

Issued December 27, 1913.

U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE STATE OF ALABAMA, EMMETT O'NEAL, GOVERNOR;
REUBEN F. KOLB, COMMISSIONER AGRICULTURE AND INDUSTRIES;
EUGENE A. SMITH, STATE GEOLOGIST.

SOIL SURVEY OF CLARKE COUNTY,
ALABAMA.

BY

C. S. WALDROP AND L. CANTRELL, OF THE U. S. DEPARTMENT
OF AGRICULTURE, AND P. H. AVARY AND N. ERIC BELL,
OF THE ALABAMA DEPARTMENT OF AGRICULTURE
AND INDUSTRIES.

HUGH H. BENNETT, INSPECTOR IN CHARGE SOUTHERN DIVISION.

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



WASHINGTON:
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BUREAU OF SOILS.

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SOIL SURVEY.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS,

Washington, D. C., November 27, 1912.

SIR: The accompanying manuscript report and map cover the soil survey of Chilton County, Alabama. This is one of the projects for 1911, undertaken in continuance of the cooperative agreement between the State of Alabama and the Bureau of Soils, and the selection of the area was made after conference with the State officials. The selection of this area also bore the indorsement of Hon. F. L. Blackmon, within whose district the area lies.

I have the honor to recommend that this report be published as advance sheets of the Field Operations of the Bureau of Soils for 1911, as authorized by law.

Very respectfully,

MILTON WHITNEY,
Chief of Bureau.

HON. JAMES WILSON,
Secretary of Agriculture.

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SOIL SURVEY OF CLARKE COUNTY, ALABAMA.

By C. S. WALDROP and L. CANTRELL, of the U. S. Department of Agriculture, and P. H. AVARY and N. ERIC BELL, of the Alabama Department of Agriculture and Industries.

DESCRIPTION OF THE AREA.

Clarke County lies in the angle formed by the junction of the Alabama and Tombigbee Rivers, in the southwestern part of Ala-

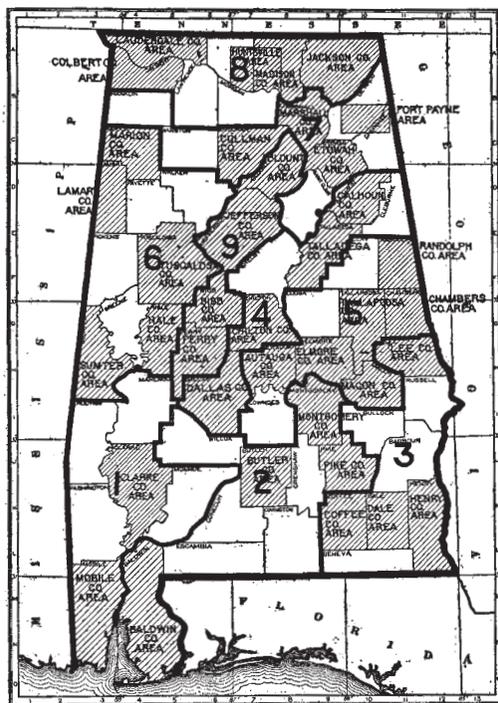


FIG. 1.—Sketch map showing areas surveyed in Alabama.

bama. It is bounded on the north and northeast by Marengo and Wilcox Counties; on the east and south the Alabama River separates it from Monroe and Baldwin Counties; and on the west the Tombigbee River forms the boundary line with Washington and Choctaw Counties.

The county has a length from north to south of about 56 miles, while its extreme width in the northern part is about 36 miles. It contains approximately 1,216 square miles, or 778,240 acres.

The county includes the comparatively level plains along the Alabama and Tombigbee Rivers and their tributaries and the hilly uplands which occur in the intervening area. The divide between the two rivers is within 6 to 8 miles of the Alabama River throughout the county. This divide varies considerably in width, in places being a rather broad, flat-topped ridge, while at others it is very narrow, the gullies on its two sides extending to within a few feet of the summit, which rises to an elevation of 375 to 400 feet above the river level. Although there are some comparatively level areas between the central divide and the river plains, these as a rule are rather small, and the greater part of this section of the county is rolling to moderately hilly, broken by occasional high hills and broad valleys. The roughest topography is found in the immediate vicinity of some of the streams.

The drainage of the upland region is for the most part excessive, and the steeper slopes where unprotected often erode badly, resulting in the formation of deep gullies. (See Pl. I.) The bottom lands along the rivers and many of their tributaries are flat and for the most part poorly drained. In many places artificial drainage is necessary before these lands can be cultivated.

Bashi, Satilpa, Jackson, Tattilaba, and Bassett Creeks, all of which flow into the Tombigbee River, carry the drainage waters of the western part of the county, while Silver, Pigeon, Reedy, Sizemores, Cedar, and Sand Hill Creeks, flowing into the Alabama River, are the main drainage lines of the eastern section.

The county was settled early in the last century by pioneers from the Carolinas, Virginia, Tennessee, and Georgia, who located along the rivers, which afforded the only means of transportation to outside points. As the population increased, the level areas of the interior were cleared and put in cultivation. It was not until the completion of the Southern Railway, in the latter part of the last century, that any extensive development occurred. At present the interior section, especially that part of it near the railroad, is better developed agriculturally and more thickly populated than any other part of the county.

The county has a population of 30,987. The principal towns are Thomasville, in the northern part, with a population of 1,181, and Jackson, in the southern part, with a population of 1,379. Grove Hill, the county seat, is located near the center of the county and has a population of about 400. Walker Springs, Suggsville Station, Whatley, and Dickinson are shipping points between Jackson and

Thomasville. Fulton is a prosperous sawmill town. Small country stores are numerous.

The only rail transportation in the county is furnished by the Southern Railway, which traverses the county from north to south. The Alabama and Tombigbee Rivers furnish water transportation between Mobile and Montgomery and Mobile and Demopolis throughout the year. Thomasville is the principal cotton market for the northern part of the county. It has a large cottonseed oil mill and cotton warehouse. Jackson is the principal market for the southern part of the county, while for the central part Grove Hill and Whatley are the principal market points. At Fulton and Jackson there are several large sawmills.

Public schools and churches are numerous throughout the county. The roads are very poor, scarcely any attention being paid to them. It is necessary to ford many of the creeks, which after heavy rains become impassable for days at a time. There are numerous beds of gravel in the county which may be used to advantage in road improvement.

CLIMATE.

There is no Weather Bureau station in Clarke County, and the data given herewith have been compiled from the records of the station at Pushmataha, about 20 miles northeast of the county, in Choctaw County.

The winters are of short duration, with a mean temperature considerably above the freezing point. There are occasional cold snaps, when the soil freezes to a depth of an inch or two, and a light fall of snow, which soon melts. The summers are long and sometimes hot. The mean temperature for June, July, and August, the three hottest months, is about 80° F. The Gulf winds modify the temperature during the summer months, and the nights are generally cool. The rainfall is fairly well distributed and is sufficient to insure good yields of all crops suited to the region if the soil treatment is along lines which tend to conserve the moisture. The heaviest precipitation occurs during the winter months and the minimum during the late summer and fall months. Short periods of drought may occur, however, during the growing season.

