SOIL SURVEY OF AUTAUGA COUNTY ALABAMA.

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DESCRIPTION OF THE AREA.

Autauga County, Ala., is located near the geographic center of the State, and is included within meridians 86° 24′ and 87° 55′ west of Greenwich and parallels 32° 18′ and 32° 46′ north latitude. It is bounded on the north by Chilton County and on the east by Elmore County, while on the south and west the Alabama River and Big Mulberry Creek form an irregular boundary, separating it from Montgomery, Lowndes, and Dallas counties. Autauga County was originally a part of Montgomery County, from which it was separated in 1818. Later its area was reduced in the formation of other counties. The present area of the county is about 380,800 acres, or 595 square miles. The base map, scale 1 inch to the mile, upon which are located the towns, roads, railroads, streams, branches, houses, churches, and schoolhouses, was constructed with the plane table as the soil mapping progressed.

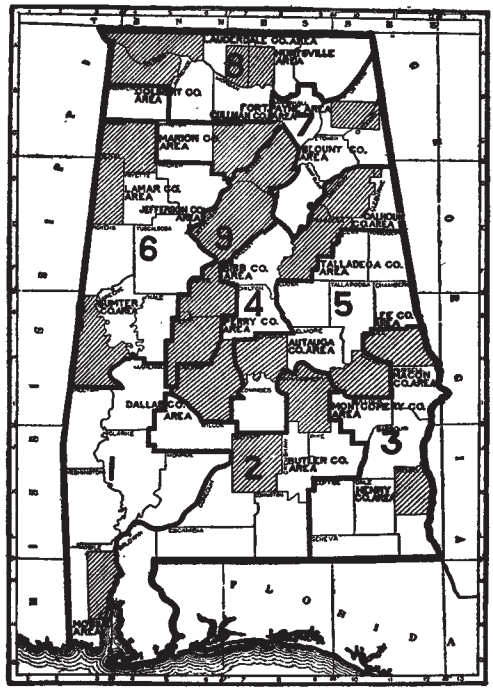

FIG. 12.—Sketch map showing location of the Autauga County area, Alabama.

The physiographic features of Autauga County embrace the comparatively level plains along the Alabama River and its larger tributaries and the hilly upland bordering these plains. This upland increases in ruggedness toward the northern part of the county, the elevation ranging from 250 to 650 feet above sea. Comparatively level peneplains or plateaus occur throughout the uplands, the

largest ones being located in the vicinity of Prattville, Autaugaville, and Mulberry. The uplands in the vicinity of stream courses are usually characterized by sharp ridges and steep escarpments.

The drainage of the uplands is usually excessive, and where steeper slopes are left unprotected serious erosion often takes place, resulting in the formation of steep, precipitous gullies. The bottom lands along the rivers are not naturally as well drained and frequently have to be supplied with artificial drainage.

Big Mulberry, Little Mulberry, Autauga, Swift, Beaver, Indian, and Buck creeks, all of which have a general southerly direction and whose waters flow into the Alabama River, form the main drainage system of the county. A small portion of the northeastern part of the area is drained by Mortar Creek.

The larger streams, including Big Mulberry, Little Mulberry, Autauga, Swift, and Buck creeks, are swift-running streams and are being developed to some extent for water power for lighting and manufacturing purposes.

The early inhabitants of Autauga County came from the Carolinas, Georgia, Virginia, and the New England States. The first community settlement was made in "Dutch Bend" in 1820 by immigrants of German descent who came from South Carolina. As early as 1818 a store was erected at Thompson's Bluff, a few miles up the river from Old Washington. The latter place was established as the seat of justice in 1825, but in 1833 the court-house was moved to Old Kingston. In 1868 the county seat was again moved to its present location at Prattville. Prattville has a population of about 2,000 and is the social and commercial center of the county. The other important towns and post-offices of the county are Billingsley, Marbury, Wadsworth, Booth, Vida, Haynes, Jones, Spur, Fremont, Mulberry, Independence, Huckabee, Autaugaville, and Kingston.

The county became somewhat noted for its manufacturing as early as 1833, when a cotton-gin factory of considerable capacity was established by Daniel Pratt. In 1846 a cotton mill was built at Prattville, and at about the same time another was established at Autaugaville. The industries now in operation include the gin factory, cotton mill, and cotton-seed oil mill at Prattville, and a number of large sawmills, located at Autaugaville, Marbury, Vida, Spur, and Jones. There are also in the county several small potteries, two turpentine stills, and four cigar factories. Many portable sawmills are at work in different parts of the county.

The first means of transportation to market was by "pole boat" down the Alabama River to Mobile. Later this was succeeded by steamboats, which plied between Montgomery and Mobile. This was practically the only means of reaching outside markets until the advent of railroads.

Four railroads now reach the county. The main line of the Louisville and Nashville, from Montgomery to Birmingham, crosses the northeastern corner of the county. The Mobile and Ohio Railroad, from Montgomery to St. Louis, crosses the eastern half of the county, entering near the southeastern corner and leaving the area near the center of the northern boundary. The Alabama Central connects Autaugaville with Booth. The Southern Railway from Rome, Ga., to Meridian, Miss., runs down the western edge of the county in the valley of Big Mulberry Creek. A branch of the Louisville and Nashville Railroad to Prattville furnishes additional transportation facilities to Montgomery, the principal market. Mobile has always been the chief seaport market. Most of the fruits and vegetables are shipped to Montgomery or Birmingham, or to more distant northern markets.

The southern half of Autauga County lies within the artesian belt, and a large number of flowing wells furnish an abundance of good water for domestic and manufacturing purposes. The water supply for the remainder of the county is usually obtained from springs and dug wells, ranging in depth from 30 to 80 or more feet.

The public roads of the county have been considerably improved during the last few years, but much still remains to be done in this direction.

CLIMATE.

No very complete record of the weather conditions in Autauga County being available, data has been taken from the station at Montgomery in the adjoining county. An examination of the accompanying table shows that the winters are of short duration, with little or no zero weather, and a monthly mean temperature considerably above the freezing point. The lowest temperatures are usually accompanied by north winds, which sometimes freeze the ground to the depth of an inch or so, and occasionally there is a slight snowfall, but this is soon melted. The summers are long and sometimes hot, but the mean temperature for June, July, and August, the three hottest months, is about 80° F. The Gulf winds modify somewhat the temperatures of the summer months, and the nights are generally cool.

The average mean annual precipitation, based on the records of twenty-five years, has been about 51 inches, while the mean monthly average ranges from 2.7 inches in September to 6.3 inches in March. The rainfall is sufficient to insure maximum yields of all crops suited to the region if ordinary attention is given to the tillage of the soil to conserve the moisture.

The maximum precipitation occurs during the winter months, when serious damage often results from washing and gullying unless the fields are protected by terraces, sidehill ditches, or the growing of

winter cover crops. The minimum precipitation usually occurs in the late summer or fall months, which makes it all the more favorable for the maturing and gathering of corn and cotton.

With regard to frost, the records at Montgomery give the date of the last killing frost in the spring as March 11, and that for the first in the fall as November 8. There is thus a period of nearly eight months during which tenderest vegetation will grow, and some crops may be grown throughout the year.

The mild winter makes it possible to graze stock and do outdoor work practically all the year. Shelter should, however, be provided for stock at night during the winter season.

The county in general is healthful and is supplied with an abundance of good water, a large portion of which comes from flowing wells ranging from 50 to 200 feet in depth.

The following table, compiled from the records at Montgomery, gives a general idea of the climatic conditions in this part of the State:

Normal monthly and annual temperature and precipitation, etc., for Montgomery.

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	48	79	5	5.0	7.2	17.8	0.4
February	51	83	−5	5.0	2.0	3.0	.8
March	58	87	21	6.3	3.6	11.9	Trace.
April	65	92	30	4.5	8.2	1.1	.0
May	74	98	43	3.8	2.6	2.6	.0
June	80	106	48	4.3	5.0	3.8	.0
July	82	107	61	4.6	.9	9.6	.0
August	81	103	58	4.6	2.1	7.8	.0
September	76	99	45	2.7	.2	2.7	.0
October	66	96	31	2.3	2.0	.4	.0
November	56	85	21	3.2	1.7	4.4	.0
December	49	79	8	4.5	4.2	4.7	.5
Year	66	107	−5	50.8	39.7	69.8	1.7

AGRICULTURE.

Beginning with the settlement of Autauga County, about 1818, its agricultural development has been centered upon the two staple crops, cotton and corn. Prior to the settlement of the county the lands were occupied by the Creek Indians, who used the region as their hunting grounds, and also grew a few small patches of maize.

The only means of transportation available to the early settlers was the " pole boat " on the Alabama River, and the pack mule. They

were obliged, therefore, to raise at home most of what was consumed. The cotton which they grew was woven into homespun; most of the wheat and a part of the corn was ground into flour and meal. They also grew rye, oats, and hay, and produced what pork, beef, and mutton they needed. Some tobacco was also grown for home use.

The immigrants of German descent who came from South Carolina were largely responsible for the early agricultural development of the area. They settled in one of the larger bends of the Alabama River, which was afterwards named "Dutch Bend." They were industrious, and it was not long before they developed a rich agricultural community and attracted immigrants from various other States, east and north, who also settled in the southern part of the county. Many of these early settlers accumulated considerable wealth in antebellum days. After the war conditions were changed, the large plantations with their organized labor were broken up, the lands thrown out of cultivation or farmed under the tenant system, which has persisted until this day. As the negro tenants are better qualified to grow cotton than the other crops, the farming has drifted into a one-crop system.

Cotton is grown upon the same land year after year, with the result the soils have lost much of their organic matter, while changes in their physical condition have helped to decrease the yields. To supply the deficiency commercial fertilizers of various kinds are used. Over $30,000 annually is expended in this way in Autauga County. In the last few years the "one-crop" system has been displaced to some extent by various crop rotations, whereby the fertility in the soil is restored through natural rather than artificial sources. The rotation usually practiced is made to include as many crops of cotton as possible and still maintain an average yield. The planting of cowpeas or peanuts between the corn rows has come into practice. Some follow the corn and pea crop with oats, or vetch and rye, which, besides preventing the land from washing, affords excellent winter pasturage. One of the best rotations is that recommended by the Auburn, Ala., experiment station. It consists of pease sown between the rows of corn, followed by oats in the fall. Second year follow oats with soy beans, cowpeas, or peanuts; third year, follow cotton with crimson clover or vetch and rye; fourth year, again follow cotton with oats, clover, or rye and vetch.

