

U. S. DEPARTMENT OF AGRICULTURE  
BUREAU OF SOILS  
IN COOPERATION WITH THE  
ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES

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# SOIL SURVEY OF GREENE COUNTY ALABAMA

BY

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[Advance Sheets—Field Operations of the Bureau of Soils, 1923]



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[PUBLIC RESOLUTION No. 9]

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

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

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

Approved, March 14, 1904.

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

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### MAP

Soil map, Greene County sheet, Alabama



# SOIL SURVEY OF GREENE COUNTY, ALABAMA

By J. F. STROUD, of the Alabama Department of Agriculture and Industries, in Charge, and R. T. AVON BURKE, JAMES THORP, A. W. GOKE, and CLARENCE LOUNSBURY, of the U. S. Department of Agriculture

## DESCRIPTION OF THE AREA

Greene County is situated in the west-central part of Alabama, with its extreme western edge less than 12 miles from the Mississippi State line. Eutaw, the county seat, located on the main line of the Alabama Great Southern Railroad, is 90 miles from Birmingham and 62 miles from Meridian. The county is irregular in shape, and, with the exception of about 15 miles in the northeast corner, its outline is marked by the Tombigbee, Black Warrior, and Sipsey Rivers. The county is long and comparatively narrow, the north-south extent being 43 miles and the east-west extent 27 miles. It contains 645 square miles, or 412,800 acres.

Greene County lies wholly within the geological division known as the Gulf Coastal Plain. The general surface features are varied and can best be described in three physiographic divisions: First, the hilly upland in the northern part; second, the prairie section in the southern and southwestern part; and third, the river terrace, including that part of "The Fork" below Forkland, and the bottom lands along the Black Warrior, Sipsey, and Tombigbee Rivers.

The first division, lying north of Eutaw and extending to the county line on the north, is very broken and hilly, being dissected by a thorough system of drainage ways cut to depths varying from about 50 to 100 feet or more below the crests of the hills and ridges. Erosion has been so active that the topography varies from very hilly and broken to gently rolling, with possibly the rolling type prevailing. About half of the county is embraced in this division.

The second division, or prairie section, beginning at Eutaw and lying mainly in the west-central and southwestern parts of the county and partly within the section locally called the "Fork," has an undulating to gently rolling surface, broken here and there by slightly elevated ridges of "post oak land," together with numbers of sand-capped hills and knolls. These hills are best described by E. A. Smith, Geological Survey of Alabama, as follows:

A peculiar feature in the geology of the "Fork" consists in the numerous isolated conical hills scattered over the prairie country; they are composed



FIG. 13.—Sketch map showing location of the Greene County area, Alabama

of sand, pebbles, and clay, and if they did not present indubitable evidence of their origin, one might mistake them for artificial mounds on a magnificent scale. They give rise to springs, the water of which is free from the usual impurities of the limestone, and they furnish, in many respects, desirable sites for the residences of the proprietors of the land. Differing so entirely from the rest of the county, it is not surprising that these elevations should have excited attention and given rise to speculations as to their origin.

The third division, or river terraces and bottom lands, comprises that part of the county to the south of Forkland together with rather wide irregular shaped areas bordering the rivers and large tributary streams of the county. The general topography is flat to gently undulating, with some low swampy areas. The drainage of the division is good on the low ridges, or slight elevations, and fair to poor in the swales and swampy areas.

With the exception of the first bottom and some of the flatter and lower-lying second bottom, all of the county has excellent natural surface drainage. Every farm in the county is connected with streams, or with intermittent or wet-weather branches, and no ditches are necessary except on the flatter bottoms. On the other hand, terracing is essential on the gently rolling to rolling areas and should be practiced by all farmers on these lands to prevent surface erosion and the consequent loss of large quantities of plant-food elements.

The drainage of the county is effected through the Black Warrior River on its eastern border, the Tombigbee and Sipsev Rivers on the western and northern boundaries, and by a number of small creeks. All the drainage in the county flows to the south.

The county ranges in elevation above sea level from approximately 100 feet in the extreme southern part to about 400 feet in the north-eastern part, the elevation of the greater part of the county being about 200 to 300 feet. The elevations along the Alabama Great Southern Railroad through the county are as follows: At the railroad bridge over the Black Warrior River, just north of Finchs Ferry, 118 feet; Eutaw, 174 feet; Allison, 132 feet; Boligee, 122 feet; and at the railroad bridge over the Tombigbee River 3 miles southwest of Miller on the western edge of the county, 97 feet.

The history of the county begins with the coming of De Soto in the fall of 1540. It was within the bounds of this county that the engagement at Mauville between the Spanish expedition and the Indians took place. According to tradition, this village, possibly the largest in this southern country, was located on the Tombigbee River one-half mile above Brasfield Landing.

Greene County, named for Gen. Nathaniel Greene of the American Revolution, was created by the first State Legislature on December 13, 1819, from parts of Marengo and Tuscaloosa Counties. Its territory was originally included in the Choctaw Land Section.

The population of the county has fluctuated considerably. It was 4,554 in 1820, 31,441 in 1850, 18,399 in 1870, 24,182 in 1900, and 18,133 in 1920. The decrease in recent years is accounted for by the facts that the inroads of the boll weevil made the production of cotton less profitable than formerly and that the great demand and high wages paid in the industrial centers for laborers during and following the World War caused the emigration of many persons from the county.

Eutaw, the county seat and largest town, with a population of 1,359 is situated in the east-central part of the county on the main line of the Alabama Great Southern Railroad between Birmingham and Meridian. The remainder of the county is sparsely settled. Small villages with populations ranging from 25 to 300 include Forkland, Allison, and Boligee in the southern part; Mount Hebron, West Greene, Clinton, and Pleasant Ridge in the western part; and Union and Knoxville in the northern part.

The Alabama Great Southern, the only railroad within the county, enters the county near the center on the eastern edge and passes through Eutaw, then in a southwest direction through Allison and Boligee. Demopolis, in Marengo County, on a branch of the Southern Railway, is 2 miles south of the southern boundary and is the trading point for the people in the southern part of the county. Tuscaloosa draws some trade from the northern part. Transportation is also furnished by steamboats plying the Black Warrior River from Mobile to Tuscaloosa. The Tombigbee River on the western border is navigable the greater part of the year. However, the rivers are seldom used for transportation except for such products as lumber, logs, and crossties, which are shipped by barge to Demopolis, Mobile, and other points out of the county.

Eutaw and Boligee are the only markets of importance in the county for farm products. Meridian, Mobile, Demopolis, Tuscaloosa, Birmingham, Nashville, Louisville, Cincinnati, and St. Louis are the most important outside markets for cotton, hay, cattle, hogs, lumber, and other products.

Next to agriculture, lumbering is the most important industry in the county. Many of the farmers find employment in off seasons in cutting stave timber, railroad ties, and stock for sawmills, or working at portable sawmills. A large sawmill is located at Allison, another at Eutaw, and there are a number of small portable mills in the county. There are two planing mills and one cottonseed-oil mill located at Eutaw.

In the southern part of the county the land is generally held in large tracts by white owners, most of whom live in the towns and villages or in other sections of the county; and the farms are occupied and worked by colored tenants, generally with a white overseer. The population of the bottoms and terraces of the county consists almost entirely of negro tenants. The white owners, who find these locations undesirable, live in the uplands or near-by villages.

The sandy lands of the northern part of the county are held in much smaller tracts than similar lands in the southern part, and the farms are generally operated by white owners.

In the northern or sandy region of the county a good supply of drinking water is obtained from springs and shallow wells, whereas in the prairie section and on the terraces, flowing wells, ranging in depth from about 200 to 300 feet, furnish the water supply. The water from these wells is usually salty and carries other mineral substances, including some lime. The water does not appear to be unhealthful.

With the exception of the road leading from Eutaw to Boligee, there are no hard-surfaced roads in the county. The roads generally are poor. However, since the issuance of State and county bonds for

road building, together with Federal aid, it is probable that the county will soon have surfaced roads connecting with the county seats of the adjoining counties.

Churches and schools for the whites are mainly located in the towns and villages, but for the colored population they are well distributed over the county. The principal towns are connected by telephone lines, but these do not extend to many of the farm homes. Rural delivery of mail reaches the better developed parts of the county.

#### CLIMATE

There is no Weather Bureau station in Greene County. The table below, giving the normal, monthly, seasonal, and annual temperature and precipitation, is compiled from the records covering 67 years at the station at Greensboro in Hale County, about 20 miles to the east of Eutaw. Greensboro has about the same elevation as the average of Greene County, and these records are believed to be fairly representative of the climatic conditions in this area.

*Normal monthly, seasonal, and annual temperature and precipitation at Greensboro, Hale County*

[Elevation, 220 feet]

| Month          | Temperature |                  |                  | Precipitation |   |  |
|----------------|-------------|------------------|------------------|---------------|---|--|
|                | Mean        | Absolute maximum | Absolute minimum | Mean          | Total amount for the driest year (1904) | Total amount for the wettest year (1900) |
|                | ° F.        | ° F.             | ° F.             | Inches        | Inches                                  | Inches                                   |
| December.....  | 48.3        | 75               | 10               | 5.05          | 3.77                                    | 5.27                                     |
| January.....   | 46.0        | 78               | 6                | 4.85          | 5.08                                    | 3.19                                     |
| February.....  | 48.4        | 83               | -5               | 5.29          | 4.62                                    | 10.26                                    |
| Winter.....    | 47.6        | 83               | -5               | 15.19         | 13.47                                   | 18.72                                    |
| March.....     | 56.3        | 88               | 21               | 5.46          | 2.82                                    | 4.62                                     |
| April.....     | 63.8        | 90               | 31               | 4.13          | 1.65                                    | 12.95                                    |
| May.....       | 71.8        | 99               | 42               | 4.04          | 3.00                                    | 1.57                                     |
| Spring.....    | 64.0        | 99               | 21               | 13.63         | 7.47                                    | 19.14                                    |
| June.....      | 78.7        | 104              | 49               | 3.83          | 1.19                                    | 8.34                                     |
| July.....      | 80.4        | 105              | 60               | 4.07          | 6.93                                    | 2.29                                     |
| August.....    | 79.6        | 100              | 57               | 4.71          | 2.78                                    | 3.61                                     |
| Summer.....    | 79.6        | 105              | 49               | 12.61         | 10.90                                   | 14.24                                    |
| September..... | 75.5        | 98               | 44               | 3.11          | .72                                     | 4.66                                     |
| October.....   | 64.6        | 93               | 30               | 2.08          | .08                                     | 7.97                                     |
| November.....  | 55.3        | 84               | 18               | 3.43          | 3.03                                    | 4.25                                     |
| Fall.....      | 65.1        | 98               | 18               | 8.62          | 3.83                                    | 16.88                                    |
| Year.....      | 64.1        | 105              | -5               | 50.05         | 35.67                                   | 68.98                                    |

Greene County lies about 150 miles from the Gulf of Mexico. The climate is characterized by comparatively short mild winters, and long warm summers, with a gradual transition between seasons. The mean annual temperature is 64.1° F. The average date of the last killing frost in the spring is March 19, and that of the first in the fall, November 8, thus giving an average growing season of

234 days for tender vegetation. Killing frosts have been recorded as late as April 10 and as early as October 21.

During the winter months pleasant sunny days, with crisp, cool nights, are interspersed with periods of cloudy weather, or slow gentle rains, frequently of two or three days' duration. The winter temperatures are more variable than those of any other season. The mean winter temperature is 47.6° F. with recorded extremes of 83° F. and 5° F. in February. Though zero weather is extremely rare, sudden cold waves of a few hours to two or three days' duration occur intermittently between the first part of November and the middle of March. These cold waves are marked by brisk north to northwest wind and sudden fall in temperature. They are occasionally attended by snow flurries or sleet, but more often by clear, cold weather. Hardy garden vegetables, such as turnips, cabbage, collards, lettuce, beets, onions, and radishes, are grown in the garden during the winter and are seldom injured by cold.

The mean temperature for spring is 64.0° F. Warm, pleasant weather, favorable for plowing and seeding, usually prevails during this season. The rains of the early spring months are generally warm and gentle, insuring good seed germination.

The summer months have an average temperature of 79.6° F., with extremes ranging from 49° F. in June to 105° F. in July. Although the summer season extends well into September it is seldom oppressively hot, the heat usually being tempered by light winds. The nights are pleasant.

The annual precipitation, which averages about 50 inches, is generally favorably distributed throughout the year. The months of December, January, February, and March are the wettest. These are the months during which most of the plowing is done, and cultural operations are sometimes delayed by heavy rains, especially on the prairie and clay upland soils and on the bottom-land soils subject to overflow. September and October are the driest months of the year and their light precipitation is favorable for the maturing and gathering of the staple crops of corn and cotton.

In general, the climate of Greene County is especially favorable to a broadly diversified system of agriculture. The freedom from extremes of temperature, together with the luxuriant growth of native grass over a period of 9 or 10 months, is favorable to dairying and livestock raising. Plowing and other cultural operations can be carried on in every month of the year. The average growing season of 234 days gives ample time for maturing all the staple crops, and also many varieties of fruits and vegetables, both early and late.

#### AGRICULTURE

The agricultural history of Greene County antedates the formation of the county. The early settlers took up homesteads along the Tombigbee and Black Warrior Rivers and in the prairie section of the county, these lands being selected because of their natural productivity. The products produced by the early settlers were mainly for subsistence, such as corn, wheat, oats, hay, pork, mutton, beef, fruits, and vegetables. A gradual immigration from the older and

more thickly populated country to the east soon resulted in scattering settlements in the more hilly section of the county.

With the exception of the prairie region, all of the upland part of the county was originally heavily forested with rosemary and short-leaf pine, and oaks and other hardwoods flourished on the bottom lands. The revenue obtained from lumber was considerable, but the devastation of the forest has decreased rather than increased the assets of the county, especially upon the rough broken areas which are at present not particularly suited to general farming. The agricultural development of the county has been gradual, but with the introduction of the power cotton gin, cotton became the money crop, and its production gradually increased until restricted by the boll weevil. The decrease in the population of the county since 1900 has been reflected in the production of the staple crops of the county, and as a result large tracts of arable land distributed over the county are now unused for agriculture.

In 1879 the principal crops were corn, grown on 31,826 acres and producing 402,992 bushels; and cotton, on 63,643 acres, yielding 15,811 bales. There were then 2,163 acres of oats, giving a yield of 22,464 bushels, and small acreages of wheat, rye, sweet potatoes, tobacco, and sugar cane. By 1889 the production of cotton had increased to 76,384 acres, yielding 20,901 bales, while the acreage of corn and oats were practically unchanged. The census also reports for this year 35 acres of peanuts, 606 acres of sorgo (sweet sorghum), 165 acres of sugar cane, and 663 acres in hay. In 1899 corn had increased to 39,285 acres, yielding 531,170 bushels, and cotton had increased to 79,404 acres, yielding 23,681 bales, this being the largest cotton crop reported in the census for Greene County. Cowpeas, peanuts, alfalfa, wild grasses, cultivated grains, vegetables, sugar cane, apples, and peaches, were grown on small acreages throughout the county. By 1909 the acreage of corn had decreased to 29,551 acres, yielding 255,942 bushels; and cotton was planted on 72,751 acres, giving a yield of 14,363 bales. A noticeable increase at this time consisted in 3,129 acres being planted to cultivated grasses. Other crops either decreased or remained about the same as 10 years previous.

