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SOIL SURVEY
OF
RANKIN COUNTY, MISSISSIPPI

BY

ROBERT WILDERMUTH, in Charge
E. W. KNOBEL, A. L. GRAY
and GROVE B. JONES

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COUNTY SURVEYED

Rankin County is in the south-central part of Mississippi. Pearl River forms the western boundary of the county, which is roughly triangular in shape. The maximum dimension east and west is about 30 miles and north and south about 37 miles. The land area of the county is 801 square miles, or 512,640 acres.

FIGURE 1.—Sketch map showing location of Rankin County, Miss.

Rankin County lies within the coastal plain. This is a low plain dissected by shallow valleys. Variations of relief are dependent entirely on the varying thoroughness and depth of dissection. The greater part of the county is smooth or undulating, but large sections are gently and moderately rolling, and a number of belts are hilly. The roughest areas are mainly in the southern and western parts of the county in small separate belts along the upper parts of the minor streams. In such areas the heads of the drainage ways start close together, forming narrow winding ridges with steep slopes. Characteristic relief of this kind is found in the vicinity of Shiloh Church, Johns, Zion Hill Cemetery, Rock Hill, Comeby, and Star. That part of the county north of Pelahatchee Creek is largely level or undulating. The main interstream divides are comparatively broad and embrace undulating or moderately rolling uplands. In the southern and western parts of the county gently rolling or undulating relief prevails, and only a small proportion of the land is unfit for farming. Terracing is necessary to prevent washing and erosion on the slopes.

The first bottoms and second bottoms or terraces along the streams are mainly level. At the heads of their courses many of the stream channels are not clearly defined. Bottoms of many streams, such as Richland, Steen, Dobbs, Campbells, Purvis, and Pelahatchee Creeks, with some of their tributaries, are either too poorly drained in many places or are subject to overflow at too frequent intervals during the growing season to be suitable for agriculture. Along Pearl River there are well-drained, high, wide benches or stream terraces.

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Some of the elevations above sea level in the county, according to determinations made by the United States Geological Survey, are 260 feet at Johnson Ferry, 280 feet at Drake Church, 327 feet at Rice switch, 486 feet at Brandon, 439 feet at Rankin, 359 feet at Pelahatchee, 501 feet on Ware Hill, 470 feet at Goshen Springs, 365 feet at Redoak School, and 368 feet at Pisgah.

Rankin County was established February 4, 1828, from part of Hinds County. Its population, as reported by the 1920 census, was 20,272, all classed as rural. Brandon, the county seat, is about 12 miles from Jackson, the capital of the State. Settlements are well distributed throughout the county, but outside of these settlements and the larger towns the county is thinly settled. The average population to the square mile in 1920 was 25.6.

Fair railroad facilities are furnished by the Yazoo & Mississippi Valley Railroad and the Gulf & Ship Island Railroad, both belonging to the Illinois Central system, and the Gulf, Mobile & Northern Railroad. The two improved main highways in the county follow these railroads. The main roads are graded and are good during the drier months of the year. In the winter and spring they become very poor and in places nearly impassable. Improvements are being made, as the people are behind movements to build better roads.

CLIMATE

Rankin County has a mild, healthful climate, with a frost-free season averaging about 230 days. This favors the production of a large variety of crops. The winters are short, and, though freezing temperatures occur, periods of very cold weather are exceptional and of only short duration. Snowfall is very light. During winter, rain sometimes continues for a week or more. The ground remains saturated for a long time after a rain, owing to the slow movement of moisture caused by the impervious or retentive nature of many soil types. Consequently early preparation of land for crops is hindered.

The summers are long and average temperatures are not unusually high, though the heat is oppressive at times because of the high relative humidity. The nights are generally cool.

Much of the work in the field can be commenced in February, and usually after the middle of March the danger of heavy frosts has passed. Corn is planted the latter part of March or later and cotton early in April, as a rule. The average date of the last killing frost is March 18 at Jackson and March 21 at Canton, and that of the first is November 6 and November 4, respectively. The latest recorded killing frost at Jackson was on April 25 and at Canton on April 26, and the earliest at the two stations were on October 20 and October 13, respectively.

No Weather Bureau station is in Rankin County, but the climatic records compiled at Jackson and Canton, close to the western boundary of the county, are representative of climatic conditions. Tables 1 and 2 give the more important climatic data.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Jackson, Hinds County*

[Elevation, 288 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1917)	Total amount for the wettest year (1875)	Snow, average depth
	°F.	°F.	°F.	Inches	Inches	Inches	Inches
December	48.2	82	9	4.88	2.41	6.06	0.2
January	48.4	83	3	4.78	4.38	5.64	1.0
February	49.6	89	6	5.28	7.34	6.88	.3
Winter	48.7	89	3	14.94	14.13	18.58	1.5
March	58.9	93	21	5.77	4.76	10.16	(1)
April	65.2	94	31	5.70	5.12	4.10	.0
May	72.6	100	39	4.01	2.22	1.02	.0
Spring	65.6	100	21	15.48	12.10	15.28	(1)
June	79 6	104	51	4 25	2.74	5.72	.0
July	81.6	105	58	4.37	2.98	2.14	.0
August	81.2	105	58	4.21	4.17	7.00	.0
Summer	80.8	105	51	12.83	9.89	14.86	.0
September	76.6	102	40	2.96	.44	8.54	.0
October	65.4	98	26	2.14	1.16	1.74	.0
November	55.7	88	15	3.42	1.76	6.60	(1)
Fall	65.9	102	15	8.52	3.36	16.88	(1)
Year	65.2	105	3	51.77	39.48	65.60	1.5

[1] Trace.

TABLE 2.—*Normal monthly, seasonal, and annual temperature and precipitation at Canton, Madison County*

[Elevation, 228 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1889)	Total amount for the wettest year (1886)	Snow, average depth
	°F.	°F.	°F.	Inches	Inches	Inches	Inches
December	48.2	82	10	5.00	1.10	2.75	(1)
January	47.5	81	2	5.21	4.21	5.81	1.1
February	49.2	86	−3	4.95	.69	5.94	.5
Winter	48.3	86	−3	15.16	6.00	14.50	1.6
March	58.3	89	21	5.59	4.96	6.18	(1)
April	64.6	92	31	4.86	5.11	6.04	(1)
May	71.8	99	39	3.93	.70	4.35	.0
Spring	64.9	99	21	14.38	10.77	16.57	(1)
June	78.8	103	49	3.83	7.04	12.47	.0
July	80.9	103	58	4.14	3.03	6.05	.0
August	80.7	106	53	3.70	3.12	4.28	.0
Summer	80.1	106	49	11.67	13.19	22.80	.0
September	76.3	101	38	2.77	.81	7.21	.0
October	65.3	98	23	2.34	.28	.08	.0
November	55.7	88	15	2.95	3.03	3.52	(1)
Fall	65.8	101	15	8.06	4.12	10.81	(1)
Year	64.8	106	−3	49.27	34.08	64.68	1.6

[1] Trace.

AGRICULTURE

Originally the greater part of the rolling uplands of Rankin County supported an open forest of longleaf pine. The bottom lands were forested with gum, oak, beech, magnolia, and hardwoods, with an undergrowth of vines and cane. Small scattered areas of prairie land were covered with a growth of native grasses, which afforded good grazing. A part of the county is still covered with virgin timber, but this is being cut rapidly.

The trend of agriculture in Rankin County since 1880 is indicated by the data given in Table 3.

TABLE 3.—*Trend of agriculture in Rankin County since 1880*

Year	Population	Farms	Land in farms		Improved land in farms		Farms operated by tenants
		Number	*Per cent*	*Acres*	*Per cent*	*Acres per farm*	*Per cent*
1880	16,752	1,727	61.0	308,660	30.1	54.1	40.4
1890	17,922	2,241	66.2	334,997	33.8	50.5	40.5
1900	20,955	3,398	65.2	330,501	39.4	38.4	51.0
1910	23,944	4,151	70.1	354,858	47.0	40.2	52.4
1920	20,272	3,231	58.6	296,455	45.3	41.5	48.7
1925	----------	2,207	37.1	187,724	----------	----------	48.3

Since 1910 there has been a marked decline in farming operations. The production of cotton has been the principal farming industry since the days of earliest settlement, but the advent of the boll weevil made this business precarious and was largely responsible for the changes in the agriculture of the county. Corn also is an important field crop. Minor crops are sweetpotatoes, sugarcane for sirup, garden vegetables, oats, and hay.

Table 4 shows the comparative importance of the various crops, according to census reports.

TABLE 4.—*Acreage and production of leading crops in Rankin County in stated years*

Crop	1879		1889		1899		1909		1919		1924	
	Acres	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*
Corn	23,450	271,996	24,758	355,824	34,380	520,570	30,851	337,100	37,475	504,167	19,935	145,503
Oats	5,781	59,450	2,763	32,659	1,083	11,400	2,043	26,446	910	13,779	370	3,775
Dry peas	------	2,467	------	2,166	538	4,943	181	933	674	3,089	------	---------
Peanuts	------	---------	68	1,398	81	1,602	105	2,821	523	6,859	29	544
Potatoes	------	2,052	86	6,851	66	4,340	78	6,669	175	13,255	47	1,830
Sweetpotatoes	1,009	96,462	921	66,435	607	48,268	804	80,413	1,494	163,496	365	14,802
		Bales		*Bales*		*Bales*		*Bales*		*Bales*		*Bales*
Cotton	30,151	11,775	35,730	13,109	36,247	14,981	42,649	14,003	23,264	6,064	15,443	4,547
		Tons		*Tons*		*Tons*		*Tons*		*Tons*		*Tons*
Tame or cultivated grasses	------	---------	2,221	3,093	785	1,009	2,035	2,312	4,264	5,371	1,291	---------
		Gallons		*Gallons*		*Gallons*		*Gallons*		*Gallons*		*Gallons*
Sugarcane	185	18,402	468	63,723	337	46,048	564	80,787	862	94,521	127	---------
Sorghum	------	21,592	402	19,935	91	7,083	39	1,739	867	40,895	16	---------
	Trees	*Bushels*	*Trees*	*Bushels*	*Trees*	*Bushels*	*Trees*	*Bushels*	*Trees*	*Bushels*	*Trees*	*Bushels*
Apples [1]	------	---------	7,667	14,783	8,477	3,025	3,817	3,255	3,053	4,658	623	679
Peaches [1]	------	---------	22,886	46,240	24,334	8,620	19,769	20,943	12,587	16,471	5,019	2,141
								Pounds		*Pounds*		
Nuts	------	---------	------	---------	------	---------	728	4,632	1,286	17,379	519	---------

[1] Trees of bearing age only.

Most of the corn produced is used on the farms, and many farmers buy some corn and hay. The corn is fed to hogs and cattle and is used for making meal and grits. The crop is planted on the upland and bottom lands and to some extent on transitional soil areas between the uplands and bottoms where sediment has been deposited. The average yield in the county ranges from 10 to 16 bushels to the acre. The low yield results partly from growing corn and cotton continuously without cover crops or rotation with clover and grasses. The better farming methods result in yields of 40 or 50 bushels to the acre on the bottoms and from 20 to 40 bushels on the uplands.

Since the advent of the boll weevil the cotton acreage has dropped 40 or 45 per cent. In some years, as in 1925, for example, when conditions were unfavorable for the boll weevil, cotton yields were high and many farmers obtained from three-fourths to 1 bale to the acre on all the better soils. Generally, however, yields are low. The low yields have caused many farms to be abandoned, and much land formerly used for cotton production has been allowed to grow up to field pines or to revert to permanent pasture. Cotton is purely a cash crop. Where early maturing varieties are grown and good methods of cultivation practiced, fair yields can be produced even under boll-weevil conditions.

Oats are grown to some extent as a winter cover crop and for winter and early spring grazing. The crop is used exclusively for feeding livestock. It yields well on the upland soils and on the high bottoms. Some oats are cut when in the milk stage and used for hay. Yields range from 10 to 15 bushels to the acre, but under favorable conditions run much higher.

Potatoes are grown on a small acreage, mainly for local use. Sweetpotatoes also are grown on nearly every farm for home consumption and for local markets. Sweetpotatoes may follow a crop of early potatoes. The average yield of about 109 bushels of sweetpotatoes to the acre is often exceeded, and yields of 150 or more bushels are obtained on many farms. Part of the crop is sometimes used for hog feed.

Peanuts are sometimes used for hay, but chiefly for forage for hogs. This crop is well suited to the sandy loam soils of the county. It tends to enrich the land for corn or cotton. Hogs fattened on peanuts should be hardened on corn.

The hay produced in the county is inadequate to carry livestock through the winter properly. Various kinds of grasses are used for hay. The natural pasture growth of the uplands includes broom sedge, carpet grass, Lespedeza, and other native grasses. In recent years Lespedeza has been grown more extensively and promises to become one of the leading hay crops. It produces from 1 to 2 tons of hay to the acre. Soybeans, rye, and cowpeas are grown on small acreages for forage and for grazing hogs.

Sugarcane occupies a small acreage on most farms. The lighter soils and those with friable subsoils produce a good quality of sirup. The "blue" sugarcane is most commonly planted. Sorgo (sweet sorghum) is grown on an acreage about equal to that devoted to sugarcane.

Tomatoes and cabbage are raised commercially by a number of farmers. For these crops high-grade fertilizers are used in amounts

ranging from 1,500 to 2,000 pounds to the acre. Efforts are made to produce an early crop for northern markets.

Apples and peaches are the most common of the tree fruits. They produce moderately well, though they receive little attention as to spraying and pruning. No commercial orchards are in the county. Pears, plums, cherries, grapes, figs, and strawberries are also grown, but there is little surplus for marketing. Blackberries grow wild in all parts of the county. A few improved pecan groves are maintained in different sections of the county, but the greater part of the nut harvest is from native trees.

Some cattle are raised in all parts of the county. The large tracts of open timberland afford range the greater part of the year. Little attention is given to feeding or improving the herds. In 1926 a stock law was passed requiring that cattle be fenced in. This may prove an incentive to improve the average quality of the stock. Cattle at present are a mixture of dairy and beef types. The income from cattle is comparatively low except for the larger landowners and a few men who make a practice of buying and feeding cattle for a short time. Dairying has been developed to only a slight extent. Some milk and butter is sold in the small towns or traded for other commodities at local stores.

A large number of hogs, which are allowed to run on the range, are raised in the county. The old razorback type has almost disappeared, and at the present the swine are largely crosses between the native stock and Duroc-Jersey, Poland China, and other introduced breeds. The use of purebred boars is helping to improve the quality of the herds.

A few flocks of sheep are kept for the wool and for sale. Sheep raising has been intermittently profitable. There are more goats than sheep in the county at present. Goats are allowed to forage at will.

Poultry is a source of revenue on nearly every farm. The region appears to be well suited to poultry raising.

Table 5 gives the value of farm products by classes, as reported by the 1920 census.

