SOIL SURVEY OF MACON COUNTY, ALABAMA.

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LOCATION AND BOUNDARIES OF THE AREA.

Macon County lies near the eastern boundary of Alabama, approximately 135 miles north of the Florida-Alabama line, and comprises an area of 621 square miles. Its extreme dimensions are 34 miles from east to west and 24¾ miles from north to south. Like all other

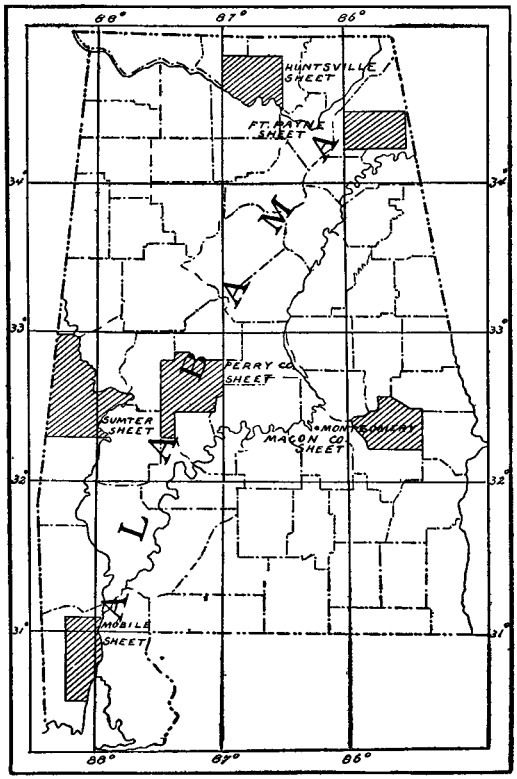

FIG. 11.—Sketch map showing location of the Macon County area, Alabama.

counties of the State, its outline is irregular. Tuskegee, the principal town and the county seat, is located in the north-central part of the county.

HISTORY OF SETTLEMENT AND AGRICULTURAL DEVELOPMENT.

Macon County was established December 18, 1832, by act of the general assembly of the State of Alabama. It was named in honor of Nathaniel Macon, the North Carolina statesman. Since its organ-

ization, however, considerable portions have been set apart to Bullock and Lee counties, constituting a reduction in area of about 300 square miles.

Tuskegee was laid out in 1833. Until this time the county was but sparsely settled by the few immigrants who had come from Georgia, the Carolinas, and Virginia, and the attention given to agriculture, under the existing order of things, was necessarily meager. After the removal of the Indians in 1836, however, the population of the State increased at such a rate that it was almost doubled in the decade ending in 1841, and the development of agricultural interests in Macon County was rapid.

The principal crops were cotton, corn, sweet potatoes, oats, and wheat. Cotton was the sole money crop, and more than one-half of the tilled land was devoted to its production. Every farmer planned to grow enough corn, sweet potatoes, and oats for his own needs, and a few grew wheat sufficient for home use. Nine-tenths of the supply of meat consisted of home-grown pork. This was varied occasionally in the winter season with mutton and beef. Sorghum had not been introduced at that time, and very little sugar cane was grown. By this plan each farmer produced the chief part of the necessary supplies, and depended upon cotton for his income.

CLIMATE.

Weather records for a period longer than three years have not been kept in Macon County, and so the following data are taken from the more complete records of the Weather Bureau stations at Montgomery, Union Springs, and Wetumpka. Montgomery is 18 miles west of the Macon County line, and the records of this and the other stations are believed to be fairly representative for this area.

Normal monthly and annual temperature and precipitation.

Month.	Montgomery.		Union Springs.		Wetumpka.	
	Temperature.	Precipitation.	Temperature.	Precipitation.	Temperature.	Precipitation.
	°F.	*Inches.*	°F.	*Inches.*	°F.	*Inches.*
January	48.3	5.37	45.5	4.90	46.3	4.25
February	52.7	5.34	49.2	6.85	46.5	5.56
March	57.0	6.47	56.2	6.16	58.8	5.70
April	65.4	4.80	65.6	3.68	68.0	4.38
May	72.8	4.05	73.7	3.02	73.7	2.32
June	79.4	4.67	80.7	4.33	81.7	3.29
July	81.5	4.53	81.1	5.38	82.2	5.12
August	79.8	4.13	80.4	5.00	81.7	5.84
September	75.6	2.95	75.5	2.78	.....	1.88
October	65.2	2.36	65.1	3.27	65.0	3.17
November	55.2	3.38	55.0	3.47	54.9	3.36
December	49.6	4.67	47.8	4.00	47.4	4.15
Year	65.2	52.72	64.7	52.84	.....	48.97

Situated in the Gulf Coastal Plain, a region of moderate winters and hot summers, the country enjoys a climate favorable to agriculture. Crops suffer occasionally from extended periods of drought, but the uniformity in distribution of the rainfall and an average growing season of two hundred and fifty-one days, entirely free from frosts, make possible considerable diversity in crop production. Periods of cold weather are short—usually from two to three days following rains, with warmer weather on the fourth or fifth day, which continues until the next rain. The summers often are quite oppressive, but moderating Gulf winds afford relief, and sunstrokes are almost unknown.

