Issued December 16, 1913.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

# SOIL SURVEY OF EAST FELICIANA PARISH, LOUISIANA.

BY

CHARLES J. MANN AND PERCY O. WOOD.

HUGH H. BENNETT, INSPECTOR IN CHARGE SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1912.]


WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1913.

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# LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
*Washington, D. C., June 18, 1913.*

SIR: The continuation of the soil survey work in Louisiana during the field season of 1912 included a detailed survey of East Feliciana Parish.

The accompanying report and map embody the results of this survey and I have the honor to recommend that they be published as advance sheets of Field Operations of the Bureau of Soils for 1912, as authorized by law.

Respectfully,

MILTON WHITNEY,
*Chief of Bureau.*

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

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FIGURE.



MAP.

# SOIL SURVEY OF EAST FELICIANA PARISH, LOUISIANA.

By CHARLES J. MANN and PERCY O. WOOD.

## DESCRIPTION OF THE AREA.

East Feliciana Parish, Louisiana, is the second in the upper tier of parishes lying east of the Mississippi River. The State of Mississippi borders it on the north, the Amite River separates it from St. Helena Parish on the east, and Thompson Creek from West Feliciana Parish on the west, although the southwest corner of the parish touches the Mississippi River. On the south lies East Baton Rouge Parish.

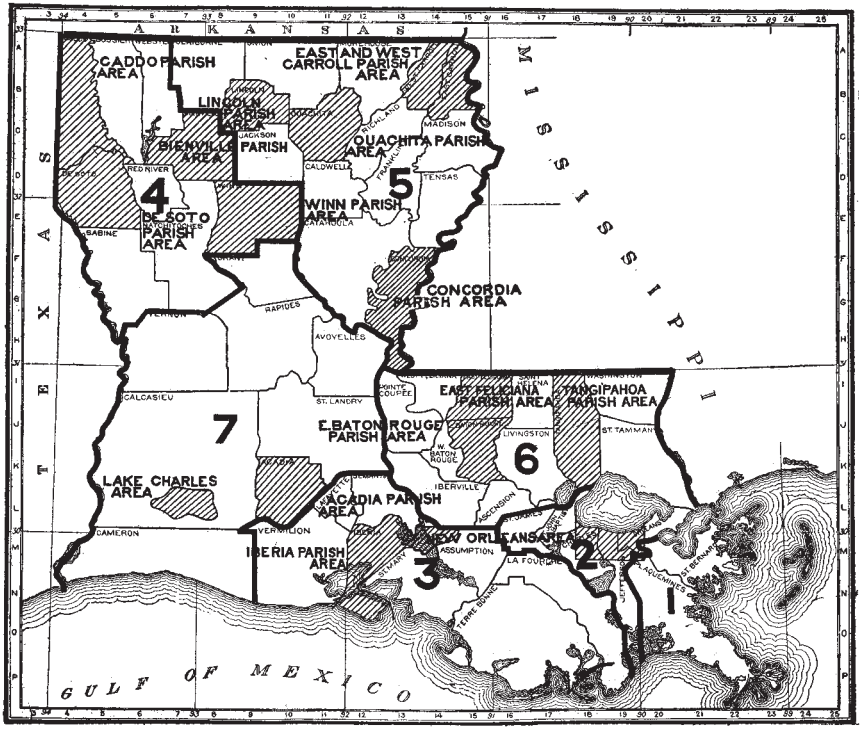


FIG. 1. Sketch map showing areas surveyed in Louisiana.

East Feliciana Parish is somewhat irregular in shape, but its average width from east to west is 23 miles, and length from north to south about 21 miles. The parish lies in about the same latitude as northern Florida and in the same longitude as Dubuque, Iowa, and St. Louis, Mo. Its area is approximately 452 square miles, or 289,280 acres.

There are three physiographic divisions within the parish, namely, the flood plains, the highlands, and the intermediate terraces. The flood plains occur along all the streams, the most typical development being in the southwest corner, along the Mississippi River. The present flood plains of the Amite and Comite Rivers and of Thompson Creek and their tributaries are moderately wide. They are as a rule much dissected by bayous and deformed by erosion. Otherwise there is very little relief, as the topography is flat and the natural levees or fronts so characteristic of the Mississippi River are not normally formed along these streams. The elevation of these bottoms ranges from about 20 feet along the Mississippi River to probably 240 where the Amite River enters the parish.

The highlands region comprises the greater part of the parish. The elevation of this region ranges from less than 200 to 321 feet above sea level. Erosion has been active in this region, forming many wide and evenly sloped, though frequently rather steep-sided, valleys. The main divides are seldom over one-quarter of a mile wide and are usually characterized by more or less rounded tops. Long, gentle slopes predominate in the southern part of the parish. The topography of the region as a whole varies from gently undulating on the divides to rolling along the banks of the large streams.

Between the flood plains and the highlands important stream terraces have been developed. These occupy almost the entire southwestern quarter of the parish, with long, narrow extensions up the larger streams for a considerable distance and, in the case of the Amite River, for some distance into Mississippi. There is usually an abrupt escarpment between the terraces and the present flood plains, varying along the smaller streams from about 3 to 6 feet in height to the height of the bluff at Port Hudson, which is about 60 feet above the Mississippi River. The line of separation between the terraces and the highlands is usually a rather gentle slope. The elevation of the terraces ranges from about 200 feet near the highlands to 100 feet at the bluff at Port Hudson. As compared with the first bottoms, the terraces must be considered as more nearly a division of the uplands, but when compared with the high, rolling uplands they at once stand out as a distinct topographic division. While over most of these terraces the topography is nearly flat and erosion slight, there has been much dissection along Thompson Creek and near the bluff of the Mississippi River, and the surface over comparatively small areas is rough and broken. In times of exceptionally high water parts of the lower terraces are overflowed by the smaller streams, but ordinary inundations do not cover any of them.

The drainage of the parish flows into two main streams, both of which enter the Gulf of Mexico, namely, the Mississippi and Amite Rivers. The Mississippi River, although touching the parish, receives

the drainage waters of but little over 80 square miles. A strip on the west side, varying from 3 to 4 miles in width, drains into Thompson Creek, which empties into the Mississippi River at the southwest corner of the parish. Sandy Bayou, in the southwestern part of the parish, and Lost Creek, in the northwestern part, are its principal tributaries. This region is the roughest in the parish, drainage ways being numerous and the dividing ridges narrow and very irregular. The remainder of the parish drains into the Amite River either directly or through its tributaries. The Amite itself and Beaver Creek, a few miles of which are in the northeast corner of this parish, drain about 100 square miles. Sandy Creek rises in the northeast quarter of the parish and flows southward. Comite River enters the parish from Mississippi as a small stream and flows south a short distance west of the middle of the parish. Richland Creek and Pretty Creek are streams of some size, flowing into the Comite in the northern half of the parish. Redwood Creek rises in the parish near Wilson and flows southward through the western part of the parish. Redwood Creek flows into the Comite, and the Comite and Sandy Creeks flow into the Amite within East Baton Rouge Parish and thence the waters enter Lake Maurepas and Lake Pontchartrain. It will be noticed that the general direction of all these streams is nearly due south. The short side streams, however, have a general direction of southeast or southwest and are universally intermittent streams or simply wet-weather branches. The percentage of run-off from rainfall is usually high, as the soils are not so absorptive as one would naturally expect from their texture. This is undoubtedly due in part to a general lack of organic matter and lime.

There is no record of the first permanent settlement within East Feliciana Parish. The purchase of the Chickasaw lands in Mississippi, known as the Yazoo Purchase, attracted settlers from the East in 1796. Many of these found their way to this section, and by 1802 there was a settlement of some size in the southwestern part of the parish, near the Mississippi River. This region was then Spanish territory, the boundary line (the thirty-first parallel) with "the States" having been established in 1797. A proclamation by President Jefferson in 1803, claiming purchase to all Louisiana, brought a second large wave of immigration from the East. Many families with slaves, and some whole neighborhoods from North Carolina, South Carolina, and Georgia, and a few from other States, came on flatboats down the Tennessee and Mississippi Rivers to Natchez, and thence overland to this region.

In 1810 settlers had become quite numerous and the independent county of Feliciana, which was bounded on the east by the Perdido River (east of Mobile), on the south by the Gulf of Mexico, on the west by the Mississippi River, and on the north by the thirty-first

parallel, was established. In 1813 the town of Jackson was made the seat of justice for this largest existing county, after which settlement became more rapid over the entire region. With the subsequent formation of the States of Alabama and Mississippi, and the creation of the parishes of St. Tammany, Washington, St. Helena, and Livingston, the area of Feliciana County was reduced to the territory comprising East and West Feliciana Parishes. In 1824 Thompson Creek was made the boundary between the present parishes of East and West Feliciana.

In 1830 the population of East Feliciana Parish was 8,247, and by 1860 it had increased to 14,697. After the Civil War many of the negroes left the parish for the sugar-cane fields of the bottoms, thousands of acres of land being left idle. The population soon began to increase again, however, continuing until the advent of the boll weevil, when many of the negroes left the cotton fields for the bottom lands of the Mississippi River. In 1900 the population was 20,443, of which 14,871 were colored, and in 1910 it was 20,055, of which 14,536 were colored. The parish as a whole is rather sparsely settled.

Transportation and shipping facilities over the western half of the parish are fairly good. The main line of the Yazoo & Mississippi Valley Railroad runs north and south through the western part, giving direct connection with Baton Rouge and New Orleans, La., to the south, and Vicksburg, Miss., Memphis, Tenn., St. Louis, Mo., and Chicago, Ill., to the north. Norwood, Wilson, Gurley, McManus, Ethel, and Slaughter are towns and shipping points on this line. The Clinton Branch of the same system connects Clinton with the main line at Ethel. This line receives the shipments from a large territory to the east. The Woodville Branch leaves the main line at Slaughter and runs westward about a mile north of the south parish line, terminating at Woodville, Miss. Lindsay and Jackson Road are the shipping points on this line within East Feliciana Parish. The line of the Louisana Railway & Navigation Co., connecting New Orleans and Shreveport, has about 3 miles of track in the southwestern corner of this parish. Port Hudson, in East Baton Rouge Parish, is the nearest shipping point. The New Orleans, Natalbany & Natchez Co. is at present extending its line, which connects with the main line of the Illinois Central at Natalbany, entering this parish, it is understood, a short distance north of Williams Bridge over the Amite River. If this road is constructed through the parish to Natchez it will give shipping facilities where they are most needed. A new road is also contemplated to connect Clinton with Gonzales, on the Louisiana Railway & Navigation Co.'s line. This will tap the south-central part of the parish.

Although the parish has a frontage on the Mississippi River, there are no landings, and water shipments for this general section are transferred to trains at Bayou Sara, in West Feliciana Parish. Some effort is being made to make the Amite River navigable from East Feliciana Parish.

