

## SOIL SURVEY OF BIBB COUNTY, ALABAMA.

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### DESCRIPTION OF THE AREA.

Bibb County is situated slightly west of the geographical center of the State of Alabama. It is roughly triangular in shape, the southern boundary, which is about 25 miles in length, forming the base. From this line to the extreme northern end is a distance of about 28 miles.

The county is bounded on the northwest by Tuscaloosa County, on the west by Hale County, and on the south by Perry and Chilton, the latter also forming most of the eastern boundary. Jefferson and Shelby counties lie to the north and northeast, respectively. The area of the county is 403,200 acres, or about 630 square miles. The average elevation is about 500 feet.

The parallel 33° north latitude passes a little north of the middle of the county, and meridian 87° west longitude intersects this line near Six Mile.

The surface of most of the county is hilly, and in places decidedly broken. The whole area may be considered an elevated plain deeply trenched by a drainage system cut to an extreme depth of 200 feet or more below the original surface. The hills thus left in relief vary in character with the nature of the material composing them. In the northeastern townships the ridges of Coal Measure sandstones present some very broken areas along the streams, but in general their slopes have rather moderate gradients. Along the southeastern

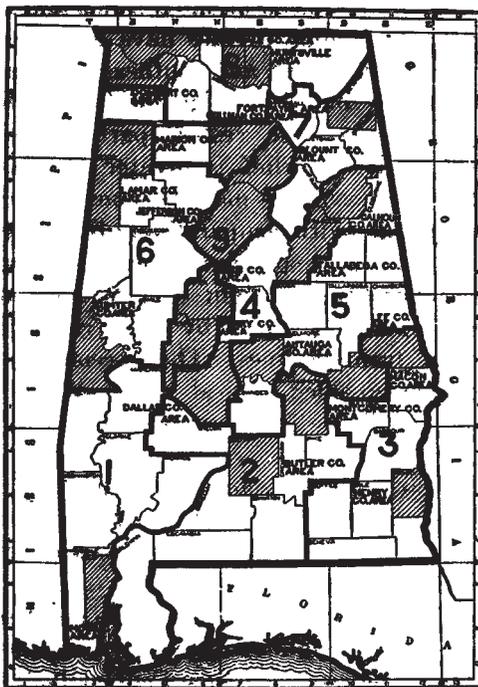


Fig. 16.—Sketch map showing the location of the Bibb County area, Alabama.

border of the Coal Measure sandstones there are outcrops of the Trenton limestone and the associated highly siliceous rocks, evidently representatives of the Knox dolomite. They have a general northeast-southwest strike, giving rise to some very broken areas along the Cahaba and Little Cahaba rivers.

The remainder of the county presents quite a variety of topographic forms. While the uplands between the larger creeks are hilly, a considerable portion of their surface is available for agricultural purposes. Undulating to gently rolling areas varying from a few hundred to a thousand or more acres may be found on most of the interstream divides. The roughest parts of the upland areas are the gravel and ironstone capped ridges. This stony covering protects the unconsolidated sands and clays with the result that narrow, steep-sided divides have been formed. This kind of topography is found east and southeast of Centerville, particularly between the south county line and the Cahaba River.

In the extreme western part of the county similar features prevail, but the relief is greater, at least more sharply accentuated. The rocky surface material consists chiefly of broken, iron-cemented sandstones with comparatively little crystalline gravel. A view from any commanding point shows a succession of pine-clad hills varying considerably in height. From the central divides shorter trenches and spurs separated by deep ravinelike valleys slope toward the main drainage lines. These secondary ridges are frequently broken into steep-sided conical hills. Where the latter are superimposed upon a divide or of unusual size, they rise in clear relief above the general level.

Nearly all the county is drained by the Cahaba River. A limited area in the western part is tributary to the Warrior River, and a few square miles of the eastern portion drain into Mulberry Creek, a branch of the Alabama River.

The Cahaba River enters the northeastern part of the county and after following a southeast course crosses the south county line near its middle point. Below Centerville it is rated as a navigable stream.

From the north part of the area the river receives Caffee and Shade creeks. Schultz Creek, which drains much of the northwestern townships, joins the main stream about 4 miles north of Centerville. Most of the western and southwestern parts of the county are drained by Haysoppy, Affonee, and Blue Guttee creeks. Each has a southeasterly course and empties into the Cahaba River, the last-named stream joining it in Perry County.

The largest eastern tributary is the Little Cahaba River. It is a crooked stream flowing westward through some very broken country. It receives considerable drainage from the south. Six Mile Creek, its largest tributary wholly within the area, receives the waters from

approximately 50 square miles of country which has a general surface inclination toward the north. A broad divide extending from Randolph westward to "Soap Hill" separates this north-flowing drainage from that which goes west or south. The latter forms the head waters of Oakmulgee Creek and the former makes the numerous branches of Sandy Creek. Each of these streams usually maintains its flow throughout the entire year.

The Cahaba River has practically no bottom land above Centerville. None of its tributaries entering above this point has more than occasional strips of alluvium. Below Centerville the Cahaba has a true flood plain which widens toward the south. Bounding this low plain on the west is a second bottom with a maximum width of about 2 miles. Opposite Centerville there is a high terrace intermediate in elevation between the second bottom and the hills to the west. Its undulating surface affords several square miles of excellent farming land. Remnants of this terrace are observable below Harrisburg. On the west side of Copperas Creek, a north-flowing tributary of Six Mile, a similar high terrace is found. All the larger creeks in the south half of the county have more or less alluvium. Much of it requires artificial drainage to render it fit for farming.

The majority of the early settlers came from the Carolinas. Georgia and Tennessee contributed a considerable number, with additions from the northern and eastern parts of the State. The valley of the Cahaba was soon occupied, but as its lands were held, for the most part, in large tracts the population was never numerous. Some of the best bottom lands on the creeks were cleared at an early date. A few of the first settlers located in the hills, but most of the rougher sections were practically uninhabited until after the war.

The coal mines between Blocton and the Cahaba River have been opened within the last twenty-five years. Several thousand people now live in this section, but very few of them are farmers. Belle Ellen, Piper, Hargrove, and Lucille are small mining towns.

Centerville and Blocton are the largest towns. The former is the county seat and the latter is the business center of the mining interests. The other towns of the area are small villages. Those located on the Mobile and Ohio Railroad and the Southern Railway are good shipping points. The last-named line touches the eastern townships. The Mobile and Ohio Railroad crosses the county diagonally and affords good shipping facilities to Montgomery and also to St. Louis and intermediate points. The "Mineral Division" of the Louisville and Nashville Railroad places Blocton in easy communication with Birmingham.

The public roads between the towns are being rapidly improved. Rural telephone lines are numerous, and the free delivery of mails extends to all the better-settled sections.

## CLIMATE.

This section of the State is favored with a climate that admits of the profitable cultivation of a great variety of crops. Most of the staple productions of the northern States may be grown, and many tender fruits and vegetables of the south have time to mature between the dates of killing frosts. Field work can be carried on the entire year, with the exception of a few weeks in midwinter.

The annual rainfall of about 50 inches is fairly well distributed. While the yields of corn and cotton are sometimes reduced by unfavorable weather, it is exceptional for crops on well-prepared land to be seriously affected by drought.

The range of temperature for each season falls within comparatively narrow limits, giving a climate that is mild and uniform. There are occasional light falls of snow; the ground now and then freezes to a depth of several inches.

No Weather Bureau station is maintained in this county. The following table has been compiled from the records of the nearest station, Greensboro, which is about 35 miles southwest of Centerville:

*Normal monthly and annual temperature and precipitation, etc., for Greensboro.*

| Month.         | Temperature. |                   |                   | Precipitation. |                                   |                                    |                      |
|----------------|--------------|-------------------|-------------------|----------------|-----------------------------------|------------------------------------|----------------------|
|                | Mean.        | Absolute maximum. | Absolute minimum. | Mean.          | Total amount for the driest year. | Total amount for the wettest year. | Snow, average depth. |
|                | ° F.         | ° F.              | ° F.              | In.            | In.                               | In.                                | In.                  |
| January.....   | 45           | 78                | 12                | 5.2            | 5.4                               | 4.4                                | 0.2                  |
| February.....  | 50           | 79                | - 5               | 4.7            | 2.0                               | 4.4                                | 1.3                  |
| March.....     | 55           | 85                | 21                | 5.2            | 1.5                               | 11.2                               | .0                   |
| April.....     | 64           | 90                | 31                | 4.2            | 6.6                               | 2.2                                | .0                   |
| May.....       | 72           | 95                | 42                | 3.7            | .6                                | 2.4                                | .0                   |
| June.....      | 78           | 100               | 50                | 4.0            | 3.4                               | 4.1                                | .0                   |
| July.....      | 80           | 105               | 60                | 3.6            | 4.5                               | 3.4                                | .0                   |
| August.....    | 79           | 100               | 59                | 4.4            | 3.0                               | 9.3                                | .0                   |
| September..... | 75           | 96                | 45                | 2.8            | 1.9                               | 7.9                                | .0                   |
| October.....   | 64           | 92                | 33                | 2.1            | .4                                | 4.4                                | .0                   |
| November.....  | 55           | 84                | 21                | 3.8            | 4.1                               | 3.1                                | Trace.               |
| December.....  | 49           | 75                | 10                | 4.8            | 2.2                               | 2.2                                | .3                   |
| Year.....      | 64           | 105               | - 5               | 48.5           | 35.6                              | 59.0                               | 1.8                  |

Average date of last killing frost in spring, March 20, and of the first in fall, November 8. Date of latest killing frost in spring, April 5, and of the earliest in the fall, October 24.

## AGRICULTURE.

The settlement of this area began very early in the last century. There was a village at the falls of the Cahaba, opposite the present site of Centerville, about 1810, and a few years later it appears in

the court records as the county seat of Cahaba County. In 1818 the name Centerville was adopted and in 1821 the county was named Bibb. There were at this time probably several hundred settlers, most of whom were located on the second bottom of the Cahaba River and the larger creeks.

About 1821 the survey of the public lands in this part of the State was completed. In accordance with the law at that time governing their disposal they were sold at auction. Most of the settlers for a few dollars per acre secured sections or fractions thereof on which they had made improvements. In the following years a comparatively few wealthy men acquired large holdings of land located, for the most part, in the valleys. The high timbered ridges were considered nearly worthless, and portions of the least accessible land remained unclaimed until the timber and mineral values were recognized.

By 1830 several of the present estates in the Cahaba Valley and some large farms in other parts of the county were fairly well improved and were producing large crops of corn and cotton. Cattle were raised in comparatively large numbers, but stock growing as a business does not seem to have ever ranked in importance with the production of the crops mentioned.

At that time the county offered excellent grazing. The uplands were covered with a rather open forest of longleaf pine, probably as fine as any in the South. The undergrowth included more herbaceous plants and less scrub oak and small trees than at present. Much of the bottom lands along the creeks and nearly all the ravines were not then timbered, but supported a dense growth of cane. There was little necessity of producing winter feed for any stock, except the horses and mules used on the farms. The cane has almost entirely disappeared, and pasturage upon the uplands is now in most places of inferior value. It may be added that the habit of depending upon the open range for support of the cattle still obtains with the farming class, and accounts in a large measure for the indisposition to take up the culture of forage crops.

For many years Mobile was the only market for cotton. Boats were built on the Cahaba River, loaded with cotton, and floated to the Gulf port. These were frequently poled back loaded with such supplies as were needed in the country stores. Later Selma became an important trading point and continued so for many years.

The general trend of agriculture in this county since 1850 is fairly well indicated in the following table compiled from the United States census reports. It gives the total production of each of the four principal crops for the year preceding that in which the census was taken.

*Yield of staple crops of Bibb County, Ala., 1850 to 1900.*

| Year.      | Cotton.       | Corn.           | Wheat.          | Oats.           |
|------------|---------------|-----------------|-----------------|-----------------|
|            | <i>Bales.</i> | <i>Bushels.</i> | <i>Bushels.</i> | <i>Bushels.</i> |
| 1850 ..... | 4, 634        | 843, 455        | 219             | 19, 676         |
| 1860 ..... | 8, 303        | 411, 130        | 15, 393         | 7, 143          |
| 1870 ..... | 3, 973        | 82, 620         | 6, 826          | 13, 645         |
| 1880 ..... | 4, 843        | 236, 086        | 16, 700         | 21, 926         |
| 1890 ..... | 5, 216        | 254, 277        | 153             | 33, 891         |
| 1900 ..... | 6, 535        | 310, 200        | 2, 112          | 51, 600         |

Since the depression immediately following the war the production of cotton has steadily increased. There has also been an increase in the acreage as well as the production of corn. The given production of oats is an estimate only, for very little of this grain is ever thrashed. At present no wheat is grown.