The last killing frost in spring usually occurs in the first part of March, and the first in the fall during the early part of November.

The following table gives the normal monthly, seasonal, and annual precipitation and temperature, as shown by the records at Pushmataha:

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

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	Inches.	Inches.	Inches.	Inches.
December.....	48	77	9	4.3	3.5	4.7	0.2
January.....	46	78	15	5.6	7.4	3.2	.4
February.....	49	80	-7	6.4	6.9	9.1	1.7
Winter.....	48	.....	.....	16.3	17.8	17.0	2.3
March.....	58	87	21	6.0	3.9	4.7	Trace.
April.....	64	88	28	5.1	1.6	13.9	.0
May.....	73	97	43	4.3	3.4	3.7	.0
Spring.....	65	.....	.....	15.4	8.9	22.3	Trace.
June.....	79	102	50	4.7	2.4	14.7	.0
July.....	81	106	60	4.9	7.0	1.4	.0
August.....	81	104	55	4.1	2.8	1.7	.0
Summer.....	80	.....	.....	13.7	12.2	17.8	.0
September.....	75	97	30	2.4	.2	4.7	.0
October.....	65	98	30	2.0	.7	4.7	.0
November.....	55	86	19	3.0	3.3	2.3	.0
Fall.....	65	.....	.....	7.4	4.2	11.7	.0
Year.....	64	106	-7	52.8	43.1	68.8	2.3

AGRICULTURE.

General farming has been the prevailing type of agriculture since the settlement of the county.

The valley lands were the first to be cleared and put under cultivation, as these soils were the most fertile and the rivers afforded a convenient outlet for the forest and farm products. The comparatively level lands of the interstream divide have also been farmed extensively, as have some of the more level areas both to the east and west of it. The greater part of this section of the county, however, was heavily forested, mainly with longleaf pine, until within recent years.

Lumbering has always been an important industry in the county, but with the advent of the Southern Railway, toward the latter part of the last century, many sawmills were erected and the forests were more rapidly cut than ever before. The logged-off lands are now being gradually put in cultivation, and many small farms are located in this section of the county.

Cotton has been the money crop of the county since the early days. The first settlers grew such other crops as were necessary for home consumption, including corn, oats, wheat, rye, and potatoes, and raised sufficient live stock to supply their needs. No fertilizer was used in the production of cotton, and when the yields began to decline the old fields were abandoned and new lands taken in. The tendency to specialize in cotton has resulted in a falling off in the production of the subsistence crops, until the demand is far in excess of the supply. This is particularly true in the longer-settled sections of the county where a one-crop system of farming is practiced. The more progressive farmers, however, are now practicing a more diversified form of agriculture, introducing such crops as cowpeas, peanuts, and velvet and soy beans in order to establish a definite and systematic rotation of crops. The wisdom of this course is apparent in increased yields and a marked improvement in soil conditions.

According to the census of 1910, 15,984 bales of cotton were produced from 55,885 acres in 1909, an average of slightly less than one-third bale per acre. Any one of the types within the county is capable of producing a much higher yield, the low production reported being due mainly to poor cultural methods. Under a systematic crop rotation and with thorough cultivation and careful seed selection, the present output of cotton for the county could well be produced upon one-third of the acreage now devoted to this crop, and the remainder of the land cultivated to corn, oats, hay, and vegetables for the maintenance of stock and for home consumption and sale.

Cotton is grown on all the soils of the survey, but the yields are best from the heavy upland types. On the more sandy soils some trouble is experienced with wilt disease, while on the bottom lands the plants run to weed and fail to mature a full crop of bolls.

Throughout the valley region and in much of the interior section the lands are still held in large tracts. On these farms negro labor is employed, both as wage hands and as tenants; and as elsewhere in the South where negroes do most of the field work the methods of tillage are more or less inefficient. On the small farms in the interior section of the county most of the farming is done by the white owners, who depend on their families for the necessary help.

Corn ranks next to cotton in point of acreage, there being 35,797 acres planted to this crop in 1909, which produced 352,669 bushels, an average of slightly less than 10 bushels to the acre. Corn is grown on all of the soils found in the county, the largest yields being secured from the bottom-land types. In the interior it is often produced on the poorer soils, formerly used for cotton and abandoned for that crop on account of a decline in yield. Although corn is grown only for home use, the demand exceeds the production, and

a majority of the farmers purchase a large part of their supply at high prices. A systematic rotation, to include leguminous crops, and the use of improved strains of seed would aid materially in increasing the yield of this crop, which should prove profitable in view of the present high prices.

Oats are not grown to any extent at present, but are coming into general favor. The rule is to sow in the early spring, though many of the more progressive farmers are beginning the practice of fall sowing. Experiments have proved that oats do better if sowed in the fall, though there is some danger of the crop being killed by winter freezes. This could be overcome by planting in open furrows.

Trucking has been started at Whatley and other points along the Southern Railway with good results. The light sandy soils of the Norfolk and Orangeburg series of the interior section are admirably adapted to such truck crops as strawberries, Irish and sweet potatoes, beans, peas, cabbage, etc.

Sugar cane is grown throughout the county, mainly for home consumption and local markets. The Norfolk sand, Norfolk fine sand, and Orangeburg sandy loam produce a grade of sugar cane that gives a clear, bright-colored, and delicately flavored sirup. The heavier soils of the series give larger yields than the light soils, but the color and flavor of the sirup is not so good. The ordinary yields of sirup range from 150 to 300 gallons per acre, but could be substantially increased if heavier applications of fertilizer were used. In southern Georgia, where this industry receives considerable attention and where the yields are frequently over 400 gallons per acre, as much as a ton of commercial fertilizer, analyzing about 8-2-2, is often used, in addition to 25 to 50 bushels of cotton seed and several tons of well-rotted manure. The small local demand is mainly supplied by the farmers, many of whom make a small quantity of sirup above their needs. The sirup retails for about 50 cents a gallon.

Cowpeas, velvet beans, and soy beans are profitably grown, but the acreage is small. These crops have heretofore been planted between the corn rows, where they furnished grazing for stock after the corn was harvested. As their value, both as a soil improver and as a hay crop, is being more appreciated, they are being more extensively used as separate steps in the crop rotations.

Crab grass comes up thickly in the cultivated fields after the crops are laid by. It is frequently cut for hay and makes a very nutritious winter feed. Some small areas of Johnson grass were noted. This grass is regarded as a pest, but it would doubtless prove a profitable hay crop, especially on the better areas of river-bottom land and on the Susquehanna soils. Bermuda grass and Japan clover are found throughout the county, and if allowed to grow on any well-drained

land which has been cultivated for a year or two will furnish excellent pasturage for six or seven months of the year.

The peanut is a promising crop, though the present acreage is small. This crop is coming into general favor, both for hay and for fattening hogs. The yield varies from 40 to 80 bushels per acre with about a ton of vine hay. The crop is frequently planted with corn, and after the corn is harvested, hogs are turned into the field to forage on the nuts.

Pork can be produced very cheaply in the county, and if properly managed hogs would prove a very profitable source of income. Crops such as peanuts, chufas, cowpeas, vetch, rape, and winter cereals, all of which can be grown cheaply, will afford grazing for hogs almost the entire year, and where the pasture method is followed very little grain is required for feeding. At present not even enough pork is produced in the county to supply the local demand.

