

Issued December 31, 1915.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS—MILTON WHITNEY, Chief.
IN COOPERATION WITH THE STATE OF MISSISSIPPI, EARL BREWER, GOVERNOR;
E. N. LOWE, DIRECTOR, STATE GEOLOGICAL SURVEY.

SOIL SURVEY OF CLARKE COUNTY,
MISSISSIPPI.

BY

A. L. GOODMAN, OF THE U. S. DEPARTMENT OF AGRICULTURE,
AND E. M. JONES, OF THE MISSISSIPPI GEOLOGICAL SURVEY.

HUGH H. BENNETT, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1914.]



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LETTER OF TRANSMITTAL

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., May 26, 1915.

SIR: Soil-survey work in Mississippi during the field season of 1914 included a detailed survey of Clarke County. The selection of this area was made after conference with officials of the State, with whom the bureau is now cooperating.

The accompanying report and map embody the results of this survey, and I have the honor to recommend that they be published as advance sheets of Field Operations of the Bureau of Soils for 1914, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

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

CONTENTS.

	Page.
SOIL SURVEY OF CLARKE COUNTY, MISSISSIPPI. By A. L. GOODMAN, OF THE U. S. DEPARTMENT OF AGRICULTURE, and E. M. JONES, OF THE MISSISSIPPI GEOLOGICAL SURVEY.....	5
Description of the area.....	5
Climate.....	7
Agriculture.....	8
Soils.....	11
Montrose series.....	13
Montrose clay.....	13
Houston series.....	14
Houston clay.....	14
Susquehanna series.....	15
Susquehanna fine sandy loam.....	16
Susquehanna clay.....	17
Orangeburg series.....	18
Orangeburg sandy loam.....	18
Orangeburg fine sandy loam.....	20
Orangeburg sand.....	21
Ruston series.....	22
Ruston sandy loam.....	22
Ruston sand.....	23
Ruston fine sandy loam.....	23
Guin series.....	25
Guin stony sandy loam.....	25
Lauderdale series.....	25
Lauderdale stony clay.....	26
Henderson series.....	26
Henderson clay.....	27
Sumter series.....	28
Sumter stony clay.....	28
Norfolk series.....	28
Norfolk fine sandy loam.....	28
Norfolk sand.....	29
Oktibbeha series.....	29
Oktibbeha clay.....	29
Leaf series.....	30
Leaf fine sandy loam.....	30
Kalmia series.....	30
Kalmia sand.....	31
Kalmia fine sandy loam.....	31
Cahaba series.....	32
Cahaba fine sandy loam.....	32
Cahaba fine sand.....	33
Myatt series.....	34
Myatt fine sandy loam.....	34

SOIL SURVEY OF CLARKE COUNTY, MISSISSIPPI—Continued.

Soils—Continued.	Page.
Trinity series.....	35
Trinity clay.....	35
Ocklocknee series.....	36
Ocklocknee loam.....	36
Ocklocknee clay.....	37
Ocklocknee fine sandy loam.....	37
Ocklocknee silt loam.....	38
Thompson series.....	38
Thompson fine sand.....	38
Miscellaneous material.....	39
Meadow.....	39
Summary.....	39

 ILLUSTRATIONS.

FIGURE.

FIG. 1. Sketch map showing location of the Clarke County area, Mississippi.	Page. 5
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MAP.

Soil map, Clarke County sheet, Mississippi.

SOIL SURVEY OF CLARKE COUNTY, MISSISSIPPI.

By A. L. GOODMAN, of the U. S. Department of Agriculture, and
E. M. JONES, of the Mississippi Geological Survey.

DESCRIPTION OF THE AREA.

Clarke County, Miss., is situated in the eastern tier of counties, bordering the State of Alabama. Its eastern boundary line is 23 miles long and its western 27 miles. East and west it ranges from 28 miles at the north to 25 $\frac{3}{4}$ miles at the south boundary. The county includes 16 standard townships and 8 fractional townships and comprises within its limits an area of 684 square miles, or 437,760 acres. It is bounded on the north by Lauderdale County, on the east by Choctaw County, Ala., on the south by Wayne County, and on the west by Jasper County.

Clarke County lies entirely within that broad physiographic division known as the Coastal Plain. It embraces three topographic divisions: (1) The uplands, built up of alternating beds of sands and clays; (2) second bottoms, or alluvial terraces and (3) the broad alluvial first bottoms of streams, subject to frequent overflow.

The surface features of the uplands vary with the location. The northeastern part of the county, embracing the section from Theadville on the south to Energy and Hurricane Creek on the north, is for the most part badly dissected by numerous valleys and ravines. Owing to the rough topography, very little farming is carried on. Occasionally small farms, comprising from 10 to 60 acres, are found along the crests of some of the high winding ridges. Much of this section of the county is still heavily forested with longleaf pine, and is considered quite valuable for its timber. South of Theadville the country is less broken, and in the extreme southeast corner of the county a small area of prairie, comprising about 3 square miles, is found. The drainage of the eastern part of the county is in a southerly direction, the main drainage ways being Bucatunna, Long, Hurricane, Greasy, Rocky, Motts, Brush, Cedar, Oak Tuppa, Tallabogue, Hanging Moss, and Fivemile Creeks. In the north-central part of the county, including what is known as the "Union neighborhood," the topography is not so rough as that to the

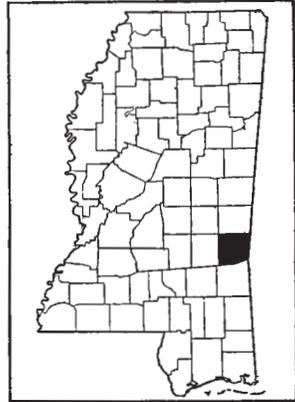


FIG. 1.—Sketch map showing location of the Clarke County area, Mississippi.

east. Here the ridges are not so sharp, and a prosperous farming development is taking place. South of this is another area of hilly country, badly dissected by the upper tributaries of Archusa Creek. In the south-central part of the county, approximately between Shubuta and Langsdale, lies a prairie belt comprising about 15 square miles. Most of this is either under cultivation or is used for pastures.

The central part of the county is drained by the Chickasawhay River. It is flanked on both sides by broad, flat terraces, lying above normal overflow. On these the towns of Enterprise, Quitman, Stonewall, De Soto, and Shubuta have been built. The country lying to the west of Enterprise has a gently rolling to hilly topography. That lying to the west of Quitman is for the most part gently rolling. In the neighborhood of Harmony lies a considerable area of smooth country. The farms on it are in nearly all cases in a high state of cultivation; and it may be considered one of the best farming sections of the county. Just west of Harmony and south of Pachuta another flat prairie country, comprising about 14 square miles, is encountered. The main drainage of this west-central part of the county is effected through Souinlovey, Pachuta, Gordon, Shots, Bogue Homo, and Shubuta Creeks. The extreme southwest corner of the county is made up of high sandy ridges and is drained by Beaverdam, Bogue Flower, Goodwater, and Wolf Creeks. The country lying between Bogue Flower Creek and Shubuta Creek ranges from gently rolling to flat. This section comprises about 17 square miles, locally called "flatwoods."

The first white settlers in Clarke County, mainly Scotch-Irish, came from the Carolinas and Georgia. The county was formed in 1833. The population in 1910 is given as 21,630; in 1900 it was 17,741. Quitman, the county seat, has 950 inhabitants, and Shubuta, the largest town, 1,168. Other towns of importance in the county are Enterprise, Basic City, De Soto, Pachuta, Wautubbee, Stonewall, Barnett, Beatrice, Langsdale, Carmichael, Theadville, Crandall, Pine Ridge, Creek, and Harmony.

Much of the low-lying second bottoms along the streams in the county has not yet been reclaimed from its poorly drained condition. Its value for farming under present conditions is low. No section of the county, not even along the railroads, has yet been settled to its full capacity, and much desirable farming land is still unbroken.

Water for commercial and domestic purposes is pure and easily obtained. Flowing artesian wells are quite common.

The county has good railroad facilities, being served by the Mobile & Ohio, New Orleans & Northeastern, Mississippi Eastern, and Shubuta & Southwestern Railroads. The Mississippi Eastern and the Shubuta & Southwestern are logging railroads, but they carry also freight and passengers. The Mobile & Ohio and the New Orleans & Northeastern give direct passenger and freight service to Mobile,

New Orleans, Meridian, Jackson, Chattanooga, Birmingham, St. Louis, and other important markets.

The public roads of the county are in good condition, being worked under the contract system. Most of the large streams are crossed by substantial bridges.

The county supports several manufacturing industries, among which is included one of the largest cotton mills in the South. This is situated at Stonewall, and employs from 500 to 700 operatives, men and women. Several large sawmills scattered throughout the county furnish employment to a large number of workers. An excel-sior factory is situated at Basic City.

CLIMATE.

Clarke County, lying in the warm temperate zone, has a climate characterized by short, mild winters and long, hot summers. The average temperature for the three winter months, December, January, and February, is 47° F. Extremes of -6° F. and 81° F. have been recorded in these months. Frosts are frequent in winter and films of ice occasionally form. Snow falls but rarely, and usually melts as soon as it strikes the ground. The winter temperatures usually range from 35° to 50° F. during the day, falling sufficiently at night to give crisp, frosty weather. Cold spells seldom last longer than 4 or 5 days, and are followed as a rule by heavy rains.

The average temperature for March, April, and May is about 64° F. The long warm period of summer begins about the first of May and lasts until the latter part of September. The average summer temperature is about 79° F. In July and August the temperature quite often reaches 100° F. and 104° F. has been reached.

Rainfall is well distributed throughout the year, the annual mean precipitation being 52 inches. The heaviest rainfall takes place during December, January, and February, the average precipitation for the three months being 15.48 inches. Spring opens about the first of March and is generally preceded by warm showers and thunderstorms. Spring and summer each average between 13 and 15 inches of rain.

The average date of the first killing frost in autumn is November 2, and of the last in spring March 17. The date of the earliest recorded killing frost in autumn is October 8, while that of the latest in spring is April 10. Cattle can be pastured for 10 months of the year. Verdure appears the latter part of February and fields stay green until December. Wild violets, jessamine, dogwood, azalea, and spirea are generally in full bloom by the first of March. Pear, plum, and peach trees generally begin blooming the latter part of February.