The present type of agriculture is in the main similar to that which developed in the fifteen or twenty years following the war. There was then practically no accessible market for anything except cotton. A local demand for corn, pork, and a few other supplies existed, but few farmers produced more than enough for their own use. The negro laborers, whether working for wages or as tenants, were not generally successful with any crop except cotton. These conditions and the high price of the staple in the early seventies stimulated its production and it has since continued to dominate the agriculture of the county.

In recent years the production of fruits and vegetables, and the acreage devoted to cowpeas, sugar cane, and other minor crops, has probably increased, but the total production is comparatively small. With the exception of some truck growing near Blocton this branch of business receives very little attention. The local demand for poultry and dairy products is not well supplied. Corn, oats, hay, and other feedstuffs command good prices, and in recent years it has been necessary to import more or less of such products.

The present markets, the variety of soils, and the climate are highly favorable to a more diversified type of agriculture than now prevails. Suitable soils for the production of small fruits and various kinds of truck crops may be found. On the lighter soils there is a good opportunity for the cheap production of meats by growing forage crops with peas and peanuts as a substitute for grain. Stock growing does not receive the attention it deserves. Nearly all the horses and mules used are imported from other States. There seems to be no reason why a light type of horse suitable for driving and for farming on hilly lands could not be raised in this section.

In general, the present cultural methods do not favor the preservation of moisture in the soil, which is often of vital importance later

in the season. In nearly all types fields may be found which have a distinctly hard stratum a few inches below the surface, the result of continuous shallow plowing. Heavy soils should be broken deep in order to have enough loosened earth to work down to a good seed bed. The physical condition of the fine sandy loams would be improved by mixing more of the clay of the subsoil with the sand of the surface, provided that the increase in depth of plowing were gradual and the after-cultivation more thorough. Such methods of tillage would require heavier implements than are now in general use.

All of the soils are deficient in humus. The climatic conditions and the cultural practices hasten the exhaustion of the original supply in the virgin lands. The production and preservation of this highly essential element should be one of the first objects in soil management. On all farms the supply of barnyard manure is so meager that the fertility of the land can not be greatly increased by its use alone. The cheapest way to obtain anything like an adequate increase in the amount of vegetable matter is to grow it on the land. The legumes are most valuable, but oats and rye may often be sown as catch crops without special preparation of the land, and turned under for the benefit of the subsequent crop.

The following rotation, recommended by the State experiment station, could be easily adopted on the majority of farms. First year, corn, with cowpeas, either broadcast or drilled between the rows; second year, oats (fall sown), followed by cowpeas or soy beans; third year, cotton, with crimson clover sown between rows in fall, or in place of oats or rye.

Such a cropping system has much to commend it. If the secondary crops are pastured or even cut for hay much vegetable material remains on the land. It insures the presence of nitrates, and also furnishes a soil cover during the winter months. The last is highly essential on all the upland fine sandy loams and would be of material benefit to the heavier soils.

It should also be borne in mind that in a soil well stocked with humus the nitrogen supply is not only increased, but the presence of organic acids assists in rendering available the potash and phosphates already in the soil or which may be added as a fertilizer. In the rotation here given no nitrates need be purchased and the requirements of any crop with regard to potash could be supplied by purchasing muriate of potash, or kainit. The phosphoric acid could be obtained in the form of treated rock phosphate. These fertilizers, purchased separately, may be mixed with compost and applied in the usual amounts more economically than by the present method of buying low-grade goods. Many farmers make a practice of selling their cotton seed; others use it as a fertilizer. Unless the price is

exceptionally high the latter is probably the better practice on most of the farms in their present condition.

According to the census of 1900 the value of farm lands exclusive of buildings is \$975,775. This does not represent the present valuation, for in the last few years there has been a marked advance in the price of all lands, especially those adapted to the culture of corn and cotton. Well-located farms range in price from \$25 to \$50 an acre. Small farms in the hilly sections of the county bring \$10 and \$20 an acre. In general, the buildings on the latter are rather poor. One-story unpainted houses and small barns are commonly seen. Some farms are well improved, and there is a general tendency on the part of those who occupy their own land toward the construction of better buildings than were formerly erected. The old rail fences are being displaced by those of woven wire, especially in those "beats" where stock is not permitted to run at large.

The large estates are operated chiefly by tenants. In a few cases the entire plantation is leased to one man, who relets the tillable land to negro tenants on the customary terms, that is, for one-half the cotton produced. In most cases the tenant is furnished a mule, implements, seed, and one-half the fertilizer used.

Those farmers who have from 50 to 200 or 300 acres of tillable land usually rent a part of their farms and also employ one or more hands by the month to work the remainder. The wages given range from \$10 to \$15 a month. House rent is always included, and in some instances a stipulated quantity of supplies, or "rations," is also given.

On the large estates no radical changes from the present methods of management, nor even in the system of cropping, can be easily made. The negroes are not inclined to raise any crop except cotton, nor to use improved machinery, preferring the one-mule plow and cultivator. The annual rent received from these large holdings, while small considering their total acreage, constitutes a good rate of interest on the actual cost to present owners.

Many of the proprietors of the medium-sized farms desire to decrease their usual acreage of cotton or abandon its culture altogether. The higher price of labor and the increased cost of all supplies needed in its production renders the returns from cotton somewhat uncertain. The most practicable change for this class of farmers to make seems to lie in the cultivation of more forage crops and the keeping of more cattle and hogs. The latest labor-saving machinery should be used—implements adapted to the tillage of the particular structure of the soil on the farm. In some instances the cultivation of special crops, the kind depending upon location and soil type, could be safely tried. Methods of farm management based on the rotation of crops and taking into consideration the adapta-

bility of the soil and the requirements of accessible markets may be made remunerative and at the same time result in the permanent upbuilding of the land.

#### SOILS.

Bibb County lies on the boundary between the extreme southern end of the Appalachian Plateau and the Coastal Plain. The line of contact between the rocks of the former region and the sedimentary materials which constitute the surface of the latter passes a little east of Greenpond, and southward through Blocton to the confluence of the Cahaba and the Little Cahaba rivers. From this point it follows an irregular course eastward, leaving the area near Brierfield. There are exposures of rock south of this line, particularly along the Cahaba River above Centerville, and a few patches of Coastal Plain deposits to the north. In general the boundary is fairly well defined by the difference in the character of the surface materials. To the north and east of this line the soils are residual. Each type represents the disintegration and decomposition of the underlying rock. To the south and west the upland soils are derived from either the Tuscaloosa or the Lafayette formation. The types found in this part of the county are more varied in composition and structure and their relation to each other and to the parent materials is not so simple as in the case of the residual soils.

The strictly alluvial soils of the Cahaba Valley are largely derived from sources to the north of the area. There is a marked difference, mineralogically, between the river alluvium and that of the tributary creeks. The latter consists almost entirely of reworked material from the Tuscaloosa and Lafayette deposits.

The oldest rocks which have to any degree affected an upland type are the Montevallo shales—a Cambrian formation that has limited exposures from a few miles northeast of Centerville to Shoals Creek. The Coal Measure sandstones form practically all the surface of the northeastern part of the county. They have given rise to the Dekalb fine sandy loam. Along the south and southeast borders of the Coal Measures the Trenton limestone has extensive outcrops. This rock has determined to a large extent the character of the land throughout a belt 2 or 3 miles wide, extending from the head of the Cahaba Valley to the northeast part of the county. Some of it is too broken to be of much agricultural value, but wherever the topography has permitted the accumulation of rock residue to a depth of a few feet a very fertile soil is found.

The area of limestone soil is limited by the extent of the drift material; that is, the sands and clays of Lafayette age lap up well on the south side of the Trenton rocks. Near the Cahaba River and on the lower Six Mile Creek some of the limestone has a compara-

tively shallow covering of Lafayette material, which carries so much chert and other local debris that the soil shows unmistakable evidences of its calcareous origin.

The soils directly derived from the Trenton have been correlated with the Decatur series, which has a more extensive development northeast of this county.

Associated with the Trenton rocks are some very siliceous limestones, whose decomposition has resulted in the accumulation of the chert fragments so numerous in many places. Several square miles of land on the Little Cahaba River consist chiefly of this residue. It is distinguished by the great abundance of chert rock and the highly siliceous character of the fine earth itself. This type—correlated with the Clarksville stony loam—has the local name "Flint Hills," which is frequently applied to this section of the area.

In the northern part of the county the Tuscaloosa and Lafayette deposits are so closely associated that in many instances no very close line can be drawn between them. The Tuscaloosa usually consists of stratified beds of highly plastic clay and fine micaceous sand. Its normal structure in this area is well indicated by the exposures on "Soap Hill." The Lafayette formation, which is of much more recent origin, is here a comparatively thin deposit covering a good deal of the Tuscaloosa. It consists for the most part of materials from the Tuscaloosa reworked into an unstratified sandy clay.

On the high divides the agencies to which the Lafayette owes its origin were not so effective as at lower levels. In many instances the crest of a ridge may consist of Tuscaloosa sand and clay, the original bedding planes showing a foot or two below the surface. Farther down the slope, or where the general surface elevation is less, the surface material to a depth of several yards may have all the characteristics of the Lafayette formation.

In such instances the Susquehanna and Orangeburg soils, which are derived, respectively, from the Tuscaloosa and Lafayette deposits, have a distribution or mode of occurrence depending upon topographic position.

On the watershed between the Warrior and Cahaba drainage systems the Lafayette has a rather limited development. It is found in the valleys and on the lower flanks of some of the less prominent ridges. This is also true of the rough area between the lower Cahaba Valley and the western heads of the Oakmulgee branches.

These soils are chiefly from the Tuscaloosa. The abundance of ferruginous sandstone and quartz gravel is a distinctive feature of the surface, and consequently gravelly loams predominate. In a former <sup>a</sup> classification of the agricultural lands of the State this sec-

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<sup>a</sup>Alabama Geological Survey, Report 1881-82.

tion and some gravelly type to the north of Sandy Creek and northwest of Centerville were appropriately termed "Gravelly hills, with longleaf pine."

The large areas of Susquehanna fine sandy loam owe their origin to the exposures of the clay beds of the Tuscaloosa. The thin covering of fine sand is the result of surface erosion and solution, whereby the finer particles have been removed, leaving the coarser and more resistant ones, the siliceous sand grains, to form the soil.

On the steeper slopes, where erosion is most vigorous, this sandy covering may be removed about as fast as it is formed. In such cases the entire soil section is a clay, forming the type known as Susquehanna clay.

In general the Lafayette deposit, excepting the superficial weathered portion, is a red sandy clay, or more correctly a mixture of fine sand, silt, and clay, with gravel occurring in places. It has a structure especially favorable to the maintenance of excellent moisture conditions. This property is well developed in the Orangeburg soils, and is one important distinction between them and the soils of the Susquehanna series. The higher clay content of the latter and, in many instances, the presence of thin but dense strata of clay in the deep subsoil, is not conducive to an equable water content. The difference in the physical structure of the basic material of the two series is of great importance, but is frequently overlooked on account of the sandy surface of each and the similarity in color.

The high terraces on the west side of the Cahaba Valley and the somewhat lower ones on several of the creeks are of Lafayette age. The soil in these comparatively level areas is finer in texture, containing more than the quantity of silt usually found in any of the other Orangeburg soils. At a much greater elevation in the uplands flat-topped hill remnants of an old peneplain are found. They have a soil very similar to that of the terraces.

Between these elevations the Lafayette deposits, when present, follow closely the inequalities of the old Tuscaloosa surface. On the slopes the processes of weathering mentioned in connection with the development of the Susquehanna fine sandy loam have formed an Orangeburg soil of the same class. It is generally deeper, for the Lafayette material yields more readily to weathering than the Tuscaloosa does.

Some of the more sandy phases of the Lafayette formation have given rise to the Guin series. These soils lack the distinctive red color of the Orangeburg, and usually rest upon a sandy substratum. They are an intermediate series grading on one side into the Orangeburg and on the other into the Norfolk. In Bibb County the latter series is represented by limited accumulations of sand and sandy gravel.

Several local types are found in the Cahaba Valley. Along the line of contact between the various geological formations the soils are mixed. These transitional types have necessarily been included in some one of the better defined members of the series to which they are most closely related.

Twenty-six types were recognized in this survey. The actual and relative extent of each is given in the following table.