There are public highways in all sections of the parish, but they are not nearly so numerous as in many regions and vary greatly in condition. With the further development of the land many more public roads must be opened. Private or plantation roads are numerous and wide reaching. The indifference in regard to road improvement is hard to explain in a region where so much lumber, fertilizer, cotton, milk, and other products have to be hauled long distances to market. During the progress of this survey hardly a bad place was seen in the roads that could not be entirely removed by drainage, culverts, and the use of the split-log drag. Gravel beds are numerous throughout the parish and could be utilized for permanent road construction at comparatively little expense.

Free rural mail delivery is enjoyed by only a small percentage of the farmers, most of the mail being delivered through small country post offices. Telephone lines reach most localities. As a rule the rural schools are good. Union district schools are maintained in some sections, the pupils being carried in conveyances to and from the buildings.

## CLIMATE.

The climate of East Feliciana Parish is that of the temperate zone of the United States. It is characterized by plenty of warm, bright weather and an abundance of rainfall. The growing season is always long, averaging about eight months, and the heaviest precipitation occurs in the growing season, although the rainfall is distributed throughout the year. Not only is this condition favorable for diversification of crops, but it makes possible double or treble the number of crops that can be obtained in the north on similar land during the same season. Oats are sowed late in the fall or early in March, or even in February, and harvested in time to be followed by sweet potatoes, cowpeas, velvet beans, or some similar crop. Irish potatoes can be planted early in March and followed by sweet potatoes, corn, or a second crop of potatoes. Two crops of cowpeas may be secured on the same field, and many other crops, such as rape, vetch, bur clover, sorghum, and the like, may be included in the year's rotation. The mild, open winters and the variety of crops which can be grown make it possible to have growing pasture nearly every month in the year.

The summers, while long, are not excessively hot. The temperature for the months of June, July, and August averages 81° F.

The winters are short and mild, with but little snow and ice. The high humidity increases the apparent extremes of both winter and summer. The temperature rarely reaches 100° in summer or 20° in winter. The fact that the winters are mild is shown by the high average temperature for December, January, and February, which is 52° F. The average temperature for the year is 67° F.

The average precipitation in East Feliciana Parish is 54.6 inches. This high rainfall, while occurring in part in protracted periods, usually comes in heavy downpours of short duration, and much care is necessary to prevent serious damage from washing.

The following data, compiled from records of the Weather Bureau at Baton Rouge, which lies a few miles south of the southwest corner of the parish, are representative of conditions over the entire parish:

*Normal monthly, seasonal, and annual temperature and precipitation, at Baton Rouge.*

| Month. | Temperature. | | | Precipitation. | | | |
|---|---|---|---|---|---|---|---|
| | Mean. | Absolute maximum. | Absolute minimum. | Mean. | Total amount for the driest year. | Total amount for the wettest year. | Snow, average depth. |
| | ° *F.* | ° *F.* | ° *F.* | *Inches.* | *Inches.* | *Inches.* | *Inches.* |
| December | 52 | 84 | 14 | 4.8 | 3.8 | 7.1 | 0.0 |
| January | 51 | 84 | 20 | 5.1 | 7.1 | 4.8 | 0.0 |
| February | 54 | 82 | 2 | 5.0 | 2.8 | 5.1 | 1.4 |
| Winter | 52 | ..... | ..... | 14.9 | 13.7 | 17.0 | 1.4 |
| March | 61 | 89 | 25 | 5.2 | 3.0 | 5.8 | 0.0 |
| April | 68 | 90 | 32 | 4.5 | 2.2 | 7.3 | 0.0 |
| May | 75 | 96 | 40 | 2.9 | 1.6 | 4.6 | 0.0 |
| Spring | 68 | ..... | ..... | 12.6 | 6.8 | 17.7 | 0.0 |
| June | 79 | 100 | 54 | 5.5 | 9.6 | 4.8 | 0.0 |
| July | 82 | 103 | 62 | 5.8 | 2.2 | 5.4 | 0.0 |
| August | 81 | 99 | 53 | 5.6 | 2.8 | 10.7 | 0.0 |
| Summer | 81 | ..... | ..... | 16.9 | 14.6 | 20.9 | 0.0 |
| September | 77 | 98 | 44 | 3.4 | 1.1 | 1.9 | 0.0 |
| October | 68 | 94 | 32 | 3.3 | 1.8 | 5.9 | 0.0 |
| November | 59 | 88 | 23 | 3.5 | 1.9 | 4.1 | 0.0 |
| Fall | 68 | ..... | ..... | 10.2 | 4.8 | 11.9 | 0.0 |
| Year | 67 | 103 | 2 | 54.6 | 39.9 | 67.5 | 1.4 |

Average date of first killing frost in autumn, November 21; of last in spring, February 28. Date of earliest killing frost in autumn, October 27; of latest in spring, March 20.

## AGRICULTURE.

The early settlers of this region found the country covered with a heavy forest growth of pine and hardwoods, including oak, beech, and gum, and a thick undergrowth of cane. The cane afforded imme-

diate pasturage for stock, while game and fish provided much of the food of the settlers. Clearing operations were necessarily slow and land could not be brought into cultivation as rapidly as prairie could have been. Cotton was the main crop from the first, though enough corn was usually grown for home consumption. Transportation was entirely or largely by way of the Mississippi River and considerable trading was done at the old town of Port Hudson, near the southwestern corner of the parish. The lands were well adapted to cotton production and as early as 1840 there were 16,884 bales of 500 pounds reported by the census from this parish. There was also more corn reported in 1840 than in 1890, and the production of oats was greater than in any year up to 1910. It is evident that before the war cotton was the most important crop, though most of the grain used on the farms was also grown locally. Sugar cane was an important crop both for sugar and for sirup. The Civil War demoralized agriculture, as the census reports for 1870 show. Much land was thrown out of cultivation and yields decreased appreciably. The planters, however, found that cotton could still be grown under the tenant system, and as it was a good money crop all the cotton possible was grown, while other crops, such as hay, corn, and oats, were greatly neglected. The production of cotton steadily increased until the advent of the boll weevil, in 1908, and even then a great many continued to plant the crop, and large amounts of money were lost through the ravages of the insect. There followed a second period of depression, and conditions are only now beginning to take on a hopeful appearance. The tenant system then in use, involving the credit system, was necessarily abolished, as cotton was no longer a safe security. Other crops must be produced, including those that could be used on the farm as well as market crops.

According to the present tenant system, the landowner furnishes nothing but the land and receives one-fourth of the cotton and corn produced, while the tenant takes everything else. The result is a decided scarcity of money received as cash income from crops, but there is more corn meal, meat, and vegetables to eat than ever before. A more rational system would seem to be for the landowner to furnish the fertilizer and land, and the tenant to furnish seed and labor, each taking half the crop. Under this system the landlord could be constantly improving his land. All tenants are negroes. The farmers who work the land themselves hire negroes, both men and women, as day laborers and pay in cash from 40 to 75 cents a day, the ordinary wage being 50 cents, and advance nothing. White laborers command 60 to 75 cents a day and board.

The crops grown at present are corn, potatoes, oats, sugar cane, legumes, truck, and rice. Dairy farming and the raising of cattle, hogs, sheep, and poultry are also important industries.

According to the Thirteenth Census there were 2,379 farms in East Feliciana Parish, of which 611 were operated by the owners, 1,742 by tenants, and 26 by managers. The land in farms comprised 194,978 acres, of which 120,568 acres were improved. The average size of farms was 82 acres.[1] The value of all farm property amounted to $3,859,886, the land being valued at $2,075,500, buildings at $865,373, and implements and machinery at $169,009. The tendency is to decrease the size of farms, though there is very little selling of small tracts.

*Corn.*—The acreage of corn has been rapidly increased every year since the advent of the boll weevil, until it is the most important crop of the parish. The last census reports 34,751 acres devoted to this crop, yielding 454,894 bushels, or a little over 13 bushels per acre. The average for the last four reports is about 14 bushels per acre. This is a very low average, and in view of the fact that much higher yields have been secured in the parish by fertilization, it seems reasonable to expect that much better yields can be obtained with proper soil management. A good corn soil should contain a good supply of organic matter, and fertilizers containing phosphorus and potash should be used. Corn can hardly be expected to produce maximum yields without fertilization. With the application of about 150 to 200 pounds per acre of a mixture of cottonseed meal and acid phosphate yields of 30 to 40 bushels per acre are now obtained locally.

Much improvement could no doubt be made by the use of better seed corn. The varieties grown are not in most cases known, seed being selected from the cribs, often after having been damaged by the weevil. Much seed corn is annually shipped in from the North at high prices. It would be better to select home-grown seed. Inasmuch as corn is destined to be one of the important crops of this parish, every possible effort should be made to increase the yield.

In harvesting corn the ears are usually pulled and stored without husking, as the shucks are considered a protection against the attack of weevil. It is then husked as used. The weevil is a serious pest in corn and destroys considerable quantities in the field and in the bin. For this reason a variety of corn is desired which has the ear tightly and completely covered with husks and also a hard grain that the weevil can not readily penetrate. Carbon bisulphide is very efficacious in destroying this insect where the grain is stored in a tight crib, and some of the farmers use it to advantage. The treatment is most successful where the corn has been husked.

*Cotton.*—Despite the fact that profitable yields of cotton have been very few since the coming of the boll weevil, a considerable acreage is still devoted to it. Last year a half bale an acre was secured by

[1] Each tenancy is tabulated as a "farm."

some planters from their best fields. It is claimed by many that the boll weevil did not cause as much damage in 1911 as did the excessive rains. It is probable that the weevil can be successfully fought and cotton made to take an important place among the products of the parish, but the acreage must be reduced, early varieties grown, and the ground well fertilized.[1] Some farmers hire laborers to pick the weevils from the plants.

*Cowpeas.*—Cowpeas, as a rule, are sown broadcast in the corn at the last cultivation, and unless moisture is a limiting factor for the particular season, no injury is done to the corn, and in some cases a positive benefit results. After the corn is harvested it is a common practice to harvest the pea vines for hay, for which they are excellent. Aside from this general use as a catch crop cowpeas are frequently planted alone for hay and seed. They are also valuable as a source of nitrogenous organic matter. For a number of years, however, there has been considerable difficulty in getting the vines to fruit. The general cause of this is the pea weevil, which attacks the bud as does the cotton boll weevil the young bolls.

*Lespedeza.*—Lespedeza grows everywhere, except in cultivated fields. In old fields, byways, and pastures it comes up without seeding and makes most excellent forage. It is used extensively as a hay crop, yields of 3 tons per acre being frequently secured. It sells for about $15 a ton. But one crop a year is obtained. Lespedeza is frequently sown in the oat fields in the spring and cut for hay or seed in the early fall. The best stands are secured by seeding alone on well-prepared land in April. Hay can be cut in August or the seed gathered in September. Seed yields as high as 8 bushels per acre and is worth about $3 a bushel.