There are very few dairy farms in the county, though the opportunities for developing this industry are good. Owing to the long growing season, pasturage may be had throughout the greater part of the year and a great variety of forage crops can be cheaply grown. Dairy products are always in demand both in the home markets and in the near-by towns and cities.

Very few orchards were seen in the county, though peach growing would doubtless prove profitable on many of the upland soils, especially the Orangeburg fine sandy loam and Norfolk fine sandy loam. The peach trees on these soils seem to be in a fairly healthy condition. Grapes, plums, and apples do well on the Susquehanna soils and on the Guin gravelly sandy loam, but have never been grown on a large scale. Pears do well on almost all of the soils, but suffer from blight, and for this reason there is little incentive to put out orchards.

Pecan growing has awakened considerable interest during the last few years, and several orchards have been planted in the southern part of the county. Although but few of the trees are in bearing, the production of this nut gives promise of becoming an important industry in the county.

At present no systematic rotation of crops is practiced, and the productiveness of the soil is maintained mainly by the use of commercial fertilizers. Rotation is of great importance in keeping the soil supplied with organic matter, in which most of the types are deficient.

The cultural methods employed are generally inadequate. The heavier soils should be plowed deeper and be more thoroughly pulverized. Deep plowing and frequent subsequent cultivation favor a constant moisture supply and materially aid in keeping the soil open and porous. Where this is done crops withstand periods of drought

much better than where the seed bed is less thoroughly prepared and the surface is allowed to crust during the growing season.

The census of 1910 reported 4,919 farms in the county, containing 486,656 acres, of which 155,423 acres are improved. The average farm comprises 98.9 acres. Since each tenancy is classed by the census as a farm, however, the average holding exceeds this acreage. Farm lands are valued at \$2,878,095, buildings at \$1,235,553, implements and machinery at \$223,800, and domestic animals, including poultry and bees, at \$1,104,445.

About 50 per cent of the farms in the county are operated by tenants, share rentals being the more common practice. Where the tenant furnishes tools and work stock the owner usually receives as rent one-third of the corn and one-fourth of the cotton produced, but where the owner furnishes these he usually receives half the crops. Where lands are leased for cash the rent usually ranges from \$1 to \$4 an acre, depending on the productiveness of the land.

The greater part of the farm labor in the county is drawn from the negro population. Day labor is scarce, as the sawmills and logging camps attract most of the hands, but the farmers have little difficulty in securing regular help and tenants. Monthly wages vary from \$10 to \$15 with board, and wages for day labor from 75 cents to \$1. Cotton picking is paid for on a basis of the quantity picked, the rate varying from 40 to 60 cents a hundred pounds.

Land values are rapidly advancing. Land in the immediate vicinity of towns and the better drained bottom lands along the rivers and some of their tributaries range in price from \$25 to \$50 an acre. In other sections the prices vary from \$2 to \$20 an acre, depending on the productiveness of the soil and the character of the improvements. Forested lands readily bring from \$20 to \$30 an acre.

SOILS.

Although Clarke County comprises a considerable total area of scattered lands topographically well suited to agriculture, there are many sections, including large areas, in which the surface is either too steeply sloping for cultivation or too rolling for the production of crops on a very profitable basis. There are some hill sections in which both the soil and the topography are unfavorable to successful farming; on the other hand, there are sections where the lands are dominantly productive and sufficiently smooth for easy cultivation.

The upland soils of this survey are derived mainly from unconsolidated Coastal Plain material consisting principally of beds of sand and gravel, sandy clay, and stiff heavy clay. One type is derived from consolidated material consisting of a soft, whitish rock. The

upland soils have been differentiated and grouped into series based upon the following important distinctions:

The Norfolk soils are characterized by the grayish color of the surface material and by the yellowish color and friable structure of the sandy clay subsoil material. The sand types of this series do not possess the characteristic series subsoil, at least not within the 3-foot section, inasmuch as the sandy material continues to the limit of this depth. The Norfolk soils are well drained.

The Orangeburg series is characterized by the grayish color of the surface material and by the red color and friable structure of the sandy clay subsoil. These are also well-drained lands, and where the topography is suitable the soils produce good crops, yielding better than the corresponding types of the Norfolk series.

The Ruston soils represent an intermediate series between the Orangeburg and Norfolk. They have grayish surface soils and subsoils of friable sandy clay, ranging in color from yellowish red to reddish yellow.

The Greenville soils, representing the most productive types of the uplands, are red or reddish brown at the surface and deep red in the subsoil. In other respects they closely resemble the Orangeburg series.

The Susquehanna series includes soils which have reddish to grayish material at the surface and reddish to mottled red, gray, and yellow heavy plastic clay subsoils. They have good surface drainage, but the underdrainage is not well established. The material composing the subsoil of this series was evidently derived from beds of heavy clay, heavier than in any of the other series described above.

The Guin soils include land of considerable variation in character of material and of prevailing rough topography. Generally the Guin types include patches of Orangeburg, Ruston, Norfolk, and even Susquehanna in such close association that satisfactory division into types could not be accomplished.

The Lauderdale series represents material derived from light-colored soft rock occurring in the Claibourne formation. The surface material of the Lauderdale is generally grayish, while the subsoil is whitish to cream yellow. These are hilly, rough lands of very low agricultural value.

Two divisions were made in the alluvial soils, as follows: The first bottoms include those low flood plains which are at present subject to overflow, while the second bottoms or stream terraces comprise those old flood plains which are no longer overflowed, although they were subject to inundation when the streams flowed at higher levels. The materials of these alluvial soils represent

wash from the uplands which was deposited from overflow stream water.

Of the first bottom division the Ocklocknee is the principal series, although the classification Meadow includes considerable areas of variable land which could not be satisfactorily mapped out into soil types, so intricate was the association of the varied-textured material.

The Ocklocknee soils comprise brownish-colored alluvial material representing wash from the uplands. These, in their natural condition, are for the most part very poorly drained, and the entire area is subject to overflow. Of the stream terrace soils, the Cahaba, Kalmia, and Leaf represent the important groups.

The Cahaba comprises the better drained soils of the terraces. These soils have grayish to reddish material in the surface portion and reddish subsoils consisting mainly of friable sandy clay. The Kalmia soils, on the other hand, are gray at the surface and yellow or mottled yellow and gray in the subsoil. They are not so well drained as the Cahaba and are less productive. The Leaf series includes those terrace soils which have a plastic heavy clay subsoil, resembling that of the Susquehanna.

In the subsequent chapters the various types are described in more detail and their crop values and adaptations are there set forth.

