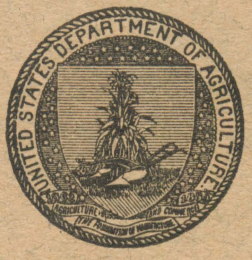
U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS.
IN COOPERATION WITH THE MISSISSIPPI GEOLOGICAL SURVEY.

SOIL SURVEY OF ALCORN COUNTY, MISSISSIPPI.

BY

E. MALCOLM JONES, IN CHARGE, AND E. P. LOWE, OF THE MISSISSIPPI GEOLOGICAL SURVEY.

[Advance Sheets—Field Operations of the Bureau of Soils, 1921.]



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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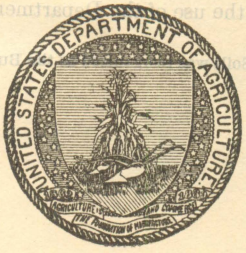

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1924.

[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, ninteen 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.]

CONTENTS.

ILLUSTRATIONS.

PLATES.

FIGURE.

MAP.

Soil map, Alcorn County sheet, Mississippi.

SOIL SURVEY OF ALCORN COUNTY, MISSISSIPPI.

By E. MALCOLM JONES, in Charge, and E. P. LOWE, of the Mississippi Geological Survey.

DESCRIPTION OF THE AREA.

Alcorn County is situated in the northeastern corner of Mississippi. It is one of the tier of counties along the Tennessee State line, and only one county separates it from the Alabama State line. The county is roughly rectangular in shape, with a maximum dimension of 26 miles from east to west and of 16½ miles from north to south. The included area is 398 square miles, or 254,720 acres.

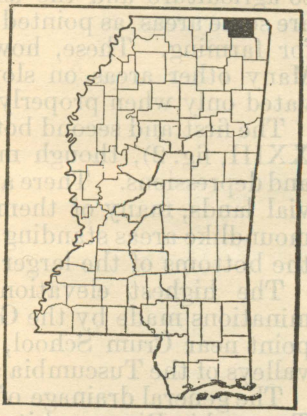

FIG. 26.—Sketch map showing the location of the Alcorn County area, Mississippi.

Alcorn County comprises a part of the physiographic province known as the Coastal Plain. The surface of this plain within the county ranges from very hilly and broken in the western part to rolling, undulating, and almost level in other parts, where there are low divides with rather broad shallow valleys and comparatively smooth slopes. In the western part there is a belt of hills several miles wide having a general trend north and south. These are called the Hatchie Hills. In some places they have almost a mountainous appearance, so rough is the topography. They consist of a series of prominent ridges separated by narrow valleys. Pine Mountain, an elevated stony knoll, stands out conspicuously above the associated hills in this belt.

In the Hatchie Hills section, fragments and ledges of ferruginous sandstone are abundant in many places. On some of the rather steep slopes outcrops of this sandstone completely cover the surface, preventing the growth of vegetation. Here and there on the high, winding ridges are found small areas of level land and slopes free of stones and not too steep for cultivation, although careful terracing would be necessary to prevent serious erosion. Where the Hatchie River enters the county the valley is wide and occupied by flat first-bottom or second-bottom terraces, the latter ranging in elevation from only a few feet to about 10 feet above the flood plain of the river. Here the slopes leading to the uplands are more gentle and ledges and fragments of sandstone less abundant, although an occasional ridge extends to within a short distance of the river and ends in a bluff at the stream or its flood plain. Toward the north, where the river leaves the county, the sandstone ledges and fragments become more numerous, and the ridges and hills strewn with sandstone and

a sandstone conglomerate flank the stream channel, first on one side and then on the other, forming blufflike declivities rising in many places 75 to 100 feet or more above the river. Here the valley narrows, and the wider strip of first bottom is found first on one side of the stream and then on the other, usually in the concaves of the bends.

The country between the Hatchie Hills and the valley of the Tuscumbia River has a rolling surface dissected by numerous streams. In places the slopes, although gentle, have been gullied and eroded until they present locally a very rough appearance. (Pl. XXIII, fig. 1.) The surface features of the area lying east of the Tuscumbia River are varied. The uplands range from almost level to hilly, with smooth, gentle slopes.

A very large proportion of the county is topographically well suited to agriculture and the use of improved farm implements; but there are some areas, as pointed out above, which are too hilly or too stony for farming. These, however, are suited to forestry and grazing. Many other areas on slopes susceptible to erosion should be cultivated only when properly terraced.

The first and second bottoms of the streams are in general flat (Pl. XXIII, fig. 2), though marked in some places by slight hummocks and depressions. There are shallow lakes scattered through these alluvial lands, many of them too small to map satisfactorily, and small moundlike areas standing well above overflow occur here and there in the bottoms of the larger streams.

The highest elevation in Alcorn County, according to determinations made by the Geological Survey in 1908, is 723.6 feet at a point near Crum School, the lowest is approximately 425 feet in the valleys of the Tuscumbia and Hatchie Rivers at the north county line.

The general drainage of the county is toward the northwest. The Tuscumbia River and its tributaries form the main drainage system of the county. The Hatchie River enters the county in the southwestern part and flows northward, passing out of the area into Tennessee. With its tributaries, it drains the western part of the county. The branches of these two streams and their subtributaries or streamlets ramify all parts of the county, so that nearly every farm is connected with one or more drainage outlets, or includes slopes leading to such outlets. There are some relatively low flat areas in the first and second bottoms, where the drainage is imperfect, but these generally can readily be connected with outlets by ditching short distances.

Hatchie River has been canalled for a short distance, while the Tuscumbia is canalled through the county, except for a short strip along the part of its course in T. 1 S., Rs. 5 and 6 E. The larger streams emptying into the Tuscumbia River have in most cases been dredged for short distances along their lower courses. (Pl. XXIV, fig. 1.) The canalled streams are still cutting their new channels and the old channels are filling with sediment deposited during overflows. Most of the bottom land is overflowed only during excessive rains and the inundations are of short duration. Where the Tuscumbia Canal stops, just before the stream passes out of the area into Tennessee, the water during heavy rains spreads out over a large area of bottom land, where it stands for long periods of time.

In the valley of the Tuscumbia there are many artesian wells. These have an average flow of 15 gallons per minute.

Alcorn County was organized from parts of Tishomingo and Tippah Counties in 1870. The original surveys were made about 1834 and the first settlers came in some time before 1840. In 1880 the population of the county was 14,272, of which 11,997 was classed as rural. In the next decade there was a slight decrease and in the decade following a corresponding slight increase in population, the number in 1900 being only a few hundred more than in 1880. Since 1900 the rate of increase has been somewhat greater, the total population being 18,159 in 1910 and 20,817 in 1920. Corinth, the largest town and the county seat, has a population of 4,946. Rienzi, the next largest, 493; Kossuth, located in the central part of the area, and the home of the agricultural high school, 247. Wenasoga, Strickland, and Glen are other small towns of importance. Corinth, with its adequate railroad facilities and improved public highway, is the gateway to the Shiloh National Park, many visitors annually passing through the city to visit this picturesque and historical place.

Three railroads traverse the county, the Mobile & Ohio, the Southern, and the Illinois Central. The Mobile & Ohio is a direct line from Mobile to St. Louis, the Southern from Memphis to Chattanooga, and the Illinois Central from Birmingham to Chicago. At present the county roads as a whole are poor, although some of the main highways are hard surfaced and afford travel the year round. In the past much money has been used to improve the public roads, with poor results, owing mainly to the fact that inexperienced men have been in charge of the construction, but recently competent engineers and road builders have been employed and within a short time the county will have an excellent system of hard-surfaced highways. Two telephone systems furnish adequate service for the area. The school system has improved in recent years and in some sections one-teacher schools have been displaced by consolidated schools.

Corinth is the principal local market for cotton and other farm products. The outside markets of importance are St. Louis and Chicago. Much lumber of small dimensions is shipped from Corinth to northern and eastern markets. Some lumber goes to Mobile and New Orleans for export.

CLIMATE.

The climate of Alcorn County is typical of the warm temperate zone of the southeastern United States. The mean annual temperature is 60.1° F. The winters are short, and while freezing temperatures usually occur in each of the winter months, periods in which the temperature is below zero are exceptional and of short duration. The coldest months are December, January, and February, with an average temperature of 41° F.

The summers are long, with the temperature not unusually high, but oppressive at times, owing to the high relative humidity. The mean temperature for the summer is 77.9° F.

The annual precipitation averages 50.59 inches, and is distributed over the entire year. Somewhat more than half the rainfall comes in the winter and spring months, but even in the fall, the driest part

of the year, the average monthly precipitation is nearly 3 inches. There are, of course, occasional protracted periods of drought, but where the soil is well prepared and frequent cultivation follows, crops seldom suffer from lack of moisture.

The average date of the last killing frost in spring is March 27, and that of the first in fall October 28. The date of the latest killing frost ever recorded in the spring is April 12, and the earliest in fall October 11. There is a normal growing season of 215 days, or about 7 months. Winter gardens of hardy vegetables are grown in December and January.

The following table, compiled from the records of the Weather Bureau station at Corinth, gives the more important climatic data:

Normal monthly, seasonal, and annual temperature and precipitation at Corinth.

(Elevation, 470 feet.)

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1910).	Total amount for the wettest year (1911).
	°F.	°F.	°F	*Inches.*	*Inches.*	*Inches.*
December	41.7	76	4	5.76	3.76	13.26
January	41.0	78	−8	4.58	4.22	3.48
February	40.4	82	6	4.25	3.73	5.76
Winter	41.0	82	−8	14.59	11.71	22.50
March	51.4	90	14	5.70	.24	2.27
April	59.7	91	28	4.78	4.02	9.32
May	69.1	100	35	4.02	5.74	1.36
Spring	60.1	100	14	14.50	10.00	12.95
June	75.9	104	46	3.86	3.31	4.11
July	79.1	102	54	4.92	4.88	6.49
August	78.6	104	50	3.78	1.23	9.03
Summer	77.9	104	46	12.56	9.42	19.63
September	73.0	102	39	2.96	2.50	3.64
October	61.2	93	26	2.41	4.65	4.70
November	50.6	83	11	3.57	1.74	3.92
Fall	61.6	102	11	8.94	8.89	12.26
Year	60.1	104	−8	50.59	40.02	67.34

AGRICULTURE.

Originally the greater part of the uplands of Alcorn County supported an open mixed forest of shortleaf pine, oak, chestnut, hickory and other hardwoods. The creek bottoms were usually wide swampy areas covered with a heavy forest of gum, oak, and beech, with a dense undergrowth of vines and cane. There were small areas where the soil was calcareous and supported a growth of native grasses which afforded good grazing and which, owing to the resemblance to the open country farther south, were called "prairie lands."

The early settlers occupied the smooth uplands and terraces or second bottoms and grew cotton, corn, wheat, rye, and barley to supply the household needs. Soon after the invention of the cotton gin,

cotton became the principal cash crop, though at this time it was necessary to transport it by wagon overland to the Memphis market, a distance of 100 miles. With the coming of the Mobile & Ohio Railroad in 1861 the marketing of cotton was greatly facilitated and production increased.

After the Civil War much of the land originally farmed was abandoned, owing to the scarcity of labor, and much of it reverted to forest. New fields in the uplands and along the edges of the stream bottoms were brought under cultivation.

The 1920 census reports 46.1 per cent of the area in farms as improved land. Most of the unimproved land consists either of uncleared bottom land or land recently cut over by lumbermen. The total number of farms increased from 2,440 in 1909 to 2,901 in 1919.

Within the last few years drainage districts have been laid out and many of the streams canalled, thus reclaiming much of the wide creek bottoms and converting them into highly valuable farming land, now practically safe from the overflows that formerly made farming in the bottoms largely dependent upon the distribution of the rainfall as influencing floods. The reclamation of these highly productive bottoms represents one of the most important steps in the agricultural development of the county. According to the 1920 census the total area in drainage districts is 53,483 acres, or about 21.6 per cent of the land area of the county. The area in operating drainage enterprises is 26,883 acres, 13,102 acres of which is improved land. The capital invested in these enterprises to December 31, 1919, is $131,220, or an average of $4.88 per acre.

The alluvial soils are very productive and a large proportion of the cotton, corn, and hay produced in the county is grown on them. The following table shows the relative importance of the various crops for the censuses 1880 to 1920 inclusive:

Acreage and production of various crops 1879 to 1919, inclusive.