Lespedeza is a shallow-rooted plant and for that reason is probably not so valuable as a soil improver as is the red clover in the North, but it is, nevertheless, a good soil builder and stores nitrogen in the soil. Where the hay is sold from the farm not much organic matter is added to the land, but where the seed only is sold and the straw returned to the soil an appreciable gain is made. Inasmuch as the price of lespedeza hay depends upon its purity, every effort should be made to secure perfect stands and to keep out noxious weeds. Applications of phosphatic fertilizers will no doubt increase the yields materially.

*Soy beans.*—Soy beans are not a general crop, but are very popular with a few farmers, who have had excellent results with them. One farmer has obtained a yield of 25 bushels per acre from the Mammoth Yellow variety. Owing to the scarcity of cottonseed meal, it will probably be found that the soy bean offers the cheapest substitute

[1] See Farmers' Bulletin No. 512, The Boll Weevil Problem, and Farmers' Bulletin No. 501, Cotton Improvement Under Boll Weevil Conditions.

to supply protein for feeding purposes that can be grown here. It is a deep-rooting plant, leaves the soil in excellent mechanical condition, and adds considerable organic matter and nitrogen to the soil. Liming will no doubt be of great benefit to this crop, which should be more generally grown.

*Peanuts.*—Peanuts are grown in a small way. They are usually planted in rows and cultivated, pigs being turned into the fields to harvest them, though some are dug and sold in local markets. The varieties known as "peanut" and "goober" are frequently confused. The latter will stay in the ground over winter and germinate the next spring, while the "peanut" will germinate the same fall if left in the ground. As a pig feed peanuts or goobers are excelled, if at all, only by soy beans.

*Velvet beans.*—Velvet beans grow luxuriantly and have a place in the agriculture of the parish. If planted in corn they completely cover it, making it difficult to gather the corn. They can be grazed off by cattle and hogs very profitably. As a source of organic matter to be plowed under in the fall this crop is excellent. They can be sown after oats to furnish fall pasturage.

*White clover.*—White clover has gained a foothold over most of the parish, and inasmuch as this is one of the most valuable pasture grasses known it should be highly prized. It is ready for pasture in the spring, usually by the middle of March, and can be pastured until summer. It is easily distributed about the farm where wanted and has a place on every farm, especially if dairy cows are kept. Lime will help this plant materially.

*Bur clover.*—But little bur clover is grown in the parish at the present time, but it is increasing in popularity. It is a most desirable winter-pasture plant, being seeded usually in September or October and dying down in April. It can be pastured during January, February, and March. Where the soil is limed and inoculated bur clover makes an excellent growth, and though stock may have to be coaxed a little to eat it at first, they soon learn to like it. A permanent pasture of bur clover and Bermuda grass or crab grass is most excellent. The bur clover can be pastured until the first of April, and will then reseed the land while the stock is allowed to run on white clover.

*Crimson clover.*—Crimson clover is but little grown within the parish, but has proved to be of value. It makes a luxuriant growth. Horses should not be pastured on it. It is a good crop to plow under as a source of organic matter and nitrogen. Liming would be profitable, and inoculation of the soil may be necessary. It is sown in the fall and makes a cover crop over winter.

*Vetch.*—Hairy vetch has been used in soil improvement to some extent very successfully within the parish. It can be sown with

oats for winter pasture. Liming and inoculation would probably be necessary for its best development.

*Beggarweed.*—Beggarweed has, so far as known, not been used in this parish, and in competition with lespedeza probably has but little place, except that it can be cut more than once, and therefore will give greater yields. It should be given a good trial.

*Alfalfa.*—Alfalfa has been tried by several farmers within the parish, and the universal opinion seems to be that it can not be grown. But in each case investigated the cause for the failure was evident. There are four conditions that must be fulfilled if alfalfa is to be grown here: The acidity of the soil must be corrected with lime, good drainage must be provided, the land must be free from weed seeds, and the soil must be inoculated. If 5 tons of limestone per acre are applied to well-drained soil in the fall and oats planted as a winter crop, and after the oats are harvested the soil is plowed deeply and cultivated with a disk harrow every week until September (the object being to germinate weed seeds and kill them), and a light dressing of manure given a few days before sowing good inoculated alfalfa seed in September or October, it is believed that no trouble will be had in securing a good and permanent stand of this valuable crop. Of course after a stand is once secured judgment must be exercised in regard to the proper time for cutting and pasturing. There are many excellent locations for alfalfa fields within the parish.

*Potatoes.*—Irish potatoes are becoming an important crop in sections of the parish with good transportation facilities. Two crops can be produced every year. The first crop is planted ordinarily in March and harvested in May. The second is planted in August and harvested in October. The yields vary considerably, but 100 bushels of marketable potatoes are frequently obtained from the early crop. The late crop does not ordinarily yield as much. The potatoes are shipped in carload lots to northern markets and bring from 75 cents to $1 a bushel. Potatoes are ordinarily fertilized with from 400 to 500 pounds of acid phosphate and from 200 to 400 pounds of cottonseed meal per acre. Potato fertilizer should contain relatively large proportions of potash. Little trouble has been experienced from disease or insect pests, and on the whole this has proved to be a very profitable crop. The acreage could be greatly increased.

Sweet potatoes are also grown to a considerable extent. They are planted in May and harvested after the first frost. Yields are frequently as high as 200 bushels per acre.

No trouble is had in disposing of potatoes at a fair price. Ordinarily the profits from the crop are greater than from cotton.

*Oats.*—As is true in many other localities of the South, oats are not considered a very profitable crop. Yields are usually low, the average being 19 bushels per acre, although yields of 50 to 60 bushels have

been reported. The variety best suited to the conditions is the home-grown Red Rustproof. November is usually considered the best time for sowing, and the fields may be pastured lightly over winter. The grain matures in May or early June. The seed is universally sowed broadcast and harrowed in. Much improvement could be effected in the oat crop by thoroughly fanning the seed and planting only the best filled grains. The crop should also be drilled in. Some legume crop which has had an application of phosphate and lime should be plowed under before the oats are planted. A considerable quantity of oats is annually shipped into the parish and used as feed for the work stock. With a little effort and improved methods enough to supply the home demand could be grown.

*Sugar cane.*—Sugar cane was formerly grown for sugar, but the distance from mills has brought about its abandonment. Considerable sugar cane is grown for the manufacture of sirup, however, of which a very good quality is obtained. A yield of over 700 gallons of sirup has been reported from the product of less than 2 acres. The usual price is 40 cents a gallon, in gallon cans. The demand, however, is considered limited, simply because the northern market has not been developed for cane sirup. There is, of course, much labor involved in the manufacture of cane sirup, but if 300 gallons can be secured from an acre and sold at even 30 cents a gallon the crop will be very profitable. The light soils produce a sirup considerably better in color and flavor than the product of heavy soils.

*Rice.*—Rice is grown by a few farmers in very small patches, seldom covering as much as an acre. It is planted in rows in low places upon which water stands for a good part of the time, and is not irrigated. It is cultivated to some extent. Only enough is grown for the needs of the individual farmer, and, with the possible exception of some of the broader areas of the Calhoun silt loam, there is but little soil in the parish well adapted to the growing of rice.

*Truck.*—Considerable interest is being aroused in the growing of early truck crops for northern markets in sections convenient to transportation. Norwood is becoming quite a trucking center, and carloads of cabbage, onions, string beans, and potatoes are shipped north in early May, while tomatoes are handled from the last of May until July. A large acreage is devoted to string beans, tomatoes, and potatoes, with smaller acreages in cabbage, onions, peppers, and other vegetables. Yields of 175 bushels per acre of tomatoes have been reported, which net about $1.40 per crate. As much as $1,100 has been realized from 2½ acres of string beans. Fertilizer which contains a high percentage of nitrogen is used extensively. Some sodium nitrate is also used alone with good results. There is opportunity for considerable extension of truck growing. Some other crops which

could be grown and for which there would be ready market in the North in the early part of the season are asparagus, rhubarb, cauliflower, eggplant, and okra. Turnips, rape, artichokes, and beets are grown more or less for home feeding of cattle and hogs, and are highly prized for this purpose.

*Pastures.*—It is possible to have green pasture every month in the year. Oats and hairy vetch can be pastured during November, December, and January, if sowed in October; bur clover during March and April; white clover during March, April, and May; carpet grass (Louisiana grass), Bermuda grass, and lespedeza from the last of April or May until frost. As pastures are likely to become badly infested with broom sedge, it is customary to burn off the dry sedge in early spring, and the young sedge, lespedeza, carpet grass, and a few other grasses come up very rapidly and make a succulent pasture. Much improvement could be effected in these pastures by mowing the sedge and other weeds before they make seed. Applications of lime would also be beneficial.

The most extensive pastures in present use are woodlands. Sedge, lespedeza, and carpet grass are the grasses; but the ground is so covered with bushes, fallen trees, and stumps that there is not a high percentage of the land accessible to stock. If the woodlands were cleared of underbrush, etc., they could be mowed over and would make nearly as good pastures as if they were not forested. This is a much neglected feature of stock raising.

*Dairying, stock raising, and poultry.*—Some interest is taken in dairying. Considerable milk is shipped to New Orleans and Baton Rouge. The butter-fat tests run considerably above the average, 5 per cent milk being quite common, though the flow is hardly up to the average. The milk shipped nets 20 cents or more per gallon. Precooling must be practiced in the summer to insure the delivery of sweet milk, as considerable time is consumed in transit, although New Orleans is only about 120 miles away. The main requisites for a dairy region are well-drained land, cheap and abundant feed, and good water, all of which are found in this parish. Silos are coming into use in the southwestern part of the parish. With lespedeza, bur clover, alfalfa, soy beans, cowpeas, and silage it is possible to compound rations which would make the cost of producing milk very low. The present method of buying cottonseed meal and hulls and not growing any feed except hay makes the milk expensive.

The Jersey is the predominating breed of cattle at present, but some effort is being made to introduce the Holstein, which seems to be a move in the right direction. With the eradication of the cattle tick it will be possible to introduce better bred stock, which will greatly benefit the dairy industry.