The following table gives the names and areas of the several soil types shown on the accompanying map:

*Areas of different soils.*

| Soil.                               | Acres. | Per cent. | Soil.                          | Acres.         | Per cent.    |
|-------------------------------------|--------|-----------|--------------------------------|----------------|--------------|
| Susquehanna gravelly loam....       | 89,600 | 22.2      | Huntington silt loam.....      | 4,160          | 1.0          |
| Orangeburg fine sandy loam....      | 74,496 | 18.5      | Guin gravelly sandy loam....   | 3,968          | 1.0          |
| Dekalb fine sandy loam.....         | 60,800 | 15.1      | Clarksville stony loam.....    | 3,840          | 1.0          |
| Orangeburg gravelly sandy loam..... | 48,576 | 12.0      | Cahaba fine sandy loam.....    | 2,816          | .7           |
| Susquehanna fine sandy loam....     | 27,456 | 6.8       | Ocklocknee clay.....           | 2,688          | .7           |
| Ocklocknee fine sandy loam....      | 13,504 | 3.3       | Norfolk sandy loam.....        | 2,432          | .6           |
| Rough stony land.....               | 12,928 | 3.2       | Guin fine sand.....            | 2,304          | .6           |
| Guin sandy loam.....                | 11,200 | 2.8       | Montevallo shale loam.....     | 1,216          | .3           |
| Waverly silt loam.....              | 9,088  | 2.3       | Susquehanna clay.....          | 1,024          | .3           |
| Kalmia fine sandy loam.....         | 8,256  | 2.0       | Huntington fine sand.....      | 896            | .2           |
| Greenville fine sandy loam.....     | 6,784  | 1.7       | Hanceville fine sandy loam.... | 384            | .1           |
| Decatur loam.....                   | 5,696  | 1.4       | Decatur clay loam.....         | 320            | .1           |
| Meadow.....                         | 4,544  | 1.1       |                                |                |              |
| Cahaba silt loam.....               | 4,224  | 1.0       |                                |                |              |
|                                     |        |           | <b>Total.....</b>              | <b>403,200</b> | <b>.....</b> |

GREENVILLE FINE SANDY LOAM.

The soil of the Greenville fine sandy loam to a depth of 6 or 7 inches is a fine sandy loam, loose to very friable at the surface, but more coherent a few inches below. The sand grains are rounded rather than sharp, the fine material consists largely of silt, and the soil has a decidedly loamy character even where there is very little organic matter present. A slight increase of the latter gives the soil a dark reddish-brown color and the appearance of a loam. The surface color of cultivated lands ranges from a light reddish gray to reddish brown.

The subsoil is a brick-red clay loam. Compared with the soil the sand content is low, but there is usually a moderate quantity of the finer grades present. Thin streaks and pockets of rounded gravel occur in the lower depths, and in places the entire soil sections contain more or less small gravel, with occasional iron concretions. As a rule, the color and texture of this material are quite uniform to a depth of 8 or 10 feet. Below this depth beds of waterworn gravel underlie all the lower areas.

The line between soil and subsoil is well defined, and in many old fields the distinction is emphasized by the formation of a hard layer

just below the plow line. This is due to shallow plowing and marks the impacting of the soil by the pressure of the plow.

The soil is easily cultivated. It is not so loose as to be droughty, nor is it in the least degree difficult to keep in an excellent state of tilth. The subsoil has a structure favorable to the maintenance of a high moisture content and capillarity is good throughout the entire soil section.

The largest areas of the Greenville fine sandy loam are found on the west side of Cahaba Valley. They are the remnants of an old terrace, which has an elevation of 30 or 40 feet above the river channel. The surface of most of these areas is undulating. It rises to the gravelly hills to the westward and usually drops off to the second bottoms in a well-defined bluff. Small areas occur as far south as Harrisburg. The low mounds of red land which are found in the Cahaba soils may be remains of this type which have suffered nearly complete removal. The soil in such areas is usually heavier than the normal phase of the type. The terrace on the north side of Sandy Creek is a very gradual transition between the gravelly hills and the alluvium of the stream. Some of it is not so well drained as the areas on the Cahaba River. The small areas found on the highest uplands have a level surface which drops off rather abruptly on all sides, so that they resemble miniature plateaus.

This is an excellent type for general farming. The average yields of cotton, corn, and oats, as well as of the minor crops, exceed those of the other upland soils. This is due in some measure to the surface conditions, which admit of the use of improved methods of culture, but the moderate depth of the sandy soil and the excellent moisture-holding properties of the subsoil are very favorable to plant growth. Some land has been under cultivation seventy-five years and still produces good crops.

This soil admits of easy improvement by use of commercial fertilizers or manure. Moderate quantities of the latter give it a very dark loamy appearance and the effects are observable for many years.

Nearly all of this soil is cultivated. Some farms are well improved, and the valuation ranges from \$30 to \$50 an acre.

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

*Mechanical analyses of Greenville fine sandy loam.*

| Number.           | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|-------------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18039, 18745..... | Soil.....    | 0.4              | 6.3              | 9.3              | 32.3             | 17.1             | 27.2             | 7.4              |
| 18040, 18746..... | Subsoil..... | .4               | 3.8              | 4.5              | 18.6             | 11.9             | 30.6             | 29.9             |

## ORANGEBURG FINE SANDY LOAM.

The soil of the Orangeburg fine sandy loam is a light reddish brown fine sandy loam 6 to 15 inches deep. The surface 4 to 6 inches, which is the part directly affected by cultivation, is a light fine sandy loam, with considerable medium to coarse sand. Some of it has a coarse feel when rubbed between the fingers. It is usually incoherent and in many places consists chiefly of brownish gray sand. The virgin soil is much darker colored and more loamy than the cultivated areas on account of the greater content of vegetable matter. The material immediately below the soil contains more of the finer particles and is usually coherent, and retains moisture fairly well. Its color is variable, ranging from brownish gray to reddish brown.

Beneath this occurs the subsoil proper, a red sandy clay or clay loam. It has a granular structure, which makes it a good absorber and retainer of moisture. To this property is due in large measure the agricultural value of the soil. The lighter phases do not possess this quality to a marked degree and are consequently droughty. The processes to which the Orangeburg soils owe their origin have been discussed under the head of soils.

In its wide distribution in this area this soil necessarily varies in its crop adaptations. The large area in the northwestern part of the county is perhaps the most typically developed. It includes some excellent upland soil, well adapted to nearly all the farm crops usually grown in this area. A considerable proportion is yet uncleared. Farther south near Eoline the type approaches in color and texture the Susquehanna fine sandy loam. The soil is a light fine sandy loam with very little coarse material and a decided tendency to assume a very light gray color. The subsoil is a red sticky sandy clay, more or less micaceous and underlain at 5 or 6 feet by clay of the Tuscaloosa formation. This phase also prevails between Six Mile Creek and Randolph.

To the south of the limestone outcrops and also on the western side of the Cahaba Valley the soils are generally rather coarse, in places gravelly. The subsoil is finer textured, including more than the average amount of silt and clay and has a granular structure. Such soils are usually more productive than the lighter phases.

Many of the small areas in the southwestern part of the county are transitional types. They often occur between the heavy Susquehanna soils and the light, sandy Guin types.

In topography, the Orangeburg fine sandy loam ranges from moderately hilly to broken. Where the surface is rough there is usually considerable gravel and great local variations in the depth of the soil.

The best agricultural land is found on the crests of the divides, but unfortunately such areas are limited in extent.

Cotton is the principal crop grown. The yields range from one-fourth to 1 bale per acre. Considerable quantities of commercial fertilizer and cotton-seed meal are used. The latter is almost a necessity in furnishing the required nitrogen, for there is usually very little organic matter in the soil. This is not considered good corn land. The average yield in old fields seldom exceeds 12 to 15 bushels per acre.

Oats, cowpeas, peanuts, and a great variety of vegetables can be easily grown. The lighter phases are well adapted to peaches and good locations for orchards may be found. Apple trees do not thrive, usually dying before they are 6 or 8 years old.

Should the culture of shaded tobacco be taken up in this area, favorable locations may be found on this soil. That phase which may be described as moderately coarse in texture and open or friable in structure to a depth of 12 or 15 inches, with a red sandy clay or heavy loam subsoil, should be selected. Much of the land is too hilly to be available, and phases approaching the Susquehanna soils should be avoided.

The present value of the land depends upon its topography and location. Moderately rolling cleared land situated on the main roads may be bought at \$10 to \$20 an acre. Rough uncleared land is valued according to the character and size of the timber. Nearly all was originally covered with a magnificent growth of longleaf pine. The virgin timber has largely disappeared and loblolly pine with a mixture of oak has taken its place.

Mechanical analyses of representative samples of the soil and subsoil of the Orangeburg fine sandy loam are given in the following table:

*Mechanical analyses of Orangeburg fine sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18747..... | Soil.....    | 0.4              | 2.1              | 5.6              | 40.7             | 13.5             | 29.6             | 7.8              |
| 18748..... | Subsoil..... | .0               | 1.2              | 3.8              | 30.6             | 10.2             | 16.7             | 37.4             |

ORANGEBURG GRAVELLY SANDY LOAM.

A distinguishing feature of the Orangeburg gravelly sandy loam is the abundance of rounded gravel found in the soil. It consists chiefly of white and pink quartz, and quartzite pebbles an inch or two in diameter, with a small proportion of darker colored rock of more complex composition. On some of the higher ridges fragments

of ironstone and other ferruginous concretions are numerous, but the fragments of crystalline rock form most of the stony material. As a rule the gravel occurs in the first foot of the soil section; in many places practically all of it is upon the surface.

The soil to a depth of 8 or 10 inches is a rather light fine sandy loam. Usually the greater part of the sand is fine to very fine in texture, and there is a considerable proportion of silt, especially in the lower part. The content of coarse sand is low for a gravelly loam. The color varies from light gray to reddish brown, according to the humus content, and also in old fields is affected by the depth of cultivation. Where the subsoil is partially exposed the surface may have a reddish cast.

The subsoil is a brick-red heavy loam. It usually contains but a moderate quantity of gravel, and much of this occurs in thin bands or occasional pockets. The subsoil of much of the type closely resembles that of the Orangeburg fine sandy loam. It is rather compact, somewhat granular in structure, and retains moisture well.

The greater part of the total area mapped as Orangeburg gravelly sandy loam has a hilly surface, which becomes more broken near the streams or where the type merges into the Susquehanna gravelly loam or into rough stony land. Much of it, however, is moderately rolling, with undulatory areas well adapted to general farming. On the higher points of the ridges the soil to a depth of 15 or 20 inches may consist chiefly of coarse gravel, but such phases of the soil, while very common, are of limited extent. On the steepest slopes surface wash and creep has resulted in greater or less reworking of the material, so that all the hillside may be a sandy gravelly loam 2 or 3 feet in depth, with a coarse sandy clay of reddish yellow color as the deep subsoil.

The heavier phases of this type have almost the same agricultural value as the Orangeburg fine sandy loam. The fertilizer requirements and crop yields are similar. The gravelly land is said to endure drought the better of the two types, the gravel where much or all of it is on the surface forming a mulch. Areas adjacent to the limestone outcrop may have received contributions of material from these formations. Some of the soil north of Centerville is underlain by limestone and occasionally resembles the Decatur soils.

The agricultural value of a given area of the type depends upon its topography. A considerable proportion of the whole is unsuitable for farming on account of high gravel content and the distance from towns. Unimproved land from which most of the timber has been removed may be bought for \$5 to \$8 an acre. Good locations for peach orchards may be selected and some of the soil seems well adapted to grapes.

The results of mechanical analyses of samples of the soil and subsoil of the Orangeburg gravelly sandy loam are given in the following table:

*Mechanical analyses of Orangeburg gravelly sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18037..... | Soil.....    | 3.0              | 6.0              | 4.5              | 28.8             | 6.9              | 44.1             | 7.0              |
| 18038..... | Subsoil..... | 1.6              | 4.4              | 3.3              | 26.1             | 7.1              | 40.9             | 16.8             |

SUSQUEHANNA GRAVELLY LOAM.

The Susquehanna gravelly loam is the prevailing type in the western and middle southern part of the county. The broken surface described in a preceding chapter has given rise to variations in the depth and structure of the soil which have a definite relation to topographic position.

On the tops of the ridges and extending well down the slopes the sandy material over the red clay subsoil is seldom more than 8 or 10 inches in thickness. Near the foot of the hillsides and in most of the depressions it has a greater depth and the clayey substratum is modified in color and structure.

These differences in the character of the soil may be found in all the areas of the type, often occurring within a short distance of each other. Considering the type as a whole, however, it is quite uniform in origin and mineralogical composition. With regard to its agricultural value one section of land does not differ materially from another.