Crop.	1879		1889		1899		1909		1919	
	Acres.	*Bushels.*	*Acres.*	*Bushels.*	*Acres.*	*Bushels.*	*Acres.*	*Bushels.*	*Acres.*	*Bushels.*
Corn	22,589	381,385	19,121	235,239	27,307	445,940	24,797	434,132	33,973	543,452
Oats	3,358	31,939	2,448	20,079	409	4,250	362	4,524	81	988
Wheat	1,078	5,070	283	1,587	447	2,410	28	178	103	969
Cowpeas				358	607	5,533	207	918		
Peanuts					31	637	22	906	73	1,666
Potatoes		4,057	42	2,612	117	5,428	157	13,157	188	12,131
Sweet potatoes	224	16,714	179	11,499	101	4,952	314	28,076	252	26,891
		Pounds.		*Pounds.*		*Pounds.*		*Pounds.*		*Pounds.*
Tobacco	40	14,852	2	350	8	1,700	1	432		
		Bales.		*Bales.*		*Bales.*		*Bales.*		*Bales.*
Cotton	18,863	7,477	15,695	3,007	16,646	5,325	19,398	5,071	23,499	7,920
		Tons.		*Tons.*		*Tons.*		*Tons.*		*Tons.*
Hay	94	86	2,448	3,097	946	1,017	3,343	4,896	7,451	8,362
		Gals. sirup.		*Gals. sirup.*		*Gals. sirup.*		*Gals. sirup.*		*Gals. sirup.*
Sugar cane					1	60	134	6,739	68	2,675
Sorghum cane		28,342	234	12,125	290	23,876	198	9,816	386	16,483
			Trees.	*Bushels.*	*Trees.*	*Bushels.*	*Trees.*	*Bushels.*	*Trees.*	*Bushels.*
Apples			13,429	21,913	25,582	8,780	17,517	7,582	13,777	7,948
Peaches			14,705	22,551	86,101	292	24,060	9,901	21,186	21,023
					Vines.	*Pounds.*	*Vines.*	*Pounds.*	*Vines.*	*Pounds.*
Grapes					4,277	32,009	4,322	12,248	1,711	23,436

The acreage in corn increased from 22,589 acres in 1879 to 33,973 acres in 1919, the extension being due to the reclaiming of the fertile bottom lands, which are well adapted to the production of the crop.

The level surface of the bottoms makes possible the use of improved farm implements, and this, with the high fertility of the soil, insures good yields at a relatively low cost of production. The farmers recognize this fact and the growing of corn is confined mainly to the bottoms and second bottoms; with only a small acreage on the uplands. Plate XXIV, Figure 2, shows a good growth of corn on a well-managed field of Catalpa clay, a productive first-bottom soil. Corn until recently has been almost entirely a subsistence crop, being used largely to feed work animals, and for making meal, hominy, and grits for home use. It is also fed to hogs and cattle to some extent.

Cotton occupies the next largest acreage, 23,499 acres being devoted to its production in 1919, yielding 7,920 bales. Cotton is purely a cash crop—with many farmers the only cash crop. The oil is extracted from the seed at local oil mills and the meal obtained in this process is used as fertilizer and feed for cattle.

It will be noted from the table above that in 1879 oats were planted on 3,358 acres, while in 1919 only 81 acres were devoted to the crop. Oats are grown to some extent as a winter cover crop, and also for winter and early spring grazing. The harvested oats are usually fed in the sheaf, few farmers threshing the grain. The crop is used exclusively for feeding stock. The reasons for the marked decline in the acreage of the crop are not apparent.

In the early days wheat was grown on nearly every farm for home consumption, but in later years with adequate transportation facilities it was found that flour could be bought elsewhere cheaper than it could be produced, and other crops giving more profitable returns have taken its place. The 1920 census shows 103 acres in wheat, yielding 969 bushels.

Sweet potatoes are grown on practically every farm for home consumption and on many for the local markets. They are also used as feed for hogs and dairy cattle. According to the census, sweet potatoes were grown on 252 acres, with a production of 26,891 bushels in 1919, or an average of about 106 bushels per acre. Yields of 150 bushels to the acre are not uncommon, and this figure is exceeded on many farms. The growing of sweet potatoes for hog feed has been stimulated by the increased interest in hog raising and by the introduction of houses for drying and storing the crop.

Usually enough hay is grown to supply the farms and local markets. Hay occupied 7,451 acres in 1919, the production reaching 8,362 tons. In recent years lespedeza has been grown more extensively for hay than formerly. It promises to become one of the leading hay crops of the county. Other hay crops are alfalfa, cowpeas, Johnson grass, sweet clover (melilotus) soybeans, and sorgo. Bluegrass and red clover seem to thrive, volunteering on the edge of the bottom lands, and probably would prove valuable hay crops if seeded on these lands. Peanuts, soybeans, cowpeas, rye, melilotus, and oats are usually grown as forage crops and for grazing hogs.

Many farms have a small home orchard of some or all of the following fruit: Apples, peaches, pears, plums, and grapes. There are a few apple orchards of commercial size, but all the fruit is disposed of in the local markets. The area seems well adapted to the production of apples, as many very old trees still bear an abundance of fine

fruit. Of the varieties grown, the Yates seems to be the most popular; it is valued especially for its keeping qualities.

The 1920 census reports 1,128 beef cattle, 8,287 dairy cattle, and 10,463 hogs in the county.

Dairying is only of importance near Corinth. Whole milk and cream are supplied this market by local dairymen. The Jersey is the favorite dairy breed, although there are some Holstein and Durham cattle in the herds.

A hog-feeding station is located at Corinth. Hogs are bought from the farmers in the surrounding country, fattened for a period of several weeks, and then shipped to northern markets in carlots. The improvement in the quality of hogs in recent years has been very noticeable and the county to-day has some splendid herds. The most popular breeds are the Poland-China and Duroc-Jersey.

The level fertile bottom soils are recognized as the most favorable corn-land soils, and the limy slope soils and the outer edges of the bottoms as being best adapted to alfalfa and melilotus. Cotton is grown on all types of soil, and little attention has been given to selecting varieties best suited to particular soils or soil conditions. Some of the popular varieties grown at the present time are Half-and-Half, King, and Wanamaker Big Boll. The boll weevil has not affected the production of cotton in Alcorn County to the same extent as in the areas lying just south of it, but at times, in certain localities where cotton matures late, the weevil has become somewhat destructive.

The prevailing system of farming is concerned with the production of two crops, cotton and corn. No definite system of crop rotation is practiced. Most farmers recognize the benefit to be derived from occasionally turning under cowpeas or other legumes, but this is only done by a few of the more progressive. The practice of growing cotton for two years, then changing to corn for one year is followed by many. Commercial fertilizers, consisting in the main of acid phosphate and cottonseed meal, are used on most of the upland soils, but fertilizers are seldom used on the bottom lands, because of the natural productiveness of the alluvial soils. Many methods are used in preparing the land for the crop to be grown. On the uplands, the farmers ridge the corn and cotton land just before the time of planting, without previous "flat breaking," and depend on subsequent cultivation with a one-horse plow to keep the ground in good tilth. On the bottom lands the more progressive farmers first "flat break" the land, disk it until a good seed bed is obtained, and then make rather shallow, wide beds for planting. A few, where the drainage is almost perfect, plant corn on the flat surface with good success.

Cotton is usually planted from the 10th to 20th of April. The planting of corn depends frequently upon when the land can be gotten in readiness, this ranging from the first of March to the middle of May, usually it is planted about March 20.

The teams and implements are efficient, although the use of implements that cover more ground and the employment of greater horsepower per man would be an improvement over present practices. Two-horse plows are generally used in breaking the fields and one-horse plows in cultivating the crops. The bottom lands planted to corn are usually cultivated with two-row cultivators of modern type.

The use of the tractor as a means of increasing horsepower per man on the more nearly level farm land is recognized and the small tractor of 16 to 20 horsepower is fast gaining favor with those farmers engaged chiefly in the production of hay and corn.

The 1920 census reports a total of $69,957 spent in 1919 for fertilizers, or an average of $34 per farm for the 2,052 farms reporting. Complete mixtures of fertilizers, at the rate of about 200 to 300 pounds per acre on the upland soils, were in rather common use until recently, but many farmers now are using only acid phosphate and cottonseed meal, while others use acid phosphate alone.

Most of the farm labor is performed by the farmer and his family, although in the southern part of the county considerable negro labor, tenants working on shares, is employed. Under normal conditions an adequate supply of labor is available at moderate wages.

According to the census there were 2,901 farms in Alcorn County in 1919, with an average size of 68.5 acres per farm, but it must be borne in mind that the census considers each tenancy a farm, and the average holding is therefore much larger than the number given. The number of farms operated by owners was 52.4 per cent of the total.

The price of agricultural land in the county varies considerably, ranging from about $10 to $15 an acre for land some distance from the railroad, with unfavorable topography, to $100 or more an acre for the more desirable land along improved highways and within short distances of railroad shipping points.

SOILS.

Alcorn County lies in the soil province known as the Coastal Plain region. It is situated in the northeastern part of the State just north of the Black Prairie Belt of the Mississippi-Alabama prairie region. The same formation (the Selma Chalk) that underlies the prairie belt to the south underlies much of the county, but it outcrops in only a few places, ordinarily on the low parts of southward-facing slopes.

The upland soils of the county, amounting to about 73 per cent of the total area, are derived chiefly from (1) sandy deposits of the Coastal Plain, which give rise to the Ruston, Susquehanna, and Orangeburg soils, and the calcareous deposits of the same region, which give rise to the Sumter, Oktibbeha, and Houston chalk; and (2) material which appears to be related to loess, which gives rise to the Pheba soils.

The alluvial soils consist of wash from the various upland soils. Much of this material appears to have been washed from the extensive areas of Pheba soils, although a considerable proportion is derived from other upland soils. The surface soils of the wider bottoms are composed chiefly of silt and clay, with comparatively little sand. The alluvial soils in some parts of the county are quite varied in texture and color within short distances, owing to varying conditions of deposition and to the wide differences in drainage conditions between the areas in depressions and those on slight ridges and hummocks. For this reason the bottoms were mapped in a more generalized way than the uplands.

The influence of the wash from the limy areas upon the bottom lands is very noticeable in both the darker color and more friable structure of the dry soil. The old soils derived from alluvium, occurring on the stream terraces, or second bottoms, that stand in most cases well above present overflows, are more uniform both in color and structure than the alluvial types of the first bottoms. On the terraces the material has undergone more change than those more recently deposited in the overflowed lands, for the former have not only been exposed to weathering processes longer, but also have enjoyed better drainage and aeration with the result that at least some of the soils have come to resemble more or less the upland soils.

Within the limits of some of the first bottoms there are some small mounds or moundlike bodies which are not overflowed, although surrounded by overflowed land. These areas were probably occupied by Indians for long periods, and the very dark color of the soil is undoubtedly due to fires and other effects of occupation.

Alcorn County includes 26 different soil types and one phase. These are grouped into 18 soil series. The uplands are represented by the Ruston, Orangeburg, Susquehanna, Pheba, Oktibbeha, Sumter, Greenville, and Houston series. The stream terrace, or second-bottom, soils are classed in the Olivier, Lintonia, Calhoun, and Amite series. The first bottoms include representatives of six series, the Collins, Ochlockonee, Bibb, Waverly, Catalpa, and Trinity.

The types of the Ruston series are characterized by the gray to grayish-brown color of their surface soils and the reddish-yellow to yellowish-red or dull-red color and moderately friable structure of their subsoil. The series is intermediate between the Orangeburg and Norfolk in subsoil color. Drainage is well established.

The types in the Orangeburg series have grayish soils, although ranging to reddish brown in places, and a red, friable sandy clay subsoil or, in the case of the sand, substratum. The drainage is good.

The Susquehanna series includes types with gray to brownish or reddish surface soils and a plastic, heavy subsoil, characteristically mottled with reddish, grayish, and yellowish colors. Where the basic clays are exposed by erosion they often show brilliant coloring of bright red, dark red, purple, gray, drab, and white. Except in the level areas the surface drainage is good, but the impervious nature of the subsoil retards the internal movement of moisture.