The prevailing winds are from the northeast and northwest during the autumn and winter and from the southeast during the spring and summer.

The occurrence of the last killing frosts in spring and the first in fall, for a series of years, and also the average date when such frosts may be expected are shown in the appended table.

Dates of first and last killing frosts.

Year.	Montgomery.		Year.	Montgomery.	
	Last in spring.	First in fall.		Last in spring.	First in fall.
1894	Mar. 30	Nov. 7	1900	Mar. 17	Nov. 9
1895	Mar. 17	Nov. 12	1901	Mar. 7	Nov. 16
1896	Mar. 21	Nov. 9	1902	Mar. 19	Nov. 28
1897	Feb. 28	Nov. 18	1903	Feb. 19	Dec. 18
1898	Feb. 23	Oct. 23	Average[a]	Mar. 9	Nov. 16
1899	Mar. 29	Nov. 6			

[a] Average dates for thirty-two years are Mar. 11 and Nov. 8, respectively.

PHYSIOGRAPHY AND GEOLOGY.[a]

The surface features of Macon County have the general character of a plain which slopes almost imperceptibly toward the sea. Further investigation, however, discloses three distinct physical features within the area. Along the main stream courses—the Tallapoosa River, Uphapee, Caleebee, Gubahatchee, Old Town, and Line creeks, and many of their branches—are low-lying, flat bottoms. The low terraces of such areas are subject to more or less overflow from streams which, with many horseshoe bends and other irregularities, wind through these bottoms. The upper terraces are rarely overflowed, and almost never during the crop season.

The second division includes the broad upland which lies above the highest terrace, and covers the chief part of the county. The gen-

[a] Direct references to geological formations in this chapter are based upon the report of Eugene Allen Smith, Ph. D., State geologist of Alabama.

eral configuration of this upland area varies from a gently rolling to a steeply rolling plateau; and in the latter case its surface is marked by many long ridges and hills which serve as watersheds, and determine the general direction of the streams of the county. Most of these elevations are less than 500 feet above sea level.

The third variation in surface features occurs in the southwestern part of the county, where the unevenly distributed surface materials have been removed. This has left exposed the broad, level, calcareous prairie, the topography of which is seldom broken by small ridges and conical-shaped hills, capped with the pebbles and sand beds of the drift, where these have not been completely removed. The general surface of this physiographic division is so level that the streams are very sluggish, and sloughs are of common occurrence.

Macon County lies almost entirely within the Coastal Plain, the boundary of that physiographic province passing just south of the extreme northern limit of the county. The oldest geological formations which have had any effect upon the soils of the area are the Tuscaloosa and Eutaw beds, and their influence appears only over small areas where the overlying Lafayette has suffered from erosion. The former of these deposits, which consists of mottled clays and cross-bedded sand, is first exposed about 6 miles south of the north line of the county. To the southward of this belt of Tuscaloosa materials follows a strip of some 6 miles in average width, underlain by the Eutaw sands. These are usually grayish, cross-bedded sands, which weather to red or yellow colors. The uppermost layers of this formation are characterized everywhere by shell beds, which mark the transition from the shallow water and offshore deposits of the Eutaw and Tombigbee sands to the great limestone and chalk formation of the Cretaceous period.

South of the belt of Eutaw strata beds of rotten limestone are found in the southwestern part of the county, which give rise to the "prairie soil." Along the border of the prairie, with the Eutaw sands, there is often a band of transition soil, formed by the intermingling of stiff lime soils with the red or yellow clay of a later formation. This soil has been mapped as Lufkin clay. On such lands the prevailing timber growth is post oak, and for this reason they are called "post-oak prairies." In the eastern part of the county the Eutaw is succeeded immediately by the Ripley marls of the later Cretaceous period.

At the end of the Tertiary period the mantle of loam, sands, and pebbles of the Lafayette formation was spread over the entire Coastal Plain part of the county, and it also overlapped the Paleozoic formation which underlies the extreme northern part of the county. Whether this material was deposited by virtue of a depression of the

land, and the consequent invasion of the Gulf to that extent, or by fresh-water currents from the direction of the land, stimulated to greater activity by landward elevation, is unknown, but from it are derived all the soils of the Orangeburg series, the Norfolk coarse sand, and a portion of the Norfolk sand. At the close of the Lafayette period the Coastal Plain was brought to its present elevation and subjected to a great amount of erosion, by which this mantle has been completely removed in the southwestern corner of the county, where the underlying Cretaceous prairie formations give rise to the Houston black clay, and are greatly diminished in thickness everywhere.