TABLE 5.—*Value of agricultural products by classes, 1919*

Crops	Value	Livestock and livestock products	Value
Cereals	$954,298	Animals sold and slaughtered [1]	$293,218
Other grains and seed	30,600	Dairy products, excluding home use	122,239
Hay and forage	291,023	Poultry and eggs	159,186
Vegetables	524,935	Wool	1,003
Fruits and nuts	47,968		
All other crops	1,513,898	Total	575,646
Total	3,362,722	Total agricultural products	3,938,368

[1] Estimated.

Though the same crops are grown generally in all parts of the county and on different kinds of soils, it is recognized by many farmers that some soils are better suited to certain crops than to others. Only general attention is given to the selection of the soils cultivated to particular crops. In the hope of escaping boll-weevil damage, cotton is grown on well-drained light-textured soils where maturity is quick. Some farmers, however, plant it also in the wet

bottoms, on heavy clay, or on poorly drained uplands. The silty prairie soils are excellent corn and general-purpose farming lands, but corn is grown on all kinds of soil. The Grenada, Lexington, and Olivier soils and the darker-colored alluvial soils or the outer edges of the bottoms generally are used for this crop. Sugarcane and sorgo are grown on such soils as the Pheba, Kalmia, and Waverly. The more sandy soils are favored for peanuts and watermelons, and the heavy prairie soils make excellent pastures and grasslands. A larger proportion of livestock, chiefly beef cattle and hogs, is raised in grazing areas of this kind and where good pastures of Lespedeza and various nutritious native grasses are available than elsewhere. Heavy clay lands of the Montrose and Susquehanna series have been left in timber on farms where more friable and more easily worked soils are available.

Systematic rotation of crops is not practiced by most farmers in the county. Many recognize the benefits to be derived from plowing under soybeams or other legumes, but it is only the more progressive who practice green manuring. The practice is to alternate corn and cotton, for most farmers prefer not to plant one crop on the same land two years in succession. Under boll-weevil conditions a number of farmers are growing peas, velvetbeans, and Lespedeza for hay and for improving the soil.

Commercial fertilizers are used throughout the county. They are necessary, apparently, for good crop production on nearly all soils. The census of 1920 reports $110,157 expended for fertilizer in 1919, or $46.21 for each farm reporting. The fertilizer used consists largely of superphosphate (acid phosphate), cottonseed meal, and mixed fertilizers. The use of superphosphate and nitrate of soda is increasing on many crops. Applications for cotton and corn range from 100 to 300 pounds to the acre and for vegetables, such as cabbage and tomatoes, from 1,500 to 2,000 pounds.

The average size of the farms in the county, as reported by the 1920 census, was 91.8 acres, of which 41.5 acres are classed as improved land. However, a number of farms which are divided into tenancies comprise from 500 to 2,000 acres. The total land in farms in 1920 was 58.6 per cent of the area of the county. Lumber companies own large tracts of timbered land, which will soon be cut over at the present rate of cutting. Practically half the farms are operated by tenants or managers. Under existing systems of rental the tenant supplies the implements and livestock and gives the owner one-fourth of the crop, or the owner furnishes everything and receives half the crop.

The price of agricultural land in the county ranges considerably, but for the most part is between $10 and $20 an acre. Well-improved farms near the towns command from $20 to $50 an acre and prairie land from $50 to $75 or more. Hilly, remote land can be had for very low prices; the value of timbered areas depends on the stand.

Large areas of land in Rankin County obviously can better be used for timber production or for forestry and grazing than for cultivation. Such areas include the rough, hilly, sandy land scattered in the southern part of the county and the heavy clay land in the northern part. Some of the soils are of low agricultural

value, because of their steepness of slope, tendency to erode, or low productivity. Border swamp land and wet lands are reclaimable for agriculture, but under present economic conditions may be better utilized for forestry and grazing. These soils are very well suited to pine, which grows rapidly. Other trees also thrive. By keeping out fires valuable second growths of pine may be obtained and grazing improved. Longleaf pine should be regarded as a valuable timber crop. Reforestation as an economic problem of importance in the agriculture of the county should receive more serious consideration than it has in the past.

SOILS

The soils of Rankin County have developed in a part of the warm-temperate zone. Long warm summers, short moderate winters with very little freezing weather, and comparatively high rainfall are important factors favoring the rapid and decisive weathering of soil materials. All the upland soils, except the scattered prairies, were developed under an open forest cover. Where the soil weathered under grass cover there has been a characteristic darkening of the surface layers by decaying organic matter. The heavy timber growth, however, which occupied this region for a long time has contributed little humus to the soil. The factors influencing soil development also quicken the rate at which organic matter is lost and cause the leaching out by drainage waters of soluble constituents liberated.

In the upland soils there is a close textural relation to the parent material. Differences in some of the soils derived from similar material result from differences in the stage of weathering that has been reached. The materials being weathered are silts, clays, and sands, the sands being mainly fine grained. The principal soil-forming material is silty material, spread out as a thin mantle over the greater part of the county. This formation has the characteristics of the material known geologically as loess. Its thickness ranges from 4 or 5 feet in the western part of the county to 1 or 2 feet in the eastern part. Underneath this mantle are unconsolidated sands, silts, and clays derived from the sedimentary material occurring in coastal-plain regions. Reddish sands, variously weathered, form the chief material underlying the loess on the more elevated ridges and rough areas. On smoother areas the sands give way to heavy clays, altered but little by weathering agencies.

In the northern part of the county are large areas of sediments, derived chiefly from stiff argillaceous material. Lime carbonate has been leached to the lower horizons, exposure showing lime nodules occurring at a depth ranging from 4 to 15 or more feet. Stratified, unconsolidated sandy deposits low in lime and highly quartzose are exposed in the southeastern part of the county. Locally they include indurated or consolidated materials, such as reddish or yellowish cemented sandstone.

In the better-drained areas in this county weathering tends to produce a normally developed soil consisting of a comparatively light-textured surface layer, grading into a heavier-textured layer where there is a maximum concentration of soil particles, and this into a third layer consisting of slightly weathered or unchanged parent

material. This layer may or may not be heavier than the upper horizons. Profile development proceeds very slowly in poorly drained situations.

In soil surveys, soils of similar origin, color, structural characteristics, surface features, and drainage are grouped in soil series. The series are subdivided into soil types on the basis of the texture of the surface soil; that is, the proportion of the various-sized texture particles present.

The predominant upland soils are members of the Grenada series. These are silty soils having a brownish or brownish-gray surface soil, underlain by a reddish-brown or buff-colored layer heavier than the surface soil, beneath which is a compact yellowish layer with gray, yellow, and brownish mottled material strikingly characteristic of the Grenada soils. The Grenada soils do not favor a rapid run-off of water, and part of the iron compounds are dissolved and carried to lower levels and concentrated there.

The Lexington soils superficially resemble the Grenada, but include those areas in which the profile has but a slight development. The surface soil and the underlying reddish or buff-colored layer are very similar to the corresponding layers in the Grenada soils. The Lexington soils differ, however, in the lower horizon, which commonly contains a noticeable proportion of sandy particles. In some areas the basal layers are similar to corresponding horizons in the sandy Ruston and Orangeburg soils. Locally clay deposits occur beneath the Lexington soils. In such places the average moisture condition and consequent degree of leaching, compaction, and oxidation are determined largely by topographic position.

The Pheba soils have silty or fine-grained sandy brownish-gray surface layers over light-yellow or yellowish-gray heavier horizons, which in turn are underlain by yellowish compact clayey subsoils mottled heavily with gray. The principal differences between these soils and the Grenada are the lighter color of the surface soil, the greater development of grayish material in the subsoil, and the higher average content of soil moisture in the Pheba soils.

The Montrose series includes heavy soils having gray or grayish-brown surface soils underlain at a slight depth by heavy plastic yellow clay containing gray and drab mottles. Lime nodules occur in many places at a depth ranging from 5 to 10 or more feet.

Plummer silt loam, the only Plummer soil mapped, consists of grayish silty material underlain by light-gray heavy plastic compact clay mottled with yellow.

Lauderdale stony clay has a grayish surface soil underlain by light-gray or bluish-gray tough heavy clay. It is distinguished by fragments of whitish rock distributed throughout.

The Susquehanna series includes sandy or silty soils having light-yellow or brownish-gray surface soils grading into plastic, heavy, stiff, refractory clay, characteristically mottled with reddish, yellowish, and gray colors. The deep substratum is basically gray mottled with yellow.

Houston clay has a very dark-brown or black heavy surface soil and a brownish-yellow heavy plastic clay subsoil with a high carbonate content.

Nevada silt loam is a medium-textured prairie soil. It has a dark-colored silty surface soil gradually becoming heavier with depth

and showing mottles of red and gray, resting on brownish-yellow heavy plastic calcareous clay mottled with gray.

The Oktibbeha series is represented in this county by the clay type, which has a light reddish-brown sticky plastic clay surface soil and a reddish clay subsoil grading below into yellowish calcareous clay. Limestone fragments are scattered abundantly over the soil.

The Ruston soils have grayish or yellowish-brown sandy surface soils underlain by friable reddish sandy clay. The substratum is more sandy and shows a range in texture.

Orangeburg fine sandy loam differs from the Ruston soils chiefly in the friable sandy clay layer, where weathering has produced a deeper color.

The Cuthbert soils consist of brownish-gray or light-brown sandy surface layers underlain by red very tight clay layers containing some very fine sand particles, beneath which is reddish-yellow friable sandy material. These soils differ from the Ruston in the tight, heavier-textured second horizon, which in the Ruston soils is friable and more sandy.

The Caddo soils have grayish or brownish-gray light-textured surface soils over pale-yellow moderately heavy layers which are underlain by mottled yellowish-gray imperfectly drained horizons that are more or less compact and impenetrable.

The Collins soils are derived from recently deposited alluvium washed from some of the upland soils. They have grayish-brown surface soils underlain by yellowish heavier-textured subsoils below which are mottled grayish heavy layers, in many places compact and containing dark-colored concretions. Drainage is poor. Near the streams there is less gray coloring, and in many places underdrainage and aeration are better. Such soils are mapped in the Vicksburg series. They have brown mellow surface layers passing into lighter-colored friable subsoils.

Soils which exist in a moist or saturated condition for long periods of time in overflow bottoms are grouped in the Waverly series and those on high bottoms or terraces in the Calhoun series. Soils of these series are similar in physical features. They have light-gray and mottled light-gray surface soils, respectively, and mottled light-gray or pale-yellow subsoils. Dark-colored concretions are abundant in places. The lower part of the subsoil is heavy, compact, and impervious.

The Lintonia soils occupy well-drained terrace positions and have brown surface soils underlain by reddish-brown heavy layers underneath which are yellowish friable horizons.

The Olivier soils are the terrace equivalents of the Collins soils.

The bottom soils derived mainly from coastal-plain material have been classified in the Bibb, Ochlockonee, Kalmia, and Myatt series. They differ from each other in drainage conditions and source of material from which they are derived. The Bibb series includes soils with light-gray surface soils and mottled gray subsoils. The terrace equivalent of the Bibb series is the Myatt. The Myatt soils have gray or mottled grayish surface soils and light-gray subsoils mottled with yellow. The Ochlockonee soils have brown surface soils, lighter-brown or yellow upper subsoil layers, and mottled yellow and gray lower subsoil layers. The Kalmia soils have brownish-gray or yellowish-gray surface soils overlying heavy yellow mottled subsoils.

In the following pages of this report the soils are described in full and their agricultural possibilities are discussed. The soil map accompanying the report shows the distribution of the soils, and Table 6 shows their acreage and proportionate extent.

TABLE 6.—*Acreage and proportionate extent of the soils mapped in Rankin County, Miss.*

Type o fsoi	Acres	Per cent	Type of soil	Acres	Per cent
Ruston fine sandy loam	11,008	7.1	Olivier silt loam	20,992	4.1
Rolling phase	25,472		Olivier very fine sandy loam	1,920	.4
Ruston very fine sandy loam	9,664	2.1	Lintonia silt loam	2,176	.4
Rolling phase	1,280		Calhoun very fine sandy loam	1,088	.2
Grenada silt loam	85,824	16.7	Calhoun silt loam	10,240	2.0
Grenada very fine sandy loam	10,944	2.1	Kalmia silt loam	1,152	.2
Lexington very fine sandy loam	37,056	13.1	Myatt very fine sandy loam	1,408	.3
Compact-subsoil phase	30,272		Myatt silt loam	2,368	.5
Pheba silt loam	54,912	10.7	Vicksburg fine sandy loam	2,112	.4
Montrose silt loam	35,264	6.9	Vicksburg very fine sandy loam	4,288	.8
Montrose clay	5,504	1.1	Vicksburg silt loam	11,968	2.3
Nevada silt loam	6,464	1.3	Collins very fine sandy loam	5,760	1.1
Houston clay	1,856	.4	Collins silt loam	37,440	7.3
Oktibbeha clay	448	.1	Waverly very fine sandy loam	768	.2
Lauderdale stony clay	256	.1	Waverly silt loam	28,416	5.5
Susquehanna fine sandy loam	6,016	1.2	Waverly silty clay loam	4,096	.8
Susquehanna very fine sandy loam	6,144	1.2	Ochlockonee fine sandy loam	3,328	.6
Susquehanna silt loam	5,440	1.1	Ochlockonee silt loam	4,032	.8
Orangeburg fine sandy loam	512	.7	Bibb silt loam	19,968	3.9
Rolling phase	3,136		Bibb silty clay loam	4,032	.8
Cuthbert very fine sandy loam	1,216	.2			
Caddo fine sandy loam	3,584	.7	Total	512,640	
Plummer silt loam	2,816	.6			

RUSTON FINE SANDY LOAM

The surface layer of Ruston fine sandy loam in timbered areas is prevailingly dark-gray or grayish-brown fine sand or fine sandy loam about 2 inches thick. This is underlain to a depth of 10 or 15 inches by brownish-gray, light brownish-yellow, or pale-yellow fine sand or fine sandy loam, beneath which is reddish-yellow or reddish-brown friable fine sandy clay which extends to a depth of 20 or 25 inches, where it is underlain by yellowish-red or pale-red more friable lighter-textured fine sandy clay or sandy clay. Some gray and yellow mottles appear in this layer. The deep substratum in places is fine sand or medium sand.

In cultivated fields where the surface layer is mixed with the lower soil it is brownish gray or grayish brown. Many areas present a spotted appearance where erosion has washed some of the surface soil to lower elevations, leaving the subsoil exposed in places. The thickness of the several layers differs from place to place, and in some places there is little uniformity in development. Chert and quartz gravel are abundant in the lower part of the subsoil in a few areas. These materials are used frequently for surfacing roads. At the head of drainage ways and on the upper rim of slopes the soil is more red than typical, resembling the Orangeburg soils. In places patches of the Lexington, Grenada, and Susquehanna soils were included in mapping.