The arrival of the boll weevil, about 1914, had important influence on the agriculture of the county. The ravages of the weevil were very severe from the first. The yield of cotton decreased from 14,363 bales in 1909 to 4,464 in 1919, while the decrease in acreage was only about 50 per cent.

At present the agriculture of Greene County consists principally in the production of cotton and corn. Cotton is the leading cash crop. A few cattle and some hay are also sold. Corn, oats, sweet potatoes, cowpea hay, velvet beans, and a few other forage crops are the principal subsistence crops.

Cotton is the most important crop grown in the county, the census reporting 36,028 acres with a production of 4,464 bales in 1919. It has always been and is to-day the principal money crop, being grown to a greater or lesser extent on every well drained soil in the county. The yields vary according to the season and the damage by the boll weevil. The production for 1922 was greater than in 1919, but the acreage was practically the same.

Corn, the second crop of importance, with an acreage of 31,913 and a yield of 352,957 bushels in 1919, is well distributed over the county. The yields on the light sandy soils are low, whereas those obtained on the heavier and darker soils are fairly good. Corn is the principal feed for work stock, for fattening hogs, and it is largely used for bread.

In 1919 there were 6,885 acres devoted to hay crops of all kinds, yielding 8,053 tons. Since that time the acreage has probably increased. The hay is mainly Johnson grass, together with some clovers and prairie grasses.

In addition to the above-mentioned staple crops, the 1920 census reports 1,098 acres of peanuts, 1,264 acres of peas, 1,260 acres of sweet potatoes, and a very small acreage of oats, wheat, rye, forage crops, potatoes, and vegetables. Nearly 74,000 gallons of sirup were manufactured from 1,073 acres of sorgo and 392 acres of sugar cane. Orchard fruits were harvested from 11,311 apple trees, 6,832 peach trees and 609 pear trees. Of the 742 nut trees, 733 were pecans, but since the 1920 census the number of pecans has increased considerably. Fig trees are observed in all parts of the county except on the prairie soils, and the production of figs could be profitably increased.

Nearly every farmer keeps a milk cow and some hogs for home use, and several of the larger farmers on the prairies raise cattle for market.

Poultry and eggs are produced in a small way by most of the farmers and more than \$100,000 worth of these products are sold annually. Small quantities of dairy products are marketed.

The farmers of Greene County recognize the Sumter clay and Bell clay as being especially adapted to the growing of hay crops, such as Johnson grass, melilotus, alfalfa, and native clovers. The Bell, Catalpa, and Ochlockonee soils are considered the best corn soils in the county, and are also considered best for Bermuda and other pasture grasses. In the prairie section the Sumter and Oktibbeha soils are recognized as best for cotton. On the terraces the Cahaba is best, but on the sandy uplands the Greenville, Luverne, and Ruston are given preference. These sandy upland soils are also recognized as being fairly well suited to general crops, as well as being particularly adapted to the production of sweet potatoes, peas, velvet beans, fruits, and garden vegetables. Under boll-weevil conditions these soils are recognized as being more desirable for cotton than the heavier soils. The soils best suited to the growing of sugar cane and sorgo are the Kalmia soils, and the lower slopes of the uplands, locally called "made land."

Very little fall plowing is done in the county, except by a few of the more progressive farmers, and to a small extent in the prairie section. The average tenant farmer, in growing cotton, allows the land to lie fallow during the winter. In many cases a middle buster is run down the bed of the previous year, and in this manner a new bed is made over the water furrow of the previous year. The more successful farmers, on the other hand, break the land with a 1-horse or 2-horse plow, or with a tractor, and later mark off the rows and then bed with a 1-horse turning plow. The plowing ranges in depth from 3 to 6 inches, which is altogether too shallow except for the

more sandy soils. Corn is planted in the water furrow on the uplands, and on the bed on the bottom lands. Cotton is always planted on the bed. Cotton receives from three to five cultivations and corn about three during the growing season. Cowpeas or velvet beans are generally drilled between the corn rows. The cowpeas may be sown at the last cultivation. After the corn, peas and beans are harvested, cattle and hogs are turned into the fields. There is no definite system of crop rotation practiced in Greene County.

In a few instances where the landowner lives on a large plantation, the farm equipment consists of modern machinery, good work animals, mainly mules, and barbed-wire fences around fields and pastures. On such a plantation may be found a large dwelling house, generally with an electric-light plant, and in some cases water-works. The water supply in many cases comes from artesian wells, and if the flow is not sufficient to force the water into the house, either gasoline-driven pumps or rams are used. Tenant houses, consisting of one to three rooms, predominate throughout the county; and the farm equipment comprises a mule, wagon, "single stock," and turning plow. On the large plantations the barns are modern, but on the average tenant farm the barn is a 1-room pen with sheds on the side for the work animals. On the prairies the pastures are sodded to native grasses and clovers and furnish good grazing the greater part of the year, whereas on the tenant farms, especially in the sandy uplands, they consist of abandoned fields, wood lots, and meadow areas along the stream, such areas supporting only a scant growth of grasses.

According to census, \$39,554 were expended for commercial fertilizer in 1919, or about \$75 per farm reporting. Most of the fertilizer is applied for cotton, a 10-2-2<sup>1</sup> mixture being applied to the rate of from 200 to 400 pounds per acre at planting time. A few farmers use from 75 to 100 pounds of nitrate of soda as a top-dressing, applied at the time of the first or second cultivation. Some of the large farmers buy the fertilizer materials, such as acid phosphate, cottonseed meal, nitrate of soda, and potash, and mix them on the farm.

Farm laborers formerly were plentiful, but much of the labor in recent years has been attracted to the industrial and commercial centers. All of the laborers in the county are negroes. The monthly wages range from \$10 to \$20 a month with board, and day hands are given from 75 cents to \$1 a day. Cotton is picked by hand at the rate of from 40 to 75 cents a hundred pounds of seed cotton.

The 1920 census reports 3,139 farms in the county, of an average size of 130 acres.<sup>2</sup> The average area of improved land per farm is given as 43.6 acres. In the prairie section and also in some places on the second bottoms there are a number of plantations ranging in size from 600 to 2,000 acres or more. In the northern section the farms are generally smaller, ranging in size from about 80 to 600 acres or more.

According to the census of 1920, about one-fifth of the farms in the county were operated by the owners and practically all of the remaining four-fifths by tenants. In 1880 about 27 per cent were

<sup>1</sup> Percentages, respectively, of phosphoric acid, ammonia, and potash.

<sup>2</sup> Each tenancy is tabulated by the census as a farm.

operated by owners. Land generally is rented by the year for "standing" rent, that is, about an average of 1 bale of lint cotton per plow, the average acreage per plow being about 20 acres. When rented for cash the average price per 1-horse farm is \$75 guaranteed by cotton. In both cases the renter furnishes everything, including fertilizer and seed.

Land values vary according to the character of the land and its location with respect to towns and transportation facilities. The prairie soils range in price from about \$25 to \$50 an acre, the comparatively smooth uplands sell at prices ranging from \$15 to \$25. The prices of the more hilly sections, which vary according to standing timber, range from about \$8 to \$20 an acre; and the terrace soils, from \$10 to \$20 an acre, according to location and improvements.

Greene County probably offers better opportunities in the way of cheap lands, favorable climatic conditions, and good transportation facilities to prospective home seekers than any other county in southern Alabama. Many of the soils here are similar in every respect to soils in the more thickly populated and better developed counties in southern Alabama where lands are held at much higher prices. The soils here are adapted to a wide variety of crops common to this region.

#### SOILS

There is, perhaps, no county in Alabama which presents more striking differences in color, texture, and structure of the soils than does Greene County. These differences are generally recognized, and the different parts of the county are locally spoken of as "prairie," "post-oak prairie," "clay hills," "sandy uplands," and "bottom lands." These soils have been classified into series on the basis of color, structure, origin, drainage conditions, and lime content. The soil series are divided into soil types on the basis of the texture of the surface soils, that is, the proportion of clay, silt, and sand entering into their composition.

With the exception of the Bell and Catalpa soils, all the soils in the county are prevailingly light in color, ranging from extensive areas of light-gray or yellowish-gray to brownish-red soils. The Bell clay and Catalpa clay contain more organic matter than the associated limestone soils and hence are very dark gray to black in color. Most of the soils in the county are decidedly deficient in organic matter, owing to the fact that forest conditions do not favor the accumulation of vegetable matter, as do prairie conditions. The prairie section has not supported a forest growth worthy of name within the memory of man, and grasses have grown for a long time. This accounts for the darker color of the soils and the large content of organic matter, except where erosion has been active, as on the Sumter soils.

Leaching, or the washing out of the soluble materials in soils, has been active, and is still going on. This probably accounts for the fact that the surface soils do not contain so much plant nutrients as the subsoils. In this region of heavy rainfall and warm temperature leaching takes place during the entire year, since the soil does not freeze as it does in the States farther north. Much of the surface in this county is bare during the winter, and most of the soils are used for clean-cultivated crops.

Erosion and gullyng are serious, particularly throughout the areas of Ruston, Susquehanna, Greenville, and Sumter soils. Erosion has not only changed the surface features of these areas but has caused changes in the soil texture as well. In places the sandy surface material has been entirely removed, exposing the unweathered formation or the underlying heavier material. In the case of the Sumter soils, the clay surface has been removed locally, leaving the rotten limestone exposed.

Except in the prairie regions of the county, which include limestone soils, the lime carbonates, together with other salts, have been rather thoroughly leached out of the soils. The soils, however, are not strongly acid, though they respond to moderate applications of lime. In the prairie section the Sumter soils are highly calcareous and they grade downward into soft, rotten limestone, which usually contains 50 per cent or more of lime. Associated with the Bell, Sumter, and Oktibbeha soils of the uplands are the Catalpa soils which have developed on the first bottoms from material washed from the more or less calcareous upland.

Since Greene County is situated in that part of the United States known as the Gulf Coastal Plain, the upland soils are derived from geological strata belonging to the Cretaceous period and the Tertiary era. According to E. A. Smith, State geologist, there are three distinct formations, Tuscaloosa, Eutaw, and Selma chalk. The Tuscaloosa formation embraces about one township in the northeastern corner of the county; the Eutaw formation lies south of this and extends to the town of Eutaw, where it passes under the Selma chalk. These formations extend across the county in a southeast-northwest direction. The Selma chalk of the southern and western parts of the county, on weathering, gives rise to the Sumter soils of the black belt in which are located the towns of Eutaw, Boligee, West Greene, and Allison. North of this the Tuscaloosa and Eutaw formations, consisting of sands and clays, on weathering, produce gray, yellow, and reddish soils, generally of a sandy nature. These include the Ruston, Susquehanna, Greenville, and Luverne soils. Eutaw is on the dividing line between the prairie and sandy soils, and Clinton, Pleasant Ridge, Union, and Knoxville are on the sandy uplands.

The soils of Greene County fall into two main groups: First, those which have normally well-developed soil profiles; and second, those which have not developed any definite profile. The first group includes all the types of the Ruston, Susquehanna, Luverne, Greenville, Cahaba, and Kalmia series.

The most striking features of the texture profile of the well-developed soils in the county are a comparatively light-textured surface layer, a subsoil of a heavier texture, and a third, still deeper layer which may vary considerably in texture, but which, in most places, is heavier in texture than the first or second layer. The texture of each of these layers varies greatly, the surface layer ranging from clay loam to sand, and the subsoil, from clay to very light sandy loam or sand. The third layer, or horizon C, consists of unconsolidated geological materials extremely variable in texture, structure, and color.

The thicknesses of these layers also vary widely, that of the surface layer ranging from a very few inches, in the case of the clay loams, to a maximum of 2 feet or more in the most sandy soils.

The soils of Group 1 may be divided into two subgroups on the basis of the general features of the color profile, or the successive color layers in the soil section. Under virgin conditions, the first subgroup, including the soils of the Luverne and Greenville series, is marked by a color profile about as follows:

1. A dark layer of leaf mold mixed with clay or sand. If it be mainly sand, this layer will be gray or brown as a rule; but if it be silt or clay, it will usually be rather well mixed with the leaf mold and hence will be dark in color. This layer ranges in thickness from very thin to about 3 inches. It is usually thickest in the sandy soils.

2. A pale-yellow to brown or red layer, showing very little evidence of the presence of organic matter. In the sandy soils this layer may be 2 feet or more thick.

3. A red layer ranging from deep, almost blood red, to crimson. The soils of the Greenville series have the darkest-red color of this group.

4. A reddish, grayish, yellowish or mottled horizon corresponding to horizon C of the texture profile.

The second subgroup of soils, differentiated on the basis of profile colors, includes the members of the Susquehanna, Kalmia, Cahaba, and Ruston series, and are characterized by a series of color layers in which the two upper layers are lighter in color than those of the first group, and the third layer is, in its upper and by far larger part, yellow in color. In its lower part, however, there is usually a thin red layer, sometimes so thin that it is difficult to detect.

In the case of the Ruston and Cahaba series, the reddish color is present throughout the whole horizon. The fourth color layer in these soils varies like the corresponding layer in the first group.

The second group includes soils in which definitely developed horizons are not present, including those of the Sumter, Oktibbeha, Eutaw, Bell, Catalpa, Leaf, Myatt, Plummer, and Ochlockonee series.

The soils of this second group may be divided into two subgroups: (1) Prairie or limestone soils; and (2) semiprairie or post-oak lands, such as those of the Sumter, Bell, Catalpa, Eutaw, and Oktibbeha series, which occur principally in the southwestern and western parts of the county.

The first subdivision of the second group of soils comprises the types of the Leaf, Plummer, Myatt, and Ochlockonee series. These soils are poorly drained, and have not developed normal profiles. In the Leaf series the surface horizons range from a fine sand to clay, and the second horizons are heavy, tough clays. The Plummer soils differ from those of the Leaf series in that the second horizons are mottled, friable materials. The two horizons in the Myatt series are not essentially different in color from those of the Plummer, but the Myatt subsoils are generally heavy clays. In the Ochlockonee soils the surface layers may be heavy or light, and the same may be said of other parts of the profile. The material mapped as Meadow is too variable in texture, color and structure to classify as a soil type.

The surface soils of the second subgroup are prevailing heavy clays, having heavy clay subsoils. In case of the Sumter soils, the

grayish-yellow, waxy, clay surface soils grade into creamy-white clay subsoils, and these in turn grade imperceptibly into soft, white limestone. The Bell and Catalpa soils are closely allied with the Sumter, in that most of the material has been washed from Sumter areas and deposited along the streams. The surface soils of Oktibbeha and Eutaw series are heavy clays. Their subsoils are also heavy clays, and are underlain, 3 to 5 feet from the surface, by calcareous material. The Oktibbeha soils are reddish brown, whereas the Eutaw soils are gray. The former are well drained, whereas the latter occupy level areas, and the drainage is fair to poor.