After this period the Coastal Plain was depressed sufficiently to allow the waters of the Gulf to advance inland and deposit a mantle of sands over the marginal sea bottom. As this part of the Coastal Plain again emerged, slack waters extended up many of the streams and deposited the sediments that at present constitute the second-bottom lands. This material, reworked to some extent with the underlying clays of older formation, gives rise to the Norfolk sandy loam.

SOILS.

Eleven soil types were recognized and mapped in this area, including Meadow. The extent of each of these types and the proportion it bears to the whole area are shown in the following table:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Orangeburg sandy loam	110,144	27.5	Meadow	19,328	4.9
Orangeburg clay	69,504	17.5	Norfolk sandy loam	9,408	2.4
Norfolk gravelly loam	56,960	14.3	Houston black clay	8,576	2.2
Norfolk coarse sand	42,752	10.8	Ocklocknee clay	4,800	1.2
Lufkin clay	32,000	8.1	Total	397,440	
Norfolk sand	22,016	5.5			
Norfolk fine sandy loam	21,952	5.5			

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam in its typical development consists of gray sandy loam, medium to coarse in texture, from 6 to 30 inches deep, with an average of 12 to 15 inches. The subsoil is red or reddish-yellow, stiff, sandy clay to a depth of 3 feet or more. The soil varies in color from light gray to dark brown, depending chiefly upon the methods of farming which have been practiced upon it. The surface soil frequently contains a low percentage of gravel and waterworn pebbles, and small veins of such material often occur in the subsoil.

Just south of the village of Tuskegee, and also in the vicinity of Laplace, there are small areas wherein the soil is more loamy than in its typical occurrence. The soil here has a yellowish-brown cast, due apparently to the intermingling of some of the red subsoil with the sandy loam of the surface. This has given rise to the so-called "mulatto soil," which is the most productive phase of the Orangeburg sandy loam, and is considered the best upland soil in the area. This apparent mingling of soil and subsoil was due primarily to natural causes, but it has been accentuated by the more thorough methods of cultivation which have obtained on it because of its natural productivity, and therein lies the key to the most effective management of that portion of the type where the underlying clay is within 12 inches of the surface. Cultural methods should be practiced for a term of several years, whereby successive slight proportions of the clay would be incorporated each year with the surface soil. This would make the surface soil more loamy, of greater depth, less subject to injury from the prevalent droughts, and consequently more productive. This phase would have been mapped as Orangeburg loam had its area been sufficient to justify the separation.

A lighter phase of the Orangeburg sandy loam occurs in the extreme northern part of the county. It occupies the rolling country that lies along the junction of the Gulf Plain and Ashland Plateau, where the Lafayette formation overlaps the southern slope of the plateau.

The soil is a coarse sandy loam from 10 to 30 inches deep, underlain by reddish-yellow sticky sand or clayey sand. It always contains small iron concretions and small quantities of quartz gravel, but not enough to constitute a gravelly loam. The soil is generally deeper and the sand coarser than that of the typical Orangeburg sandy loam. The subsoil contains more coarse sand and iron concretions, and its color is noticeably lighter than that of the normal type. In the vicinity of the Tuskegee Normal School there is a similar variation, which seems a gradation soil between the Orangeburg sandy loam and the Norfolk coarse sand. On the slopes bordering streams in the northern part of the county occasional small areas are found over which are scattered fragments of rocks which represent portions of the overlapped strata that have been most resistant to weathering, and have been left exposed by the removal of the soil mantle above them by rapidly flowing water. These stones are quartz or gneiss fragments, varying in size from 1 to 10 inches in diameter, and never occur in sufficient quantity to prevent cultivation.

The largest area of the Orangeburg sandy loam lies just south of Tuskegee and extends thence to the western border of the county.

Many areas of lesser extent are found in the uplands throughout the county.

The type occupies country generally rolling, although level areas of considerable size occur on broad-topped hills. The rolling character of the surface secures for this type good natural drainage. The soil is somewhat prone to wash on slopes, and gullies are often formed on steep hillsides. Scrupulous care should be observed in the management of the soil to overcome this tendency.

The Orangeburg sandy loam is derived from the sandy mantle and the clays of the Lafayette formation, which covers a large portion of the area.

Cotton and corn are the principal crops on this soil, as upon all other types of the area. The yield of cotton varies from one-eighth bale to 1 bale per acre, but one-third bale per acre is probably an average yield. Efficient methods of management would largely increase this yield, and the type as mapped should produce an average yield of from one-half to two-thirds bale per acre. The "mulatto" phase of this type, already mentioned, when well farmed for a series of years, has produced from two-thirds bale to 1 bale per acre year after year, and this fact should be sufficient incentive to the owners of this type of soil to undertake to increase its rate of productivity. This could be done by adopting the methods of tillage already mentioned, gradually incorporating the underlying clay with the surface soil, and by growing leguminous crops to supply additional organic matter.

Areas of the type subjected by position to washing have suffered severely from this cause, and preventive measures should be taken, such as contour plowing and cultivation and terracing the steep hillsides.