With the exception of a few small areas, Ruston fine sandy loam occurs south of Pelahatchee Creek. The areas are scattered and are not large. The largest are in the southeastern part of the

county. The land is moderately undulating or gently rolling. Drainage is very good, and the soil holds moisture well. The land is susceptible to erosion, and terracing or contour plowing is necessary to prevent soil washing in cultivated areas.

The soil is of minor importance in the agriculture of the county. The leading crops are cotton and corn. Yields range widely, depending on the methods of cultivation practiced and the quantity of fertilizer used. Soybeans, velvetbeans, peanuts, oats, tomatoes, and cabbage are minor crops that do well.

Commercial fertilizers, mainly superphosphate and cottonseed meal, are used in applications ranging from 100 to 250 pounds to the acre. For truck crops from 1,500 to 1,800 pounds are used.

This land can easily be improved by the incorporation of organic matter or by growing soil-improving crops. Deeper and earlier plowing is beneficial for some crops. The soil is considered good agriculturally, but careful management is required to maintain fertility.

Ruston fine sandy loam, rolling phase—The rolling phase of Ruston fine sandy loam differs from the typical soil in its rougher relief. It occupies slopes too steep to be farmed satisfactorily. The soil profile does not differ from that on smoother areas. In some included areas there is a tight subsoil, like that in the Cuthbert soils. On the upper slopes the material may be more reddish than typical and on lower slopes more yellowish. The land at present is forested with pines and oaks. It has some value for grazing.

RUSTON VERY FINE SANDY LOAM

Ruston very fine sandy loam consists of a thin layer of brownish-gray or dark-gray very fine sandy loam, grading abruptly into light-brown, light brownish-yellow, or pale-yellow very fine sandy loam underlain at a depth of 10 or 15 inches by reddish-brown or light-red friable very fine sandy clay or fine sandy clay which gives way, at a depth between 25 and 35 inches, to lighter-colored more sandy fine sandy clay.

The thin dark-colored surface layer is most noticeable on the more level areas and may be missing on slopes. In cultivated fields the surface soil is brownish gray or light grayish brown. Chert and quartz gravel are present, and yellow, gray, and reddish-yellow mottles splotch the subsoil in places. In the southern part of the county on ridge crests a thin irregular mantle of Lexington very fine sandy loam covers areas included with this soil. Patches of Orangeburg very fine sandy loam and of Susquehanna very fine sandy loam have also been included.

Ruston very fine sandy loam occurs in the southern part of the county. The largest area is east of Alonzo, and narrow small belts along streams are in the vicinity of Florence, Joe, Mayton, and Puckett. About 50 per cent of the land is cultivated, some is cut-over land used for pasture, and the remainder supports a cover consisting mostly of shortleaf and longleaf pines and scrubby oaks. All the general farm crops common to the region are grown, but corn and cotton are given the most attention. Cotton generally yields one-half bale or less to the acre and corn from 12 to 15 bushels. Soybeans, velvetbeans, sweetpotatoes, and Lespedeza are also grown.

Sweetpotatoes usually yield from 150 to 175 bushels to the acre. Lespedeza is becoming more popular for hay and as a soil-improving crop.

Ruston very fine sandy loam, rolling phase.—Areas of Ruston very fine sandy loam too rolling and steep to be cultivated safely are mapped as the rolling phase. Practically no attempt is made to utilize this soil for farming. It is well suited to pine and should be maintained in timber under present economic conditions.

GRENADA SILT LOAM

Virgin Grenada silt loam has a surface layer colored dark gray by decayed vegetation. This merges into light-brown or light grayish-yellow smooth very fine silt loam 8 or 10 inches deep, which is abruptly underlain by finely granular buff-colored, reddish-brown, or reddish-yellow friable silty clay loam or silty clay. This layer grades, at a depth ranging from 15 to 30 inches, into light yellowish-brown silt loam or light silty clay loam mottled conspicuously with gray and to a less extent with yellow and brown. The yellowish and brownish mottles occur as segregated spots and the gray as irregular blotches. The concretions are soft and easily crumbled. At a depth ranging from 25 to 35 inches this layer rests on very compact light yellowish-brown silt loam mottled profusely with gray, rust yellow, and brown. The gray mottles, as a rule, occur as irregular fingers ramifying downward. They range from one-half to 1 inch in diameter and are frequently connected or branched. The texture of the gray mottles is for the most part silt loam or silty clay loam, though in places it may be fine sandy loam. Most of the concretions in this soil are well formed, hard, and cemented.

Grenada silt loam is fairly uniform throughout the county. The surface soil is low in organic matter but is friable and mellow. The second or reddish-brown layer is porous and spongy, owing to the presence of minute openings or pores in the soil mass. This porosity allows good moisture and air drainage. When moist this layer has a definite reddish tinge which becomes much fainter on drying, when the layer appears more brownish. Beneath this layer there is in places a thin transitional layer of light reddish-yellow silty clay loam slightly mottled with gray. This grades quickly into the mottled layer. The mottles result from poor drainage and oxidation. The compact horizon prevents the downward percolation of soil moisture, and after a rain cuts in the soil show a moisture belt 12 or 15 inches thick above the hardpan. The movement of moisture here is lateral and the rate is slow enough to affect the moisture content in the upper soil layer. The lower part of the subsoil typically is moderately or very compact, especially when dry. When loosened artificially it is friable.

The structure of the lower horizon is finely granular, the soil particles breaking up into aggregates about the size of buckshot. The surface of these small lumps is smooth, but their outline is blocky or irregular. On drying the soil fractures into irregular-shaped roughly rectangular breakage particles 1 or 2 inches in diameter. Their surfaces are rough and show the buckshot structure of the soil.

The deep underlying strata lying at a depth ranging from 5 to 6 feet in the western part of the county and occurring nearer the

surface to the east characterize coastal-plain soils. Generally in areas of rolling or broken relief they consist predominantly of sandy materials, but where the surface relief is less uneven and more undulating heavy sedimentary clays occur. These underlying strata, because of their influence on drainage and aeration, have a marked influence on the stage of weathering reached in the overlying material.

In some included areas on long gentle slopes yellowish-gray fine silt loam grades, at a depth of about 1 inch, into yellow silt loam underlain at a depth of 5 or 7 inches by moderately friable yellowish-brown silty clay loam continuous to a depth of 18 or 20 inches. Beneath this is yellowish silty clay loam mottled with gray, the gray increasing with depth. The lower part of the subsoil is compact mottled yellow and gray silty clay loam containing some rust-brown concretions. These areas differ from typical in the color of the second layer and in the greater predominance of gray in the subsoil. Other included small areas are of Grenada very fine sandy loam and Grenada clay loam. In included small patches where erosion has removed the surface layer the reddish-brown silty clay layer has been exposed. Many fields that have been in cultivation for a long time present a spotted appearance, owing to surface wash. The surface layer has been removed from many ridge crests and redeposited along the lower slopes or carried by water to stream bottoms.

Grenada silt loam is one of the dominant upland soils. It occurs mainly in a belt south of Pelahatchee Creek extending southward toward Simpson County. Areas are large in this belt but are smaller to the east. Only a few patches occur north of Pelahatchee Creek. Areas range from undulating to gently rolling. Surface drainage is adequate for most farm crops, but underdrainage is poor. Drainage could be improved by ditching or tiling.

This is one of the main agricultural soils in the county. Originally it was covered by longleaf pine. Approximately 40 per cent is under cultivation. Before the advent of the boll weevil a much larger area was farmed, but large tracts have been abandoned or allowed to revert to field pine. Most of the soil has been depleted of its original small humus content through long cropping. In many places it has become badly washed because of careless methods of cultivation.

Cotton and corn are the principal crops. Minor crops are sweet-potatoes, sugarcane for sirup, Lespedeza, and vegetables. Yields of crops depend mainly on the thoroughness of cultivation and the system of rotation followed. Formerly the soil produced a bale of cotton to the acre, but yields now are considerably lower. If the soil is in good tilth and weather conditions are favorable, corn yields from 15 to 25 bushels to the acre and cotton from one-fourth to one-half bale. Where these crops are grown on land which has been manured or seeded to Lespedeza and pastured, the yields may run higher. In the last few years many farmers have grown a few acres of cabbage and tomatoes for early market. Truck crops are fertilized heavily (1,500 to 2,000 pounds to the acre), but yields are dependent on tillage methods and weather conditions. Lespedeza grows well where it has an opportunity to get a foothold. It is sown to some extent for hay. Hogs and cattle are kept on nearly all farms.

Some farms on Grenada silt loam are well improved, having good fences and farm buildings. Land values range from $10 to $50 an acre, depending on location, improvements, condition of the soil, condition of farm buildings, surface features, and extent of erosion.

Grenada silt loam can be improved by providing better drainage. All the soil is acid, and applications of ground limestone at the rate of 2 or more tons to the acre, after drainage has been improved, would be beneficial. One of the principal needs is to increase the humus supply. Deeper plowing, thorough cultivation, and the prevention of erosion are also essential. Land eroded to the extent that most of the surface is gullied or the surface soil washed away is better suited to timber and grazing than to cultivation.

Table 7 shows the results of mechanical analyses of samples of the surface soil, subsurface soil, and several layers of the subsoil of Grenada silt loam.

TABLE 7.—*Mechanical analyses of Grenada silt loam*[1]

No.	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*
425001	Surface soil, 0 to ½ inch	0.5	1.8	2.7	5.9	2.1	68.4	18.5
425002	Subsurface soil, ½ to 7 inches	.1	.8	2.2	5.3	2.6	76.1	12.8
425003	Subsoil, 7 to 20 inches	.0	.3	.9	2.5	1.2	61.4	33.7
425004	Subsoil, 20 to 35 inches	.1	.9	2.2	5.5	2.2	65.9	23.1
425005	Subsoil, 35 to 60 inches	.2	1.0	3.1	8.4	2.9	64.4	20.0

[1] After treatment with hydrogen peroxide.

GRENADA VERY FINE SANDY LOAM

Grenada very fine sandy loam consists of a thin layer of brownish-gray very fine sandy loam 1 or 2 inches thick, grading into yellowish-brown or yellowish very fine sandy loam or silty very fine sandy loam. This is underlain at a depth ranging from 10 to 14 inches by a characteristic heavier layer of buff-colored or reddish-brown silty clay loam, grading at a depth between 20 and 25 inches into yellowish-brown silt loam or silty clay loam mottled gray or bluish gray and rust brown and containing dark-colored concretions. The lower horizon, occurring at a depth of 30 or 35 inches, is compact or hardened brownish-yellow or yellowish-brown silt loam or silty clay loam mottled irregularly with gray.

Grenada very fine sandy loam very closely resembles Grenada silt loam, differing mainly in the texture of the surface layer. The two soils are so intricately associated that many patches of the silt loam were included with the very fine sandy loam in mapping. In many places there is only a thin layer of very fine sandy loam on the surface. The underlying coastal-plain material is the same as under Grenada silt loam. Some small areas of Lexington very fine sandy loam, especially on some of the slopes, were also included with this soil. On many slopes erosion has removed part of the surface soil and even the subsoil in small areas, giving the land a mixed, spotted appearance.

Grenada very fine sandy loam occurs mainly in the vicinity of Florence in the southwestern part of the county. Areas are small.

A small tract is mapped around Hollybush Church. The land ranges from undulating to rolling, with smooth gentle slopes. Some nearly level areas occupy ridge crests. Surface drainage is good, but the compact layer forming the lower horizon interferes with the internal movement of moisture and air. The more elevated areas are better drained than others.

This soil is of small agricultural importance. About 25 per cent of it is under cultivation, and the remainder is used for pasture or grazing land. The forest growth includes post oak, blackjack oak, shortleaf pine, gum, dogwood, and native grasses.

Corn and cotton are the main crops, but the soil is used also for growing sweetpotatoes, sugarcane, soybeans, Lespedeza, cabbage, and tomatoes. Crop yields are influenced by the thoroughness of seedbed preparation and the amount of fertilizer used, but average about the same as on Grenada silt loam. Fertilizer, chiefly cottonseed meal and superphosphate, is used on cotton and corn at the rate of 100 to 300 pounds to the acre. For truck crops applications are heavy.

Continuous cropping to corn and cotton has materially depleted the supply of organic matter, and consequently the land is not so productive as it formerly was. Increased yields will result from proper fertilizing and cultivation practices and from growing legumes in a crop rotation.

LEXINGTON VERY FINE SANDY LOAM

In areas undisturbed for a long time, Lexington very fine sandy loam has a 1 or 2 inch surface layer of light-brown or brownish-gray very fine sandy loam. This merges into pale-yellow or light grayish-brown very fine sandy loam underlain abruptly, at a depth of 8 or 10 inches, by yellowish-brown, reddish-brown, or buff-colored silty clay loam. The upper part of this layer is in places silty in texture and somewhat lighter in color than the remainder. At a depth of 25 or 30 inches there is yellowish-brown or yellow silt loam or light silty clay loam mottled somewhat with gray, grading quickly into variable sandy material which in places may show a tendency toward compaction. In general the sandy material is very similar to that in the Orangeburg and Ruston soils.

Lexington very fine sandy loam is closely related to the Grenada soils, but the depth to the underlying sandy strata is not so great. The texture of the surface soil is variable, and many spots of silt loam are included. Soil layers are definite and well defined. The surface soil is fine, floury, and mellow and contains very little decaying humus matter. The second or heavy layer is well oxidized and has a reddish tinge. It is friable, finely granular, and porous for the most part, but in places is slightly plastic when moist. The basal layer of this soil is everywhere lighter in color than the one above and may show some mottling resulting from inadequate drainage caused by compaction of the underlying layer. The compaction results where fine-textured sedimentary deposits occur under the soil or where the soil merges into adjoining soils. However, well-drained porous sandy material underlies most of the soil. Small areas of Lexington very fine sandy loam, compact-subsoil phase, are included where it was found impractical to separate them.

Lexington very fine sandy loam occurs throughout the county in scattered areas. In the western part it is found in association with the Grenada soils, mostly as narrow strips on slopes along or at the heads of streams and drainage ways. In more broken, rolling, or ridgy country it occupies all the flat or nearly level ridge crests. Such areas extend around the heads of Campbells and Billy Walters Creeks and occur near Star, Cato, Pelahatchee, Fannin, and Goshen Springs. Areas associated with Grenada silt loam in the western part of the county are undulating or gently rolling. Elsewhere the land is gently sloping or nearly level.

The topographic position of Lexington very fine sandy loam has influenced its agricultural use. The more favorably located areas are farmed mainly in connection with associated soils. Approximately 10 per cent is thus utilized. Small isolated tracts on ridge crests are cultivated, but the rolling relief of the surrounding land limits extensive use of the soil. Some areas have been abandoned because of the impoverished condition of the soil resulting from continuous cropping, surface erosion, and gullying. These areas, where covered with broom sedge, Lespedeza, and grasses, afford some pasturage. The greater part of the soil is forested with longleaf pine, sweetgum, shortleaf pine, red oak, blackjack oak, post oak, and dogwood. Much of the land is better suited for forestry and grazing than any other purpose.