In all, 20 different types of soil, including Meadow, were recognized and mapped in the county. The following table gives the names and extent of the several types:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Orangeburg fine sandy loam . . .	154, 112	19.8	Ocklocknee fine sandy loam . . .	17, 088	2.2
Susquehanna fine sandy loam . . .	85, 952	11.0	Guin gravelly sandy loam	16, 832	2.2
Susquehanna clay	83, 264	10.7	Norfolk sand	13, 184	1.7
Ocklocknee silt loam	82, 752	10.6	Greenville loam	12, 544	1.6
Orangeburg sandy loam	47, 744	6.1	Kalmia fine sandy loam	10, 112	1.3
Meadow	47, 552	6.1	Cahaba fine sandy loam	5, 184	.7
Norfolk fine sandy loam	46, 208	5.9	Ruston gravelly sandy loam	3, 584	.5
Orangeburg sand	38, 400	4.9	Leaf fine sandy loam	704	.1
Norfolk fine sand	31, 488	4.1			
Lauderdale stony clay	31, 040	4.0	Total	778, 240	.....
Ruston fine sandy loam	29, 440	3.8			
Orangeburg gravelly sandy loam	21, 056	2.7			

NORFOLK SAND.

The surface soil of the Norfolk sand consists of a gray to slightly brownish-gray, medium to coarse quartz sand, 10 to 12 inches deep, usually carrying a small quantity of quartz gravel.

The subsoil is similar in general composition and structure to the soil except on the slightly elevated areas, where it usually contains variable amounts of fine material. Along the slopes of the ridges, however, where the loosened material has been accumulating for a long time, the subsoil to a depth of many feet is a coarse sand. The type is easily recognized by its loose, open structure, and coarse, gritty feel, the loose material extending to a depth of 36 inches or more.

Areas which are in close proximity to the Orangeburg types often vary in color from a dull grayish brown to reddish brown in the lower depths.

The largest areas of Norfolk sand are those east of Alameda and to the west of Chilton. Small isolated areas are scattered throughout the county.

Topographically, the type consists mainly of comparatively level areas several square miles in extent, occurring on broad divides. Along the borders of these areas the surface is more uneven.

The greater part of this soil is uncultivated. Much of it is in old fields, as under the usual methods of tillage the soil erodes badly, does not retain humus and moisture, and fails to yield profitable returns after a few year's cultivation. However, on the more level areas, where the content of fine material is high, fairly good yields of cotton, peas, sweet potatoes, and sugar cane are obtained with liberal applications of fertilizer. The type is fairly well adapted to truck crops, and areas near the railroad could be used profitably for this purpose.

The original forest growth consisted mainly of blackjack and scrub oak, and longleaf pine. Most of the pine has been removed.

Lands of this type range in price from \$2 to \$10 an acre, depending upon location and the stand of timber they support.

NORFOLK FINE SAND.

The surface soil of the Norfolk fine sand, to an average depth of 10 inches, consists of a gray to slightly brownish-gray fine to very fine sand, containing in places some small quartz gravel and iron concretions.

The subsoil, to a depth of 36 inches or more, is a pale-yellow fine sand, the yellow becoming more pronounced with depth, especially where sandy clay is encountered in any quantity within the soil profile. In phases where there is a substratum of many feet of loose fine sand, the color, as observed in road cuts, varies from a pale yellow to a light gray.

In origin and distribution this type is closely associated with the Norfolk sand. It is derived from the more sandy beds of the

underlying formation, and is found mainly in the northwestern part of the county. Other areas occur throughout the uplands in the southern part of the county, bordering small streams.

The Norfolk fine sand is a better agricultural soil than the sand member of the series. Its finer texture gives it better capillarity, insures a more uniform moisture content, increases its capacity for retaining humus, and lessens the leaching effects of heavy rains. Except on hillside areas, where the sand has accumulated, the subsoil nearly always contains considerable moisture.

The soil is easily cultivated and responds readily to fertilization. Fair yields of cotton and excellent yields of sweet potatoes and sugar cane are secured where the land is fresh or where barnyard manure and commercial fertilizers are applied.

The type is especially adapted to the production of sugar cane for sirup. The yield is not so great as that of the Norfolk fine sandy loam, but the sirup is lighter in color and has a better flavor. Watermelons and truck crops also do well, especially on the more level areas where the moisture conditions are favorable.

Only a small part of this type is at present under cultivation.

The principal forest growth consists of longleaf pine and scrub oak, with some dogwood on the slopes.

Lands of this type range in price from \$5 to \$20 an acre, depending mainly on the stand of pine.

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam consists of a gray to brownish-gray loamy fine sand to light fine sandy loam, coherent under ordinary moisture conditions. The soil of the surface few inches is light and friable, becoming slightly compact at depths ranging from 8 to 12 inches. The subsoil is a heavy fine sandy loam to fine sandy clay of a yellow color and friable structure.

This type includes areas of Norfolk sandy loam, the soil containing large quantities of coarse and medium sand, but such areas are too small to be shown separately on the map.

The largest areas of this type occur west of Clarksville, southwest of Grove Hill, and a few miles southeast of Jackson. The soil is developed in smaller areas throughout the upland region.

The topography over much of the type is rolling to slightly hilly, and as a result the cultivated fields suffer from erosion. Badly eroded areas are indicated on the map by ruling. The type also includes areas which are slightly rolling to nearly level, where the soil is usually heavier than on the more rolling areas, owing to the higher content of the finer soil particles.

Good crops of cotton, corn, sweet potatoes, and sugar cane are produced on this type with liberal applications of commercial ferti-



Report of Bureau of Soils, U. S. Dept. of Agriculture, 1912.

PLATE I.

TYPICAL GULLY IN COASTAL PLAIN UPLANDS NEAR JACKSON.

lizer containing relatively high percentages of nitrogen and potash. Barnyard manure or cottonseed meal is best for corn, since continued cultivation of the old fields has greatly reduced their humus content and left them exceptionally low in nitrates. The incorporation of leguminous crops as green manure and deep preparation of the seed bed would improve the physical condition of the soil and make the average yields equal those of the recently cleared areas.

Land of this type ranges in price from \$5 to \$20 an acre, depending on the location, improvements, and stand of forest.

ORANGEBURG SAND.

The Orangeburg sand is the lightest soil of the Orangeburg series occurring within the county. The surface soil consists of a grayish-brown medium to coarse sand, underlain at a depth of 10 to 20 inches by a deep-red loamy sand. Except in its reddish-brown color, it differs but little from the Norfolk sand.

Much of the type has a loamy character and a certain degree of coherency not found in sands of other series, owing, it is believed, to the presence of red oxide of iron, which causes the finer material to adhere with considerable persistency to the coarser particles. This phase represents a gradation toward the Greenville sand, mapped in other areas in this State. This peculiarity in its physical structure greatly augments the moisture-holding capacity of the soil and gives it properties resembling those of a light sandy loam.

The largest areas of the Orangeburg sand occur between Thomasville and Winn and a few miles east and northeast of Jackson. Small areas are developed throughout the upland region of the county. The type generally occupies slopes adjacent to small streams, though occasional areas are found on level uplands.

As an agricultural soil the Orangeburg sand ranks slightly higher than the Norfolk sand and is not quite equal to the Orangeburg sandy loam. It responds readily to good cultural methods and is easily capable of improvement either through the use of barnyard manures or legumes and cover crops. Owing to its sandy nature and comparatively loose structure, the type warms up early in the spring and is easy to cultivate. It is a very desirable truck soil. Sweet potatoes, Irish potatoes, and almost all kinds of truck crops do well. Some of the lighter phases of this type have been successfully used for growing Sumatra wrapper tobacco in some parts of Florida.