The types included in the Pheba series have light-brown to brownish-gray surface soils, with a reddish-yellow or buff subsoil. The lower subsoil is compact and mottled yellow, brown, and gray. In most areas dark-colored concretions and concretionary material are common in the lower subsoil. Surface drainage is in many places inadequate and the compact substratum retards internal movement of air and moisture. These soils resemble the Grenada soils throughout the 3-foot section, differing only in having a rather more grayish surface soil and possibly a little more sand in the subsoil.

The types of the Oktibbeha series have grayish to brownish or reddish-brown surface soils, a brownish-red upper subsoil and a mottled reddish, drab, and yellowish or yellowish and drab lower subsoil. The soils are similar to the Susquehanna, but apparently have been influenced by the underlying calcareous material, which is encountered in parts of their area within the 3-foot section.

The types of the Sumter series have brown to yellowish-brown soils and a grayish-yellow or greenish-yellow highly calcareous subsoil. In most places there is an abundance of partly weathered fossil shells on the surface and throughout the soil and subsoil.

The types of the Greenville series are characterized by reddish-brown to red surface soils and a red subsoil. The series is represented in Alcorn County by the Greenville clay loam.

The Olivier series includes terrace soils with yellowish-brown to light-brown surface soils, a yellow or light reddish yellow upper subsoil, and a mottled yellowish and grayish lower subsoil, containing in many areas dark-colored or rusty-brown concretions or concretionary material. The soil is much like that of the Lintonia, while the lower subsoil resembles that of the Calhoun series. The material giving the Olivier is derived chiefly from the Pheba soils, which is true also of the material from which the Lintonia and Calhoun soils have developed. The drainage is fairly good.

The surface soils of the types classed in the Lintonia series are brown to yellowish brown and the subsoil in the upper part buff or light reddish yellow, and in the lower part yellow. These are the better drained second-bottom soils.

The Calhoun series includes types with light-gray surface soils, and a mottled light-gray and pale-yellow to bluish-gray subsoil. Dark-colored concretions are present in great abundance in some places. In places the lower subsoil is compact and impervious; in others it is less compact but very heavy clay and rather impervious. The soils are very poorly drained.

The Amite series includes types with dark-brown to dark reddish brown surface soils, and a friable dark-brown to dark reddish brown subsoil. The dark color of the soils is the result of occupation by Indian camps. Fragments of charcoal and often of pottery are to be found in places through the soil and subsoil.

The types included in the Collins series have yellowish-brown to light-brown surface soils and a pale-yellow subsoil, mottled with gray, bluish gray, and yellowish brown. Rusty-brown concretions and concretionary material are present in the lower subsoil. The Collins series is the first-bottom correlative of the Olivier. The soil is like that of the Vicksburg and the subsoil like that of the Waverly. The drainage between periods of overflow is fairly good, but not so good as that of the Vicksburg. The material has been washed chiefly from the Pheba soils.

The Ochlockonee soils are dark gray to brownish, with a light-brownish, or mottled brownish, yellowish, and grayish subsoil. These soils occur in the first or overflowed bottoms of the streams. They are composed of wash from the Coastal Plain soils. The areas are subject to overflow, but between overflows the drainage is good.

The types of the Waverly series have gray or mottled brownish and grayish soils and a light-gray or bluish-gray subsoil, faintly mottled with brownish yellow, yellowish brown, or rusty brown. The soils are poorly drained and subject to overflow. These are first-bottom soils, the material of which has been washed chiefly from the Pheba soils.

The Bibb series includes types with grayish soils and a light-gray to whitish subsoil mottled in many places with yellow and brown. Iron stains and black concretionary material appear in the subsoil.

The soils are subject to overflow and are poorly drained. These are first-bottoms soils, the material of which has been washed from the upland soils of the Coastal Plain region.

The Catalpa series includes types with brown soils and a light-brown or yellowish-brown subsoil. In places where the soil receives continuous washings from the adjacent limy slopes of the Sumter soils and Chalk (Houston material) the surface soil is dark brown to very dark brown. The material is neutral to calcareous. These soils occur in the first bottoms. Enough of the material is derived from the limy uplands to give a calcareous nature or at least a neutral reaction in the typical areas. The drainage is good between periods of overflow. The soil crumbles to a desirable tilth on drying.

The types in the Trinity series have dark-brown to black soils and a subsoil of the same color range. They are derived mainly from material washed from the limy upland soils. The organic-matter content is high and lime is normally present in sufficient quantities to produce a friable structure, the soils crumbling to a desirable tilth on drying. These soils occur in the first bottoms. The drainage is good between overflows.

In the following pages the various types are described in detail, and their relation to agriculture is discussed. The table below gives the actual and relative extent of each soil type mapped:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Pheba silt loam	68,032	26.7	Orangeburg fine sandy loam	1,600	0.6
Ruston fine sandy loam	45,184	17.7	Greenville clay loam	1,408	.5
Collins silt loam	29,568	11.6	Waverly silty clay loam	1,216	.5
Ruston stony fine sandy loam	25,984	10.2	Lintonia silt loam	1,216	.5
Olivier silt loam	14,912	5.8	Calhoun silt loam	1,216	.5
Ochlockonee silt loam	12,032	4.7	Trinity clay	1,088	.4
Susquehanna silt loam	9,472	3.7	Catalpa clay	960	.4
Oktibbeha clay	6,016	3.3	Susquehanna fine sandy loam	896	.4
Shallow phase	2,176		Chalk (Houston material)	896	.4
Ruston gravelly sandy loam	7,744	3.0	Pheba silty clay loam	768	.3
Catalpa silty clay loam	5,312	2.1	Sumter clay	448	.2
Ruston silt loam	4,928	1.9	Amite fine sandy loam	64	.1
Bibb silt loam	4,672	1.8			
Oktibbeha silt loam	4,672	1.8	Total	254,720	
Ochlockonee fine sandy loam	2,240	.9			

ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam consists of brownish-gray, gray or light-brown fine sandy loam, underlain at an average depth of 8 or 10 inches by red, friable fine sandy clay. The lower subsoil is typically more sandy than the upper subsoil. In places there are some quartz gravel and soft ferruginous pebbles on the surface.

The Orangeburg fine sandy loam is developed in small scattered areas on slopes or near the tops of slopes. It is found north of Cooks Chapel, west and southeast of Floyds Store, west of Union School, north of Coke, near Glen, east of Jerusalem Church, southwest of Kendrick, east of Jones School, south of Lookout School, and near Mount Pleasant Church, Brush Creek Church, and Keaths Creek.

The type as mapped in Alcorn County is in general hilly, and the drainage both of the surface and subsoil is good. The type is not extensive and only a small part is under cultivation. A large part

is occupied by a forest growth consisting largely of blackjack oak, hickory, and pine. Cotton is the crop usually grown. It gives good yields where properly handled. It responds well to good tillage, to the application of manure and commercial fertilizers, and to the growing of legumes. The type warms up early in the spring, and crops may be planted from one week to ten days earlier on this soil than on the heavier types. In general, cultural requirements of this type are identical with those of the Ruston fine sandy loam. In other sections of the State this type is considered well adapted to peaches.

GREENVILLE CLAY LOAM.

The surface soil of the Greenville clay loam consists of grayish-brown to reddish-brown silt loam to very fine sandy loam which is underlain at about 3 or 4 inches by a brown to reddish-brown silty clay loam extending to an average depth of 8 inches. The subsoil is a dark-red friable clay or silty clay. The immediate surface in nearly all cases is quite silty, but when the land is plowed it turns up to form a silty clay loam or clay loam. Both the soil and subsoil are friable. Where deep cultivation is employed the freshly plowed fields have a dark-red or reddish-brown color.

The type occurs as small areas 1 mile east of Farmington Church, southeast of Field School, near Jerusalem Church, around Kendrick, near Hickory Flat School, northeast of Indian Springs, east of Lone Pine School, and south of Mathis Store.

It occurs on the higher divides in gently rolling to gently undulating areas, some of which resemble table-lands.

The surface drainage is generally adequate and the underdrainage good, as the friable structure permits the free movement of the soil waters.

The Greenville clay loam occupies slightly more than 2 square miles in the county, but it is recognized as a very durable and productive soil, and nearly all of it is under cultivation. Cotton and corn are the main crops, but excellent yields of oats, soybeans, peanuts, lespedeza, and potatoes are obtained. Corn yields 50 bushels or more per acre and cotton 1 bale per acre in good seasons. This type usually requires heavier implements than the lighter soils of the county for the first breaking of the ground, and sometimes becomes cloddy, but once well broken under proper moisture conditions in the fall or early spring, good tilth can be maintained throughout the season. The farms on which this type occurs are operated in most cases by the owners.

Fertilizers, consisting usually of acid phosphate and cottonseed meal, are applied at the rate of 200 to 300 pounds to the acre.

Land of this type has a higher value than the other upland soils of the area.

The growing of winter cover crops, such as oats, rye, hairy vetch, and bur clover, to be turned under in the spring as a green-manure crop, and followed with the annual legumes which succeed in this region, will go far toward the establishing of a very good soil condition. With a ton of burnt lime or 2 tons of crushed limestone per acre, alfalfa probably could be made a successful crop, especially in fields that have been pretty well rid of the troublesome grasses of the region.

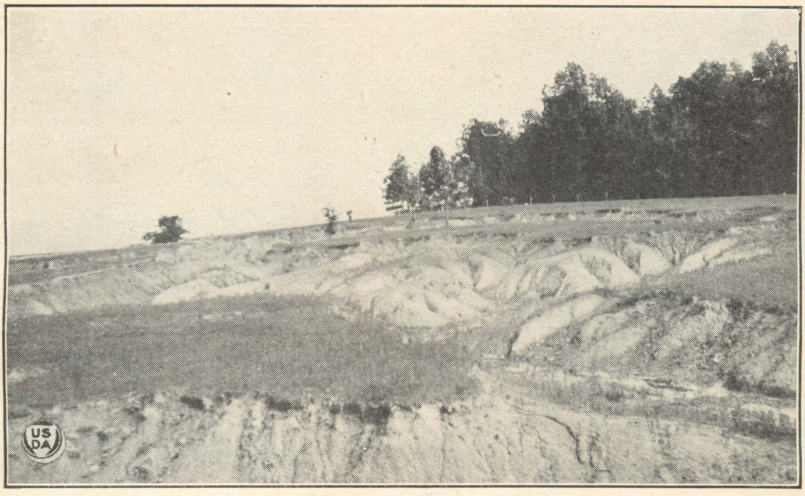

FIG. 1.—ERODED AREA OF PHEBA SILT LOAM 2 MILES FROM CORINTH, ON ROAD TO WENASOGA.

Many of the slopes on this type of soil are gentle, but erosion is active nevertheless.

FIG. 2.—VIEW OF STREAM BOTTOMS.

Note level surface and extensive cultivation. Trinity and Catalpa soils.

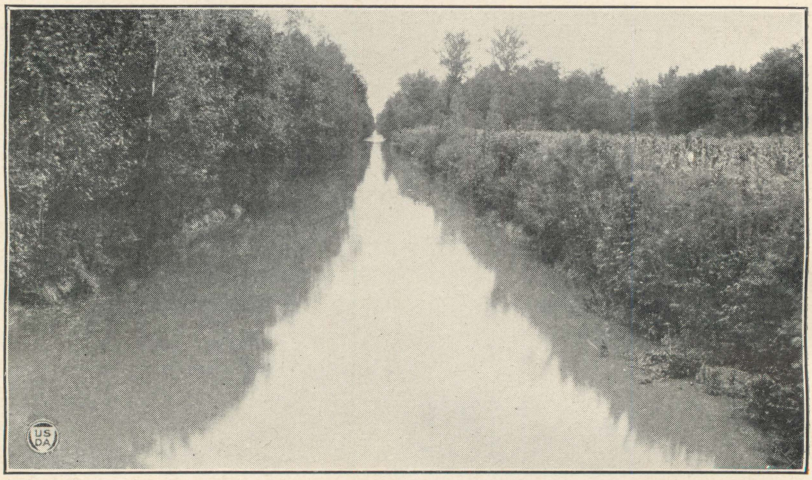

FIG. 1.—ONE OF THE CANALS DUG IN RECLAIMING AND IMPROVING THE OVERFLOWED BOTTOM LANDS.

FIG. 2.—CORN IN WELL-MANAGED FIELD OF CATALPA CLAY, A PRODUCTIVE ALLUVIAL SOIL.

RUSTON GRAVELLY SANDY LOAM.