The upland soils belong to the Susquehanna, Ruston, Greenville, Luverne, Eutaw, Sumter, and Oktibbeha series.

Horizon A-1 of the Ruston series consists of from 1 to 3 inches of light-brown or grayish-brown friable material; and horizon A-2, of yellow or brownish-yellow friable material extending to depths of 10 to 15 inches. Horizon B is a crumbly, reddish-brown, rusty-brown to reddish-yellow sandy clay or sand. Horizon C typically begins at from 30 to 60 inches below the surface, and consists of a hard and brittle sandy material, brownish yellow or mottled with reddish brown, yellow, and light gray. This horizon contains small mica scales. The Ruston fine sandy loam, together with a hilly phase, occurs in this area.

The sandy members of the Susquehanna series have topsoils, 2 to 3 inches thick, of gray, friable material underlain by pale-yellow to grayish-yellow, friable materials. Their subsoils consist of a top layer of sticky sandy clay or clay mottled with light red and yellow, and a bottom layer of sticky and plastic clay, mottled light red, gray, and yellow. Their C horizons, consisting of alternating layers of light-gray or bluish-gray clay and brownish-yellow fine sandy material, represent the parent material. The clay type of this series is a dark-red clay, a few inches thick, resting on a subsoil similar to those of the sandy members. The Susquehanna fine sandy loam and the clay, together with a hilly phase of the clay, are mapped in Greene County.

The types of the Greenville series have surface soils of reddish-brown, light-textured, friable material or dark-red heavy material. Their subsoils (horizon B) consist of dark-red, compact but fairly brittle, stiff sandy clay, or dark-red, loose sand. Horizon C consists of hard and brittle materials, mottled or streaked with red, yellow, purplish, and whitish colors. Small, rounded, brown accretions are present on the surface and in the soil of some of the heavier types. The Greenville fine sandy loam is the only type mapped in Greene County.

The characteristics common to the soils of the Luverne series are: Horizon A-1, from 1 to 3 inches thick, consisting of grayish-brown to reddish-brown, friable material containing a small quantity of organic matter; horizon A-2 consisting of a yellowish-brown to red, friable material; horizon B-1 (subsoil) consisting of a red to light-red clay, tough and compact, which cracks and crumbles into irregular particles on drying; horizon B-2 (subsoil), from 20 to 30 inches from the surface, consisting of a yellowish-brown to reddish-yellow or light-red, mottled with yellow, compact but friable clay; and horizon C, consisting of a brownish-yellow, hard but brittle, fine

sandy material with reddish-brown stains along the cleavage lines. The lower subsoil contains a small quantity of fine mica flakes and a high content of fine sand, making it more friable than the upper subsoil. This layer usually extends to depths of from 40 to 50 inches. The Luverne fine sandy loam and clay loam are mapped in Greene County.

The soils of the Eutaw series have gray to brownish-gray surface soils, ranging from fine sandy loam to heavy clay. The subsoils are brownish-yellow or yellow, tough, plastic clays, faintly mottled with red or brown. At depths ranging from about 18 to 24 inches, the subsoils grade into plastic clay, mottled or streaked with brownish yellow and bluish gray. Usually at depths of from 4 to 6 feet calcareous clay of a gray and white coloration is reached. The Eutaw fine sandy loam and clay are mapped in this county.

The distinguishing characteristics of the Sumter series are: A yellowish-gray to brownish-gray surface layer (horizon A-1), 2 to 4 inches deep; a grayish-yellow, plastic clay (horizon A-2); a subsoil, from 8 to 14 inches thick, consisting of yellowish or grayish-yellow clay, fairly brittle and crumbly, and mottled with light gray and creamy white; and a substratum of soft, almost white, rotten limestone, or Selma chalk, and limestone. In places the limestone comes near the surface, and outcrops of it are common. The soil is calcareous and the subsoil is highly calcareous. The Sumter clay, together with a mixed phase, is mapped in this area.

The characteristics of the Oktibbeha series are: A brown to reddish-brown surface soil; a subsoil of red clay, mottled with gray and yellow; and a C horizon consisting of soft limestone which usually occurs from 3 to 8 feet below the surface. These soils, though non-calcareous, are closely associated with the Sumter soils, and in places are influenced by the underlying limestone, which occasionally outcrops or comes near the surface. Oktibbeha fine sandy loam and clay have been developed in this county.

The Plummer series has the following distinguishing marks: A gray to dark-gray surface layer overlying a thin, grayish-yellow subsurface layer; and a subsoil consisting of friable, sandy clay mottled with gray and yellow or rusty brown. Only one type of this series, the Plummer fine sandy loam, is mapped in Greene County.

Along the Tombigbee and Black Warrior Rivers and larger creeks are extensive areas of second bottoms or terraces. These represent some of the best farming lands in the county, including soils of the Cahaba, Kalmia, Leaf, Bell, and Myatt series. The materials giving rise to these soils were brought down by the rivers and creeks and deposited when the streams flowed at much higher levels. Since their deposition, the materials have been subjected to considerable oxidation, aeration, and leaching.

The characteristics of the Cahaba series are: A brown top layer of friable material 3 or 4 inches thick (A-1); a second layer (A-2), consisting of reddish-yellow or brownish-yellow, friable material; a reddish-yellow B horizon, somewhat heavier in texture than horizon A; and a C horizon consisting of more friable and lighter-

colored material. The Cahaba fine sandy loam, together with a low phase, fine sand, and clay loam occur in this area.

The distinguishing features of the Kalmia series are: A grayish-brown top layer (horizon A-1), 2 to 4 inches thick; a subsurface layer (A-2) of friable, pale-yellow material, 10 to 16 inches thick; a yellow subsoil, extending to depths of from 40 to 60 inches; and a C horizon of friable material, which is mottled with purplish-red, yellow, and whitish colors and contains a few soft iron accretions. The Kalmia fine sandy loam, together with a low phase, is mapped in the area.

The soils of the Leaf series are light gray or yellowish gray to brownish in color. The subsoils characteristically consist of gray to mottled gray and yellow, compact, silty clay which grades downward into a sticky and rather impervious clay, mottled with gray, yellow and red. The Leaf fine sandy loam, together with a low phase, and the clay are mapped in Greene County.

The types of the Bell series have dark-gray to almost black surface soils and drab or brownish-yellow, plastic clay subsoils. These soils occur on second bottoms, and represent materials which have been washed mainly from the areas of Sumter soils in the limestone region. Only one type, the Bell clay, is mapped in this area.

The Myatt soils are characterized by dingy-gray or dark-gray surface soils mottled with rusty brown, and by pale yellowish-gray subsoils mottled with brown, gray and yellow. The Myatt soils represent poorly drained areas of the terraces. Two types of this series, the fine sandy loam and the silty clay loam, are mapped in the county.

The Catalpa soils have gray to dark-gray or rusty-brown surface soils, and brownish-gray or drab, plastic clay subsoils. The types are developed on the first bottoms of creeks and intermittent streams which have their origin in or which flow through the limy soils. In places they are highly calcareous, being composed of materials washed from the Sumter uplands. The Catalpa clay is mapped in the county.

Meadow represents material so variable in color, texture and structure that no type separations could be made. It is covered with water or is wet during the greater part of the year.

The following table gives the extent of each soil type mapped in Greene County.

*Areas of different soils*

| Soil                    | Acres  | Per cent | Soil                        | Acres   | Per cent |
|-------------------------|--------|----------|-----------------------------|---------|----------|
| Ruston fine sandy loam  | 45,184 | 15.1     | Susquehanna fine sandy loam | 12,416  | 3.0      |
| Hilly phase             | 17,472 |          | Bell clay                   | 12,288  | 3.0      |
| Cahaba fine sandy loam  | 29,056 | 8.3      | Catalpa clay                | 11,904  | 2.9      |
| Low phase               | 5,312  |          | Ochlocknee fine sandy loam  | 11,456  | 2.8      |
| Sumter clay             | 27,904 | 7.4      | Meadow                      | 11,264  | 2.7      |
| Mixed phase             | 2,560  |          | Cahaba fine sand            | 10,624  | 2.6      |
| Ochlocknee clay loam    | 29,440 | 7.1      | Oktibbeha fine sandy loam   | 9,732   | 2.4      |
| Luverne fine sandy loam | 27,136 | 6.6      | Leaf clay                   | 8,000   | 1.9      |
| Kalmia fine sandy loam  | 25,472 | 6.5      | Eutaw clay                  | 7,040   | 1.7      |
| Low phase               | 1,088  |          | Greenville fine sandy loam  | 6,016   | 1.4      |
| Leaf fine sandy loam    | 19,840 | 5.4      | Luverne clay loam           | 5,952   | 1.4      |
| Low phase               | 2,304  |          | Myatt silty clay loam       | 4,800   | 1.2      |
| Susquehanna clay        | 5,824  | 4.2      | Eutaw fine sandy loam       | 2,880   | .7       |
| Hilly phase             | 11,584 |          | Plummer fine sandy loam     | 832     | .2       |
| Oktibbeha clay          | 17,344 | 4.2      |                             |         |          |
| Myatt fine sandy loam   | 16,832 | 4.1      |                             |         |          |
| Cahaba clay loam        | 13,184 | 3.2      |                             |         |          |
|                         |        |          | Total                       | 412,800 | -----    |

## SUSQUEHANNA FINE SANDY LOAM

The surface layer of virgin Susquehanna fine sandy loam, 2 to 4 inches deep, is a gray to light brownish-gray, loamy fine sand or fine sandy loam, grading into a pale-yellow or brownish-yellow, loamy fine sand which extends to an average depth of 8 or 10 inches. Iron concretions and fragments of iron crusts occur on some of the higher hills and ridges. The subsoil begins as a dull-red, brownish-red, or mottled yellow clay, and grades into a mottled red, gray, and yellow clay extending to depths of from 3 to 5 feet. The subsoil is plastic and sticky when wet, and very stiff when dry, baking and cracking into small angular lumps. Beneath the subsoil is found a variety of material, usually a bluish, laminated clay banded with yellow, friable fine sandy material. On cultivated fields the surface soil of 5 to 6 inches is light gray to yellowish gray in color.

There is considerable variation in the depth of the surface soil. On the abrupt slopes it is seldom more than 6 or 8 inches in depth, whereas on the gentle slopes and nearly level areas it may extend to depths of from 15 to 20 inches. Where the steeper slopes have been cultivated for a number of years, the surface soil has been entirely removed in places by erosion and the red clay subsoil is exposed. The gradation from soil to subsoil is usually abrupt, except where the surface soil is deepest. The lower subsoil in some of the higher areas in the vicinity of Union, Snoddy, Mantua, and Knoxville is more friable than typical, owing to the presence of a strata of micaceous sand and clay.

The Susquehanna fine sandy loam is not a very extensive type in Greene County, occurring only in the northern half of the county. The principal areas are found north of Eutaw, and north of Union. The type occurs mainly on slopes between the upland and the stream terraces; but in places, it occupies divides and narrow ridges. The surface ranges from gently rolling or sloping to broken and hilly. The surface drainage is generally good, but the impervious subsoil frequently causes the smoother areas to be imperfectly drained and also causes erosion of the surface soil on slopes. The type is inclined to be droughty.

About 20 per cent of the Susquehanna fine sandy loam is cultivated, and some of it is in pasture, but the larger part is forested. The tree growth consists mainly of rosemary, old-field pine, post oak, red oak, sweet gum, and black gum. The native pasture grasses are principally sedge grass, carpet grass, Bermuda grass, and lespedeza, with some dallis grass (large water grass) and clovers. Under the present system of soil management the yields of all crops are low, but the soil is capable of producing much larger yields. The type is used principally for the production of cotton, the yields ranging from almost a total failure to about one-fourth bale per acre on the average tenant farm. On the better farms, where crops are rotated and the soil has been built up, yields of one-third to one-half bale are usually obtained. Corn produces from 6 to 15 bushels, velvet beans about one-fourth ton, and cowpeas (for hay) about one-half ton per acre. The yield of sweet potatoes averages about 50 bushels per acre.

Land of this type sells at from \$8 to \$15 an acre, depending on location, topography, improvement, and merchantable timber. Much of this type is best suited to forestry.

#### SUSQUEHANNA CLAY

The surface soil of the Susquehanna clay, in wooded areas, varies from a reddish-brown fine sandy loam to clay, grading at a depth of 2 or 3 inches into a dull-red, plastic clay which extends to depths of from 10 to 15 inches. Below this is a plastic clay intensely mottled with light gray, red, and yellow. This clay contains a small quantity of finely divided mica scales, and extends to depths of 60 to 72 inches. In the upper portion of this clay subsoil the red color is dominant, whereas in the lower part light gray predominates. Below the subsoil is the parent material, which consists of alternating layers of light-gray or bluish-gray clay and brownish-yellow fine sandy material. In the cultivated fields the surface soil, to depths of 4 to 6 inches, is a red clay to clay loam. The type is apparently the result of surface erosion of the Susquehanna fine sandy loam, since their subsoils are identical.

The Susquehanna clay occurs in small irregular bodies in the northern half of the county, associated with the Susquehanna fine sandy loam and the Ruston soils. The largest bodies are about 2 miles north and 3 miles southeast of Union.

The topography varies from gently rolling to rolling or hilly. The surface drainage ranges from good, on the gently rolling areas, to excessive, on the steeper slopes. On account of the heavy, impervious nature of the subsoil, most of the rainfall is lost as run-off, and consequently the type is droughty in summer. Areas of the type are dissected by numerous wet-weather streams which have cut rather deep V-shaped valleys.

On account of the very shallow covering of the sandy material and of the heavy character of the subsoil, the type is difficult to handle. Of the staple crops, cotton is best adapted to this soil, which yields about one-fourth bale per acre when moisture conditions are favorable and when 200 pounds of a 10-2-2 fertilizer are applied per acre. The yields of corn and other crops are very low.

Land of the Susquehanna clay sells for \$5 to \$10 an acre, depending on the kind and quality of the forest growth. It is best suited to forestry and pasture.

*Susquehanna clay, hilly phase.*—The hilly phase of the Susquehanna clay represents areas with hilly and broken surfaces, where erosion has been so active that the shallow surface covering of fine sandy loam, usually found on typical areas, has been removed in most places.

This phase is of rather small extent, and is found only in the northern half of the county, occurring in close association with the Ruston soils and other types of the Susquehanna series. Surface drainage is excessive and the soil is droughty.

The topographic position of the hilly phase of the Susquehanna clay renders this soil unfit for cultivation, and hence it is devoted entirely to forestry. The forest growth consists principally of rosemary pine, with some old-field pine, post oak, white oak, red oak, hickory, and gums.

Land of this kind is valued entirely on the basis of the stand of commercial timber, the price ranging from about \$5 to \$10 an acre.