Some good system of rotation is always desirable, but for those who feel that they must grow cotton year after year on the same land the following method of green manuring is recommended: Plant cotton in rows 5 feet apart and at the last cultivation of the crop sow vetch broadcast. The following spring plant cotton in the middles of the old rows made up into beds as usual, leaving a narrow

strip upon which are standing last year's stalks and enough vetch to seed the ground for next year. After the vetch has gone to seed cut down the old cotton stalks, plow out the ridge upon which they stood, and sow cowpeas in the depression. In the fall the vetch is allowed to come up again, while the cowpeas are left to decay. Cotton follows cowpeas, while vetch is allowed to seed on the old cotton bed. Vetch produces a better stand usually upon soils which have previously been sown in cowpeas. A stand is not always obtained the first year, in which case the land should be reseeded the following year.

The present methods of tilling the soil, especially in the case of tenants, differ from those practiced in the earlier days. The plowing is usually done with the one-horse breaking plows, and the soil is seldom turned to a depth of more than 3 or 4 inches. The more progressive farmers are, however, using modern machinery for plowing their fields deeper and practicing more shallow after cultivation. This insures better drainage, better aeration, and a deeper feeding zone for the growing crops.

According to the census of 1900 the number of acres planted to cotton in 1899 was 50,000, or an area one-third greater than the combined acreage of all other crops and more than double that of corn. From this acreage an average yield of one-third bale per acre was secured. The greater part of the cotton is grown in the southern half of the county, where the soils are better adapted to its production. In the northern part of the county the soils are more sandy or gravelly, and this section has not been extensively developed. It is unlikely that cotton will ever become an important crop in this section of the county.

In 1889 the acreage in corn was between 25,000 and 30,000 acres. The average yield per acre was low, being only 10 bushels. Corn is by far the most important of the grain crops. Oats is next in importance, but only 3,000 acres is returned by the census as in this crop. Cowpeas and peanuts form important items in the agriculture of the county. In 1889 there were produced 25,000 bushels of cowpeas and 30,000 bushels of peanuts. This is of course aside from the acreage devoted to cowpeas grown for hay, which probably exceeds the area devoted to the production of seed.

The planting of pecan trees has attracted much attention in the last few years, and several large orchards have been planted in the vicinity of the Alabama River and in a few cases upon the uplands. Although but few of the orchards are in bearing, the growing of pecans bids fair to become an important industry in the county.

Trucking is being carried on in the vicinity of Prattville, the most important products being cabbage, tomatoes, peas, beans, and potatoes. The greater part of the truck grown is consumed in the county or sold

in Montgomery. Large areas of soils exist in Autauga County which are suitable to the growing of all kinds of truck crops, including potatoes, tomatoes, watermelons, and cantaloupes; so that this industry might be greatly extended. According to the census of 1900, about 1,000 acres were devoted to sweet and Irish potatoes, with an average yield of 75 bushels per acre. The same authority gives the total value of miscellaneous vegetables produced in the county as $42,945. Sugar cane and sorghum are grown to considerable extent and molasses and sirup of excellent quality are produced, but very little is marketed outside of the county. The census gives the production as 30,000 gallons of sirup annually and the yield per acre as 146 gallons. Stock raising has received but little attention in this area in the past, but with the introduction of more intensified methods of farming this industry is gradually being extended.

Fruit growing is another industry that might be developed in some sections, especially on the sandy and gravelly soils of the northern part of the county. Until recently this section has been forested with a heavy growth of longleaf pine, but this is rapidly being removed by numerous sawmills. Peaches of excellent quality are grown at present in the county, but no large shipments are made. Grapes, plums, and apples do well upon the Guin gravelly sandy loam, but have never been grown upon a large scale.

In the county as a whole the question of the adaptation of certain soils for certain crops has received little thought. Cotton and corn are planted on nearly all the soils, with varying results. Some progressive farmers, truckers, and dairymen, however, are giving the question some attention, as well as trying to improve the yield and quality of their crops by seed selection.

The farm labor is drawn almost entirely from the negro race. As a general rule, the men prefer to work as tenants, and this, taken in connection with the demand for labor by the sawmills and various other enterprises, causes a shortage in the supply of day laborers. Most of the large plantations are parceled out to colored tenants in "one-mule" farms. By this system the tenant is allowed as much land as he can work with one mule, and this is usually about 40 acres. He pays a rental of $2 to $4 an acre or works the crop on shares. In the former case the tenant usually furnishes his own mule, implements, and fertilizer, while in the latter the landlord furnishes practically everything, including half the fertilizer and seed. In both cases the tenants are supplied with cabins and with necessary supplies, giving a lien on the prospective crop as security. In recent years some of the tenants have prospered to such an extent as to enable them to purchase small farms.

Occasionally farm hands are hired by the month, the usual wage ranging from $8 to $12 a month, including board.

The total area of Autauga County is 595 square miles, of which amount only a little more than half is classed as in farms, and only about one-third of the farm lands are improved. The holdings range in size from a few acres to a thousand or more. Only about one-fourth of the farms are operated by the owners. The value of the farm lands and improvements, according to the census of 1900, including implements and machinery, was $1,571,362. The value of live stock and products not fed to live stock, $1,317,964. This valuation and output has been considerably increased in the last few years.

Deeper plowing and subsoiling are recommended, especially upon "worn-out" soils, and this should be done in conjunction with a complete system of crop rotation, which should include as many crops of legumes as possible. The raising of more stock will naturally follow the planting of forage and winter cover crops and more intensive methods of farm management.

Liberal applications of lime, in conjunction with both stable manure and green manuring crops, is strongly recommended for the farmers of Autauga County.

SOILS.

Autauga County lies within the Coastal Plain region and the different soil types encountered in the survey are similar to those found in various other surveys in the Gulf States. The surface features of the county consist of three natural divisions—namely, the bottoms along the Alabama River and its larger tributaries, the terraces along these same streams, and the uplands. These divisions are distinct from each other, both as to origin and the soils found therein.

The bottom lands represent the most recent formation in the area. They are subject to frequent overflow and are so wet and swampy that, with the exception of the Huntington loam in the bottoms of the Alabama River, they were classified as Meadow and Swamp.

The next division consists of the first and second terraces along the larger streams. The terraces were formed in Pleistocene time and represent depositions which took place either when those streams were estuaries or when the whole region was under the Gulf. The surface features of the terraces are such that the drainage has never been excessive. The terraces are also high enough above the streams to be free from overflow, and for these reasons the material from which the soils are derived have undergone very little change since its original deposition. The main soils found in this division are the Kalmia fine sandy loam, Kalmia sandy loam, Kalmia sand, Myatt sandy loam, Cahaba fine sandy loam, and Cahaba silt loam.

The third division rises rather abruptly from the terrace areas and extends to the northern boundary of the county, being made up principally of level to rolling uplands with good drainage. The soils

of this division are derived mainly from the gravel, sands, and clays of the Lafayette mantle. In the drainage areas of the creeks and branches, however, these overlying materials have in places been washed off, exposing sands and clays of Cretaceous age which underlie the whole area. In such places these earlier formations enter into the formation of the soil. The soil types found in the uplands are the Orangeburg fine sandy loam, Orangeburg sandy loam, Orangeburg sand, Orangeburg clay, Greenville fine sandy loam, Greenville sandy loam, Norfolk loamy sand, Norfolk sandy loam, Norfolk fine sandy loam, and Guin gravelly sandy loam.

Adjacent to the Alabama River, where erosion has been greater, a narrow strip of the "rotten limestone," one of the subdivisions of the Cretaceous, has been exposed and gives rise to the Houston clay and Houston chalk types.

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

Areas of different soils.

Soils.	Acres.	Per cent.	Soils.	Acres.	Per cent.
Norfolk loamy sand	76,992	20.2	Greenville fine sandy loam	8,384	2.2
Guin gravelly sandy loam	62,784	16.5	Kalmia fine sandy loam	4,992	1.3
Orangeburg fine sandy loam	51,328	13.5	Myatt sandy loam	4,416	1.2
Orangeburg sandy loam	39,232	10.3	Swamp	3,840	1.0
Orangeburg sand	31,616	8.3	Orangeburg clay	3,712	1.0
Meadow	23,488	6.2	Norfolk fine sandy loam	2,240	.6
Greenville sandy loam	12,032	3.2	Houston chalk	1,728	.4
Kalmia sand	11,904	3.1	Houston clay	1,664	.4
Norfolk sandy loam	10,816	2.8	Huntington loam	1,472	.4
Cahaba fine sandy loam	9,600	2.5	Oktibbeha clay loam	704	.2
Cahaba silt loam	9,152	2.4			
Kalmia sandy loam	8,704	2.3	Total	380,800	

ORANGEBURG FINE SANDY LOAM.

The soil of the Orangeburg fine sandy loam consists of a gray or brownish fine sandy loam varying in depth from 6 to 15 inches, but with an average depth of 8 or 9 inches. The subsoil is a red to reddish-yellow sandy clay, which usually reaches its maximum clay content at about 24 to 30 inches, below which the texture becomes coarser and the structure more open and porous.

A large well-developed area of this type occurs in the region west of Swift Creek, while lesser areas are found south and southeast of Mulberry and also northeast of Prattville. Its surface features vary from gently undulating areas upon the broad plateaus to deeply cut and broken areas upon the narrow divides. The topography, together with the rather open character of the subsoil, insures good

natural drainage; in fact, the drainage is inclined to be excessive in places.

Where this type occurs as rather flat or gently undulating areas upon the plateaus, the soil is usually of a reddish-brown color and shallow. Where it was found practicable to do so these areas were mapped with the Greenville fine sandy loam. Such areas are known locally as "mulatto lands." The removal of the surface soil upon the steeper hillsides gives rise to the Orangeburg clay, but frequently these occur as areas too small to be represented upon the map.