The Ruston gravelly sandy loam consists of a gray gravelly sandy loam grading into a pale-yellow gravelly sandy loam, which is underlain at about 8 or 10 inches by yellowish-red gravelly sandy clay to heavy sandy loam. Over the surface and through the soil and subsoil there is an abundance of gravel, consisting chiefly of waterworn quartz, mixed in places with considerable quantities of ferruginous fragments.

The largest development of this type is in the eastern part of the county. It is the important type around Indian Springs, Union School, and Jerusalem Church, and north of Shady Grove Church. Smaller areas are developed northeast of Jacinto, in the vicinity of Hickory Flat and Juliett Schools, 3 miles northwest of Kendrick, and on slopes of the smaller streams in other parts of the county.

The type occupies rolling to rather steep slopes and the drainage is good. The Ruston gravelly sandy loam is used to some extent for cotton, but it is not valuable soil. The abundance of gravel makes cultivation rather difficult. About 40 per cent of the type is in cotton; the rest consists either of old fields now used as pasture or supports a scant growth of pine. It is an early soil which should give good results with peaches in positions having good air drainage.

RUSTON STONY FINE SANDY LOAM.

The Ruston stony fine sandy loam consists of a gray fine sandy loam, in places relatively high in silt, underlain at variable depths, typically at 10 to 15 inches, by dull-red to yellowish-red silty clay to fine sandy clay and then by dull-red, reddish-yellow, or mottled reddish-yellow and gray fine sandy clay to fine sandy loam. In some places the silty clay stratum extends to a depth of 2 feet or more, but ordinarily the lower part of the 3-foot section is a sandy clay to fine sandy loam in texture. In many places the substratum is a moderately stiff sandy clay, intensely mottled with red, gray, and yellow. Also, in some places the subsoil is decidedly stiff, particularly where a whitish clay material is present. Small and large fragments and ledges of ferruginous sandstone are abundant on the surface and in the soil and subsoil. A few included areas have very little stone.

The Ruston stony fine sandy loam is almost entirely confined to the western part of the county, where a large part of it occupies the steep slopes of high ridges. Most of the Hatchie Hills is made up of this type. In many places on the steep slopes ledges of sandstone completely cover the surface. Areas where the rocks are not so numerous and where the topography is favorable to cultivation are used in growing cotton; most of these areas, however, are separated and mapped as Ruston fine sandy loam or silt loam.

The drainage of both the surface and subsoil is good to excessive.

The stony nature and rough topography of this soil has prevented any important utilization of it, except for pasturing stock. Most of it is covered with forest or is land recently cut over. The forest consists of shortleaf pine, with a small admixture of oak and hickory.

The type is valued chiefly for its timber, the price ranging from $5 to $10 an acre.

The Ruston stony fine sandy loam is mostly nonagricultural, and it is recommended that the rough and stony areas be reforested with pine or seeded and used as pasture. Under proper management the land can be used for both purposes at the same time.

RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam is a yellowish-gray to gray fine sandy loam 8 to 14 inches in depth. The subsurface material is yellow, pale yellow, or slightly reddish yellow, and the subsoil a dull-red to reddish-yellow friable fine sandy clay to silty clay grading into reddish-yellow fine sandy clay in many areas mottled with gray in the lower part of the 3-foot section. In places the lower subsoil is a yellowish-red or mottled yellow and gray fine sandy loam, containing considerably more sand and less clay than the upper subsoil. In places also the lower subsoil is a fine sandy clay of a somewhat stiff nature, with gray and yellow or reddish-yellow mottlings. Platy fragments of ferruginous rock, consisting of sandstone or ironstone, are scattered on the surface and in the subsoil of many areas. In places the unbroken rock appears in the subsoil in the position where it was formed by cementation with iron salts carried in the percolating waters. There is present in much of this type a somewhat higher content of silt than is typical of the large areas of Ruston in southern Mississippi, where the texture of the soil is very commonly not heavier than a fine sand or loamy fine sand. The sandier soil in this county is developed in the more hilly areas or where the surface is rough, and the heavier soil on the broader divides. There are some included patches of Ruston silt loam and Ruston sandy loam, which are not mapped because of their little importance and the difficulty of showing them on a map of the scale used in the present survey.

The Ruston fine sandy loam is confined mostly to the southeastern and eastern parts of the county. Its largest development is in the vicinity of Jacinto. Here it is interrupted by scattered areas of Ruston silt loam, Ruston gravelly sandy loam, Orangeburg fine sandy loam, and Pheba silt loam. Other areas lie east of Wenasoga, east of Purdy Roads School, near Mays Creek Church, Lone Oak Church, north of Butler Bridge on the Tennessee line, around Crum School, south of Dixon School, Mathis Store, and Goose Pond School, and west of Dilworth Store.

The prevailing topography varies from rolling to broken and hilly. There are a few areas that are gently rolling, but these are of small extent. Owing to the topography and to the sandy nature of the soil and subsoil, the natural drainage, both surface drainage and underdrainage, is good.

The type is not considered as important agriculturally as some of the other soil types, whose topography is more favorable to cultivation. Probably 40 per cent of it is under cultivation, the rest being covered or partly covered with forest. Shortleaf pine is the predominant tree in these wooded areas, but various oaks are represented. On the ridges a scattering growth of chestnut, oak, hickory, and pine appears.

Cotton and corn are the leading crops. The yields vary considerably, depending upon the quantity of fertilizer used and the methods of cultivation practiced. Usually the type is planted to cotton, the necessary corn being grown on near-by alluvial soils. Cowpeas, peanuts, oats, and lespedeza are crops of minor importance that do well on the type. Peaches and certain varieties of apples also succeed.

Acid phosphate and cottonseed meal, at the rate of about 200 pounds of phosphate and 100 pounds of meal per acre, is the most common fertilizer application. This gives good results. Other mixtures also are used, such as mixtures of blood and bone running high in phosphorus.

The selling price of this soil varies widely, values depending upon the topography of the land, its location, and the character of the improvements. Some of the cut-over areas and land of a rather hilly topography is held at $10 an acre, and the average price at the present (1921) is around $25 an acre.

The type seems to be lacking in phosphorus and nitrogen, and the soil naturally is not very productive. The greater part of it, however, has a sandy clay subsoil, of a character that makes it easy to improve the land by growing the soil-improving crops like cowpeas, velvet beans, and soybeans in rotation with other crops, occasionally turning under some green crop to increase the supply of organic matter. The depth of plowing should be gradually increased as the supply of organic matter is increased. The steeper slopes should be used for the soil-binding crops, such as Bermuda grass and lespedeza, but if well terraced may be utilized for the production of intertilled crops. In all cases the furrows follow the contours of the slopes. The steepest slopes should be left in forest.

RUSTON SILT LOAM.

The surface soil of the Ruston silt loam consists of a gray silt loam, slightly brownish when moist, 10 to 14 inches deep. The upper subsoil is a yellowish-red or dull-red to reddish-yellow silty clay, containing enough sand to give a fair degree of friability. The lower subsoil has a yellowish-red color and contains more sand than the upper subsoil. Usually there is very little or no gray mottling within the 3-foot section, but yellow mottling is not an uncommon characteristic of the lower subsoil.

The Ruston silt loam occurs in small scattered areas on the level or nearly level to gently undulating or sloping ridge crests. Its total extent is not great. The type is developed southwest of Box Bridge, near Mathis Store, south of Lookout School, near Irby Bridge, south of Lone Pine School and Cooks Chapel, northwest of Hickory Flat School, south of Hightown, near Deerlick School, northeast of Biggersville, and northwest of Elbethel School.

The surface is in general smooth and favorable to cultivation. Both surface drainage and underdrainage are normally good.

Nearly all the Ruston silt loam is under cultivation, and notwithstanding its small extent it is of considerable importance in the agriculture of the county. Cotton and corn are the principal crops. The yields are somewhat larger than on the fine sandy loam.

The price of land does not differ greatly in the case of the Ruston fine sandy loam and the Ruston silt loam.

The methods of improvement suggested for the fine sandy loam will generally apply to this type. The quick response to good treatment shows that the type can easily be brought to a high state of productiveness. The growing of leguminous crops and deep plowing are two essential steps in its betterment. Applications of acid phosphate and barnyard manure have given increased yields. Cottonseed meal also is a useful fertilizer.

PHEBA SILT LOAM.

The Pheba silt loam is a brownish-gray silt loam, underlain abruptly at depths of 4 to 10 inches by reddish-yellow or buff-colored to dull-red silty clay of moderately friable structure, grading downward into mottled yellow or brownish-yellow and gray or bluish-gray compact silty clay loam. Ordinarily, dark-colored concretions or concretionary material is present in the lower subsoil. The lower part of the 3-foot section typically contains more silt than the upper subsoil and also in many places carries more fine or very fine sand. On flat and very gently sloping, low-lying areas the subsoil contains less red in the upper part, in fact, it is chiefly yellow or brownish yellow, but otherwise the soil differs very little from the typical soil and the agricultural value seems to be very nearly the same. The fact that there is less red color here appears to be due to a less advanced stage of oxidation resulting from somewhat poorer surface drainage.

The Pheba silt loam very closely approaches in character the Grenada silt loam, which is extensively developed through the great loessial belt crossing the western part of Mississippi and Tennessee. The principal difference appears to be a somewhat gray color of the soil and the presence of more sandy material in the lower part of the subsoil.

There are included in the Pheba silt loam a number of small areas in which a layer of rather stiff material appears in the lower subsoil. This layer commonly consists of reddish or yellowish clay or silty clay, mottled with gray, in some places resembling closely the Susquehanna subsoil material. Other small areas having a thin surface layer of fine sand material (Pheba fine sandy loam) are also included. Owing to their patchy occurrence, these variations from the typical soil have not been separated.

The Pheba silt loam is the most extensive soil in the county. It occurs throughout the county, and in a broad belt running northeast and southwest through the center of the county it is the dominant type.

On many of the slopes small areas appear in which erosion has removed part of the soil and even of the subsoil, giving the land a rather rough surface and mixed or spotted appearance.

The topography of the Pheba silt loam ranges from undulating to rolling, with smooth, gentle slopes. There are some low-lying nearly level areas, that occupy positions of a benchlike nature, suggesting second bottoms. Usually these areas are more sloping, however, than the typical terrace areas.

The surface drainage is usually good, but the compact layer forming the lower subsoil interferes more or less with the internal move-

ment of moisture and air. The more nearly level areas are somewhat poorly drained and during seasons of excessive and protracted rains crops suffer for lack of proper drainage.

This type occupies about 27 per cent of the area of the county. Its texture is favorable to tillage and it is of considerable agricultural importance. With the exception of a few areas nearly all of it is cleared, and probably 85 per cent is under cultivation. The rest is used as pasture land. The forest growth consists chiefly of shortleaf pine.

Cotton and corn are the chief crops, but the type is used to some extent also in growing sweet potatoes, peanuts, strawberries, cowpeas, and lespedeza. The yields of all crops depend on the thoroughness of the seed-bed preparation and the amount of fertilizer used. Under ordinary conditions cotton produces from one-half to three-fourths bale to the acre. The type seems better adapted to cotton than to corn, and unless corn is well fertilized the yields are rather light. Apples do exceptionally well on this type, and most of the old apple orchards are located upon it. Peaches also do well.

Fertilizer is used on cotton and corn land at the rate of 200 to 300 pounds per acre, and frequently consists of a mixture of 1 part cotton-seed meal to 2 parts acid phosphate. Many apply acid phosphate only.

The present value of this type is determined largely by the distance from railroads and towns, the location with respect to improved highways, the condition of the soil, the farm buildings, local topography, and extent of erosion. Some of the land sells at the present time for $50 to $100 an acre, while areas remote from villages and railroads can be bought as low as $10 an acre.

The Pheba silt loam was one of the first upland soils to be brought under cultivation. Continuous cropping to corn and cotton for many years has materially reduced the organic-matter supply and therefore the land is not now so productive as formerly, except on those farms which have kept it in good condition by manuring and by growing such soil-improving crops as cowpeas. The type responds readily to fertilizer, the practice of good cultural methods, and the growing of the legumes in rotations. Under this treatment the soil can not only be maintained in its original fertile state, but can gradually be brought to even more productive condition.