Corn yields from 6 to 30 bushels per acre, according to the management of the land, and the average yield is not above 10 bushels. Where the type is well farmed, oats yield from 10 to 50 bushels per acre, according to the season, with an average of 30 bushels.

The Orangeburg sandy loam is adapted to cotton, corn, potatoes, clover, cowpeas, and other general farm crops. It is also the best soil in the area for the production of fruits.

The table on the following page shows the texture of both soil and subsoil of this type.

Mechanical analyses of Orangeburg sandy loam.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10342	Tuskegee	Medium sandy loam, 0 to 12 inches.	2.2	16.1	15.2	21.7	20.3	17.9	6.3
10344	1¼ miles S. of Tuskegee.	Sandy loam, 0 to 9 inches.	2.3	7.6	6.6	24.2	25.3	25.2	8.7
10338	2 miles E. of Shorter	Coarse sandy loam, 0 to 15 inches.	1.6	12.3	18.2	28.1	12.1	18.6	8.9
10343	Subsoil of 10342	Red sandy clay, 12 to 36 inches.	1.9	13.8	11.7	16.1	13.7	18.1	24.4
10339	Subsoil of 10338	Red sandy clay, 15 to 36 inches.	.9	8.6	14.3	24.4	10.4	15.0	25.8
10345	Subsoil of 10344	Sandy clay, 9 to 36 inches.	.7	5.6	4.7	17.4	20.9	20.4	29.6

ORANGEBURG CLAY.

The surface soil of the Orangeburg clay, in its typical development, consists of heavy red loam or clay, with a depth of 6 inches. Frequently a shallow covering of sandy loam occurs, from 2 to 6 inches deep. When of the latter depth, the extremely shallow plowing generally practiced in the area gives to this type the appearance of a sandy loam, but if plowed to a proper depth the soil, even of this most sandy portion, becomes distinctly loamy in the course of a few years.

The subsoil has the appearance of a stiff red clay in cuts and gullies, but upon closer examination it is seen to be a mixture of clay and sand, which is shown by the mechanical analyses to be mainly of the fine and very fine grades. Such soil arrangement has given rise to the apt term "sandy clay," which sometimes is used in describing this subsoil. Certain portions of this type are termed "hog-wallow" lands. This appellative belongs more strictly to the Lufkin clay, and is mentioned further in the description of that type. Near its boundary with the Lufkin clay the Orangeburg clay is underlain frequently, at depths ranging from 1 to 3 feet, by the limestone subsoil of that type.

The largest area of the Orangeburg clay lies between Caleebee and Gubahatchee creeks, where it extends from Laplace to Cotton Valley. East and north of this area the type extends along Big Swamp Creek, and thence westward to Little Caleebee Creek. Several smaller areas are scattered over the southern half of the county.

The type occupies moderately rolling country, in which level and slightly rolling areas are not uncommon. In such areas, and in that part of the type already mentioned wherein the subsoil is the same as

that of the Lufkin clay, artificial drainage would be highly beneficial, but the greater part of this soil formation has good surface drainage. Well-marked slopes are liable to suffer from washing, and care should be exercised in their cultivation to overcome this destructive tendency. The slopes should always be plowed parallel to the lines of contour, and cultivation throughout the season never should be up and down the slope. In addition, terracing will be necessary in the steepest places, if they are to be cultivated to advantage.

The Orangeburg clay is derived from the Lafayette formation.

That part of the type which has a shallow covering of sand is cultivated as generally as any of the upland soils of the county, and produces yields of cotton and corn comparable to the methods employed. It should produce excellent crops with better and more thorough methods. Where the sandy covering is lacking the type is seldom farmed, because it is hard to work and requires thorough tillage. If this soil were plowed deeply and worked carefully with efficient implements only at times when moisture conditions were favorable, remarkable yields could be secured. Such tillage is not practiced, and as a result relatively little of this soil is cultivated. The type is well adapted to the production of cotton and other general farm crops.

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

Mechanical analyses of Orangeburg clay.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10350	4 miles S. of Tuskegee	Brown clay loam, 0 to 8 inches.	1.0	2.3	1.7	12.7	28.6	30.1	23.6
10348	4 miles W. of Liberty Hill.	Red sandy loam, 0 to 6 inches.	1.5	5.2	4.3	14.3	21.5	20.9	31.8
10346	2 miles N. of Warriorstand.	Red heavy clay, 0 to 6 inches.	.6	1.6	1.4	19.1	19.9	12.1	44.9
10349	Subsoil of 10348	Red sandy clay, 6 to 36 inches.	1.1	4.2	3.8	15.4	20.4	22.6	32.5
10351	Subsoil of 10350	Red clay, 8 to 36 inches.	.6	1.4	1.2	7.7	18.9	26.9	42.6
10347	Subsoil of 10346	Red heavy clay, 6 to 36 inches.	.2	.8	.6	13.1	18.3	10.3	56.7

NORFOLK COARSE SAND.