The sandy nature of this type admits generally of easy cultivation, but where the texture is very fine the soil shows some tendency to run together or to become compact during wet seasons. To prevent this the fields should be plowed in the fall and sowed to oats or rye and vetch.

The Orangeburg fine sandy loam is derived through the process of weathering from the sandy clay materials of the Lafayette formation. In its natural state it supported a forest growth of hickory, pine, persimmon, dogwood, and various kinds of oak, including red, black, and post oak.

The main crops grown are cotton and corn, the former being somewhat better adapted to the type than the latter. Cowpeas, velvet beans, oats, and crimson clover also do well. Sugar cane gives large yields, but the color and quality of the sirup do not equal that produced upon the Norfolk soils. The soil is well adapted to peaches, and if properly handled they can be grown with profit. Most of the trees, however, are never sprayed or pruned, and are frequently short lived, and the fruit is diseased and drops off before it is matured. Where the location of orchards is properly selected and the trees cared for according to the best methods, the fruit is of excellent color and size and highly flavored. The Elberta variety is a favorite. There are as yet no large orchards in the county. Figs, plums, and strawberries do well upon this soil, and filler tobacco has been grown with considerable success in Perry, Dallas, and other counties.

A large proportion of this land is worked by colored tenants and is planted year after year to cotton and corn. The first year or two after the land is cleared the humus is sufficient to insure fair yields, but with the usual methods of cultivation of the soil the organic matter is soon depleted and the use of commercial fertilizers is resorted to. No attempt is made permanently to build up the land because the tenant rarely occupies the same farm two years in succession. Where the farms upon this type are managed by the owners and attention is given to crop rotation and deep plowing, yields of one-half to 1 bale of cotton and 15 to 30 bushels of corn per acre have been obtained.

Experiments which have been conducted upon this soil show that stable manure is superior to mineral fertilizer, and this is even surpassed by green manure (cowpeas) with lime. Stable manure is not always available under the present system of farming, so that the growing of legumes is probably the most practicable method of building up the land. The growing of a winter cover crop to prevent washing and to supply forage should be included in the management of this type as well as of the Orangeburg sandy loam. The native grasses do well and furnish good grazing. With the growing of more forage crops, stock raising could be carried on more extensively. Large bodies of this type are held at $5 to $25 an acre.

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

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.*	*Per cent.*
18315	Soil	0.5	1.5	2.4	29.5	21.2	36.2	7.9
18316	Subsoil	.1	1.2	1.5	25.3	13.9	28.4	30.2

ORANGEBURG SANDY LOAM.

The Orangeburg sandy loam, locally known as "gray sandy land," is a grayish to brownish medium-textured sandy loam, ranging in depth from 6 to 15 inches, with an average depth of about 10 inches. The subsoil is a dark-red to brick-red sandy clay to a depth of about 36 inches, below which the clay content diminishes and the material grades into the underlying looser Orange sands.

The greater part of this type occurs between Prattville and Independence. Other areas occur north of Prattville and in the northwestern part of the county.

In topography the Orangeburg sandy loam is characterized by frequent occurrences of deep valleys and tributary gullies, which have dissected the original peneplain into long narrow ridges and steep rounded knolls. Small areas of this table-land occur upon the wider ridges.

The drainage is always excellent and sometimes excessive, so as to cause serious erosion unless the slopes are protected by forest growth or where cultivated by terraces or cover crops. The many gray and red spots upon the hills are due to the exposure of the subsoil caused by erosion. The soil is derived directly from the breaking down of the Lafayette mantle, which forms the main covering over the northern half of the county.

Forests, chiefly of longleaf and shortleaf pine, originally covered this soil, but these are being rapidly exhausted by the lumber companies. In recent years considerable areas of stump land have been cleared and put under cultivation. For the first few years the yield per acre of cotton without fertilizer varies from one-half to three-fourths bale, while that for corn ranges from 15 to 20 bushels, but with continuous cropping the humus is soon exhausted, and the productiveness of the land declines rapidly. In some cases the yields are maintained by the regular use of commercial fertilizers; in others a reasonable return may be expected from this land each year. As soon as the yields become too small to give a fair profit the fields are abandoned and allowed to grow up in field pine. The use of fertilizers is increased from year to year as the supply of virgin soil becomes less. It is less affected by the extreme weather conditions of drought or excessive rains than some of the other upland types, and being more open and porous than the finer textured Orangeburg fine sandy loam it is less liable to compact or run together and is easier to cultivate. The two soils, however, have about the same agricultural value. It responds readily to the use of fertilizers and is a warmer soil generally than the Norfolk type of the same texture.

The Orangeburg sandy loam is especially well adapted to cotton, and also produces fair yields of corn and oats. Its adaptability to the growing of peaches has been recognized in other areas where soil surveys have been made. A good grade of filler tobacco is also produced in other localities. Large yields of sugar cane can be grown, but the quality and color of the sirup indicate that the soil is not generally as well suited to this crop as the deeper sandy soils bordering the bottom lands. Where this soil occurs upon the steeper hillsides and about the heads of gullies it should be allowed to remain in forest, because of the tendencies to excessive erosion.

Wherever this type has been cropped continuously to cotton and corn without rotation or the application of fertilizers, the yield of cotton has fallen as low as one-eighth bale per acre and of corn to 10 or 15 bushels per acre. On the other hand, the yields of these crops have been proportionally increased by the application of commercial fertilizers in varying quantities, the usual application being from 200 to 600 pounds per acre in the proportion of 100 pounds of acid phosphate to 200 pounds of cotton-seed meal.

The necessity of deeper plowing and more thorough cultivation is becoming generally recognized by the farmers who study the needs of their soils. The practice of growing legumes as a source of available nitrogen, and the use of cover crops or catch crops to prevent washing and as a means of supplying humus to the soil, is especially recommended to those who cultivate the Orangeburg sandy loam.

This soil is generally valued at from $5 to $20 an acre, depending upon its location and access to market.

The results of mechanical analyses of the soil and subsoil are given in the following table:

Mechanical analyses of Orangeburg 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.*	*Per cent.*
18988	Soil	0.8	12.4	17.1	35.6	7.9	19.0	7.1
18989	Subsoil	.2	9.7	10.2	24.9	5.4	17.1	32.3

ORANGEBURG SAND.

The soil of the Orangeburg sand varies in depth from 4 to 8 inches and consists of a brown to gray loose, incoherent sandy loam of medium texture. Below this the material is a loamy sand of a reddish color, which at depths varying from 18 to 36 inches grades into a dark-red sandy clay.

The Orangeburg sand occurs largely in the central and northern parts of the county. The largest connected area of it occurs as an irregular shaped body about 4 miles northwest of Prattville. The next largest area occurs from 3 to 4 miles southwest of Billingsley, in the northwestern part of the county, where it is developed as a succession of irregular bodies linked together into one continuous area. In that section of the county it is similar in texture and structure to the Norfolk loamy sand. The red color and shallow depth of subsoil are the essential features upon which the separation was based. Smaller areas occur throughout the other upland sections of the county. A few small areas were mapped on the river plains, where it occurs as outcrops of the original formaiton.

This type occurs largely upon the uplands, and its usual surface features are hilly and broken. Where it is associated with the Orangeburg fine sandy loam or the Orangeburg sandy loam it generally occurs upon the sides or at the base of slopes extending into the narrow valleys. Its drainage in general is excellent.

The Orangeburg sand is derived from sands and clays of somewhat doubtful age. The materials of the Lafayette and of the noncalcareous Cretaceous formations, exposed in places in this region by the removal of the Lafayette, are somewhat similar.

Millions of feet of high-grade pine lumber have been cut in the last few years from areas of this soil. The present growth is largely scrub-oak or black-jack, with a scattered growth of pine. Not more than a third of the area of this soil has thus far been cleared and put under cultivation.

For the first two years after clearing it yields from 10 to 20 bushels of corn and from one-fourth to one-half bale of cotton per acre. Continued cultivation to these crops, without recourse to rotation of crops to maintain the land, soon results in diminished yields and the planters find it necessary to use commercial fertilizers. The type is especially adapted to cowpeas, and the growing and plowing under of this crop is probably the most practicable method of increasing its productiveness. Experiments have shown that stable manure is the most efficient fertilizer that can be used.

When it is desired to produce vegetables for early market this type of soil is better suited for the purpose than either the Orangeburg fine sandy loam or sandy loam. It is also well adapted to sweet potatoes, watermelons, cantaloupes, and peaches. In some sections of the South wrapper-leaf tobacco is grown upon this soil. At present the Orangeburg sand is being largely used as a range for live stock. The native grasses and tender shoots of shrubs furnish fairly good pasturage.

Land of this type of soil is rarely sold separately. Included with other types it brings from $7 to $15 an acre, exclusive of the timber rights, which are usually sold separately.

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

Mechanical analyses of Orangeburg 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.*	*Per cent.*
18984, 18986.....	Soil.....	0.5	20.7	21.4	33.4	5.6	10.9	7.1
18985, 18987.....	Subsoil.....	.3	10.7	20.3	31.1	5.4	11.6	20.6

ORANGEBURG CLAY.

The Orangeburg clay consists of about 4 inches of dark-red to reddish-brown sandy loam to loam, resting upon a red sandy clay subsoil which extends to 36 inches or more.

The largest area of this type occurs above Bonita and extends in a northwesterly direction. Another large area occurs one-half mile east of Figtree Church, and one about 1 mile northwest of Harmony Church. Other smaller areas are found scattered about the county, usually associated with the Orangeburg fine sandy loam and sandy loam. The Orangeburg clay is found in the higher parts of the uplands. Its topography is in some cases very hilly, but it also occurs as high level areas. Its elevated position and broken topography insure excellent drainage. If care is not taken to protect the fields by means of winter cover crops and by terraces, serious erosion is apt to

take place. The Orangeburg clay is derived from the Lafayette formation.