The soil of most of this type is a fine to very fine sandy loam. It usually contains considerable silt, and in places approaches a silt loam in texture. The percentage of coarse sand and fine gravel is very low, considering the stony character of much of the surface. The fine earth has a soft, loamy feel. Its color varies from light brown to reddish brown. In the virgin soil the first 2 or 3 inches are usually darker through the addition of decaying vegetable matter. In cultivated fields, or even where the surface is exposed to the sun by removal of the timber, it assumes a much lighter tint.

The subsoil is usually a brick-red clay, similar to that of the Susquehanna fine sandy loam. At a depth of 25 or 30 inches it is a red-and-white mottled clay carrying a good deal of finely divided mica, and a few feet below the surface the red clay grades into thin-bedded whitish clay, resting upon a white, micaceous sand which extends to considerable depths. This sand often shows horizontal beds of nearly impervious clay.

Through the subsoil and between it and the underlying sand there are one or more irregular sheets of iron-cemented sandstone. These plates vary from a fraction of an inch to several inches in thickness. On the crests of the ridges and on all the highest points these iron crusts—a very hard brown siliceous ore—are very abundant upon the surface. They literally cover the ground in some places, varying in size from coarse gravel to pieces several feet across. On the high divide between Data and Pearson much rounded crystalline gravel is mingled with the ironstone. This is also true of the area south of Lucille and Braehead. The small areas near Piper carry a great deal of quartz gravel and the soil is very sandy.

On the flanks of many of these divides, or where a slight local depression exists, the soil is a somewhat coarser sandy loam from 6 to 12 or 15 inches deep. The subsoil is usually a sandy clay, more open in structure than the residual clay which forms the subsoil of the phase just described. The surface is less incumbered with stones and small areas often occur which are cultivated with considerable success. Generally they are mere patches or irregular strips along the small branches or creeks.

The principal forest growth is longleaf pine and black-jack oak. In the ravines there is a good deal of poplar, post oak, hickory, and sweet gum, with dogwood, sourwood, and cucumber trees as the larger undergrowth. On all of the high ground there is a thin surface covering of wilt vetch, dwarf huckleberry, and sedge grass.

This type of soil has a low agricultural value. It affords good pasturage for sheep, and could be utilized to a much greater extent for this purpose. After the original pine is removed the black-jack oak usually comes in so thick that the native undergrowth disappears and the land is rendered valueless for pasture.

Several of the large areas in the western part of the county have a valuation ranging from \$10 to \$20 an acre, according to the quality of the standing timber. The areas near the center of the county have largely been cut over and the land is worth but a few dollars an acre.

The following table gives the average results of mechanical analyses of fine-earth samples of the Susquehanna gravelly loam:

*Mechanical analyses of Susquehanna gravelly loam.*

| Number.           | Description.    | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|-------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18755, 18758..... | Soil.....       | 1.9              | 4.4              | 4.2              | 20.4             | 27.4             | 31.9             | 9.6              |
| 18756, 18759..... | Subsoil.....    | .0               | .8               | .7               | 10.6             | 12.9             | 26.7             | 48.1             |
| 18757, 18760..... | Lower sub-soil. | .2               | .8               | .6               | 10.2             | 13.6             | 29.2             | 45.1             |

## SUSQUEHANNA FINE SANDY LOAM.

The soil of the Susquehanna fine sandy loam consists of a fine sandy loam of variable depth. There is a marked absence of the coarse grades of sand. The silt content is usually high and a perceptible amount of finely divided mica is present. The material has a fine, smooth texture, is rather loose in structure, and if it contains more than the average amount of humus it is very loamy and friable. The surface color is gray, tending to reddish brown with depth.

The subsoil is a heavy, tenacious red clay. When dry the exposed surface of this material in roadside ditches crumbles into very hard, angular lumps a fraction of an inch across. When wet this clay is exceedingly adhesive, and if well saturated becomes very soft and so yielding and slippery that it is aptly termed "soapy." This peculiar quality is due in some measure to the high percentage of mica which it contains.

At a depth of 2 to 3 feet the red subsoil is underlain by lighter-colored clay which is more or less stratified. This stratification may consist of thin bands of white, micaceous clay of very fine texture, or of flakes of similar material arranged horizontally in a matrix of red clay. This light-colored clay is nearly impervious, a thin layer being sufficient to affect seriously the underdrainage. It occasionally occurs as a heavy bed several feet thick. In such cases the subsoil is merely the weathered upper portion, the iron content being highly oxidized.

In some instances the lower subsoil is a mottled red and white silty clay, becoming more sandy with depth. This graduates downward to a white micaceous sand, which gives better underdrainage, provided the subsoil is not more than 3 or 4 feet in depth.

The distinguishing feature of this type is the heavy red subsoil. It affects the agricultural value to a marked degree, since the sandy loam of the surface is generally too thin to mask the characteristics of the clay. In old fields where considerable erosion has occurred the clayey material is exposed in many places. These red spots show very plainly where the ground is freshly plowed, and their location is indicated later in the season by the thin stand and dwarfed appearance of the cotton and corn plants. Such phases of the type are difficult to keep in good tilth. In wet seasons they are so miry that cultivation is practically impossible, and on drying the surface becomes very hard. In the depressions, where washings from the adjacent hillsides have accumulated, the soil is very loamy and responds generously to good tillage.

The Susquehanna fine sandy loam near Randolph occupies the crests of some rather broad divides. A considerable proportion of the entire area is moderately undulating and the soil has a depth of 8

to 12 inches. Such phases are well adapted to cotton. They endure drought well if properly managed and with an increase of the humus content produce good crops of corn.

In the areas south of Ingate some very loamy phases of the type are found. There are also considerable tracts of land which have been abandoned or are used only for pasture.

The large area between the heads of Sandy and Copperas creeks is very broken and of little agricultural value. The areas north of Eoline include the crests of some narrow interstream divides. The soil is thin and erodes badly. Much of it apparently consists of very fine, well rounded quartz grains with less than the usual proportion of clay and silt. In all old fields and in some of the uncleared land in this vicinity the organic matter content is very low and the soil has a peculiar white, "lifeless" appearance.

The native vegetation consists chiefly of deciduous trees. Hickory and several varieties of oak are abundant. On the high ridges some longleaf pine is interspersed with these varieties, but it avoids the heaviest phases. In the ravines and along the streams poplar, swamp pine, sycamore, maple, gum, and cucumber trees are found.

Much of this type formerly under cultivation has been abandoned. Old fields now grown up in loblolly pine are rather common. Their cultivation was discontinued after the original humus supply was exhausted and erosion had removed much of the sandy loam. If shallow plowing is practiced for a number of years, the subsoil becomes very compact at the plow line. On a steep hillside a single heavy rain will occasion irreparable injury by washing away most of the light soil. Terracing and deep plowing will prevent some of this waste.

Much of this type is not permanently productive. The phases that most closely resemble the Orangeburg soils are possible exceptions. In most instances the light-colored fine sandy lands having the unweathered clay more or less in evidence at a depth of 2 to 3 feet rapidly decline in crop yields after a few years of cultivation. The cultural difficulties already pointed out are the chief causes of this decrease in productiveness, but where a good physical condition is maintained the yields do not compare favorably with those on the Orangeburg types. This is doubtless due to some property of the Tuscaloosa clay from which the soil is derived.

The best phases of this type will produce from one-half to 1 bale of cotton per acre. Corn yields from 10 to 20 bushels. Where the soil is thin and clayey, winter oats and rye succeed, furnishing not only good pasture, but also much-needed cover crops. Much of this land could be profitably utilized in the production of forage crops. If the growing of Japan clover and Bermuda grass were encouraged, good pasture could be cheaply obtained.

The value of improved land ranges from \$10 to \$15 an acre. Very rough land is valued according to the timber upon it.

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

*Mechanical analyses of Susquehanna fine sandy loam.*

| Number.    | Description.    | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18749..... | Soil.....       | 0.4              | 1.1              | 4.3              | 32.5             | 21.0             | 32.0             | 8.7              |
| 18750..... | Subsoil.....    | .0               | .3               | .4               | 18.9             | 9.1              | 20.8             | 50.5             |
| 18751..... | Lower sub-soil. | .0               | .1               | .2               | 13.3             | 8.0              | 28.3             | 49.9             |

#### SUSQUEHANNA CLAY.

A few small areas of the Susquehanna clay have been mapped. It is essentially the subsoil of the Susquehanna fine sandy loam from which all the lighter surface material has been removed.

The area around Randolph is a high ridge from which the original surface soil has been eroded since the land was cleared. The other areas include both old fields and virgin land. The latter generally has a thin covering of fine sandy loam, which on the steeper slopes has been held in place by forest growth.

In all the cultivated areas of the Susquehanna fine sandy loam small spots of this type may be found, but no attempt has been made to show them on the map.

The heaviest phases of this type are practically untillable. At certain stages in the moisture conditions of the first foot or two it yields fairly well to cultivation. It should never be worked or trampled over when wet.

Since clay soils in general are best adapted to grasses, much of this type could be well utilized for forage crops or pasture. It is highly probable that a heavy application of lime would assist in securing a stand of mixed grasses and clover. Permanent pasture could be secured on many of the old fields now supporting practically nothing of value.

#### GUIN GRAVELLY SANDY LOAM.

The Guin gravelly sandy loam to a depth of 10 to 15 inches is a sandy gravelly loam very loose and open in structure. The surface in most places is covered with small stones and gravel. The latter consists almost entirely of the rounded quartz pebbles so common in the middle and southern parts of the county. The larger stones are the flat, iron-cemented sandstones, but as a rule they are not abundant

in this soil. A few inches below this surface the material is much heavier, being usually a coarse yellow sandy loam with pebbles distributed through it.

The subsoil is a yellow or reddish-yellow sandy clay with varying amounts of coarse sand and gravel. In most instances the lower part of the soil section grades into the sands or clays of the Tuscaloosa formation. On some of the ridges a thin crust of iron may lie between the two at a depth of 3 to 4 feet. In the depressions and on the flanks of the larger divides the Guin gravelly sandy loam is a colluvial soil having considerable depth. It is usually very open and readily leached by the rain water. This characteristic, together with the rough topography, renders the type as a whole of little agricultural value.

The native vegetation consists chiefly of longleaf pine with more or less black-jack oak on the sandy phases, and under present conditions it is best adapted to forestry. Some of this soil is well adapted to peaches and pears. Grapes have been grown with considerable success, but the distance from market and the inaccessibility of most of this type renders it unsuitable for such purposes.

#### NORFOLK SANDY LOAM.

The Norfolk sandy loam, to a depth of 12 to 15 inches, is a medium to fine sand or a very light sandy loam. There is a small percentage of coarse sand and some gravel present, which shows very plainly in old fields after a rain. The color is light gray. After the original organic matter content is exhausted, which occurs a few years after the land has been put under cultivation, the surface has a decidedly bleached appearance. The light color and coarser texture of the type distinguishes most of it from the Orangeburg and Guin soils. It seldom contains iron crusts or other ferruginous material, consisting chiefly of siliceous sand. The subsoil is a yellow sandy clay, becoming heavier with depth.

Small areas of this type are found in the southeastern part of the county. Portions of these areas are cultivated, chiefly to corn and cotton, but the average yields are low. The former seldom exceeds 10 or 12 bushels per acre, and the latter averages about one-half bale. Winter oats do well, and some of the type could be profitably used for this crop. If followed by cowpeas the organic matter content would be increased so that the soil could better withstand drought and the following crops of corn and cotton would be benefited. This light soil is well adapted to truck crops, but owing to present lack of market facilities these can not be profitably grown. On this type a fine quality of sugar-cane sirup of superior flavor and color can be produced.

## GUIN SANDY LOAM.

The Guin sandy loam is a gray to grayish-brown sandy loam. While the finer grades of sand predominate, there is generally a perceptible amount of medium sand and sometimes enough coarse grades to give a decidedly gritty feel to a sample when rubbed between the fingers. It contains sufficient silt and clay to be coherent when wet, but when dry is very friable and in most instances plows into a loose, deep seed bed, the surface never becoming cloddy.

The contact between the soil and subsoil is generally well marked by the difference in color and structure. Below 8 to 10 inches the material is a dull reddish-brown or yellow-brown color, which prevails to a depth of several feet. To a depth of 18 to 20 inches the content of clay and silt increases, giving the material more coherency and firmness than the soil possesses. The sand seems to average a little coarser in texture. Below 20 inches the relative proportion of sand increases with depth, and the lower subsoil is usually a light sandy loam.