The following data, compiled from the records of the Weather Bureau station at Meridian, Lauderdale County, represent the climatic conditions in Clarke County:

Normal monthly, seasonal, and annual temperature and precipitation at Meridian, Lauderdale County.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	46.9	78	9	4.51	3.50	3.32
January.....	45.0	79	12	4.78	4.31	2.41
February.....	49.1	81	-6	6.19	2.98	7.61
Winter.....	47.0			15.48	10.79	13.34
March.....	56.3	89	17	5.35	3.27	4.50
April.....	64.1	90	28	4.04	3.11	14.95
May.....	71.1	96	40	4.27	2.82	1.61
Spring.....	63.8			13.66	9.20	21.06
June.....	77.3	100	46	4.62	1.88	20.06
July.....	80.0	104	58	4.86	4.42	3.06
August.....	78.5	103	49	5.15	4.97	2.26
Summer.....	78.6			14.63	11.27	25.38
September.....	72.7	98	39	3.28	6.53	2.48
October.....	63.0	92	29	2.02	.22	5.24
November.....	53.2	85	18	2.95	2.84	4.42
Fall.....	63.0			8.25	9.59	12.14
Year.....	63.1	104	-6	52.02	40.85	71.92

AGRICULTURE.

Clarke County lies within the territory claimed and occupied by the Choctaw Indians at the time the county first attracted the attention of white men. About 1834 a few white immigrants from Georgia and South Carolina began to make small settlements on the sandy lands along the second bottoms or terraces of the Chickasawhay River, but the agricultural development of the county was very slow and of little importance up to the year 1854. During this year the Mobile & Ohio Railroad was built through the county, affording access to a considerable extent of territory.

The first important farms were cleared in the neighborhood of the present sites of Enterprise and Shubuta. A few small farms in the prairie section of the county near Langsdale and Pachuta were also put under cultivation. The pioneer settlers devoted most of their effort to cattle and sheep raising. A few small patches of corn, potatoes, beans, and cabbage were planted for home consumption. After the clearings became larger and more numerous some of the settlers began to grow cotton. Prior to the construction of the Mobile & Ohio

Railroad this crop was hauled on wagons to Mobile and marketed. Most of the cattle and sheep were also driven to Mobile and necessary supplies were purchased largely in this market.

According to the Federal census, Clarke County had a population of 15,021 in 1880. The total number of farms at that time was 1,304, of an average size of 119 acres. Eight hundred and forty-eight of the farms were operated by the owners and 456 by tenants. Corn was the most extensively grown crop, 17,338 acres being planted, with a production of 174,712 bushels. Cotton was second, with 15,936 acres planted and 4,693 bales produced. Oats were also extensively grown, 3,193 acres being grown, with a production of 30,101 bushels. Hay, Irish potatoes, sweet potatoes, tobacco, sugar cane, and sorghum were also important crops. Nearly all of the uncleared land in the county at that time supported a dense growth of virgin longleaf pine. Some of the bottoms were forested with hardwoods, including oak, hickory, and gum.

During the succeeding decade there was a slight increase in population, an increase in the number of farms and in the proportion operated by tenants, and an apparent decrease¹ in the size of farms. The position of corn and cotton in acreage was reversed, cotton taking first place in 1889 with a gain of 8,000 acres, while corn gained only a little more than 1,000 acres. Oats occupied more than 1,000 acres less than in 1879. The minor crops at this time included rice, peanuts, hay, Irish potatoes, sweet potatoes, sugar cane, sorghum, apples, and peaches.

By 1900 the population had increased to 17,741, and during the decade following it increased by about 4,000. Cotton had increased in production and at this time (1899) was the most important crop, 30,823 acres being planted, from which 9,532 bales were produced. Corn was second, with 21,411 acres and a production of 208,351 bushels. Not much change in the production of minor crops had taken place.

Since the invasion of the Mexican boll weevil in 1910 cotton has been fast losing its position as the leading crop, while corn, velvet beans, soy beans, melilotus, alfalfa, Irish potatoes, sweet potatoes, cabbage, melons, peas, and sugar cane have been gaining in importance.

On most of the farms the agricultural methods are quite similar to those generally practiced on the lighter soil types of the Gulf Coast region. One-horse implements are in general use, and the "bedding-up" method of preparing ground for planting is most commonly practiced. In recent years improved implements have been intro-

¹ The tabulation in the census of each "tenancy" as a "farm" and the greater proportionate increase of tenants might be sufficient to cause this decrease.

duced with success and more approved methods of cultivation are being followed.

Considerable quantities of truck crops, including English peas and sweet potatoes, are being shipped from the county to northern markets.

Corn is the most important crop. It is grown on all the soils, but seems to give the best results on some of the fine sandy loam terrace soils along the river and on the Ruston and Orangeburg soils of the uplands. Yields range from 15 to 75 bushels to the acre, depending upon the method of cultivation used and the amount of fertilizers applied.

Cotton probably ranks second in agricultural importance, although the acreage devoted to it since the invasion of the boll weevil is estimated to be not more than 50 per cent of what it was in 1909. This crop normally gives good yields on the heavy clay prairie soils as well as on the lighter sandy soils, the returns ranging from one-fourth to $1\frac{1}{2}$ bales per acre. Cotton is very responsive to good tillage methods, such as a deep and careful preparation of the seed bed, thorough cultivation, and a comprehensive system of rotation and manuring.

Oats¹ are grown generally, but not as extensively as conditions would seem to warrant. The crop is gradually gaining in favor, however, and the acreage is yearly increasing. Fall-planted oats not only produce good yields, but protect the soil from washing and leaching. Thirty bushels to the acre is considered a good average yield.

Cowpeas, velvet beans, and soy beans are legumes extensively planted between the corn rows. Velvet beans produce a luxuriant growth both of straw and seed, and where plowed under in the fall add much organic matter to the soil. The vines after being killed by frost make excellent feed for stock, being nearly as nutritious as corn. Soy beans grow well throughout the county.

Sugar cane when planted in moist, well-drained locations and well fertilized produces from 250 to 500 gallons of sirup to the acre.

Orchard crops, such as peaches, pears, plums, and figs, do exceptionally well on the high, well-drained Orangeburg soils. Quite a number of small orchards are found throughout the county.

Commercial fertilizers are used on all the soil types in the county, except the Houston clay, Henderson clay, and Oktibbeha clay. The practice has been to buy any kind of fertilizer most readily available, regardless of the needs of the soil. A 8-2-2 fertilizer mixture has been found to give good results. Systematic rotation of crops is not practiced to any great extent in the county.

Purebred cattle and hogs are beginning to be substituted for the inferior grades heretofore raised. The "razorback" hog is rapidly

¹ See Farmers Bul. No. 436, Winter Oats for the South.

being displaced by the purebred Berkshire, Duroc Jersey, and Poland China. Taken as a whole, the soils of the county are well adapted to the production of an abundance of cheap forage, such as rape, velvet beans, soy beans, cowpeas, peanuts, turnips, and sorghum.

The lumber industry of the county has steadily increased. Forests of longleaf pine that at one time sold as low as 50 cents to \$1 an acre now bring from \$35 to \$60 an acre. In most instances the value of the standing pine is the first consideration and the agricultural worth of the land incidental. The lumber companies throughout the county are encouraging the settlement of the cut-over lands. The prices for small tracts range from \$5 to \$10 an acre. The removal of stumps is the most difficult task in bringing these cut-over lands under cultivation, but when they are once removed the land is in good condition for profitable agriculture.

SOILS.

Clarke County lies within the limits of the Coastal Plain. Its upland soils have been derived mainly from unconsolidated deposits consisting of clays, sands, gravels, or mixtures of these in varying proportions. Small areas of soil have been derived from the decay of limestone beds occurring interbedded with the other material. The soils range from sands to clays in texture, and from gray through brown, red, and yellow to nearly black in color.

The alluvial soils, both first-bottom and second-bottom, or terrace soils, range in texture, like the upland soils, from sand to clay, and are embraced within the soil province known as the River Flood Plains. The first bottoms represent the present flood plains, while the second bottoms represent former flood plains which now stand above normal overflow, the streams having cut their channels below their former level. The first-bottom soils consist of faintly modified, recently deposited alluvium, while the second-bottom or terrace soils are derived from old alluvium, which has been rather extensively changed through weathering from its original condition.

In the classification of the various soils of the county, those soils which have the same color or range of color in the surface portion, the same color and range of color and of structure in the subsoil, a common or similar origin, and similar drainage and topography have been grouped together and designated as a soil series. Within each series there are a number of types, the members being differentiated upon the basis of their texture, or the degree of coarseness or fineness.

The upland series, derived from unconsolidated material represented in the county, are the Orangeburg, Ruston, Norfolk, Susquehanna, and Guin.

The Guin stony sandy loam is a classification including several types, mainly the Orangeburg and Ruston fine sand and fine sandy

loam and the Susquehanna fine sandy loam, with ferruginous sandstone fragments, occurring in such intricate or mixed association over rough, hilly country as to preclude satisfactory separation and mapping of the several included types. It is practically uncultivated.

Certain soils in the upland are derived from consolidated material. These are Houston, Montrose, Henderson, Oktibbeha, Sumter, and Lauderdale soils, the first five series being from limestone and the last from shales.

On the second bottoms the Cahaba, Myatt, Leaf, and Kalmia series occur. The Cahaba occupies the best drained situations, the Myatt the poorest, and the Kalmia the situations of intermediate, or fair, drainage.

The overflowed stream bottoms include three series—the Ocklocknee, Trinity, and Thompson—and Meadow. The Ocklocknee and Thompson soils are composed of recently deposited material, washed principally from the Ruston, Orangeburg, and Susquehanna uplands, while the Trinity includes recently deposited material washed largely from the Houston clay. All of these are subject to overflow.

Meadow embraces narrow strips of overflowed bottoms which are so variable in character of material, not merely in different places but in arrangement of the 3-foot soil profile, particularly with reference to texture, that separation into distinct types was impracticable. This alluvium has the same origin as the Ocklocknee and Thompson soils.

In the following chapters the several types are described in detail and their economic relation to agriculture set forth.

The following table gives the name and the actual and relative extent of each of the several soils mapped in Clarke County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ruston fine sandy loam.....	116,032	26.5	Henderson clay.....	3,264	0.7
Orangeburg fine sandy loam..	63,936	14.6	Orangeburg sand.....	3,136	.7
Kalmia fine sandy loam.....	39,488	9.0	Ruston sandy loam.....	2,752	.6
Susquehanna fine sandy loam	36,544	8.4	Guin stony sandy loam.....	2,432	.5
Susquehanna clay.....	25,536	5.8	Kalmia sand.....	2,432	.5
Cahaba fine sandy loam.....	23,424	5.4	Ruston sand.....	2,368	.5
Ocklocknee fine sandy loam..	21,056	4.8	Myatt fine sandy loam.....	2,048	.5
Meadow.....	16,576	3.8	Trinity clay.....	1,984	.5
Ocklocknee loam.....	14,208	3.2	Norfolk fine sandy loam.....	1,152	.3
Orangeburg sandy loam.....	13,376	3.1	Thompson fine sand.....	1,088	.2
Montrose clay.....	11,264	2.6	Leaf fine sandy loam.....	704	.2
Houston clay.....	9,920	2.3	Oktibbeha clay.....	448	.1
Lauderdale stony clay.....	7,552	1.7	Norfolk sand.....	256	.1
Ocklocknee clay.....	4,992	1.1	Sumter stony clay.....	64	.1
Cahaba fine sand.....	4,864	1.1			
Ocklocknee silt loam.....	4,864	1.1	Total.....	437,760

MONTROSE SERIES.