#### RUSTON FINE SANDY LOAM

On wooded areas the surface soil of the Ruston fine sandy loam is a brownish-gray, loamy fine sand, becoming grayish yellow or brownish yellow at a depth of 2 or 3 inches and extending to depths of from 12 to 15 inches. The subsoil is a yellowish-red to yellowish-brown, fine sandy clay, friable, and slightly compact in structure. It crumbles into irregular lumps and shows a slight coloration of reddish brown along fracture planes. Below this, at depths of from 40 to 60 inches, is a brownish-yellow to reddish-brown, hard but brittle, fine sandy material containing small scales of mica. In places stratified material of bluish or light-gray clay and yellow fine sandy material is encountered, especially near areas of Susquehanna soils. In cultivated fields the surface soil has a light brownish-gray to yellowish-gray color. On the lower slopes and the more poorly drained situations the lower subsoil is usually mottled with shades of gray, yellow, and brown.

The Ruston fine sandy loam is fairly uniform in color, texture, and depth, except where erosion has been active. A deeper surface layer is found on the more gentle slopes, but in places on the steeper slopes, or around stream heads, the surface layer has been removed, leaving the reddish subsoil exposed as "gall spots."

On a few areas of this type the subsoil is heavier than typical. In these places the upper subsoil is dingy-red to dark-red, heavy, slightly plastic clay; and the lower portion, beginning at depths of from 15 to 20 inches, is a friable sandy clay. Such areas are found near Union, Mantua, and Knoxville.

Typical Ruston fine sandy loam is not so heavy as the Luverne fine sandy loam, the former being a friable material which readily absorbs and retains moisture. It occurs in close association with the Greenville, Luverne, and Susquehanna soils, and, as mapped, includes small areas of these soils. Several small bodies of Norfolk fine sandy loam are included with the Ruston fine sandy loam because of their small extent. The areas of the Norfolk type are found between Clinton and Eutaw.

The Ruston fine sandy loam is the most important agricultural soil of the sandy uplands of the county. It occurs principally in the northern half, with a few small areas capping the hills in the prairie section. The largest areas are in the vicinity of Union and west of that place, and at Clinton, Mantua, and Braggville.

The type occupies comparatively low hills, divides, and moderately sloping valley sides, and also rolling to steeply rolling areas along stream heads. Only a small part of it is too broken and steep for cultivation. Both surface and internal drainage are well developed. Where not protected by terraces and cover crops, excessive run-off results in erosion. The soil is easy to till and can be cultivated under a wide range of moisture conditions. The friable, fine sandy clay subsoil absorbs and retains moisture, and thus crops seldom suffer from lack of moisture where the proper methods of farming are practiced.

The Ruston fine sandy loam is not quite so productive as the Greenville or Luverne soils, although under the present system of management the yields are about as good as on the latter types. About 50 per cent of the type is under cultivation, and the remainder is in pasture, or in forest consisting mostly of rosemary pine, and old-field pine, with some post oak, red oak, hickory, poplar, gum, and a few other hardwoods.

Cotton and corn are the principal crops, with some velvet beans, cowpeas, oats, peanuts, and sweet potatoes. The average yield of cotton is about one-fourth bale, but in some years the better farmers produce one-half bale per acre. Corn yields from 10 to 25 bushels, with an average of about 12 bushels. Velvet beans are planted in the corn and yield about 1 ton of beans per acre. Oats do fairly well, and are generally fed in the sheaf or cut green for hay. Peanuts average about 40 bushels per acre. Sweet potatoes produce an average of about 50 bushels per acre where no fertilizers are used, and as much as 300 bushels where they are fertilized with 400 or 600 pounds of a 9-3-4 mixture. Water grass, lespedeza, and Bermuda grass furnish good grazing on this soil. Bur and white clovers do well and are valuable additions to pasture-land forage. The soil is well suited to fruits and vegetables, but these are grown only for home use. Some small pecan groves, from one-half to 4 or 5 acres in size, are doing well on this soil. The pecan industry would be found profitable if large orchards of the improved varieties were grown.

Cotton is usually fertilized with about 200 pounds of a 10-2-2 fertilizer. If a heavier application of a mixture analyzing 8-4-4 were made probably better yields could be obtained.

The Ruston fine sandy loam is a good soil, well suited to general farm crops. It is light and easy to till, responds readily to good treatment, and, with proper management, may be brought to a reasonably high state of productiveness.

Land of the Ruston fine sandy loam sells at prices ranging from \$10 to \$25 an acre, depending on location and improvements.

*Ruston fine sandy loam, hilly phase.*—The hilly phase of the Ruston fine sandy loam has the same color and texture as the main type, but varies more in the depth of the surface soil. In many places the topsoil has been entirely removed, leaving the red, sandy clay subsoil exposed, but at the base of some slopes the soil may extend to a depth of 2 feet or more. On the hill-tops the subsoil is typically a red, friable, sandy clay; on the slopes it varies from the bright-red sandy clay of the Orangeburg to the mottled plastic clay of the Susquehanna; and on the sand-capped hills of the prairie section it varies to reddish-yellow or yellow, plastic clay. Areas mapped as the hilly phase include patches of Greenville, Luverne, and Susquehanna soils.

This phase is developed in small scattered bodies on the high hills of the prairie section, and in larger areas in the northern part of the county. It occupies steep hills and narrow winding ridges with steeply rolling sides, also the slopes bordering the plateaulike areas of Greenville soil southwest of Pleasant Ridge. The run-off is excessive and erosion very active, especially on land not protected by vegetation.

The phase is generally too steep and rough for cultivation, except in small patches on the hilltops. Probably not more than 1 per cent of this phase is cultivated. The crops grown and the yields obtained are practically the same as on the main type. The remainder of the phase is in forest, to which it is best suited, owing to its rough topography. The tree growth is principally rosemary pine and old-field pine, with some post oak, red oak, dogwood, white oak, hickory, and a few other hardwoods.

This kind of land is generally sold in conjunction with surrounding lands. The larger bodies vary in price from \$5 to \$25 an acre, depending on the kind and quality of the merchantable timber. Areas that have been cleared are valued at from \$1 to \$5 an acre.

#### GREENVILLE FINE SANDY LOAM

The surface soil of the Greenville fine sandy loam, to an average depth of about 6 inches, is a brown to reddish-brown, fine sandy loam or loamy fine sand. The subsoil is a red to dark-red, slightly sticky, heavy, fine sandy clay. Variations in the depth of the surface soil occur throughout the areas of this type. On the more rolling areas, the soil has been partly removed by erosion; whereas on the more level areas, in places, it is from 8 to 10 inches deep. To the east of Eutaw the type is probably composed of old river terraces which have lost their terracelike topography through erosion. The subsoil here is not so deep red as typical, and at 4 to 6 feet it grades into a dull-red clay, streaked with gray and yellow. The type is closely associated with the Ruston and Luverne fine sandy loams, and mapped areas include patches of these types.

Several small bodies of Orangeburg fine sandy loam are included with the Greenville fine sandy loam in mapping, such areas occurring at Sunflower Church, Pleasant Ridge, to the west of Mantua, and at Mount Hebron. The soil on these Orangeburg areas consists of a grayish-brown or brownish-yellow fine sandy loam, about 6 inches deep, grading into a reddish-brown loamy fine sand. At about 10 or 12 inches this loamy fine sand grades into a friable, fine sandy clay subsoil, colored red or bright yellowish red, and which extends to a depth of 3 feet or more. The crop yields on these areas are practically the same as on the Greenville fine sandy loam.

The Greenville fine sandy loam covers only about 10 square miles in this county. It occurs in rather small, widely scattered areas, the most important areas occurring 3 miles east of Eutaw, 2 miles southwest of Pleasant Ridge, and near Braggville. The areas to the southwest of Pleasant Ridge are nearly level to very gently rolling, while the remainder of the type occupies comparatively low hills. Drainage is well established over all of the type, and erosion is active over the more rolling bodies. The structure of the soil and subsoil permits good internal drainage. The type readily absorbs and retains moisture, and where properly handled, it is one of the last of the upland soils to show the effects of drought.

Practically all of the level and gently rolling areas of the type are cleared and under cultivation, and about half of the rolling land is farmed. It is a good, productive soil, easy to handle, and is highly prized for the general farm crops, especially cotton, which occupies by far the largest acreage. The yields of cotton range from about

one-fourth to three-fourths bale per acre, depending on the season, methods of cultivation, and quantity of fertilizer applied. The yields of corn range from 15 to 30 bushels, with a probable average of about 20 bushels per acre. Velvet beans are usually drilled with the corn. Peas are sown at the last cultivation of the corn, and yields are very good. Oats are grown in small fields, the yields ranging from 15 to 40 bushels per acre. Peanuts, sweet potatoes, watermelons, and garden vegetables do well on this soil, but are grown only for home use. This soil is well suited to peaches and pecans, which are grown commercially on this type in other sections of the South.

The Greenville fine sandy loam responds readily to commercial fertilizers. With deeper plowing, proper rotation, and addition of organic matter the yields of this soil can be materially increased.

Land of the Greenville fine sandy loam sells at prices ranging from \$15 to \$30 an acre, depending on location, topography and improvements.

#### LUVERNE FINE SANDY LOAM

The surface soil of the Luverne fine sandy loam in virgin areas is a brown fine sandy loam, 1 to 3 inches deep, containing a noticeable quantity of organic matter and becoming yellowish brown in color; it extends to depths of from 6 to 10 inches. The change from soil to subsoil is usually rather abrupt. The subsoil of dull-red to red clay is tough and compact. It cracks and crumbles on drying and breaks into irregular particles varying in size from very small to an inch or more in diameter. It contains a few small, rounded, moderately soft iron accretions. At depths of about 20 to 30 inches this red clay changes in color to yellowish brown or reddish brown mottled with yellow, and is compact but friable. This lower clay contains some fine mica flakes, much fine sand, and is more friable than the true subsoil. This layer extends to depths of from 40 to 50 inches, where it grades into a brownish-yellow, hard but very brittle, fine sandy material with reddish-brown stains along cleavage lines. It also contains a noticeable quantity of finely divided mica. Cultivated fields assume a brown or reddish color, owing to the mixing of the upper soil layers with some of the red clay subsoil.

In many places the surface soil is a reddish-brown loamy fine sand and the clay subsoil is within 6 or 8 inches of the surface. There are a few "gall spots" of red clay where the surface soil has been entirely removed by erosion.

The Luverne fine sandy loam is developed in the north-central part of the county, in the region between Eutaw, Clinton, Pleasant Ridge, Mantua, and Union, the largest areas lying north of Clinton. The type is closely associated with the Ruston and Susquehanna soils, and in many places it was difficult to draw boundaries between them.

The greater part of the Luverne fine sandy loam occupies gently rolling and undulating country, and some moderately low, irregular hills having gentle slopes. In an area of several square miles lying between Mantua and Hollingsworth School the surface is broken and steeply rolling around the heads of drainage ways. The surface drainage is good. Erosion is active on the more rolling areas not protected by terraces or vegetation. Deeper plowing, terracing, and the growing of winter cover crops will aid in controlling destructive erosion on this type. The erosion is fairly smooth, that is,

deep gullies have not been formed, as is generally the case on some of the associated types.

About 50 per cent of the Luverne fine sandy loam is cleared and under cultivation; the remainder supports a growth of rosemary pine and old-field pine with some post oak, red oak, hickory, and sweet and black gums. The type is used for all of the general farm crops, though the greater part is given to the production of cotton, to which it is well suited, the yields ranging from one-fifth to one-half bale, with a possible average of one-fourth bale per acre. Before the advent of the boll weevil yields averaged one-half bale or more per acre. Corn is the next crop of importance and yields from 10 to 20 bushels per acre. Velvet beans are generally planted in the corn and yield about one-half ton of beans per acre. Peas do well and produce from three-fourths to 1 ton of hay per acre. Peanuts are grown in small patches for home use, and produce good yields. Sweet potatoes produce from 75 to 300 bushels per acre, depending on preparation of the soil and fertilization. The type is well suited to fruits and vegetables, but these are grown only in a small way for home use. This is an especially good soil for peaches and pecans, the trees making good growth and producing a good quality of fruit.

Land of this type sells at \$10 to \$20 an acre, depending on location, improvements and forest growth.

The Luverne fine sandy loam is one of the best general-purpose soils of the sandy uplands. It has the power to retain larger quantities of moisture than its associated types, and crops suffer less from drought on this soil than on the Ruston and Susquehanna fine sandy loams. It is a stronger soil than the Ruston, but under the present system of farming the yields are about the same on the two types.

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

*Mechanical analyses of Luverne fine sandy loam*

| Number | Description                   | Fine gravel     | Coarse sand     | Medium sand     | Fine sand       | Very fine sand  | Silt            | Clay            |
|--------|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|        |                               | <i>Per cent</i> |
| 416653 | Soil, 0 to 8 inches.....      | 0.2             | 0.6             | 1.4             | 50.9            | 10.1            | 31.5            | 5.3             |
| 416654 | Subsoil, 8 to 18 inches.....  | .2              | .2              | .8              | 28.3            | 7.3             | 25.1            | 38.1            |
| 416655 | Subsoil, 18 to 36 inches..... | .0              | .2              | .9              | 33.1            | 4.8             | 20.8            | 39.9            |

LUVERNE CLAY LOAM

The surface soil of the Luverne clay loam consists of 2 to 4 inches of a reddish-brown fine sandy loam, which in places may extend to depths of from 6 to 8 inches. The subsoil is a red clay. Over the type generally there is only enough fine sand to impart to the soil a clay loam texture when it is plowed to a depth of 6 or 8 inches. There are many spots where the sandy covering has been entirely removed and the red clay subsoil is exposed. The subsoil is identical with that of the fine sandy loam type.

This type is found only in the section between Eutaw, Union, and Clinton, the largest area lying northeast of Clinton. It occurs in

close association with the Luverne fine sandy loam and represents areas of that type from which the surface covering has been removed. The surface varies from undulating to gently rolling. The drainage is good over all the type, and erosion is still active on the sloping areas.

The Luverne clay loam occupies only about 9 square miles in the county. About 90 per cent of the type is cleared and under cultivation. It is best suited to cotton, and the larger part of it is planted to this crop, the yields being practically the same as on the fine sandy loam. The yields of corn and other field crops are generally slightly lower than on the fine sandy loam type.