Crops grown are the same as on Grenada silt loam, and the yields average practically the same. Soil management and treatment are also similar.

Recommendations for improving Grenada silt loam apply also to this soil. Contour cultivation and terracing are necessary, especially in the western part of the county. The more rolling areas could be utilized profitably for growing timber for lumber and posts. In cultivated fields the supply of organic matter should be increased, systematic crop rotation should be followed, and the soil should gradually be plowed more deeply.

Lexington very fine sandy loam, compact-subsoil phase.—The compact-subsoil phase of Lexington very fine sandy loam under forest cover consists of a 1 or 2 inch grayish very fine sandy loam surface layer, grading into light grayish-yellow or pale-yellow very fine sandy loam underlain at a depth between 7 and 10 inches by reddish-brown, reddish-yellow, or buff friable silty clay or silty clay loam giving way to yellow or brownish-yellow silt loam or light silty clay loam mottled with some gray, rust yellow, and brown, which is underlain at a depth of 20 or 25 inches by lighter-yellow or light brownish-yellow compact fine sandy clay loam blotched with gray and rust-colored mottles, the gray increasing with depth.

This soil resembles the Grenada and Lexington soils. It has the compact horizon of the Grenada soils and the sandy subsoil of the Lexington. It differs from Lexington very fine sandy loam in having a compact layer, uniformly developed throughout its extent, and from the Grenada in the thinness of the several layers and in the sandy texture of the subsoil. The surface layer in many places has a very fine floury feel and is silty loam in texture. In the western part of the county it consists largely of silty very fine sandy loam

or silt loam. The second layer is not so strongly developed as in the Grenada soils and is only about half as thick, but it has the same consistence and finely granular structure. In areas of higher average moisture content, well-developed but easily crumbled concretions are disseminated through the soil. The lower sandy layer is more compact and hard when dry than when moist. It inhibits the downward percolation of soil water, but is not altogether impervious to it. Cuts in the soil illustrate how moisture concentrates above the compact material after a rain. It remains there for a time before it escapes. The gray mottles generally extend vertically through the lower horizon, where they assume elongated forms. In places in the silty layer they have a silty texture. The compact subsoil described extends to a depth ranging from 40 to 60 inches and is underlain by stiff heavy clayey coastal-plain materials. Along slopes and at the heads of drains these underlying strata come closer to the surface, and in many nearly level positions the soil rests abruptly on heavy clays, like those under the Susquehanna soils.

This soil occurs mainly in the eastern part of the county, though small areas are scattered elsewhere. The largest belt stretches southward from Pelahatchee, and sizable areas occupy ridges and divides in the vicinity of Lucknow, Rock Hill, Fannin, and Rankin. The land is prevailingly undulating or slightly rolling, but areas at the heads of drainage ways are rolling. Surface drainage is good, but underdrainage may be rather poor. Some areas along gentle slopes remain cold and wet for a longer time than higher areas.

A large part of this soil is in cultivation, particularly south of Pelahatchee. Cotton and corn are the principal crops. In seasons of moderate rainfall and temperature, cotton yields average about one-half bale to the acre. Commercial fertilizer, chiefly superphosphate, is applied at the rate of 100 to 300 pounds to the acre. Corn yields from 15 to 20 bushels to the acre; but with better cultural methods and sufficient fertilizer, yields are increased. All the land is suited to grasses and most forage crops. Lespedeza, sown by some farmers, makes valuable hay and improves the soil. Cowpeas, soybeans, sweetpotatoes, and peanuts are grown on small acreages by most farmers. Sugarcane is planted in depressed areas or at the heads of drainage slopes. Cabbage and tomatoes are grown on most farms. A number of farmers plant these crops on "made land" or soil which has been washed from ridges and upper slopes to lower elevations.

The compact-subsoil phase of Lexington very fine sandy loam can be improved by increasing the supply of organic matter. Liming will also prove beneficial, as the soil is acid. Drainage may be improved by open ditches.

PHEBA SILT LOAM

Pheba silt loam consists of brownish-gray or yellowish-brown fine silt loam grading at a depth of 2 or 3 inches into pale-yellow silt loam faintly splotched with gray and underlain at a depth of 12 or 15 inches by pale-yellow heavier silt loam or silty clay loam mottled with gray and brown, giving way at a depth of 25 or 30 inches to mottled gray and yellow or gray heavy compact clay or very fine sandy clay containing an abundance of gray mottles.

Small areas of Pheba very fine sandy loam and fine sandy loam are included with this soil on the soil map, as are also short narrow strips of Grenada silt loam. In the lower part of the subsoil on some of the lower slopes there is yellowish clay mottled red and gray, which closely resembles the subsoil material of the Susquehanna soils. In places, chiefly at the heads of drainage ways where the soil is saturated for a long time, lack of oxidation has resulted in a light-colored profile. Concretions are mixed through the soil, but those in the surface layers are soft and easily crushed. Crawfish chimneys occur in the wet areas.

Pheba silt loam occurs in irregular areas ranging in size from a few acres to 3 or 4 square miles. The largest areas are mapped in a broken belt running south from Brandon through Rock Hill and Cato. In the northern part of the county the soil occurs in the vicinity of Pisgah, Ophelia, and Lucknow. Areas are flat or undulating, with smooth gentle slopes. Some nearly level areas occupy benchlike positions that merge into high bottoms. Surface drainage is fair, but the compact substratum impedes the internal circulation of moisture and thus affects the moisture content of the surface soil. On flattish areas during rainy periods the water table approaches the surface.

Pheba silt loam is largely cut-over land supporting second-growth timber, including red oak, post oak, shortleaf pine, and gum. Only about 5 per cent of the land is cultivated at present. Many cleared areas formerly farmed have been abandoned or are now used for pasture. The chief value of the soil is for pasture or forestry. Its poor drainage and low average fertility have caused it to be avoided for cultivated crops.

MONTROSE SILT LOAM

Montrose silt loam has a surface layer, 1 or 2 inches deep, of grayish or grayish-yellow fine silt loam. This is underlain by brownish-yellow or yellow friable silt loam spotted faintly with gray and dark brown which grades, at a depth of 7 or 8 inches, into a transitional layer of brownish-yellow silty clay loam faintly mottled with gray and some red. At a depth of about 10 or 12 inches this grades into brownish-yellow or yellow plastic heavy moderately light clay containing a large proportion of gray mottles. No perceptible change occurs in the soil to a depth ranging from 40 to 60 inches, where yellow sticky heavy clay, mottled conspicuously with gray and to a less extent with rust yellow, bluish gray, and dark gray, occurs. Some lime nodules, ranging in size from that of small gravel to that of walnuts, are in this layer. In places masses of these nodules are concentrated into pockets. Black and dark yellowish-brown rounded iron concretions are scattered through the soil.

The surface soil of Montrose silt loam is prevailingly silty. In a few areas it is spotted with a thin covering of very fine sand or fine sandy loam where it merges into adjoining soils. On some of the flatter areas the silt loam covering is only 3 or 4 inches thick and grades into silty clay loam, which gives way at a depth of about 10 inches to the characteristic subsoil. Such areas may be classed as silty clay loam.

In many places in typical areas the silt loam covering rests abruptly on the heavy clay layer. At the heads of some slopes and draws the

upper part of the subsoil has a reddish cast, resembling the corresponding layer in the Susquehanna soils. The gray mottling in the clay layer increases with depth in most places. In some areas the deep subsoil is mottled yellow and gray. The mottles are distributed in irregular masses through the soil. The depth at which lime nodules occur differs widely from place to place. As seen in road exposures, it ranges from 4 to 10 or more feet. The iron concretions in the soil are mostly hard and well developed at greater depths. They are about the size of small shot or pebbles.

On drying, the heavy clay layers crumble into a finely granular structure, the granules being about the size of a buckshot. The particles of soil have smooth surfaces and a blocky outline with sharp corners. The fracture formations resulting where exposures dry are 3 or 4 inches in diameter, but may break down into smaller sizes on further drying. They are lighter colored on the outside than on the inside, where moisture causes the color to be accentuated.

Montrose silt loam occurs for the most part in several large belts running across the county north of Pelahatchee Creek. South of this stream several small tracts are mapped in the vicinity of Lucknow and Pelahatchee. Areas are in general level or gently undulating, though some rough or rolling areas occur on steep ridge slopes. Surface drainage for the most part is only fairly well established, and underdrainage, hindered by the heavy clay substratum, is very slow and poor.

Though this soil occupies large areas in the county, it is not important agriculturally. About 25 per cent, including the more favorably located, better-drained, deeper areas, is cleared and cultivated. The heavy texture of the land makes it difficult to handle without proper equipment. The forest growth includes longleaf pine, shortleaf pine, red oak, post oak, gum, and some hickory. Some remaining merchantable timber will probably be cut during the next few years. On most cut-over land a thick stubby growth of oaks and young pine has sprung up.

Cotton and corn are the most important crops. Yields average low. These crops are planted on the better-drained positions. The soil produces a good quality of sorgo and sugarcane for sirup. The growth of forage crops and grasses on this soil depends largely on local drainage conditions. Some cattle are pastured in the forested areas, but the native grasses make only a sparse growth and poor grazing. Lespedeza and broom sedge do well and furnish some feed.

Montrose silt loam produces well when first cleared and cultivated, but the yields soon decline under the farming system followed. Corn yields from 10 to 20 bushels to the acre and cotton from one-fourth to three-fourths bale. It is necessary to prepare the land when in the proper moisture condition. When wet it is too sticky to plow and when dry too compact.

This land is in need of lime to correct its acidity. Artificial drainage should be established in cultivated fields to increase yields. It is advisable that the land be broken in the fall, especially where corn and cotton are to be planted. This soil is low in organic matter, and this should be supplied by turning under green-manure crops.

MONTROSE CLAY

Montrose clay consists of a 1 or 2 inch surface layer of grayish or yellowish-brown silty clay or clay, underlain to a depth of 30 or 40 inches by brownish-yellow or dull-yellow heavy sticky clay with gray mottles and rust-yellow splotches, beneath which is yellow or yellowish-olive heavy impervious plastic clay abundantly mottled with gray and bluish gray and less distinctly with rust yellow and brown. Lime nodules are in the upper part of this layer.

There is sufficient organic matter in the surface soil to give it a slightly crumbly structure. In some places the upper part of the subsoil layer is light reddish-brown heavy clay mottled yellow, red, and gray. This variation does not occur continuously but as irregular tongues extending downward 20 or 25 inches and alternating with the more typical yellowish clay. The zone of lime nodules on the average lies closer to the surface than in Montrose silt loam, and the occurrence of the nodules is more uniform. The heavy clay layers have the same angular and blocky granular structure as in Montrose silt loam. Dark-colored concretions have developed in the soil, which locally is called post-oak flats or prairies and hog-wallow land.

Montrose clay occurs in the north and northeast parts of the county. Several small areas are southwest of Ophelia in sections 21, 22, 28, and 29 of T. 8 N., R. 4 E. Along the east county line, north of Clarksburg, is a belt several miles long and about one-half mile wide. Between Clarksburg and Hollybush Church are several scattered areas, and others are south and west of Pelahatchee. The relief ranges from flat to slightly undulating or smoothly sloping. Drainage is poor because of the lack of surface relief, the retentiveness of the soil particles, and the imperviousness of the substratum.

A very small acreage of this soil is in cultivation at present. The greater part of the land is covered with a timber growth consisting chiefly of post oak and shortleaf pine. In some sections the smaller growth of oak saplings is very thick.

Under present conditions Montrose clay is undoubtedly better suited to timber growing than to farming. The best results for pasture are obtained when the underbrush and some of the timber have been cleared away.

NEVADA SILT LOAM

Nevada silt loam has a 1 or 2 inch surface layer of dark brownish-gray silt loam, underlain by dark grayish-brown silt loam that grades, at a depth ranging from 8 to 20 inches, into dark grayish-brown silty clay mottled yellow and to a less extent dark gray and red. At an average depth of about 18 inches gray or yellowish-gray moderately plastic heavy clay splotched with red (heavily in places), rust brown, and yellow occurs. This grades quickly into heavy plastic and moderately light brownish-yellow or dull-yellow clay mottled with gray and some rust yellow and spotted with faint reddish specks in the upper part of the layer. Below a depth of about 35 inches there is brownish-yellow or yellow slightly plastic tight clay, mottled strongly with gray material of the same texture

and in spots with dark gray. Lime concretions or nodules are disseminated through this layer.

The silt loam surface layer of this soil is finely porous and mellow, with a floury feel. The surface soil in cultivated fields is grayish, with darker material underneath. It extends into a heavier friable layer of about the same color, the lower part of which gives some evidence of poor drainage by the presence of mottles. The dark color of the surface soil is the result of the incorporation of large quantities of decayed vegetation in the soil. The original cover of this soil was a thick growth of prairie grasses that grew to a height of 5 or 6 feet. The depth of the dark-colored surface layer ranges considerably, in some places at the outer edges of the prairie being only 8 or 10 inches, but elsewhere being about 25 inches. Beneath the dark surface soil and resting on the heavy underlying clay horizon is a thin transitional zone not everywhere present, but well developed in places. It is a grayish layer colored with red in some places, but not all. The heavy underlying clay has an impervious consistence and extends without much change in physical appearance to a depth of 3 or 4 feet, where the presence of lime in the form of nodules is noted. The concretions are generally about the size of walnuts, though many are smaller. The clay layer in which they occur has an olive tinge in many places and is more waxy than the layer above. The lower heavier layer crumbles into the same granular structure. The granules are about the size of heavy buckshot. The structure particles generally have smooth surfaces with sharp, irregular, blocky outlines, but some of the aggregates are rather round. Well-formed dark-colored concretions are scattered in the soil layers. The gray mottles coloring the heavy clay are irregularly massed in the upper part, but at greater depths occur as vertical streaks.

On some of the prairies in the western part of the county dark grayish-brown or very dark-brown friable fine silt loam ranging from 10 to 20 inches in thickness is underlain by a thin layer of dark-gray silty clay which merges quickly into pale-yellow or dull-yellow heavy plastic clay mottled with gray. The lower substratum is similar in texture and color, but has a waxy and greasy feel and contains an abundance of lime concretions.

Nevada silt loam occurs in the scattered prairie lands of the county, mainly in the clay belt north of Pelahatchee Creek. Two areas, Bald Prairie north of Red Hill, and one area north of Brandon, are south of this stream. The larger prairies are known locally as Barnes, Rollison, Hills, Round, and Leesburg Prairies. Areas are level or very smoothly undulating. Surface drainage is free and good, but underdrainage is impeded by the impervious heavy clay layers, which affect downward percolation of soil moisture, and on slight slopes, or where the clay layer is close to the surface, cause the soil to remain moist for some time after rains.