In this area the Guin soils represent a rather broad transition between the Orangeburg and Tusquehanna series. The material forming the Guin series should be classed geologically with the Lafayette formation rather than with the Tuscaloosa. It seems to have undergone the same method of deposition as the former, perhaps the only difference being that its constituents are chiefly of local origin and include a relatively greater percentage of sand. The latter gives the coarser texture and more open structure which the Guin soils present when compared with the Orangeburg. The freer circulation of air and water may have affected the iron content, producing brown instead of red tints. Local variations in color are of frequent occurrence. In general, the heavier phases of the subsoil have red or reddish tints, while the lighter textured ones incline to gray and brown. The organic matter content is low, affecting only the color of the immediate surface.

The topography varies from undulating to hilly. Its average elevation is less than that of the other upland types. Some small areas resembling the Kalmia fine sandy loam are found along the minor streams. On some of the higher ridges the type graduates to the Guin fine sand.

This type is not highly esteemed for general farming. It does not withstand drought well, and in wet seasons the comparatively rapid percolation of water tends to leaching. Farmers complain that it will not "hold fertilizers."

Being light and well drained the type is adapted to early truck. Near Blocton considerable produce of this kind is grown for local markets, besides melons, sweet potatoes and tomatoes. Peaches and grapes are grown with considerable success.

This soil would be greatly benefited by liberal additions of vegetable material, preferably some green crop plowed under. This would correct the deficiency in organic matter, or humus, and by increasing the loaminess of the soil would make it more retentive of moisture. The latter is even more essential than the former. By gradually increasing the depth of plowing some of the clay subsoil would be added to the surface soil and this would also increase the moisture-holding capacity of the soil if shallower cultivation be followed.

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

*Mechanical analyses of Guin sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18735..... | Soil.....    | 0.8              | 13.3             | 18.8             | 30.5             | 7.7              | 18.3             | 10.5             |
| 18736..... | Subsoil..... | .4               | 11.6             | 16.5             | 27.2             | 6.7              | 22.1             | 15.3             |

GUIN FINE SAND.

The Guin fine sand is a somewhat anomalous type associated with the Susquehanna and Guin soils. It represents local accumulations of sand, mostly of the finer grades, evidently derived from the arenaceous strata of the Tuscaloosa formation. It is most commonly found on the high divides, but some small areas occur on the flanks of hills. In many places in the vicinity of Pondville the Guin sandy loam passes gradually into this type, but the areas are too small to map.

The soil as mapped is generally a loose, incoherent, grayish sand 10 to 15 inches deep. In the areas that are low in organic matter content the surface soil is very light colored. The subsoil is a fine sand, somewhat more loamy than the surface. Upon its capacity to absorb and hold moisture depends the crop-producing power of this type. In most places it is open in structure and so deep that it rapidly loses moisture; consequently this land has a low agricultural value. Where the subsoil consists of a fine loamy sand, bright red in color, good cotton may be grown in seasons of average rainfall. Winter oats would do well and could be followed by an early crop. This phase of the type is very susceptible of improvement and should be more generally utilized in the production of forage crops.

The small area northwest of Eoline occupies some high ridges, mostly covered at the present time with longleaf pine and blackjack oak. It is generally lighter colored than the areas near the Guin

soils. The subsoil in most places is a dull brownish-gray sand or very light sandy loam of unknown depth.

Owing to the variable nature of this type, no samples were collected for mechanical analysis.

#### KALMIA FINE SANDY LOAM.

The Kalmia fine sandy loam is a light-brown fine sandy loam, having a depth of 6 to 7 inches. The percentage of medium to coarse sand is usually low, while that of silt is quite high, giving the material a decidedly loamy character.

After a heavy rain it packs to a moderate degree of firmness, and the surface has the appearance of a loam. Under usual moisture conditions the cultivated soil is very friable as deep as it has been plowed. The lightest phases of the type are a loamy sand 10 to 15 inches deep. If deficient in humus, they are very light in color. These sandy phases constitute but a small proportion of the total area.

The subsoil is much heavier than the soil. In most instances it is a silty clay containing considerable medium and fine sand. It extends to a depth of several feet without marked change in color or texture. As a rule the lowland has a heavier subsoil than that occupying greater elevations. In the latter positions the deep subsoil is similar to that of the Orangeburg soils.

While the composition may vary from a heavy fine sandy loam to a sandy clay the structure and color are more uniform, the latter being a light brownish yellow, frequently a tint suggestive of ground ginger. The subsoil is more porous than the red material underlying the Orangeburg soils. During rainy periods in the winter the fields are miry, although the surface may have every appearance of a rather firm loam.

The "spongy" nature of the subsoil seems to prevail to a considerable depth. It enables this material to absorb a large amount of water and on the heaviest land cultivation is sometimes delayed in the spring. The type, as a rule, withstands drought well if given proper cultivation.

This soil is typically developed on the gently sloping areas found on the east side of Cahaba Valley. It is associated with the Greenville fine sandy loam and frequently marks the transition between this type and second bottoms. Several large bodies are located between Brent and Harrisburg.

On the smaller streams it usually occupies fairly well defined terraces and extends some distance up the moderately sloping hillsides. On Haysoppy, Affonee, Blue Guttee, Oakmulgee, and the upper tributaries of Six Mile Creek areas are found varying in size from mere strips along the base of a hill to tracts of several hundred acres.

The type also occurs on the uplands in or near shallow basins found in a few instances at the extreme heads of drainage lines.

This soil is derived from the Lafayette formation. It represents material which has undergone more or less local transportation and upon redeposition has not settled as compactly as in the original state.

The iron content has also been changed. The freer circulation of the ground water, combined with the comparatively high organic matter content of the virgin soil undoubtedly caused the change in the form of the iron oxide in the material to a depth of several feet.

This is a desirable type for general farming. While most of it has sufficient relief to give good drainage none of it washes badly. The light soil is easily tilled and well adapted to cotton growing. These features commend it to the large land owners who must necessarily employ negro labor. In favorable seasons the average yield of cotton is upward of 1 bale per acre. Many fields in the Cahaba Valley have been continuously planted to cotton for ten or fifteen years and still give good returns.

All of this soil with the exception of that recently cleared is deficient in humus. The yields of corn and cotton are increased by applications of cotton-seed meal. Some farmers use a little high-grade acid phosphate in combination with the meal with good results. The readiness with which most of this type responds to fertilization is due in some measure to the excellent physical condition in which the soil may be kept. No fertilizer is lost through excessive leaching or rendered unavailable by bad surface conditions.

The minor crops, such as oats, cowpeas, sorghum, sweet potatoes, and peanuts, in addition to garden vegetables, are successfully grown. Some of the lighter phases are well adapted to the production of sugar-cane sirup of excellent quality.

Much of this type is included in large plantations which are not for sale. The smaller areas are so generally associated with other types of soil that an accurate estimate of their value can not be made. It may be stated, however, that very little cleared land can be bought for less than \$30 or \$40 an acre.

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

*Mechanical analyses of Kalmia fine sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18727..... | Soil.....    | 0.7              | 9.6              | 13.4             | 34.1             | 8.3              | 28.3             | 5.1              |
| 18728..... | Subsoil..... | .6               | 4.2              | 9.5              | 21.9             | 6.9              | 30.4             | 26.7             |

## DEKALB FINE SANDY LOAM.

The Dekalb fine sandy loam to a depth of about 10 inches is a very light yellowish-gray to yellowish-brown silty loam or very fine sandy loam. The surface of cultivated fields is usually lighter in color than the soil a few inches below, and, when dry, has a slightly ashy appearance. It is very friable and only where the silt content is usually high has it any marked tendency to pack after rains.

The content of fine sand is variable, being influenced by the character of the underlying rock and by surface configuration. On the steeper hillsides the soil is generally lighter in texture than on the tops of the divides or on the more moderate slopes. Where the organic matter content is above the average the soil is very loamy and may be easily kept in good tilth.

A relatively large proportion of this soil consists of bits of brown weathered sandstone ranging in size from small angular grains to flat pieces an inch or two across. They give the surface of some of the cultivated land a gravelly appearance and impart a coarse, lumpy feel when rubbed in the hand. Near Blocton much of this stony material is an arenaceous shale rather than sandstone. Some rounded crystalline gravel and ferruginous concretions are found on the higher ridges.

The subsoil is a silty clay loam or silty clay, usually becoming heavier at a depth of 25 to 30 inches. It is less friable than the soil, but is not very compact. Under the prevailing moisture conditions it is crumbly, although it does not have a pronounced granular structure. The structure of the subsoil as a whole is affected by the presence of a large proportion of rock fragments in various stages of disintegration. With increased depth the stones are larger, less affected by decay, and at 2 to 3 feet below the surface constitute most of the soil mass. At 5 feet or less solid rock is usually found.

Where the rock has a shaly structure the subsoil is usually a yellowish colored material. This color is common to the small semialluvial areas where the drainage is poor. The more massive phases of the sandstone contain considerable iron and as they disintegrate assume a reddish color. The further the process of decay proceeds the more pronounced this tint becomes. Pieces of rotten rock which may be easily broken in the hands are light red. The more thoroughly decomposed material is generally yellowish red, and this is the usual color of the subsoil. This is strictly a residual soil derived from a sandstone formation of the Coal Measures.

As already suggested, local variations in the nature of the rock occur, but they do not materially change the character of the soil. Between Pratt Creek and Hargrove much of the rock is rather coarse in texture and the soil is a deeper red in color and more sandy than

farther north. On Shades Creek and on each side of the Cahaba River it is light in texture and frequently stony.

This type occurs in one large area in the northeastern part of the county. It is well drained by several creeks and many small branches which empty directly into the Cahaba River. Most of these flow through rather narrow gorges, with more or less outcropping of sandstone along the lower hillsides. The upper portion of many of the ridges are moderate slopes and a considerable part of their area can be cultivated.

Nearly all of this type is covered with a second growth of oak, hickory, and a few other varieties of hardwoods. The longleaf pine, never abundant, has been removed and used in the mines. The undergrowth includes a considerable variety of grasses and more herbaceous plants than are commonly found on the Orangeburg and Susquehanna soils. The native pasturage, in many places, is very poor, owing to the density of the black-jack oak.

Most of this land is owned in large tracts by companies interested chiefly in mining coal. Its agricultural possibilities have hardly been determined. On the small farms in the little valleys, where there is more than the average depth of soil, cotton, corn, and a limited variety of vegetables are grown with fair success. In Blocton there are many gardens located on this type of soil. Receiving no other fertilization than liberal applications of stable manure, they produce a great variety of vegetables. While these highly cultivated plots are affected by drought, they will withstand a short period of dry weather much better than poorly cultivated land, causing the latter to be frequently referred to as an entirely different type. This difference is due to the better moisture-holding properties of the soil containing the greater amount of humus and receiving more frequent surface cultivation.

Grapes do well on this type; also apples, plums, and small fruits. On the ridges where good air drainage is assured, and where the soil has a depth of 3 to 4 feet, strawberries could be successfully grown. The soil should be heavily manured, and planted in corn, potatoes, or some other cultivated crop the preceding seasons. In preparing the land for these plants, deep plowing is absolutely essential. This should be done in the fall, in order to conserve as much of the winter rainfall as possible. It is necessary to have the ground in a high state of cultivation before setting the plants, and subsequent tillage should be frequent and done with a view of conserving moisture in the soil.

The same observations apply equally well to other truck crops on this particular type. The soil has not sufficient depth to render it capable of maintaining a high moisture content, but this in a measure can be remedied by proper tillage.

The excellent local markets afforded by the mining towns justify the expenditure of more labor than is profitable where products must be shipped long distances.

The type does not seem to be well adapted to peaches. No special attention, however, has been given to their cultivation or to the selection of varieties adapted to this locality. Sweet potatoes do well on this soil; also forage crops of all kinds.

Locations may be found well adapted to fruit and truck raising for local markets, but the type is not well adapted to general farming.

A few miles north of Centerville there is a little valley on the east side of the Cahaba River, opening on the north into the gorge of the river. It is entirely surrounded by high hills. The floor of this basin is an outcrop of subcarboniferous shale, part of which, at least, is calcareous, giving rise to a residual soil, which represents a phase of the Dekalb fine sandy loam. The soil approaches a yellowish clay loam, and is rather stiff, but not inclined to be cloddy. Shale fragments are numerous and in some places very abundant. The subsoil is a yellow silty clay, becoming heavier with depth. It contains more or less stony material, the amount varying considerably in different parts of the valley. Most of this phase is cultivated, producing fair yields. Cotton does not attain a large size, but the plants are strong and yield well. This heavy phase is better adapted to grasses. It is probable that clover and alfalfa could be easily grown.

The average results of mechanical analyses of samples of the soil and subsoil of the Dekalb fine sandy loam are given in the following table:

*Mechanical analyses of Dekalb fine sandy loam.*

| Number.            | Description.  | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|--------------------|---------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18731, 19068 ..... | Soil .....    | 3.3              | 3.9              | 2.9              | 18.7             | 16.9             | 38.8             | 15.4             |
| 18732, 19069 ..... | Subsoil ..... | .9               | 3.1              | 1.2              | 3.3              | 6.5              | 45.6             | 39.3             |

HANCEVILLE FINE SANDY LOAM.

