. In the large area in the east part of West Carroll Parish the texture of the soil is remarkably uniform. The color varies somewhat, however, with the condition of drainage. Where the topography is rolling the surface is brown and the subsoil dark yellow; where level or only gently sloping, the top soil is of a lighter color and the subsoil becomes a pale yellow or mottled yellow and gray. The latter phase occurs more frequently in the southern part of the area, especially in the vicinity of Floyd. In these more level areas many iron concretions are often scattered over the surface. There is a narrow ridge of this type along the Bœuf River west of Oak Grove, and here it has a heavier subsoil and a somewhat more sandy surface. There are small spots on the tops of the higher ridges in this section that have a very fine sandy loam surface soil and a subsoil that merges into a slightly sandy clay loam.

There is a small area of about 100 acres 2½ miles south of Floyd, where the loess has been largely removed, if, in fact, it ever formed a continuous covering. At least the sand and clay of the older geological formations are largely responsible for the present soil conditions. The surface is commonly a brown fine sandy loam or loam underlain by a heavier sandy loam or sandy clay loam. The area is so variable and of such a limited extent that it has not seemed advisable to consider it a separate soil type, but rather a variation of the Richland silt loam.

The type has an undulating to gently rolling topography. It is drained by numerous broad sluggish streams with ill-defined channels. At times of heavy rainfall these slashes are not able to carry the water off rapidly enough to protect some of the lower lying areas of the Richland silt loam from overflow. These streams vary from a few rods to nearly a quarter of a mile in width. The soil along their banks is the gray Carroll silt loam, but generally the width of the type along these slashes is not great enough to indicate the bodies on the map. The higher ridges of the Richland silt loam, however, present the best-drained areas in the survey.

The type owes its origin to the weathering of the layer of loess which originally covered, in an almost continuous sheet, the uplands of the area. The present condition of this deposit is due to the continued percolation of rain water through it and the incorporation of vegetable matter by plant growth, which, together with other various forces, have changed the original deposit of yellow loess into the light-brown Richland silt loam.

This type originally supported a good growth of numerous varieties of oak and other hardwoods. Only the higher, better drained areas have been put under cultivation, so that a considerable part of the Richland silt loam is still forested.
While it cannot be considered as productive as some of the alluvial types of the area, it is a more certain soil and one adapted to a greater variety of agricultural products. It is a good Upland cotton soil, will produce fair yields of corn, and with proper attention could be made to support an excellent growth of pasture grasses. While it is not quite as early a soil as the Yazoo fine sandy loam, it is admirably adapted to vegetables. Peaches, plums, pears, and various small fruits will produce well on this soil. Cowpeas, soybeans, and lespedeza are legumes that are adapted to the type. It may be that on a few of the higher ridges alfalfa could be successively grown, but generally it can not be recommended, as the subsoil is too often inclined to be acid and somewhat impervious.

Many of the farmers on the Richland silt loam are becoming interested in stock raising, and there is no reason why this industry should not be more extensively developed. Oats and rye would be valuable crops for winter pasture and by supplementing this pasture with root crops, such as turnips, carrots, and mangel-wurzels, stock could be wintered very cheaply. Red top (Agrostis alba) would prove a valuable grass for winter and spring pastures. It would be well to sow rye grass with it as a nurse crop. Orchard grass and alsike clover are also recommended for this type. a

Cotton and corn are the chief crops on this soil. The former averages about two-thirds of a bale to the acre, and the latter somewhere near 20 bushels, with a range of 10 to 30 bushels. Some spring oats are grown and occasionally cowpeas are sown in the corn. The farmers generally have small gardens and orchards large enough to supply vegetables and fruits for home use.

Crops receive about the same culture on this soil as on the alluvial types, although, as a rule, the farming is done in a more primitive way on the upland. Modern machinery has not been as rapidly introduced as on the other farmed types, nor are the farm improvements as extensive. It is divided into smaller farms and more often cultivated by the owners than any of the other types of the area.

The type is valued at $10 to $30 an acre, depending upon the improvements. Where uncleared it can be bought for less. It commonly rents for $4 or $5 an acre.