Nevada silt loam is important agriculturally because of its productiveness and fertility in comparison with other soils in the county. All of it is used for cultivated crops or for pasture land. Cotton, corn, and hay are the main crops. Other crops grown include oats, sorgo, clover, Lespedeza, and vegetables for home consumption. This is excellent cornland, and yields normally range from 40 to 50 bushels to the acre. Some farmers complain that cotton blights

easily on this land, but yields are reported as three-fourths or 1 bale to the acre. Some grain for feeding livestock is grown. A farmer on Barnes Prairie reported a yield of 20,000 bushels of oats from 400 acres and that some fields had yielded 75 bushels to the acre. Yields have been increased where the different crops were preceded by Lespedeza that was pastured and then turned under. Yields of this crop are 1 or 1½ tons to the acre. Corn and sorghum are cut for silage to fatten beef cattle. An attempt has been made to grow red clover and alfalfa, but little success has been attained.

This soil has high possibilities for crop production. Inoculation of seed and liming are necessary for establishing alfalfa or clover. Continual cropping to one crop is injurious to the land, depleting it of fertility. The use of a well-planned rotation that includes the turning under of legumes will aid in maintaining high crop production.

HOUSTON CLAY

The surface soil of Houston clay to a depth ranging from a few inches to 10 or 12 inches is very dark grayish-brown or grayish-brown heavy plastic clay stained rust yellow and black. This merges quickly into yellowish-brown heavy sticky clay mottled with gray. At greater depths the material is dull yellow with a slight olive tinge, mottled with gray and containing iron-colored stains. Lime concretions are present throughout, but are most abundant with depth.

The surface soil is very sticky when wet, but crumbles easily when dry. The dark soil merges irregularly into the underlying stratum and on some lower slopes and in flat areas is blacker and deeper than typical. The structure of the subsoil is similar to that of the corresponding layer in Nevada silt loam. Lime concretions found in the surface soil have been washed there from higher slopes. The concretions occur in places in large pockets or as a thin horizontal stratum from 2 or 4 inches thick and from 15 to 25 feet long.

Houston clay is a prairie soil bordering the bottoms of Pelahatchee Creek south of Pelahatchee and in the vicinity of Mount Nebo Church. Other areas are 2 miles south of Pisgah and 1½ miles northwest of Sand Hill. Most of the land occurs on moderately gentle slopes with a smooth surface or flat or undulating relief. Drainage is poor in the subsoil, but there is sufficient slope to much of the soil to provide good surface drainage. In some places surface wash has removed the black soil from the higher slopes, leaving the underlying clay exposed.

Some of the prairies are becoming covered with a growth of pine, oak, haw, and wild plum. The open areas afford good pasturage of Lespedeza, carpet grass, and broom sedge. Only a few small patches are in cultivation to corn and cotton. The land has excellent possibilities for hay production and use as pasture, but little attention has been given these uses.

OKTIBBEHA CLAY

Oktibbeha clay typically consists of light reddish-brown clay 2 or 3 inches deep, grading into red plastic clay faintly mottled with yellow, which gives way at a depth of 10 or 12 inches to mottled red.

yellow, and gray, or reddish-yellow mottled gray, sticky plastic clay, underlain at a depth of 20 or 25 inches by gray clay mottled yellow and containing white chalky calcareous material or yellowish-brown calcareous clay mottled bluish gray and yellow. Fragments of limestone, known geologically as the Vicksburg limestone, occur in the substratum.

Included with Oktibbeha clay are small patches of Sumter clay. This included soil is brown waxy clay from 4 to 6 inches deep, underlain by light-gray smooth calcareous clay mottled with yellow or containing white chalky decomposed limestone.

Oktibbeha clay occurs chiefly north and northwest of Shiloh Church. The largest area is about 3 miles north of Pelahatchee. Areas occupy the heads and sides of drainage slopes. Surface drainage is fair, but underdrainage is inadequate. The surface relief is prevailingly rolling, but some areas are level and include steep smooth slopes.

The land is not used for crops, except where some small patches are associated with cultivated land. About half of it is cleared and used for pasture. The rolling areas are in timber of shortleaf pine, post oak, hickory, cedar, sweetgum, and ash.

LAUDERDALE STONY CLAY

Lauderdale stony clay is a mixed variable soil in which the texture of the surface soil ranges from very fine sandy loam to clay. It has an irregular covering of sandy material ranging from a mere film to 12 or 15 inches in thickness. Gray or whitish clay is exposed in many small areas. The surface layer in timbered areas is grayish sandy soil colored from organic matter and underlain by a light-brown or pale-yellow sandy layer resting on gray heavy tight plastic clay mottled pale yellow and rust brown. In places above the clay there is a cemented or compact gray or yellowish sandy layer streaked with rust stains. On some slopes saturation resulting from seepage has caused the subsoil to be dark gray or bluish gray with yellowish mottles.

Patches of rock outcrop are numerous and much of the surface is littered with rock fragments. Some areas are free of stones. The rock material is grayish or whitish sandstone and clay stone. In areas adjoining Lexington soils there is a thin covering of that soil over the Lauderdale soil.

Lauderdale stony clay is of small extent in Rankin County. The largest area is about 2 miles south of Mountain Ridge Church. A conspicuous small area is on a high hill a little west of Star. A number of small outcrops of this soil in the southern part of the county are too small to map and have been included with surrounding soils.

This soil occurs characteristically on steep slopes and high ridges. The steep slopes encourage good surface drainage, but small patches are wet and seepy. The forest growth includes shortleaf pine, blackjack oak, post oak, some hickory, and gum. The land is of low agricultural value and should be used for forestry and grazing.

SUSQUEHANNA FINE SANDY LOAM

Susquehanna fine sandy loam has a 2 to 4 inch gray or dark-gray loamy fine sand or fine sandy loam surface layer grading into lighter-gray or pale-yellow loamy fine sand or fine sandy loam continuing to an average depth of about 8 inches. This is underlain to a depth of 20 or 25 inches by red plastic heavy clay slightly mottled gray and yellow, beneath which is mottled red, gray, yellow, and purplish-red plastic heavy clay. The red color is most conspicuous in the upper part of the subsoil and the gray mottling increases with depth. The deep unweathered layer lying at a depth ranging from 40 to 60 inches is gray or bluish-gray heavy plastic clay. Small iron concretions, some of which are friable, are scattered in places through the soil. The heavy clay layers have a fine crumblike structure, but when wet the clay is sticky.

On some of the lower slopes, where colluvial material has been washed from higher positions, the sandy surface soil is 12 or 15 inches deep. The heavy subsoil on the upper slopes is exposed or covered with only a thin soil layer. Included with this soil are patches of Susquehanna very fine sandy loam and some small spots of Caddo fine sandy loam and Lexington very fine sandy loam.

This soil occurs mainly on slopes and lower divides in many sections of the upland. The relief ranges from moderately rolling to hilly. Surface drainage is sufficient, but the heavy plastic clay retards the internal movement of moisture.

Susquehanna fine sandy loam is not an important soil, and practically none is used for farming. Most of it is covered with a timber growth including shortleaf and longleaf pines, post and blackjack oaks, some hickory, and dogwood. The growth of native grasses is sparse.

SUSQUEHANNA VERY FINE SANDY LOAM

Susquehanna very fine sandy loam has a dull-gray or brownish-gray loamy very fine sand surface layer 1 or 2 inches deep, grading into pale-yellow or grayish very fine sandy loam extending to a depth of 7 or 8 inches. This is underlain by reddish-brown or red very fine sandy clay or friable silty clay which gives way at a depth of 12 or 15 inches to mottled red, gray, and yellow plastic heavy clay in which the gray coloring increases with depth. At a depth of 30 or 40 inches this passes, in places abruptly, into light-gray or bluish-gray heavy plastic clay with little or no red and yellow coloring.

For the most part this soil occupies moderately rolling country, but in included variations the relief is smoothly sloping or undulating. Surface drainage is good, but underdrainage is deficient, and downward percolation is hindered by the impervious subsoil, so that there is a tendency toward a lateral movement of moisture.

This soil is not extensive and only patches favorably located are cultivated in connection with surrounding soils. The greater part of the land supports a timber growth like that on Susquehanna fine sandy loam. The soil is not very productive, and because of its surface relief it is probably best suited to the growing of trees.

SUSQUEHANNA SILT LOAM

The surface layer of Susquehanna silt loam, to a depth ranging from 1 to 3 inches, is grayish or grayish-brown silt loam. This passes into yellowish-brown or dull-yellow friable silt loam underlain at a depth ranging from 7 to 10 inches by light brownish-yellow or reddish-yellow silty clay loam mottled with gray and red. The subsoil consists of red plastic clay heavily mottled with gray and to some extent with yellow. The gray becomes more noticeable with depth. The contact between the surface soil and subsoil layers is generally abrupt or sharp. In places a few iron concretions have developed in the soil.

Where this soil merges into the Grenada and Lexington soils it has a thin covering of those soils. Small areas of Montrose silt loam are also included.

Susquehanna silt loam is most extensive north of Andrews Chapel and in the vicinity of Outing School and west of Leesburg. Small areas are scattered in the central and northern parts of the county. The relief is undulating or rolling, and drainage is poorly established, especially in nearly level areas.

Some fields are cultivated, mostly to corn and cotton, but crop yields are low. The land is not very desirable for the general farming practiced in the county. It contains a high percentage of moisture during wet seasons and in dry periods has a tight consistence. Where cultivated it should be well supplied with organic matter to aid aeration and to lessen the tendency to compaction. A large percentage of the soil is forested with shortleaf pine, oaks, and other trees. The land, because of its characteristic heavy clayey texture, is not so well suited to cultivation as available friable soils and can probably best be utilized for forestry.

ORANGEBURG FINE SANDY LOAM

Orangeburg fine sandy loam consists of dark-gray or brownish-gray loamy fine sand 2 or 3 inches deep, grading into light-brown or brownish-yellow loamy fine sand or fine sandy loam continuous to a depth of 10 or 15 inches, where it is underlain by red friable fine sandy clay or sandy clay. The lower part of the subsoil is more friable and has a larger content of sand than the layers above. Scattered chert and quartz gravel and ferruginous sandstone commonly occur on the surface. In places exposed sections show the lower part of the subsoil, containing brownish-red or yellowish-red splotches.

Areas of this soil range from undulating to gently sloping. The soil is inextensive, a few small tracts being scattered in the southern part of the county. Most of the land is cultivated, and good average yields result where it is properly handled. The soil erodes readily, and terraces should be constructed to save it.

Orangeburg fine sandy loam, rolling phase.—The rolling phase of Orangeburg fine sandy loam differs from the typical soil chiefly in surface relief. The texture of the surface soil is variable. Some areas contain considerable medium sand. Small areas of Lexington soil are included on narrow ridges, and on some of the lower slopes small areas of Susquehanna soil have not been separated.

The rolling phase of Orangeburg fine sandy loam occupies steep slopes and includes some of the roughest parts of the county. Drainage is good. The rolling phase comprises the greater part of the Orangeburg fine sandy loam in the county. The largest areas are at Red Hill, at Ware Hill, on the Fannin-Goshen Springs ridge, west of Clarksburg, and near Providence Church north of Pelahatchee.

The soil is productive, but its rolling relief precludes economical cultivation. It is covered with timber consisting mainly of a good growth of longleaf and shortleaf pines, oak, dogwood, and other trees. Only a few patches in the less rolling areas are farmed. A good practical use for this land, because of its configuration, is for timber and pasture.

CUTHBERT VERY FINE SANDY LOAM

Cuthbert very fine sandy loam has a surface layer, 2 or 3 inches deep, of gray or brownish-gray very fine sandy loam. This grades into lighter-gray or grayish-yellow very fine sandy loam which rests abruptly, at a depth of 10 or 12 inches, on tight reddish very fine sandy clay or clay mottled to some extent with red and gray. On drying this layer breaks into a fine crumbly structure. It grades at a depth of 25 or 30 inches into light-red fine sandy loam or very friable fine sandy clay irregularly streaked with yellow, gray, and reddish mottles.

The outstanding characteristic of this soil is the tight second layer lying beneath the surface horizon. This differs from the corresponding layer in the Ruston soils in its more clayey consistence. In the eastern part of the county along the county line south of Clarksburg the soil approaches fine sandy loam in texture. In places a few areas consist of pale-yellow fine sandy loam or loamy fine sand, grading at a depth of 8 or 10 inches into reddish-yellow fine sandy loam, giving way at a depth of 12 or 14 inches to yellowish-red fine sandy clay becoming more sandy with depth. This is underlain at a depth of about 24 or 26 inches by pale-red compact sandy clay. Chert and quartz gravel are scattered in places through the soil.

Cuthbert very fine sandy loam occurs in narrow strips bordering streams and slopes south of Pelahatchee and Clarksburg. Areas are generally rolling or sloping, though on the broader slopes some are smooth. Drainage is well developed.

Where the soil is not too rolling, good crops of corn, cotton, sweetpotatoes, and sugarcane are produced. The soil responds well to good tillage, applications of manure, and the growing of legumes, such as Lespedeza. Cultural requirements are the same as for the Ruston soils. The more rolling areas should be allowed to remain in timber because of the difficulty that would be experienced in cultivating them.

CADDO FINE SANDY LOAM

The 2-inch surface layer of Caddo fine sandy loam is gray or brownish-gray loamy fine sand or fine sandy loam. This grades into dull-gray or pale-yellow loamy fine sand or fine sandy loam

continuous to a depth ranging from about 7 to 15 inches. Beneath it is yellow or pale-yellow friable fine sandy clay or sandy clay generally containing some gray mottles, and below a depth of 25 or 30 inches the material is yellow fine sandy clay or sandy clay heavily mottled with gray or bluish gray. This lower layer is commonly compact in place, especially when comparatively dry. In places it is heavy tight pale-yellow fine sandy clay with gray mottles that increase in abundance with depth.

Iron concretions and well-rounded quartz pebbles are scattered in the soil, in places in rather large numbers. The depth of the surface layer varies on the lower edge of the steeper slopes where colluvial wash has been received from higher situations. The profile is not uniformly developed where the soil merges into adjoining soils, such as the Ruston and Pheba, and small patches of those soils are included. A plastic clay substratum occurs in many places where this soil is associated with the Susquehanna soils. Small areas of silt loam and very fine sandy loam were also included in mapping.

Caddo fine sandy loam occurs in small areas or narrow belts along some of the stream courses and their headwaters in the southern part of the county. It characteristically occupies long narrow slopes, some of which are fairly steep where they pass into the rolling phase of Ruston fine sandy loam. Drainage is slow and deficient, and some rather large patches are wet from seepage. On the higher slopes drainage is slightly better.

A few fields are cleared for cultivation, but most of the land is used for pasture or is kept in timber. The timber includes sweetgum, shortleaf pine, willow oak, post oak, and other trees. Broom sedge, carpet grass, and some Lespedeza provide fairly good grazing. This is not a very good cotton and corn land, and yields are comparatively low. The soil is cold and wet in rainy periods, and this hinders and delays tillage operations. Caddo fine sandy loam is probably best suited to use for wood lots or pasture land.