The surface soil of the Norfolk coarse sand consists of medium to coarse sand, which is slightly loamy to an average depth of 8 inches. The subsoil consists of similar material, which generally becomes coarser in texture with increasing depth, until it rests upon a bed of

coarse gravel. Fine gravel occurs throughout soil and subsoil, and the latter often contains iron crusts. From 10 to 60 per cent of coarse gravel is strewn over the surface of small areas. The materials composing this type, to a depth of several feet, are loose and incoherent and very unretentive of moisture. The depth of such material depends largely upon the location.

The Norfolk coarse sand is found in an irregular band along the upland to the south of Uphapee Creek, and it also occurs in a large body between Chowocala and Chewockeleehatchee creeks, including the districts near Pleasant Hill, Alliance, and Little Texas. Both of these areas are moderately rolling upland, which is frequently marked by long, narrow ridges and small hills. Such topography accounts for the variable depth of this soil. The flattest portions of the upland have the deepest subsoils, which often consist of coarse sand and gravel from 10 to 15 feet deep. In areas along stream slopes erosion has left exposed, in many places, the underlying gravel formations. Small flat areas, bordering minor stream courses, usually grade into a heavy subsoil at 3 feet. This regulates their water supply, and crops are grown successfully on these limited areas. The topography of the Norfolk coarse sand is such as to give good surface drainage. In addition, the porosity of the soil to a depth of several feet is so great that the type is extremely susceptible to drought, and there are few seasons when crops do not suffer from lack of moisture.

The Norfolk coarse sand is derived from the Lafayette sands, which, in the areas occupied by this type, usually are underlain by the older sandy formations.

The crop yields on this type are very low. The average yield of cotton does not exceed one-sixth bale per acre. On some plantations, under favorable conditions, the average yield is somewhat larger, but this is exceptional. The average yield of corn is not more than 6 or 8 bushels per acre. Sweet potatoes of excellent quality often yield from 35 to 70 bushels per acre, although few are grown except for home use. Peaches and cherries thrive on this soil, but the trees are short lived.

Early truck crops might be grown on the areas of this soil least susceptible to drought, but there is not sufficient demand to warrant the development of this industry. The greater part of the Norfolk coarse sand is not tilled. It is the poorest soil in the area, and so long as much better land may be had but a few miles distant at the low prices which prevail at present this type should not be farmed at all.

The subjoined table gives the texture of the fine-earth portion of both soil and subsoil of this type:

Mechanical analyses of Norfolk coarse sand.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10366	5 miles W. of Society-hill.	Gray gravelly sand, 0 to 10 inches.	7.0	15.3	13.1	31.1	16.1	11.7	5.2
10368	2 miles E. of Tuskegee.	Gravelly sand, 0 to 8 inches.	5.7	22.7	15.3	23.6	11.9	15.4	5.5
10364	Near Pleasant Hill	Sand and gravel, 0 to 8 inches.	4.9	19.6	13.5	25.2	13.2	10.7	12.8
10369	Subsoil of 10368	Gravelly sand, 8 to 36 inches.	7.3	22.0	14.8	22.4	14.1	14.4	4.6
10365	Subsoil of 10364	Sand and gravel, 8 to 36 inches.	6.1	14.8	13.1	26.6	12.8	15.9	10.1
10367	Subsoil of 10366	Coarse gravelly sand, 10 to 36 inches.	4.8	16.0	12.4	27.1	14.2	15.2	10.3

NORFOLK GRAVELLY LOAM.

The surface soil of the Norfolk gravelly loam is a gray, coarse to medium sandy loam from 6 to 30 inches deep, containing from 15 to 50 per cent of gravel and iron concretions. The subsoil varies from a sticky sandy loam to a light sandy clay, with the admixture of varying amounts of gravel. The gravel content generally is mixed evenly throughout soil and subsoil, but occasionally the surface is strewn with coarse gravel, though the underlying soil may have but the normal gravel content; and, again, the subsoil may contain veins and pockets of coarse gravel. Fragments of coarse, ferruginous sandstone are of frequent occurrence. This type is distinctly lighter than the Orangeburg sandy loam, is much more susceptible to drought because of its more open texture, and is naturally less productive.

The Norfolk gravelly loam is located in the rolling country to the north of an east and west line drawn through Tuskegee. It is thus closely associated with both the Norfolk coarse sand and the Orangeburg sandy loam.

It has the same topographic characteristics as the other upland soils of the country—gently to steeply rolling areas, marked with occasional ridges and hills. Such surface features, combined with its mellow texture, secure for this type excellent drainage.

Near the county line, west and north of Notasulga, is found a variation of this type. This variation occurs near the contact of the metamorphic rock formations, which lie to the north, and the overlying deposits of the Lafayette. Possessing chiefly the characteristic materials of the Lafayette, metamorphic stones and bowlders are abundant in the road cuts, and are scattered over the surface. These rocks, by their decay, have played some part, also, in determining the character

of the soil and subsoil, which contain much less sand than in typical areas, and accordingly are much more plastic.