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Fine gravel</th>
<th>Coarse sand</th>
<th>Medium sand</th>
<th>Fine sand</th>
<th>Very fine sand</th>
<th>Silt</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1804, 1805</td>
<td>Soil</td>
<td>0.0</td>
<td>0.4</td>
<td>0.6</td>
<td>1.6</td>
<td>6.4</td>
<td>74.6</td>
<td>10.6</td>
</tr>
<tr>
<td>1805, 1807</td>
<td>Subsoil</td>
<td>0.0</td>
<td>0.2</td>
<td>0.3</td>
<td>0.6</td>
<td>4.0</td>
<td>72.5</td>
<td>21.8</td>
</tr>
</tbody>
</table>

a For full discussion of southern forage plants, see Farmers' Bulletins Nos. 102 and 147, U. S. Department of Agriculture.
CARROLL SILT LOAM.

The surface soil of the Carroll silt loam consists of 8 to 10 inches of a gray silt loam containing considerable very fine sand. Although similar in texture to the Richland silt loam, the subsoil is commonly somewhat heavier. It, too, is of a gray color, similar in this respect to the surface soil, so that there is no distinct line of demarcation between the surface soil and subsoil. The change generally comes within 10 inches of the surface, though it may be as deep as 14 or 16 inches. The subsoil is very compact and impervious, forming in many cases a distinct hardpan. Iron concretions are commonly found in this type, and in some cases they become very numerous in the subsoil.

The Carroll silt loam occurs as narrow strips of "slash" land throughout the Richland silt loam, and forms the predominating soil through the extensive flat and poorly drained areas between the west border of the large Richland silt loam ridge and the Colewa Bayou. During the spring and winter much of the type is covered with a shallow sheet of water the greater part of the time. There are numerous flat ridges and mounds a few feet in height scattered over the surface, which are of too small extent to be indicated on the soil map. The soil on these small elevations resembles the Richland silt loam in that it has a light-brown surface soil and a pale-yellow subsoil. The subsoil, however, becomes a gray silt loam in most cases below 24 inches. The greater part of the type is subject to inundation by the back waters from the Mississippi River, when the levee breaks. The numerous slashes throughout the type contain water much of the time.

While it appears that this type owes its origin partly to alluvial deposition, it seems very probable that it was formed at the same time and in the same manner as the Richland silt loam, but on account of its subsequent undrained condition it has acquired characteristics very distinct from those of the Richland silt loam.

Practically none of the Carroll silt loam has ever been put under cultivation. It is still covered with a heavy growth of Spanish, black jack, red, and post oak, and often a dense undergrowth of palmetto. It would require a large expenditure to put this type in condition for cultivation. Because of its low humus content and its often impervious subsoil, it would not, even with the best of drainage, prove a good cotton or corn soil. For a few years after being put under cultivation it should give fair yields, but the yields could hardly be expected to continue profitable for any considerable length of time. It might be utilized to some extent for rice production and at the present time this seems to be the best agricultural crop to produce on this type, though even its economical production seems somewhat questionable. Probably the best means of utilizing much of this type is to allow it to remain in forest. It supports a good
growth of commercial hardwood at present, and by careful and systematic cutting of the mature trees returns can probably be secured that will equal if not surpass those from any farm crop.

Much of the type is owned by a large cooperage company which has recently begun to remove the larger timber. The farmers utilize the soil of this type to some extent for pasturing hogs.

The Carroll silt loam is valued at $10 to $12 an acre, principally because of the timber upon it. The few areas that have been cut over can be bought for $500 to $700 a quarter section.

The average results of mechanical analyses of this type of soil are given in the following table:

Mechanical analyses of Carroll silt loam.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18618, 18622</td>
<td>Soil</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>1.2</td>
<td>9.4</td>
<td>71.3</td>
<td>17.9</td>
</tr>
<tr>
<td>18619, 18633</td>
<td>Subsoil</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.6</td>
<td>6.9</td>
<td>60.1</td>
<td>32.0</td>
</tr>
</tbody>
</table>

Waverly silt loam.

The Waverly silt loam consists of a mottled drab and yellow clay loam and silty clay surface soil about 5 inches deep, underlain by a light drab or gray and yellow silty clay loam subsoil which often grades into a clay below 20 inches. This type is lighter in both color and texture than the Wabash and Sharkey clays.

It occupies the alluvial lands along Boeuf River and extends as far east as Colewa Bayou. The type is heavier near the river and becomes very light near the east boundary, where it often grades very gradually into the Carroll silt loam. In the vicinity of this boundary the type may have a gray or light-drab, heavy silt loam subsoil, a shallow clay loam layer having apparently been deposited on the material giving the Carroll silt loam.