PLUMMER SILT LOAM

Plummer silt loam is typically dark-gray or brownish-gray smooth floury silt loam to a depth of 1 or 2 inches, where it grades into light-gray or gray fine smooth silt loam mottled faintly in places with small spots of rust yellow. Below an average depth of 8 or 10 inches the material is light-gray or bluish-gray heavier silt loam or silty clay loam mottled rust brown and yellow. This continues to a depth of 25 or 30 inches, where it grades into light-gray, bluish-gray, or pale-yellow heavy sticky tightly compacted clay splotched with rust yellow. Crawfish chimneys occur in places, and locally dark-colored concretions are numerous.

This soil is poorly drained. It occupies flats at the heads of small intermittent drainage ways and gentle slopes bordering some of the streams in the northern part of the county. The passage of water through it is very slow, and in rainy periods water stands on the more level and depressed areas. Practically none of the soil is cultivated, nor is it suited to the common crops of the county. A few patches of rice are grown by some farmers. Most of the land has a timber cover of sweetgum, shortleaf pine, slash pine, and oaks.

OLIVIER SILT LOAM

In most wooded areas Olivier silt loam has a 3 or 4 inch surface layer of grayish-brown or dark-gray silt loam. This grades into yellowish-brown or yellow friable silt loam moderately splotched with gray and rust yellow. The underlying heavier horizon, occurring at a depth ranging from about 12 to 18 inches, is gray, light-yellow, or bluish-gray and brown silty clay or silty clay loam containing mottles of brown, gray, and yellow. Below a depth ranging from 20 to 24 inches is yellowish-brown compact silt loam or silty clay loam mottled gray and rust brown.

In cultivated areas the surface soil is grayish brown or yellowish brown. In some small depressions gray and rust-brown mottles are faintly developed in the surface layers. The horizon of concentrated material is not uniformly weathered because slow drainage and imperfect aeration, influenced by the underlying compact layer, have tended to produce a variable condition. Soil moisture seeps down to the impervious layer and keeps the horizon above it saturated for a comparatively long time. The compaction is not definitely developed over all the soil; in some exceptions a layer of heavy tough plastic silty clay acts as an impervious layer. The compact layer is resistant to penetration, but when loosened is friable in consistence. Rust-brown, rust-yellow, and yellowish-gray concretions and concretionary material are abundant through the soil in many places.

In some of the better-drained areas in the belt along Pearl River the soil consists of grayish-brown or brown friable silt loam from 3 to 5 inches deep, grading into light-brown or brownish-yellow slightly heavier silt loam underlain at a depth of 10 or 15 inches by yellowish-brown or dull brownish-yellow silty clay loam, giving way at a depth of 25 or 30 inches to yellow or pale-yellow silty clay loam, mottled gray, or to mottled yellow and gray heavy silt loam or silty clay loam which becomes compact with depth. Modifications result also where the soil has received some colluvial wash from adjoining uplands.

Olivier silt loam occurs mainly in the western part of the county on the high bottoms or terraces of Pearl River and its larger tributaries. The largest areas are in the valley of Pearl River. Part of Pelahatchee is located on this soil. Olivier silt loam lies from about 10 to 25 or more feet above the present flood plains of streams. The surface relief is faintly undulating in places, but most commonly is nearly level. Surface drainage is fairly good, but underdrainage is poor.

About 50 per cent of this soil, some of which has been cropped since the early settlement of the county, is in cultivation. Long cropping has depleted fertility over a large part of the soil. Some of the areas along Pearl River are now in virgin timber, but this is being cut out rapidly. The trees, which are of vigorous healthy growth, include longleaf pine, shortleaf pine, slash pine, hickory, sweetgum, beech, ash, and oaks.

Cotton and corn, the chief crops, give fairly good yields with good management. Oats, sorgo, cowpeas, and sweetpotatoes also do well. Excellent yields of Lespedeza are obtained, and many worn-out fields are now profitable hay lands. Where the soil merges into Calhoun silt loam, yields are low.

The typical soil responds fairly well to good cultivation and fertilization practices. It lacks organic matter, and it is essential to improve drainage by tiling or ditching. Liming and growing legumes in a well-planned rotation would aid materially in bringing this soil to a higher state of productiveness.

OLIVIER VERY FINE SANDY LOAM

Olivier very fine sandy loam has a grayish-brown or brownish-gray very fine sandy loam surface layer passing into pale-yellow or grayish-yellow very fine sandy loam faintly mottled in places with gray and rust yellow. This is underlain at a depth of 15 or 20 inches by pale-yellow very fine sandy clay or moderately friable silty clay with mottles of gray and rust yellow. The material of the lower layer is light-gray slightly plastic heavy clay containing little very fine sand or fine sand and heavily mottled pale-yellow and rust-yellow or bluish-gray and yellow silty clay or clay. Dark-colored concretions are disseminated through the soil.

Some small areas of Olivier fine sandy loam were included in mapping. They differ from typical in being slightly coarser textured. Compaction is more defined than in Olivier silt loam. The lower part of the subsoil is comparatively tight and heavy in texture and is somewhat impervious to the passage of soil moisture. On slightly higher positions, where aeration and drainage are not greatly impeded, small patches of Lintonia very fine sandy loam have been included.

Olivier very fine sandy loam occurs principally on the second bottoms or terraces of Pearl River and Pelahatchee and Riley Creeks. Areas are almost flat or very slightly undulating, and drainage is fairly well established except in some of the low-lying areas.

This soil is not very extensive. About 75 per cent is cultivated or used as pasture land; the remainder is covered with a tree growth consisting mainly of shortleaf pine, gum, oak, and some beech.

The main crops are cotton, corn, oats, sugarcane, vegetables, and Lespedeza. Corn occupies the largest acreage and yields from 10 to 30 bushels to the acre. Oats yield from 15 to 30 bushels and sugarcane from 250 to 500 gallons of sirup to the acre. The soil is easily tilled and works up into a loose mellow seed bed. The recommendations for the improvement of this soil are similar to those given for Olivier silt loam.

LINTONIA SILT LOAM

The surface soil of Lintonia silt loam is brown or grayish-brown fine mellow silt loam grading at a depth of 2 or 3 inches into brown or yellowish-brown friable silt loam. This is underlain, at a depth ranging from 8 to 12 inches, by reddish-brown or yellowish-brown heavy silt loam or silty clay which passes at a depth ranging from about 15 to 30 inches into light yellowish-brown or yellow silt loam or silty clay loam with gray and rust-brown mottles.

The surface soil in cultivated fields is not so dark as that in timbered areas, owing to the influences of cultivation. Most areas have a smooth floury surface soil. The second layer is tight in places, and some compaction occurs in the subsoil. The material becomes less

compact with depth in most places. Where drainage is poorer than typical, gray mottles have developed. Dark-colored concretions occur in the subsoil.

Some small areas of Lintonia very fine sandy loam and Lintonia fine sandy loam have been included in mapping. The total area of the Lintonia soils is small, and the sandy soils are intimately associated with the silt loam, so that separation was not important. In some patches light-brown or yellowish-brown very fine sandy loam is underlain at a depth of 6 or 8 inches by pale-red or reddish-brown moderately friable silty clay passing down into friable reddish-yellow or buff-colored silty clay or silty clay loam, which gives way at a depth of 20 or 24 inches to mottled yellowish-brown and bluish-gray plastic clay loam or moderately friable pale-yellow silty clay loam mottled rust yellow and gray and containing concretions.

This soil occurs mainly in scattered areas on the high bottoms of Pearl River and on the highest and best-drained parts of the terraces. The small areas are usually low ridges or knolls, but the larger areas are nearly flat or very faintly undulating.

Nearly all the Lintonia soil is in cultivation. It is considered productive, and with proper tillage and the use of fertilizers it gives satisfactory crop yields. Corn, cotton, sorgo, soybeans, and Lespedeza have all been grown successfully. Corn yields about 30 bushels to the acre, and other crops do correspondingly well.

CALHOUN VERY FINE SANDY LOAM

The surface layer of Calhoun very fine sandy loam under timber cover is dark gray or gray. This grades abruptly into pale yellowish-gray or gray very fine sandy loam underlain at a depth of 6 or 8 inches by yellowish-gray or light-gray silty very fine sandy loam or fine smooth silt loam containing faint-yellow blotches. Beneath a depth of 20 or 25 inches the material is light-gray heavy slightly plastic very fine sandy clay or clay mottled yellow. Black and rust-brown concretions occur throughout the different soil layers.

This soil has been mapped on the high bottoms of Pearl River. Several areas are in the vicinity of St. Peters Church, in the northern part of the county, and along Campbells Creek. Areas are flat or slightly undulating, and drainage is poor. Crawfish holes are numerous.

Very little of the soil is farmed; most of it is covered with a good growth of timber. It is not subject to overflow and has about the same agricultural capacity as Calhoun silt loam.

CALHOUN SILT LOAM

Calhoun silt loam is gray, dark-gray, or mottled bluish-gray and rust-brown silt loam 2 or 3 inches deep, grading into light-gray or pale yellowish-gray silt loam with rust-yellow splotches, underlain at a depth ranging from 18 to 30 inches by compact or tight silt loam, silty clay, or heavy clay which is light gray or drab in color and contains an abundance of concretions. In many places buckshot concretions, composed of rust-brown, yellowish-brown, and blackish material, are present over the surface and through the soil.

Some areas of Calhoun silty clay are included with this soil. Where Calhoun silt loam merges into the Olivier soils, sharp boundary lines can not be drawn.

This soil occupies flat areas and slight depressions on terraces. The largest tracts are mapped along Pearl River, in the northern part of the county, where the terrace borders the upland. Small areas are scattered south of these bodies and also along Pelahatchee Creek. The land is flat and basinlike, and drainage is imperfect. The compact, impervious subsoil impedes the internal movement of moisture and air. Water often stands on the surface for some time after rains.

Very little of this soil is cultivated. It supports a tree growth including willow, oak, elm, sweetgum, and black gum. Somewhat better-aerated areas transitional between the Olivier soils and this soil are used in connection with the Olivier soils for cotton and corn. Lespedeza grows well where drainage is fair, but crops make a poor, uncertain growth for the most part.

This land is acid and low in organic matter. Drainage is essential in its improvement. The most practical use of the land under present economic conditions is for wood lots or pasture.

KALMIA SILT LOAM

The surface soil of Kalmia silt loam is dark grayish-brown or brownish-gray very fine sandy loam 1 or 2 inches deep, underlain by pale-yellow or grayish-yellow silt loam or very fine sandy loam extending to a depth of 10 or 15 inches. The subsoil consists of pale-yellow silty clay loam or fine sandy clay mottled gray, or of heavy tough pale-yellow very fine sandy clay with grayish mottles. At a depth of 25 or 30 inches there is some compaction, but locally the material becomes more friable and coarser textured. The more poorly drained areas contain small dark-colored concretions. Some patches of Kalmia fine sandy loam were included in mapping.

Kalma silt loam occupies high bottoms along Strong River in the southeastern part of the county. The land is mostly level, but is relieved by slightly depressed and undulating areas. Drainage is fairly well established, except in some of the low-lying areas.

Approximately 70 per cent of this soil is in cultivation or is used as pasture land. Corn, cotton, oats, sugarcane, vegetables, and Lespedeza are grown with moderate success when the land is properly managed and drained.

This is an acid soil, and lime is recommended to overcome this condition. A judicious use of fertilizer is necessary for good crop production. Soybeans and velvetbeans, where grown and used as green manure, eliminate some of the expense of fertilizing. Timber growth includes shortleaf pine, oak, gum, beech, hickory, ironwood, and holly.

MYATT VERY FINE SANDY LOAM

The surface layer of Myatt very fine sandy loam is brownish-gray or gray very fine sandy loam colored from organic matter. This passes quickly into gray or light-gray very fine sandy loam with brownish splotches, which is underlain at a depth of 10 or 15 inches by gray very fine sandy clay mottled yellow. Below a depth of 25

or 30 inches is gray compact or moderately tight clay with yellow mottles. Locally the compact layer is dry when the material above is saturated, and in places plastic clay forms the deep substratum.

This soil occurs as narrow belts along Dry and Clear Creeks. It is poorly drained, and water stands over most of it after a rain. The forest growth includes pine, black gum, sweetgum, water oaks, and beech. This is not a desirable farming land and is not suited to ordinary farm crops. Corn does poorly, and cotton tends to rust. Sugarcane grows fairly well. Carpet grass and Lespedeza afford some pasturage. It appears inadvisable to farm this type of soil when better moderately priced land can be obtained.

MYATT SILT LOAM

The surface layer of Myatt silt loam is brownish-gray or dull-gray silt loam 1 to 2 inches deep. This passes into gray or light-gray smooth fine silt loam underlain at a depth ranging from 12 to 16 inches by gray or bluish-gray silty clay or clay mottled in many places with rust-colored material. The lower layer is gray compact clay mottled yellow or yellowish brown. The surface and subsoil layers contain iron concretions in various stages of cementation.

Myatt silt loam occurs as irregular areas along Fannegusha, Clear, Riley, and Pelahatchee Creeks. The land is flat, and drainage is poor, the soil being water-logged through the rainy season. In dry weather it hardens and cracks.

Most of this land is in timber. Lespedeza and carpet grass are adapted to it and offer some grazing for livestock. The establishment of artificial drainage and the liberal use of manure and commercial fertilizer aid in producing crops, but because of the expense involved in thus preparing the land it is best to keep it covered with trees.

VICKSBURG FINE SANDY LOAM

Characteristically Vicksburg fine sandy loam near the banks of the larger streams consists of brownish-gray fine sand, about 2 inches deep, underlain by light-brown slightly loamy fine sand which at a depth of 10 or 12 inches gives way to brown fine sandy loam which in turn grades, at a depth of 20 or 25 inches, into light-brown fine sand. Farther away from the streams the profile changes, and in places brown fine sandy loam 8 or 10 inches deep grades into yellowish-brown heavy fine sandy loam underlain at a depth ranging from 14 to 20 inches by brownish-yellow or yellow fine sandy clay or silty clay mottled more or less with gray or bluish gray.

Some included areas approach loam in texture. These consist of brown mellow loam underlain at a depth of 6 or 8 inches by yellowish-brown loam which grades into yellow friable silty clay loam, giving way at a depth of between 16 and 20 inches to yellow silty clay. A few mottles of gray occur at a depth of 30 or more inches.

Vicksburg fine sandy loam occurs principally along the banks of Pearl River in narrow flats or on rounded ridges interspersed with narrow elongated depressions. Along the river bank are natural narrow levees that are not flooded so frequently as the lower ridges. The position and elevation of the soil are reflected in the character of the profile. The higher ridges are more sandy, and in the depres-

sions a heavy subsoil has developed. Some small low-lying areas of river wash, consisting of recently deposited accumulations of sands and silts, are also included. These areas are frequently flooded, and each inundation leaves a fresh deposit. The outlines of the areas are changed frequently by the cutting and building up of the stream.