The Montrose series, as far as encountered, occurs in the south-central part of Mississippi and in near-by sections in Alabama. The surface soils are gray and are underlain by heavy, plastic, yellow subsoils. The soils are derived from a deposit of heavy clay immediately overlying a soft, chalky limestone. Areas of these soils are locally known as "flatwoods" or "hog-wallow prairie." Only one type, the clay, was found in this county.

MONTROSE CLAY.

The Montrose clay has a "hog-wallow" surface; that is, its surface is faintly billowy, owing to numerous low, coalescent mounds 6 to 10 inches higher than the depressions. On the mounds the soil is a grayish clay, underlain at 1 to 3 inches by yellow, very sticky, very plastic, heavy clay, showing usually in the lower depths faint mottlings of gray or drab. In the depressions the soil is darker and the subsoil more mottled, usually a dark-brown to almost black clay, underlain at 2 or 3 inches by yellow or brownish-yellow, plastic, sticky, heavy clay, which below shows conspicuous mottlings of gray or drab and reddish yellow or yellowish red. The topography is characteristically level, except for the slight unevenness represented by the hog-wallow surface. This land is locally called "flatwoods."

Representative areas of this type are developed in the western part of the county along Shubuta Creek, east of Barnett, west of Walters School, and along Luke Fluffer Creek and the headwaters of Mingo Creek. The drainage is poor, water standing in the depressions for weeks at a time until evaporated by the hot sun during dry periods. During dry weather the soil bakes and cracks badly, probably on account of the very clayey, compact structure of both the surface soil and the subsoil, and the low humus content. The type is exceedingly difficult to till and, owing to this characteristic and to its poor drainage, only a small part of it is in cultivation.

The Montrose clay is similar in many respects to the Susquehanna clay, into which it grades at one extreme of its variation, while at the other extreme it approaches the Henderson clay in character of subsoil. The type at present is mostly forested, the growth consisting largely of longleaf and shortleaf pine and post and blackjack oak. Owing to the very compact nature of the subsoil, trees growing upon this type have very short tap roots, many of the roots not penetrating more than 2 feet below the surface.

The type is not considered a productive soil. It will produce one or two good crops when first cleared, but the yields quickly decline. The soil in many cases is deficient in lime. Owing to the small area under cultivation, it is difficult to make definite statements as to the average yields of crops.

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

Mechanical analyses of Montrose clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
422925.....	Soil.....	0.8	2.2	2.2	8.8	5.4	35.8	44.6
422926.....	Subsoil.....	.6	1.0	.7	3.0	4.8	31.0	58.8

HOUSTON SERIES.

The soils of the Houston series are black and high in lime, especially in the subsoil, which in some of the types consists of white, chalky limestone. The members of the series occur principally in the black calcareous prairie regions of Alabama, Mississippi, and Texas. The soils have been derived from the weathering of calcareous clays, chalk beds, and rotten limestones, all of late Cretaceous age. In some localities remnants of later sandy and gravelly deposits have been mixed with the calcareous material, giving rise to the gravelly and loam members of the series. The Houston clay was the only type of this series encountered in Clarke County.

HOUSTON CLAY.

The Houston clay, locally known as "black prairie land," consists of a dark brownish gray to black clay, underlain over the higher portions at a depth of about 5 to 8 inches by a sticky, plastic drab clay, mottled somewhat with yellowish colors and passing below into greenish-yellow, sticky, plastic clay. On the slopes and level areas the soil is darker and deeper, consisting of black clay overlying drab clay at about 10 to 15 inches, the drab clay grading into greenish-yellow clay within the 3-foot section. Whitish and yellowish lime nodules are present on the surface and through the soil section, being more abundant in the lower greenish-yellow clay. These range from the size of a pea to an inch or more in diameter, and appear to be present in sufficient quantity to keep the soil well supplied with lime. On some of the sharper ridges the greenish-yellow clay comes near the surface. Where erosion has been active the soil is sometimes so thin that the partially weathered parent rock comes near enough to the surface to give the soil a grayish color. In other places all of the soil has been washed away, leaving the bare rotten limestone exposed. Areas of this nature are found bordering the south bank of Pachuta Creek, east of the Chickasawhay River near Shubuta, and in the extreme southeastern corner of the county. The soil is very sticky when wet, but on drying granulates and assumes a favorable tilth.

This type occupies undulating prairies. The ridges are not very high and the slopes are long, gentle, and smooth, passing imperceptibly into level strips of Trinity clay along the streams flowing through the type. This is a well-drained soil, with the exception of occasional flats, which would be benefited by ditching or tiling. Clumps of wild plum, crab apple, honey locust, shortleaf pine, ash, hackberry, cedar, and occasionally a few scattered cottonwood trees are found on the more poorly drained spots. Some bois d'arc hedges mark section or land lines. The type was originally covered with sedge or prairie grass. At present Johnson grass and lespedeza have spread over a large area.

The Houston clay is found principally in two separate bodies, one in the southeastern part of the county between Shubuta and Langsdale, the other lying in the west-central part of the county along the New Orleans & Northeastern Railroad, south of Pachuta. The soil in the belt lying between Shubuta and Langsdale is of a somewhat blacker color than that south of Pachuta and seems to be slightly better drained. Only very small patches of this type lie more than 7 miles from a railroad, which is an important factor in marketing bulky crops such as cotton, corn, and hay.

This type is one of the most durable soils in the county. At present, however, a large area of it is in an impoverished condition, owing chiefly to continuous cultivation to the same crops for the last 75 years. In attempts to restore this soil to a more productive state a rotation consisting of oats in the fall, followed in the spring by corn, with velvet beans or cowpeas between the rows, has been found to give good results.

There is sufficient lime in the Houston clay to meet the requirements of alfalfa. One reason this crop has not met with better success is the failure to eradicate weeds before seeding, the crusting of the soil after seeding, or neglect to inoculate the seed.

Besides alfalfa, the Houston clay is well suited to the production of cotton, corn, oats, rye, rape, velvet beans, soy beans, cowpeas, and vetch. Since the invasion of the boll weevil much of the type has been turned into pastures and stock raising is becoming quite an important industry throughout the prairie section. Considerable tracts of this type have recently been purchased at \$10 to \$25 an acre by northern farmers, who plan to engage in stock raising and general farming.

SUSQUEHANNA SERIES.

The Susquehanna soils are gray, ranging to reddish. The subsoils are mottled gray and red or gray, red, and yellow, and consist of plastic, heavy clay. The color of the subsoils varies, often being red, white, drab, yellow, and sometimes purple, although red practically

always predominates, the other colors appearing only as mottlings in the lower part of the section. The Susquehanna series is most extensively developed in the higher part of the Coastal Plain from the vicinity of Chesapeake Bay to central Texas. This series is represented in Clarke County by the fine sandy loam and clay types.

SUSQUEHANNA FINE SANDY LOAM.

The typical Susquehanna fine sandy loam is a grayish fine sandy loam, grading quickly beneath into pale-yellow fine sandy loam, underlain at about 6 to 12 inches by red, plastic clay mottled with drab. The drab mottling becomes more conspicuous and the structure more sticky with increase in depth. In places the subsoil is mottled red and yellow, or red, yellow, and drab. Where the yellow mottling is more in evidence the subsoil usually contains more sand and is more friable. On some of the level areas, where drainage is not so perfect, the soil is a brownish-gray fine sandy loam grading abruptly into pale-yellow heavy fine sandy loam and then into yellow or yellowish-red fine sandy clay loam. This is underlain at a depth of 10 to 15 inches by yellowish-red or reddish-yellow clay containing considerable black concretionary iron material, with mottled reddish and yellowish, plastic clay appearing below.

On some colluvial slopes the soil is found to be 12 to 20 inches deep, while on many of the steeper valley sides it has been completely eroded away, leaving the unproductive red-clay subsoil exposed.

The topography of this type varies from undulating to gently rolling, there being a few areas that might be classed as heavily rolling or hilly.

Areas of Susquehanna fine sandy loam, containing from 2 to 6 square miles, are widely distributed throughout the county. Much of the type lies on the high, winding ridges and steep slopes adjacent to drainage ways. Some of the larger areas are situated south of Souinlovey Church, at Pleasant Grove Church, Hurricane Creek, north of Mannassa School, north of Hunter Store, southeast of Bethel Church, around Carmichael, and in the extreme northwestern corner of the county.

A small proportion of this type is under cultivation, much of it being recently cut over land or still covered with forests of longleaf pine. Areas in the neighborhood of Hunter Store and Hale are well developed and produce good yields.

The soil of the Susquehanna fine sandy loam is easily cultivated, but the subsoil, when wet, puddles and works into a very sticky mass. Wherever the soil is thin and the subsoil is near the surface cultivation is restricted to a rather narrow range of moisture conditions. If such areas are plowed when wet the soil is likely to assume a compact

condition unfavorable to plant growth, and it is almost impossible to get soil plowed at the wrong time into a good physical condition. Much of this type, occupying comparatively level areas, is poorly drained and "crawfishy." In all cases where the drainage is not good the subsoil shows a yellowish cast, is highly mottled with gray, and contains many iron "buckshot" concretions. This condition could be greatly improved by the construction of open ditches with sufficient fall to carry off the surplus water and by liming the soil to eliminate acidity.

Formerly this type was devoted mainly to cotton, but since the coming of the boll weevil much of the acreage formerly used for cotton has been seeded to corn, oats, and cowpeas. The yields of these crops vary greatly, the success of crops depending upon the rainfall and its distribution.

The Susquehanna fine sandy loam is not considered a very fertile soil, but where it is given proper care fair yields are obtained. Corn produces 12 to 35 bushels per acre. Where barnyard manure and commercial fertilizers high in nitrogen and potash are applied, yields of 20 to 40 bushels of corn and 20 to 35 bushels of oats per acre are had.

A considerable acreage of this type now in an unproductive state can be purchased at \$2.50 to \$8 an acre.

SUSQUEHANNA CLAY.

The typical Susquehanna clay is a brownish to grayish silty clay loam or fine sandy loam, underlain at about 1 to 5 inches by red plastic clay, usually faintly mottled with drab or gray. This clay becomes very sticky and more thickly mottled with drab in the lower part. There are many spots in which the clay is yellowish in the upper part, becoming mottled reddish and drab below, or in some places mottled yellowish and drab or gray. The clay often reaches to the surface with the fine sandy loam covering absent. Nodules and small platy fragments of ironstone occur in many places. There are included a few patches of Oktibbeha clay.