The drainage of the type is good, owing to its rolling topography and open structure.

The forest growth consists principally of blackjack and scrub oak and longleaf pine. Very little of the type is under cultivation.

The price of the Orangeburg sand ranges from \$2 to \$10 an acre, depending mainly on the character of forest it supports.

ORANGEBURG GRAVELLY SANDY LOAM.

The fine-earth material of the Orangeburg gravelly sandy loam consists of a light-gray to grayish-brown fine sandy loam. The soil varies in depth from 6 to 12 inches. The subsoil is a red sandy clay loam to brick-red loam, becoming somewhat compact at 20 to 30 inches. It is slightly granular in structure and retains moisture equally as well as the Orangeburg fine sandy loam, with which it is associated. Strewn over the surface of this type and disseminated throughout the soil profile is an abundance of gravel, mainly of quartz, quartzite, and chert. Small areas with iron concretions on the surface occur on some of the knolls.

The topography of the Orangeburg gravelly sandy loam is rolling to hilly, becoming more broken along the streams. A large part of the type occurs on the knolls, sharp interstream divides, and slopes along the streams. As a rule such areas are too rough to cultivate, but if seeded to Bermuda grass and clover would make excellent pastures. The broader ridges frequently contain small, undulating areas well suited to general farming.

The heaviest phases of this type, where not too rough for cultivation, have practically the same agricultural value as the Orangeburg fine sandy loam. It is claimed that the gravel acts as a mulch, preventing rapid evaporation of moisture, and for this reason crops withstand drought better on this soil than on the associated types which contain no gravel.

The largest areas of this type occur along the slopes of Bassett Creek. Smaller areas are found in the vicinity of the streams east and south of Grove Hill and northwest of Jackson.

Fairly good yields are obtained on newly cleared areas of the Orangeburg gravelly sandy loam, but owing to its broken topography it erodes badly, and the yields soon become unsatisfactory. It is usually abandoned after a few years' cultivation. Excellent sites for peach orchards and vineyards are found on the type, and doubtless these crops would prove very profitable if given the proper attention.

The forest growth on this soil consists principally of oak, hickory, and longleaf and shortleaf pine.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam consists of a gray to grayish-brown sandy loam from 8 to 10 inches deep. The subsoil is usually a red sandy clay. The substratum as observed in road cuts is frequently a rather stiff red clay. Small quartzite gravels are

occasionally encountered upon the slopes to streams and in eroded areas. The subsoil has been exposed here and there in small areas, giving them the characteristics of Greenville loam.

The largest bodies of the type occur in the vicinity of Nettleboro, Tattilaba, and McVay. Numerous other areas of less extent are scattered throughout the upland region of the county.

The material of the Orangeburg sandy loam, like the other sandy loam types, is derived from the more sandy beds of the unconsolidated sedimentary formations.

The topography is rolling to hilly. Many sharp ridges with steep slopes occur as narrow divides between the smaller streams. The type is also developed in large areas which have a more even surface, and upon these good farms are often found.

The type is well drained. In the more rolling sections drainage is often excessive, the run-off being so rapid that erosion becomes a serious problem.

This soil is adapted to cotton and corn, from one-half to three-fourths bale of cotton and 12 to 20 bushels of corn per acre being produced under ordinary methods of cultivation. Cowpeas, soy beans, and such truck crops as watermelons, sweet potatoes, Irish potatoes, and strawberries do exceptionally well. If more attention were given to the growing of legumes, with deeper plowing and more frequent shallow cultivation, the average yields of the different crops could be greatly increased.

The greater part of this type is still in forest, the growth consisting principally of blackjack and scrub oak, hickory, and longleaf pine.

Land of this type ranges in value from \$5 to \$25 an acre, depending upon improvements, location, and stand of timber.

ORANGEBURG FINE SANDY LOAM.

The surface soil of the Orangeburg fine sandy loam consists of a grayish-brown fine sandy loam from 6 to 24 inches deep, which becomes heavier with depth. The subsoil is a red or brick-red to orange-red fine sandy clay, fairly heavy and compact and somewhat friable. Iron concretions in large quantities occur on the surface and between soil and subsoil.

This type is usually associated with the Greenville loam or with the other types of its own series. In many places where the type approaches a nearly level surface the content of clay in the soil is much greater than over the more rolling areas. Where this is the case the material is inclined to pack after heavy rains. Such areas represent a close approach to the Greenville fine sandy loam. The type responds readily to thorough cultivation and to increase of the

organic-matter content. Humus is not very abundant in the virgin soils, although fairly well distributed and not quickly exhausted.

Many small areas of Orangeburg sandy loam, Orangeburg sand, and a few areas of Ruston fine sandy loam, too small to be shown separately on the map, were included with this type.

The topography of the Orangeburg fine sandy loam varies from gently rolling on the broad areas of the central divide to slightly hilly or rough in the vicinity of Grove Hill and Coffeetown and between these towns and Jackson.

Most of this type in the vicinity of towns is under cultivation, but elsewhere it is generally left in forest, consisting mainly of longleaf pine, oak, and hickory. The type is well suited to cotton, corn, oats, and hay crops. It is especially adapted to strawberries and tomatoes, and areas located in the vicinity of shipping points on the railroad could be advantageously used for these crops.

The heavier phases of the Orangeburg fine sandy loam in other parts of this State and in Florida are profitably used for the production of Cuban filler tobacco, while the rather deep loamy soil is well adapted to the shade-grown Sumatra wrapper.

Land of this type ranges in price from \$5 to \$25 an acre, depending on the character of forest or location and improvements.

RUSTON GRAVELLY SANDY LOAM.

The surface soil of the Ruston gravelly sandy loam consists of a gray medium to coarse sandy loam from 8 to 15 inches deep, containing large quantities of iron concretions and white, water-rounded quartz gravel. The subsoil is a yellowish-red to dull-red sandy clay containing a small proportion of gravel. It is sometimes mottled in the lower depths with gray and yellow.

The type is of small extent, the few areas encountered amounting in all to 5.6 square miles. It occurs mainly in the southeastern part of the county in the vicinity of Alma and in the northwestern section near McEntyre.

The topography is gently rolling to slightly hilly and the drainage in most places is inclined to be excessive. On the steeper slopes the soil has a tendency to erode. Only a small part of the type is under cultivation, the greater part being forested with longleaf and shortleaf pine, scrubby oak, and hickory.

The Ruston gravelly sandy loam is not considered a good agricultural soil owing to its rolling topography and loose structure. However, by terracing the steeper slopes and increasing the organic-matter content of the soil through liberal applications of barnyard manure and commercial fertilizer, fairly good yields of cotton, corn, oats, potatoes, and vegetables could be secured.

Land of this type ranges in value from \$2 to \$5 an acre.

RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam consists of a gray loamy fine sand to light fine sandy loam from 8 to 10 inches deep. The subsoil is a friable, reddish-yellow to yellowish-red fine sandy clay, mottled in places with gray and brown in the lower depths. On the forested areas the soil of the surface 2 or 3 inches is dark gray, owing to a high content of decayed vegetable matter. Quartz gravel is encountered throughout the soil mass and upon the surface. Occasional small patches of Ruston sandy loam and Norfolk fine sandy loam too small to map were included in this type.