A small part of the Vicksburg fine sandy loam has been cleared for cultivation. Cotton, corn, vegetables, and sweetpotatoes comprise the main crops, but peanuts, watermelons, soybeans, and sugarcane are also grown. High water renders this land in danger of overflow, and low depressions are often flooded. Timber of oak, beech, sweetgum, ironwood, dogwood, magnolia, ash, and other trees covers the greater part of the soil.

VICKSBURG VERY FINE SANDY LOAM

The surface layer of Vicksburg very fine sandy loam is brownish or light-brown very fine sandy loam. This is underlain at a depth ranging from 5 to 10 inches by light-brown or yellowish-brown silt loam or fine sandy loam which grades into yellowish-brown or light-brown fine sandy loam, silt loam, or silty clay loam with some gray mottles in places. In the wide bottoms the mottling is most pronounced in the underlying silty clay loam layer. This soil is silty in places and includes some areas of silt loam.

This soil lacks uniformity, largely because of the hummocky surface relief. The hummocks are less mottled than the material in the depressions. Along banks of the streams are narrow strips of well-drained soil only slightly mottled. These consist of brownish very fine sandy loam grading at a depth of 6 or 8 inches into lighter-brown very fine sandy loam underlain at a depth of 15 or 18 inches by brown silt loam which becomes lighter colored between depths of 20 and 30 inches.

Vicksburg very fine sandy loam occurs as scattered areas and narrow strips in stream bottoms. It occupies narrow belts along Campbells, Dobbs, Tumbaloo, Richland, Steen, Hominy, Mountain, and Mill Creeks and some of their tributaries.

The vegetation on this soil includes slash pine, sweetgum, black gum, holly, beech, cypress, magnolia, hickory, ironwood, and laurel. Some areas back from the streams and not subject to frequent flooding are cultivated to corn, cotton, and sugarcane, but most of the soil in its present condition is flooded after heavy rains and is little used for agriculture except as pasture and hay land.

VICKSBURG SILT LOAM

The surface layer of Vicksburg silt loam consists of grayish-brown or brown mellow silt loam. This grades at a depth of 5 or 10 inches into somewhat lighter-brown silt loam which in many places shows little change to a depth of 2 or 2½ feet. In many other areas below a depth ranging from 20 to 25 inches there is brownish-yellow or yellowish-brown silty clay loam or heavy silt loam mottled somewhat with brown and gray at greater depths.

In the Pearl River bottoms this soil varies with location. Stream action has caused the formation of many winding abandoned inter-

mittent channels and bayous and has built up hummocky ridgy areas along the sides of the river. In some places successive narrow level benches rise one above the other from stream level. In these ridges, depressions, and hummocks it is not feasible to separate the soil variations and phases that have been developed. The narrow old tortuous channels and intermittent ponds consist mostly of Waverly silt loam or Waverly silty clay, with some Collins silt loam. The narrow bottoms along meandering streams are often flooded by backwater from the river. These consist of drab-brown silt loam grading within a few inches into brown silt loam underlain by light-brown silty clay loam or heavy silt loam containing dark stains and bluish-gray mottles. On slightly higher elevations the soil is in many places brown silt loam grading into a yellowish-brown subsoil heavier in texture than the surface layer. Some of the highest ridges, which are seldom flooded even in times of exceptionally high water, have fairly well-developed profiles. Here brownish-gray mellow silt loam 2 or 3 inches thick grades into brown silt loam extending to a depth ranging from 6 to 9 inches. This is underlain by dull brownish-yellow heavy silt loam or silty clay loam which grades into moderately light-yellow silty clay loam mottled somewhat with gray. In these areas the soil resembles Olivier silt loam. Some small areas of the sandy soils of the Vicksburg series are included with this soil.

The surface features, together with the danger of flooding, have rendered a large part of this soil of uncertain value for farming operations. Some of the higher ridges would be productive farm land, but they are difficult of access because of intervening ponds and bayous. Along some of the larger creeks, such as Purvis and Dobbs Creeks, the soil occupies narrow nearly level belts.

Much of this land is still in forest, though at this time (1926) the timber is being cut rapidly for lumber. Oak, sweetgum, pines, holly, ironwood, and beech are the principal trees. The grass growth in many places is sparse, because of the frequent flooding and the timber growth, but on cleared areas a good growth of carpet grass, Lespedeza, and other grasses affords good grazing.

COLLINS VERY FINE SANDY LOAM

Collins very fine sandy loam has a surface layer of dark grayish-brown or brownish-gray very fine sandy loam 2 or 3 inches deep. This grades into light brownish-yellow or pale-yellow very fine sandy loam, underlain at a depth ranging from 8 to 18 inches by light yellowish-gray smooth fine silt loam mottled bluish gray and rust yellow, which is underlain at a depth of 20 or 25 inches by light-gray or bluish-gray heavy tight silty clay loam with splotches of rust brown and yellow.

In depressions and the more poorly drained areas the soil is mottled gray and brown at the surface, and the subsoil consists in many places of mottled bluish-gray and yellowish-brown heavy clay. The lower layer tends to develop some compaction. Dark-colored and rust-brown well-developed concretions and concretionary material are characteristic throughout the soil. At the heads of some drainage ways there is a thin surface covering of light-yellow fine

sand or sand washed from the adjoining upland soils. Some small areas of Collins silt loam and Collins fine sandy loam were included in mapping.

This soil occurs in the first bottoms of the streams. The most important areas are along Steen, Mountain, Tumbaloo, and Eutacutachee Creeks and French Branch, and at the heads of large streams. The relief is prevailingly flat, but is relieved by low hummocks and slight depressions. The land in places is poorly drained, especially at the heads of various streams; between overflows drainage is fair.

This soil is covered mostly with oaks, elm, ironwood, gum, and willow. Some of the better-drained areas are used for corn and to some extent for cotton. The land is well suited to Lespedeza and is used for hay and pasture land.

COLLINS SILT LOAM

The surface layer of Collins silt loam is brownish-gray or gray fine silt loam faintly mottled in many places with rust brown and gray. This grades, at a depth of 4 or 5 inches, into pale-yellow, brownish-yellow, or light-brown silt loam which is underlain at a depth of 15 or 18 inches by light-gray or grayish-yellow heavy silt or silty clay loam mottled rust brown and yellow. With depth the color becomes whitish gray or bluish gray, splotched with rust color. Dark-colored concretions and concretionary material are generally present in this soil. The material of the lower light-colored layer is in places impervious clay. Locally the lower part of the subsoil has developed into a hardpan. Other areas have a somewhat sandy subsoil mottled with brown and rust brown.

When dry the surface soil appears light gray or whitish. In many places it consists of silty material from recent depositions. Near the banks of some streams the soil consists of brown silt loam from 8 to 12 inches deep, underlain by light-brown or yellowish-brown silt loam or silty clay loam. In such areas the rust-brown concretionary material and gray mottles of the lower part of the subsoil are less conspicuous than in the typical soil. The height of the water table influences the depth to which the brown or yellowish layers are developed. Where underdrainage is poor the brown layer is thin and the soil resembles the Waverly soils. In general the concretions are most numerous where drainage is poorest.

Collins silt loam occupies the first bottoms of most of the streams in the central and western parts of the county. It occurs in association with the Waverly soils and is subject to overflow. The areas are narrow near the source of the streams, but attain a width of more than a mile along the largest creeks. The land is smoothly sloping, with a downstream gradient and a slight rise to the uplands or terraces. In areas adjacent to the uplands there is generally some admixture of colluvial material from the slopes. The lack of surface relief and the compaction of the lower part of the subsoil greatly hinder rapid movement or downward percolation of surface water.

Most of this soil has a forest cover and is used for pasture. Approximately 15 per cent has been cleared. The timber cover includes willow oak, water oak, sweetgum, beech, holly, ironwood, ash,

and hickory. The higher areas and some areas adjoining the uplands are used for producing corn, sorgo, sugarcane, and cotton. Results are fairly good.

The improvement of Collins silt loam involves ditching, application of lime to overcome acidity, growing humus-supplying crops, and the use of commercial fertilizers.

WAVERLY VERY FINE SANDY LOAM

Waverly very fine sandy loam in timbered areas consists of a dark-gray or dull-gray surface layer about 1 inch deep, grading into light grayish-yellow or gray very fine sandy loam, mottled lightly with rust brown, underlain at a depth of 10 or 15 inches by light-gray, bluish-gray, or pale-yellow fine sandy clay or very fine sandy clay splotched with yellow, which at a depth of 25 or 30 inches grades into stiffer compact clay or fine sandy clay showing some mottling of rust yellow and containing yellowish-brown or rust-brown concretions. Crawfish holes are common. When dry the surface soil is light gray, but when wet it darkens considerably. The lower part of the subsoil is usually water-logged, but the compact layer generally remains dry.

This soil is intimately associated with small patches of other bottom soils, which have been included in mapping. Areas are scattered, occurring mainly along Eutacutachee, Campbells, and Ashlog Creeks.

Waverly very fine sandy loam occupies low flattish areas, and most of it is flooded after heavy rains. Some of the more common trees are slash pine, black gum, sweetgum, cypress, and beech. In places the undergrowth is thick and hard to penetrate. None of the land is farmed, because of its very poorly drained condition and low producing power. In its present condition it is not suited to the common crops of the region and can probably be most economically used for forestry and grazing.

WAVERLY SILT LOAM

Waverly silt loam has a 1 or 2 inch dark-gray or yellowish-brown silt loam surface layer, overlying gray or whitish fine silt loam extending to a depth ranging from 8 to 20 inches, where it is underlain by light-gray silty clay loam splotched with rust-colored mottles. The lower horizon consists of bluish-gray or light-gray impervious or compact silty clay or clay mottled with yellow and rust brown. Varying numbers of concretions are present over the surface and through the soil.

In some areas the 3 or 4 inch surface layer is dark bluish-gray mottled rust brown, or dark brownish-gray silt loam with rust-brown mottles, and is underlain by dull-gray silt loam splotched heavily with brownish mottles, which gives way at a depth of 6 or 8 inches to mottled bluish-gray, yellow, and rust-brown silty clay loam which overlies plastic silty clay at a depth of 25 or 30 inches. Crawfish chimneys are numerous in many places. Patches of Collins silt loam were included in mapping.

Waverly silt loam occurs principally along the bottoms of Pearl River and Richland, Hominy, Tumbaloo, Dobbs, Campbells, Purvis, and Eutacutachee Creeks, and some of the smaller streams and

branches. Areas are level, with a slight slope from the stream bank back to the edge of the uplands. A number of wet basinlike depressions occur within the soil, which is poorly drained and along Pearl River is swampy in many places. It is subject to frequent floodings. The tree growth includes white oak, slash pine, sweetgum, persimmon, red haw, ash, and hickory.

A very small proportion of the Waverly silt loam is cultivated to corn and cotton. Average yields are low, though where the land is better drained and when seasonal conditions are favorable fair returns of corn are sometimes obtained. The land is considered suited to moisture-loving grasses and rice, and some Lespedeza is grown. In this county it can best be used for pasture or for forestry.

WAVERLY SILTY CLAY LOAM

The surface soil of Waverly silty clay loam is mottled brown and grayish silty clay loam. This grades into bluish-gray or light-gray silty clay loam mottled faintly with brownish yellow or rust brown. The lower layer is bluish-gray or light-gray tough impervious clay or silty clay mottled somewhat with rust brown and brownish yellow or yellow.

In depressions or small basins there is generally only a thin surface covering over the heavy clay subsoil. In such places dark-gray or bluish-gray silty clay loam mottled light gray, rust brown, and yellow grades at a depth of 4 or 5 inches into light-gray or gray clay mottled rust yellow, which at a depth ranging from about 25 to 35 inches gives way to light-gray or bluish-gray heavy impervious clay with rust-yellow splotches. Well-developed concretions occur in the different layers. Some areas of Waverly clay were included in mapping. On small hummocks and low ridges in areas of this land the soil is similar to Collins silt loam and Collins silty clay loam.

The water table in many places is close to the surface, and crawfish holes are numerous. Locally these whitish soils of the Waverly series are called "crawfish land." This soil is subject to overflow and is imperfectly drained between floods. In many faint depressions, where water stands for a long time, the surface soil is light gray.

Waverly silty clay loam occupies the most poorly drained parts of the first bottoms of streams, in most places occurring adjacent to the uplands. The largest areas are in the Pearl River bottoms north of the Yazoo & Mississippi Valley Railroad, and along Pelahatchee Creek.

This soil has very little importance agriculturally, and nearly all of it is in wood lots and pasture. It affords few possibilities for cultivated crops because of its heavy texture, low fertility, acidity, and poor drainage. In consideration of the cost and effort required to bring it to a productive state, it appears best to maintain it as timber and pasture land.

OCHLOCKONEE FINE SANDY LOAM

Ochlockonee fine sandy loam consists of grayish-brown or brown loamy fine sand or fine sandy loam, in places faintly mottled with rust brown, grading at a depth of 2 or 4 inches into brown or yellowish-brown loamy fine sand or fine sand which in many places

is mottled with some gray at a depth of 25 or 30 inches. Along the larger streams the surface is in places covered with loose fine sand that has been deposited by recent overflows.

There is considerable variation in this soil. The subsoil in many areas is poorly drained and remains moist. This condition influences the depth to which the brownish surface soil continues and also the character of the subsoil. Along Strong River the subsoil ranges from fine sandy loam to silty clay loam mottled brown, yellow, and gray. Back from the stream bank the subsoil is gray or bluish gray and the texture is heavier than that of the surface soil. Along the smaller streams the soil is more uniform. Here grayish-brown loamy fine sand 2 or 3 inches deep passes into brown loamy fine sand extending to a depth of 10 or 15 inches, where it is underlain by brown or yellowish-brown fine sandy loam, giving way at a depth ranging from 12 to 20 inches to brown or yellowish-brown silt loam or fine sandy clay which becomes lighter and mottled with gray at a depth of about 30 inches.

This soil is mapped along Strong River and the headwaters of Tumbaloo and Clear Creeks. It is subject to overflow after heavy rains. Most of the areas along the river are cleared, but those along the creeks are still in timber. Areas are somewhat undulating, and in the river bottom the surface in many places is cut by sloughs and old stream channels. About 60 per cent of the soil is cultivated to corn and cotton. Under favorable conditions corn yields 40 or 50 bushels to the acre. Many areas are suitable for sorgo and sugarcane, and all the soil is well suited to carpet grass, Lespedeza, and Bermuda grass.

The forest vegetation includes slash pine, bay, sweetgum, holly, beech, cypress, hickory, ironwood, laurel, and magnolia trees.

OCHLOCKONEE SILT LOAM

Ochlockonee silt loam has a 2 or 3 inch surface layer of dark-brown mellow silt loam. The next lower material is brown or yellowish-brown silt loam, which grades into lighter-brown silt loam continuous to a depth ranging from 10 to 16 inches, where it grades into light-brown or brownish-yellow silty clay loam or very fine sandy clay, generally showing mottles of gray and yellow. Rust-brown and dark-colored concretions are present in the lower part of the subsoil. The gray mottling is more noticeable back from the streams, and in places the surface soil is tinged with gray.