The Waverly silt loam is flat, with a few low cane ridges through it. It possesses very poor drainage and is subject to occasional inundation. Very little of it, however, is flooded except when the levee along the Mississippi River breaks, at which times the backwater comes in, and this, together with that of the Boeuf River, floods the whole surface of this soil.

It is of alluvial origin and has been laid down in a rather sluggish current. The alluvium has apparently been carried down largely by the Boeuf River, but probably would not have been so widely distributed were it not for the influences of the backwaters of the Mississippi.

The type is covered with a dense timber growth consisting largely of oak. There is an occasional undergrowth of scrubby cane and
palmettos. If drained and protected from inundation, this type would produce good yields of cotton, corn, and rice. It would require a considerable outlay, however, to put it in shape for cultivation.

Its value is determined largely by the timber to be found upon it. It is held at $10 to $12 an acre at the present time, which price represents a considerable advance in value during the last ten years.

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18610, 18612</td>
<td>Soil.........</td>
<td>0.0</td>
<td>0.6</td>
<td>0.4</td>
<td>2.3</td>
<td>8.7</td>
<td>63.5</td>
<td>24.5</td>
</tr>
<tr>
<td>18811, 18813</td>
<td>Subsoil.....</td>
<td>.0</td>
<td>.3</td>
<td>.4</td>
<td>1.5</td>
<td>8.1</td>
<td>60.9</td>
<td>25.0</td>
</tr>
</tbody>
</table>

BOEUF FINE SANDY LOAM.

The surface soil of this type is a brown loamy sand, about 8 inches deep, underlaid by a heavy, plastic, sandy clay subsoil of yellow color. The line of division between the top soil and the subsoil is very marked. The soil generally becomes lighter in texture at 30 inches, and occasionally a sandy loam is found just below this depth.

It is of very limited extent and occurs only on a few small ridges in the vicinity of the Boeuf River. The tops of these ridges are from 15 to 30 feet above the surrounding area. Their location seems to indicate that they might be of alluvial origin, but the character of the soil hardly justifies such a conclusion. The lower parts of these ridges frequently merge into the Richland silt loam, and in one instance a part of one of these ridges was found to be Richland silt loam and the remainder of it Boeuf fine sandy loam. The Richland silt loam seems to possess a heavier subsoil throughout the extreme western part of the area, and on the very highest ridges little patches occur where the surface is of a sandy nature. It seems that the loess deposit becomes very thin in this section of the area, and that on these ridges it has been eroded, exposing the sandy substratum which has given rise to this soil.

The Boeuf fine sandy loam is a very productive soil, and much of it is under cultivation. It produces from one-half to nearly a bale of cotton and as high as 30 or 40 bushels of corn to the acre. There are probably some small uncleared ridges of this soil which could not be located on the soil map, as their extent was difficult to determine on account of their heavy forest covering.
The following table gives the results of mechanical analyses of the soil and subsoil of this type:

**Mechanical analyses of Boeuf fine sandy loam.**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Fine gravel</th>
<th>Coarse sand</th>
<th>Medium sand</th>
<th>Fine sand</th>
<th>Very fine sand</th>
<th>Silt</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>18602</td>
<td>Soil</td>
<td>0.0</td>
<td>1.0</td>
<td>14.5</td>
<td>29.0</td>
<td>4.8</td>
<td>40.9</td>
<td>10.0</td>
</tr>
<tr>
<td>18603</td>
<td>Subsoil</td>
<td>0.0</td>
<td>1.0</td>
<td>14.1</td>
<td>31.3</td>
<td>4.2</td>
<td>32.2</td>
<td>17.0</td>
</tr>
</tbody>
</table>

**DRAINAGE.**

Fully two-thirds of the two parishes is insufficiently drained to allow agricultural development, and much of the area that is at present under cultivation would be greatly improved by better drainage. There has been a little ditching done here and there on the better managed plantations, but in no case, so far as known, has any drainage district been organized or any other united attempt made to drain systematically any considerable section.

Throughout the alluvial portion of the two parishes the water table is found within a few feet of the surface during much of the year, while in the lower lying types it is practically at the surface throughout the winter and spring months.