The application of ground limestone at the rate of about 2 tons per acre has proved beneficial. A systematic rotation or at least some rotation of crops should be followed. A rotation including a winter cover crop to be turned under in the spring as green manure, followed by a legume, such as cowpeas or peanuts, and this by corn, cotton, or grain, can be counted on to keep the soil in pretty good condition. Lespedeza is an excellent soil builder, and also produces a fine quality of hay. This crop should be more extensively grown on this type of soil. The marl from near-by exposures of the Selma Chalk, scattered over the surface of lespedeza fields at the rate of 2 or more tons per acre has given very good increases in the yield of hay. Where the type is level to very nearly level drainage should be improved by the use of tile.

PHEBA SILTY CLAY LOAM.

The Pheba silty clay loam represents areas of Pheba silt loam from which the greater part of the surface material has been removed by erosion during the long period the land has been in cultivation. The type consists of a reddish or buff-colored silty clay loam or clay loam, underlain at about 5 inches by red or reddish-yellow moderately friable silty clay, which in turn is underlain by a mottled yellow or brownish-yellow and gray or bluish-gray compact clay. Some patches, as with the Pheba silt loam, have rather a stiff clay lower subsoil that appears to be derived from unconsolidated deposits and resembles the subsoil of the Susquehanna. The type includes areas which have a thin surface covering of silt loam, but which plow into a silty clay loam. Freshly plowed fields have a reddish-brown color.

The type occurs as small areas near Marvin Church, northeast of Purdy Roads School, northeast of Waukomis and Moores Lakes, northwest of Lookout School, near Hightown, and west of Mills Chapel.

Owing to the compact nature of the loam subsoil and the heavy, plastic clay of some of the included areas, the underdrainage is rather imperfect. The surface drainage, however, is usually good.

The Pheba silty clay loam is not very important agriculturally, owing to its small extent. Probably 85 per cent of it is under cultivation. The same crops are grown as on the Pheba silt loam, but the yields are somewhat lower. The price of farm lands also is usually somewhat lower.

The incorporation of organic matter, such as can be economically accomplished by growing the legume crops in rotation and the occasional plowing under of a crop for green manure, will go far toward building up this eroded land. A very necessary step for its protection and improvement is efficient terracing. Terraces should be laid off and built up at once. Applications of lime would assist in getting better stands of such crops as clover.

SUMTER CLAY.

The Sumter clay is a brown to yellowish-brown calcareous clay, with a depth of about 8 inches, underlain by grayish-yellow and whitish, calcareous, crumbly, or chalky clay. The surface layer is dark colored where organic matter has accumulated, but there are included light-colored patches from which the soil material has been largely washed off, and the parent limestone exposed. In most areas there are present on the surface and through the soil and subsoil many fossil shells and fragments of limestone.

The Sumter clay occurs on the lower slopes adjacent to the larger streams, in close association with the shallow phase of the Oktibbeha clay and with Chalk (Houston material). The type is of small extent, occurring in a few small areas along McElroy Creek southeast of Kossuth, northeast of Smith Bridge, 2½ miles west of Corinth, northwest of Scally School, and west of Rienzi.

The surface is prevailingly sloping and the drainage is good. The type is very productive, yields of 1 bale of cotton or 50 bushels of corn often being obtained without the application of any kind of fertilizer. In addition to cotton and corn, melilotus, lespedeza, and alfalfa are grown with success.

The soil is very sticky and hard to cultivate when wet, but under proper moisture conditions it granulates and assumes a favorable tilth.

While the type is generally recognized as a more valuable soil than most of the upland soils, it is sold in connection with the associated soil types and for this reason has usually the same value.

The lighter colored included areas where the whitish chalky material is found can be improved and brought to a high state of productivity by growing the legumes. In other sections of the State, the growing of melilotus has within a few years completely changed the surface color of the included Chalk (Houston material). Some almost white spots have been converted into a productive soil in this way, with a surface covering consisting of several inches of brown to dark-brown silty clay loam like the typical soil.

OKTIBBEHA SILT LOAM.

The Oktibbeha silt loam consists of a reddish to brownish silt loam, 3 to 6 inches deep, underlain abruptly by dull-red clay which passes downward into mottled red and gray or mottled red, gray, and yellow plastic, heavy clay. The red mottling normally disappears in the lower subsoil, which ordinarily is a plastic, sticky, heavy clay mottled bluish gray and yellow or grayish yellow. Neither the soil nor the subsoil is calcareous, but highly calcareous chalk material is present at depths of about 4 feet. The type includes patches of Oktibbeha silty clay loam and Oktibbeha clay loam.

This soil is most largely developed in the vicinity of Wenasoga, Madden School, and west of Rienzi. Smaller areas lie near Bethel Church, Dilworth School, north of Corinth, and southwest of Antioch Church near the southern boundary of the county. The areas occupy rather broadly undulating to very gently rolling ridges or divides. On the flatted tops of the wider ridges some smaller areas of Pheba silt loam are found, and some small patches have been included with this type. The surface drainage is good and underdrainage fair.

Most of the Oktibbeha silt loam is cultivated. It is considered a good soil for general farming, and where it has been properly managed fairly satisfactory yields are being obtained. There are, however, many fields that have been impoverished through careless methods.

The Oktibbeha silt loam responds quickly to good treatment, especially to those practices that tend to increase the supply of organic matter in the soil. Most of the type is at present deficient in this constituent. Adding barnyard manure when available, and growing the legumes, occasionally plowing under a crop for green manure, will give marked increases in yields. Rotations, including leguminous crops, should be used. Tile drainage or ditching of some areas would improve the conditions in some fields. The same crops are grown on this type as on the other silt loam types of the uplands.

OKTIBBEHA CLAY.

The Oktibbeha clay is a dull-red or brownish-red clay showing faint mottlings of yellow below the surface few inches and of gray at greater depths. The subsoil, which is encountered at about 8 or 10 inches, in the upper part consists of mottled red, gray, or bluish-gray and yellow plastic, heavy clay, and in the lower part, of a plastic,

sticky clay mottled bluish gray and yellow, or greenish yellow, with very little or no red. The material does not effervesce with hydrochloric acid to a depth of 3 feet, but the material of the substratum, which is reached at depths of 3½ to 5 feet, is highly calcareous, the Selma Chalk formation underlying the soil. There are included areas of Sumter clay in the more eroded places, and patches having a shallow surface covering of grayish silt loam.

Areas of Oktibbeha clay are scattered over the county, the largest lying northwest of Corinth, northwest of Wenasoga, southeast of Layton School, east of Mills Chapel, and southeast of Farmington Church. Other areas of a smaller size are developed south of Progress School, northeast of Alcorn Church, east and west of Wayside School, northwest of Rienzi, east of Mays Creek Church and in the vicinity of Bell School.

The surface of this type is prevailingly gently rolling; a small propotrion of its area is level and a little consists of rather steep slopes. The type is often encountered on the lower parts of slopes the upper parts of which are occupied by the Pheba silt loam.

Nearly all the Oktibbeha clay is under cultivation, the small areas not in farms usually being covered with post oak. The type is locally called "post-oak land" in other sections of the State. Here the sticky nature of the type after rains has given rise to the name "beeswax land."

The rolling topography usually insures good surface drainage, but water sometimes stands on the more level areas after rains.

The type is used chiefly in growing cotton and under good management fair yields are obtained. Crops of minor importance are oats, cowpeas, and sorgo.

The plowing under of green-manure crops, and the application of barnyard manure and fertilizers high in phosphoric acid give good results for most crops planted on this type. Although a highly calcareous chalk underlies this type at varying depths, the soil and subsoil are in many places acid. Where this condition exists it can be remedied by applications of the underlying marl. Two tons to the acre would not be too much to apply. Marl could well be added in growing the legumes. Another good time to apply marl is just before plowing under a crop of green manure.

Oktibbeha clay, shallow phase.—The Oktibbeha clay, shallow phase, consists of dull-red, red, or brownish-red clay, which in the subsurface shows yellow mottling and, a little deeper, gray mottling. The upper subsoil is a mottled bluish-gray, yellow and reddish-yellow plastic, heavy clay. The lower subsoil consists of yellow or greenish-yellow clay with inclusions of white, highly calcareous chalky material. This phase represents areas of Oktibbeha clay in which the calcareous chalk material is much nearer the surface than it is in typical areas. The surface is spotted in places as regards texture, clay loam, sandy loam, and gravelly clay loam frequently being found in patchy occurrences along with the clay.

The shallow phase occurs as narrow strips closely associated with the typical Oktibbeha clay. It is developed on the slopes of streams and as gently sloping areas on the divides. The largest areas are on the south side of Hinkle Creek, on Mays Creek, southwest of Progress

School, west of Pleasant Hill Church, west and northwest of Bell School, and southeast of Mount Carmel Church.

The topography is generally rolling, with steep slopes in the immediate vicinity of the larger streams. The surface drainage of practically all areas is good.

Cotton was until recently the main crop, but the adaptability of this phase to the production of melilotus, alfalfa, lespedeza, and other hay crops is being recognized and these crops are becoming more popular. The eroded areas usually are converted into melilotus, Bermuda grass, and lespedeza pasture. The ready growth of melilotus on this type and the increasing demand for melilotus hay has been the cause of planting much of this soil to that crop. It would seem that the shallow phase of the Oktibbeha clay could not be better utilized than for the production of melilotus, either for pasturage or for hay.

SUSQUEHANNA FINE SANDY LOAM.

The surface soil of the Susquehanna fine sandy loam is a grayish to light-brownish fine sandy loam with an average depth of about 8 inches. The subsoil consists of mottled red, gray, and yellow or mottled bluish-gray and yellow plastic heavy clay. The drab mottling becomes more conspicuous and the structure more plastic with increase in depth. The red color is usually more conspicuous in the upper subsoil than in the lower part of the 3-foot section, sometimes being absent in the lower layer.

On the lower slopes the sandy surface soil is often 12 to 15 inches or more deep, having been accumulated in such positions apparently as colluvial material washed from the higher adjacent slopes. On the other hand, some of the steeper slopes have been eroded to the extent that the heavy subsoil is exposed or is covered only by a thin soil layer.

This type occurs on the slopes and lower divides in the vicinity of Jacinto, Sardis Church, southwest of Indian Springs, north of Hickory Flat School, east of Moccasin School, and southeast of Hopewell School.

The topography ranges from sharply rolling to hilly, but nearly all the type is tillable. The drainage of this soil is nearly always sufficient, but in the more level areas the proximity of the stiff plastic clay subsoil retards internal movement of moisture and gives rise to wet areas.

The combined area of the type is not large, and only about 50 per cent of it is under cultivation, the rest supporting a growth of shortleaf pine. Both soil and subsoil are distinctly acid according to the litmus paper test, and the organic-matter content is naturally low. The principal crop grown on this type is cotton, which when well fertilized produces fair yields. Cowpeas, peanuts, and sweet potatoes are crops of minor importance. Bermuda grass and lespedeza succeed well and should be grown more extensively.

It is necessary to prevent erosion of this type and to increase its organic-matter content, if crop yields are to be maintained or increased. Contour cultivation and terracing should be practiced on all the more sloping areas. The application of lime and the growing

of winter cover crops to be turned under in the early spring as green manure are essential steps in good management.

SUSQUEHANNA SILT LOAM.

The surface soil of the Susquehanna silt loam is a grayish to grayish-brown silt loam, which quickly passes into a very light brown or pale-yellow silt loam to silty clay loam extending to an average depth of 8 or 10 inches. The subsoil consists of a mottled red, gray, and yellow or mottled bluish-gray and yellow, plastic, heavy clay. The line between the soil and subsoil is usually very sharp. In some places a small quantity of fine quartz gravel and some fragments of iron-cemented sandstone are present in the surface soil.

This type has its largest development near Layton School, Boneyard School, north of Lookout Bridge, near Pleasant Grove Church, Union Church, Alcorn Church, Crow, east of Hightown, east of Alcorn, northwest of Kossuth, and near Mills Chapel and Dixon School. Smaller areas are scattered through the county. The surface ranges from rolling to undulating and the drainage is not very well established, especially in the more nearly level areas.

The Susquehanna silt loam in its natural condition is less desirable for crops like cotton and corn than is the fine sandy loam, especially in wet years. It has a tendency to remain soggy in wet seasons, and in very dry seasons it assumes a compact structure, unless liberally supplied with organic matter. Much of the type is now in old abandoned fields, and a part of it is in forests of oak and pine. Cultivated areas where good cultural methods have been employed produce fair yields. Cotton is the only crop grown to any extent. Peanuts, cowpeas, oats, sweet potatoes, lespedeza, and Bermuda grass are crops of minor importance.