The type is nearly all covered with forest, mostly longleaf and shortleaf pine, with a rather thick growth of small-sized oaks.

Land of this type can be plowed with difficulty. The soil is soft and sticky when wet, and when moderately dry becomes tough and tenacious. A slight rain makes it too sticky to plow, while in dry weather it is too hard. In the lower subsoil, where weathering has not yet penetrated, the clay when dry breaks into angular fragments. This granulation disappears almost entirely when the clay becomes saturated, so that the subsoil proper is as resistant to the downward movement of water as the unweathered clay beneath. Owing to this compact, dense nature, oxidation and air circulation can not take

place. The soil is deficient in lime, and responds well to applications of 1,000 pounds of unburned lime to the acre.

The topography of the Susquehanna clay ranges from heavily rolling to nearly level. The level areas in the neighborhood of Pachuta and east of Shubuta are locally called "red prairie" and are in most cases poorly drained. The hilly areas of the type found in the vicinity of Pierce Springs, Zion Chapel, and south of Pine Grove Church have fairly good drainage. The main body of this type lies along a broad divide about 3 miles west of Shubuta. Public roads located on this soil are for the most part good in dry weather but almost impassable after a wet period of three or four days.

Before the invasion of the boll weevil a good many small fields on this type were planted with cotton, the yields ranging from one-fourth to three-fourths bale per acre. Since the advent of the weevil nearly all these tracts have been allowed to remain uncultivated, most of them being used as pasture land.

The type has a narrow range of crop adaptation, owing to its heavy texture, the difficulty of plowing it with the light stock in general use in the county, and its nearly impervious subsoil. It is best suited to shallow-rooted crops, such as Bermuda grass, lespedeza, carpet grass, and probably Johnson grass. Oats, rye, cotton, and corn do fairly well when the soil is deeply broken.

Quite a large area of the type is now for sale throughout the county at prices of \$2.50 to \$8 an acre.

ORANGEBURG SERIES.

The Orangeburg soils are predominantly gray, ranging to reddish brown, and the subsoil is red and consists of friable sandy clay. This series is confined to the uplands of the Coastal Plain Province, being most extensively developed in a belt extending from southern North Carolina to central Texas. The series is represented in Clarke County by the sandy loam, fine sandy loam, and sand types.

ORANGEBURG SANDY LOAM.

The soil of the Orangeburg sandy loam is a gray to grayish-brown loamy sand to sandy loam, passing into yellowish or reddish loamy sand to sandy loam at a depth ranging from 8 to 15 inches. The subsoil below this depth is a red, friable sandy clay, which continues to a depth of 3 feet or more without important change, except that the lower subsoil is in many places more compact than the overlying material.

The type on the higher ridge crests and in uneroded areas has a comparatively smooth surface, undulating to gently rolling, suited to cultivation. A large part of the type has been cut into by drainage

ways and gullies until the topography has become rolling to rough. The smoother, higher bodies are usually flanked by sloping areas of a ridgy or gullied configuration. These rougher portions when plowed wash severely, and even without cultivation the gullies continue to lengthen and spread. There are many places where such washing has already given the land a rough gullied character and made it valueless except for pasturage and forestry. Such areas may be identified on the map by the very branching character of the drainage lines. Some of the canyonlike gullies found in this type range from 20 to 100 feet in depth. The steep slopes can not safely be cultivated, except to soil-binding crops, such as Bermuda grass and lespedeza, for they are certain to wash where handled under ordinary cultural methods. Gullied areas are to best advantage left in timber. Moderate slopes are farmed with comparative safety if carefully terraced.

The Orangeburg sandy loam in Clarke County is of patchy occurrence. The most important areas occur in the southwest corner of the county bordering Bogue Flower Creek and its tributaries. Others appear along the Lauderdale County line north of Haney School, along Little Oak Tuppa Creek, east of Union School, and northwest of Molpus School.

Owing to the rather coarse texture of the surface soil, it absorbs moisture very readily. The subsoil, though somewhat compact, does not act like a hardpan, but allows the free passage of the excess water from the soil. Where this action is not too rapid or too complete a favorable condition for crop production exists.

The Orangeburg sandy loam is one of the first soils to warm up in the spring, and, owing to its sandy nature, can be plowed shortly after a heavy rain. The type, where heavily fertilized, is well adapted to all kinds of early truck crops. Among those that have been tried are cabbage, beans, tomatoes, Irish and sweet potatoes, strawberries, watermelons, and cantaloupes. Fertilizers high in vegetable matter, nitrogen, and phosphoric acid have been found to give good results when applied at the rate of 500 to 1,000 pounds to the acre. Oats and rye have proved the most successful cover crops grown on this type. These two crops not only protect the soil from washing and leaching during the heavy winter rains, but yield 15 to 35 bushels of grain to the acre. Cotton and corn both do well on this type where properly cultivated. Sugar cane, when fertilized and planted on moist lands, produces 250 to 500 gallons of sirup to the acre. Fruit trees, such as peaches, pears, and plums, do well.

Land of this type can at the present time be purchased for \$5 to \$15 an acre, depending on the topography and the distance from town or railroad.

ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam is a grayish loamy sand or fine sandy loam, grading at a few inches into yellowish or reddish fine sandy loam, and underlain at about 8 to 15 inches by red friable fine sandy clay or dull-red fine sandy clay, passing into red clay. In places, as, for example, a few miles north of Quitman, the subsoil is somewhat stiffer than the typical Orangeburg subsoil. The surface is characteristically undulating to gently rolling over the relatively lower areas, where erosion has cut deeper into the soil. There are included some rough bodies, certain of which approach the character of Rough gullied land. The smoother portion is admirably suited to farming, but the steeper slopes, unless carefully handled and terraced, erode badly where clean cultivation is practiced. Gullies once started in this kind of soil rapidly advance, destroying or greatly decreasing the value of the land for agriculture.

Drainage in the Orangeburg fine sandy loam is in nearly all cases good, no swampy areas of large extent occurring within the county. The type occupies elevated positions, with sharp slopes from the uplands down to the drainage levels. Much of the type is found as a capping on high, winding ridges. Erosion is everywhere active, but less so on the plateaulike areas.

This type is one conserving moisture well and crops seldom suffer from drought. This is due chiefly to the soft, friable surface soil, which allows the water to percolate, and to the texture of the subsoil, which favors both the absorption and retention of moisture in such a way that it is readily available to plants.

The Orangeburg fine sandy loam is the second most extensive type in the county and is one of the best types for general farming. Some areas of importance are located in the neighborhood of Langsdale, north and east of Stonewall, north of Theadville along Brush Creek, in the vicinity of Pine Ridge, south of the Concord School, north of Hopewell Church, at Middleton, and at Union School. The type seems to have reached its best development in the northern part of the county, in what is known as the Union Neighborhood.

The Orangeburg fine sandy loam, owing to its fine texture, is easily built up and fertilizers have a more lasting effect upon it than upon the more sandy soils. It can not be plowed under as wide a range of moisture conditions as the sandy loam type, because of its tendency to become compact in dry weather following wet plowing.

The type produces good yields of market-garden crops, such as Irish potatoes, sweet potatoes, tomatoes, lettuce, beans, onions, peas, cabbage, and strawberries. With moderate applications of fertilizers good crops of cotton, corn, oats, sugar cane, velvet beans, soy beans, and cowpeas can be grown. Orchard fruits, such as peaches,

pears, apples, and plums, are especially adapted to this soil, the Elberta peach being grown with marked success. Fall-seeded oats deserve a decidedly more important place than they now have as a winter cover crop, as they not only prevent washing and leaching of the soil, but are profitable in direct returns. Sodium nitrate applied at the rate of 75 to 150 pounds to the acre on oats has been found to give excellent results.

Quite a large area of this type near Pine Ridge is being rapidly cleared of its timber. Owing to its rough topography, it is unsuited for farming land, and would to best advantage be reforested or seeded to some soil-binding grass, such as Bermuda grass, in order to retard erosion.

The type can now be bought for \$5 to \$30 an acre, depending upon the topographic features and the distance from a railroad.

ORANGEBURG SAND.

The Orangeburg sand to a depth of 16 to 20 inches consists of a gray to grayish-yellow loose sand. Below this depth a reddish-brown to red, medium-textured, incoherent sand, somewhat more loamy than the surface soil, is encountered. There are included patches, too small to map, of Orangeburg sandy loam, which have sandy clay within the 3-foot section.

The type occupies knolls, slopes, and moderately rolling country. It has perfect to excessive drainage, and unless kept well supplied with organic matter crops are likely to suffer from drought during periods of light rainfall.

The Orangeburg sand is not extensively developed, but has a patchy distribution throughout the county. Some of the larger areas mapped are in the southwestern corner of the county along Beaverdam Creek, with others north of Cross Road Church and south of Pine Ridge. It is found in most cases along the crests of ridges and down the slopes in shallow drainage depressions.

The sand type is less retentive of moisture than the Orangeburg fine sandy loam or sandy loam. The lack of organic matter makes it almost impossible to produce a satisfactory crop without the use of commercial fertilizers.

Owing to the thorough drainage of this type, it warms up early in the spring and may be considered an excellent type for the production of early truck crops such as melons, strawberries, and cabbage. When corn is planted on this type velvet beans, soy beans, or cowpeas are profitably planted between the rows. Barnyard manure and commercial fertilizers high in nitrogen and potash have been found to give the best results. Oats, corn, cotton, melons, early vegetables, and peaches are among the best crops for this type.

The type is forested with scattering longleaf pine, together with a dense growth of scrub oak and bushes. At present it is not considered of much value and can be bought at \$3 to \$7 an acre.

RUSTON SERIES.

The Ruston soils are gray, varying to grayish brown. The subsoils are reddish yellow to yellowish red or dull red, and are moderately friable, consisting generally of sandy clay. Occasionally the lower subsoils are mottled with gray and shades of yellow. This series is intermediate between the Orangeburg and Norfolk series in the color of its subsoil, and between the Orangeburg and Norfolk on the one hand and the Susquehanna on the other in point of subsoil structure. The Ruston soils are closely associated with the Orangeburg and Susquehanna. In Clarke County the sandy loam, sand, and fine sandy loam types are mapped.

RUSTON SANDY LOAM.

The Ruston sandy loam to an average depth of 10 to 18 inches consists of gray or grayish-brown loamy sand to light sandy loam. The presence of fine sand is very evident, but usually enough coarse sand is present to produce a gritty feel. The subsoil proper, which is reached at about 14 inches, is a yellowish-red to brownish-red friable sandy clay, not very uniform in structure. Areas covered with forest have a dark-gray to almost black color in the first few inches of the soil, this being the result of an accumulation of vegetable matter and humus.

The Ruston sandy loam is scattered throughout the county in small areas, some of the most important being in the neighborhood of Scarbrough Bridge, northwest of Fairchild Mill Pond, west of Haney School, and east of Dunnam School.