Variations in color and texture are common, and patches of Ochlockonee silty clay loam, Ochlockonee fine sandy loam. and Bibb silt loam have been included in mapping. In well-drained locations near the bank of Strong River the soil is mainly brown mellow silt loam grading into lighter-brown silt loam underlain by yellowish-brown silt loam or very fine sandy clay. Farther away from the river and along the many included bayous and former stream channels the soil consists of brown silt loam 8 or 10 inches deep, underlain by yellowish-brown silty clay grading at a depth between 15 and 30 inches into mottled yellow and gray clay or gray silty clay or clay mottled yellow. Along creek bottoms the surface layers are deep-brown silt loam and grade, at a depth of about 10 inches, into

lighter-brown heavy silt loam or silty clay loam, below which is yellowish-brown silty clay which shows little change or only slight evidence of mottling to a depth of 35 or more inches.

Ochlockonee silt loam occurs in the stream valleys of Strong River and as narrow belts along Clear, Fannegusha, Bakers, Riley, and Pelahatchee Creeks. The typical soil is well drained between overflows. In the mottled-subsoil variation underdrainage is not good, but is sufficient not greatly to hinder successful cropping. Many hummocks and depressions occur throughout areas of this soil.

In the Strong River Valley much of the soil is cleared and used for producing cotton, corn, oats, and Lespedeza. Crop yields fluctuate, depending on soil management and drainage conditions. Along the creek bottoms the land is used primarily for pasture. The timber growth is like that on Ochlockonee fine sandy loam.

BIBB SILT LOAM

Bibb silt loam has a surface layer of mottled gray, brown, and rust-brown or dull grayish-brown silt loam or silty very fine sandy loam. This grades, at a depth between 3 and 5 inches, into light-gray silt loam mottled rust yellow. The lower part of the subsoil is light-gray or bluish-gray silty clay loam or clay mottled in many places with pale yellow and rust brown. The dry surface soil appears whitish. In some areas a compact stratum retards the internal movement of air and moisture. Crawfish chimneys are numerous, and iron concretions are scattered abundantly over the surface, causing the soil to be called "buckshot land." The lower part of the subsoil contains numerous black and rust-brown concretions. In places the texture of the surface soil is very fine sandy loam or silty clay loam. These areas represent inclusions of other Bibb soils too intricately mixed with this soil to warrant separation. The boundary between the Ochlockonee and Bibb soils in some places had to be drawn arbitrarily.

This soil is extensive in stream bottoms on the eastern side of the county. Large areas are in the wide bottoms of Pelahatchee Creek and Strong River, and this is the predominant soil along Riley, Hollybush, Clear, and Brushy Creeks and is associated with other poorly drained soils in the valleys of Billy Walters, Purvis, and Clark Creeks. Areas are generally flat, except where relieved by a few depressions and ridges. In its natural condition the soil is very poorly drained and so subject to overflows as to be unsuitable for cultivation. The greater part of the land is now covered with beech, slash pine, oak, sweetgum, holly, ironwood, bay, magnolia, hickory, and other trees.

A few small areas of Bibb silt loam have been cleared and cultivated to corn and cotton. The plantings are made on the higher elevations and generally on transitional areas between this soil and the uplands or better-drained bottom soils. The yields are variable, but are low as a rule. In some years the crops are damaged by floods. Improved surface drainage helps to render the land suitable for Lespedeza and carpet grass. The soil is undoubtedly best suited to forestry and grazing.

BIBB SILTY CLAY LOAM

Bibb silty clay loam consists of light-gray or mottled brown and gray clay, grading quickly into light-gray plastic heavy clay, mottled in places with rust yellow and pale yellow, beneath which is bluish-gray stiff heavy clay. The texture of the surface soil is in places silty clay loam to a depth ranging from 3 to 5 inches. Some areas of Bibb very fine sandy loam have been included in mapping.

Bibb silty clay loam is the prevailing soil in the wide flat bottom of Fannegusha Creek in the northeastern part of the county. It is a wet, poorly drained soil, from which water drains very slowly. The forest growth is similar to that on Bibb silt loam. A large part of the timber has been removed. The growth of grasses is poor. The land is not cultivated because of its low fertility and the swampy condition obtaining through a large part of the year. It can best be used for timber growing or pasture.

SUMMARY

Rankin County is in the south-central part of Mississippi. It has an area of 801 square miles, or 512,640 acres.

The surface relief ranges in most places from moderately to gently undulating, but some sections are broken, rough, and hilly. The prairie lands are level or faintly undulating. Pearl River drains most of the county. The valleys of creeks are comparatively wide and flat, and wide bottoms and high terraces have developed along Strong and Pearl Rivers.

The population of the county in 1920 was 20,272. Brandon is the county seat and Pelahatchee the largest town.

The county has a mild climate, with an average frost-free season of about 230 days. Rainfall is well distributed throughout the year and is sufficient for all crops.

The principal crops of the county are corn and cotton. Cotton was the most important cash crop previous to the advent of the boll weevil. Since then cotton growing has only been intermittently profitable, and corn now occupies the largest cultivated acreage. Oats, potatoes, sweetpotatoes, peanuts, hay, sugarcane, tomatoes, and cabbage are also grown to some extent. Cattle and hogs, mostly rather poor-grade animals, are ranged in the timberland.

The Grenada soils are the most extensive and main agricultural upland soils in the county. They are suited chiefly to growing corn, cotton, and hay, but are used also in the production of potatoes, cane, tomatoes, and cabbage. Their fertility is good, but can be increased materially by applications of lime and growing and plowing under legumes.

The Lexington soils occur in hilly country, and the surface features limit easy or extensive tillage. They are used for the same crops as the Grenada soils and are managed in the same way.

The Pheba soils are not generally used for cultivated crops, because of their poor drainage and low fertility. They afford some timber and grazing land.

The Montrose soils, though extensive, are not agriculturally important. The heavy texture of the subsoil and poor drainage make them difficult to handle.

Nevada silt loam occurs in the scattered prairie lands and is one of the most productive soils in the county for corn, cotton, and hay.

Houston clay is a productive and fertile soil, but because of its heavy texture is used chiefly for pasture land.

The Susquehanna soils have a low agricultural value. They have plastic heavy subsoils, and because of their surface relief are better suited to forestry than to farming.

The Ruston and Orangeburg soils are sandy, friable, and well drained and are good farming soils where not too rough. The Cuthbert soils resemble the Ruston except in the development of the tight sandy clay subsoil.

The Caddo and Plummer soils are of low agricultural value because of their poor drainage and low fertility.

The Olivier and Collins soils are usually poorly drained. The Collins occur in overflow bottoms and the Olivier on terraces. They are fairly good or good farming lands, depending on drainage conditions and treatment.

The Lintonia soils are well drained, well aerated, and of good productive capacity. Practically all their area is in cultivation.

The Calhoun and Waverly soils are grayish and very poorly drained. They are largely timbered, but afford some grazing. The Waverly occur in the first bottoms or flood plains and the Calhoun on terraces.

The Vicksburg soils occupy first bottoms and are subject to frequent flooding. They are generally well drained, however, and are of high agricultural value.

The bottom soils of coastal-plain material include members of the Kalmia, Myatt, Bibb, and Ochlockonee series. The Kalmia are moderately well-drained terrace soils partly cleared and in cultivation. The Myatt and Bibb soils are poorly drained, acid, low in organic matter, and of low producing capacity. The Ochlockonee soils are fertile, but generally are untillable on account of the frequency of overflows.

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U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
HENRY G. KNIGHT, CHIEF
A. G. McCALL, CHIEF, SOIL INVESTIGATIONS
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP

RANKIN COUNTY
MISSISSIPPI

MISSISSIPPI GEOLOGICAL SURVEY
E. N. LOWE, DIRECTOR

LEGEND

Bibb silt loam — Bs	Kalmia silt loam — Kl	Ochlockonee fine sandy loam — Ol	Ruston fine sandy loam — Rf
Bibb silty clay loam — Bm	Lauderdale stony clay — Lc	Ochlockonee silt loam — Ot	Rf — Rolling phase
Caddo fine sandy loam — Cf	Lexington very fine sandy loam — Lv	Olivier very fine sandy loam — Oy	Ruston very fine sandy loam — Rv
Calhoun very fine sandy loam — Ca	Lv — Compact-subsoil phase	Olivier silt loam — Or	Rv — Rolling phase
Calhoun silt loam — Cs	Lintonia silt loam — L	Orangeburg fine sandy loam — Of	Vicksburg fine sandy loam — Vf
Collins very fine sandy loam — Co	Montrose silt loam — Ml	Of — Rolling phase	Vicksburg very fine sandy loam — Vv
Collins silt loam — Cl	Montrose clay — Mc	Pheba silt loam — Ps	Vicksburg silt loam — Vs
Cuthbert very fine sandy loam — Cu	Myatt very fine sandy loam — Mv	Plummer silt loam — Pl	Waverly very fine sandy loam — Wv
Grenada very fine sandy loam — Gv	Myatt silt loam — Ms	Susquehanna fine sandy loam — Sl	Waverly silt loam — W
Grenada silt loam — Gs	Nevada silt loam — Ns	Susquehanna very fine sandy loam — Sv	Waverly silty clay loam — Ws
Houston clay — Hc	Oktibbeha clay — Oc	Susquehanna silt loam — Ss	

CONVENTIONAL SIGNS

CULTURE *(Printed in black)*

- City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort
- Secondary roads and Trails
- Railroads Steam and Electric
- Bridges, Ferry
- R.R. crossings, Tunnel
- Ford, Dam
- School or Church Cemeteries
- Mine or Quarry, Mine dumps, Made land
- Bluff, Escarpment, Rock outcrop and Triangulation station
- Stony and Gravelly areas
- Soil boundaries
- Boundary lines (State, County)
- Boundary lines (Land grant, City or village)
- Boundary lines (Civil township, Reservation)
- U.S. township and section lines

RELIEF *(Printed in brown or black)*

- Contours, Depression contours
- Prominent Hills, Mountain Peaks
- Sand Wash and Sand dunes
- Shore and Low water line, Sandbar

DRAINAGE *(Printed in blue)*

- Streams
- Lakes, Ponds, Intermittent lakes
- Intermittent streams
- Springs, Canals and Ditches, Flumes
- Swamp, Salt marshes
- Submerged marsh, Tidal flats

The above signs are in the order of their use on maps. Variations from this usage appear in some maps of earlier dates.

Hugh H. Bennett, Inspector, District 4
Soils surveyed by Robert Wildermuth, in charge, and E. W. Knobel, A. L. Gray, and Grove B. Jones

BASE MAP IN PART FROM U. S. GEOLOGICAL SURVEY SHEETS

Scale 1/62500
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 Kilometers

Contour interval 20 feet.
Datum is mean sea level.

WILLIAMS & HEINTZ CO. WASH. D.C.

Field Operations
Bureau of Soils
1926

[PUBLIC RESOLUTION—No. 9]

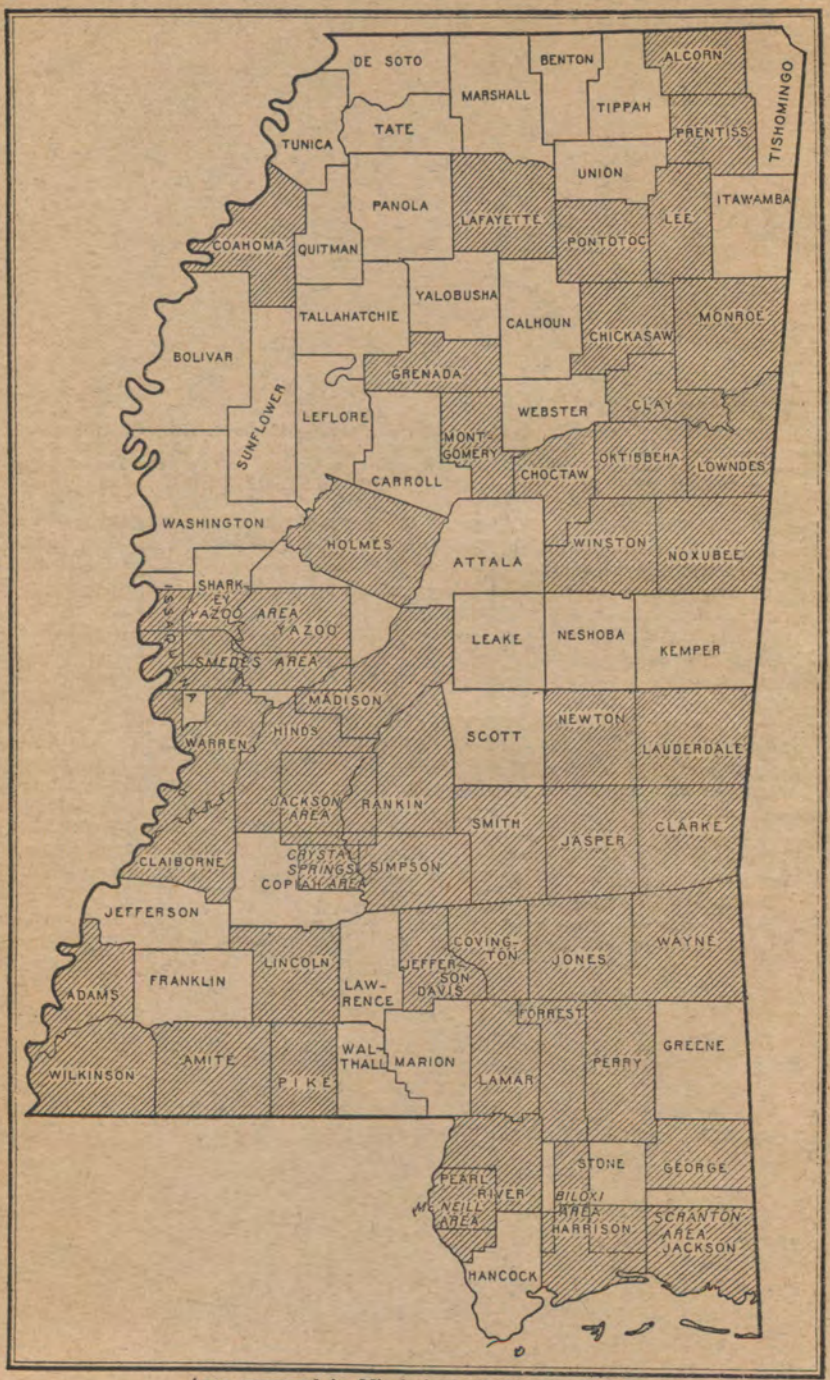
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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, and on July 1, 1927, the Bureau of Soils became a unit of the Bureau of Chemistry and Soils.]



Area surveyed in Mississippi, shown by shading