A small area of the Hanceville fine sandy loam is found in the northern part of the county on the divide locally known as "Sand Mountain." This is an elevated ridge of light-colored sandstone, much harder than the rock to the south from which the Dekalb fine sandy loam has been derived, the weathered outcrops, consisting usually of large rounded masses of graystone, forming areas of Rough stony land on each flank of the "Mountain." On the top a residual soil has accumulated to a depth varying from a few inches to many feet.

The virgin soil is a friable fine sandy loam. The upper portion is dark gray in color through the addition of organic matter. At a depth of a few inches it is more compact and changes to a reddish loam. It contains considerable medium and some coarse sand which is "sharper" than that usually found in other soils of this area.

The subsoil is a compact sandy clay of a bright Indian red color, usually becoming heavier with increase of depth. In many instances, however, the contact between the soil and subsoil is sharply indicated by the marked increase in clay at 8 to 10 inches below the surface, while the deep subsoil is rather sandy. When wet this sandy clay is very plastic, and if handled stains the fingers red. When dry it becomes very hard, the high clay content serving to cement the sharp sand very firmly.

On the limited area under cultivation all field crops common to this county are grown. It seems to be well adapted to tree fruits, and a few very old apple trees are on this type. The elevation insures immunity from the frosts which damage trees on lower land.

This soil is exceptionally responsive to careful management. In its cultivation the conservation of moisture should be given much consideration. The soil body will absorb and hold a heavy rainfall, but in old fields, where the organic matter content is low, the surface packs and evaporation is very rapid. Deep plowing and frequent shallow cultivation would be beneficial. The effects of heavy applications of manure are observable for many years afterwards.

The following table shows the results of mechanical analyses of a sample of the soil and subsoil of Hanceville fine sandy loam:

*Mechanical analyses of Hanceville fine sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18761..... | Soil.....    | 0.7              | 5.5              | 11.8             | 27.0             | 8.3              | 35.2             | 11.3             |
| 18762..... | Subsoil..... | .3               | 3.1              | 7.9              | 17.6             | 7.6              | 22.4             | 41.1             |

MONTEVALLO SHALE LOAM.

The Montevallo shale loam to a depth of several inches is a friable silt loam. It usually contains a relatively high percentage of very fine sand, besides numerous angular bits of soft brown shale.

The subsoil is a heavy silty loam or loam and in many instances a rather stiff clay which would doubtless be very compact were there no shale fragments present. These increase in size and abundance with increase of depth. Hillside washes 3 to 4 feet deep show the lower subsoil to be a mass of small, rhomboidal pieces of shale with little interstitial material.

The color of most of this type is a purplish brown, but gray and yellowish tints also occur. Near Shoal Creek cultivated hillsides show marked variations in color and texture, due to the varied composition of the parent rock and to the admixture of material from the Coal Measures to the north.

This soil is derived from the Montevallo shales,<sup>a</sup> a compact argillaceous rock of the Cambrian age. The exposed portions all show the effects of the displacement to which it has been subjected. The rock is so broken by fracture planes and sharp folds that it breaks down rather rapidly, forming hills of moderate height and easy slopes.

These shales are usually purplish brown in color, and in some instances a dull Indian red, while bands of greenish gray and gray also occur. Occasional lenses of impure limestone and thin sandstone are found in the northeastern exposures in this county.

A series of exposures occur from Shoal Creek almost to Centerville. So much of the formation is concealed beneath the Lafayette material that the total area of this soil is limited to less than 2 square miles.

This is a productive soil wherever it has sufficient depth to maintain a fair degree of moisture. On the hillsides it is generally so shallow that a brief period of drought causes serious injury to crops. Some fields have been cultivated without regard to the effects of surface washing, and consequently they are now practically worthless except for pasture or forestry. In the depressions, where physical conditions are more favorable, corn, oats, and vegetables do well. Apple and plum trees, as well as grapes and small fruits, seem to thrive better on this soil than on the Orangeburg types.

While much of the Montevallo shale loam is too thin and droughty to be safely planted to field crops, limited areas may be found suitable for small farms where the adjoining areas of rough land afford opportunity to raise cattle and sheep. This type ranges in value from \$5 to \$10 an acre.

Mechanical analyses of a representative sample of the soil and subsoil of the Montevallo shale loam give the following results:

*Mechanical analyses of Montevallo shale loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18739..... | Soil.....    | 6.1              | 9.9              | 2.9              | 7.2              | 12.8             | 51.6             | 9.5              |
| 18740..... | Subsoil..... | 3.3              | 11.5             | 4.4              | 8.6              | 9.9              | 39.0             | 23.1             |

<sup>a</sup> Sometimes called Choccolocco shales. In Report on Valley Regions of Alabama, Alabama Geological Survey, termed "Montevallo shales and sandstones." In Shelby County same formation includes sandstones, shales, and limestones. In Gadsden folio the formation is termed "Conasauga shales."

## CLARKSVILLE STONY LOAM.

The Clarksville stony loam to a depth of 10 to 12 inches is a very light gray silty loam. It usually contains such a high percentage of gray chert fragments, varying in size from fine, sharp gravel to large stones, that the texture of the soil is obscured. The fine earth, however, consists chiefly of silt and fine sand, with a rather small percentage of clay. When dry this soil has a light, fluffy feel, is barely coherent, and if devoid of humus is almost white.

The subsoil is a light-yellowish silty loam, with a higher percentage of clay. It contains so much chert that any implement penetrates with considerable difficulty below a depth of 1 or 2 feet. Solid rock, however, is seldom found, and the same general admixture of fine silty earth and broken rock extend to a depth of many feet.

A small area of this type is found west of Four Mile Creek, lying between this stream and the Little Cahaba River. It is associated with outcrop of the Trenton limestone and near the other streams grades to Rough stony land. Indeed, no very definite line can be drawn between the two types.

A little of the Clarksville stony loam is under cultivation. It produces good crops of cotton, corn, and potatoes while the original supply of humus lasts. When this is exhausted the soil tends to run together after each rain. In such condition it dries out rapidly. The type as a whole is difficult to cultivate and has a low agricultural value. The same soil type farther north has been found well adapted to peaches and affords sites for commercial orchards.

While this soil is not calcareous, it has been affected locally by the adjacent limestone, some of the depressions having received contributions of rock fragments and other wash from such sources. The lower ground would be better adapted to clover, Johnson grass, and possibly timothy, than to cultivated crops.

Mechanical analyses of a sample of the type taken south of Six Mile Creek give the following results:

*Mechanical analyses of Clarksville stony loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 19062..... | Soil.....    | 2.9              | 8.7              | 6.4              | 17.2             | 10.7             | 42.5             | 11.3             |
| 19063..... | Subsoil..... | 2.6              | 6.0              | 6.7              | 15.1             | 7.4              | 44.3             | 17.7             |

## DECATUR LOAM.

The Decatur loam to a depth of about 6 inches is a dark reddish-brown loam or fine sandy loam. The latter is the prevailing phase

on the higher elevations and the hillsides, which are capped with Susquehanna or Orangeburg soils. In the depressions the soil is usually a very dark reddish-brown loam, containing enough clay, especially a few inches below the surface, to render the material quite sticky. As a rule, this phase is friable, easily cultivated, and held in high esteem for corn and cotton.

The subsoil is a dark-red clay loam. The contact between it and the soil is generally well defined. Where there is more or less admixture of sand, evidently from the Orangeburg soils, the subsoil is rather crumbly and in some instances friable to a depth of 15 to 20 inches, but the lower subsoil is compact. Where it rests directly upon the limestone it is a heavy, red, granular clay.

The surface is generally free from pebbles and stones, with the exception of areas along some of the streams where the limestone outcrops.

This soil is derived in the main from the decomposition of the Trenton limestone. In places the residual products have suffered transportation, and more or less material from other sources has become incorporated with them. This is the case on the flanks of divides, where the limestone shows occasional traces of its presence for one-half or two-thirds of the distance up the hillsides, while sand and pebbles of Lafayette origin form the surface soil of the upper portion.

On both the Cahaba and Little Cahaba rivers there are occasional small areas, evidently old terraces, having an elevation of from 50 to 100 feet above the streams. The surface, being undulatory to moderately rolling, is characterized by numerous irregular depressions suggestive of limestone sinks, which in all probability they are. In such localities the Decatur loam is typically developed. The soil is not uniform in texture, but the subsoil is invariably a heavy red clay of limestone origin.

The original timber growth was characterized by an abundance of hickory, white oak, red oak, and red cedar. No longleaf pine grows on this type, but abandoned fields are soon overrun with loblolly pine.

Excellent crops of corn, wheat, and oats have been grown on this soil. The greater part of the cultivated area is now planted to cotton, the loamy depressions producing good yields, but the more sandy upland phases, if not well tilled, are affected by drought.

Some of this type is well adapted to alfalfa. Well-drained land having evidences of a comparatively high lime content should be selected rather than the sandy areas bordering the Orangeburg soils. Too much stress can not be placed upon the importance of preparing a good seed bed in the case of this type of soil. The hard sub-

stratum, found in some places 6 to 8 inches below the surface, should be broken by deep plowing. Much of this clay will become mixed with the soil, which should be thoroughly harrowed or disked to prevent clodding. Land which is especially deficient in humus would require a light application of barnyard manure unless cowpeas had been previously grown. It is also probable that inoculation would be necessary in order to get satisfactory results with the leguminous crops at first.

In general, the cultivation of this soil requires heavier implements than are at present in use on the fine sandy loams. Some fields have been abandoned largely on account of the unsatisfactory results following the use of light plows and bull-tongue cultivators. Subsoiling appears to be especially beneficial. It was observed in one instance that the moisture content of subsoiled land was much greater than that of the same type near by which had not been so treated.

This type is well adapted to general farming. It also admits of the adoption of a crop rotation without cotton in which corn and oats would be the principal crops. Any of the legumes grown in this area could also be included with favorable chances for the culture or introduction of other forage crops. In many instances meadows or pastures of Bermuda grass and Japan clover could be easily established, the last-mentioned legume doing exceptionally well. Red clover also grows naturally on this land.

The average results of mechanical analyses of samples of soil and subsoil of this type are given in the following table:

*Mechanical analyses of Decatur loam.*

| Number.           | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|-------------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 19064, 19066..... | Soil.....    | 0.6              | 7.1              | 11.4             | 26.2             | 11.1             | 28.5             | 15.1             |
| 19065, 19067..... | Subsoil..... | .7               | 6.3              | 7.1              | 16.1             | 7.3              | 27.7             | 34.7             |

DECATUR CLAY LOAM.

The Decatur clay loam in its virgin state is a dark-colored clay loam to a depth of 6 to 8 inches. The top soil is much lighter in texture than the material 3 to 4 inches below the surface. The latter is usually a stiff granular clay or clay loam. It gradually changes with increase of depth to a dark-red residual clay similar to the heaviest phases of the subsoil of the Decatur loam.

Small areas of this type occur along the Cahaba River, most of them being too small to map. The largest tract of such land is found near River Bend, occupying a moderately elevated area underlain by limestone.

This type is essentially a residual soil containing but little material other than that of limestone. It has practically the same agricultural value as the Decatur loam.

#### CAHABA SILT LOAM.

The Cahaba silt loam is a light-yellowish silt loam or silty clay loam. The surface of the uncultivated land is rather compact. It contains more or less fine sand and little or none of the coarser grades. The organic matter content is also low—another cause of the compactness characteristic of the soil. If plowed when wet it is cloddy, but if cultivated at the proper time with regard to the moisture conditions the surface material is friable, or at least crumbly, and assumes a condition suitable for any crop.

There is no line of demarcation between the soil and the subsoil. The latter contains more clay and is quite compact, and its color is bright yellow. In some places it is distinctly a silt loam, in others it is a silty clay. Some of the areas in the lower Cahaba Valley in this county are nearly level and not so well drained as the small areas farther north. The soil of the latter usually contains more sand and the subsoil is a reddish-yellow silty clay. The red color of the subsoil is more noticeable near areas of Greenville fine sandy loam. Nearer the south county line the two types are less distinct.

This type is found on the second bottoms of the Cahaba River. It owes its origin to the deposition of sediments when the river flowed at a slightly higher level. It is probable that there is little difference in the mineralogical composition of this soil and the Huntington silt loam. The better drainage and the longer period to which the Cahaba soil has been subjected to the agencies of weathering have brought about changes in color and also in structure.