The Luverne clay loam is seldom plowed more than 3 or 4 inches deep; but with deeper plowing, the incorporation of vegetable matter, terracing, and the growing of winter cover crops, erosion on this type could be largely prevented and the soil built up to a high state of productivity. Like the fine sandy loam type, this soil is retentive of moisture and responds readily to fertilization and good treatment.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Luverne clay loam:

*Mechanical analyses of Luverne clay loam*

| Number | Description                   | Fine gravel     | Coarse sand     | Medium sand     | Fine sand       | Very fine sand  | Silt            | Clay            |
|--------|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|        |                               | <i>Per cent</i> |
| 416668 | Soil, 0 to 3 inches.....      | 0.2             | 0.9             | 1.8             | 54.3            | 8.2             | 24.8            | 9.5             |
| 416669 | Subsoil, 3 to 18 inches.....  | .0              | .3              | 3.0             | 31.8            | 7.4             | 27.2            | 30.3            |
| 416670 | Subsoil, 18 to 36 inches..... | .0              | .6              | 1.4             | 37.4            | 7.9             | 20.6            | 32.5            |

#### SUMTER CLAY

The surface soil of the Sumter clay in virgin areas, 2 to 4 inches deep, is a yellowish-gray to light-gray clay, hard and stiff, crumbling into large nodules when dry. It is very sticky when wet. It grades into a tough, grayish-yellow clay. The subsoil is a yellowish clay mottled with light gray and creamy white. It extends to a depth of about 18 or 20 inches, where it grades into a soft, almost white, rotten limestone (Selma chalk), which becomes bluish gray lower down. In places the soft, white limestone comes near the surface, and on many of the slopes it is exposed. The soil is calcareous and the subsoil is highly calcareous. The white mottlings in the subsoil are calcareous nodules. In cultivated fields the top layer of 4 or 5 inches is colored light gray or yellowish gray. Areas of this soil are locally known as "gray prairie" or "lime prairie."

Several variations are necessarily included in mapped areas of Sumter clay. On many knolls and slopes the surface soil is shallower than typical, and on many of the more pronounced slopes it has been entirely removed by erosion, exposing the mottled subsoil. Many patches of Oktibbeha clay, or a shallow phase of that type, are also included. Areas which consist of many scattering patches of Oktibbeha clay are shown on the soil map as Sumter clay, mixed phase. Small areas of Houston clay are also included, these occurring in slight depressions and on rather flat areas.

The Sumter clay occurs in the western and southern parts of the county. It occupies nearly level to gently rolling areas and a few comparatively low hills, many of which are capped with a shallow covering of sandy material mapped as Ruston fine sandy loam. Natural surface drainage is good, but the internal drainage is slow, owing to the impervious nature of the subsoil. These conditions with respect to drainage result in a heavy run-off of rain water and serious erosion on the more pronounced slopes not protected by vegetation. Many fields of this soil have become unproductive on account of destructive erosion.

The Sumter clay is the most important soil in the prairie section. The topography is favorable for tillage over all of it except a few of the steeper slopes. About 50 per cent of it is used for cultivated crops, and the remainder for pasture and the production of hay. The typical soil in places supports a scanty growth of cedar, hackberry, osage orange, locust, red haw, plum, persimmon, and a few gums. A few old-field pine, post oak, red oak, sweet gum, hickory, and haw grow on the included patches of Oktibbeha soils. The Sumter clay is a natural grass soil, wild prairie grasses being native to it. Much of it now grows Johnson grass, Bermuda grass, lespedeza, melilotus, black medic, and other clovers. Other growths consist of dallis grass (large water grass), carpet grass, and wild rye, with some ragweed, sedge grass, and many other coarse weeds and grasses.

Hay, corn, and oats are the principal crops produced on the Sumter clay. Prior to the advent of the boll weevil cotton was extensively grown, and is still an important crop; but there has been a considerable reduction in the acreage in recent years. This reduction in cotton acreage has resulted in an increase in the area devoted to hay, corn, and pasture grasses, and also velvet beans, cowpeas, millet and sorgo. Cotton and hay are the principal money crops. Some of the larger farmers produce a surplus of corn for market. Much of the hay and corn is consumed on the farms in feeding cattle and hogs. More attention is being given to livestock farming on this type than formerly.

The yields of corn range from 15 to 30 bushels per acre, depending on the season and cultural methods. Before the advent of the boll weevil cotton yielded from one-third to 1 bale per acre, but under present conditions the yield is considerably lower and very uncertain. Johnson grass yields from 1½ to 2 tons of hay per acre in two to three cuttings. Alfalfa is grown in small fields on several farms, and the yields range from 2 to 4 tons, depending on the season, depth of soil, and methods of soil management. Oats yield from 20 to 40 bushels, some of this crop is threshed and marketed, but the bulk of it is fed in the sheaf on the farm.

Land of the Sumter clay sells at prices ranging from \$25 to \$50 an acre, depending on location and improvements.

The foremost need of the Sumter clay is organic matter. Steps should be taken to prevent soil washing and erosion. This soil should be plowed deeper and more thoroughly prepared for planting. Systematic rotation should be practiced, including summer legumes for green manuring and cover crops for protection from erosion during winter. Cowpeas, velvet beans, soy beans, and sweet clover are well suited for green manuring; and oats, rye, crimson clover, bur clover, and hairy vetch are good winter cover crops which incidentally fur-

nish green manure. Legumes are better than grains in soil improvement, because of their ability to gather nitrogen from the air. Liberal incorporation of vegetable matter and deeper plowing will greatly increase the ability of the soil to absorb and retain moisture. This soil is suited to the production of alfalfa and is used for this crop in many places in Alabama and Mississippi.

*Sumter clay, mixed phase.*—The Sumter clay, mixed phase, represents areas in which the Sumter clay and Oktibbeha clay, together with a few small bodies of Houston clay, are so intricately mixed that separation could not be made. The Sumter clay seems to predominate in these areas. On these areas plowed fields have a very spotted appearance. The color of the surface soil ranges from light gray to almost black or red. The soil and subsoil of the Sumter clay areas are typical, while the included bodies of Oktibbeha clay are generally shallow and thin out into the Sumter clay. The lower subsoils of these included areas of Oktibbeha clay and Houston clay are generally more like that of the Sumter clay, and they usually grade into Sumter material within a depth of 3 feet.

This mixed phase occurs in a few small areas. The largest bodies are located about 4 miles south of Eutaw and around New Hope Church, and a few small scattered bodies are found throughout the prairie section. These areas have a fairly smooth and gently rolling topography. The surface drainage is good, but the heavy clay subsoil prevents rapid absorption of moisture and retards internal drainage. The close proximity of the bedrock also curtails the supply of soil water.

About 60 per cent of the phase is under cultivation, the remainder being in pasture. It supports the same kind of trees and grasses that may be found on the various types composing the phase. The crops and the yields obtained are practically the same as on the Sumter clay. The best use of this land is for pasture.

#### OKTIBBEHA FINE SANDY LOAM

The surface soil of the Oktibbeha fine sandy loam in wooded areas is a brown, mellow, fine sandy loam, from 5 to 8 inches deep. It is underlain by a dull-red, plastic clay which, at about 10 or 12 inches, becomes intensely mottled with purplish red, light gray, and shades of yellow. At depths of from 30 to 60 inches it is underlain by a friable, calcareous material, mottled with brownish yellow and light gray. In cultivated fields the surface soil is light brown or brownish gray in color. Practically all areas of this type are underlain at depths of from 4 to 7 feet by a soft, white limestone similar to that underlying the Sumter clay.

In some flat areas or slight depressions the soil is a dingy-gray fine sandy loam, grading downward into a dingy-brown or dull-red, mottled gray and yellow clay. In these areas numerous small, brown, iron-oxide concretions occur on the surface and to a less extent to a depth of 3 feet or more. In many places small quantities of rounded quartz gravel occur on the surface and in the subsoil.

The type occupies comparatively small isolated areas in the prairie country. Its total area in the county is about 15 square miles. The largest areas are southeast of Eutaw, north of Allison, and northeast of West Greene. The topography is nearly level to gently roll-

ing. The surface drainage is good, but internal drainage is slow on account of the heavy character of the subsoil.

About 75 per cent of the type is in cultivation, a small amount is in pasture, and the remainder is in forest, the trees and grasses being practically the same as on the Oktibbeha clay. The Oktibbeha fine sandy loam is well suited to cotton and most of it is planted to this crop. The yields range from about one-fifth to one-half bale per acre, depending on the season, quantity of fertilizer applied, and preparation of the seed bed. Corn yields from 8 to 15 bushels. Velvet beans and cowpeas are usually planted in the corn and give fair returns. This soil is much easier to handle than the Oktibbeha clay. It responds readily to fertilization, and is fairly retentive of moisture, though crops suffer during very dry seasons.

Land of the Oktibbeha fine sandy loam is sold in conjunction with other land, the value depending more or less on the value of the associated soils.

#### OKTIBBEHA CLAY

Areas of Oktibbeha clay, locally known as "red prairie" or "post-oak prairie," have a surface soil consisting of about 6 or 8 inches of reddish-brown to brownish-yellow, moderately friable clay loam. This is usually low in organic matter, except in some of the forested areas where leaf mold is to be found. The upper 12 or 15 inches of the subsoil consists of a reddish-yellow or red, rather plastic clay; and the lower portion, to a depth of 36 or 40 inches, is a stiff, plastic clay, mottled with yellow, red, gray, and brown. In many places, at depths of from 24 to 30 inches, the conspicuous mottling changes to a dull-yellow or greenish color; and below 40 inches the material grades into soft, grayish limestone.

In some small areas where erosion has formed ditches and gullies, the chalky limestone is exposed. Patches of Sumter clay, too small to indicate on the map, are included with this type. The surface soil in places is covered by 2 or 3 inches of brownish fine sand which, when mixed with the heavy underlying material, is sufficient to impart a rather loamy texture. Some of these areas are sandy enough to approach the textural characteristics of the Oktibbeha fine sandy loam.

The Oktibbeha clay is developed in the prairie section of the county and is associated with the Sumter clay. It predominates southwest of Eutaw, where it occupies areas 1 to 2 miles wide. In other localities it occurs in small and more widely distributed areas.

The surface varies from almost level or gently rolling to rolling, and the slopes generally are broad and gentle. The type is found both on slopes and tops of ridges; and where it is closely associated with the Sumter clay it may be found at elevations above or below the latter soil. The compact structure of this type hinders the absorption of moisture; hence during rains the run-off is rapid, often causing serious surface washing.

Probably 40 or 50 per cent of the Oktibbeha clay is cultivated, and the remainder is in pasture. A considerable part of the uncultivated land supports a sparse growth of short-leaf pine, oak, hickory, and sweet gum. Cotton is the leading crop, and the soil is considered well suited for its early development. Cotton yields one-fifth to one-

fourth bale to the acre; and when the boll weevil is not too destructive, the yield may be one-half bale or more. Corn and oats are grown to some extent. Corn produces from 8 to 20 bushels or more, according to the state of fertility and care given in preparation of the soil; and oats, from 20 to 40 bushels per acre. This type gives fairly good results with cowpeas, velvet beans, soy beans, peanuts, and vegetables. Fairly good pasturage is afforded from a variety of native grasses, principally lespedeza, carpet grass, Johnson grass, crab grass, and broom sedge.

The Oktibbeha clay is rather difficult to handle because its heavy texture requires much power and effort to produce a satisfactory seed bed. Optimum moisture conditions are necessary for best results, because if it is plowed too dry the soil forms heavy clods, and if it is handled too wet it puddles and tends to bake on drying. Barnyard manure is used to some extent, but often no special fertilizer treatment is given.

The selling value of the Oktibbeha clay varies somewhat according to the state of fertility, location, and improvements. Prices range from about \$10 to \$30 an acre.

#### EUTAW FINE SANDY LOAM

The surface soil of the Eutaw fine sandy loam, in virgin areas, consists of 1 to 3 inches of grayish-brown or brown fine sandy loam. In low-lying areas this top layer has a darker color, and on higher elevations it has a lighter color and a somewhat lighter texture. Ordinarily, the surface layer grades downward into a yellow or pale-yellow, compact fine sandy loam which, at about 18 or 20 inches, becomes a rather sticky, fine sandy clay, mottled more or less with rusty brown and reddish brown. Farther down, to a depth of 36 inches or more, is a sticky, plastic clay or sandy clay, mottled with yellow, red and gray. In many places, below depths of from 36 to 48 inches, may be found lime nodules or rotten limestone. Rotten limestone occurs at depths of from 4 to 6 feet. In some of the low-lying or depressed areas brown and gray mottlings usually occur within a few inches of the surface.

This type occupies a small total area. It occurs in widely scattered tracts of from 80 to 100 acres, representative bodies being located at West Greene and about 3 miles north of Clinton. The type is usually associated with, and represents, poorly drained soils in the mapped areas of Oktibbeha soils. On the higher-lying areas the drainage is fairly good, but in the lower locations the run-off is slow and consequently the soil remains rather soggy several days after a rain.

Probably 80 per cent or more of the Eutaw fine sandy loam is cleared and under cultivation. A few areas are in pasture or support a scattering forest growth. It is farmed in connection with associated types, and in some places one or more other types may be found in the same field. It is used largely for cotton and to some extent for such crops as corn, sorgo, and cowpeas. The crops give fairly good yields, though in wet seasons they do not develop well in the depressed areas having poor drainage. Land of this type is sold in conjunction with surrounding lands.

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

*Mechanical analyses of Eutaw fine sandy loam*

| Number | Description                   | Fine gravel     | Coarse sand     | Medium sand     | Fine sand       | Very fine sand  | Silt            | Clay            |
|--------|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|        |                               | <i>Per cent</i> |
| 416616 | Soil, 0 to 6 inches.....      | 0.8             | 2.1             | 3.1             | 47.2            | 7.9             | 34.7            | 4.0             |
| 416617 | Subsoil, 6 to 18 inches.....  | .3              | 1.8             | 2.1             | 27.8            | 7.8             | 45.1            | 14.9            |
| 416618 | Subsoil, 18 to 36 inches..... | .8              | 1.7             | 2.2             | 24.7            | 8.8             | 37.0            | 24.9            |

#### EUTAW CLAY

The surface soil of the Eutaw clay, to a depth of about 6 inches, may consist of a gray, grayish-yellow, or brownish-yellow clay or clay loam, moderately friable and of a compact structure. In virgin areas the top 1-inch layer usually has a dark-brown color, due to an accumulation of leaf mold. The material beneath the surface layer consists of a plastic, brownish-yellow or yellow clay, mottled with red or brown. At depths of from 14 to 20 inches or more, this clay becomes stiff and is streaked with yellow, red, bluish, or light-gray colors. Deeper down it becomes more plastic, and below 30 inches, the light-gray streaks become more prominent and the red color disappears. Beginning at 38 or 40 inches and extending to depths of from 48 to 72 inches, the clay is mottled with yellow, rusty brown, and light gray. Underlying this is a gray and white calcareous material. On a few slight elevations may be found small areas of Oktibbeha clay too small to map.

The most extensive and typical area of this type is located from 2 to 3 miles northwest of Clinton, and smaller areas are found at widely separated points on the edge of, or within, the prairie section. It is usually associated with the Oktibbeha clay and ordinarily occurs at slightly lower levels.

The surface is smooth and nearly level to somewhat undulating. It has a flatwoods position and the run-off of rain water is slow. The drainage as a whole is deficient. Low places are marked by swales, and in shallow depressions around the heads of streams water often stands for several days after a rain. In these depressions crawfish chimneys are common. In dry seasons the soil tends to bake, becoming hard and intractable.