North of the Tuskegee Normal School, and including part of the farm lands of that institution, there is a considerable area which passes very gradually from Norfolk gravelly loam to Norfolk coarse sand, and for some distance the soil resembles each type.

The Norfolk gravelly loam is derived from the sandy mantle and the clays of the Lafayette formation. Much of the area occupied by this type is uncultivated at present, and supports a scattered growth of oak and pine.

The yields obtained on the greater part of the cultivated areas are low, as the average crop of cotton is not above one-fourth bale, and that of corn not more than 12 bushels, per acre, when from 150 to 200 pounds of commercial fertilizer are applied.

The Norfolk gravelly loam is not as productive as the Orangeburg sandy loam, but with better methods should produce fairly satisfactory crops of cotton, corn, cowpeas, sweet potatoes, and truck crops. For the production of peaches it is probably the best soil of the area.

The texture of the fine-earth portion of the soil and subsoil of this type is shown in the following table:

Mechanical analyses of Norfolk gravelly loam.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10332	Near Tuskegee Normal School.	Coarse sandy loam, 0 to 15 inches.	10.6	24.7	17.1	24.6	9.0	7.8	6.2
10336	E. of Uphapee Creek	Sandy loam, 0 to 12 inches.	8.2	18.7	13.1	24.2	16.8	11.4	7.0
10330	4 miles E. of Milstead	Medium sandy loam, 0 to 12 inches.	10.6	24.5	13.9	19.2	13.8	9.9	8.0
10337	Subsoil of 10336	Red sandy loam, 12 to 36 inches.	10.8	23.2	11.7	15.2	8.9	9.7	20.0
10331	Subsoil of 10330	Clay loam, 12 to 36 inches.	8.1	22.2	11.4	14.5	9.1	9.1	25.1
10333	Subsoil of 10332	Red sandy clay, 15 to 36 inches.	5.3	18.6	12.2	17.9	5.7	9.2	30.7

NORFOLK SAND.

The surface soil of the Norfolk sand consists of 3 feet or more of coarse to fine sand, with a slight admixture of finer material. The type does not occur in large areas, but is found in three distinct positions which have an important effect upon its productivity.

The coarsest phase occupies upland areas which are somewhat broken by low hills and ridges. The soil of such elevations is coarser

than the true type, because of the tendency of the finest portions to wash down the slopes. The Norfolk sand of this description is a very poor soil, and is seldom cultivated.

On flat upland areas, which, from their position, do not suffer from erosion, the soil is finer in texture and is colored dark by the accumulation of organic matter. Such areas sometimes are underlain by clay at a depth of 3 feet, which renders them less susceptible to drought.

This phase of the type, as well as the preceding one, is derived from the Lafayette mantle. It is generally cultivated, and yields from one-sixth to one-third bale of cotton and from 6 to 12 bushels of corn per acre, depending upon the methods employed in its management.

The Norfolk sand is also found to a limited extent on stream terraces, where it is sedimentary in origin. The soil of such areas consists of medium and fine grayish sand to a depth of 30 inches or more. This is underlain by sticky sand, which grades into a plastic, drab-colored clay loam, at depths varying from 3 to 3½ feet. The soil in this position is subject to inundation when the largest streams overflow their banks, but the damage from this source is insufficient to make cultivation unprofitable. An average yield on this phase of the type is one-third bale of cotton or 10 bushels of corn per acre.

The following table shows the results of mechanical analyses of the type:

Mechanical analyses of Norfolk sand.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10326	¼ mile W. of Warrior-stand.	Medium sand, 0 to 3 inches.	0.7	3.4	10.9	67.3	10.7	4.3	2.2
10328	2 miles N. of Calebee	Medium sand, 0 to 6 inches.	5.2	16.3	16.7	35.8	13.2	6.1	4.3
10327	Subsoil of 10326	Medium sand, 3 to 36 inches.	.2	2.3	6.8	62.5	15.3	7.8	4.6
10329	Subsoil of 10328	Medium sand, 6 to 36 inches.	3.6	16.9	16.8	37.2	12.5	7.6	5.2

HOUSTON BLACK CLAY.

The surface soil of the Houston black clay is black or drab clay from 6 to 10 inches deep. This is underlain by very stiff drab or yellow clay, which becomes waxy and sticky when wet. Numerous shells and carbonate of lime nodules are found in both soil and subsoil, but in the latter they are the more abundant. The subsoil also contains occasional pockets of rounded quartz pebbles. When in a moist condi-

tion the surface soil is very sticky, and on drying it becomes extremely hard and cracks into irregular blocks.

The Houston black clay occupies but a small area in the southern part of the county. It is known locally as the "black prairie land," because of the color of the greater part of the surface soil. It is nearly level and is treeless, save along some of the sloughs which mark its surface. The type, as a whole, is not well drained. Surface drainage is sluggish, because the topography is level, or but slightly undulating, and the subsoil is very impervious to moisture. The construction of drains involves much tedious labor because of the stiff character of the subsoil. As a result of its texture, the soil is quite susceptible to injury from excessive rainfall, while it is also severely affected by droughts.