The plantations along the river front suffer considerable injury from seepage water, which percolates through the levee whenever the river rises to a considerable height. This seldom becomes injurious to land more than a quarter or half a mile from the levee. This condition seems to be unavoidable and will probably exist until ditches are cut through this higher front land so that seepage can drain to the lower lying land to the west.

The thorough drainage of the extensive areas of so-called "swamp," which includes practically all of the Sharkey clay, the Carroll silt loam, and the Waverly silt loam, as before mentioned, would require too large an outlay to be met by private means, and such a project will very likely have to be carried out by some corporation or through Government aid. There are numerous natural drainage ways to be found throughout these low areas, but they must be broadened and deepened, and in some cases straightened, before they will be able to carry water from the area through which they flow.

While the drainage of much of the two parishes seems to be too large an undertaking for private individuals, there is no reason why the drainage of certain areas can not be easily improved. By the forming of drainage districts along certain of the bayous, the combined effort of the different landowners could do much in at least preserving what natural drainage now exists, and there is no reason
why the logs and trees could not be kept from accumulating in these bayous, which possibly could be deepened also in some cases. Instead, some of the landowners have run open ditches into the bayous, which have continually deposited sediment at their entrance until the bayous have become shallower and in some cases even partly dammed by such sediment.

The permanent agricultural development of much of the area can only come about through absolute protection from inundation, followed by thorough and systematic drainage.

**SUMMARY.**

East Carroll and West Carroll parishes are located in the extreme northeastern part of Louisiana and have a combined area of 727 square miles. The surface of the area is generally very flat and is largely subject to inundation when the levee along the Mississippi breaks. There is an upland ridge which is mostly above overflow extending north and south through West Carroll Parish.

The area drains south into Red River. Fully two-thirds of these two parishes is still in forest and insufficiently drained. The front land along the Mississippi River, the ridges adjacent to some of the bayous, and the upland ridge in West Carroll Parish include most of the improved areas.

The negroes outnumber the whites nearly ten to one in East Carroll, but in the West Carroll Parish the white population is slightly in excess. Lake Providence is the only town of importance in the area.

The climate is that of the warm temperate region of the United States. The winters are short and mild; the summers long and hot. The rainfall is sufficient for successful crop production.

The value of the agricultural products of the area is far less than before the civil war. Cotton and corn are the leading crops. Some rice is being successfully produced near the Mississippi River. The plantation system of farming is commonly practiced in the east part of the area, while the white people often do their own farm work on the upland ridge. The negro is the only available farm laborer.

The well-improved lands are valued at $20 to $30 an acre, while the timbered areas can be bought for $10 and $12.

The greater part of the area is of alluvial formation. The upland ridge that extends the entire length of West Carroll Parish is covered with a thick sheet of loess.

Ten distinct types of soil were mapped in the survey. The Yazoo fine sandy loam occupies the higher, better drained areas of the Mississippi River bottom land. Generally this soil is rather light for corn production. Cotton gives good yields and the type is especially well adapted to vegetables.
The Yazoo loam is heavier and forms an intermediate type between the Yazoo fine sandy loam and the Wabash clay. It is adapted to corn and cotton, and where the subsoil is heavy it makes an excellent rice soil. It is located on the front lands and along the bayous of East Carroll Parish.

The Wabash clay is locally termed "buckshot land." When well drained it is the most productive soil type of the area. Cotton often yields over a bale to the acre and corn from 30 to 40 bushels. It also gives good yields of rice. The lower areas are rather poorly drained.

The Sharkey clay is the heaviest soil of the area. It is locally termed "swamp," because of its poorly drained condition. It supports a heavy timber growth.

The Richland silt loam is the most important type derived from the loess deposit. It is found only on the upland ridge in West Carroll Parish. Cotton and corn are the principal crops grown, and fair yields are obtained, though not so large as on some of the alluvial types. It is well adapted to the production of fruit and vegetables.

The Carroll silt loam occupies the poorly drained areas of the loess ridge. It is of a gray color and commonly has an impervious and somewhat acid subsoil. It is practically all in timber.

The Waverly silt loam includes most of the alluvium along the Boeuf River. It is flat, poorly drained, and all of it is heavily timbered.

The Boeuf fine sandy loam and the Yazoo coarse and fine sands are the other types of the area. They are of limited extent.

The greater part of the two parishes is insufficiently drained to allow agricultural development. The thorough drainage of the area is too extensive an undertaking to be accomplished by private means, and must be undertaken, if at all, by some corporation or with Government aid.
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