Cattle have always been fattened to some extent in the parish, but since the advent of the boll weevil pastures and hay have been the principal source of feed, as not enough grain has been grown for more intensive feeding. The feeding stock has heretofore been secured from the South, as northern animals are likely to die from the Texas fever, owing to the presence of the Texas-fever tick. A concerted effort is now being made to eradicate the tick and within a few years it will be practicable to import the better beef breeds, and the raising of fat cattle will probably become an important industry. The present grade of feeders would not fatten and become first-class beef on grain, but make profitable gains on the natural pastures, and even under present conditions considerable profit can be made in raising them. Probably the most profitable method is not to try to carry the stock over winter, but to buy in the spring and pasture until fall, getting the profit on the one season's growth. While shelter is not absolutely required over winter, some protection should be given against the raw, chilling winds. Natural pastures are poor in the winter, and unless hay can be fed the stock is frequently in poor condition in the spring. Hundreds of head were lost during the past winter from exposure and lack of food.

Hogs constitute a source of considerable income, most of the farms having a few, although there are no strictly hog farms. There are many animals of fine breed, and the grade of hogs usually seen is considerably above the average for the South, the razorback being decidedly rare. The Berkshire and Poland China are favorites. Not as many Duroc-Jerseys are seen as would be expected. With the excellent pasture available throughout the season, and with peanuts, artichokes, and rape obtainable, very cheap pork can be produced.

Considerable income is derived from sheep raising. Sheep are admirably adapted to the more rolling sections of the parish and make good gains on the Bermuda-grass and lespedeza pastures. This parish is an excellent location for the production of Christmas lambs.

Poultry products yield a much higher proportion of the income on the farms than would at first be thought possible. Chickens form a large part of the fresh meat eaten at home during the entire year, and eggs are also consumed in enormous quantities. Good beef is very difficult to get, and pork is only killed during the cold weather of winter, so that much dependence is placed on poultry. Geese are also raised in large numbers, and turkeys, ducks, and guineas to a less extent. The region is admirably adapted to poultry raising, as good drainage, which is absolutely essential, can be nearly always provided. Many fine-bred flocks were seen in the parish, but the average flock is of mixed breeds. Chickens are easily induced to lay

during the winter, and on dry soils there is very little loss of young chicks in the early spring. For the man who understands the business, the region offers many inducements.

Horse and mule raising has received attention from a few planters, and some very good results have been attained. Mules can be raised almost entirely on the pasture, and this, together with the high prices which they bring, should be an inducement to extend the industry.

*Fruits.*—It would seem that in a region with as good air and water drainage as this has fruit would do exceptionally well, but fruit growing has never been made a remarkable success. There are a large number of peach trees in the parish, but it is said that the peach is short lived and likely to be affected by yellows. It is probable that if the soil were well limed, fertilized with phosphate, and kept clear of weeds, a success could be made of peach culture.

Apples are not cultivated extensively, but some are grown with apparent success. The varieties giving most promise are Ben Davis, Roxbury russet, Stakes, De Lee Striped, De Lee 14-Inch, Smith June, White's May Beauty, and Enterprise.

Pears blight severely, though the Kieffer is by some considered nearly immune. The La Conte does fairly well, but is more subject to blight. The Winter Nellis and Duchess do well. The Golden Russet is one of the best producers and the Seckel is grown successfully.

Figs are a natural fruit of the region, will grow nearly everywhere, and can be depended on to make a crop. The Celeste is the principal variety, though the Brown Turkey (large) and the Large Yellow are also grown.

Pecans are grown for home consumption, and though there are no commercial groves in the parish, it would seem that this nut might be made profitable.

Small fruits have received but little attention. Success would no doubt follow the careful cultivation of blackberries, raspberries, currants, gooseberries, and strawberries.

*Fertilizers.*—Commercial fertilizers are used extensively throughout the parish, over $52,000 having been spent for them according to the last census, but not nearly so much is now applied as was customary before the boll weevil came. Before cotton seed became so valuable it was customary to broadcast the whole seed, but this practice was later discontinued and the cottonseed meal was distributed in the rows. For a number of years the meal has been supplemented with acid phosphate, and the present tendency is to use acid phosphate almost entirely on cotton and corn, though some use bone meal on corn. Complete fertilizers are used to a very small extent.

Probably the most needed constituent of the local soils is lime. Practically all types show acidity.[1] The surface soils of the Ruston fine sandy loam and Orangeburg sandy loam are but slightly acid, and the subsoils are highly acid. Both soil and subsoil of the Memphis silt loam are very acid, those of the Lintonia silt loam are apparently little less so, while the Calhoun silt loam, as a rule, requires more lime for neutralization than any other type. The cultivated areas are apparently not more acid than the forested areas. Any effort to increase the crop yield should include means to correct this acidity. There is apparently no cheap source of ground limestone at present available to this section, but with immense deposits at Vicksburg and near Jackson it seems that rock could be quarried, crushed, and delivered in the parish at a price that would make its use economical.

After the correction of the acidity the most important step in the improvement of the soils is the incorporation of organic matter. The proportion of this constituent is usually very small and its importance but little realized. With the large number of catch crops which are available it should be an easy matter to increase annually the amount of decaying vegetable matter. Organic matter prevents the soil particles from packing too closely together and enables the rain water to be absorbed more completely and be retained for future use. It also prevents to a great extent the injurious washing of soil during heavy rains. Barnyard manure is of course to be used wherever available, but the supply is entirely inadequate. Much more could be made by a more liberal use of bedding in the barns and sheds. Its quality could be improved also by greater care in storing it. Manure depreciates very rapidly after it is thrown in the pile. Proper care of the product seems to be but little understood within the parish. Rock phosphate spread daily on the manure would greatly increase its fertilizing value.

*Crop rotation.*—Systematic rotation of crops is but little practiced. It is customary to alternate cotton and corn, though frequently each is grown on the same land for two or three successive years. It will be very easy to plan suitable rotations in a region where it is possible to grow so many different crops as here. A practical crop succession and method of managing the soil, and one which will permit many variations, is as follows: Apply 1,000 pounds of rock phosphate to a lespedeza pasture and plow it deeply in the fall, disking and sowing oats and hairy vetch thinly for a winter covering. In the spring plow under the green crop and plant corn. Cowpeas should be sowed in the corn at the last cultivation and plowed under in the fall and an

[1] Analyses made in the bureau laboratories show the lime requirements of the Memphis silt loam 5,285 pounds of burnt lime per acre; the Lexington silt loam, 5,250 pounds; the Ruston fine sandy loam, 5,110 pounds, and the Calhoun silt loam, 6,300 pounds. In using ground limestone twice these amounts should be applied per acre.

application of 2 tons of limestone per acre made after plowing; crimson or bur clover can then be planted as a winter covering and plowed under in the spring for corn again; peas again planted in the corn and plowed under in the fall before the land is planted to oats, which should be drilled in. In the spring sow lespedeza, which would the same year be harvested for hay and the ground plowed up again. This would be a 3-year rotation, but would permit the harvesting of 3 grain crops, 1 hay or seed crop of lespedeza, 2 hay or seed crops of cowpeas, and two months winter pasture each year, making in all 6 crops besides the pasture. Irish potatoes could precede the corn, which would make 8 crops besides pasture which would be obtained from a field in three years, and the organic-matter content will have increased and the soil will be richer in phosphate than at the beginning. Cotton could be substituted for corn one year, crimson clover to be sown in the fall, and the lespedeza might be left for pasture the fourth year. Sweet potatoes can be planted after Irish potatoes. It would not take many such rotations to bring this land up to a remarkable state of productiveness.

*Preparation and cultivation of land.*—All cultivated crops are planted on beds. In the preparation of these beds furrows are thrown together, making a ridge from 5 to 12 inches high and from 18 to 24 inches wide. Potatoes, corn, and cotton are planted in the middle of these ridges, and subsequent cultivations consist of moving the dirt to and from the rows. Weeds are thus covered and not cultivated out, as in a check-row system. The ridges or beds are laid out to follow more or less closely the contour of the land, allowing some slight fall. This prevents washing and tends to hold the moisture until it sinks into the soil. Until more organic matter can be incorporated into the soil this system should not be severely criticized, as very serious washing would otherwise result. If the rotation previously referred to is followed and large quantities of organic matter and lime added, it is entirely possible that after a number of years flat cultivation could be practiced safely.

Oats and lespedeza are sown on flat surfaces. Though it has not been tried, it is possible that blasting the heavy silty clay subsoil of these soil types with light charges of dynamite would increase its capacity to absorb water sufficiently to pay for the expense. Subsoiling may also be found advantageous.

## SOILS.

On the basis of topography and origin of material, East Feliciana Parish includes three main soil divisions: (1) The gently rolling to rolling uplands, (2) the overflowed first bottoms along streams, (3) the flat stream terraces which now stand above overflow. The rolling uplands are very largely occupied by the Memphis silt loam,

which is derived directly from the mantle of loess covering the uplands to a depth of 3 to 10 feet. Beneath the loess is found sandy Coastal Plain material, usually of a reddish color. There are many spots throughout the uplands from which the loess has been wholly or partly removed by erosion in such a way as either to expose the underlying deposits or to bring them within the 3-foot section of the soil. In this way there have been developed a few patches of Coastal Plain soils of the Orangeburg and Ruston series, and also some areas of the Lexington silt loam, which type is similar to the Memphis silt loam in every respect except that the lower portion of the 3-foot section consists of Coastal Plain material.

The deposit of loess is deepest along the western boundary, thinning out toward the eastern part of the parish. There has been considerable erosion, however, along the western border, and there are here many broken areas which approach the characteristics of the typical rough broken Memphis silt loam so extensively developed along the loessial bluff bordering the Mississippi bottoms northward from this area through Mississippi and Tennessee into Kentucky. The southern end of this loessial belt is in East Feliciana Parish. It is bordered to the south by a flat terrace which closely resembles the loess, but which apparently has been influenced by stream action. This terrace gives way in the southern part of East Baton Rouge Parish, on the south, to the Mississippi bottom lands.

Two important types are developed on the terraces of such streams as Amite River and the broad, flat belt of terraces in the southwestern part of the parish. These are the Lintonia and Calhoun silt loams. The Lintonia is a brownish silt loam underlain by a buff or yellowish-red silty clay loam. The surface is flat to slightly undulating, and the drainage is fairly well established. The Calhoun silt loam is a flat or slightly depressed soil, having poor surface drainage as well as underdrainage. The soil of this type is gray or drab in color, while the subsoil is gray or drab, mottled with shades of brown and yellow, and contains considerable black oxide of iron concretions and other dark-colored ferruginous material. The lower subsoil of this type is a drab or dark-drab, plastic silty clay of a very impervious character. This lower portion frequently contains more than 50 per cent of black oxide of iron material, either in the form of concretions or segregated material.

The extensive terraces in the southwestern part of the parish are believed to have been formed by the Mississippi River. The material may be alluvial in origin, but this could not be positively determined, inasmuch as the soil, especially of the Lintonia silt loam, is quite like the Memphis soils of the uplands. It is possible that loessial material has been distributed over the original terrace by the action of smaller streams or by wind, but it is not necessary in this report

to attempt to determine conclusively the source of the material. It is sufficient to say that the surface configuration of the Lintonia and Calhoun soils forces the belief that these lands represent old stream terraces. There is in many places a gradation between the flat and undulating topography of the Lintonia and Calhoun soils toward the rolling uplands, the two divisions merging in such a way that sharp boundaries could not everywhere be drawn.