The original vegetation comprised white oak, water oak, ash, hickory, maple, swamp pine, and beech. There was also a heavy growth of cane in many places.

Nearly all of this soil is now cleared and much of it has been under cultivation many years. The high degree of permanent fertility possessed by the Cahaba soils is evidenced by the good yields of cotton on land which has been planted to that staple for years in succession. Some commercial fertilizer is now used and cotton-seed meal is applied, but neither are considered absolutely necessary. If a liberal supply of vegetable material were mixed with this soil its loaminess would be greatly increased and its physical condition immeasurably improved. Under such management the need for commercial fertilizers would be greatly reduced.

There seems to be no reason why alfalfa should not do well on the better-drained areas of this soil. The seed bed should be well pre-

pared, care being taken not to work the ground when it is wet. The finely pulverized soil makes a good surface mulch, retaining the moisture and insuring germination of the seed without covering it deeply. It is probable that an application of several hundred pounds of lime to the acre would be beneficial and that inoculation of the soil would be necessary.

Japan clover and a variety of grasses and herbaceous plants spring up on all the fields which are thrown out of cultivation for a year or two, forming good pasture.

The average crop yields on this type are perhaps more variable than on the Cahaba fine sandy loam. It is more difficult to manage in wet seasons and more labor is required to keep it in good tilth, for if the surface becomes compact the entire soil section loses moisture rapidly through evaporation. Deep plowing with frequent shallow surface cultivation is recommended.

This land is recognized as a desirable type for general farming. Its value is about the same as the Cahaba fine sandy loam.

Mechanical analyses of a representative sample of the soil and subsoil of this type gave the following results:

*Mechanical analyses of Cahaba silt loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18729..... | Soil.....    | 0.0              | 1.0              | 0.5              | 8.1              | 14.6             | 57.2             | 18.4             |
| 18730..... | Subsoil..... | .0               | .3               | .3               | 10.9             | 14.1             | 51.8             | 22.4             |

CAHABA FINE SANDY LOAM.

The Cahaba fine sandy loam to a depth of 6 inches consists chiefly of fine sand and silt. The clay content is low and there is usually present very little coarse and medium sand. It is barely coherent when moist and has a particularly soft, loamy feel. Under usual field conditions it is very friable, seldom becoming much compacted, and an excellent seed bed may be prepared with a minimum of labor. The color is usually some shade of brown, tending to a reddish brown on slight elevations or wherever the type borders areas of the Greenville fine sandy loam.

The subsoil is usually a reddish-yellow silty loam, becoming heavier with depth. The line of contact between it and the soil is generally well defined. In old fields where shallow plowing has been practiced there is a compact substratum just below the plow line. In some places the lower subsoil is a yellowish-brown loamy sand. On the slight elevations, which are frequently found in areas of this type, the subsoil is more compact, being a red or reddish-yellow silty clay.

In origin, topographic position and agricultural value this type is closely related to the Cahaba silt loam. Most of it lies a little higher with reference to the river channel and has more relief. As a rule, it is characteristically developed upon the low, broad swells occurring on the second bottoms of the Cahaba River.

The largest area of Cahaba fine sandy loam is located about 2 miles southwest of Centerville. The upper end of this tract, which in places is a reddish loam, marks the transition between the second and third terraces. Some of this soil is overwash material derived from the higher ground. Near the point where Affonee Creek enters the river valley there is a small area of dark reddish brown loamy sand, remarkably uniform in composition to a depth of several feet. A few very small areas of this soil occur near the Orangeburg types and are exceptionally early and productive.

This type is highly esteemed for cotton growing. It is easily cultivated, producing from one-half to 1 bale per acre. It withstands drought well, because the shallow, fine-textured soil forms a natural mulch. Even with the indifferent cultivation some of it receives, the physical condition throughout the growing season is exceptionally good.

If the humus content were increased, this type would be well adapted to corn. The suggestions regarding the adaptability of the Cahaba silt loam to alfalfa apply equally well to this soil. An excellent seed bed could be easily prepared, which would improve the chances of securing a good stand from the first seeding.

The type is well adapted to general farming. Most of it is now annually planted to cotton. It is valued at from \$40 to \$50 an acre, but practically all of this type is included in large plantations, seldom changing owners.

The following table gives the mechanical analyses of the soil and subsoil of the Cahaba fine sandy loam:

*Mechanical analyses of Cahaba fine sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 19058..... | Soil.....    | 0.3              | 0.2              | 0.5              | 33.2             | 37.8             | 23.1             | 4.7              |
| 19059..... | Subsoil..... | .0               | .1               | .2               | 21.1             | 24.8             | 31.2             | 22.1             |

HUNTINGTON FINE SAND.

The soil of the Huntington fine sand is a dark reddish-brown fine sand. In most instances it contains enough clay and silt to give the surface a loamy character, and friable clods will form if the land is plowed when wet. In some places, particularly along the river

channel, the surface is quite loose, consisting almost entirely of fine sand.

The subsoil is an incoherent reddish-brown fine sand of variable depth. Here and there it rests upon a substratum of heavier material—a silty loam similar to the soil of the Huntington silt loam. Most of this type, however, is a sand or light fine sandy loam of unknown depth.

Small areas of this soil are found on each side of the Cahaba River. It owes its origin to the deposition of the coarse sediments brought down by this stream. When the river overflows these are dropped near the main channel or wherever the velocity of the current is checked.

In its mineralogical composition the material resembles to some extent the silt loam. It contains a good deal of fine mica and the silt and clay have much the same appearance as the fine earth of the heavier soil.

It is too light in texture to be well adapted to any but early maturing crops. Corn or cotton are liable to injury during summer droughts. It is exceptionally well suited to watermelons and cantaloupes. The narrow strips on the banks of the river are generally used for hay and pasture, on account of the uncertainty of overflows.

The results of mechanical analyses of typical samples of the soil and subsoil of this type are given in the following table:

*Mechanical analyses of Huntington fine sand.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18737..... | Soil.....    | 0.0              | 0.8              | 5.2              | 50.6             | 21.1             | 16.2             | 5.8              |
| 18738..... | Subsoil..... | .2               | .5               | 3.3              | 55.7             | 20.7             | 12.3             | 7.2              |

HUNTINGTON SILT LOAM.

The soil of the Huntington silt loam is a heavy silt loam, containing a small percentage of fine sand, but generally very little coarse sand and no gravel or stones. The relative proportion of clay, silt, and fine sand varies considerably, but the silt content is always high, imparting a soft and friable character to the soil, which is very apparent when it is moderately moist. On drying the surface becomes hard, but usually it is not dense. This porosity or openness in structure is characteristic of the material and is only destroyed by plowing when the soil is too wet.

The color ranges from a dull chocolate brown to a yellowish brown. It varies greatly, according to the moisture content, a wet surface being very dark in comparison with those well drained and dry. The

organic matter content of even uncleared, well-drained areas is not usually so high as that of most alluvial soils.

The subsoil, as a rule, resembles the soil in texture and structure. The color, however, is frequently a little darker. Streaks and pockets of sandy muck and thin strata of black mud are not uncommonly found at various depths. In some places the subsoil becomes heavier as the depth increases. On most of this type, however, standing water disappears in a few days, indicating an open structure of the deep subsoil. Near the south county line water-bearing sand has been found at 20 feet. Farther up the valley gravel occurs in places at about the same depth.

The surface is uneven, often rather undulatory where low swells are separated by irregular depressions. Many partially filled channels, marking the former course of the river, occur, and swampy lagoons often separate this type from the Cahaba soils.

This is strictly an alluvial soil of recent origin. All of it is subject to overflow, with the consequent deposition of much fine material. The source of much of this sediment is the Coal Measures of the Cahaba basin.

The Cahaba River drains several hundred square miles of land lying for the most part north of the Lafayette formation. Its upper tributaries drain extensive outcrops of the principal geological formations of the southern Appalachians. The main stream is confined to a comparatively narrow gorge and has a rather high gradient. Just below Centerville the Cahaba River finds its first opportunity to break over its banks when at high flood and to deposit some of the sediment gathered along its upper course. The varied nature of this material may be indicated by naming its source. Knox dolomite, Chicamauga limestone (Trenton), and Millstone grit, with shales and sandstones of the Carboniferous group, all contribute to the quantity of yellow-brown mud which the Cahaba carries during high stages of the water.

The soil thus formed is exceedingly fertile. Undoubtedly it is well supplied with all the mineral elements and contains sufficient organic matter to meet the requirements of heavy crops of grain. It is an excellent corn soil, the yields in favorable seasons being 75 bushels per acre. Occasionally a crop is damaged or even entirely destroyed by high water in the fall, but such occurrences are not frequent. Early frosts occasionally do some injury, but corn planted as late as July 20 has matured. Oats and grass do well. Johnson grass soon takes possession of the uncultivated fields, and is particularly troublesome, since its seeds are distributed over all the land by the winter overflows.

This land commands \$4 to \$5 an acre rent as corn land. Its market value, although very little is for sale, is in the neighborhood

of \$50 an acre. With the exception of fences, practically none of the type has any improvements. A small proportion of the type is covered with timber, but most of it is under cultivation.

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

*Mechanical analyses of Huntington silt loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 19072..... | Soil.....    | 0.0              | 0.2              | 0.2              | 2.9              | 2.7              | 67.0             | 27.2             |
| 19073..... | Subsoil..... | .0               | .1               | .2               | 10.7             | 8.7              | 51.9             | 28.2             |

WAVERLY SILT LOAM

The Waverly silt loam is an alluvial type characterized by its light color and fine texture. The soil consists chiefly of silt, having a rather high percentage of very fine sand. When dry and in good tilth it is loose and floury; when wet it has about the same color and consistency as putty, molding easily if pressed between the fingers. When thoroughly saturated, which is its usual condition during the winter months, it works up in the roads to a whitish sloppy mud that persistently adheres in a thin coat to the wheels of vehicles and the legs of horses.

There is but little textural difference between the soil and subsoil. The latter may be more compact and is mottled with streaks of yellow or very light-brownish yellow. Small iron concretions are present, but, as a rule, they are not abundant.

Near the stream channels the subsoil contains more than the average amount of fine sand. This difference in texture combined with better drainage gives the soil in such locations greater friability and a color approaching brown. This phase also occurs on small elevations and marks the transition into the Cahaba silt loam, and heavier portions of the Ocklocknee soils. Farther back from the streams and also in the central parts of some of the poorly drained second bottoms the Waverly silt loam is characteristically developed.

The organic matter content is low. The forest debris, nearly all of this type being covered with timber, usually forms a thin layer of decaying material which is scarcely mixed with the fine earth. The latter is affected only to the depth of an inch or two, and very frequently the whitish color prevails quite to the surface.

This type is found on Haysoppy, Affonee, and Blue Guttee creeks. Considerable areas occur on the second bottoms of the Cahaba River. Small ill-defined areas may be developed wherever alluvial material having poor drainage and a silty texture is found.

The characteristic forest growth consists of beech, white oak, and swamp pine. Poplar, water oak, holly, and occasionally birch and elm occur. There is usually but little undergrowth.

The type owes its origin primarily to poor drainage. The topographic position induces periods of saturation and partial drainage which slowly alternate during the season. These variations in the moisture content and the lack of humus cause a peculiar condition or arrangement of the soil particles. They seem to have lost the property of flocculation. When wet they form a pasty mass, which upon drying firmly cements, making a crust not easily reduced to good tilth. Under cultivation this crust either breaks into hard clods or falls into a loose pulverulent dust. It is difficult to get this material into a "grainy" or friable condition suitable for the best growth of cultivated plants.

Very little of this type is under cultivation. Fields which have been cleared and drained do not give satisfactory results. Their reclamation is a problem of considerable interest, as the increasing demand for lumber will cause much of this land to be cleared in the near future. The type so closely resembles similar soils in other areas where artificial drainage has been attempted that the results can be anticipated. The movement of water through a silty soil of this character is very slow. For days after a heavy rain the soil will remain saturated within a few rods of a ditch having ample depth and fall. No better results are obtained with tile drains, as they soon become filled with fine silt.

While it is highly desirable to lower the level of the ground water, it is not advisable to attempt to do so at once by making a complete system of permanent ditches. It has been found best to have a few open mains and numerous shallow laterals. The latter may be made by "back furrowing," that is, by plowing the land in narrow strips, leaving between the strips broad and rather deep furrows parallel to the surface inclination. This comparatively inexpensive method will give fairly good surface drainage. In normal seasons small grain can be produced or tame grasses can be established, the latter being the most profitable crops for this soil. In some northern areas timothy and reedtop produce heavy yields. It is highly probable if lime were applied to correct the acidity that crimson clover could be grown. Japanese clover and Bermuda grass thrive on the better drained portions of this soil.