For the most part this type is not cultivated, but remains either in forest or pasture land. Perhaps 1 or 2 per cent, constituting the better drained areas in association with adjacent types, is being cultivated with fair success. The forest growth consists chiefly of hardwoods. Oaks predominate, including post oak, white oak, blackjack oak, and water oak. Other trees are sweet gum, dogwood, rosemary pine, and old-field pine.

Cotton is about the only crop grown, producing from moderate to low yields. Fairly good pasturage is produced in the form of native legumes and grasses, the important ones being lespedeza, Johnson grass, carpet grass, and broom sedge. Besides its use for pasturage, its value is often governed largely by the quality of the

forest growth. Selling prices ususally do not exceed \$8 or \$10 an acre.

For the improvement of this type, drainage of the swales and depressions should be effected by suitable open ditches. The land should be broken deeply in order to permit aeration and proper pulverization of the seed bed.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Eutaw clay:

*Mechanical analyses of Eutaw clay*

| Number | Description                   | Fine gravel     | Coarse sand     | Medium sand     | Fine sand       | Very fine sand  | Silt            | Clay            |
|--------|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|        |                               | <i>Per cent</i> |
| 416613 | Soil, 0 to 6 inches.....      | 0.9             | 3.8             | 2.0             | 12.6            | 12.5            | 50.9            | 17.2            |
| 416614 | Subsoil, 6 to 14 inches.....  | .4              | 1.8             | 1.4             | 10.2            | 11.2            | 41.4            | 33.1            |
| 416615 | Subsoil, 14 to 36 inches..... | .1              | .9              | 1.2             | 7.0             | 6.6             | 46.4            | 37.9            |

PLUMMER FINE SANDY LOAM

In wooded areas, the surface layer of Plummer fine sandy loam consists of from 1 to 4 inches of dark-gray fine sandy loam which, to a depth of 8 or 10 inches, becomes gray or pale yellowish gray in color, mottled with rusty brown. The subsoil is a gray or light-gray loamy fine sand, mottled with rusty brown and yellow. At a depth of about 18 inches, this upper subsoil layer grades into a gray, slightly sticky and heavy, fine sandy clay, mottled with rusty brown and yellow. In places the lower subsoil, 24 to 40 inches from the surface, is a sandy clay loam, mottled with bright yellow.

The only occurrence of this type within the county is a long, narrow strip just east of Clinton, extending about a mile north and 2½ miles south of that place. It occupies flat to undulating and gently sloping country. The surface is sufficiently sloping to insure surface drainage, but because of the impervious substratum lying at a depth of 3 feet or more below the surface, the type remains wet and soggy during the winter rainy season and becomes very dry during the summer. Crawfish chimneys are numerous over the type.

The Plummer fine sandy loam is of minor agricultural value, probably not more than 5 per cent of it being under cultivation. Corn and sorgo are the principal crops. The yields of corn are very low, and sorgo gives only fair returns. The best use of this type is for forestry and pasture.

CAHABA FINE SAND

The top layer of Cahaba fine sand is a grayish-brown to reddish-brown fine sand, 6 to 8 inches deep, underlain by a yellowish-brown or reddish-brown fine sand or loamy fine sand. At a depth of about 30 inches this second layer usually becomes light brown or yellowish. In several places, for example, 2½ miles west of Lock No. 5 and 2½ miles southwest of Forkland, the subsoil is loamy, and the sand particles are coarser than typical. The type includes several small areas along the river courses in which the soil material is incoherent, brown sand or fine sand, consisting of recent riverwash.

At Sipsey Mills on the Sipsey River, and about 6 miles west and northwest of West Greene, are several areas of Kalmia sand and fine sand, comprising about 800 acres, which have been included with the Cahaba fine sand. The surface soil in these areas, to a depth of about 8 inches, is a gray, brownish-gray, or brownish-yellow sand or fine sand, which in turn grades into a yellow or light brownish-yellow sand or loamy fine sand. These included areas have a slightly lower agricultural value than the Cahaba fine sand.

The surface of the Cahaba fine sand is nearly level to undulating. In places the surface is hummocky. Drainage is largely internal, both the surface soil and subsoil being very porous. Some areas of the type adjacent to the rivers are subject to overflow during high floods.

Areas of this type occur at Miller, northwest of Bluffport, and west and north of Lock No. 5 on the Black Warrior River. Agriculturally the type is unimportant, probably not more than 5 per cent of it being under cultivation. The forest growth is principally pine and scrub oak, with some hackberry, yaupon, persimmon, and dogwood.

Cotton is the principal crop grown on this type; also some corn, velvet beans, cowpeas, and peanuts. The yields of cotton are very low, ranging from about one-eighth bale to one-fifth bale per acre, depending on the character of the soil. The average yield of corn is about 5 bushels. Velvet beans, cowpeas, and peanuts do fairly well.

The soil is loose and leachy, and the fertility is difficult to maintain. Forestry, perhaps, constitutes the best use of this land. The more loamy areas may be used for growing watermelons, cantaloupes, peanuts, velvet beans, peas, and early truck crops.

#### CAHABA FINE SANDY LOAM

The surface soil of virgin Cahaba fine sandy loam, to depths of 1 to 3 inches, is a grayish-brown or brown, loamy fine sand, becoming yellowish brown or reddish brown in color. Beginning at an average depth of 10 inches, the subsoil may be a reddish-yellow, yellowish-red, or brownish-red, friable fine sandy clay, and may extend to depths of from 36 to 48 inches without change in color or structure. Below this sandy clay is a material similar in texture to a fine sandy loam.

Several areas of this type, in which the surface soil is reddish brown to almost red, occur 8 miles due south of Eutaw, and about 3 miles northeast of Bluffport. The lower portion of the subsoil in the flatter, more poorly drained areas is mottled with gray, brown, and yellow. On the map a few areas are included in which the subsoil is lighter in color than typical, being an intermediate soil between the Cahaba and the Kalmia types. Small areas of Kalmia, Leaf, and Myatt fine sandy loams are also included with this type in mapping.

The Cahaba fine sandy loam is developed on the terraces along the larger streams within the county, where it occurs in small irregular bodies. The principal areas lie in the vicinity of Forkland. The type has a nearly level to gently undulating surface, and is

very favorable to the use of improved farm machinery. Both surface and internal drainage are usually well established. A few low-lying poorly drained areas can be improved by open ditches. In a few locations, as along the river east from Brasfield Landing, areas of this type may be found on bluffs 50 feet or more above the first bottoms, and are deeply cut by numerous short streams.

Probably 85 per cent of the Cahaba fine sandy loam is cleared and was formerly cultivated. The soil is excellent for cotton and is used principally for that crop. Many fields have been planted to cotton almost continually since the lands were cleared in the early settlement of the county, with a consequent deterioration of the soil and a lowering of the yields. The present average yield is about one-fifth bale. Some of the better farmers obtain one-half bale per acre in good seasons. Corn yields from 10 to 30 bushels, with a probable average of 15 bushels. Corn is not generally fertilized, although a few farmers apply about 100 pounds of nitrate of soda when corn is about knee-high, with good results. Velvet beans are generally planted in the corn, or cowpeas are sown between the rows at the last cultivation, and yields are very good. Cowpeas sown broadcast produce from three-fourths to 1½ tons of hay per acre. Sugar cane does well on this soil. The yields are about the same as are produced on the Kalmia fine sandy loam, but the quality of the sirup is not quite the same. The yield of peanuts ranges from 40 to 60 bushels per acre. The soil is well suited to this crop. Sweet potatoes produce from 50 to 150 bushels per acre. Yields could probably be doubled by applications of from 400 to 600 pounds of a 9-4-3 fertilizer mixture. This is a good soil for peaches and pecans; it is also excellent for vegetables and truck crops, but these are not produced on a commercial scale.

The Cahaba fine sandy loam is sufficiently open and loose to permit good aeration. It responds readily to good cultivation, to additions of organic matter in the form of barnyard manure or green-manure crops, and to applications of commercial fertilizer.

Land of the Cahaba fine sandy loam sells at prices ranging from \$10 to \$25 an acre.

*Cahaba fine sandy loam, low phase.*—The areas of Cahaba fine sandy loam, low phase, were separated principally on the basis of differences in topography and drainage. This phase occupies a lower elevation than the main type and is subject to occasional overflow by high waters from the rivers.

The surface soil and subsoil have practically the same general colors as the main type, excepting the mottlings of gray and rusty brown in the surface soil, and gray, yellow, and reddish brown in the subsoil. On some slight knolls only the lower portion of the subsoil is mottled. The phase as mapped includes numerous patches of Kalmia and Leaf fine sandy loams, and it is dissected by many very narrow and shallow sloughlike branches in which the soil is a mottled gray and rusty-brown fine sandy loam, underlain by a mottled, slightly sticky, fine sandy clay of a light grayish-yellow color.

This low phase occurs in small isolated bodies on the low terraces of the Tombigbee and Black Warrior Rivers. The surface is flat to very gently undulating, and the drainage is generally poor.

Corn is the principal cultivated crop on this phase, the yield being about the same as on the main type. Cotton is planted in small fields, but the yields are low and unprofitable, on account of lateness in maturing and damage from boll weevil. Sorgo and sugar cane give fair yields. The native grasses do well and furnish good summer grazing. Under present conditions this phase could probably be most profitably used for grazing. About 50 per cent of the phase is in forest consisting of shortleaf pine, oaks, and other hardwoods. Land of this kind sells at prices ranging from \$8 to \$15 an acre.

#### CAHABA CLAY LOAM

The surface soil of the Cahaba clay loam, to an average depth of about 6 inches, is a brown to light reddish-brown clay loam, or silty clay loam. The subsoil, to a depth of about 18 inches, is a brown to reddish-brown heavy clay loam, below which is a brownish-red, dull-red, or yellowish-red, moderately friable clay or silty clay. In places, as east of Green Oak Church, there is a surface covering of an inch or two of grayish-brown to dark-brown fine sand. In the lower and more poorly drained situations mottlings of rusty brown are generally present in the soil, and gray and yellow mottlings in the subsoil. In a few places the upper subsoil is a heavy clay loam grading into a brown or yellowish-brown fine sandy clay at a depth of about 18 or 20 inches. The presence, in places, of considerable finely divided mica flakes in both soil and subsoil, increases the friability of the soil.

Included in mapped areas of Cahaba clay loam are small patches of Leaf clay loam, spots of Myatt clay loam and flats of Kalmia soil.

The Cahaba clay loam is developed on rather low terraces on the Tombigbee and Black Warrior Rivers. The largest areas are found in the forks of these rivers, north of lock No. 8, west of lock No. 6, and west of Jennings Ferry on Black Warrior River, and south of the Alabama Great Southern Railroad on the Tombigbee River.

The topography is nearly level to very gently undulating. In some places are low flat ridges cut by narrow, shallow swales. The drainage ranges from fairly good on the ridges to poor on the flat areas. The soil generally is sufficiently well drained for corn, cane, and grasses, but needs better drainage for cotton. The soil is locally called "thirsty land," because crops suffer for want of moisture during the summer or in dry seasons. Although this type occupies second-bottom positions it is subject to overflow during times of flood.

Although the Cahaba clay loam totals a rather large acreage, it is undeveloped and at present unimportant agriculturally, probably not more than 10 per cent being cleared and under cultivation. The greater part of it is held in large tracts by lumber companies. The principal forest growth consists of shortleaf pine, beech, sweet gum, black gum, post oak, water oak, willow oak, live oak, red oak, black oak, hickory, maple, and dogwood, with an undergrowth of briars, switch cane, and other shrubs. Most of the merchantable timber has been cut. In cleared areas sedge grass, carpet grass, lespedeza, Bermuda grass, and Johnson grass furnish excellent summer grazing.

Corn is the principal crop and produces from 15 to 30 bushels per acre without fertilizer. The native grasses yield from 1 to 2 tons of hay per acre. Velvet beans produce from one-fourth to three-fourths ton per acre when planted in the drill with corn. On account of the imperfect drainage and low position of the soil the yields of cotton are uncertain under boll-weevil conditions. The average yield is about one-fifth bale per acre. One-half bale or better is obtained in favorable seasons on the better drained areas. The higher areas of this soil would be excellent for growing pecans on a commercial scale.

At present the Cahaba clay loam is valued chiefly for its timber, and it sells at an average price of \$10 an acre.

This soil, if cleared and seeded to clovers, Bermuda and other grasses, would give good grazing for cattle practically 12 months in the year. It is higher in humus content than the Kalmia soils or the other members of the Cahaba series. With better drainage and deeper plowing the yields of all field crops could be considerably increased.

#### KALMIA FINE SANDY LOAM

The surface soil of the Kalmia fine sandy loam in virgin or old-field areas is a grayish-brown to light-brown loamy fine sand, 2 to 4 inches deep. Below this top layer is a pale-yellow loamy sand which extends to depths of from 14 to 18 inches. The subsoil, to depths of from 40 to 60 inches, is a yellow sandy clay of a crummy structure. Below this subsoil is a friable sandy clay, which is mottled with purplish red, or brown, yellow and whitish colors, and contains a few soft iron accretions. Where cultivated, the top layer has been mixed with some of the second layer, producing a light-gray color. In places, as on Trussells Creek, south of Mount Hebron, the surface of cultivated fields assumes a brownish appearance.

The Kalmia fine sandy loam is one of the more extensive terrace soils in the county. It occurs on the second bottoms of the Tombigbee and Black Warrior Rivers and along some of the larger tributaries. Areas of the typical soil are not subject to overflow, but the areas mapped as the low phase are subject to occasional inundations during times of very high water. The largest bodies of the Kalmia fine sandy loam are east, south, and west of Forkland in the southern part of the county.

The surface of the type areas varies from nearly level to gently sloping and undulating, and is favorable to the use of improved farm machinery. The drainage is good on the higher knolls and fair on the flatter areas. The areas are cut by low narrow swales which usually run parallel to the stream channels. These swales have poor drainage, but they can be easily drained by open ditches. The soils in these swales are usually indicated as Meadow and Myatt fine sandy loam.

About 70 per cent of the Kalmia fine sandy loam is cleared, and the remainder supports a growth of shortleaf pine, gums, oaks, and a few other hardwoods. Cotton and corn are the principal crops, followed by velvet beans, cowpeas, peanuts, sugar cane, and sweet potatoes grown for home use. Cotton averages about one-fourth or

one-third bale per acre, but continuous planting to that crop, together with the damage by the boll weevil, has reduced the yield considerably. The yield of corn ranges from 6 to 15 bushels, with an average of about 8 bushels per acre. Velvet beans and cowpeas are generally planted in the corn and give good yields. Peanuts do best on the better drained areas, and produce from 30 to 60 bushels per acre. Sugar cane produces from 100 to 200 gallons of sirup per acre of an excellent flavor and a uniform bright color. In some counties in southern Alabama sirup is produced on a commercial scale on this type. Sweet potatoes, garden vegetables, and fruits do well, and this soil is used extensively for trucking in other sections of the State. It is well suited to tomatoes, potatoes, cabbage, collards, beets, onions, strawberries, blackberries, cucumbers, cantaloupes, and watermelons. Very little of this soil in this county is so situated as to be conveniently used for trucking under present conditions; hence it is used exclusively for general farm crops.