The native vegetation consisted of pine, oak, and dogwood, but most of this has been removed and the land has been put under cultivation. The type is regarded as the strongest of the Orangeburg soils, and is well suited to general farming purposes, including stock raising. Cotton yields from one-fourth to two-thirds bale and corn from 10 to 15 bushels per acre. Oats also do well.

In the case of such heavy soils as the Orangeburg clay deep plowing is particularly advantageous. The soil materials where unbroken are penetrated with difficulty by plant roots and the shallower the seed bed the more circumscribed is the feeding zone. Deeper plowing enables a wider spreading of the root system and a more perfect development of the plants in general, with a consequent increase in the yields. It also affords a larger reservoir for moisture, enabling the crops to pass with safety through much longer periods of drought.

The soil is usually deficient in humus. Stable manure is probably the best fertilizing substance that can be used; but its use is restricted in this region, as comparatively little live stock is kept and little attention given to conserving the available supply. The turning under of cowpeas is a practicable and economical method of building up this soil. In the winter a catch crop of oats, crimson clover, rye, or vetch should be grown as winter cover crops. They not only prevent the soil from washing, but afford winter pasturage and later may be cut for hay or turned under. In the absence of live stock there is no better way to supply humus to the soil than to use these crops for green manuring. The type is valued at from $8 to $15 an acre.

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

Mechanical analyses of Orangeburg clay.

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.*	*Per cent.*
18992	Soil	0.5	3.0	9.0	39.0	5.9	18.9	24.4
18993	Subsoil	.1	1.8	8.7	26.7	4.5	10.5	47.7

KALMIA FINE SANDY LOAM.

The soil of the Kalmia fine sandy loam to a depth of 8 to 30 inches, with an average depth of 15 or 18 inches, is a dark-gray to brown fine sandy loam. At the lower depths the color becomes yellowish, being similar to the upper portion of the subsoil. The subsoil is a yellowish

sandy clay, which becomes heavier in texture with depth. It is sometimes slightly mottled below 30 or 36 inches.

The Kalmia fine sandy loam is sedimentary, being derived from materials of Pleistocene age. It is confined to the first and second terraces along the Alabama River and its tributaries, including Autauga, Swift, Buck, and Little and Big Mulberry creeks. The largest areas occur 1½ miles northeast of Autaugaville and in the vicinity of Vinehill, Jones, and Fremont. Other areas occur in the several bends of the Alabama River and along other streams.

The topography is gently undulating to sloping and the drainage is usually adequate for the average rainfall, but during stages of high water this type is occasionally partially inundated or is too wet for cultivation. The soil shows a tendency to "pack," but is generally easy to cultivate and does not suffer readily from drought if properly mulched. Artificial drainage is usually necessary to insure the best returns.

The native vegetation consists of water oak, pine, sweet gum, hickory, dogwood, and various kinds of shrubbery.

This type is best suited to corn, yielding from 10 to 20 bushels per acre, but where the subsoil is shallow and the soil has been well drained cotton yields from one-fourth to one-half bale per acre. Cotton grown upon this land is not subject to stain, as that grown upon the upland soils. If well drained this type should be fairly well suited to trucking, including peas, beans, cucumbers, raspberries, blackberries, and strawberries. It is especially suited for Johnson and Bermuda grasses and pasture. A fine grade of light sirup is also produced on this soil.

For general farming purposes this type is usually held at from $10 to $20 an acre, although at present very little is offered for sale.

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

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.*	*Per cent.*
18349	Soil	0.1	2.5	3.6	26.5	20.6	44.1	3.4
18350	Subsoil	.1	1.3	2.5	15.5	14.4	46.3	19.4

NORFOLK FINE SANDY LOAM.

The soil of the Norfolk fine sandy loam consists of a grayish light-brown fine sandy loam of uniform texture, ranging in depth from 6 to 20 inches. In the lower depths of the soil proper the color be-

comes yellowish gray and the texture is slightly heavier. The subsoil is a bright yellow sandy clay or heavy fine sandy loam extending to a depth of 36 inches or more. The lower part of the material is frequently mottled by iron stains. Iron concretions are occasionally found strewn upon the surface and disseminated throughout the soil.

This soil type usually has a loose friable structure, and when first cleared and put under cultivation is quite loamy, owing to the organic matter incorporated with it. It loses this characteristic to some extent after a few years of cultivation and shows a slight tendency to compact upon the surface after a hard rain, but does not bake or crack like some of the heavier soils. On account of its loose, incoherent structure and sandy texture it warms up early in the spring and is easy to till.

The surface of the Norfolk fine sandy loam is level to gently rolling, with enough irregularity to insure fairly good natural drainage. There are very few areas that can not be easily drained. The effects of fertilization are more lasting than with soils having looser and more incoherent subsoils.

Norfolk fine sandy loam is found upon the upland. It is confined almost entirely to the southern half of the county. It is derived principally from the weathering of the sand and clays of Lafayette age, to which the Pleistocene has probably made some contribution.

The native forest growth consisted of liveoak, water oak, and pine. Some marketable timber is still standing, but the greater proportion of these lands have been cleared and under cultivation for a good many years. When abandoned the fields soon become covered with a rank growth of broomsedge.

Cotton and corn are grown almost to the exclusion of other crops. The ridge method of cultivation is the common practice as with most of the other soil types in the area. No definite system of crop rotation is practiced, and commercial fertilizers are depended upon to maintain the yields. A few of the better class of tenants and owners plant cowpeas or peanuts between the corn rows, and a few of them have extended this practice to the cotton fields as well. This aids materially in building up the soil.

In general the average yield of corn on this soil ranges from 8 to 10 bushels per acre where no fertilizer is used. These yields are increased from 10 to 20 bushels by applying commercial fertilizers. With fertilization cotton yields from one-third to one-half bale per acre.

Better results than at present could be obtained by plowing this soil in the fall with a two-horse breaking plow, leaving it until spring for harrowing and reworking. A still better plan would be to plow the land deeply, harrow it thoroughly, and sow a cover crop, oats and rye, or vetch in the fall. In this way the tendency to wash and

leach will be retarded, a winter pasturage for stock afforded, and a crop of hay secured. The action of the roots of these crops will put the soil in a better physical condition, while the organic matter in the roots and stubble will add to the supply of humus.

This is one of the best strawberry soils in the area, although none of it is being used for this crop at the present time. It is also well adapted to peas, beans, radishes, beets, carrots, sugar corn, Irish potatoes, cabbage, sweet potatoes, and sugar cane. A very large part of the type is too far from market, however, to be used for trucking, with the present facilities.

In other parts of the South an excellent grade of wrapper tobacco is being produced upon this soil, and it is believed that where the soil is 15 or 20 inches deep there are possibilities in this direction in the present area. The land is valued at $10 to $14 an acre.

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

Mechanical analyses of Norfolk 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.*	*Per cent.*
18970	Soil	0.3	1.6	2.0	32.0	17.4	37.7	8.6
18971	Subsoil	.2	1.1	1.6	27.0	16.9	29.4	23.8

KALMIA SANDY LOAM.

The Kalmia sandy loam, to a depth of 8 to 24 inches, with an average depth of 10 or 12 inches, is a dark-gray, brown, or gray sandy loam of medium, or medium to coarse texture. The upper portion of the soil is usually quite dark in newly cleared areas, but after a few years of continued cultivation the soil becomes "leached" and a lighter gray. At the lower depths the color changes to a yellowish hue, being of the same color as the upper portion of the subsoil. Where this type occurs adjacent to stream courses or old river channels there are small areas in which the surface soil has a loose, gravelly sandy structure. These areas were not of sufficient extent to warrant mapping as a distinct type. The subsoil is a yellowish or slightly reddish sandy clay, usually becoming heavier with depth and frequently showing mottling below 30 inches.

The largest areas of the Kalmia sandy loam occur in the vicinity of Autaugaville and along Autauga, Big and Little Mulberry, Swift, and Buck creeks and upon the Alabama River terraces. Autaugaville and a portion of Prattville are upon this type. The Kalmia sandy loam is not so extensively developed in this county as the Kalmia sand. It is of about the same average texture, but on

account of the clay foundation is a much more productive soil than the deeper sands. This type is not naturally so well drained as the upland soils, but where it occurs upon the second terraces it is usually easy to drain artificially and is much more productive, especially for corn and hay, than the " gray land " (Norfolk sandy loam) of the uplands. This soil also suffers less from drought than the Norfolk sandy loam, but is often inundated at times of heavy rains. Artificial drainage is usually necessary to obtain the best results from this type.

The Kalmia sandy loam, like the other members of the Kalmia series, is of Pleistocene alluvial origin, and occupies the first and second terraces along the Alabama River and its tributaries. The topography is flat to gently undulating or sloping.

The native growth upon this soil is pine, water oak, sweet gum, hickory, elm, and other deciduous trees and shrubbery.

This type is best suited to corn and hay, but is also used for cotton. Its water-holding capacity, being usually well supplied with moisture, makes it especially suited for grasses and pasture, the hay produced being more nutritious than that usually obtained from the lighter upland soils. Bermuda grass has been grown extensively upon this type, yielding from 1 to 3 tons per acre. The better drained areas are suitable for trucking, but the type as a whole is not so well adapted to this industry as the warmer Norfolk sandy loam upon the uplands.

This type is valued at from $5 to $10 an acre, according to location and improvements.

NORFOLK SANDY LOAM.

Norfolk sandy loam to an average depth of 18 to 20 inches consists of a grayish or yellowish medium-textured sandy loam. The first 2 or 3 inches of the surface material is sometimes brownish and is a little finer textured than the underlying soil. The subsoil to 3 feet or more is yellowish in color and varies from a heavy sandy loam to a sandy clay in texture. Where it comes within 15 inches of the surface the texture is somewhat heavier, and instead of the even yellow color the material is mottled with reddish and brownish iron stains. Adjacent to some of the stream courses and old stream channels a few small gravelly sandy loam areas were included with this type.

The soil, except in the virgin state, is very apt to be deficient in humus, and for this reason is generally referred to as a " weak " soil. It is as dependent upon the use of commercial fertilizers to secure a paying crop as the Norfolk sandy loam. It is for the most part loose and friable, which insures good drainage, while the same open structure makes it a warm soil and favors early cultivation.