With good surface drainage and the introduction of tame grasses the character of the soil improves. It is greatly benefited by any increase in the supply of humus, which not only changes the color but improves the texture and tends to make the soil fit for cultivated crops. The latter require aeration of the subsoil, a process dependent upon a permanent lowering of the water table. The difficulty of

effectually accomplishing this has already been indicated. It seems that with surface drainage and the prevention of overflows by straightening the natural stream channels all except the heaviest phases of this type may be utilized for pasture, hay, or cultivated crops not too sensitive to extremes of moisture.

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

*Mechanical analyses of Waverly silt loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18763..... | Soil.....    | 0.0              | 0.7              | 0.9              | 2.2              | 4.6              | 64.1             | 27.6             |
| 18764..... | Subsoil..... | .1               | .4               | .6               | 1.0              | 1.8              | 54.3             | 41.7             |

OCKLOCKNEE FINE SANDY LOAM.

The Ocklocknee fine sandy loam is an alluvial type found along the small streams. It represents reworked Lafayette and Tuscaloosa materials which have been washed from the hillsides and accumulated along the local drainage lines. This soil usually forms the "flats" of the narrow valleys which extend back among the hills. Many of these are less than one-fourth mile in width, but several miles in length, and have numerous branches.

In most places the soil to a depth of a foot or more is of very recent deposition. Since so great a proportion of the uplands has been cleared, erosion has increased, resulting in a rapid deposition of sand and finer material over much of the former surface of the alluvium. The original character of the soil has thus been changed. It has in most instances become more sandy, and as a result of cultivation the original humus content has disappeared. The color is determined almost entirely by the mineral constituents. Where the surface materials are derived from the Orangeburg or Susquehanna soils the particles retain their coating of ferric oxide. Such phases are red or reddish brown. The older or natural surface, as it may be termed, is dark colored if some humus is present, but when this element is lacking it is some shade of gray.

In most instances the soil is a fine sandy loam to a depth of 10 to 15 inches. It is coarsest near the stream channel and in the small coves at the heads of the branches. The soil of some of the larger areas approaches a silt loam in texture, or at least includes a high percentage of fine material. The subsoil is a sandy clay or clay loam becoming heavier with depth. Not infrequently thin layers of sand occur. The lower portion is more or less mottled with gray and brown, and if the underdrainage is or has been poor iron concretions are present.

This type has a comparatively high agricultural value. After it has been cleared and drained a few surface ditches are usually sufficient to reduce the water table to a safe level; it is easily tilled and not seriously affected by seasonal extremes. Some of it is frequently overflowed, but water does not remain on the surface long. A few places in each valley may have poor natural drainage, not easily remedied by ditches, the soil remaining cold and sour. Such areas are essentially Waverly silt loam, but it is not practicable to indicate them on the map.

Corn and cotton are the principal crops. On many farms the small area of branch-bottom land is the best soil for corn, and is continuously planted to that grain, or only occasionally changed to cotton. The original vegetable material is exhausted, and recourse is often had to commercial fertilizers and light applications of cotton-seed meal. If the humus content were increased by plowing under green crops, which could profitably be included in a rotation, this soil would need little or no other fertilization, and it is safe to say that the present average yields of these two staples would be doubled.

This soil is the favorite location for small patches of sugar-cane, which almost every farmer plants for domestic use. The yields of sirup are invariably high, but the quality is not so good as that obtained from cane grown on the light upland soils. Japan clover, Bermuda grass, Johnson grass, and crab grass make a rank growth in these bottoms.

The results of mechanical analyses of samples of this type are given in the following table:

*Mechanical analyses of Ocklocknee fine sandy loam.*

| Number.    | Description. | Fine gravel.     | Coarse sand.     | Medium sand.     | Fine sand.       | Very fine sand.  | Silt.            | Clay.            |
|------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|  |  | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. | <i>Per cent.</i> |
| 18743..... | Soil.....    | 0.5              | 1.5              | 8.9              | 50.3             | 6.8              | 21.3             | 10.6             |
| 18744..... | Subsoil..... | .2               | 1.9              | 4.1              | 27.1             | 10.0             | 33.1             | 23.7             |

OCKLOCKNEE CLAY.

The Ocklocknee clay is an alluvial soil associated with the Ocklocknee fine sandy loam. It is not of such common occurrence as the latter type, since it has been formed only where the sediments consist chiefly of very fine material derived from the heaviest beds of the Tuscaloosa.

On Sandy Creek and in a few places on other small streams the soil is a clay or heavy clay loam. Along the tributaries of the above-mentioned creek, which drains "Soap Hill," the soil to a depth of

2 to 3 inches is a reddish fine sand or sandy loam, beneath which occurs a stiff, heavy red clay. The latter is highly micaceous and becomes very soft and adhesive when wet.

Farther down the stream some of the larger areas have poor natural drainage and the clay is lighter colored. The soil is frequently a light yellowish clay loam, with varying amounts of silt and fine sand. The subsoil is a mottled clay, slippery and plastic when wet and very hard when dry. Iron concretions are not uncommon in these poorly drained spots. On slight elevations, where the drainage is better, the subsoil to a depth of several feet is a red clay. In such places there is usually more silt and fine sand in the soil than in the low areas.

Much of this soil has been cultivated many years. When new it was well supplied with humus and produced excellent crops of corn. The content of vegetable matter is now low, and the land is difficult to manage. The yields of corn and cotton are greatly affected by seasonal extremes. In many cases a short drought is as injurious as an excess of rain. This is due in a large measure to the prevailing method of cultivation.

In spring there is an excess of moisture in the soil, with perhaps a saturated condition of the subsoil. The young corn or cotton plants develop very shallow roots. After cultivation is suspended in July or August the water table has usually sunk several feet. The clayey soil, which has an inherent tendency toward compactness, becomes hard and rapidly loses moisture by evaporation. The plants are thus left rooted in comparatively dry earth. Continued shallow cultivation should be given in order to prevent the escape of moisture which rises from the lower subsoil. A boring in a field in which cotton plants are plainly suffering from lack of moisture will invariably show damp earth at less than 36 inches. Effective drainage is highly essential, and the value of this type justifies considerable outlay for such an improvement.

A few small areas of heavy yellowish clay loam on Hills Creek and Caffee Creek have been included with this type.

This soil is well adapted to oats and grass. Much of it could be profitably utilized for pasture and hay.

Owing to the variable composition of this type, no samples were taken for mechanical analyses.

#### ROUGH STONY LAND.

In Rough stony land have been included all those areas which as a whole are so rough and stony as to be nonarable. The extensive outcrops of the Trenton limestone near River Bend and the chert hills on the Little Cahaba River give rise to some very broken country.

The gorges of the streams flowing through the Coal Measures are very stony and deep in places, but usually too narrow to be shown on a map of the scale used.

This type has no agricultural value, except for the scanty pasture afforded. Most of it is now forested, and the character of the timber remaining determines its market value, aside from the minerals which underlie some parts of it.

#### MEADOW.

Along some of the streams there are strips of alluvium so frequently overflowed or so constantly saturated that they have at present no agricultural value except for pasture. The character of the surface soil ranges from a black muck to nearly clean sand. The subsoil usually exhibits the white and mottled colors characteristic of poorly drained material.

If the stream channel were straightened and the surface cleared of brush and timber much of this land in a few years would resemble the Ocklocknee soils.

The value of some of these semiswampy areas as pasture could be increased by clearing out the dense brush and timber and encouraging the growth of grass. In similar locations elsewhere redtop (herd's-grass) has been established by merely sowing the seed broadcast without any preparation of the soil.

A phase of Meadow occurs as narrow strips of flat land on the extreme upper tributaries of Affonee and Blue Guttee creeks and consist chiefly of muck. It is a soft, black mass of decaying vegetable remains filled with the roots of trees and shrubs now growing upon the surface. Its depth ranges from a few inches to several feet. Some of the deeper parts are nearly a peat and if dry would burn.

On the larger creeks an occasional spot of mucky soil is found, but conditions have been more favorable for the accumulation of such deposits near the heads of the streams.

Similar soils farther north are used for celery and onions. Heavy crops of timothy have been secured; also corn where satisfactory drainage is established.

#### SUMMARY.

Bibb County is situated in the central part of Alabama, having an area of 630 square miles. The surface of much of it is hilly, and in some sections quite broken. Nearly all the drainage is tributary to the Cahaba River, which has a southwesterly course through the center of the county. The lower half of the stream flows through a valley from 2 to 3 miles wide. The tributary streams in the southern half of the county have more or less bottom land, but those in the northern part, as well as the river itself, have very little alluvium.

Physiographically the northeastern part is the extreme southern end of the Appalachian Mountain system, the remainder of the county being essentially a part of the Coastal Plain.

The settlement of this county began about one hundred years ago. The majority of the early immigrants came from the Carolinas and from Tennessee. The present population of the southern and western parts is almost entirely rural, consisting for the most part of American-born citizens. In the northeastern part there are comparatively few farmers. Many of the residents in this section are foreigners or of foreign descent, and are employed in the coal mines.

Blocton, the business center of the mining industry, is the largest town. Centerville, located at the head of the Cahaba Valley, is the county seat.

Transportation facilities are good. The Mobile and Ohio Railroad crosses the southern part of the county, the Southern Railway the eastern, and the Louisville and Nashville and the Alabama Great Southern roads serve the northern part of the area.

The main county roads are being rapidly improved. Telephone lines and the rural delivery of mails extend to all the well-settled portions of the county.

The climate admits of the production of a wide range of crops. The growing season extends from the middle of March to the first of November. The rainfall of about 50 inches is usually well distributed.

Since the early settlement of the county cotton and corn have been the principal agricultural products. At present cotton is the money crop. A considerable acreage of corn is grown, but the average yield is 12 to 13 bushels per acre; usually it does not meet the requirements for home use.

Cowpeas, oats, sorghum, and other forage crops are not extensively grown, and not very much attention is given to stock raising. The local demand for meats, dairy and poultry products, and feed stuffs, such as hay and grain, is in excess of the production.

A limited amount of fruit and truck is produced. Although conditions are favorable for these industries, they have never been attempted on a commercial scale.

The largest plantations are located in the Cahaba Valley. Most of the cotton produced on them is grown by negro tenants.

The smaller farms are usually occupied by the owners, who rent part of their tillable land to negroes and also hire hands. The wages of the latter range from \$10 to \$15 a month.

Twenty-six types of soil were mapped in this area. They may be divided into three general divisions—the residual soils of the northeastern part of the area, the red upland types in the western and southern sections which are derived from the Tuscaloosa and Lafayette formations, and the alluvial types.

The Dekalb fine sandy loam has an extensive development in the northeastern part of the county. It is derived directly from sandstones of the Coal Measures.

Two types of agricultural value are derived from the Trenton limestones—the Decatur loam and clay loam.

The Clarksville stony loam is a type of low agricultural value and is derived from a very cherty limestone. It is frequently associated with Rough stony land and often called "Flint Hills."

The Orangeburg series includes two members. The fine sandy loam and the gravelly sandy loam occupy extensive areas in the uplands and include some farming lands well adapted to cotton, cow-peas, oats, and a great variety of minor crops.

The Greenville fine sandy loam is a highly valuable type for general farming.

The Guin soils are closely related in origin to the Orangeburg soils. They are lighter colored, have sandier subsoils, and are not so well adapted to the production of cotton and corn.

The Susquehanna soils include a gravelly loam which is found principally in the western and southern parts of the county. Most of it is of low agricultural value and should remain forested. The fine sandy loam has a very heavy subsoil, and in general is not as easily tilled or as productive as the Orangeburg fine sandy loam, which, in many places, it closely resembles.

The Kalmia fine sandy loam is a valuable type for general farming. It is related to the Orangeburg soils, and is usually found on the lower slopes of the hills and in some of the recent bottoms.

The Ocklocknee soils are found along the small streams. They represent the accumulation of sand and clay washed from the hills of Tuscaloosa and Lafayette material. Their present agricultural value depends largely upon the drainage.

The Huntington soils are the overflow lands of the Cahaba River. They, as well as the Cahaba soils, are composed chiefly of alluvial materials derived from the various formations found in the Cahaba coal fields. They are very fertile and constitute some of the most valuable farming land in the county.

The light colored and poorly drained soils along the creeks and in the lower Cahaba Valley have been included in the Waverly series. Owing to their poor drainage they have a rather low agricultural value.

A few types of soil, members of the Norfolk and Montevallo series, occur in limited areas and form an unimportant part of the soil resources of the county.

The Rough stony land, a nonagricultural type, and Meadow are of little importance in the county.

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