The largest areas of the Ruston fine sandy loam are found to the north and northeast of Coffeerville. Other small areas occur in the southern part of the county.

The topography is moderately rolling to slightly hilly. The soil absorbs moisture rapidly and drainage is generally good. Owing to the moderately rapid downward movement of the water and the rolling surface configuration, moisture is held in sufficient amounts to the organic-matter content has been maintained by proper cultural methods little decline has been noticed in crop yields.

The Ruston fine sandy loam is well adapted to cotton, corn, oats, sweet and Irish potatoes, cowpeas, peanuts, soy beans, vetch, velvet beans, and grasses. Peaches can also be successfully grown. Moderate applications of a complete fertilizer containing relatively high percentages of nitrogen and potash are recommended for this soil. Applications of 300 to 600 pounds of a mixture analyzing 6-3-4 have been profitably made for cotton, corn, peanuts, potatoes, sugar cane, and cowpeas.

Of the truck crops early cabbage, radishes, tomatoes, garden peas, beets, etc., do well with liberal applications of barnyard manure. Fields planted continuously to cotton for a number of years frequently puddle badly during heavy rains, owing to lack of humus in the soil. To correct this condition a carefully planned rotation, including legumes and winter cover crops, to be plowed under to furnish organic matter, should be practiced.

Extensive areas of the Ruston fine sandy loam are under cultivation, mainly to cotton and corn. It is considered a good soil, equaling the Orangeburg fine sandy loam in productiveness.

The forest growth consists of longleaf and shortleaf pine, post and blackjack oak, and hickory.

Land of this type ranges in value from \$5 to \$20 an acre, depending upon the location and improvements in case of the cultivated areas, or the character of the forest on uncleared areas.

GREENVILLE LOAM.

The Greenville loam is locally known as "red table-land." The surface soil is a dark reddish brown loam to slightly sandy loam 6 to 10 inches deep. The subsoil is a brick-red or dark-red sandy clay, rather heavy and close in structure, but not altogether impervious. The depth and character of the soil vary somewhat with the topography, being shallower and more silty on the level areas and more sandy on the slight elevations.

A small area of the type is developed in the county. The towns of Jackson and Grove Hill are situated on it, and somewhat larger bodies are found in the vicinity of Gainestown and Gosport. The soil is sedimentary in origin.

The surface is level to gently rolling. As a rule the drainage is good, though small depressed areas are frequently encountered that would be improved by artificial drainage. When drained these depressed areas are very productive.

The Greenville loam is one of the most productive soils in the county and the greater part of it is in cultivation. It is used almost entirely for cotton, corn, and forage crops, to which it seems better adapted than to truck. The soil responds readily to any increase in the organic-matter content and to fertilizer treatment.

Numerous small areas are forested with longleaf and shortleaf pine, oak, hickory, and other deciduous trees.

The type is highly prized for farming and is held at prices ranging from \$20 to \$50 an acre, depending upon location and improvements.

SUSQUEHANNA FINE SANDY LOAM.

The surface soil of the Susquehanna fine sandy loam consists of a gray to reddish-brown fine sandy loam varying in depth from 6 to 10 inches. The subsoil is a heavy, terra-cotta red, stiff, plastic, tenacious clay, mottled with gray, red, and reddish brown in the lower part of the profile. The type varies in texture over different areas, being finer where the material is shallow and becoming coarser as it increases in depth.

This type is developed most extensively in the northern part of the county. The largest area is found between Thomasville and Campbell. Other smaller areas occur in the southern part of the county. It usually occupies the lower part of slopes leading down to the streams.

The Susquehanna fine sandy loam is a sedimentary soil, consisting of disintegrated argillaceous shales or indurated clays. The occurrence of limestone fragments in the subsoil and along some of the steeper escarpments indicates that the materials of the type may have been modified by an admixture of disintegrated limestone.

The topography is rolling to slightly hilly, except near the streams, where it is usually undulating. Drainage as a whole is good, and on the hilly and broken areas excessive, so that serious erosion takes place unless contour plowing and terracing are practiced.

A large part of this type is under cultivation. It is used almost exclusively for the production of cotton and corn, of which fairly good yields are obtained. Where the humus content is low, the soil is easily affected by drought or excessive moisture. For this reason special attention should be given to the growing of legumes and winter cover crops for green manure. Where this system is followed good yields of cotton, corn, and forage crops can be secured. The forest growth consists of pine, white oak, post oak, blackjack oak, and hickory.

Land of this type where improved or carrying a good stand of pine brings \$15 to \$25 an acre. Unimproved lands on which there is no forest of commercial value usually sell for \$2 to \$10 an acre.

SUSQUEHANNA CLAY.

The Susquehanna clay is practically the subsoil of the Susquehanna fine sandy loam from which the lighter surface soil has been removed. In places where the forest growth has prevented erosion there is a thin covering of fine sandy loam, but these areas were too small to be shown on the map.

The type occurs mainly in the northern part of the county, forming a somewhat broken belt from east of Thomasville west to near the county line. Other isolated areas occur near Salitpa, Suggsville, and Jackson, and in other parts of the county.

Tillage of the heaviest phases of the type is impracticable, especially where erosion has been active, as the soil cakes and clods badly. The lighter phases, if plowed at the proper time, can be cultivated without much difficulty and produce fair yields of cotton, corn, and forage crops. Owing to the general adaptation of clay soils to grasses, much of this type could well be utilized for pasturage and forage crops. Heavy applications of lime would no doubt aid in securing a stand of mixed grasses and clover, and would improve the physical condition of the soil. By making this use of the land much of the erosion which takes place in growing the intertilled crops could be prevented.

The type supports a growth of pine, blackjack oak, white oak, and hickory.

Owing to the difficulty of cultivating the soil and its rough topography the value of land of this type is low, varying from \$2 to \$10 an acre.

GUIN GRAVELLY SANDY LOAM.

The fine-earth material of the Guin gravelly sandy loam consists of red, yellow, or reddish-yellow, coarse sandy loam, from 10 to 12 inches deep. The subsoil is usually a sandy clay of the same color as the soil, with a variable proportion of coarse sand and quartz gravel, the content of which gradually decreases with depth. A number of distinct soils, with gradations between them, intimately associated with the typical soil, and occurring in areas too small to warrant separation, are included with the type. The sandy soil material often extends to a depth of 3 feet, but over the greater part of the type the subsoil is encountered at less depths. Rounded quartz gravel occurs throughout the soil and over the surface, while iron concretions and iron-cemented sandstone are encountered in places.

The type is derived largely from Coastal Plain material. Usually the topography is rough and broken, and for the most part unfit for agriculture. Small areas on the tops of some of the broadest ridges can be tilled, and these produce fairly good yields of cotton, corn, oats, and cowpeas. They could also be utilized for the production of peaches, berries, and vegetables. The inaccessibility of such areas, however, often renders their cultivation impracticable. Most of the type is in forest and should either be kept forested or used for pasture.

The forest growth consists of longleaf pine, blackjack oak, and some hickory.

Land of this type is held at prices ranging from \$2 to \$10 an acre, depending mainly on the stand of pine.

LAUDERDALE STONY CLAY.