This type occurs chiefly in the southern half of the county. The next largest body occurs east and south of Mulberry. The town of

Autaugaville stands upon this type. A few scattered areas were mapped in the northern half of the county in the vicinity of Boothe, Rayshill, and Marbury. These have the same origin as the Norfolk loamy sand, the main difference between the two types being the difference in depth of soil, the sandy loam type having less than 3 feet of loamy sand resting upon a yellowish sandy clay formation.

For the most part the surface of this type is flat. In small areas it is slightly undulating, and here the drainage is sufficient in seasons of normal rainfall, but in the larger flat areas it is usually necessary to supplement the natural drainage by open ditches. A few small depressed or seepage areas occur throughout the type. The soil in these is usually a rich loam, which when reclaimed by drainage produces large yields of cotton and corn, and is especially well suited to sugar cane.

The origin of this type is practically the same as that of the Norfolk fine sandy loam. The type is formed from the weathering of the sands and clays of the Lafayette formation.

The native forest growth upon this soil was longleaf pine, water oak, and persimmon. Practically all the marketable timber has been removed and the greater proportion is under cultivation.

Most of the truck crops may be grown successfully on the Norfolk sandy loam. It is also a good soil for peaches, plums, strawberries, blackberries, sweet potatoes, and sugar cane. Aside from the home garden very little of this type is at present used for trucking. Occasional patches of watermelons and cantaloupes are grown for the local markets. The growing of lima beans, string beans, green peas, etc., could be developed into a paying industry. The selection and improvement of cowpeas and peanuts for seed purposes could be successfully conducted upon this soil and the yields of these crops materially increased. Strawberries could be forced to an early maturity and made to produce good yields with proper fertilization. Along the Atlantic coast the Norfolk sandy loam is used extensively for strawberry culture with profitable results.

This type, like most of the soils of the county, is cropped almost exclusively to corn and cotton. The practice of planting cowpeas between the corn rows is followed by some of the farmers who cultivate the Norfolk sandy loam, but it is exceptional to find cowpeas planted separately or with the purpose of rotating the crops. A good rotation of this soil is cotton, corn, oats, and cowpeas, sowing the cowpeas between the rows of cotton and corn and as a catch crop after the harvesting of the oats. Deeper plowing, with shallower after cultivation, is also recommended. Over the greater part of this soil the surface conditions favor the use of labor-saving machinery.

Corn yields from 10 to 15 bushels and cotton from one-fourth to one-half bale per acre. These yields are considerably increased where

a system of crop rotation is practiced and humus is put back into the soil. Johnson grass yields from 2 to 3 tons per acre. The finer textured bodies of this soil, having a yellow sandy clay subsoil at from 10 to 20 inches below the surface, could be used for growing bright tobacco. A fairly good grade of wrapper-leaf tobacco has been produced upon this soil in other sections of the South. With successful cigar factories already established in the county, this might become a paying industry here as in other counties of the State. The type is generally valued at from $10 to $15 an acre, according to location and markets.

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

Mechanical analyses of Norfolk 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.*	*Per cent.*
18043	Soil	0.6	25.3	16.7	32.0	6.6	13.9	4.4
18044	Subsoil	.0	15.9	19.3	30.0	7.2	15.7	10.9

KALMIA SAND.

The Kalmia sand, to an average depth of 10 to 12 inches, is a medium to coarse textured, grayish or brownish loamy sand or sandy loam. In its virgin state the first few inches of the soil is quite dark and loamy, owing to greater abundance of organic matter. The subsoil to 36 inches is a yellowish, rather loose, incoherent loamy sand of slightly coarser texture than the soil.

The Kalmia sand occurs on the level or slightly undulating terraces of the larger streams in the southern part of the county. These terraces owe their origin to deposits of sandy materials which were laid down by the larger streams during early flood periods and before these stream channels were lowered to their present levels. There are a few locations where the type is still in process of formation.

Originally the vegetation upon this type was chiefly shortleaf and longleaf pine, water oak, persimmon, and blackjack. Practically all the marketable timber has been removed and a large proportion of the type is now under cultivation in cotton and corn.

In many localities along the Atlantic this soil is used extensively for trucking and by heavy fertilization large yields of lettuce, peas, radishes, early Irish potatoes, cantaloupes, cucumbers, watermelons, strawberries, and other special products are obtained. In Autauga County, however, up to the present time very little attention has been given to trucking, except in the growing of watermelons and cantaloupes for the local markets. There appears to be no reason why

this industry should not be developed on a commercial scale in Autauga County.

With the usual methods of cultivation and fertilization corn produces from 7 to 10 bushels and cotton from one-sixth to one-third bale per acre. Where this soil is highly fertilized double these yields may be obtained. Sugar cane, producing a very good quality of sirup, can also be grown upon this soil, although the yield is not as large as on some of the other soil types. The soil is especially adapted to peanuts, which may be made a valuable crop in connection with hog raising, the hogs being fattened by being turned into the field to gather the nuts.

The Kalmia sand is generally deficient in organic matter and responds to applications of barnyard manure or plowing under of some of the legumes, preferably cowpeas. Where the growth is heavy the best results will be obtained by applying lime to the field before plowing the vines under. The use of lime in combination with a complete fertilizer has also been found beneficial, but unless some means is provided for maintaining the humus content of the soil the yields soon diminish.

This soil is usually valued at $5 to $10 an acre and is generally leased to tenants who give one-half the produce for use of the land.

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

Mechanical analyses of Kalmia 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.*	*Per cent.*
18415, 18966.....	Soil.....	0.2	22.5	32.9	27.2	2.4	11.2	3.3
18416, 18967.....	Subsoil.....	.3	20.3	32.5	28.9	2.4	10.9	4.5

CAHABA FINE SANDY LOAM.

The soil of the Cahaba fine sandy loam is a light-brown to reddish-brown fine sandy loam ranging in depth from 5 to 10 inches, with an average depth of about 7 inches. The material of the first few inches is usually slightly darker, owing to the presence of small quantities of organic matter. The subsoil is a light-red heavy fine sandy loam grading gradually into a dull-red sandy clay at a depth of about 30 inches. Below this the subsoil is mottled red, yellow, and gray, and the texture of the material becomes much lighter. Both soil and subsoil contain more or less mica flakes.

Development of the soil is confined to the second terraces of the Alabama River and its tributaries. The largest area occurs in the western portion of Dutch Bend. Another area of about the same

size lies south of Prattville and there are areas in Days Bend and throughout the river plains, including those in Big Mulberry Creek Valley.

The topography of the Cahaba fine sandy loam is flat to very gently undulating. The greater proportion of the type has a fairly well developed natural drainage, though in areas occurring in the level plains artificial drainage is usually necessary. On the whole the natural drainage, however, is somewhat better than upon the Cahaba silt loam. The Cahaba fine sandy loam is derived from the weathering of sands and clays of Pleistocene age.

The native vegetation consisted of sweet gum, water oak, pine, black gum, persimmon, and elm, the greater portion of which has been removed and the land put under cultivation. The type is a desirable one for general farm purposes and it is not usually allowed to stand idle. It is well adapted to cotton and corn, and with an application of 200 to 400 pounds of acid phosphate and cotton-seed meal yields of from one-fourth to one-half bale of cotton and from 15 to 30 bushels of corn per acre are obtained. The effect of commercial fertilizers is materially increased by maintaining a goodly supply of humus in the soil.

The most practicable method of incorporating organic matter in the soil is by growing legumes, though where available stable manure gives even better results. Applications of lime in connection with organic manures markedly increases their efficiency.

Oats yield from 15 to 30 bushels per acre, and this is a valuable crop either for grain, hay, or winter pasturage. Peanuts produce well, and not only enrich the soil but furnish the best of forage for hogs. They should be planted between the corn rows and cultivated at the same time as this crop. Sugar cane produces large yields of sirup of good quality.

As with many of the soils, this type should be plowed in the fall so that the fall and winter rains may sink into it and be available for the growing crops during seasons of drought. It is a warmer soil than Cahaba silt loam and can be cultivated earlier in the spring, while it is not so susceptible to drought later in the season as the latter type.

A large percentage of this soil is farmed by tenants who ordinarily plow to a depth of 3 or 4 inches only. Under such conditions its natural productiveness is but partially brought out. Like most soils in the county, the breaking is done with a one-horse plow or is bedded up without previous breaking. Deeper plowing and shallower after cultivation should be substituted for the present methods.

The value of this land ranges from $7 to $20 an acre. Most of it is held in large tracts and is not under the direct management of the owners.

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

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.*	*Per cent.*
17525	Soil	0.0	2.3	10.3	43.3	12.0	29.7	2.7
17526	Subsoil	.7	3.4	9.7	25.2	7.2	44.7	9.6

MYATT SANDY LOAM.

The soil of the Myatt sandy loam from 8 to 20 inches consists of a dark-gray medium to fine sandy loam. Sometimes there are large amounts of organic matter present, and this imparts to the soil a dark-brown color. The subsoil is grayish in color and varies in texture from a heavy sandy loam to a sandy clay. At a depth of about 3 feet the material is stiffer and more plastic and is mottled with iron stains.

This type occurs upon the river terraces in the southern part of the county, the largest area being found about 1 mile northeast of Forester Station. Other areas are found southwest of Kalmia, west of Autaugaville, and in the vicinity of Prattville, and also in Big Mulberry Creek valley.

Usually the areas of the soil which are practically level or slightly depressed are poorly drained. Frequently a hardpan condition of the soil is encountered at varying depths below the surface, and this retards the movement of the ground water. The type is regarded as a cold soil and difficult to handle in the early spring.

Like the Cahaba soils, this is derived through weathering from deposits of Pleistocene age, which form the terraces along the Alabama River and some of the more important tributaries of that stream. The native vegetation is principally bay, poplar, gum, shortleaf pine, with an undergrowth of shrubs and vines.