Bermuda grass, crab grass, Johnson grass, carpet grass, lespedeza, and other grasses furnish good grazing on this soil, and dairying should prove profitable in connection with general farming.

Land of the Kalmia fine sandy loam sells at prices ranging from \$8 to \$15 an acre, depending on location and improvements.

The Kalmia fine sandy loam is a good general-purpose soil, since it is retentive of moisture, easy to handle, and responds readily to fertilization. Crop yields could be considerably increased by growing crops in rotation with legumes and by growing and turning under winter cover crops. At present cotton is about the only crop fertilized, the fertilizer used being light applications of low-analysis mixtures. Fertilizers richer in phosphorus would very probably give higher returns. Corn responds readily to an application of from 100 to 200 pounds of nitrate of soda, applied when the stalks are about 2 feet high.

*Kalmia fine sandy loam, low phase.*—The separation of the low phase of the Kalmia fine sandy loam is based mainly on drainage, these areas being subject to occasional overflows by flood waters from the Tombigbee and Black Warrior Rivers.

The surface soil, to a depth of 6 inches, is a gray fine sandy loam, mottled with yellow and brown. This grades downward into a pale-yellow fine sandy loam or loamy fine sand mottled with gray and yellow. Underlying this second layer, beginning at a depth of about 15 inches, is a subsoil consisting of a yellow, friable fine sandy clay, mottled with gray, yellow, and brown, the gray usually predominating in the lower part. On the map this low phase includes small areas on low ridges in which the soil and subsoil, because of better drainage, are typical of the main type. It also includes numerous patches of Myatt fine sandy loam and Leaf fine sandy loam too small to indicate on the soil map. These areas are cut by many very narrow, sloughlike waterways in which the soils range from the very light gray of the Bibb series to those of the Myatt.

This low phase, like the main type, is developed principally on the river terraces, the largest bodies occurring in the southern part of Dollar Hide Swamp and in the extreme southeastern part of the county. The surface is nearly flat to very gently undulating. Drain-

age is fairly good on the slight elevations and poor in the swales and on the flat areas.

Probably not more than 20 per cent of this phase is under cultivation, the remainder being forested with various hardwoods and some short-leaf pine. The production of cotton on this phase is unprofitable, owing to poor drainage and destruction by the boll weevil. Corn, sugar cane, and sorgo do well, the yields being about as good as on the main type. Grasses grown on the typical soil do well on this phase. Other crops are of minor importance. The main needs of the low phase of Kalmia fine sandy loam are drainage, deeper plowing, and the addition of large quantities of vegetable matter high in nitrogen.

#### LEAF FINE SANDY LOAM

The surface soil of the Leaf fine sandy loam, to a depth of 6 or 8 inches, consists of gray to brownish-gray fine sandy loam. The color varies according to the content of organic matter. The subsurface, to a depth of about 15 or 18 inches, is a yellowish-gray to yellow, silty clay loam, mottled with pale yellow and rusty brown. These two surface layers are underlain by a compact and moderately plastic, gray clay (subsoil), mottled with blue, red, and reddish brown. On the better drained areas red is the dominant color in the lower subsoil and yellow in the upper subsoil. In the subsoils of poorly drained bodies a bluish-gray color predominates. On areas affected by the materials washed from the prairie soils, both soil and subsoil are heavier than typical.

Bordering Trussells Creek, in many places on the Tombigbee River, and on low ridges the areas of this type have better drainage and are more productive than the average. The surface soil in such places, to a depth of 6 inches, is a yellow fine sandy loam, grading into a reddish loamy fine sand. At a depth of about 10 inches this loamy fine sand is underlain by a layer of reddish-yellow clay loam, which in turn, is underlain by a sticky, plastic clay, mottled with red, yellow and gray.

Patches of Cahaba fine sandy loam and of Myatt fine sandy loam, together with narrow shallow swales of Myatt and Bibb soils, are included in mapped areas of Leaf fine sandy loam.

The topography varies from nearly level to undulating. The type occupies second bottoms along the principal streams. The fact that along the larger streams and river bottoms this type occupies higher positions than on the smaller streams of the county, accounts for the greater agricultural importance of this soil in areas along Trussells and Brush Creeks and the Tombigbee River.

Natural drainage is usually deficient, especially along small, sluggish streams and along the foot of heavy-soil hills, where seepage occurs. Bordering the prairie lands north of Boligee and near Mount Hebron the drainage is poor. Here the seepage from the hills keeps the soil very wet. Along some of the smaller streams fairly good drainage has been effected by straightening and deepening the stream channels and by constructing lateral ditches. Although most of this soil lies well above overflow, some low-lying areas are occasionally flooded by high water from the rivers.

The Leaf fine sandy loam is a moderately extensive terrace soil. About 10 per cent of it is cultivated, some cleared areas are in pasture, and the remainder is in forest. The vegetation on this soil varies. In places where surface drainage is poor but overflows seldom occur, thin, mixed forest growths are found, having dense undergrowths of blackberry vines, smilax, dewberries, and wild grapes. On areas of abundant merchantable pine the undergrowth is sparse. When the pine is cut the ground soon becomes covered with an abundant growth of Japan clover, carpet grass, and sedges. If unmolested for some time, old-field pine invades the areas, together with a mixed growth of sweet gum and oak. If a cut-over area is fairly dry, the old-field pine will in time dominate; but if the soil remains in a wet condition and the invading trees and shrubs are kept down, good pasture for livestock can be maintained.

Cotton and corn are the principal crops. Corn is grown on the wetter areas, and yields from 8 to 20 bushels per acre. Cotton is usually planted on the higher and better drained areas, and yields vary from one-eighth to one-fourth bale per acre. Sugar cane and sorgo do fairly well on this type, and are usually planted in the more poorly drained fields. The yields of sirup range from 75 to 250 gallons per acre. Cowpeas do fairly well and produce about 1 ton of hay per acre. Velvet beans are planted in the corn and yield about one-half ton of beans per acre. Sweet potatoes and garden truck do fairly well on the better drained parts, but are grown only for home use.

Land of this type sells at prices ranging from \$8 to \$15 an acre, depending on the character of timber, the location, and improvements.

*Leaf fine sandy loam, low phase.*—The Leaf fine sandy loam, low phase, differs from the main type in that it occupies the low terraces which lie only a few feet above the first bottoms and considerably lower than the high terraces. There is more mottling in the soil and subsoil than in the typical soil, and the grayish or drab colors seem to predominate. The surface is flat and almost level, with here and there slight depressions or sloughs. The natural surface drainage is poor, and all of the phase is subject to overflow. Water stands on the surface for a considerable time after rains. Practically none of this phase is under cultivation, most of it being forested to oak, hickory, holly, magnolia, pines, and gums. The phase is best suited to forestry or pasture. Lespedeza and carpet grass grow well in pastures.

#### LEAF CLAY

The surface soil of the Leaf clay consists of about 4 to 6 inches of a grayish-brown or yellowish-brown, heavy clay loam or clay. The subsoil begins as a pale-yellow or yellow clay, mottled with gray, which gradually becomes heavier and, at a depth of about 16 or 20 inches, becomes a plastic clay, mottled with gray, yellow, and red.

In places, the surface soil, 2 to 4 inches deep, may consist of loamy fine sand, silt loam, or heavy clay. In the more poorly drained situations, the topsoil is a gray clay or silty clay, mottled with rusty brown; and the subsoil is a mottled yellow and gray, plastic clay, the yellow color being most conspicuous to a depth of

about 18 inches, where gray predominates. Small, gray to brownish concretions are usually scattered over the surface, and to a less extent, are present in the soil and subsoil.

The Leaf clay occurs principally in the western part of the county, the most important bodies being found in Boligee Creek Swamp, north of Bluffport, and west of West Greene. Another large body occurs near Evening Star Church, in the extreme southeastern part. Although some areas lie well above overflow, most of the type is subject to inundation by flood waters from the rivers and large creeks. It occupies flat to gently undulating country. Because of the prevailingly flat surface and the impervious nature of the lower subsoil, both surface and internal drainage are poor. After heavy rains the surface of flat areas may be covered with water for considerable periods; an example of this is the semiswampy area bordering Boligee Creek on the north.

The Leaf clay is not important agriculturally, since only about 5 per cent of it is farmed. Formerly a larger area was cultivated, but because of scarcity of labor and the uncertainty of cotton production under boll-weevil conditions many fields are lying idle, or are used for pasturage. Carpet grass, lespedeza, and broom sedge are the principal grasses. The tree growth on this type is practically the same as on the Leaf fine sandy loam.

Corn is the principal crop on this soil. A small acreage is planted to cotton, generally by tenant farmers. Corn yields from 6 to 15 bushels per acre, with a possible average of 8 bushels; and cotton yields range from a failure to about one-fifth bale per acre. Cotton is generally planted on the better drained areas.

At present land of the Leaf clay loam is valued chiefly for the commercial timber it produces, and sells at prices ranging from \$5 to \$15 an acre.

This soil should be used for pasturage or devoted to forestry. It now supports a heavy growth of oak, gums, pines, and other trees common to the lowlands of the county.

#### BELL CLAY

The surface 6 to 8 inches of the Bell clay is a clay varying in color from dark brown or dark gray to almost black. The subsoil is a gray to pale-yellow, sticky, plastic clay, mottled with yellow. At varying depths of from 15 to 18 inches this clay changes in color to a drab or is mottled with bluish gray, yellow, and brown. The soil is sticky when wet, but is crumbly and fairly friable when dry, breaking down into rather coarse granules. The soil is generally calcareous, especially along the smaller stream heads and adjacent to the Sumter areas of the uplands, whereas the lower subsoil is nearly everywhere acid. In the more poorly drained situations the soil is lighter in color and is mottled with rusty brown, and the subsoil changes abruptly to a plastic clay, mottled with gray, rusty brown, and yellow.

In some places the topsoil of this type is a loam which varies in color from pale yellow to reddish brown, being determined by the proportion of material contributed by the Sumter and Oktibbeha

soils, respectively. Layers of fine sand from 1 to 6 inches thick are found in the subsoil in places.

The Bell clay occurs along the branch heads and small streams heading in or flowing through the prairie soils, and represents transported material that has been washed down from the Sumter and Oktibbeha soils. The type occupies rather small areas, the largest being found west of Watsonia, about 3 miles south of Boligee, along Taylor Creek, and east of that stream. Though the Bell clay lies above normal overflow of the streams, it constantly receives thin sheets of water from the adjacent upland slopes. The surface is flat to gently sloping. The surface drainage is fairly good on the gentle slopes and poor on the flat areas, the heavy clay subsoil retarding internal drainage.

About 80 per cent of the Bell clay is cleared and under cultivation, and the remainder is in pasture or supports the same character of growth found on the Catalpa clay. Formerly cotton was extensively grown, but under boll-weevil conditions corn and Johnson grass hay are the most important crops. A small acreage is planted to oats and sorgo. Yields of corn range from 20 to 60 bushels, with an average of about 40 bushels per acre. Three cuttings of Johnson grass are usually obtained, the total yield ranging from 1½ to 3 tons per acre. Before the arrival of the boll weevil cotton produced one-half to 1 bale per acre, but the crop does not mature early enough under present conditions and the yield is generally small and uncertain. Sorgo produces from 100 to 200 gallons of sirup per acre. Oats yield from 40 to 60 bushels per acre.

Small areas of the Bell clay are used for pasture. It supports a good growth of mixed grasses, including Bermuda grass, Johnson grass, carpet grass, dallis grass (large water grass), together with numerous clovers that have spread over this section of the country. The Bell clay is one of the best grain and grass soils in the county and gives good returns of these crops without fertilizers. It is also well suited to alfalfa when properly drained. On one field of this soil, tile drained, alfalfa has yielded from 3 to 4 tons per acre yearly for about seven years, and the stand is still good.

Land of the Bell clay ranges in selling value from \$30 to \$60 an acre.

More thorough preparation of the seed bed is needed on the Bell clay. Better drainage can be effected by open ditches constructed so as to catch surface waters.

#### MYATT FINE SANDY LOAM

The surface soil of the Myatt fine sandy loam may consist of 6 to 8 inches of gray fine sand or fine sandy loam, mottled with rusty brown, below which may be found about 18 or 20 inches of pale yellowish-gray fine sandy loam or loamy fine sand, mottled with yellow and gray. This second layer grades into a mottled gray and yellow, lumpy, and slightly sticky, sandy clay which, at depths of from 24 to 30 inches, grades into a sticky, impervious clay.

The Myatt fine sandy loam is developed upon the terraces along Tombigbee and Black Warrior Rivers. It occurs in comparatively

small isolated areas, the largest bodies being in Dollar Hide Swamp,  $2\frac{1}{2}$  miles south of Mount Hebron, and about 2 miles northwest of Allison.

The type occupies swales and nearly level areas, lying from 2 to 10 feet or more below the level of the surrounding Kalmia and Cahaba soils. The run-off is slow on account of its nearly level topography, and the surface is usually covered with a thin sheet of water during rainy seasons. During the summer, however, the soil becomes dry. The lower subsoil is generally impervious, and consequently the downward movement of water is very slow.

The Myatt fine sandy loam has no agricultural importance in the county. With the exception of a few small patches occurring in fields of other types, none of the type is cultivated. Some of it is used for pasture, but the greater part is in forest consisting principally of sweet gum, black gum, water oak, willow oak, some red, black, and post oaks, and loblolly pine. Under natural conditions its most profitable use is limited to forestry and pasture.

#### MYATT SILTY CLAY LOAM

The surface soil of the Myatt silty clay loam consists of about 4 inches of gray silt loam or silty clay loam, mottled with rusty brown. The subsoil begins as a mottled gray and yellow silty clay loam which, at a depth of 18 or 20 inches, grades into a rather sticky, silty clay or clay. In places the soil is a clay or heavy silty clay; and in other places it contains a higher content of fine sand, and is a loam or clay loam.

The Myatt silty clay loam occurs in swales or sloughs that dissect the terrace soils along the Tombigbee and Black Warrior Rivers. The most important areas are about 1 mile south of Birdseye Church, 5 miles south and 4 miles southwest of Boligee, and 3 miles east of Bluffport. Surface drainage is very slow and the nearly impervious substratum retards internal drainage. Although a terrace soil, its position is so low that it is subject to overflow during high waters of the rivers. The surface is generally covered with a thin sheet of water during wet seasons, but the sloughs dry up in summer.

The Myatt silty clay loam is all in forest, the tree growth being similar to that upon the fine sandy loam type. It should remain in forest or be used for grazing.