The Houston black clay is derived from the disintegration of the rotten limestone, or Selma chalk formation, which was deposited as a sediment in the deep or open sea which prevailed at this point during the greater part of the Upper Cretaceous period.

Cotton and corn are the principal crops grown. An average yield of the former, when well farmed, is one-half bale per acre; but the latter, without fertilization, yields only from 10 to 15 bushels. Johnson grass has been grown to a limited extent on this soil, and good yields are obtained, but many object to sowing it because of the difficulty encountered in eradicating it for the cultivation of subsequent crops. The successful growth of this grass, however, makes possible the development of the cattle industry, if at any time the price of cotton should be so low as to make the production of that crop unprofitable.

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

Mechanical analyses of Houston black clay.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10320	½ mile S. of Edwards	Gray clay loam, 0 to 9 inches.	0.7	1.4	1.3	9.5	22.1	51.6	12.9
10322	Near Downs	Black sticky clay, 0 to 4 inches.	.2	.4	.4	5.0	17.9	54.5	21.7
10324	1 mile E. of Downs	Gray clay loam, 0 to 6 inches.	.5	1.3	.7	4.3	11.2	50.0	31.7
10323	Subsoil of 10322	Black heavy clay, 4 to 36 inches.	.2	.5	.3	3.2	12.6	60.2	22.5
10321	Subsoil of 10320	Gray clay, 9 to 36 inches.	1.0	1.8	1.0	4.9	9.0	46.2	35.5
10325	Subsoil of 10324	Gray sticky clay, 6 to 36 inches.	.4	.8	.6	5.0	7.4	41.4	44.0

LUFKIN CLAY.

The surface soil of the Lufkin clay is a heavy red or reddish-yellow clay loam, which is extremely plastic when wet. This is underlain by soapy red or yellow clay, which often contains nodules of lime. Beneath this the underlying beds of rotten limestone are often exposed in cuts, and above the limestone quantities of small shells are of common occurrence.

This type occupies the so-called lime hills, and represents a transition soil between the Houston black clay of the prairie and the Orangeburg series, which extends northward to the metamorphic rock formations, and hence is found only in the southern part of the county. Wherever the accumulation of the Lafayette formation covers this type to a depth of 12 inches or more it has been mapped with the Orangeburg series. Part of the so-called "hog-wallow" soils have been included in this type. The composition of these soils is such that when wet they are inclined to "run together," and this tendency makes them very difficult to cultivate. In wet seasons they are often abandoned.

The Lufkin clay is so poorly drained, because of its impervious texture, as to preclude any possibility of a good crop in a wet season. The value of the type depends upon artificial drainage, and such drainage would be too expensive to be practicable at the present low price of land in this section.

This type is derived from the intermingling of the soil resulting from the decomposition of the hard, sandy limestone of the Ripley group with the Lafayette formation, and partakes in varying degree of the characteristics of both. The timber growth on this soil is chiefly post oak, and for this reason it is called "post-oak prairie."

The Lufkin clay is a very unpopular soil. It is commonly said to be "too wet, or too dry, and too hard to work." Few whites live upon it, and the negroes dislike to farm it because it is so hard to till. Under such conditions the major part of the type is uncultivated. When tilled, good crop yields are obtained in dry seasons, but in wet seasons it is practically impossible to work this soil, and partial or total failures are common. In dry seasons this type gives larger crop yields than the Orangeburg clay, but succumbs to excessive rainfall much sooner even than that type. At present cotton yields from one-fifth to one-half bale per acre.

Whenever the increase in the value of land shall warrant the expense of underdraining, this soil will be very productive if well farmed. Until that time crop returns will be uncertain, because of its susceptibility to seasonal extremes of moisture.

The table following shows the results of mechanical analyses of both soil and subsoil of this type.

Mechanical analyses of Lufkin clay.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
10362	1¼ miles E. of Chesson.	Brown loam, 0 to 8 inches....	0.3	1.4	1.2	17.1	29.2	32.1	18.8
10360	2 miles E. of Hardaway.	Red heavy clay, 0 to 8 inches.	.6	.8	.3	2.6	15.1	16.3	64.3
10363	Subsoil of 10362..	Gray tenacious loam, 8 to 36 inches.	.1	1.1	3.0	22.5	20.3	34.5	17.9
10361	Subsoil of 10360..	Heavy plastic clay, 8 to 36 inches.	.5	.7	.3	3.3	15.0	16.0	64.3

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam, to a depth of from 8 to 12 inches, is a brown loamy sand or sandy loam, which frequently contains a small percentage of fine gravel. This is underlain by yellow clay loam, or sandy clay, to a depth of 36 inches. Coarse gravel frequently occurs on the surface in spots which may be a few acres in size, but there is seldom any gravel in the subsoil. The type occurs as level or very gently rolling bottom lands along Uphapee Creek and its tributaries. Sometimes in the winter most of the type is overflowed, and the lower portions occasionally suffer from inundations during the summer.