A few small areas of this type of soil in the vicinity of Prattville have been used for cabbage and other truck crops, and this soil seems well adapted to trucking. Cauliflower, lettuce, turnips, beets, and Irish potatoes give good results. Irish potatoes should be grown upon the better drained areas only. Tomatoes make a vigorous growth of vine, but often fail to fruit satisfactorily. Small fruits, such as strawberries, raspberries, blackberries, currants, and gooseberries, could be grown with profit upon the better drained areas. The soil is well adapted to Johnson and Bermuda grasses, and yields of 2 to 3 tons per acre are obtained. An abundance of water from flowing wells at a depth of 50 to 200 feet is obtainable, and this,

together with the adaptation of the soil to grass, makes it valuable for stock raising and dairying. Corn yields from 20 to 50 bushels per acre, when heavily fertilized, and oats from 30 to 40 bushels per acre. Sugar cane also does well.

In order to get the best returns from this soil, it is necessary to improve its physical condition. It is a comparatively simple matter to do this by draining with open ditches, by deeper plowing, preferably in the fall, and by turning under legumes. Experiments with the wire-basket methods have shown that applications of lime at the time the green manuring crops are turned under increase decidedly the beneficial effects of the organic matter. The liberal use of manure, either alone or with light applications of lime, will probably give as good results as plowing under a leguminous crop, but under existing conditions in the county where little live stock besides the work animals is kept the available supply of manure is far from sufficient to meet the requirements, and the most practicable way of managing the soil is to introduce a rotation of crops, including cowpeas, some of the clovers, or winter vetch, to be used as green manuring crops.

For general farming the soil is valued at $10 to $15 an acre, but where it is in close proximity to market it is held at higher prices for trucking and dairying.

The following table gives the results of mechanical analyses of the soil and subsoil of the Myatt sandy loam:

Mechanical analyses of Myatt 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.*	*Per cent.*
18946	Soil	1.9	19.0	18.0	29.2	13.5	13.1	5.2
18947	Subsoil	2.4	14.0	16.1	27.1	9.9	20.4	10.0

CAHABA SILT LOAM.

The Cahaba silt loam consists of a brownish or yellowish-gray friable loam or silty loam varying in depth from 4 to 10 inches, with an average depth of about 6 inches. The texture of the subsoil is somewhat heavier than that of the soil to about 30 inches, but below this it becomes a little coarser. The color varies from yellowish-gray in the upper portion to bright yellow at a depth of about 24 inches, and below this the material becomes distinctly mottled with red, yellow, and gray.

Where well drained the Cahaba silt loam is usually an easy soil to cultivate, but care must be taken not to plow when it is wet or serious difficulty will be experienced, the soil grains running together and the surface baking hard.

The soil of this type is confined to the southern part of the county in the neighborhood of the Alabama River. The largest area occurs 7 miles southwest of Prattville and other areas of considerable importance were mapped in Dutch and Day's bends on the river. It occurs upon first terraces and is sometimes associated with old abandoned channels a considerable distance back from the present stream. The soil is alluvial in origin, having been deposited in Pleistocene time. Its most typical development has been in the large bends of the stream. In its virgin state it is often in a semiswampy condition, especially during the rainy season, and usually before the land can be successfully cultivated it has to be drained.

Deeper plowing and better drainage, together with applications of barnyard manure and the growing of leguminous cover crops, would tend to keep the soil from "running together" and result in larger yields. The use of lime would cause the soil to flocculate and remove its tendency to compact.

Cotton is the leading crop and very little attention has so far been given to crop rotation. The soil is well adapted to both cotton and corn, the former yielding from one-fourth to one-half bale of cotton and 15 to 25 bushels of corn. Commercial fertilizers are used to some extent, the most popular application being a mixture of cotton-seed meal and acid phosphate. The most important change in the plan of cultivation is the adoption of some systematic rotation of crops in which a leguminous crop, either cowpeas, clover, vetch, or soy beans, is included with oats and rye as winter cover crops. Whether these crops are turned under as green manuring crops or not they will add considerable organic matter to the soil and maintain a supply of humus, of which the soil is badly in need. The land is held at from $7 to $10 an acre.

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

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.*	*Per cent.*
18351, 18950.....	Soil.....	1.2	2.5	2.9	6.4	10.4	57.9	19.1
18352, 18951.....	Subsoil.....	.0	.6	.7	1.7	3.3	58.1	35.7

GREENVILLE FINE SANDY LOAM.

The Greenville fine sandy loam consists of a brownish or reddish fine sandy loam varying in depth from 5 to 12 inches, with an average depth of about 8 inches. The subsoil is a dark-red to brick-red medium sandy or fine sandy clay which changes to a lighter colored

sandy loam at about 36 inches. Where the subsoil is close to the surface, the subsoil material is sometimes turned up in plowing, causing the fields to be quite red in spots. On the other hand, where the soil is deep or where there are small depressed areas in which water stands after heavy rains, the surface soil is rather dark colored.

This soil type is confined to the southern half of the county and is especially well developed in the vicinity of Prattville, Mulberry, and Huckabee. It occurs as flat to gently rolling areas and the drainage is adequate only in seasons of average rainfall.

The Greenville fine sandy loam, like the sandy loam, is derived from the weathering of the sands and clays of the Lafayette formation. The native timber has been almost entirely removed and the greater proportion of the land is under cultivation. Eroded spots, where the subsoil has been exposed, are usually permitted to grow up to wild plum trees and old field pine. The occurrence of these patches makes fields irregular and more difficult to cultivate. A better practice would be to build terraces where erosion is active, remove the growth, and plow the soil deeper so that it will be able to absorb a large proportion of the rainfall. In the course of a few seasons these gall spots could be reclaimed and made as productive as the remainder of the fields.

Under the present methods of cultivation the Greenville fine sandy loam, which is naturally well adapted to cotton, produces the rather low average yield of one-third to one-half bale per acre. The yield can be greatly increased by deeper plowing and more thorough cultivation and the growing of legumes and winter cover crops. In this way the water-holding capacity of the soil will be improved and the supply of humus, which has been diminished by continuous clean culture, will be maintained in sufficient quantity to meet the requirements of the crops.

Owing to the flat, gently rolling topography of the soil it is well adapted to the use of labor-saving machinery. It has been successfully demonstrated upon the soils of similar character that the planting of cotton and corn in checks, so that it can be cultivated in two directions, one at a right angle to the other, not only increases the yields but reduces considerably the expense of cultivation.

The average yield of corn varies from 10 to 20 bushels per acre, but with better methods of cultivation and seed selection these yields may be greatly increased. The oat crop also does well, but most of it is cut for hay, so that no definite figures can be given for the yield of grain. Cowpeas are grown considerably for forage and the acreage of this crop should be extended.

Farms consisting of the Greenville fine sandy loam are valued at $10 to $30 an acre, according to their location with regard to shipping point and local market.

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

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.*	*Per cent.*
19000	Soil	0.9	6.4	14.6	33.7	10.7	19.9	13.7
19001	Subsoil	.5	4.4	9.8	23.9	8.4	22.2	30.7

GREENVILLE SANDY LOAM.

The soil of the Greenville sandy loam is a dark-brown or reddish-brown loam or sandy loam varying in depth from 5 to 12 inches, with an average of about 8 inches. To a depth of about 30 inches the subsoil is a dark-brown to red, moderately stiff, sandy clay, which attains its maximum clay content between 20 and 30 inches below the surface. This soil is known locally as "mulatto land." It is a fairly uniform type, although some variation is found in small depressions which receive the wash from higher ground, the soil being somewhat heavier and darker in color than the typical areas.

The largest single area of this soil type occurs about 2 miles southwest of Autaugaville and is known as the "Pickett level." Another area lies immediately north of this and is practically a continuation of it. The "Montgomery level," which is located 2½ miles southeast of Prattville, embraces another large area. Other areas occur in the vicinity of Mulberry and scattered throughout the southern part of the county.

The Greenville sandy loam is an upland type, occurring as flat or rather gently undulating table-lands or plateaus, with rather poor surface drainage. Owing, however, to the friable character of the soil and subsoil the underdrainage is good, although this could be somewhat improved by tile drains. The surface drainage may also be improved by deeper plowing, enabling the soil to absorb more of the rainfall. When properly handled the soil can be readily put in good tilth. In origin the Greenville sandy loam is the same as the Orangeburg soils, being derived from the Lafayette formation. Originally the areas supported forests of pine, oak, hickory, and dogwood. Practically all the timber has been removed and the land put under cultivation. Its level topography and occurrence in large bodies favor the use of labor-saving machinery.

This soil is particularly well adapted to cotton, and though under the present methods of cultivation the yields are only one-half bale per acre, with proper cultural methods, including a rotation of crops, it can be made to yield a bale to the acre. Corn and oats also pro-

duce fair yields upon this type; the former, under the best management, can be made to yield 30 to 50 bushels per acre. Cowpeas could be grown not only for forage but as a green manuring crop. Oats and vetch with rye are as valuable as a winter cover crop on this soil as in the case of soils already described.

This soil is well adapted to trucking and is especially suited to tomatoes and Irish potatoes. Blackberries, raspberries, currants, gooseberries, and strawberries also do well.

Land of this character is generally held in large tracts and is not usually for sale. Its estimated value ranges from $8 to $30 an acre.

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

Mechanical analyses of Greenville 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.*	*Per cent.*
18041	Soil	1.4	19.8	17.3	24.3	7.3	18.5	11.5
18042	Subsoil	.7	13.5	10.3	17.8	5.4	18.7	32.9

GUIN GRAVELLY SANDY LOAM.

The Guin gravelly sandy loam consists of 10 inches of a dark-gray or brownish, gravelly, fine to medium textured sandy loam, resting upon a subsoil which to a depth of 2 feet is slightly heavier in texture and of yellow-brown color, at which point it grades into a sandy clay, the color sometimes changing to red.