The topography ranges from undulating to heavily rolling or hilly. Most of the areas occupy the crests of ridges or steep slopes leading to the drainage ways.

The drainage is in all cases thorough, and in many places excessive, owing to the sandy substratum and the loose structure of both the soil and subsoil.

Owing to the good subdrainage, the soil warms up early in the spring, making the growth of early truck crops possible. Areas of Ruston sandy loam occupying low swales or hollows can be advantageously planted to sugar cane. Where commercial fertilizers are heavily applied yields of 300 to 500 gallons of sirup to the acre are obtained. Crops such as corn, cotton, and oats produce fair yields. Owing to the small area of this soil in the county, it is not important.

Below are given the results of mechanical analyses of samples of the soil and subsoil:

Mechanical analyses of Ruston sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
422937.....	Soil.....	1.4	21.0	17.2	30.3	4.8	20.3	4.2
422938.....	Subsoil.....	.9	17.9	17.4	30.1	5.1	19.9	8.6

RUSTON SAND.

The Ruston sand to a depth of 10 to 15 inches is a light-gray to gray, loose-textured, fine to medium sand. This is underlain to a depth of 36 inches by a yellowish-brown to brownish-red incoherent sand. The subsoil is not so red or so loamy as that of the Orangeburg sand, and the soil is somewhat less retentive of moisture.

The type is of rather limited occurrence, being generally found in patches along the slopes and crests of ridges or on the tops of high knolls. In all cases it is well drained, and owing to its incoherent structure drainage is in many cases excessive, crops suffering from lack of moisture during periods of drought.

Typical areas are found along the Alabama State line east of Little Oak Tuppa Creek, along Moore Mill Creek south of Coldwater School, and along Archusa Creek northeast of Quitman.

Only a very few small areas are at present under cultivation, most of the type being forested, mainly with a scrubby growth of blackjack oak and scattering longleaf pine. With the liberal incorporation of vegetable matter and barnyard manure, together with the planting and turning under of legumes, such as cowpeas, velvet beans, and soy beans, fair crops of melons, corn, and oats can be obtained.

Owing to its loose structure and droughty nature, this type is not considered of high agricultural value. The land can be bought for \$2 to \$5 an acre.

RUSTON FINE SANDY LOAM.

The Ruston fine sandy loam is a gray loamy fine sand, passing within a few inches into a yellowish loamy fine sand or fine sandy loam, and underlain at about 10 to 20 inches by a reddish-yellow to yellowish-red or dull-red, friable fine sandy clay. This clay subsoil may be more compact at lower depths, but otherwise it is quite uniform in character to a depth of 3 feet or more.

In forested sections the first few inches of the virgin soil has a dark-gray to brownish-gray color, owing to the presence of organic matter. Below the section influenced by vegetable matter the soil has a dull-brown to reddish-brown tint. Taking the type as a whole, the subsoil

occupies an intermediate position between the Orangeburg fine sandy loam on the one hand and the Susquehanna and Norfolk fine sandy loams on the other. It is redder than the Norfolk, but contains more yellow than the Orangeburg, and is considerably less plastic than the Susquehanna.

There are places where the subsoil is somewhat stiff and mottled with shades of yellow and red, or even shows some gray mottling in the lower part. Such a phase represents an approach toward the Susquehanna fine sandy loam, and the type as mapped includes some patches of this Susquehanna soil and some of Orangeburg fine sandy loam, as well as occasional eroded patches where the clay is near the surface, these areas being too small to be shown on the map.

The Ruston fine sandy loam has the largest extent and the widest distribution of any type mapped, being found in large, continuous bodies, as well as scattered patches, throughout the county. The topography is undulating to rolling, with some rather rough bodies throughout the more sloping situations. In the neighborhood of Harmony the type occupies a smooth area, while in the northeastern part of the county some of it is very rolling to hilly. The ridges in most cases are rounded, although the slopes are steep. If these rough areas were put under cultivation, gullying and destructive washing would quickly ensue, as has been the case with this type on even more gentle slopes.

The drainage of the type appears in nearly all cases good, though occasionally small poorly drained areas are found around the heads of drainage ways and in depressions elsewhere.

Much of this type is being cleared of timber or is already cut-over land. Where freshly cleared, or even though in continued cultivation if kept well supplied with humus, good crops are obtained under a wide range in seasonal conditions. This soil has a good foundation and can be easily built up to a high degree of fertility by the use of commercial fertilizers and barnyard manure. Land that has been in cultivation for some time is in nearly all cases deficient in vegetable matter. One of the fertilizers said to give good results is a mixture of 200 pounds of cottonseed meal and 100 pounds of acid phosphate to the acre. Where truck crops are to be grown, heavier applications are made. Fertilizers analyzing 8-2-2 or 10-2-2 are used for most crops with good results.

Before the invasion of the boll weevil much of the Ruston fine sandy loam was planted to cotton, but during the last two years only a very small area has been used for this crop. Corn with velvet beans between the rows is becoming the most important crop. Oats do well on this soil, and could well be more extensively grown as a winter cover crop. Many kinds of truck crops, including beans, cabbage, peas, sweet potatoes, Irish potatoes, strawberries, and melons,

do exceptionally well where proper attention is given. Some of the low-lying moist areas are well adapted to the growing of sugar cane, producing 150 to 500 gallons of sirup to the acre.

Large areas of the Ruston fine sandy loam are for sale at the present time at \$5 to \$12 an acre.

GUIN SERIES.

The Guin soils are predominantly gray and sandy in the surface section and have yellowish-red to red subsoils. They occupy hilly, broken uplands of the Coastal Plain, where erosion has been and still is very active. The members are usually marked by the presence of locally formed sandstone. There is generally such a lack of uniformity in these soils as to make separation of the various types difficult. In origin they are closely associated with the Orangeburg and Ruston series, but also include patches of Susquehanna soils, usually too small to be satisfactorily differentiated from the Orangeburg, Ruston, and sometimes the Norfolk soils. All these soils are frequently mapped together under the Guin series, owing to their intricate association and patchy occurrence. In Clarke County one type of this series, the stony sandy loam, was mapped.

GUIN STONY SANDY LOAM.

The Guin stony sandy loam represents a group of stony and poorly developed soils of several kinds, rather than a definite soil type. It comprises very rolling country of winding ridges with flanking subordinate ridges sloping rapidly away from the main crests. The slopes of these are steep and mostly stony, the stones consisting of rather large platy fragments of ferruginous sandstone and ironstone. On the crests of the ridges Orangeburg and Ruston fine sandy loams predominate, while on the slopes Orangeburg, Ruston, and Susquehanna fine sandy loams and stony sandy loams are the principal soils. There are also scattered bodies of Lauderdale stony clay mixed with this type, some of which were large enough to map separately.

The land mapped as Guin is mostly nonagricultural, being valuable chiefly for timber and pasturage. It is not very extensively developed in the county, being found only in the northeastern part around Carr School between upper Greasy Creek and Hurricane Creek.

LAUDERDALE SERIES.

The Lauderdale series is marked by the yellowish to nearly white color of the soil material, which shows little change from the surface downward, and the abundance of rock fragments found on the surface and throughout the soil section. These consist of a soft rock of a white to mottled yellow, reddish, and gray color, of reddish sandstone or ironstone, and of hard siliceous rock resembling quartzite.

The topography comprises narrow, high, winding ridges, sharp hills, and steep slopes, and is so rough and stony as to give these soils a very low agricultural value. Of this series one type, the Lauderdale stony clay, was mapped in Clarke County.

LAUDERDALE STONY CLAY.

The typical Lauderdale stony clay is a creamy-yellow to greenish-yellow rather plastic clay containing an abundance of angular fragments of soft yellowish to cream-colored rock and in places harder, more siliceous rock fragments. Similar fragments are also thickly strewn upon the surface. Bedrock, or a mass of rock fragments, is usually reached within the 3-foot section. There is no definite division between soil and subsoil, the material having about the same physical characteristics from the surface downward. The immediate surface is often rather grayish. Occasionally iron-cemented sandstone fragments are found scattered over the surface with the white siliceous rock, and it is not uncommon to find pockets of almost pure-white quartz sand in the clay stratum.

The soil is derived from a light-colored rock and is found only in the northern half of the county. This belt of white rock enters the county just north of Basic City and extends in a southeasterly direction for a distance of 15 or 20 miles. Some of the largest patches lie along Hurricane Creek, east of Reynolds School, and along upper Greasy and upper Long Creeks.

The greater part of this type occupies the crests and slopes of high, winding ridges, in many cases capping the highest ridges in the county. Some of these rock-covered peaks tower well above the general upland level. In other cases the type is found occupying the valley between two hills, having a rock-lined stream flowing through its center. A number of springs are found along the base of these rocky hills.

The greater part of this type is still covered with a dense growth of longleaf pine. Owing to its rough topography and stony character, it can be classed as nonagricultural land. None of the type is under cultivation. It is locally called "white stony land" and is valued only for its timber growth.

HENDERSON SERIES.

The members of the Henderson series are marked by their greenish-gray, sticky and refractory clay subsoils and usually carry large quantities of limestone fragments and marly material in various stages of decomposition. The types occur in patches as residual material derived from exposures of soft limestones. One type, the Henderson clay, was mapped in Clarke County.

HENDERSON CLAY.

The Henderson clay consists of a brown to dark yellowish brown clay, underlain at about 4 inches by a greenish-yellow, plastic, very sticky, heavy clay, containing frequently, in the lower part, considerable soft, whitish calcareous material and lime concretions. In places the calcareous material seems to occur in layers 2 to 6 inches thick. Some areas were found to have a drab color at a depth of 12 or 15 inches.

The Henderson clay has characteristics somewhat similar to the Houston clay, though the soil contains less organic matter and is therefore lighter in color. It is locally known as "shell prairie." With more complete weathering and the turning under of legumes, this soil possibly would approach the Houston clay in productivity.

When the soil is wet it is very plastic and sticky and hard to cultivate, but under proper moisture conditions it is friable and works into a good tilth. In uncultivated fields during very dry weather the soil bakes and cracks. The type occurs on slopes near streams, and consists mostly of prairie land, having some cedar and field pine in places.

The Henderson clay is derived from the weathering of limestone and calcareous clays and shales.

Cotton, corn, sorghum, cowpeas, and all of the legumes do well on this soil. Alfalfa and melilotus give good results where care is taken to eradicate weeds and work up a good seed bed before planting. Ordinarily corn yields 10 to 15 bushels, cotton one-fourth to three-fourths bale, and oats 20 to 30 bushels to the acre. Hay produces one-half to 1½ tons to the cutting, and averages three cuttings a year.

The Henderson clay is an exceptionally good soil for stock farming, but is not considered of much value for fruit or truck crops. Some areas with more than the average content of organic matter have been under cultivation for over 50 years and still produce fair yields. Areas in which the soil is underlain at shallow depths by rotten limestone are less productive, probably because of a lower content of organic matter and a shallower soil.