Both the soil and subsoil are distinctly acid according to test with litmus paper, indicating the need of lime. Where the type is used for cultivated crops it should be constantly supplied with organic matter, which will give it better aeration and lessen the tendency to compact.

CALHOUN SILT LOAM.

The Calhoun silt loam is a mottled light-gray and pale-yellow silt loam passing at about 8 inches into mottled light-gray and pale-yellow silty clay, the gray quickly changing to bluish gray with increasing depth. The lower subsoil is a mottled bluish-gray and yellow compact silty clay loam to silty clay.

Crawfish holes are common and small dark-colored concretions the size of buckshot are scattered over the surface and in places mixed with the soil and subsoil.

This soil is developed in small imperfectly drained areas on the terraces. Areas are mapped northeast and south of Jones School, southeast of Carpenter School, south of Kossuth, east of Shiloh Church, south and east of Biggersville, and north of Wayside School. The surface is flat and depressed or basinlike and both surface and underdrainage are very imperfect. The soil is acid in reaction and low in organic matter. The compact structure of the lower subsoil retards internal movement of air and moisture, and water often stands on the surface for some time after rains.

The Calhoun silt loam represents the "wet" lands associated here usually with the Olivier. Practically none of it is in cultivation. It for the most part supports a growth of willow oak, post oak, sweet gum, black gum, and maple. On the outer edge, where the drainage is somewhat better, lespedeza grows well.

To improve this type of soil, it first should be well drained with open ditches or tiles. Heavy application of the local "rotten limestone" could be applied with benefit after proper drainage is attained. The turning under of some crop such as cowpeas, lespedeza, or rye undoubtedly could be done to advantage. Application of acid phosphate at the rate of 200 to 300 pounds per acre likely would give profitable increases of crop yields.

Soils similar to this type in other sections of the State produce strawberries of a fine quality, and probably the type in Alcorn County could be used in a small way in growing this crop. Lespedeza is one of the most promising crops, under present conditions.

AMITE FINE SANDY LOAM.

The Amite fine sandy loam is a very dark brown to dark reddish brown, mellow fine sandy loam, 10 inches or more deep. This is underlain by a dark-brown to dark reddish brown friable clay to sandy clay or sandy clay loam. In places the surface soil contains a relatively high percentage of silt, approaching a loam in texture.

The type occurs as low second bottoms and as small rounded mounds or isolated patches surrounded by first-bottom or overflowed land. The surface stands above normal overflows. There are along the Tuscumbia River numerous small spots of this soil which were entirely too small to map and were included with the bottom soils. The areas mapped are found west of Price School, northeast of Scally School, and east of Bethel School.

Areas of this soil were occupied by Indians, as evidenced by the abundance of arrow heads and fragments of pottery present in all of them. It would seem that some of these areas were occupied for very long periods, inasmuch as charcoal fragments were found at depths of 3 feet in the soil. The dark color of the soil is undoubtedly due to fires made by the Indians and to other effects of their occupation. The type is locally called Indian mound land.

The drainage of the surface soil and subsoil is good, and all of the areas mapped are under cultivation. This is an excellent corn soil, producing 50 or more bushels per acre. It is considered by some not a particularly good cotton soil, and corn is usually the only crop grown. The soil in some areas effervesces with hydrochloric acid, and it is possible that alfalfa would succeed in such areas.

OLIVIER SILT LOAM.

The Olivier silt loam is a yellowish-brown to light-brown silt loam underlain abruptly at about 4 to 8 inches by yellow or light-buff silty clay loam to silty clay of a friable character. Gray mottlings occur at a depth of about 15 inches, their number increasing with depth. The lower subsoil consists of bluish-gray compact silty clay loam or silty clay mottled in many places with yellow. The lower subsoil at 30 to 40 inches is commonly a mottled yellow and bluish-gray stiff clay.

There are included areas where the surface soil consists of a grayish fine sandy loam or sandy loam to a depth of 8 or 10 inches, but owing to their small extent they were not mapped separately.

This type occurs on the second bottoms and is probably the most extensive terrace soil in the area. It lies above overflow. The largest areas are situated northeast and north of Carpenter School, in the forks of McElroy and Eastes Creeks, on the north side of Hinkle Creek, at Rienzi, northwest of Nabors, northeast of Madden School, and on the north side of Parmicha Creek. Other areas occur on the west side of the Hatchie River in the vicinity of Collins, northeast of Mathis Store, north of Tuscumbia Church, east and southwest of Kossuth, north and southwest of Price School, in the forks of Phillips and Bridge Creeks, south of Field School, and north and south of Kendrick.

The type represents the second-bottom correlative of the Collins silt loam; it lies from 10 to 25 feet above the present flood plains of the streams, and in some places at higher elevations. The surface is faintly undulating in places, but there are many flat areas, some nearly level. The drainage of the soil is fairly good, but the underdrainage is not uniformly well established.

Most of this type has been in cultivation since the early days of settlement, and is still in cultivation or in fields given over to pasture because of decreased yields resulting from long-continued cropping.

The price of the Olivier silt loam depends on location chiefly. Probably the average price at the present time (1921) is about $40 an acre.

Cotton and corn are the chief crops. With good management these give fairly good yields. Excellent yields of lespedeza are obtained, and sorgo, cowpeas, and peanuts do well. This is also an especially good soil for Bermuda grass.

The soil responds well to good cultivation and fertilization. Acid phosphate applied at the rate of about 200 pounds per acre gives appreciable increase of both corn and cotton.

The Olivier silt loam is deficient in organic matter. Heavy applications of barnyard manure, and the growing of soybeans and cowpeas would tend to replenish the soil with this necessary constituent. Green-manure crops should be plowed under occasionally. Lime obtained from the chalk beds near by and applied at the rate of 2 tons or more per acre in conjunction with the growing of leguminous crops would materially aid in bringing the soil to a higher state of productiveness.

LINTONIA SILT LOAM.

The surface soil of the Lintonia silt loam is a brown to yellowish-brown silt loam, with an average depth of about 8 or 10 inches. This upper layer grades into buff-colored or slightly reddish yellow, to yellowish-brown silty clay loam, and this in turn into yellow friable silty clay loam, which passes downward into pale-yellow silty clay loam, mottled in some places with gray. There are included patches where the surface is quite sandy, and some less well drained patches of Olivier silt loam. The better drained areas, being better oxidized, have a brown to reddish-brown subsoil.

The type occupies the better drained parts of terraces. It is developed in small areas just north of Tuscumbia Church, east of Mathis Store, east of Pleasant Hill School, southeast of Carpenter School, west of Price School, south of Corinth, north and south of Biggersville, north and south of Scally School.

The surface is very faintly undulating to nearly flat. The natural drainage is good, except in a few depressions.

All the type is in cultivation. Cotton and corn are the leading crops. This is considered a good soil, and with proper tillage and the liberal use of commercial fertilizers it gives satisfactory yields. Lespedeza, peanuts, cowpeas, sorgo, and soybeans have all been grown successfully. Strawberries and Bermuda grass will do well.

The soil is handled in much the same way as the principal upland soils, and about the same kinds and quantities of fertilizers are used.

The Lintonia silt loam is recognized as being more productive than the Olivier silt loam, but it usually has about the same selling price. It has better underdrainage than the Olivier.

COLLINS SILT LOAM.

The typical soil of the Collins silt loam is a yellowish-brown to light-brown silt loam about 10 inches deep. This grades into a subsoil of yellow or pale-yellow silty clay loam, which shows gray mottling with increasing depth. In the lower subsoil the gray mottling is more pronounced. Here the material in many places consists of mottled bluish-gray and yellowish-brown or yellow silty clay. This lower layer is inclined to be compact, in places it is very compact. It contains dark-colored and rusty-brown concretionary material and well developed concretions. In places the silt loam surface layer extends to greater depths, and the subsoil contains less clay, Where the lower subsoil is noticeably compact, some of the type, as that near Moccasin School, is a light-brown silt loam overlying dark ashy gray to black or nearly black silty clay loam, containing many rusty-brown concretions.

Along the narrow drainage ways where the streams have been straightened and the swift flowing current has cut and deepened the channel so as to insure the area against overflows, the soil is in many places a mellow rich-brown to dark-brown silt loam, and the rusty-brown concretionary material is less in evidence. Here the type consists partly of colluvial and partly of alluvial material, which has been more thoroughly oxidized under the conditions of better surface and underdrainage.

The Collins silt loam, or the greater proportion of it, is composed of material washed down from areas of Pheba silt loam and deposited during overflows of the streams.

The type occurs in the first bottoms. The most important areas lie along the Tuscumbia and Hatchie Rivers, and Eastes, Tarebreeches, Parmicha, Bridge, Sevenmile, Clear, Moores, Hurricane, Chambers, Mays, Elam, Turners, and Hinkle Creeks.

The surface is prevailingly level to flat, but is marked in places by low hummocks and faint depressions. Most of the streams where this type occurs have been canalled, and periods of overflow are of short duration. The type in some places is poorly drained, but as a whole the drainage is fair between the overflows.

This is an important soil and the most extensive bottom-land soil in the county. Much of it is in cultivation, but there are some areas which are still in forest, consisting chiefly of hardwoods. willow oak, overcup oak, water oak, elm, ironwood, black gum, sweetgum, maple, shellbark hickory, and willow are the predominating trees. Switch cane is characteristic in the undergrowth.

Corn is the main crop on this type. It produces fairly good yields. A large part of the type is devoted to cotton. The soil is ideally adapted to lespedeza, and this crop should be planted more extensively for hay or pasturage. Oats, cowpeas, and sorgo are other crops that are grown to a small extent. Where the type has been influenced by the adjacent limy soils and the drainage well established, bluegrass seems to do well.

The Collins silt loam could be improved greatly by installing tile drains or ditches, one of the deficiencies of the type being lack of underdrainage. The growing of more legumes, such as lespedeza, cowpeas, and soybeans, and occasionally turning under a crop for green manure would prove beneficial. With good drainage lime undoubtedly could be used profitably.

BIBB SILT LOAM.

The Bibb silt loam is a mottled brown, gray, and rusty-brown silt loam passing into light-gray or bluish-gray silty clay loam, mottled with yellow or yellowish brown or rusty brown. The surface when dry has a whitish appearance. The material from which the type has been derived has been washed from the upland soils of the Coastal Plain. There is encountered at depths ranging from about 8 to 12 inches or more in some areas a compact stratum or hardpan layer which retards the internal movement of moisture and air. Black and brownish iron concretions are of common occurrence, especially in the subsoil. Some included areas have a sandy surface layer and would have been mapped separately as Bibb fine sandy loam had they been of sufficient size. The type is not as productive as the other alluvial soils of the area.

The Bibb silt loam is developed along Goose Pond Creek, Green Haw Branch, southeast of Hopewell Church, south of Waukomis Lake, about the headwaters of Hurricane Creek, on Taylor Creek, and south of Cooks Chapel.

The surface is flat, except for a few depressions and low ridges. Its drainage is permanently poor, that is, in the natural condition. Occurring in the first bottoms of streams it is of course subject to overflows and between these overflows the ground is wet and soggy. Only a small part of this type is under cultivation and yields in those cases where cultivation is attempted are rather low. The forest growth consists of birch, tupelo gum, ironwood, sweetgum, and cypress.

Lespedeza and carpet grass would probably succeed. The type is best adapted, probably, to forestry and grazing.

WAVERLY SILTY CLAY LOAM.

The surface soil of the Waverly silty clay loam is a mottled brown and gray silty clay loam which passes abruptly into an upper subsoil of bluish-gray silty clay fainty mottled with brownish yellow, yellowish brown, or rusty brown. The lower subsoil is a stiff clay

ranging in color from bluish gray to light or grayish blue, mottled somewhat with rusty brown, brownish yellow, or yellow. No effervescence was noted with hydrochloric acid in any part of the 3-foot section, and the soil is distinctly acid to litmus paper.

The Waverly silty clay loam is locally called "cold natured land" or "crawfish land." It is subject to overflow and is imperfectly drained between overflows. Crawfish holes are abundant and the water table is in most cases near the surface. There are frequent low hummocks and faint depressions, the soil in the latter being poorly drained and more thickly mottled with gray.