#### OCHLOCKONEE FINE SANDY LOAM

The surface soil of the Ochlockonee fine sandy loam is a grayish-brown, brown, or brownish-yellow fine sandy loam 6 to 10 inches deep. The subsoil is a grayish-brown or yellowish-brown fine sandy clay loam or friable fine sandy clay, mottled with yellow and rusty brown, the mottling being most conspicuous in the more poorly drained areas. In many places where the drainage is poor the soil is mottled with rusty brown, and the subsoil is a pale-yellow or grayish-yellow fine sandy clay, mottled with gray, yellow, and rusty brown. The color and texture of both soil and subsoil vary widely, owing to differences in drainage and sedimentation during periods

of overflow. Where affected by wash from the limy soils, the soil is slightly sticky and the subsoil is heavier than typical.

This type, as mapped, includes patches of Kalmia, Cahaba, Leaf, and Myatt soils, too small to indicate. These lie at elevations slightly higher than the Ochlockonee fine sandy loam, yet are subject to overflow. Along several small streams which flow through areas of Luverne and Susquehanna soils, strips of Hannahatchie fine sandy loam are also included. On these strips the soil is a reddish-brown fine sandy loam, mottled with rusty brown, and is underlain, at depths of from 10 to 15 inches, by a mottled gray, rusty-brown and yellow fine sandy clay. Such strips may be found along the stream 2 miles southeast of Clinton.

The Ochlockonee fine sandy loam occurs principally along the Black Warrior River and the tributary streams of the county, and in a few small scattered bodies along the Tombigbee River. The most important areas are at Lock No. 5 and near Stevenson Bluff on the Black Warrior River. The natural surface drainage is generally poor, but the movement of water through the soil is fairly good. The type is subject to overflow. Along the inland streams the run-off is rapid, but along the rivers the soil may be covered with water for several days during seasons of heavy rains.

The total area of Ochlockonee fine sandy loam is small. About 20 per cent of the type is cleared and under cultivation, and the remainder is in forest and pasture, the forest growth being practically the same as on the clay loam type. This soil is easier to handle than the clay loam, and warms up earlier in the spring. It is an excellent soil for corn, sugar cane, sorgo, velvet beans, cowpeas, and hay crops. Corn produces from 20 to 40 bushels to the acre. Velvet beans are planted in the drill with the corn, and yield from one-half to one ton per acre. Sugar cane yields from 100 to 250 gallons of sirup; and sorgo, from 50 to 75 gallons per acre. Cotton formerly gave good returns, but since the arrival of the boll weevil the yields are uncertain and generally unprofitable. No commercial fertilizers are used on this soil.

Land of the Ochlockonee fine sandy loam sells for \$8 to \$15 an acre, the price varying with the quality of the standing timber.

#### OCHLOCKONEE CLAY LOAM

The surface soil of the Ochlockonee clay loam, to depths of from 6 to 8 inches, is a brown to dark-brown or yellowish-brown, moderately heavy clay loam, sticky when wet but crumbly when dry. The subsoil is a brown or yellowish-brown clay loam or clay, grading at about 18 inches into a light-brown clay, mottled with gray, yellow, and in places light red. In the more poorly drained situations the soil is mottled with rusty brown, and the subsoil is a grayish-brown clay, mottled with gray, yellow, and rusty brown. In places lenses of fine sand are encountered at varying depths in the subsoil.

The type includes many textural variations. In places the top layer may be a loam and in others, a heavy clay. A rather large area of clay is found in the forks of the Tombigbee and Black Warrior Rivers and another in the bend of the Tombigbee River 4 miles

north of the forks. Some small areas are found along the course of the latter river farther north. On these areas it would seem that the type has been affected by material brought from the prairie country, since the soil approaches the Catalpa clay. Mapped areas of this type include small patches of Ochlockonee silty clay loam and fine sandy loam. They also include small bodies of Cahaba clay loam, Leaf clay loam, and Myatt clay loam, of such small extent and in such inaccessible locations that it was impracticable to make separations. Although these bodies lie at slightly higher elevations than the Ochlockonee soil, they are subject to inundation during high waters from the rivers.

The Ochlockonee clay loam is an alluvial soil developed on the first bottoms along the streams, and is subject to overflow. It occurs as irregular strips, ranging in width from about one-fourth mile to 2 miles or more in places, along the Tombigbee and Black Warrior Rivers, and along most of the larger creeks within the county. The largest areas are in Dollar Hide Swamp and along the Tombigbee River in the southern part of the county.

The surface of the type is nearly level to billowy. It is dissected by numerous sloughs and old stream channels which fill with water during the rainy season and usually dry up during the summer. Although the type is subject to destructive overflow, it is comparatively dry throughout the summer and fall, when overflows do not ordinarily occur. At each overflow silty and clayey material is deposited over the surface. In low depressed areas the soil is swampy or semiswampy throughout the year.

The Ochlockonee clay loam is naturally one of the most productive soils in the county, but it has little agricultural importance when undrained. Probably not more than 1 per cent of the type is cultivated, only in patches. It is forested largely with a heavy growth of hardwoods, including oaks, hickory, birch, elm, ash, ironwood, beech, maple, sycamore, sweet gum, cypress, and tupelo, with an undergrowth of briars and switch cane.

Corn is practically the only crop grown. The yields are generally large, ranging from 30 to 60 bushels per acre; but since a crop sometimes fails to mature or is destroyed by overflow, the yields are uncertain. Velvet beans are sometimes planted with the corn, and produce from one-half to 1 ton per acre. Fields in Johnson grass produce from 2 to 3 tons of hay per acre. Some cleared areas used for pasture furnish good grazing, the principal grasses being Bermuda grass, Johnson grass, water grass, and Lespedeza.

The Ochlockonee clay loam is valued chiefly for the stand of merchantable timber, the prices ranging from \$10 to \$20 an acre.

If this type were protected by levees from destructive overflow, it would prove a highly productive and important soil. In its natural condition it could be cleared and used for pasture and hay crops. Some cows and hogs are pastured on the forested areas.

#### CATALPA CLAY

The surface soil of the Catalpa clay, from 6 to 8 inches deep, is a dark-gray to brownish-gray clay, usually mottled with rusty brown. The subsoil is a gray or mottled drab and brown, plastic clay which

becomes mottled with gray, yellow, and brown below depths of from 15 to 18 inches. The surface soil contains some lime nodules and is calcareous, except in the semiswampy areas; but the deep subsoil is generally decidedly acid. The soil is sticky and plastic when wet, but crumbly when dry. It contains considerable organic matter and is very retentive of moisture. If plowed too wet, it clods badly and the cloddy structure remains throughout the season; but if handled at the proper moisture stage, it has a coarse, granular structure which is not destroyed by rains.

On the map, patches of Trinity clay are included in this type, as on Wilkes Creek and on some of the small branches south of Eutaw. Trinity clay is dark brown to black in color.

The most important areas of the Catalpa clay are along Wilkes, Taylor, and Needham Creeks. The type occurs on first bottoms along streams that head in or flow through limestone soils, being derived principally from material washed from the Sumter soils. The surface is predominantly flat, with abandoned stream channels and swales in places. The type is subject to overflow. The drainage is poor, owing to the flat surface and the impervious nature of the soil and subsoil. In a few areas, as on Boligee Creek Swamp between Boligee and Allison, the surface is covered with thin sheets of water during rainy seasons, and is semiswampy. Plowing and seeding are sometimes delayed by spring overflows, and cultivation may be retarded during summer by heavy rains.

About 40 per cent of the Catalpa clay is cleared and under cultivation, the remainder is in pasture or forests consisting of sweet gum, ash, hackberry, willow, post oak, white oak, hickory, elm, ironwood, red oak, locust, and some other hardwoods with an undergrowth of palmetto, briers, and other shrubs. Pasture lands support a prolific growth of native grasses and clovers.

Corn and Johnson grass hay are the principal crops. Cotton was formerly one of the leading crops, but at present its acreage on Catalpa clay is small. Corn yields from 20 to 60 bushels, with an average of about 30 bushels; and Johnson grass produces from 1½ to 3 tons of hay per acre. Since the advent of the boll weevil the yield of cotton is very uncertain, ranging from a failure to one-half bale per acre in good seasons. Where not damaged by overflows, oats produce from 30 to 50 bushels. Velvet beans are interplanted with corn and yield from one-half to three-fourths ton of beans. Cowpeas yield from 1 to 1½ tons of hay, and sorgo yields from 100 to 200 gallons of sirup per acre.

The Catalpa clay is generally sold with the adjoining lands; but when sold alone, the prices range from \$30 to \$75 an acre.

Productivity on this type can be considerably improved by adequate drainage, deep plowing, and thorough preparation of the seed bed. Catalpa clay is well adapted to grain and hay crops, and is suited to alfalfa when tile drained and protected from overflows.

#### MEADOW

Meadow includes material on the first bottoms, which is variable in color, texture and structure. This deposited material ranges from light gray and reddish to dark colors; and in texture, from sand or

fine sand to clay loam or clay. In many places it is more or less stratified with alternating layers of fine sand, fine sandy loam, and clay loam.

Meadow has a general distribution throughout the sandy upland in the northern part of the county, and it also occurs along some of the small streams on the terraces. It occupies long narrow strips along the streams and creeks, and represents material recently washed from the surrounding uplands and deposited along these streams at times of heavy rainfall. It is subject to frequent overflows, as much of it lies only a few feet above the normal water level of the streams.

Very little of the Meadow is cleared and used for crop production. Corn, sugar cane, and sorgo are the principal crops, and fairly good yields are obtained. Meadow is used mainly for pasturage for cattle and hogs. Carpet grass, dallis grass (large water grass) Bermuda grass, Lespedeza, and crab grass are the principal grasses. The principal tree growth is sweet gum, and some oaks and old-field pine.

Much of the Meadow could be drained and reclaimed for farming by straightening and deepening the stream channels, by cutting lateral ditches, and ditches at the base of the hills to take care of the seepage waters. It is best suited for the production of grasses, and for forestry.

#### SUMMARY

Greene County is situated in west-central Alabama. It lies between the Tombigbee and Black Warrior Rivers, and the Sipsey River forms part of its northern boundary. The county has an area of 645 square miles, or 412,800 acres.

The elevations range from about 100 to 400 feet above sea level. The surface features are flat, as on stream bottoms and terraces; undulating, as over the prairies; and gently rolling to hilly in the northern half of the county.

The county is drained by the Tombigbee and Black Warrior Rivers and their tributaries. Drainage is good on the uplands and poor on the stream bottoms.

Greene County had a population in 1920 of 18,133, all of which was classed as rural. Eutaw, with a population of 1,359, is the county seat and largest town.

The Alabama Great Southern Railroad crosses the county in a northeast-southwest direction, and, in addition to the Black Warrior River, furnishes the transportation facilities.

Climatic conditions favor a highly diversified agriculture. The winters are short and mild and the summers long and moderately hot. The rainfall is well distributed throughout the year, the highest average precipitation occurring during the late winter months, and the lowest occurring during the fall months.

At present much less than half of the area of the county is under cultivation. The agriculture consists mainly of general farming. Cotton, corn, and hay are the principal crops. Cattle raising is carried on to some extent in the prairie section. The farm products, except cotton and some hay, are mainly used within the county. Mobile, Tuscaloosa, and Birmingham are the principal outside markets.

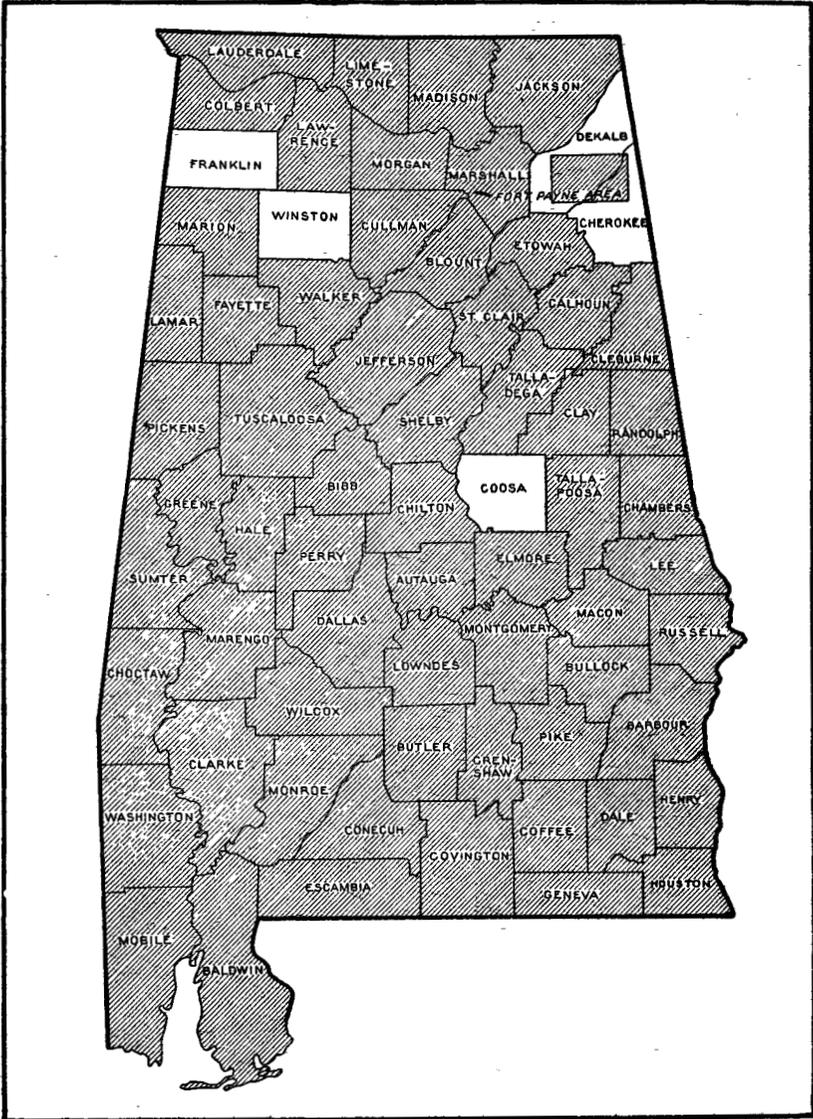
There are two main groups of soils in the uplands of Greene County. To the west and south of Eutaw are the prairies or limestone lands, classed as Sumter, Oktibbeha, and Eutaw series. These soils are especially adapted to alfalfa, Johnson grass, melilotus, and other grasses and clovers. They represent the best hay and pasture lands of the county.

Most of the rolling uplands have light, sandy surface soils and reddish-yellow to red subsoils, including the Ruston, Greenville, and Luverne series. These are the cotton lands and trucking and fruit soils of the region. The Susquehanna soils are best suited for forestry.

On the broad terraces or second bottoms are soils similar in their characteristics to the sandy uplands, and are used for the same crops. The calcareous soils, on the first and second bottoms, along the streams flowing out of or through the Sumter soils are suited to grasses and corn, and they constitute some of the most productive lands of the county.

The soils of Greene County compare favorably with those in other parts of the Coastal Plain region of Alabama. They are selling at comparatively low prices, and they offer inducements to prospective farmers of moderate means.





Areas surveyed in Alabama, shown by shading

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