The price of this type is somewhat lower than that of the Houston clay, ranging from \$8 to \$15 an acre.

Below are given the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Henderson clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
422901.....	Soil.....	1.8	2.2	0.9	3.8	4.3	35.7	51.3
422902.....	Subsoil.....	1.8	4.4	1.9	5.2	5.1	39.2	42.6

SUMTER SERIES.

The soils of the Sumter series are predominantly yellow, and the subsoils are slightly brighter in color and carry large quantities of partially weathered rock fragments and chert from soft cherty calcareous rocks of the Coastal Plain, from which the soils are derived. The Sumter stony clay is the only member of this series mapped in the present survey.

SUMTER STONY CLAY.

The Sumter stony clay consists of a yellowish brown clay, grading into yellowish, moderately friable clay and then into yellow, partly decomposed rock. Grayish, fossiliferous cherty fragments, ranging from 6 to 15 inches in diameter, are abundant over the surface and throughout the soil section. Bedrock or an impenetrable mass of rock fragments is encountered at about 10 or 15 inches.

The type occurs on knolls and was found in only two small areas in the southwestern part of the county. Neither area is in cultivation, but owing to their dense growth of lespedeza they afford excellent grazing. Owing to its small extent in this county, the type is unimportant.

NORFOLK SERIES.

The surface soils of the Norfolk series are prevailing gray, ranging from light gray to grayish yellow. The subsoils consist of yellow sandy clay of friable structure. These soils occupy nearly level to rolling uplands throughout the Coastal Plain. The series is represented in Clarke County by the fine sandy loam and sand types.

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam is a grayish fine sand to loamy fine sand, passing abruptly into pale-yellow loamy fine sand to fine sandy loam, and underlain at about 10 to 20 inches by yellow, friable fine sandy clay. Where the drainage is insufficient the subsoil is often slightly mottled with gray or reddish colors and contains a small percentage of iron concretions.

Only a small total area of the Norfolk fine sandy loam occurs in the county. Some of the typical tracts are mapped in the neighborhood of Weems School and at St. Mary Church. A large proportion of this type is farmed, with good returns where properly handled.

The topography is undulating to gently rolling and in most cases drainage is good. Corn, oats, velvet beans, soy beans, strawberries, tomatoes, potatoes, and many other truck crops do well on this soil.

The price of the Norfolk fine sandy loam ranges from \$5 to \$12 an acre.

NORFOLK SAND.

The Norfolk sand is a grayish to almost white, incoherent, medium sand to a depth of 12 inches or more. This is underlain by a pale-yellow loose sand to a depth of 36 inches. In many places the loose sand extends to a depth of 5 feet or more. This material is derived chiefly from quartz.

This type is restricted to one small area in the extreme northwest corner of the county near Concord Church. The topography is gently rolling.

None of this soil is under cultivation, and it supports only a dense growth of blackjack oak, with a few scattered Spanish bayonet plants. Owing to its loose, open structure crops upon it would suffer for lack of moisture. With heavy fertilization watermelons might succeed.

OKTIBBEHA SERIES.

The Oktibbeha soils are prevailingly dull brown to yellowish brown. The subsoils are composed of yellowish-brown or slightly mottled yellow, gray, and red, rather plastic silty clay. The members are developed in close association with the Houston soils, having been mapped only in the "black prairie belt" of Alabama and Mississippi. They are underlain by the soft, rotten limestone which gives rise to the latter series. The topography is flat to gently sloping. The soils occur at slightly varying elevations throughout the prairie regions. The original timber growth consists mainly of post oak, and the members are locally known as "post-oak land" or "post-oak prairie land."

OKTIBBEHA CLAY.¹

The Oktibbeha clay consists of a dull-red or yellowish-red, plastic, sticky, heavy clay, mottled below 8 inches with yellow in places, and underlain within the 3-foot section or a little below 3 feet with greenish-yellow, plastic, sticky clay. The low-lying clays in many cases contain soft, white calcareous material and yellowish lime nodules. The type occurs on slopes where erosion has thinned down the original covering of reddish Susquehannalike clays. This soil is sticky when wet, and difficult to till, except under proper moisture conditions, when it assumes a slightly granular structure.

The Oktibbeha clay is found bordering the black prairie soils in the south-central part of the county.

The topography varies from flat to gently sloping. Characteristically the type occupies flat-topped or moderately sloping drainage divides. The surface drainage is normally adequate, but owing to

¹ This is not true Oktibbeha clay, varying from the latter in the color of both soil and subsoil and in the highly calcareous nature of the subsoil.

the plastic, compact nature of the soil, much of the underdrainage is insufficient. Depressed areas appear in nearly all cases to be poorly drained and contain many iron-oxide concretions.

The type contains more lime than the Susquehanna clay and is considered more productive. Only a small acreage of it is in cultivation, cotton and corn being the leading crops planted. Johnson grass, Bermuda grass, lespedeza, and ordinary prairie grass make good yields, and stock raising is quite profitably carried on.

LEAF SERIES.

The surface soil of the types included in the Leaf series is light gray to gray. The subsoil characteristically consists of gray or mottled gray and yellow, compact silty clay, which grades downward into a mottled red and gray or red and yellow compact, plastic clay. Iron concretions are common on the surface. These soils are developed on the stream terraces of the Coastal Plain region. In Clarke County only the fine sandy loam type is found.

LEAF FINE SANDY LOAM.

The surface soil of the Leaf fine sandy loam to a depth of 6 to 8 inches consists of a light-gray fine sandy loam. The surface after cultivation for several years presents a white, ashy appearance, which is caused chiefly by the loss of organic matter. The subsoil is a stiff, plastic red clay, mottled with gray and drab, and much resembles the subsoil of the Susquehanna fine sandy loam.

The topography is in most cases level, this soil occupying a terrace position similar to that of the Kalmia series. A few small tracts of this type have been included on the map with Cahaba and Kalmia soils, owing to their small size.

The Leaf fine sandy loam is of small extent in Clarke County. Typical areas lie on second bottoms of the Chickasawhay River, southeast of Sumrall, and north of Enterprise.

Owing to the heavy, plastic nature of the subsoil and the difficulty with which it is worked, very little of the type is in cultivation. Under favorable conditions, however, corn, cotton, oats, and peas give fair yields. During rainy seasons the returns are low. This is probably caused to a great extent by the poor circulation of water and air through the heavy, plastic subsoil. Land of this type may be purchased for \$5 to \$10 an acre.

KALMIA SERIES.

The surface soils of the Kalmia series are gray, ranging to grayish yellow, and the subsoils are mottled gray and yellow. The types are developed along streams of the Coastal Plain region on terraces lying largely above overflow, and most extensively in the Coastal

Plain section of Mississippi and Alabama. They are derived largely from materials washed from Coastal Plain soils, although along the larger streams issuing from the Appalachian Mountains and Piedmont Plateau more or less material has been transported from those regions. In the better drained situations the subsoils are yellow, the soils of such areas resembling very closely the corresponding members of the Norfolk series. The Kalmia soils are closely related to the Cahaba, differing mainly in their poorer drainage and the consequent less oxidized condition of their subsoils. The surface is usually flat and the drainage deficient. The Kalmia series is represented in this county by the sand and fine sandy loam types.

KALMIA SAND.

The Kalmia sand from 0 to 8 inches consists of a gray rather loose sand. This is underlain by a pale-yellow or yellowish-gray sand, which may show mottling in the lower and more poorly drained areas. The depth of the sand is widely variable, usually being greater near the streams.

The type occurs on stream terraces or second bottoms of the Chickasawhay River and the larger creeks. Typical areas were mapped along the river south of Quitman, east of De Soto, at Barber Lake, and southeast of Sumrall.

The drainage is naturally good, but not so thorough as that of the Cahaba fine sand. Areas of the Kalmia sand that have been well fertilized produce good crops of corn, peanuts, oats, sweet potatoes, and cowpeas, and the soil is considered an excellent one for watermelons and cantaloupes. During dry seasons, however, all crops are likely to suffer from lack of moisture.

A large proportion of this type has a flat to billowy surface and is covered with a dense growth of blackjack oak.

KALMIA FINE SANDY LOAM.

The typical Kalmia fine sandy loam is a gray loamy fine sand to fine sandy loam, underlain at 3 to 5 inches by pale-yellow or yellowish-gray loamy fine sand to fine sandy loam, which passes at about 8 to 15 inches into yellow fine sandy clay, slightly mottled with gray and shades of yellow, especially in the lower part. There are places where this clay is not reached above 20 or 30 inches, and others where the subsoil is a sandy loam rather than a sandy clay.

As mapped the type includes some small patches of Cahaba fine sandy loam on the better drained knolls, of Myatt fine sandy loam in poorly drained depressions and flats, and occasional small areas of Leaf fine sandy loam.

The Kalmia fine sandy loam occurs as a second-bottom soil along the large streams. The surface is prevailingly flat, and drainage

fairly well established. Some of the typical areas are developed along terraces bordering the Chickasawhay River, Bucatunna Creek, and many of the smaller streams. The most important areas are found near Enterprise, Quitman, Pachuta, Stonewall, De Soto, Shubuta, and Stallings Store.

As a rule the stream channels along which this type is found readily accommodate the run-off, but in places obstructions formed by logs and brush cause a sluggish flow, with resultant deficient drainage, necessitating ditching. The type, however, usually lies in situations where drainage systems can be easily installed.

Where the soil has been in constant cultivation under good drainage conditions it loses some of its gray and yellow colors and assumes a more brownish hue, the mottling appearing only in the lower depths. The type is largely deficient in organic matter, but when adequately drained it is easily built up and can be made to produce good yields of corn, oats, velvet beans, soy beans, peanuts, cabbage, potatoes, strawberries, tomatoes, and sugar cane. Pecans, figs, and grapes also do well. It is especially adapted to stock raising. Dense growths of lespedeza, sedge, and carpet grass are found everywhere upon it. Fall-sown oats do well, producing 25 to 35 bushels to the acre.

The value of this land depends largely upon the improvements, location, and drainage conditions. From \$8 to \$15 an acre is the ordinary range in price.

CAHABA SERIES.

The surface soils of the Cahaba series are brown, ranging to reddish brown, and the subsoils are yellowish red to reddish brown. The Cahaba soils occupy old stream terraces, are largely above overflow, and comprise the best drained land of these terraces. They are most extensively and typically developed in the Coastal Plain region of Alabama and Mississippi. The soil material consists of wash from the Coastal Plain soils, with some admixture along the larger streams issuing from the Appalachian Mountains and Piedmont Plateau of material from the soils of those regions. The Cahaba fine sandy loam and fine sand were mapped in this county.

CAHABA FINE SANDY LOAM.