The Lauderdale stony clay is a gray to grayish-yellow heavy clay loam or clay, extending throughout the 3-foot soil section and becoming slightly heavier with depth. From 30 to 60 per cent of the material consists of stone fragments, varying from one-half inch to 3 or 4 inches in diameter. These fragments are composed of soft, mottled, reddish-gray to white siliceous rock and occur on the surface and throughout the soil mass. In places a thin covering of white sandy material is encountered, while in others small bodies of stiff red clay are found as the surface soil.

The type is derived from the Buhrstone (Claiborne-Tallahatta) formation,¹ and is found in the northern and northwestern parts of the county. Areas of this soil occur in the vicinity of Suggsville and Nettleboro and also between Jackson and Coffeeville.

¹ See Reports of the Mississippi and Alabama Geological Surveys.

The greater part of the type is found capping the highest hills and ridges, which are usually narrow and rugged. Its continuity is broken in many places by a covering of sedimentary materials. The type also occurs along the slopes of ridges and hills in association with Orangeburg soils.

The greater part of the type is too rough and stony to be cultivated and supports a forest of longleaf and shortleaf pine, oak, hickory, and dogwood. Occasional patches in which the stones are less numerous are farmed. The type is valued chiefly for its forest and should not be cleared.

The following table gives the average results of mechanical analyses of the fine-earth materials of this type of soil:

Mechanical analyses of Lauderdale stony clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
413551, 413555.....	Soil.....	0.2	0.8	1.2	6.7	3.9	37.8	49.2
413552, 413556.....	Subsoil.....	.2	.7	1.0	3.7	4.1	41.3	48.7

The following sample contained more than one-half of 1 per cent calcium carbonate (CaCO₃): No. 413555 45.63 per cent; No. 413556, 41.25 per cent.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam is a light-brown to reddish-brown fine sandy loam about 8 inches deep. The first few inches are sometimes darker than the material below, owing to the presence of organic matter. The subsoil is a light-red heavy fine sandy loam, frequently grading into a dull-red clay at a depth of about 30 inches. Below this it is usually mottled with red, yellow, and gray.

The Cahaba fine sandy loam occurs as a second bottom along the Alabama River. It is bounded on one side by the upland escarpment and on the other by the lower lying bottoms. A considerable area also occurs along Bashi Creek in the northern part of the county. This area adjoins the bank of the stream and is subject to occasional overflow.

The topography of the type is level to gently rolling. As a rule the soil is well drained, although some small, depressed areas would be benefited by artificial drainage.

The Cahaba fine sandy loam is an old alluvial soil derived from the intermixture of sands and clays washed from the uplands when the river flowed at a higher stage. The material for the most part was deposited before the streams had cut their channels to present levels, when the flood plain was much wider than at present.

The type is used almost entirely for cotton and corn. Cotton yields one-third to one-half bale per acre and corn from 15 to 20 bushels. Oats are grown to some extent and yield 25 to 30 bushels per acre. The type is well adapted to sugar cane, sweet potatoes, Irish potatoes, melons, cabbage, onions, and other truck crops. The organic-matter content is low. Cowpeas, bur clover, soy beans, vetch, and grasses can be grown successfully and, in addition to yielding profitable crops, increase the organic-matter content of the soil and improve it for subsequent cultivation. By including such crops in the rotation and with deep, thorough fall plowing, greater yields could be secured at but slightly increased expense.

A small part of the type is still in forest. The forest growth on such areas consists of sweet gum, black gum, water oak, pine, persimmon, and elm.

Land of this type sells for \$15 to \$30 an acre, depending upon location and improvements.

KALMIA FINE SANDY LOAM.

The surface soil of the Kalmia fine sandy loam consists of a grayish to yellowish brown, slightly friable fine sandy loam, from 8 to 10 inches deep. The soil contains small quantities of medium to coarse sand, while the content of silt is rather high, giving the material a decidedly loamy character. The subsoil is usually a yellowish silty clay or heavy fine sandy clay, much heavier than the soil, and containing variable quantities of medium and fine sand. Mottlings of gray and shades of brown appear at a depth of 30 inches. The subsoil is very retentive of moisture, and when properly cultivated the type withstands drought well. After heavy rains the soil packs to a moderate degree of firmness. Where the soil has been cultivated for a number of years without the addition of humus it is lighter in color than the more recently cleared areas.

The Kalmia fine sandy loam is developed on level to gently rolling areas along some of the smaller streams and along the Alabama River near Choctaw Bluff in the southeastern section.

This type consists of reworked Coastal Plains deposits. It is a transitional soil between the uplands and first bottoms in weathering as well as elevation.

The type for the most part is level to gently rolling. In many instances it is in need of drainage, which can be easily accomplished by ditching.

The Kalmia fine sandy loam, especially where it has been cultivated for a number of years, is in need of humus. The soil responds readily to fertilization, and relatively little of the fertilizer is lost by leaching.

This soil is well adapted to cotton, corn, oats, cowpeas, sorghum, sweet potatoes, peanuts, and garden vegetables. Sugar cane produces well on the lighter phases and yields a sirup of excellent quality.

Much of this type supports a growth of pin oak, water oak, black gum, sweet gum, and pine.

Land values range from \$5 to \$20 an acre, depending mainly on the stand of pine.

LEAF FINE SANDY LOAM.

The Leaf fine sandy loam consists of a gray to grayish brown or slightly reddish brown fine sandy loam extending to a depth of 6 to 10 inches. The subsoil is a dull-red sandy clay, which at lower depths becomes a heavy red, stiff, plastic, tenacious clay, mottled in places with gray. Iron concretions occur on the surface and in the surface soil.

The type is of small extent, comprising a total area of a little more than 1 square mile. It occurs as a narrow strip along a second bottom of the Alabama River in the vicinity of Choctaw Bluff. The surface is level to gently rolling.

The forest growth consists mainly of longleaf and shortleaf pine, oak, beech, and gum.

Very little of the type is cultivated, though it is well adapted to cotton, corn, oats, and forage crops. It could also be advantageously used for hay crops, especially Johnson grass and crab grass.

This soil is valued at \$5 to \$15 an acre, depending upon location and improvements.

OCKLOCKNEE FINE SANDY LOAM.

The Ocklocknee fine sandy loam in its typical development consists of a light-brown to brown fine sandy loam, varying in depth from 10 to 15 inches, and often containing a relatively large proportion of silt. Mottlings of yellow, brown, and drab are frequently encountered below a depth of 6 to 10 inches. The subsoil is a brownish sandy clay or clay loam, becoming heavier with depth and more or less mottled with gray and shades of brown in the lower portion. Where the underdrainage is poor iron concretions are found.

The type is an alluvial soil and represents reworked materials washed from the uplands and accumulated along drainage ways. It forms the first bottom lands along many of the streams in the uplands and also occurs in places along the Tombigbee River.

The Ocklocknee fine sandy loam is considered a good agricultural soil. Where properly drained it is friable and easily tilled, and does not suffer greatly from drought or excessive moisture. Most

of the type is overflowed, but the water does not remain on the surface long enough seriously to affect crops.

Corn and cotton are the principal crops, the yields being usually better than those obtained on the surrounding uplands. Cotton yields from one-half to three-fourths bale and corn from 20 to 30 bushels per acre.