The overflowed first bottoms of streams are largely occupied by the Vicksburg silt loam, which is a brownish soil composed largely of wash from the loessial uplands. There are a number of areas which, on account of their poor drainage and the variableness of the soil material, were mapped as Meadow. The largest area of Meadow is in the bottom lands of the Mississippi River, in the southeastern corner of the parish. Here the Meadow is covered by willow, sycamore, and other moisture-loving trees, representing typical "batture" land. The material has been washed out over this area of Meadow from the exposed section of the Port Hudson formation of the adjacent bluff. The Port Hudson formation underlies at least a part of the terrace soils in the southwestern part of the parish.

Detailed descriptions of the several soil types are given in subsequent chapters. There also will be brought out the crop adaptation and crop values of the various types.

The following table gives the names and extent of the several soils mapped in the parish:

*Areas of different soils.*

| Soil. | Acres. | Per cent. | Soil. | Acres. | Per cent. |
|---|---|---|---|---|---|
| Memphis silt loam | 101,760 | | Calhoun silt loam | 25,920 | 9.0 |
| Erosion areas | 7,360 | 45.0 | Meadow | 1,920 | .7 |
| Drainage less well established | 21,120 | | Ruston fine sandy loam | 1,600 | .5 |
| Lexington silt loam | 56,000 | 19.4 | Ruston gravelly loam | 960 | .3 |
| Vicksburg silt loam | 36,800 | 13.5 | Orangeburg sandy loam | 192 | .1 |
| Mixed phase | 2,368 | | | | |
| Lintonia silt loam | 33,280 | 11.5 | Total | 289,280 | |

MEMPHIS SILT LOAM.

The Memphis silt loam is remarkably uniform in its physical characteristics throughout the soil section of 36 inches. The surface soil, with an average depth of about 10 inches, is a light-brown or grayish-brown silt loam. The lower 2 or 3 inches may be quite light colored almost pale yellow, while the upper few inches is often a decided brown. The dry surface of a plowed field generally appears gray, though when moist it has a distinct brownish cast. The structure of the soil is loose. The subsoil, beginning very abruptly, consists of a yellowish-red or buff-colored silty clay loam to silty clay,

which is rather plastic when wet and hard when dry, though friable and easily crumbled when containing a moderate amount of moisture. This stratum extends usually to about 24 inches, and while it is not known locally as hardpan, it acts somewhat like it in that water penetrates it but slowly and in some cases scarcely at all. At an average depth of about 24 inches the heavy upper subsoil grades into lighter textured, grayish-yellow or pale-yellow silt loam or silty clay loam. This material is frequently mottled slightly with gray. The lower subsoil material extends to 3 feet or more, but rarely below 10 feet. The substratum is invariably the reddish or buff-colored sandy clay material of the Coastal Plain deposits which underlie the region.

Some variations from the normal soil are encountered. The surface soil varies principally in depth. In places much or all of it has been washed away, so that the buff-colored upper subsoil is either exposed on the surface or lies near enough to be turned up by the plow. The heavy textured upper subsoil also varies in thickness, in places extending from near the surface to a depth of about 3 feet. In some small areas it may be entirely lacking. There is probably considerable agricultural difference in areas in which it is not present, and such areas have been indicated on the map by symbol. In some areas the mottling of the deeper silt loam subsoil is not present, owing probably to better local drainage. Other phases of the type are described in detail.

As mapped, the type includes small areas of Lexington silt loam too small to be separated, also small areas of Orangeburg sandy loam and spots of other soils having a sandy character. These rarely contain over a fraction of an acre and no effort was made to show them. There are also included in this type small areas of very light-gray silt loam which resembles the Calhoun silt loam in physical characteristics. These nearly always occur on the summit of ridges, but are too small to be shown on a map of the scale used.

The Memphis silt loam is the predominant soil of the parish, but is confined to the highland region. So far as profile is concerned it is very similar to the Lintonia silt loam. It is most extensively developed in the western half and northern three-fourths of the parish, though there is a large development in the southeastern part. In the western part of the parish the type occupies both the ridges and narrow valleys, but in the eastern part it is confined practically to the wider ridges, as erosion has universally brought the Coastal Plain material to within less than 36 inches of the surface over most of the more rolling land.

The material which forms the Memphis silt loam is loess and was deposited either as mud from glacial outwash or blown by the wind from the Mississippi River bottoms. Along the immediate bluff this material is very deep, but it thins out rapidly away from it.

This same soil type occurs through Mississippi, Tennessee, Kentucky, and southern Illinois.

As this type occupies the hill section, the topography is usually undulating to rolling. Very little of it is flat. In general the relief is sufficient to give adequate drainage. Small areas, however, occur in many places where artificial drainage would be advantageous. Open ditches will always be necessary to take care of the run-off, but tile would assist greatly in improving seepy places and in getting moisture down into the subsoil. The soil is very deficient in organic matter, and even during the season of unprecedented rains in 1912 it was found that the subsoil was rarely more than fairly moist. The particles of surface soil had merely packed closely together and prevented the moisture from going down into the subsoil. Underdrainage would tend to induce the movement of moisture downward through the soil.

It is estimated that less than half the Memphis silt loam in the parish is in cultivation. Much of it is at present idle and supporting only a growth of broom sedge, lespedeza, and seedling pine. This land is idle simply because of a lack of labor to cultivate crops other than cotton. All the crops of the parish are grown on this soil. Probably the most remunerative crops at present are potatoes, tomatoes, and snap beans. As much as 70 bushels of corn per acre has been reported as grown on highly manured and fertilized land. Lespedeza is particularly luxuriant on this type and yields of 3 tons of hay and 8 bushels of seed have been reported. Yields of one-half bale of cotton per acre have been secured under boll weevil conditions.

The advantages of this type for agriculture are its generally suitable surface, adequate drainage, and easy cultivation. The important steps for its improvement are the correction of acidity by applications of lime or ground limestone, the incorporation of organic matter, and the use of phosphoric and potassic fertilizers. The only logical means of supplying organic matter is the plowing under of leguminous crops, of which a great many can be grown. The adoption of the rotation previously discussed would be profitable.

*Memphis silt loam, erosion areas.*—In the western part of the parish, south and north of Jackson, there are several bodies of Memphis silt loam that have been badly dissected by erosion. The topography of these areas would be described as choppy rather than broken, because the uneven surface is not so much due to the presence of deep, steep-sided gullies, as to frequent variations between ridges. This phase could not be classed as steep, broken land, for the reason that the greater part of it can be plowed. Some of it is under cultivation to the general farm crops. The surface of the

steeper slopes, however, is too uneven for safe cultivation, erosion being likely to follow plowing.

Since this phase is the result of erosion upon the original loessial deposit of this region, which represented a relatively thin layer over sandy Coastal Plain material, thinning out toward the east, it follows that the advanced erosion has exposed or brought the Coastal Plain material near the surface in places. The phase thus includes patches of Lexington silt loam and even gravelly spots that are so irregular in shape or of such small size that they could not be satisfactorily separated from the prevailing soil which is a brown silt loam, separated at depths varying from an inch or two to perhaps a foot by a reddish-brown or reddish-yellow silty clay loam, which in turn usually passes into a more friable and lighter colored stratum within the 3-foot section. But for the fact that the loessial deposit was relatively deep in this part of the parish, it is likely that the Coastal Plain material would already have been brought to the surface over most of the areas included in the phase. As it is exposures of loess 6 to 10 feet deep are seen here.

This phase is adapted to the same crops as the typical Memphis silt loam, but it can not be handled as efficiently as can the typical soil, on account of the uneven surface. Corn, oats, and cotton are the principal crops grown.

*Memphis silt loam, drainage less well established.*—This phase of the Memphis silt loam is much less rolling than the typical soil. The surface configuration would be described as nearly flat to undulating. It includes many small, poorly drained, flat areas and slight depressions of grayish to nearly white soil, very much like the Calhoun silt loam. This is particularly true of the area between Olive Branch and Redwood Creek.

The main portion of this phase, like the surface of the typical soil, ranges from a silt loam to silty clay loam of brown, light-brown, or grayish-brown color, underlain by yellowish silty clay loam, which becomes lighter in texture and mottled with gray in the lower depths. The drainage of this phase is not so good as that of the typical Memphis silt loam, and it usually contains more concretions on the surface and through the soil section.

The phase as a whole would be benefited by drainage and applications of lime. Both the soil and subsoil are acid. The gray spots are largely covered with magnolia, beech, white oak, winter oak, and ironwood. The better drained areas where forested support a growth of oak, pine, and magnolia.

The most important areas are the ones referred to above, those between Black Creek and Ethel, and the larger continuous belt to the north, west, and south of Bells Store.

Much of this phase is cleared and successfully used in the production of lespedeza hay and seed, oats, corn, Irish potatoes, tomatoes, and cotton. A considerable area is used for pasturage.

The same treatment as suggested for the typical soil would apply to this phase, but much more of the land would be benefited by artificial drainage.

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

*Mechanical analyses of Memphis silt loam.*

| Number. | Description. | Fine gravel. | Coarse sand. | Medium sand. | Fine sand. | Very fine sand. | Silt. | Clay. |
|---|---|---|---|---|---|---|---|---|
| | | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* |
| 431505 | Soil | 0.0 | 1.6 | 2.7 | 5.7 | 7.0 | 71.7 | 11.1 |
| 431506 | Subsoil | .0 | .3 | .8 | 1.6 | 2.0 | 51.2 | 44.0 |
| 431507 | Lower subsoil | .1 | .5 | 1.6 | 3.0 | 6.9 | 64.7 | 22.8 |

LEXINGTON SILT LOAM.

The Lexington silt loam consists of a light-brown silt loam to silty loam about 8 to 12 inches deep. The lower portion of the soil is usually grayish yellow in color. The subsoil, beginning usually with a sharp line of separation from the soil, is a buff or yellowish-red, rather compact silty clay loam to silty clay which extends to a depth of about 24 to 28 inches. Beneath this is a third stratum of silt loam or silty clay loam of a grayish-yellow color, which at depths ranging from about 28 to 36 inches is underlain by the reddish sandy clay Coastal Plain material, the common substratum material of the uplands. While these four distinct strata occur in the 3-foot section of the typical soil, it is not unusual to find the intermediate section of the subsoil missing and the buff silty clay loam or silty clay upper subsoil resting immediately upon the stratum of Coastal Plain material. Although in this typical development the buff-colored and red sandy clay strata are very distinct, they are sometimes quite difficult to distinguish from each other.