The Cahaba fine sandy loam is a grayish to brownish fine sandy loam, grading into yellowish fine sandy loam, and underlain at about 8 to 12 inches by a reddish-yellow to yellowish-red, moderately friable fine sandy clay. The subsoil is not so friable as that of the Ruston fine sandy loam, but otherwise the subsoil material of the two types is very similar. The soil occurs over the best drained portions of the stream terraces, having a flat to slightly undulating surface.

A variation in this soil occurs on certain high terraces at several places throughout the county, some of the largest areas being found at Enterprise, west of Basic City, south of Quitman, and west of De Soto. It differs very little from the typical soil, the difference lying in its better drainage and somewhat redder color. Since the color on the lower terrace varies considerably, it is not at all certain that the darker colored areas on the lower terrace are not as red as those of the upper. It is thought by some that the higher-terrace soils are slightly more productive, but there are no reliable data on this point. So far as physical character of the soil can be relied upon, there is no essential difference between the high-terrace phase and the typical soil.

The Cahaba fine sandy loam is extensively developed in the second bottoms of the Chickasawhay River and Bucatunna Creek. The color of the surface material is often determined by the position of the area, the more poorly drained lower levels and depressions showing a dark-grayish color in the soil, while the more elevated areas show varying shades of brown, denoting better drainage. Some of the most typical areas are along the second bottoms of the Chickasawhay River, at Enterprise, south of Stonewall, northwest of Quitman, and north of Shubuta. The towns of Shubuta and Enterprise are largely built upon it.

The Cahaba fine sandy loam occupies the position of second bottom and is overflowed only during exceptionally high water. It is considered a well-drained soil, the structure being sufficiently porous to permit a rather free percolation of water.

A high state of productiveness can be brought about and maintained on this soil. It is also valuable on account of the large number of crops that can be grown upon it, including oats, cotton, corn, peanuts, Irish and sweet potatoes, tomatoes, cabbage, peas, beans, cucumbers, and strawberries. Cabbage, peas, melons, and tomatoes are grown for shipment to northern markets.

Land of this type can be bought for \$10 to \$25 an acre, depending on location and improvements.

CAHABA FINE SAND.

The Cahaba fine sand, to an average depth of 10 inches, consists of a brownish fine sand. The subsoil is a reddish-brown to orange-red or reddish-yellow loamy fine sand.

Areas of this soil occur in well-drained situations on stream terraces. The surface is flat or billowy. In depressions the soil is frequently quite dark and contains more silt. The largest and most typical areas lie along the Chickasawhay River. The largest area is that west of Stonewall.

The Cahaba fine sand was originally forested with magnolia, beech, gum, water oak, red oak, and pine, but at present a large proportion of it is cleared and utilized for pastures or crops. It is a more productive soil than the Kalmia sand. Good yields of watermelons, peanuts, cowpeas, velvet beans, soy beans, pecans, and early truck crops, such as beans, English peas, tomatoes, and Irish potatoes are obtained.

Owing to its loose structure, the soil is droughty, and in dry seasons crops are likely to suffer from lack of moisture. Heavy applications of barnyard manure and the turning under of green crops aid greatly in conserving soil moisture and enriching the soil. The average selling price of land of this type is \$5 to \$12 an acre.

MYATT SERIES.

The Myatt soils are gray to dark gray. The subsoils are of gray to mottled gray and yellow color and impervious character. The soils of this series represent the most poorly drained portions of the Coastal Plain stream terraces. They lie principally above overflow, but are so flat that water stands for long periods after heavy rains. Occurring in close association with the Cahaba and Kalmia soils, they are composed of about the same character of material, differing principally in their poorer drainage. Of this series, one type, the Myatt fine sandy loam, was mapped in the county.

MYATT FINE SANDY LOAM.

The Myatt fine sandy loam is a dark-gray loamy fine sand to fine sandy loam, underlain at about 3 to 5 inches by a gray, mottled with yellow, fine sandy loam to sandy loam. This passes at a depth of 8 to 15 inches into a mottled gray fine sandy clay, the gray becoming more conspicuous as the depth increases. Below 20 inches the subsoil becomes a mottled gray, sticky, waxy, sandy clay. Both soil and subsoil have a closer, more compact structure than is found in the better drained upland areas of the same texture.

The type occupies flat to slightly depressed poorly drained situations on the stream terraces, of which it represents the most poorly drained areas.

The Myatt fine sandy loam is inextensive, occurring in a number of small areas associated with the Kalmia fine sandy loam. The largest area mapped lies in the western part of the county in the forks of Twistwood and Souinlovev Creeks. Other areas are mapped near Shubuta and south of Basic City.

None of this type is under cultivation, most of it being too waterlogged to produce crops profitably. Tests with litmus paper show the soil to be in an acid condition.

The type supports a dense growth of gallberry bushes, palmetto, and various water-loving grasses. A few longleaf pine and black gum trees are left, most of the pine having been cut.

TRINITY SERIES.

The Trinity soils comprise the dark-brown to black first-bottom alluvial lands derived mainly from material washed from the soils of the Houston series. The organic-matter content is high, and the lime constituent is usually large enough to give fairly good structure. These soils usually occur as flat lands in comparatively shallow stream valleys. Only one type, the Trinity clay, was mapped in this survey.

TRINITY CLAY.

The Trinity clay is a black clay, underlain by a nearly black, sticky clay, which grades into dark-drab, plastic, very sticky clay, showing in the lower depths faint mottlings of drab or gray and yellowish brown. Occasionally where drainage is not well established a slight mottling with brown may occur. The black color is due chiefly to the high content of organic matter accumulated in the presence of lime. When wet the soil is very sticky and plastic, but under favorable moisture conditions it is friable and easily cultivated. Owing to the occurrence of numerous iron concretions on the surface, the type is locally called "buckshot land." It occurs as flat stream bottoms subject to overflow. A few narrow strips of this type along sloughs and drainage ways are included with the Houston type, owing to their small area, while, on the other hand, certain areas holding an intermediate position between first and second bottoms are mapped as Trinity, owing to their black color and swampy condition.

The Trinity clay is mainly developed along the south bank of Pachuta Creek, along the headquarters of Dry and Shiloh Creeks, and along the east bank of Bucatunna Creek south of Evans Bridge.

This type is considered one of the most productive soils in the prairie section of the county. It is capable of producing good crops year after year without the addition of any kind of commercial fertilizers. Formerly it was considered an excellent soil for growing cotton, but since the advent of the boll weevil the production of cotton has been largely discontinued, and corn has taken its place. The soil, being heavy and compact, does not dry out until late in the spring, making planting at least two or three weeks later than on the better drained upland types. Where overflow during the growing season is prevented and the soil is properly drained, corn produces 35 to 75 bushels to the acre, with little more labor than is necessary on the less productive types.

Many kinds of grasses, including Johnson grass, Bermuda grass, and lespedeza, do well on this soil. Success with alfalfa depends upon the drainage conditions. Protection from overflow and good under-

drainage are absolutely essential to this crop. Uncultivated areas of this type support a scattering growth of hackberry, ash, cottonwood, hog plum, hawthorn, white oak, elm, cane, and "bamboo" vines.

As the Trinity clay covers in the aggregate only 3.1 square miles, little of it is now for sale. The average price ranges from \$15 to \$30 an acre.

OCKLOCKNEE SERIES.

The Ocklocknee soils are prevailingly brown, ranging to dark gray. The subsoils are brownish or mottled brownish, yellowish, and gray. This series comprises the darker colored soils of the first bottoms of Coastal Plain streams. The soils are composed mainly of wash from the Coastal Plain soils. In general, they are subject to overflow. This series is represented in the county by the fine sandy loam, loam, silt loam, and clay types.

OCKLOCKNEE LOAM.

The Ocklocknee loam is typically a brown loam, underlain by light-brown loam to sandy clay loam. Much of it has a yellowish colored subsoil, which shows usually some mottling of gray or drab. Rusty brown is also a common mottling of the subsoil. The type as mapped includes many spots of Ocklocknee fine sandy loam that can not be satisfactorily separated. Also, layers of sandy material and brown-colored material are frequently encountered at various depths in boring through the subsoil. Some grayish soils (Bibb series) are also included with the loam type.

The Ocklocknee loam is one of the most extensive overflowed types in the county, being typically developed along the first bottoms of Souinlovey, Long, and Bucatunna Creeks. None of it is at present under cultivation, as the creeks, owing to their shallow channels, are likely to overflow after heavy rains, even though lasting only a day or two.

This type is in nearly all cases heavily timbered, supporting a growth of water oak, sweet gum, black gum, beech, maple, bay, magnolia, ironwood, Cuban pine, poplar, holly, and various vines and shrubs. Much of the hardwood along Souinlovey and Bucatunna Creeks is now being manufactured into lumber.

This soil is rich in vegetable matter and is naturally one of the most fertile soils in the county. Extensive diking or enlarging of the stream channels would be necessary before it could safely be used for ordinary farm crops. It is a good grass soil, however, and if cleared could be successfully used for hay or pasturage. Bermuda grass, lespedeza, carpet grass, Johnson grass, and other native grasses would do well. By simply clearing out the undergrowth good grazing is available.

OCKLOCKNEE CLAY.

The Ocklocknee clay is a brown or dark-brown silty clay loam, underlain at about 3 inches by a lighter brown silty clay, showing mottlings of rusty brown and gray or drab in the lower depths. The subsoil in many cases is light brown, usually mottled with rusty-brown iron stains. The soil of some of the low, depressed areas is almost black, the texture in such places being usually a stiff, heavy clay.

This soil is typically developed along the first bottoms of Souinlovey, Pachuta, Luke Fluffer, Mingo, and Carson Creeks. The material is washed from the heavy Susquehanna clays and the Montrose clay, there being considerable variation in color of the materials and also in the drainage conditions. In some places it passes into Trinity clay so gradually that the placing of the boundary is difficult. Some areas have fair drainage, except during overflows, while in the depressions and bottoms of sloughs the type is poorly drained and stays wet nearly all the year.

None of the type is under cultivation, all of it still supporting a dense growth of oak, hickory, magnolia, beech, sweet gum, and palmetto. The soil is as productive as the Delta soils along the Mississippi River, but the frequent and heavy overflows render it unsuitable for successful general farming. It is admirably adapted to grass and lespedeza, however, and could be used profitably for hay and grazing if cleared.

OCKLOCKNEE FINE SANDY LOAM.

The Ocklocknee fine sandy loam is a brown fine sandy loam, underlain by light-brown to yellowish fine sandy loam, faintly mottled with gray, drab, and rusty brown. There are included patches of Ocklocknee loam and gray soils (Bibb series). Also in the vertical soil section layers of material varying in texture and color from both the overlying and underlying material are often encountered.