The percentage of gravel and other coarse material is less in the subsoil than in the soil and diminishes with depth. In the vicinity of stream courses and around the heads of streams, where erosion has been greatest and where the surface is often hilly or broken, the type occurs in the most gravelly phase. The percentage of gravel is also higher upon the hilltops and crests of ridges, where the surface is frequently so thickly strewn with quartz gravel as to render the land of little or no value for agriculture. The purplish sands and clays of the underlying formation occasionally outcrop in spots at the surface and give rise to a heavier phase of the type. Sometimes where this type occurs adjacent to the Orangeburg fine sandy loam or sandy loam its subsoil resembles that of the latter types. Among the hills which form the bluff lines of the Alabama River small patches of the soil are found, but these are usually so eroded that the clayey subsoil is often exposed. The type occurs in the northwestern and northeastern parts of the county. In the northwestern part a good many iron concretions are found in the soil. Elsewhere the areas

are more level and the soil in many places is comparatively free from gravel. On gentle slopes adjacent to stream courses the material to a depth of several feet is sometimes a sandy gravelly loam.

The topography of the Guin gravelly sandy loam varies from undulating to hilly, and in some places is quite precipitous, with pointed knolls and sharp ridges. The drainage is usually very good, but on account of the surface coating of gravel and small stones erosion is not as severe as on many of the soils of the area where the topography is similar. It is never necessary to drain this type artificially.

The Guin gravelly sandy loam is derived from gravelly layers of the Lafayette formation. The erosion of these layers has removed the finer particles of sand and clay and left an accumulation of gravel at the surface. The soil was at one time covered with a fine growth of longleaf and shortleaf pine, but the timber has been largely removed. A scattering growth of pine, white oak, post oak, dogwood, hickory, and blackjack oak constitute the present forest growth.

The native grasses and tender shrubs furnish fairly good grazing for hogs, sheep, and cattle.

Owing to the gravelly nature of this type of soil, it is as a whole difficult to cultivate. Only a small percentage of its area is at present farmed. Cotton yields from one-fourth to two-thirds bale and corn from 12 to 25 bushels per acre. Both plowing and cultivation are usually shallow. Crops planted on this type suffer less from drought than the sandier soils, while they are not injured by abnormally wet seasons.

The Guin gravelly sandy loam is especially well adapted to grapes, and with proper shipping facilities and markets a paying industry could be developed. Plums, peaches, pears, and apples produce well and the fruit is of excellent quality. Land of this type is generally held at $5 to $15 an acre. It is owned mostly in large tracts by lumber companies. It is being gradually cleared and put upon the market. At present its chief value, aside from timber, is for grazing.

The following table gives the average results of mechanical analyses of fine-earth samples of both soil and subsoil:

Mechanical analyses of Guin 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.*	*Per cent.*
18952, 18954.....	Soil.....	4.4	22.5	15.1	20.4	6.7	23.1	7.5
18953, 18955.....	Subsoil.....	2.2	18.1	14.6	20.2	5.9	22.1	16.7

NORFOLK LOAMY SAND.

The Norfolk loamy sand consists of a grayish or brownish, fine to medium textured sandy loam with an average depth of about 10 inches, resting upon a yellowish or brownish colored sandy loam. Sometimes there is rather a large percentage of coarse angular sand in both soil and subsoil. In cuts the subsoil material seems to be sufficiently coherent to stand in perpendicular walls, but when dug it is loose and friable.

Along the crests of the steeper ridges where erosion has been active there often occurs a grayish or purplish sticky sandy clay, and here the soil is more coherent. In the vicinity of stream courses iron concretions and gravel are often found. This type occurs chiefly in the north-central and northeastern parts of the county, and extends south as far as Booth. Smaller areas are found about 4 miles north and 3¾ miles northeast of Prattville. The topography is flat to gently rolling, with abrupt escarpments along the streams and gullies. The drainage is always sufficient and frequently excessive, so that crops suffer from drought unless great care is taken to conserve the soil moisture. In wet weather excessive moisture finds a ready outlet through the loose, open-structured soil and subsoil, and the soil has the reputation of being leachy and of soon losing the effects of fertilizer.

The Norfolk loamy sand is derived from a noncalcareous formation of Cretaceous age and represents areas where the Lafayette has been removed by erosion. The native vegetation is chiefly blackjack oak and pine. The native grasses grow in abundance and furnish fair grazing. The type has not been extensively farmed, but by proper cultivation and fertilization it can be made fairly productive.

This soil is best suited to corn, cowpeas, peanuts, fruit, watermelons, cantaloupes, cucumbers, and other truck crops. Peaches, plums, and figs do well both in yield and quality of fruit. Corn does well if the rainfall is plentiful, but is easily affected by drought, the average yield being 12 to 15 bushels per acre. Under favorable conditions yields of 20 to 25 bushels per acre are sometimes obtained. Oats yield from 15 to 30 bushels per acre. Cotton does not do well unless there is an abundance of organic matter in the soil, and then yields ranging from one-fourth to one-half bale per acre are obtained. With the usual cultural methods, however, cotton is very susceptible to rust. Increased use of potash fertilizers seems to be the most practicable remedy for this disease.

The cultural methods practiced upon this soil are not always conducive to the best results. The breaking is done just before planting time with a one-horse plow, the soil being turned to a depth of 4 or

5 inches only. It is then marked off and the fertilizer applied. In planting corn the seed is dropped on the fertilizer and covered. In planting cotton the field is further prepared by throwing it up in low ridges or beds and the seed planted on the top of this ridge. Frequently the fields are not plowed before bedding, a few furrows being thrown together where the last year rows grew or over the water furrow between the old rows. Nothing more is done until the plants are large enough to cultivate, which consists of barring off, chopping or thinning, hoeing, and thereafter infrequent plowings, generally with sweep plows. The methods employed are being improved upon by two comparatively simple changes. The first plowing should be deeper than at present, the land being broken a little deeper each year until the plow reaches 8 or 10 inches below the surface, but when once the seed bed has been prepared and the plants well started the cultivation should be as shallow as practicable in order that the roots may be disturbed as little as possible. The two main objects of cultivation will be subserved if in the intertillage of cotton and corn 2 or 3 inches of the surface soil are kept in a friable condition.

Cowpeas and peanuts should be grown more extensively. They not only serve to renovate the soil, but make valuable forage for hogs and cattle. They should be grown as a catch crop in corn and as a crop to follow oats. Often it is preferable to plant them so that they may be thoroughly cultivated. Cotton should be planted on this type of soil only when it is in a good state of productiveness. The type offers opportunities for profit in the production of figs, and its texture makes it a good soil for watermelons and cantaloupes, with either of which crops given suitable markets and shipping facilities the average farmer owning this type of soil will be able to make more money than by attempting to grow cotton.

Only a limited acreage is at present under cultivation. It is used extensively as pasture. Its present valuation is governed largely by its standing timber. "Logged off" areas, however, are being offered at $8 to $10 an acre.

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

Mechanical analyses of Norfolk loamy 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.*	*Per cent.*
18958, 18964.....	Soil.....	0.8	16.4	27.8	30.7	4.4	13.9	5.8
18959, 18965.....	Subsoil.....	.4	15.1	25.2	33.6	4.9	13.3	7.1

HUNTINGTON LOAM.

The Huntington loam to a depth of about 10 or 12 inches is a dark-brown loam or fine sandy loam. The subsoil, like the soil, is rather variable in texture, and ranges from a heavy sandy loam to a sandy clay or silty clay. It is of light-brown color and extends to a depth of 3 feet or more. The lighter phase is confined to the better-drained areas and usually lies near the streams. The heavier phase occupies flat or depressed areas. Relatively large quantities of finely divided mica are usually present in soil and subsoil, and this gives rise to the local name of "isinglass land."

The Huntington loam occurs in small bodies and occupies flat, low-lying first bottom in the inner bends of the Alabama River. It occurs in small bodies, the largest of which lies about 7½ miles southwest of Prattville. The next largest area occurs as a crescent-shaped body in the point of Days Bend, near Benton Landing.

This is an alluvial soil composed of sediments deposited by the Alabama River in times of flood.

It is still in the process of formation, being subject to frequent overflow. It is extremely productive, and this condition is maintained by the annual addition of rich sediments. The natural fertility is shown by the dense growth of tall cane and blood weed, which find a natural habitat upon it. These canebrakes afford a good winter pasture. Floods inundating this soil generally occur in the spring and fall, but occasionally in June or July. This limits the use to which the land can be safely put. Corn, taking less time to mature than cotton, is grown almost exclusively. Where the season is favorable, yields of 75 to 125 bushels per acre are sometimes secured. To insure the best results it is necessary to plow the land deep and to pulverize it thoroughly by harrowing, so that the seed bed may be as loose, warm, and well drained as possible. This is one of the most productive soils in the area, but being subject to overflow the crops are somewhat uncertain. In its present state it is held at $10 to $40 an acre.

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

Mechanical analyses of Huntington 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.*	*Per cent.*
18976	Soil	0.2	0.3	0.8	21.2	18.2	39.6	19.5
18977	Subsoil	.0	2.8	13.3	45.2	11.3	17.1	9.9

OKTIBBEHA CLAY LOAM.

The Oktibbeha clay loam consists of 6 or 8 inches of heavy dark-brown loam or clay loam resting upon a subsoil of slightly mottled yellowish clay which extends to a depth of 12 to 15 inches. Beneath this the material grades into a more distinctly mottled yellow and gray clay. Below 30 inches it is of a light gray and mottled color and is very stiff and plastic. The surface of this type is occasionally strewn with gravel and small stones, and sometimes there are small spots of sandy loam scattered through the areas.

The Oktibbeha clay loam is confined to three comparatively small areas in the vicinity of Autaugaville and the Alabama River. One important body occurs about 3½ miles and another about 6 miles southwest from Autaugaville. The third area extends along the eastern edge of Bear Swamp southeast of Autaugaville. The total area of the type is less than 2 square miles.

The Oktibbeha clay loam is found in the level uplands. The drainage is usually sluggish and, while in ordinary seasons crops may be grown with an excess of rainfall, surface ditches are needed to carry off the surplus water. The underdrainage is also slow, the impervious subsoil retarding the escape of water downward.

The native forest growth is pine, oak, hickory, and poplar. The soil is derived from materials of Cretaceous age and represents areas from which the Lafayette has been removed by erosion.

Melilotus, Bermuda grass, and Johnson grass do well upon this soil and yields of 2 to 3 tons per acre are obtained. No alfalfa has thus far been grown, but it is believed that it would do nearly as well upon this soil as upon Houston clay. Stock raising and dairying are industries which could be profitably introduced.