The surface soil of the Lexington silt loam is somewhat variable in texture and in places closely approaches a sandy loam, such areas frequently being difficult to distinguish from Ruston fine sandy loam. As a matter of fact this type does include patches of Ruston fine sandy loam. It also includes many areas of Ruston loam, Orangeburg sandy loam, Memphis silt loam, and Lexington loam too small to map. The dominant soil is similar to the Memphis silt loam, except in the presence of the Coastal Plain material within the 3-foot section.

The principal developments of this type are in the eastern and northwestern parts of the parish. The topography is usually rolling, being found principally above the breaks of water courses and the heads of streams. Occasionally, however, it is developed on the higher and narrower ridges. It is plainly the result of erosion and is developed only where much of the loess has been washed away, leaving the present depth of that deposit less than 3 feet. As erosion is not always uniform the soil profile is necessarily quite variable within very short distances.

Much of this type is under cultivation, but by far the greater part is in forest. It is frequently regarded by farmers as being equal to, if not slightly better than, the Memphis silt loam. The somewhat lighter texture of the material, especially of the lower subsoil, permits slightly better natural drainage than in case of the Memphis silt loam, allowing the soil to be worked a little sooner after rains. The same fertilizers are used and the same crops grown as on the Memphis silt loam. Because of its somewhat lighter texture and easier working qualities, this soil is somewhat better adapted to and used more extensively for trucking, especially around Norwood, than is the Memphis silt loam. The lime requirement is slightly lower than for the Memphis silt loam. It is probable that the most rational plan of improving this soil is to apply limestone and to grow legumes, either lespedeza, cowpeas, bur clover, or velvet beans, plowing these under with rock phosphate. The type is susceptible of great improvement and will respond readily to good treatment.

The following table gives the results of mechanical analyses of samples of the soil, subsoil, intermediate subsoil, and lower subsoil of the Lexington silt loam:

*Mechanical analyses of Lexington silt loam.*

| Number. | Description. | Fine gravel. | Coarse sand. | Medium sand. | Fine sand. | Very fine sand. | Silt. | Clay. |
|---|---|---|---|---|---|---|---|---|
| | | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* |
| 431501 | Soil | 0.9 | 2.5 | 6.0 | 7.8 | 7.3 | 65.5 | 9.9 |
| 431502 | Subsoil | .2 | 3.0 | 7.0 | 8.6 | 6.7 | 45.1 | 29.6 |
| 431503 | Intermediate subsoil. | .3 | 1.9 | 3.9 | 4.3 | 3.2 | 65.8 | 20.4 |
| 431504 | Lower subsoil | .2 | 4.3 | 14.3 | 15.5 | 7.0 | 14.4 | 44.5 |

RUSTON FINE SANDY LOAM.

The soil of the Ruston fine sandy loam is a gray or grayish-brown rather loose structured fine sandy loam, with a depth of 8 to 10 inches. Considerable organic matter is usually incorporated with the immediate surface, but the lower few inches is light colored and apparently low in humus. Beneath this is a reddish-yellow to yellowish-red or

buff-colored, rather compact silty clay loam containing considerable fine sand. This material becomes lighter with increase in depth, the silt and clay content diminishing and the sand content increasing, until at about 24 to 30 inches it consists of friable sandy clay or sandy loam of a reddish color. The different strata in this type are not so sharply defined as in the other upland soils of the parish.

As mapped this type varies considerably in the texture of the surface soil, though the subsoil is rather uniform. The surface ranges from a fine-textured loam, like that of the lighter phases of the Lexington silt loam, to a sandy loam, like that of the Orangeburg sandy loam. Indeed, some of each of these types has been included with the Ruston fine sandy loam where the areas were too small to indicate. Also, some of this type is included with the Lexington silt loam. Chert and gravel are frequently present.

This type occurs in isolated areas in the eastern part of the parish along the breaks of the streams where erosion has been especially active and has completely removed the surface covering of loess and exposed the sandy clay Coastal Plain material. The washing out of the silt and clay from this material has concentrated sand particles on the surface, forming the fine sandy loam soil. It occupies prominent knolls or ridges and the topography is consequently rolling. Drainage is thorough and likely to be excessive.

All the general crops of the parish are grown. Cultivation is practiced principally on the small areas included with the Lexington silt loam, while most of the areas mapped are in pine forest. This is an excellent sweet potato, peanut, and truck soil, but unfortunately lies at too great a distance from market to be used extensively for production of these crops. For the permanent improvement of this soil the application of limestone, organic matter, phosphate, and potash is necessary. The surface soil is not often very acid, but the subsoil is generally so.

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

*Mechanical analyses of Ruston 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.* |
| 431510 | Soil | 1.4 | 3.0 | 19.1 | 33.8 | 4.9 | 30.8 | 6.9 |
| 431511 | Subsoil | .4 | 1.6 | 14.1 | 22.1 | 2.5 | 35.9 | 23.4 |

RUSTON GRAVELLY LOAM.

The Ruston gravelly loam is an unimportant type both in point of extent and productiveness. Through the entire section of 3 feet the material consists mainly of gravel, mostly chert, ranging in size from

fine gravel to particles an inch in diameter. The interstitial material is composed of sand and clay. Probably 90 per cent of the mass consists of gravel. The clay is of a buff or yellowish-red color.

These gravel beds occur along the prominent breaks of the larger streams, where erosion has been sufficient to remove the loess and also much of the sandy clay of the Coastal Plain material. The areas are always small, but are distributed throughout the uplands. The type occupies elevated areas and has excellent drainage.

The material is derived from gravel beds of the Coastal Plain deposits. Some of the less gravelly areas are under cultivation and where sufficient organic matter is incorporated fair yields are secured.

### ORANGEBURG SANDY LOAM.

The Orangeburg sandy loam consists of 8 to 12 inches of gray or grayish-brown, loose-structured sandy loam, containing a relatively large percentage of coarse sand particles. The subsoil, extending from 12 to 36 inches, is a deep-red, friable sandy clay of a rather compact structure in the upper section but looser and more crumbly below. Very small areas of this type occur throughout the Lexington silt loam, Ruston fine sandy loam, and some occur in even the Memphis silt loam. They are usually too small to show on a map of the scale of one inch to the mile. The type usually occurs on knolls and slopes along the sides of stream valleys. The soil is derived from Coastal Plain material.

This is an excellent truck soil and wherever possible should be used for that purpose. The general farm crops also do well. The soil can be improved by the use of lime or ground limestone, organic matter, phosphates, and potash.

### LINTONIA SILT LOAM.

In its typical development the Lintonia silt loam consists of a light-brown or brown mellow silt loam about 8 to 14 inches deep, the lower portion being generally of a lighter color, usually yellowish brown. On drying out, the immediate surface portion, especially of the poorer drained areas, assumes a grayish cast. The subsoil is a reddish-brown, yellowish-red, or buff silty clay loam to silty clay of somewhat plastic structure when wet and moderately crumbly when moist. In many places at a depth of 22 to 30 inches this passes into a more silty and more friable stratum, faintly mottled with gray and containing a few black iron concretions and a small quantity of limonite.

As mapped the type includes a number of variations. In places, particularly on the lower, smoother terraces near the drop to overflowed bottom lands, both soil and subsoil are more uniform in color and the subsoil is lighter in texture. In this occurrence the

soil is a brown, mellow silt loam, underlain at about 12 to 18 inches by a moderately compact silt loam to silty clay loam of a light-brown or slightly reddish-brown color, showing much less mottling with gray and iron oxide stains and carrying fewer iron concretions than the subsoil of the areas. In poorly drained areas the subsoil always shows more gray or a more intense mottling of gray with brownish, yellowish, and reddish iron-oxide stains, and contains more iron concretions. The soil is often a dark-brown or light-brown silt loam varying in depth, and passing abruptly into a gray or mottled subsoil, like the subsoil of the Calhoun silt loam.

There are many places where the Lintonia silt loam grades into the Calhoun silt loam by such imperceptible degrees that no definite boundary exists between the two, and consequently the line of separation had to be drawn rather arbitrarily. Where there was a foot or more of the brown material over the gray or mottled stratum the soil was mapped as Lintonia. The type as shown on the map also includes patches of typical Calhoun silt loam too small to outline on a map of the scale used Some areas include the two soils in such mixed or intricate association that it was not easy to tell which predominated. Under such conditions the soil would have been mapped as a mixed phase of one of these types had the areas been of any considerable importance in point of extent.

Along the slopes of Sandy Bayou and the lower part of Thompson Creek, in the southwestern part of the parish, narrow strips of the Lintonia silt loam are encountered. This soil includes the slope land lying between the first bottoms of the streams along which it occurs and the adjacent flat highland. Owing to its steep character, the areas are of little value. The streams in this section have cut their channels deep, reaching well down into the grayish sandy and clayey Coastal Plain substratum. The soil is not very uniform along these slopes. Most of the surface material is silt loam of a brownish color, but the subsoil ranges from silty clay loam or silty clay to sandy loam. The upper part of the slope simply represents eroded Lintonia silt loam, while the lower part embraces sandy Coastal Plain material covered to varying depths by silt loam washed from above.

Cultivation can not be carried on safely upon these steep slopes, both on account of the difficulty of plowing and the excessive washing that would follow. The areas are best suited to pasturage. It is at present covered by forest and should be allowed to remain in this condition.

The Lintonia silt loam also grades off into the Memphis silt loam, so that the boundary could not be satisfactorily drawn in all cases.

This type is closely related to the Richland silt loam of northeast Louisiana and southeast Arkansas, except that it has a heavier subsoil than the Richland.

The Lintonia silt loam is most extensively developed in four important areas or belts, as follows: (1) The large body in the southwestern corner of the parish between Port Hudson and Bells Store; (2) the areas in the vicinity of Slaughter, between Redwood and Black Creeks; (3) the area about the head of Black Creek; and (4) the strip following the course of Amite River almost continuously across the parish. There are a large number of isolated areas and patches too small to map in the southwestern portion of the parish, mainly south of an east-and-west line drawn from Thompson Creek through Ethel to Comite River. There are also narrow strips along Thompson Creek, north of Jackson, and along Lost, Bluff, Beaver, and Sandy Creeks. It is believed that much of the type represents a terrace of the Mississippi River, which was the flood plain of that river at a time when the level of the stream was higher than it is now. The substratum consists of a layer of sand, clay, and silt, quite similar in many places to the red Coastal plain material in all respects save color, which is usually light grayish to white. It probably represents the Port Hudson formations. The present soil material is probably derived mainly from loess. It may be old alluvium or it may represent aggraded Memphis silt loam. It is possible that some of the present silt material has been spread out over a flat stream terrace by the action of wind or water.