This soil is in need of organic matter and more attention should be given to the growing of legumes and winter cover crops. With the practice of regular crop rotations and more liberal applications of commercial fertilizers the yields could be materially increased.

Oats constitute a promising crop on this soil, and Johnson grass, Bermuda grass, clover, and crab grass also do well, yielding from 1 to 2 tons of hay per acre. Sugar cane is another favorite crop, and though the quality and color of the sirup is not so good as that produced from the cane grown on lighter upland soils, the yield is greater, ranging from 300 to 400 gallons per acre.

The larger part of the Ocklocknee fine sandy loam is in cultivation. Uncultivated areas are forested with water oak, pin oak, sweet gum, black gum, beech, and willow.

As this type occurs for the most part as narrow stream bottoms in the upland region of the county, it has practically the same value as the other upland soils, ranging in price from \$5 to \$25 an acre, depending on the character of forest growth, location, and improvements.

OCKLOCKNEE SILT LOAM.

The surface soil of the Ocklocknee silt loam consists of a grayish-brown or brown silt loam about 12 inches deep. The first few inches of the subsoil consists of a yellowish silt loam, grading in the lower depths into a rather heavy, mottled gray to brown clay. In one phase of this type, lying on the higher swells, the material is light in texture, approaching sometimes a fine sandy loam. A heavier phase, marked by an increased mottling in the subsoil, is encountered in depressions.

The Ocklocknee silt loam is alluvial in origin. It occupies the first bottoms along the Alabama and Tombigtree Rivers. It is subject to frequent overflows, which leave the surface covered with a thin layer of sedimentary material and vegetable debris. Upon drying the soil becomes rather friable. It is easy to cultivate and very fertile.

The type is rather flat and has an average elevation of 3 to 5 feet above the usual level of the water in the streams. The highest elevations are found along the immediate banks.

The larger part of the type supports a forest of oak, sweet gum, poplar, willow, sycamore, ironwood, and a few other deciduous trees,

with some pine and an undergrowth of vines, blackberry bushes, and elder.

There is no practical way of diking this land to prevent overflow. A large area of the type lying at the confluence of the Alabama and Tombigbee Rivers is under water practically the entire year.

Where the type is cultivated large yields of corn, peas, and pumpkins are obtained. The growing of Johnson grass and other hay and forage crops could be greatly increased, as the soil is well adapted to such crops and there is a good demand for hay in Mobile and other near-by markets.

The Ocklocknee silt loam is highly prized as an agricultural soil. Well-drained, cultivated areas near towns sell for \$30 to \$50 an acre. Forested areas range in price from \$10 to \$25 an acre.

MEADOW.

The areas mapped as Meadow in Clarke County include poorly drained stream bottom land, in which the soil material is so variable as to make a satisfactory separation into soil types impossible.

The soil is usually quite sandy, but varies greatly within small areas. The soil-forming materials have been deposited during times of high water, and consist mainly of wash from the various upland soils. In some places washings from the red hills are added to the type, the red color continuing for some distance along the stream courses. In other situations, the soil is dark brown or almost black. Along the larger streams where the water is more sluggish during overflows the surface soil is usually a heavy loam or silt loam.

The type is confined to first bottoms which are frequently overflowed and are permanently wet and soggy. Almost all of the type could be reclaimed by deepening and straightening stream channels and digging lateral drains.

The land, when reclaimed, would probably prove best adapted to corn and hay. Sugar cane should do well on the lighter phases. Cotton also could be profitably grown, especially with the addition of phosphatic fertilizers. In its present condition this soil makes excellent pasture during most of the year and is used almost exclusively for that purpose.

The Meadow, aside from its use for grazing, is valued for its forest, which consists of cypress, elm, oak, hickory, and gum.

SUMMARY.

Clarke County is situated in the southwestern part of Alabama. It has an area of 1,216 square miles or 778,240 acres. The county lies wholly within the Gulf Coastal Plain and its soils are consequently of sedimentary origin.

The county comprises the comparatively level flood plains along the Alabama and Tombigbee Rivers and their tributaries and rolling to hilly uplands.

In the upland region the drainage is inclined to be excessive, while over a great part of the bottom lands artificial drainage is necessary to fit the land for farming.

The county was settled early in the last century, and now has a population of 30,987. The negro population forms the chief source of labor. Thomasville and Jackson are the largest towns in the county. The Southern Railway and the Alabama and Tombigbee Rivers afford fairly good transportation. The interior of the county is most thickly populated and highly developed agriculturally.

The climate is moderate and favorably suited to the production of a wide range of crops. The annual mean temperature is 64° F. and the mean precipitation 52.8 inches, the heaviest precipitation occurring during the winter and spring months. The growing season ordinarily extends from the middle of March to the middle of November.

Cotton is the chief money crop of the survey, with corn second and oats third in importance. Truck crops, such as potatoes, cabbage, beans, peas, tomatoes, etc., are grown to some extent but very little truck is shipped out of the county. A large area of the soil is suited to general farm crops and sugar cane. The acreage of a number of crops, such as sugar cane for sirup, peanuts to be fed to hogs, and sweet potatoes, Irish potatoes, melons, and vegetables for shipment could be profitably increased.

Twenty soil types, including Meadow, were separated and mapped in the county. These soils have been grouped in 11 series: The Susquehanna, the Norfolk, the Orangeburg, the Ocklocknee, the Kalmia, the Greenville, the Ruston, the Lauderdale, the Guin, the Leaf, the Cahaba, with one miscellaneous type, Meadow.

The Orangeburg fine sandy loam is the most valuable member of this series and is well suited to general farming and to peaches. The sand and sandy loam types are adapted to truck crops and fruits. Much of the sandy loam is still in forest. The gravelly sandy loam is suited to peaches, but in general the topography is too rough for farming.

The Greenville loam and Ruston fine sandy loam are adapted to general farming and can easily be brought to a high state of productivity. The Ruston gravelly sandy loam and the Guin gravelly sandy loam are rather light for general farming purposes, but are well suited to fruits or to forestry.

The Norfolk fine sandy loam, fine sand, and Kalmia fine sandy loam, though used mainly for cotton and corn, are naturally better

adapted to trucking. The Norfolk sand is a better type for forestry than for cultivated crops.

The Susquehanna fine sandy loam is cultivated quite extensively and though difficult to handle, under favorable conditions produces good crops of cotton, corn, and forage. Very little of the Susquehanna clay is cultivated and tilled areas must be handled carefully in order to prevent erosion and to maintain proper moisture conditions.

The Lauderdale stony clay is better suited to forestry and pasturage than to general farming.

The Ocklocknee silt loam and Ocklocknee fine sandy loam are developed in the overflow bottoms of the rivers and smaller streams. They are well adapted when drained to corn, forage crops, and grasses.

The Cahaba fine sandy loam and the Leaf fine sandy loam are second bottom soils. They are suited to cotton, corn, oats, forage crops, and grass.

Very little of the Meadow is under cultivation, but it is used extensively for pasture and supports in places a fair forest growth.



[PUBLIC RESOLUTION--No. 9.]

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

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

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

Approved March 14, 1904.

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

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