In places there are areas of mottled rusty-brown and bluish-gray silty clay, which below shows mottling of yellowish brown, and in places reddish yellow. The lower subsoil is somewhat sandy in places. In such places the surface is quite hummocky, the soil being always browner on the hummocks and grayer in the depressions. These heavy areas really represent the Waverly clay but they were not mapped owing to their small size and irregularity of distribution and consequent impracticability of separation.

The Waverly silty clay loam occupies the more poorly drained parts of the first bottoms, the areas commonly lying close to the stream channels. Areas lie on Bridge Creek northwest of Price School and along Tuscumbia River west of Corinth and southwest of Alcorn.

The type is not very important agriculturally, and most of it is in forest. The principal trees are willow oak, overcup oak, water oak, ironwood, black gum, sweetgum, tupelo gum, red haw, hickory, elm, ash, maple, birch, cypress, and willow. Switch cane is a characteristic plant in the undergrowth.

As the development of the bottom lands progresses and the type is desired for cultivation, it should first have good drainage insured by ditching or tiling. After this liming at the rate of about two tons or more per acre of burnt lime or twice this quantity of ground limestone or of the local chalky material. With this treatment the clovers and other legumes would give better returns, and probably other crops would do better, but it is not known just how profitable such treatment of land of this kind would be. Lespedeza and Bermuda grass for hay and pasturage may be the best crops in the long run.

TRINITY CLAY.

The typical Trinity clay consists of a black to nearly black or dark-brown clay, which ordinarily shows little change within the 3-foot section, except that the lower part is likely to have a browner color. The immediate surface of some included patches consists of silty clay loam, and areas near bluffs on which the chalky limestone material outcrops have recent overwash deposit of whitish material 1 or 2 inches thick. Such areas really represent an approach to the Catalpa clay.

The Trinity clay occurs along the outer edge of the creek bottoms at or near the foot of calcareous uplands, as narrow strips, subject to overflow. The material is high in lime.

Areas of this type lie southeast and east of Kossuth, east of Smith Bridge, on the east side of Cane Creek, northeast of Polk Levee Bridge, west of Scally School, southwest of Mount Carmel Church, north of Biggersville, south of Hinkle, north of Dilworth School along the south side of Parmicha Creek, and northwest of Rienzi.

The type normally lies for the most part above direct overflow from the main streams, but is subject to brief overflow when exceptionally high water backs up the tributaries.

The high content of organic matter and lime gives the type a granular structure when dry, so that a mellow seed bed can readily be prepared. The surface is flat and in some instances the run-off is slow, but the natural drainage of the larger part of this type is sufficient for satisfactory tillage.

The Trinity clay is a very productive soil, and although it is not as extensive as some of the other bottom soils, it is agriculturally important. All of it is under cultivation. In recent years most of it has been devoted to corn, which yields 60 to 70 bushels per acre without manurial treatment of any kind. Cotton ordinarily yields 1 bale per acre when the boll weevil does not trouble, and alfalfa, melilotus, and Johnson grass give good returns.

The type is very durable, producing well after many years of continuous cropping to a single crop.

It is a typical alfalfa soil, and the growing of this crop should be extended. The price of land of the type at the present time (1921) ranges from $75 to $125 an acre.

The installation of tile drains would probably increase the yields somewhat and would insure to a certain extent against loss during wet seasons.

OCHLOCKONEE FINE SANDY LOAM.

The Ochlockonee fine sandy loam consists of a brown to light-brown fine sandy loam, underlain at depths of about 10 to 15 inches by lighter brown to yellowish fine sandy clay, silt loam, or silty clay. In the lower subsoil of most areas, gray, drab, and yellowish mottling is encountered.

In places, especially on the outer edges of the bottom lands adjacent to the higher lands, there are deposits of loose fine to medium sand, ranging from 10 to 20 inches in depth.

The Ochlockonee fine sandy loam as mapped in this county represents an overwash of sandy material upon the Ochlockonee silt loam.

The type is developed principally in the first bottoms of Brush, Keaths, Dixon, and Hurricane Creeks.

The typical Ochlockonee fine sandy loam is well drained between overflows. As a rule the underdrainage and aeration are good. In some places where the light-colored, mottled subsoil material occurs somewhat closer to the surface than in most of the type and black-colored concretions appear, frequent saturation of the lower subsoil is indicated. In some instances this is due to seepage from higher land, but more frequently it is due to the low situation of the type.

The total area of this type is not very large. About half of it is under cultivation and the rest supports a growth of beech, water oak, overcup oak, hickory, and other hardwoods.

Corn and cotton, the principal crops, produce good yields in favorable seasons. Corn is probably more extensively planted than cotton. All crops mature somewhat earlier on this type than on the other bottom-land soils. Lespedeza should succeed.

OCHLOCKONEE SILT LOAM.

The Ochlockonee silt loam consists of a surface layer of brown to dark-brown silt loam, grading at about 12 inches into a lighter brown silt loam to silty clay loam, and this into a lower subsoil of yellowish-brown silt loam to silty clay loam. In the extreme lower part of the 3-foot section there appears a yellow or pale-yellow material of similar texture, somewhat mottled with gray. In places the lower subsoil carries rusty-brown and darker colored concretions and concretionary material. The lower, mottled layer is compact at depths of 26 to 36 inches, and in places has the nature of hardpan. The immediate surface soil is a very dark brown in many places, owing to a high content of organic matter. Small areas of the gray Bibb and Waverly silt loams and silty clay loam, which are less productive than the mottled subsoil variation of the Ochlockonee, have been included with the Ochlockonee silt loam, as mapped, owing to the impracticability of separation. A few small included areas consist of a dark-brown silty clay loam passing at 4 to 6 inches into brown or light-brown silty clay, which in turn is underlain at a depth of about 10 inches by yellow, mottled gray, or bluish-gray silt loam. This heavier material probably has been deposited during recent overflows.

The Ochlockonee silt loam occurs mainly in the first bottoms along the Hatchie and Tuscumbia Rivers, with smaller areas along Hurricane, Yellow, Robinson and a few other creeks. The typical soil is well drained between overflows. The mottled subsoil variation does not have as good underdrainage, but it is sufficiently well drained for successful cropping, though less productive than the typical soil. In shallow depressions, and the deeper depressions representing former stream channels, water often stands for long periods and in some cases the year round.

The surface is prevailingly flat, and when cleared well suited to cultivation. The principal trees are elm, willow oak, shellbark hickory, black gum, maple, ironwood, and other hardwoods. Near the banks of the streams, birch, sycamore, and willow are common.

This is a very productive soil, and much of it is in cultivation. Corn and cotton give excellent yields in normal seasons. Lespedeza, cowpeas, soybeans, sorgo, Bermuda grass, and oats are among the other crops that can be successfully grown.

The type ranges in price from $35 to $125 an acre, depending on improvement and the location.

CATALPA SILTY CLAY LOAM.

The Catalpa silty clay loam consists of a brown silty clay loam grading at about 3 to 6 inches into brown, light-brown, or yellow-brown silty clay, which either shows little change within the 3-foot section or passes in the lower subsoil into yellow or brownish-yellow silty clay loam, faintly mottled with pale yellow and containing some dark concretionary material. In some places the mottled subsoil is distinctly dark brown to almost black.

In most places the soil effervesces vigorously with hydrochloric acid, indicating a high lime content, but elsewhere it is neutral and in some cases there are spots in which the material is acid according to the litmus paper test.

The soil has been influenced by wash from areas of Chalk (Houston material) and Sumter clay occurring on the slopes next to the stream bottoms. The high content of organic matter and lime causes the soil to crumble on drying, and an excellent tilth can be maintained during the growing season.

This soil occurs in the first bottoms of Cane, Hinkle, and Mays Creeks and also west of Corinth on Tuscumbia River. It was of little agricultural value prior to the canalling of the streams, but it is now one of the most important soils in the county. Most of it has been brought under cultivation, and the rest is being cleared. The outer edges were the first to be farmed, and as the canals improve the drainage—they are being deepened by the cutting of the streams—the reclaiming of this soil is being extended up to the banks of the canals. Most of this type at present (1921) is under cultivation, but belts of forest, consisting mainly of water oak, willow oak, overcup oak, ironwood, black gum, and tupelo, still border the streams.

Practically none of this type has been underdrained and for this reason it may not produce its maximum yields. The drainage is not bad, but some areas are not perfectly drained in the lower subsoil. They may be improved by tiling or ditching, but it is problematical whether or not the expense would be warranted by the increase in yields.

Corn on this type averages between 50 and 60 bushels per acre, and cotton produces three-fourths to 1 bale or less per acre. Bluegrass, lespedeza, melilotus, and red clover grow luxuriantly on the outer edges of the type, where it is best drained.

Two-horse plows are used in breaking the land in the spring. Little plowing is done in the fall, although this practice is advisable. Cotton and corn are usually planted on beds. In some level, well-drained areas, level cultivation is practiced with good results. The present methods of handling this soil and the crops planted seem well suited to the type.

The type ranges in price from $100 to $200 an acre for the best land well located, the more remote areas where there has been less improvement can be bought for as little as $35 an acre.

CATALPA CLAY.

The Catalpa clay is a brown silty clay underlain by yellow or yellowish-brown silty clay, which quite frequently is faintly mottled yellow and brown and in places includes a little rusty-brown concretionary material in the lower subsoil. In places, particularly at the foot of slopes occupied by Sumter clay and Chalk (Houston material), the surface soil is dark brown to very dark brown, approaching the character of Trinity clay. Some places show a brown soil over a very dark brown to black subsoil which in turn overlies yellow or brown or mottled silty clay in the lower subsoil. There are some spots where a thin overwash of whitish calcareous material occurs.

In nearly all areas the soil effervesces with hydrochloric acid and the subsoil also is commonly calcareous. The soil crumbles on drying.

The type is not very extensive, the total area being less than 2 square miles. It is developed south of Hinkle, north of Bethel

Church, northeast of Polk Levee Bridge, north of Pleasant Hill Church, east of Smith Bridge, and southeast of Mount Carmel Church.

This is a highly productive soil, yielding excellent crops of corn. All of it is in cultivation. Besides corn, which is the principal crop, it is used in the production of alfalfa and cotton. The yields are about the same as on the silty clay loam type. White clover, melilotus, lespedeza, Johnson grass, and bluegrass do well.

The type has about the same selling price as the Catalpa silty clay loam.

CHALK (HOUSTON MATERIAL).

The type Chalk (Houston material) represents areas where the original surface soil has been washed off, exposing the white or dove-colored limy material of the Selma chalk formation. In places the surface soil is quite friable, but in freshly eroded gullies the firmer chalk is exposed at the surface. Almost everywhere fossil shells are abundant. As mapped patches of Sumter clay and of the shallow phase of the Oktibbeha clay are included. The small size of these areas makes it impracticable to separate them.

Chalk (Houston material) occurs as narrow strips along the slopes to stream bottoms, often separating areas of Sumter clay or Oktibbeha clay and the bottom-land types. Areas have been mapped southeast of Mount Carmel Church, northeast of Polk Levee Bridge, north of Biggersville, south of Hinkle, north of Wayside School, northwest of Rienzi, and southwest of Bethel School. The largest continuous strip occurs on the south side of Parmicha Creek north of Dilworth School.

Typical areas of this soil are bare or nearly bare of vegetation, but it can be made to produce sweet clover, and it is possible, according to some farmers of the Black Prairie Belt, to build up a productive soil with the aid of this plant. Cultivation, however, is unsafe because of the tendency to erosion. The value of this land lies chiefly in its grazing possibilities.

Chalk (Houston material) is highly calcareous, and may be used as a source of agricultural lime, which is needed by so many of the upland soils of the region. The material is easily excavated and breaks down and crumbles readily when spread upon the land and exposed to air, rain, and frost. It has been used with good results as a top dressing on clover and alfalfa fields in other sections of the State.

SUMMARY.

Alcorn County lies in the northeastern part of Mississippi along the Tennessee line. It has a total area of 398 square miles, or 254,720 acres.

The surface ranges from gently rolling to hilly and rough, and drainage in most places is well established. Along many streams there are comparatively wide bottoms.

The general drainage of the county is north into the State of Tennessee. The main streams are canalled.

The mild climate, together with excellent drainage and a supply of good drinking water insures healthfulness. There is an abundance of well-distributed rainfall for all crops. The average annual precipitation is about 50 inches.