This soil, owing in part to its low organic content, has a tendency to compact in uncultivated fields, but when properly cultivated it breaks down into a fine loamy mass and becomes a very good soil for cotton and corn. The former crop, which at present gives only one-fourth to one-half bale per acre, can be made to yield as much as a bale. The corn yield is 15 to 20 bushels per acre. Probably as great an increase in this crop as in the case of cotton can be made by the use of improved methods, including deeper plowing and seed selection.

Land of this type of soil in conjunction with other soils may be purchased from $10 to $15 an acre, according to the character of improvements and convenience to markets.

The following table gives the results of mechanical analyses of fine-earth samples of soil and subsoil:

Mechanical analyses of Oktibbeha clay 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.*	*Per cent.*
19004.....	Soil.....	2.2	7.4	9.4	18.5	8.0	34.7	19.2
19005.....	Subsoil.....	.7	3.4	4.0	8.3	3.9	25.2	54.3

HOUSTON CLAY.

The Houston clay consists of 8 to 15 inches of dark-brown or black clay or clay loam, underlain to a depth of 36 inches or more by a comparatively stiff, light-brown, highly calcareous clay or chalky material. Scattered through both soil and subsoil are a good many fossil shells and nodules of carbonate of lime. Land of this type becomes waxy and gummy when wet and at such times it is practically impossible to plow or cultivate it.

This type is found next to the Alabama River plains, where it occupies level to gently undulating areas. It is known locally as "black prairie land."

In many parts of the Gulf States this type of soil occurs in broad prairie areas and because of its very compact impervious structure is inadequately drained. In Autauga County it occurs in small areas which are sufficiently well drained to allow cultivation, except during seasons of excessive rainfall. The construction of a few small open ditches is usually all that is necessary to drain these areas thoroughly. The impervious nature of the subsoil, however, tends to check the free movement of soil moisture, and crops are likely to suffer both from excessive rainfall and from drought.

The Houston clay is formed from the disintegration of "rotten limestone"—Selma chalk formation of the Upper Cretaceous period, and is a highly calcareous soil, with a valuable special adaptation for alfalfa. Only a very limited acreage is under cultivation. The remainder is used mostly for grazing. Corn yields on an average from 10 to 20 bushels per acre, while the average for cotton is about one-half bale per acre. Johnson grass does well, yielding as high as 2 to 3 tons per acre. The fact that Bermuda and Johnson grass can be grown with success makes it a valuable soil for stock raising and dairying. No alfalfa is grown upon this soil in the county, but it has been demonstrated in other areas in Alabama and Mississippi that alfalfa can be grown with marked success wherever the drainage conditions are good. Melilotus also produces well.

The type is held in conjunction with other soils in large tracts and has an average value of $5 to $15 an acre.

HOUSTON CHALK.

The Houston chalk is derived from the rotten limestone. The surface soil to depths ranging from 6 to 15 inches is a heavy dark-gray or brown loam or clay loam which becomes lighter in color a short distance below the surface. The subsoil is a dark gray to bluish gray or highly calcareous clay or rotten limestone, with a jointed or shaly structure. At various depths this grades into a mass of impure limestone.

Areas of this soil type are the result of erosion and the soil conditions vary with the severity of wash to which the material has been subjected. Included with the Houston chalk were patches of "red prairie" or Susquehanna clay, "black prairie" or Houston clay, and "yellow prairie" or Oktibbeha clay loam. These patches were too small to be separated and shown with their distinctive colors in the soil map.

The Houston chalk is deficient in organic matter and when wet is very sticky and difficult to handle. When thoroughly dry it crumbles readily and has the appearance of impure slaked lime. Where the soil has been protected from erosion it assumes something the character of the Houston clay.

Scattered about upon the surface and embedded in both soil and subsoil are phosphatic concretions, shells, and fossil impressions, all of which contain varying quantities of phosphoric acid as lime phosphate. Thin strata of greensand also occur at various depths.

The largest continuous body of this soil is found about 4½ miles southeast of Mulberry in the vicinity of House Bluff on the Alabama River. Areas of less extent occur in the vicinity of Kalmia, and along the bluff line of the Alabama River plains. Other outcrops occur about 5 miles southwest of Prattville.

The topography is generally hilly and broken and the surface is cut by many gullies. The drainage over most of the areas is excessive and erosion is severe where no means are employed to prevent it.

The greater portion of the Houston chalk is unused and valued chiefly for pasture. In some places sweet clover has obtained a stand and serves to protect the soil from washing. Where no attempt has been made to check erosion, the surface is usually devoid of vegetation. By filling up the deeper gullies with brush and seeding down the slopes with sweet clover erosion can eventually be checked to a large extent.

The Houston chalk type is probably best suited to dairying or stock raising. For general farming purposes it has very little value

in its present state. In conjunction with other types of land it is valued at $5 to $15 an acre.

MEADOW.

The Meadow in Autauga County includes the low-lying, flat, poorly drained areas along the stream courses. In their present condition the areas are unsuited for farming. The materials forming the soil have been deposited during high-water time, and consist of wash from various soils on the uplands.

As it occurs along the smaller streams the soil is usually quite sandy and varies greatly in short distances. In some places it receives the washings from the red hills and retains the color for some distance along the stream courses. In other places the soil is dark brown to almost black. Along the largest streams where the water is sluggish during overflows the surface soil is usually a heavy loam or silt loam.

Along Little Mulberry, Swift, Autauga, Bridge, Indian, and Buck creeks the soils are somewhat more uniform. This is even more characteristic of the Little Mulberry and Swift Creek bottoms. The more elevated, better drained areas along these creeks consist of from 8 to 15 inches of a gray to brown sandy loam or light loam, resting upon a yellowish-gray to bright-yellow sandy clay, which below 24 to 30 inches changes to gray or is mottled. In some instances the soil could be cleared and cultivated without much extra drainage. It would be best adapted to corn and hay. In its present condition it makes excellent pasture during most of the year and is used almost exclusively for that purpose. Small patches of Muck are sometimes found associated with these bottoms. Where the large streams are dammed up for power purposes the backwater from these dams is responsible for the wet condition of a large percentage of the bottomland soils.

Small patches of sugar cane for home use are grown upon the better drained estuary deposits and washed-over areas of sand and light sandy loam which occur at the outer edges of the Meadow. This produces a sirup of light color and excellent quality.

The Meadow aside from its use for grazing is valued for the timber growth upon it, which consists of hickory, elm, oak, gum, and cypress.

SWAMP.

A comparatively limited area of Swamp, confined to the Alabama River plains, is found in the county. These areas are apparently the remains of former river channels which have become partially filled with sediments. In their present condition they have no agricultural value, and drainage would be very difficult and expensive.

The largest body of Swamp occurs about 3 miles east of Autaugaville, and is known as Bear Swamp. A sluggish stream emptying into the Alabama River is its only drainage outlet. Other areas occur southwest of Prattville. Along the smaller streams a few areas of Swamp occur, but these were too small to be mapped and were included with Meadow.

The present value of Swamp depends upon the character of the timber, which consists of cypress, gum, bay, and other water-loving trees.

SUMMARY.

Autauga County (area 595 square miles) is located near the center of Alabama, and lies wholly within the Coastal Plain region. It is characterized by three distinct physiographic divisions; the flood plains, the Alabama River terraces, and the broken uplands. The drainage waters of the area eventually reach the Gulf of Mexico through the Alabama River.

The early settlers came largely from Georgia and the Carolinas, and the present white population is made up almost entirely of the descendants of these settlers. There is a large negro population, which forms the chief source of labor.

Prattville is the county seat and the largest town. Autaugaville, Billingsley, Vida, Spur, Jones, and Marbury are flourishing villages.

The Louisville and Nashville, Mobile and Ohio, Southern, and Alabama Central railroads and the Alabama River furnish transportation facilities to the principal markets, including Montgomery, Mobile, New Orleans, Birmingham, Selma, and points in the north.

The climate is moderate and is suited to a wide range of crops. The mean annual temperature is about 65° F., and the precipitation about 50 inches. The average growing season is from March 10 to November 8.

Including Swamp and Meadow, 22 soil types were mapped in the area. The Meadow is not under cultivation, but is used extensively for pasture. The Kalmia sand, sandy loam, and fine sandy loam, and Norfolk sandy loam and fine sandy loam are generally used for cotton and corn, but are naturally better adapted to trucking. Sumatra wrapper tobacco has been found in other areas to be especially adapted to the finer-textured soils of the Norfolk series with a sandy clay subsoil at a depth of 15 or 20 inches.

The Cahaba fine sandy loam and silt loam are best adapted to corn, cotton, and forage. The Myatt sandy loam is well adapted to cabbage, turnips, beets, corn, and hay, including Bermuda and Johnson grass. The Huntington loam is subject to frequent overflow, but when the seasons are favorable very large yields of corn are obtained.

The Houston chalk, Houston clay, and Oktibbeha clay loam are residual soils derived from materials of Cretaceous age. The Houston chalk is badly eroded and has little present agricultural value. The Houston clay and Oktibbeha clay loam are suited to cotton and corn, and are well adapted to Bermuda and Johnson grass and alfalfa.

The Orangeburg clay, the Orangeburg sandy loam, and the Orangeburg fine sandy loam are better adapted to cotton than to corn. The sandy loam soils are also well suited to peaches. A fair grade of filler tobacco has been grown upon these soils in other areas. The Greenville sandy loam and fine sandy loam are best suited to cotton, but with proper management can be made to produce good yields of corn, oats, and forage crops. The Orangeburg sand, Norfolk loamy sand, and Guin gravelly sandy loam are rather light for general farming purposes, but are well adapted to peaches, grapes, and other fruits. The Orangeburg, Greenville, and Guin soils are derived from weathering of the pebbly loam, sands, and clays of the Lafayette formation.

Cotton is the chief money crop in the county. Corn is an important product, but none is grown for shipment. Oats, cowpeas, and peanuts are grown chiefly for forage. Truck crops, such as potatoes, cabbage, tomatoes, watermelons, cantaloupes, etc., are grown on a comparatively small scale, while some fruits are grown for the local markets.

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