The surface of the Lintonia silt loam is characteristically flat to very gently undulating. There is frequently a barely perceptible slope in the direction of streams, but in many places the soil occurs in broad areas of smooth surface, without slope as far as the eye can detect. Areas such as the strips along Amite River, Thompson Creek, above Jackson, and a number of other creeks have the readily recognizable topographical features of a definite stream terrace, with an essentially flat surface, distinct bluffs bordering the lower overflowed bottoms, and a line of abrupt rise to the uplands along the outer margin. But in the southwestern part of the parish terrace features, aside from the prevalent flat surface configuration, are not always evident. Here the type often reaches from stream to stream over broad areas which shade off to the north into upland soils of less smooth surface features so gradually that their line of separation is by no means definite in all cases. Most of the streams of this section have only narrow, shallow first bottoms, or none at all, and overflow relatively small areas.

In the southwest corner of the parish erosion has been very severe in this type, but the general flat surface extends to the edge of the bluff bordering the Mississippi River, which is 60 or 70 feet below. This belt of flat Lintonia silt loam extends southward and eastward through East Baton Rouge Parish, grading off into the bottoms south of Baton Rouge.

The typical Lintonia silt loam has moderately good drainage, far better than the associated Calhoun silt loam. On account of its flat surface, however, rain water does not in all cases flow off as rapidly as is desired. Cultivation is then delayed and crops caused to suffer by the soggy conditions obtaining in wet seasons. Plowing can be and frequently is carried on, however, when the soil is in a surprisingly wet condition, without subsequently causing serious damage. This is probably accounted for by the high silt and low clay content of the surface or plowed portion, the silt having little tendency to set in a hardened structural condition on drying out. Nevertheless, the productiveness of the soil could be increased by improving the drainage, either by tiling or ditching. A large proportion of the type certainly should be ditched to insure a more rapid run-off of the rainfall. During the course of the present survey young corn was observed to have suffered markedly from poor drainage. Cotton also seemed to be checked in its growth, while Irish potato seed in some fields rotted in the ground.

Most of the Lintonia silt loam has been cleared and cultivated, though bodies of it are now lying idle because of the reduction in cotton acreage. It is locally regarded as being a somewhat stronger soil than the Memphis silt loam, and certainly has many good features. It works easily, is not subject to erosion, and if properly ditched drains readily. All the crops discussed in the chapter on agriculture are grown successfully. Dairying is well developed on it and is supported by the excellent crops of lespedeza, soy beans, and corn produced. The soil is not as a rule as acid as the Memphis silt loam, which may account for its greater popularity.

Average applications of 5 tons of ground limestone per acre would probably be profitable. As regards fertilizer requirements there is little accurate knowledge. The local use of acid phosphate would seem to show the value of phosphatic fertilizers. Potash fertilizers have given but slightly increased returns on loess. The soil is deficient in organic matter. It thus appears that the best way to improve this soil would be to correct the acidity, to provide tile or open drains, to insure thorough drainage, and to adopt the general rotation suggested in the chapter on agriculture, or some other likewise planned to add organic matter to the soil.

Land of this type now sells for $10 to $25 an acre, but it is not believed that such low prices will prevail for any great length of time, as the land is worth more than that. Transportation facilities are good over most of it; it is easy to cultivate, and is adapted to a great variety of crops. There is considerable uncleared land of this type in the southeastern part of the parish which could be profitably brought under cultivation.

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

*Mechanical analyses of Lintonia silt loam.*

| Number. | Description. | Fine gravel. | Coarse sand. | Medium sand. | Fine sand. | Very fine sand. | Silt. | Clay. |
|---|---|---|---|---|---|---|---|---|
| | | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* |
| 431512, 431517. | Soil..... | 0.1 | 0.8 | 1.0 | 1.7 | 9.7 | 76.2 | 10.1 |
| 431513, 431518. | Subsoil..... | .0 | .1 | .4 | .6 | 3.3 | 74.0 | 21.6 |
| 431519..... | Lower subsoil... | .0 | .0 | .3 | .5 | 4.2 | 77.0 | 18.1 |

CALHOUN SILT LOAM.

Although there are a number of minor variations in the type, the Calhoun silt loam comprises but two important developments, the typical soil and a gravelly phase.

The typical soil is a gray to grayish-brown, rather compact silt loam, faintly mottled with dark-brown, rusty-brown, and yellowish-brown colors, which is underlain at an average depth of about 10 inches by a light-gray to white compact silt loam, also mottled with shades of brown and yellow. This in turn is underlain at about 24 to 30 inches by a drab or dark-drab, tough, plastic, impervious, silty clay, mottled with gray, white, limonite-yellow or ocherous-yellow and black oxide of iron material and containing black and yellow iron concretions. In places, as in the flat area just southwest of Ethel, on the road to Bells Store, about 50 per cent of this lower subsoil consists of black oxide of iron material and concretions. Very often, also, this section of the soil is mottled with yellowish red and bright red, such material apparently consisting principally of iron oxide.

The surface of this type is characteristically flat and on account of poor surface drainage and underdrainage, water stands on it in wet seasons. Some of the lowest situations near streams, as in the areas along West Fork, near the parish boundary, along Redwood Creek north of Ethel, and that skirting the Vicksburg silt loam of the lower Comite River bottoms, are subject to overflow, or partial overflow in times of exceptionally high water. Even here there are very slight elevations or hummocks of a brownish silt loam approaching the characteristics of the Lintonia silt loam. Most of the typical Calhoun silt loam, however, is above overflow and is characterized by a flat surface, in places having a barely perceptible slope from the Memphis silt loam or Lintonia silt loam toward the drainage ways. The typical Calhoun silt loam is locally called "white-oak slash," "white-oak flats," and "white crawfish land."

A considerable proportion of the type, perhaps 40 per cent, carries so many iron concretions on the surface and throughout the soil section that it is called "gravelly land" and "gravelly crawfish land." This probably should be considered a gravelly phase of the type. In physical characteristics this phase is quite like the typical soil, except in the greater abundance of black and yellow soft iron concretions and the more frequent red mottling of the subsoil. The phase occurs both as flat areas and as sloping areas about the heads and along the slopes of drainage ways. The underdrainage is always poor, even in the sloping situations, and, of course, surface drainage is very poor over the flat bodies.

Throughout the Calhoun silt loam there are numerous places where the surface soil to varying depths is brown, like that of the associated Lintonia silt loam. Where the brown material was more than 12 inches deep the soil was mapped as Lintonia. Owing to this gradation from the one to the other, the boundaries between these two soils could be drawn with only approximate accuracy. The heavy lower subsoil is one of the important features of the type. It is developed beneath all phases, and its imperviousness to water is largely the cause of the poor drainage obtaining everywhere over the type, and indirectly the cause of the gray color and abundance of iron oxide concretions and segregated iron material—normal oxidation—which in this region gives a uniform brown color to a silty soil material, having been inhibited by the very poor aeration. The surface soil is lighter colored—white when dry—in those places where the subsoil is heaviest and most intractable.

The Calhoun silt loam is extensively developed in close association with the Lintonia silt loam, in the southwestern section of the parish along and between Redwood and Black Creeks, West Fork and Sandy Bayou and their tributaries. There is a large body east of Slaughter, which extends along the southern boundary of the parish across to Comite River and up that stream through Olive Branch to the junction of Knighting Branch. There are also important areas in the northeastern corner of the county near Amite River, and patches along Sandy and Bluff Creeks. Many areas too small to map were included with the Lintonia silt loam and the Memphis silt loam, drainage less well established.

Like the Lintonia silt loam, this type is believed to be a stream terrace soil. Many areas along the larger streams stand out conspicuously as definite terraces, but some of the broader, higher lying interstream areas, if they are terraces, were influenced by water under conditions that do not seem easy to explain except on the basis of a wider scope of activity on the part of the creeks traversing the type. Possibly the flat surface was brought about at a time when the country was standing at a lower level. At any rate the main portion of the

type is considered a terrace soil which was formed in identically the same way as the Lintonia silt loam. Much of the type is believed to represent a terrace of the Mississippi River. Some of the sloping areas probably represent Memphis silt loam or the material which gave rise to this soil, the gray color of which has been effected by the poor drainage resulting from the impervious clay subsoil. There are some very small patches of soil like the Calhoun silt loam on the highest portions of the Memphis silt loam which certainly owe their conspicuously gray or white color to poor drainage occasioned by a heavy, impervious subsoil, the material being the same as that giving the Memphis silt loam, except in the higher clay content of the subsoil or substratum. This upland gray soil would have been mapped as Lufkin silt loam if the areas had been of sufficient size.

The Calhoun silt loam then appears to be of the same origin as the Lintonia silt loam, the difference between the two representing the effects of poorer drainage obtaining in the former, which must be ascribed to the heavy lower subsoil. The Calhoun typically lies a little lower than the Lintonia. In addition to very poor surface drainage and underdrainage, the Calhoun silt loam possesses another unfavorable feature in the extremely acid condition of both soil and subsoil. When the material is saturated blue litmus turns red immediately on coming in contact with the soil, showing an unusual acid condition. Therefore, the improvement of the condition of this soil, of natural low productiveness as regards the ordinary cultivated crops, presents two important problems to the agriculturist: (1) the improvement of the drainage, and (2) the correction of acidity.

To improve the drainage the most practical method seems to be the digging of ditches at frequent intervals. Owing to the flat surface and low position of the soil with respect to many of the shallow-channeled streams, ditching would not afford the same beneficial results that would be received on a soil of stronger slope, but it unquestionably would help greatly. The main drainage channel would have to be deepened in many instances in order to provide sufficient fall in the ditches to effect any considerable service. Tiling would help in some places, but the nearness of the impervious clay to the surface probably would limit the profitableness of tile drains to the more sloping areas.

The correction of the unfavorable acid condition can be accomplished by the addition of liberal quantities of burnt lime or ground limestone. Probably ground limestone would be the cheaper and better form in which to apply lime. A lime requirement determination of a representative sample of this soil shows that 6,300 pounds of burnt lime or twice that quantity per acre of ground limestone would be required to neutralize the acid condition of the soil.

In its present poorly drained condition lespedeza, white clover, carpet grass, and Bermuda grass do well on this soil, affording good pasturage, and, in the case of lespedeza, good yields of hay and seed. Without much additional preparation a fairly large proportion of the type could be profitably utilized for the two last-mentioned crops and practically all of it for grazing. Bermuda would do better were drainage conditions improved, as they could be readily by ditching.

In dry years fair to good returns are obtained from corn and oats, but damage occasioned by wet seasons lowers the average yield considerably. Profitable average yields of the cultivated crops can not be counted upon on much of this soil until better drainage is provided and additions of lime made. Corn turns yellow and oats red in wet seasons, getting such a setback that during subsequent fair weather they fail to recover the lost ground. With better drainage Irish potatoes, cabbage, sugar cane, onions, beans, and probably other crops could be successfully grown. The use of "floats" as a carrier of phosphoric acid would increase the yields, and it is possible that kainit or other potash salts would be beneficial. Patches of rice are successfully grown without irrigation.