The type is mainly developed along the first bottoms of Rocky, Greasy, Browns, Hurricane, and Long Creeks, and in a few low depressions along the Chickasawhay River. None of it is under cultivation. It is covered with a dense growth of oak, sweet gum, pine, maple, magnolia, hickory, poplar, beech, holly, and various kinds of vines and bushes. It is best used, except for forests, for hay and pasturage, since protection from heavy overflows which would prove destructive to ordinary crops would entail great expense. This soil will probably be used for grazing until drainage districts are formed and the stream channels straightened and deepened with steam dredges.

The Ocklocknee fine sandy loam is now for sale throughout the county at \$5 to \$30 an acre, depending on the timber growth.

OCKLOCKNEE SILT LOAM.

The Ocklocknee silt loam is a chocolate-brown silt loam, underlain at a depth of 6 or 8 inches by a lighter brown or yellowish-brown silt loam to silty clay loam. Rusty-brown and grayish-brown mottlings are not uncommon and iron concretions are present in many cases.

The type is typically developed along the Chickasawhay River about 2 miles south of Stonewall. Excellent crops of corn and oats are produced on several clearings on this type. It is one of the most productive bottom-land soils in the county, but owing to the damage caused by high water it is not considered a safe type to cultivate.

If plowed when the moisture content is most favorable, the soil works up into a mellow seed bed, but if plowed when either too dry or too wet it breaks up into heavy clods which are exceedingly difficult to pulverize.

Much of the Ocklocknee silt loam is still forested, supporting a dense growth of oak, magnolia, Cuban pine, gum, beech, and hickory. Lespedeza and carpet grass thrive on this soil.

The value of land of this type depends so largely on its timber and the extent of clearing that average values can not well be given.

THOMPSON SERIES.

The surface soils of the Thompson series are brown, in places being grayish brown, while the subsoils are predominantly yellow, with mottlings of gray and various shades of brown and yellow. The subsoil of the heavier members is slightly plastic, but not too compact to permit good underdrainage where drainage outlets are provided. These soils occupy the first bottoms of streams in the Coastal Plain region and are subject to overflow. They are characteristically poorly drained, although their drainage is somewhat better than that of the related Bibb soils. The Thompson soils consist of material washed largely from the Coastal Plain soils. In Clarke County this series is represented by the fine sand.

THOMPSON FINE SAND.

The Thompson fine sand is a grayish fine sand underlain by a pale-yellow fine sand, showing some mottlings of bright yellow and gray in the subsoil of many areas. There are often layers of brownish and comparatively heavy material through the soil section. Spots of Thompson fine sandy loam are also mapped with this type. Small pockets of coarse and medium-textured sand are sometimes found intermingled with the fine sand. These variations are probably the result of differences in current velocity during overflow periods.

The type occurs as narrow strips along the first bottoms of Archusa and Souinlovey Creeks and the Chickasawhay River. Its surface is

characteristically billowy, owing to numerous hummocks and depressions.

None of the type is under cultivation and it supports a growth of sweet gum, magnolia, beech, bay, and other water-loving trees. Near the bridge at Enterprise there is a pecan grove upon this type which has been giving good results. The soil is deficient in humus and, owing to its small extent and generally unfavorable situation, is of little agricultural importance.

MISCELLANEOUS MATERIAL.

MEADOW.

The areas mapped as Meadow in Clarke County include all of the low-lying, swampy soils bordering small branches, sloughs, and "slashes," and some of the first bottoms of large creeks that constantly overflow after wet spells of even short duration. Many of the larger areas of Meadow are locally called "swamp," but owing to the surface condition during the greater part of the year the latter name is hardly justified.

Meadow is mapped in narrow strips along the minor drainage courses in all sections of the county.

The type includes areas of variable texture, so intimately mixed as to make separation impossible. Many of the Meadow soils contain a large percentage of decayed vegetable matter, giving them a black color.

Much of the Meadow in the county, especially that found along the headwaters of small streams, is formed of material washed from the valley slopes, which makes it in part colluvial and causes a variable texture. All of the Meadow type supports a dense growth of gallberry bushes, water-loving plants and grasses, bushes, and switch cane. These low, swampy places are green throughout the year, giving good pasturage during the winter months. Owing to the extensive areas of idle well-drained lands in the county, these low, swampy areas are not cultivated. The type where cleared and well drained produces fair yields of lowland rice.

SUMMARY.

Clarke County, Miss., is one of the eastern tier of counties. It contains 684 square miles, or 437,760 acres. It falls within the Coastal Plain region and its soils are consequently of sedimentary origin.

The county has an excellent drainage system, being crossed from north to south by the Chickasawhay River and Bucatunna Creek.

The topography of the uplands ranges from flat through undulating or rolling to hilly and ridgy. The stream bottoms and second bottoms are prevailingly flat. While much of the flat terrace land is

naturally well drained, there are considerable areas that would be materially benefited by artificial drainage.

The county has a population of 21,630. Quitman, with a population of 950, is the county seat. Shubuta, De Soto, Stonewall, Enterprise, and Pachuta are other thriving towns. There are a number of manufacturing industries in the county, one of the largest cotton mills in the South being located at Stonewall.

The county has good railroad service. The public roads are in good condition.

The Ruston fine sandy loam is the most widely distributed soil type in the county, and is an excellent type for general farming. The Ruston sandy loam much resembles it, but has a coarser texture. The Ruston sand has a loose structure and is subject to drought.

The Leaf fine sandy loam is a terrace soil of small extent. Under favorable conditions it gives fair yields of corn, cotton, oats, and peas.

The Orangeburg fine sandy loam is a very productive type, being well adapted to all the general and truck crops, and especially to certain fruits. The Orangeburg sandy loam and sand types are also good farming soils, but the sandy loam washes and gullies freely.

The Cahaba fine sand and fine sandy loam are second-bottom types above normal overflow. Both give good yields of early truck and forage crops.

The Ocklocknee series is represented by the fine sandy loam, loam, silt loam, and clay types. These are strictly first-bottom soils. The types are all subject to frequent overflows and are valued chiefly for stock raising and for their timber growth.

The Trinity clay is a bottom-land type formed of material washed from the prairie that surrounds it. It is black in color and very productive.

The Houston clay is a black prairie soil containing a large percentage of lime. This type is well suited to cotton, corn, alfalfa, velvet beans, and soy beans, and to stock raising.

The Henderson clay very much resembles the Houston clay but is lighter in color. It is a good type for stock raising.

The Montrose clay is a flatwoods type found in the southwestern part of the county. It is a heavy, sticky clay, and very difficult to cultivate.

The Susquehanna series is represented by the fine sandy loam and clay types. Both are considered difficult soils to handle. They are used for general farming.

The Kalmia fine sandy loam and Kalmia sand are both terrace soils. Well-drained areas are suited to various truck crops. Both

members support a good growth of grass and make excellent pasture lands.

The Guin stony sandy loam and Lauderdale stony clay are both rough, rocky types, best suited to forestry.

The Norfolk series is represented by the fine sandy loam and sand types. The fine sandy loam produces good crops of corn, oats, peas, and various other crops. The sand is less desirable. It is a better type for truck growing than for general farming.

The Myatt fine sandy loam is a gray, poorly drained terrace soil. It is usually in a water-logged condition.

The Sumter stony clay is a soil of small extent and of little agricultural value in Clarke County.

The Thompson fine sand is also of very little agricultural value, and is subject to overflow.

The Oktibbeha clay is a heavy clay associated with the Houston and Sumter types. The soil is well adapted to cotton, corn, and oats.

Meadow is valuable under present conditions only for its timber and pasturage. It supports in its natural state a dense growth of water-loving grasses and affords good grazing. If reclaimed it could be used for a number of staple crops.



[PUBLIC RESOLUTION--No. 9.]

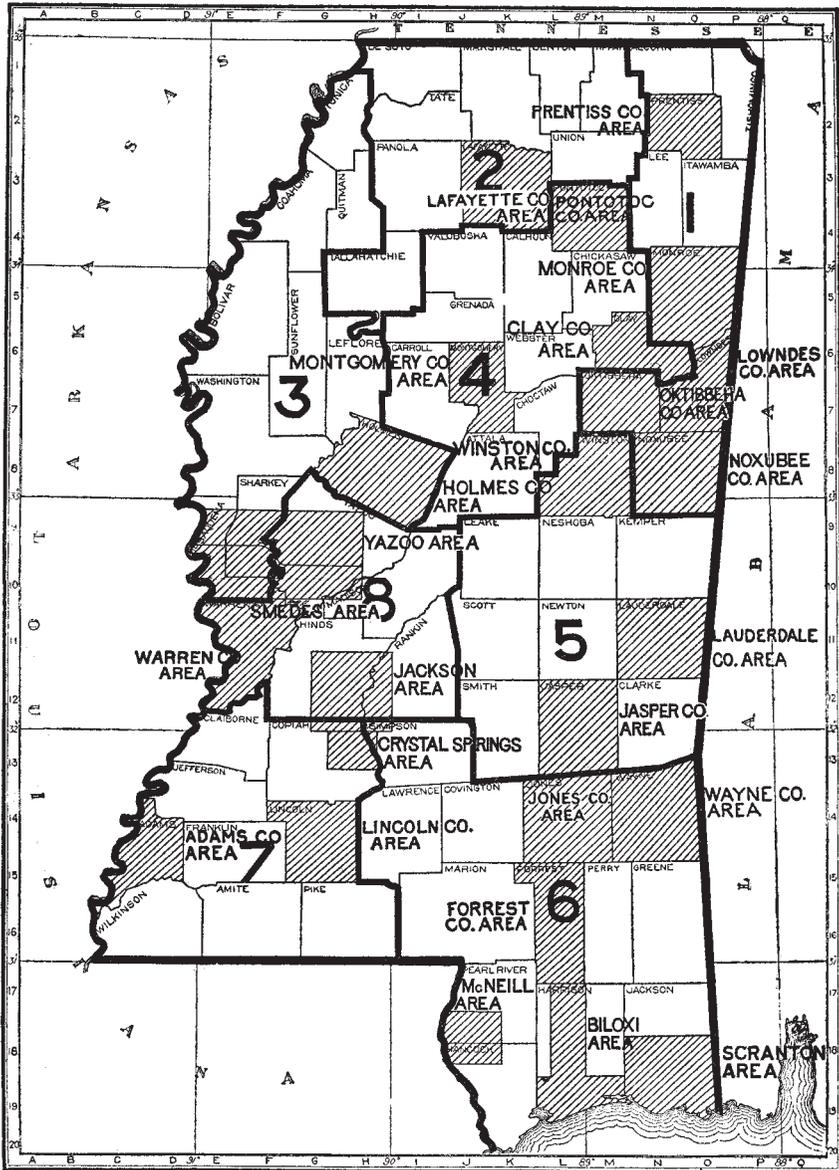
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture "

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

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

Approved March 14, 1904.

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



Areas Surveyed in Mississippi.

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