Excellent school facilities are maintained in the towns and some rural sections, but there is much need of improvement of the rural schools. An agricultural high school, established in 1909, is situated at Kossuth.

Corinth is the largest town in the county and the gateway to Shiloh National Park.

There are three railroads in the county—the Mobile & Ohio, Illinois Central, and Southern.

Probably 25 per cent of the county is fertile bottom land, which is insured against long overflows by canals.

The 1920 census reports 2,901 farms in the county, an increase of 461 farms since 1910.

The principal crops are cotton, corn, and hay. Corn is usually planted on the bottoms, and the uplands are used for cotton. There is a general trend to diversify; more hay and better livestock are being produced than in former years.

The upland soils usually respond to applications of phosphate and nitrogen. Most of them are benefited by liming. The bottom lands as a whole are high in organic matter and very productive.

There are 26 different soil types in the county. These are grouped into 18 series.

The Pheba silt loam is the predominating upland soil. Nearly all the type is under cultivation. The silty clay loam member of this series is also mapped. The Pheba soils are used for the production of cotton, corn, oats, and forage crops. Fruit seems to do well on the silt loam, particularly apples, pears, peaches, and grapes. The silty clay loam is a heavy soil and is really an eroded phase of the silt loam. The productiveness of these soils can be increased materially by the application of lime and the growing of legumes.

The Oktibbeha soils include the silt loam, and the clay, with a shallow phase. These soils are productive but somewhat heavy and difficult to cultivate. The shallow phase of the clay is calcareous, the typical clay and the silt loam are deficient in lime.

The Ruston and Orangeburg soils are well-drained friable soils. The Ruston stony fine sandy loam, the predominating soil of the Hatchie Hills, is very rough and stony. The other Ruston types are good all-round farming types, where the topography is not too rough. The Orangeburg fine sandy loam is adapted to a wide range of general farm crops and is valued highly.

The Susquehanna silt loam and fine sandy loam have heavy subsoils and are deficient in lime.

The Sumter clay is a productive soil. It is highly calcareous. Melilotus and alfalfa produce good yields on this type.

The Chalk (Houston material) represents exposed areas of the underlying formation, the Selma chalk. While unproductive in its natural state, it can be reclaimed and made of value for pasture.

The second-bottom soils are grouped in the Lintonia, Olivier, and Calhoun series. The Lintonia and Olivier soils have good drainage and are largely under cultivation. They are moderately productive. The Calhoun is imperfectly drained and very little of it is under cultivation.

The Trinity and Catalpa soils are productive bottom-land soils which are influenced by wash from the limy upland soils.

The Ochlockonee, Waverly, and Bibb soils are likewise soils of the stream bottoms. The Ochlockonee is a fertile soil high in organic matter.

The Waverly and Bibb soils are poorly drained and contain less organic matter than the associated first-bottom soils. They are acid both in the soil and subsoil, and where used for cultivated crops should be well drained and given heavy applications of lime.

Canalling of the rivers has improved conditions in the bottom lands and added greatly to the productive acreage of the inherently fertile alluvial soils.

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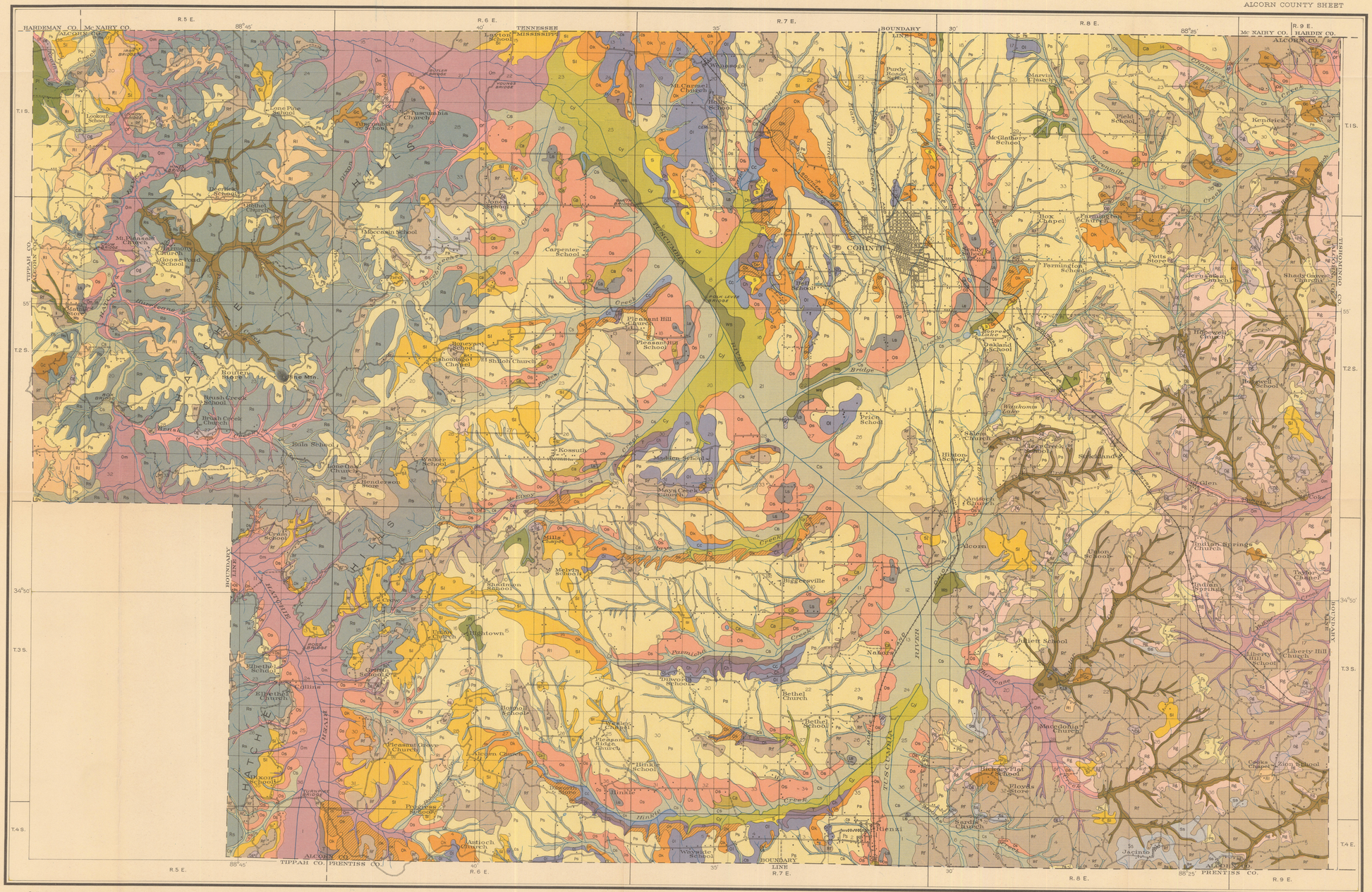
U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF SOILS
IN COOPERATION WITH THE
MISSISSIPPI GEOLOGICAL SURVEY

SOIL MAP

MISSISSIPPI
ALCORN COUNTY SHEET



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

Boundary lines

Boundary lines

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 current use on the soil maps Variations from this usage appear in some maps of earlier dates.

LEGEND

Amite fine sandy loam — Af	Olivier silt loam — Os
Bibb silt loam — Bs	Orangeburg fine sandy loam — Og
Calhoun silt loam — Ca	Pheba silt loam — Ps
Catalpa silty clay loam — Cy	Pheba silty clay loam — Pl
Catalpa clay — Cc	Ruston stony fine sandy loam — Rs
Collins silt loam — Cs	Ruston gravelly sandy loam — Rg
Greenville clay loam — Gc	Ruston fine sandy loam — Rf
Lintonia silt loam — Ls	Ruston silt loam — Rl
Ochlockonee fine sandy loam — Of	Sumter clay — S
Ochlockonee silt loam — Om	Susquehanna fine sandy loam — Ss
Okibbeha silt loam — Ol	Susquehanna silt loam — Sl
Okibbeha clay — Ok	Trinity clay — T
Ok — Shallow phase	Waverly silty clay loam — Ws
Chalk *(Houston material)* — Ch	

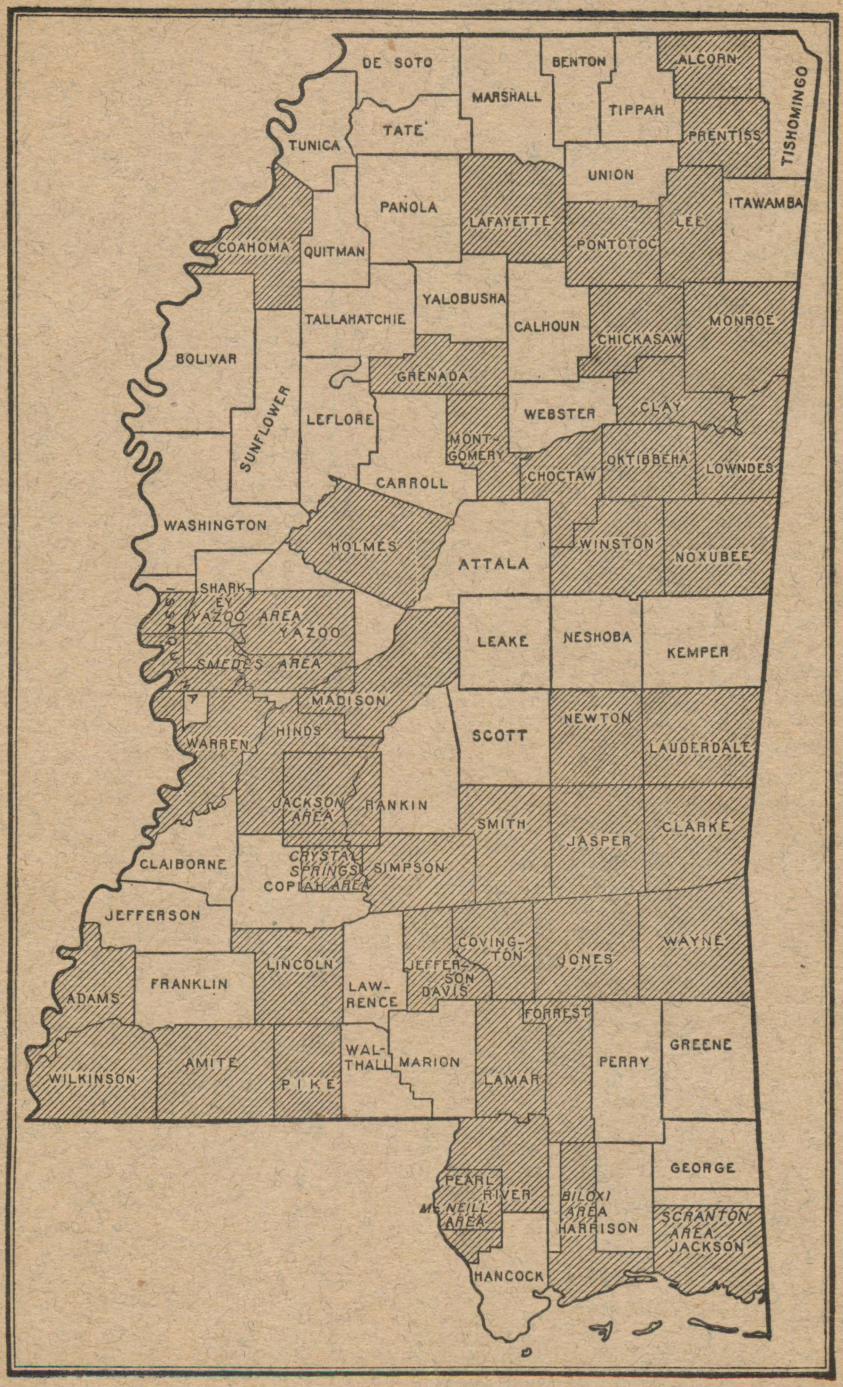
Soils surveyed by E. Malcolm Jones, in charge, and E. P. Lowe of the Mississippi Geological Survey.

Scale 1 inch = 1 mile

1 ½ 0 1 2 3 4 Miles

LUTE & SHERRMAN, LITH., N.Y.

Field Operations Bureau of Soils 1921



Areas surveyed in Mississippi, shown by shading