Probably 50 per cent of the type is in forest. White oak, overcup oak, water oak, pin oak, beech, sweet gum, magnolia, and ironwood are the principal trees. Some ash, black gum, and holly are seen in places.

The following table shows the results of mechanical analyses of samples of the soil, subsoil, and lower subsoil of the Calhoun silt loam:

*Mechanical analyses of Calhoun silt loam.*

| Number. | Description. | Fine gravel. | Coarse sand. | Medium sand. | Fine sand. | Very fine sand. | Silt. | Clay. |
|---|---|---|---|---|---|---|---|---|
| | | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* |
| 431514 | Soil | 0.0 | 0.5 | 1.4 | 3.1 | 3.0 | 77.9 | 14.1 |
| 431515 | Subsoil | .2 | .7 | 1.3 | 3.5 | 6.8 | 70.2 | 17.2 |
| 431516 | Lower subsoil | .0 | .2 | .7 | 2.1 | 2.1 | 65.4 | 29.5 |

## VICKSBURG SILT LOAM.

The Vicksburg silt loam is a rather uniform soil. It is typically a brown silt loam to a depth of at least 24 inches, though the surface few inches may be slightly darker in color than the subsurface. Below this depth the color is generally lighter, with frequent faint gray mottling, but there is little or no change in texture. Along some of the smaller streams lenses or thin strata of sandy material are frequently encountered in the subsoil.

This is a first-bottom soil. It occurs along practically all the streams in the parish. Despite the fact that its general level is about the same, there is considerable relief within the type, owing to swales

which have been eroded during overflow periods and to the presence of abandoned stream channels. Along the larger streams much of the type is practically useless for cultivated crops, on account of the presence of bayous and freshly cut channels. The type is all subject to inundation at times of high water. The material consists very largely of wash from the upland loessial soils. Some Coastal Plain material enters into the composition of the type in this area, such material having been washed from the exposures of the underlying Coastal Plain deposits.

Although but little of this type is under cultivation, it is a very productive soil. If not injured by overflow water, good crops of corn, potatoes, and hay are obtained. Small patches of rice are also grown in the low, wet places. It is claimed that there are small areas within this type which are for some reason unproductive. Crops on these were not sufficiently advanced to locate them during the progress of the survey, so that nothing definite could be learned regarding the cause of this reputed unproductiveness.

This land is naturally adapted to grass. Good grazing and heavy cuttings of hay can be secured from lespedeza and from Bermuda, Johnson, and carpet grass.

Like the other silt loam types of the parish, this soil is acid, and applications of 2 or 3 tons of limestone would be found beneficial. Organic matter and commercial fertilizers will be required to bring this soil to full productiveness. It could be made a very valuable soil by clearing out, deepening, and straightening the stream channels. Dikes, also, could be used to protect the land from overflow.

*Vicksburg silt loam, mixed phase.*—The bottoms of Thompson Creek, south of Jackson, to the bottom land at Port Hudson, comprising 3.7 square miles, were mapped as a mixed phase of the Vicksburg silt loam. The dominant soil here is a light-brown silt loam, which continues to a depth of 3 feet or more without any important change in texture or color. The subsoil is usually somewhat lighter in color and often includes thin layers or pockets of sandy material. Throughout these bottoms there are numerous patches and strips of grayish fine sandy loam. There are long, irregular strips of sandy soil near the creek bank and along the outer margin of the bottoms next to the foot of the uplands. There are also patches and strips of sandy soil distributed through the main bodies of the phase which generally occupy slightly higher positions than the dominant silt loam, which has a flat surface. These sandy-loam areas are so irregularly mixed with the silt loam that it was not practical to separate them.

There are a number of streams crossing this land and abandoned stream channels and bayous are common. About the mouths of the larger streams the soil is usually sandy, particularly in case of those crossing the northern part of the parish. Most of the soil is subject to

overflow, but there are high places that are no longer inundated, holding essentially the position of second bottoms. Much of this land is used for pasture. Corn does very well, especially on the silt loam areas. The sandy areas are well suited to vegetables.

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

*Mechanical analyses of Vicksburg silt loam.*

| Number. | Description. | Fine gravel. | Coarse sand. | Medium sand. | Fine sand. | Very fine sand. | Silt. | Clay. |
|---|---|---|---|---|---|---|---|---|
| | | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* |
| 431508 | Soil | 0.0 | 0.0 | 0.3 | 1.3 | 5.9 | 78.1 | 14.3 |
| 431509 | Subsoil | .0 | .0 | .1 | 1.1 | 5.7 | 79.1 | 14.0 |

MEADOW.

Meadow includes overflowed stream bottom land in which the soil material is so variable that it was impossible to make any satisfactory separation into definite soil types.

The most important area is the strip extending from the foot of the bluff at Old Port Hudson to the Mississippi River. This is subject to deep inundation during high-water stages of the Mississippi. The soil material is quite variable, ranging from sandy loam to silt loam, comprising deposits from the Mississippi River and Thompson Creek and colluvial wash from the adjacent bluffs. Along the outer margin of the area there is a gentle slope comprising a strip perhaps 200 feet wide along the foot of the bluffs. Over this the soil is largely light-colored colluvial material from the exposed section of brownish loess and underlying gray, drab, and yellowish stratum of Coastal Plain material.[1]

The Mississippi formerly flowed along the foot of the bluff near the old town of Port Hudson. The bottom or batture land now occupying the former position of the Mississippi River is covered with willow, cottonwood, and sycamore, and used only for pasture.

Along some of the smaller streams about Jackson and to the north and in a few places in the Thompson Creek bottoms inextensive strips and patches of Meadow were mapped. Here the soil is dominantly sandy, but there are present a sufficient number of silty patches to preclude type separation. The sand comes from the Coastal Plain material which has been exposed by the deep cutting of the streams. Portions of these strips might be used for early vegetables, but the total area of this phase of Meadow is too small to be of much importance.

[1] Probably this substratum of Coastal Plain material belongs to the Port Hudson formation. See Louisiana Geological Survey reports.

SUMMARY.

East Feliciana Parish is the second in the upper tier of parishes east of the Mississippi River. Its area is 452 square miles, or 289,280 acres.

The parish contains three physiographic divisions—highlands, terrace, and flood plains. The elevation ranges from 20 feet to 321 feet above sea level.

The Mississippi River touches the parish, but receives the drainage water of but a small section of the western part through Thompson Creek. The Amite, with its tributaries, Sandy Creek, Comite River, and Redwood Creek, drains most of the section into Lake Maurepas and Lake Pontchartrain.

Settlement began in 1796. Most of the earlier settlers came from the Carolinas, Georgia, and Virginia.

The population at the last census was 20,055.

The main line of the Yazoo & Mississippi Valley Railroad runs north and south through the western quarter of the parish. Slaughter, Ethel, McManus, Gurley, Wilson, and Norwood are towns and shipping points on this road. A branch of this line connects Ethel and Clinton and the Woodville Branch runs west from Slaughter. Clinton, in the center of the parish, is the parish seat, and Jackson, in the western part, is the largest town.

The climate is strictly south temperate. Short, mild winters and long but not excessively hot summers prevail. There is a period of 240 days between the killing frosts of spring and fall. The mean annual rainfall is 54.6 inches, which is well distributed throughout the year.

The mild climate permits a highly diversified cropping system. Before the advent of the boll weevil in 1908 cotton was the main crop. At present cotton holds secondary place. Corn occupies the largest acreage. Aside from lumber the main sources of revenues are lespedeza hay, lespedeza seed, cattle, hogs, poultry, eggs, milk, and truck. Soy beans, velvet beans, peanuts, and cowpeas are extensively grown. The natural pastures of lespedeza, Bermuda grass, carpet grass, white clover, and crab grass are the greatest natural assets of the parish, and if supplemented with oats, bur clover, or vetch, green pastures can be had the entire year. So far as natural conditions are concerned, dairying is the most promising industry for this parish.

Land brings from $5 to $20 an acre, with an average price of about $10.

A rotation of corn, oats, and lespedeza with catch crops of cowpeas, vetch, bur and crimson clover is recommended. With this 3-year rotation 8 crops, besides winter pasture, can be obtained. The rotation may be modified to include potatoes and cotton.

For the improvement of soils and crops applications of burnt lime or ground limestone and rock phosphate and the plowing under of legumes deeply in the fall and of catch crops in the spring are recommended. The soils are in a remarkably acid condition.

The soils of the parish are derived mainly from loess, a layer varying in depth from 1 foot to 10 feet covers most of its area. On the highlands where it is over 3 feet deep the soil has been mapped as Memphis silt loam and where less than 3 feet as Lexington silt loam. When there is no loess the sandy clay Coastal Plain material forms the soil and gives rise to the Ruston fine sandy loam, Ruston gravelly loam, and Orangeburg sandy loam. On terraces the loess forms the Lintonia silt loam when fairly well drained and Calhoun silt loam when poorly drained. The Vicksburg silt loam occupies the flood plains of the smaller streams, while the Mississippi bottoms are classed as Meadow.

The Memphis silt loam is the dominant soil type of the parish. It has a brownish-gray, loose-structured, easily worked silt loam surface soil about 10 inches deep, a buff-colored silty clay loam subsurface soil extending to a depth of 24 inches, and a grayish-yellow silt loam subsoil frequently mottled with yellow and gray. This soil is naturally a grass-growing soil, but under proper management will produce good yields of cotton and corn.

The Lexington silt loam is better adapted to truck than the Memphis silt loam and produces grass abundantly. With fertilization it can be used profitably in the production of corn.

The Ruston fine sandy loam is of small extent. It is well adapted to truck, but most of it is too far from market to be used for this purpose. It is usually heavily fertilized for cotton or corn.

The Orangeburg sandy loam consists of gray sandy loam, is very limited in extent, but well adapted to truck crops and peanuts.

The Lintonia silt loam is an important type. It is less acid than the other silt loam types and is well adapted to all crops of the parish. It has a flat surface and requires drainage.

The Calhoun silt loam is a low-lying, poorly drained soil. Little of it is under cultivation. It produces good growths of white clover, lespedeza, and Bermuda and Johnson grasses. It can be used extensively for pasture. In dry seasons corn will give fair crops. The soil is extremely acid, requiring over 3 tons of burnt lime to effect neutralization.

The Vicksburg silt loam is also a poorly drained type. Not much of it is in cultivation, but the better areas produce good crops. It is subject to frequent overflows.

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[PUBLIC RESOLUTION—No. 9.]

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

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided,* That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

**[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]**

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