The soil owes its origin to the reworking of the Pleistocene sands with the underlying clays of the older formations.

This soil is farmed to cotton and corn, the staple crops of the area, and, in comparison with the upland types, produces good yields of each in favorable seasons. Accurate estimates of crop yields were not obtainable, but it is not so productive as the Norfolk fine sandy loam or the Ocklocknee clay.

The following mechanical analyses show the texture of both soil and subsoil:

Mechanical analyses of Norfolk sandy loam.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
10352	3 miles E. of Chehaw.	Light sandy loam, 0 to 9 inches.	8.5	17.8	11.6	17.2	15.1	19.2	10.4
10354	Near Tuskegee..	Light sandy loam, 0 to 9 inches.	2.7	15.7	10.5	14.7	29.1	14.1	13.1
10353	Subsoil of 10352..	Sandy clay, 9 to 36 inches....	6.1	17.8	10.4	14.7	12.2	17.9	20.7
10355	Subsoil of 10354..	Sandy clay, 9 to 36 inches....	2.6	14.8	10.3	12.4	21.3	15.7	22.3

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam consists of gray fine sandy loam or fine sand, which sometimes is colored black with organic matter to a depth ranging from 10 to 30 inches. This grades into yellowish or gray clay loam, which contains varying amounts of fine and very fine sand.

Along Persimmon Creek are several small areas which are similar to the Calcasieu fine sand. The surface in such places is marked by small mounds from 10 to 18 inches high. The soil consists of fine sand from 18 to 30 inches deep, underlain by a few inches of sticky sand, which grades into mottled clay loam. The soil grades very gradually from the center of these mounds into the typical fine sandy loam which surrounds them.

Another variation occurs along Caleebee Creek, where the soil is a fine dark-brown loam, which is very sticky when wet. The subsoil is a sticky, slightly loamy fine sand. This type is a low-lying, flat, stream-marginal soil, and produces excellent yields of cotton and corn.

The Norfolk fine sandy loam is found only in the southern part of the county, where the principal areas occupy first terraces along the upper courses of Caleebee, Gubahatchee, Line, and Old Town creeks, and the lower courses of their tributaries. It is subject to overflow, and crops are liable to injury from this cause. Serious damage to crops occurs every few years, but the natural productivity of the soil in favorable years is more than sufficient to offset the liability to loss in wet seasons.

The type is so level that certain portions need draining. This is done by means of open ditches, and with this provision the type generally is well drained in favorable seasons.

The Norfolk fine sandy loam is derived from the fine grades of sand which have been washed from the adjacent uplands. This material has been deposited upon the sedimentary clays and loams which were laid down in the estuaries during the time of the Pleistocene submergence. This is the typical sandy hammock land of the area. In places where the rate of current was retarded during overflow by topographic obstruction, finer material, brought from upstream during times of high water, was deposited in shallow water, which was comparatively quiet, and thus were formed the small areas of the black hammock phase of this type.

Cotton yields from one-half to 1 bale per acre, and corn from 20 to 35 bushels per acre, in favorable seasons. The best staple of cotton grown in the area is obtained on this type. Its excellence as a cotton soil prevents other crops from being grown upon it to any considerable extent, but good crops of oats are often obtained when

the price of cotton is low. Care should be taken, however, to break the continuity of cotton production by the introduction of other crops in rotation.

The texture of the soil and subsoil of this type is shown in the following table:

Mechanical analyses of Norfolk fine sandy loam.

No.	Locality.	Description.	Organic matter.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10318	6 miles S. of Tuskegee.	Fine loamy sand, 0 to 24 inches.	0.7	0.0	0.0	0.1	26.7	55.5	12.7	4.4
10316	3 miles S. of Laplace.	Fine sandy loam, 0 to 18 inches.	1.1	.0	.9	1.1	17.2	45.3	28.8	6.2
10317	Subsoil of 10316 ..	Gray clay loam, 18 to 36 inches.	.5	.1	1.1	.9	14.9	40.5	26.1	15.8
10319	Subsoil of 10318 ..	Fine sandy loam, 24 to 36 inches.	.6	.0	.0	.4	20.6	40.5	16.7	21.4

OCKLOCKNEE CLAY.

The surface soil of the Ocklocknee clay is a rich, dark brown or black loam, or heavy fine sandy loam, which often contains a considerable proportion of silt. This rests upon a lighter brown or drab loam, which is somewhat heavier in texture than the soil, and generally grades into a heavy plastic clay loam or clay at a depth of 30 inches or more. The presence of flakes of mica in both soil and subsoil is general.

The type occupies a comparatively small area in the northwestern part of the county, along the Tallapoosa River. The largest area extends from just west of Milstead to Line Creek, which marks the boundary between Macon and Montgomery counties. The subsoil of this type, which is typical in the eastern part of the above-mentioned area, grows heavier very gradually, following down the course of the Tallapoosa River until, near Line Creek, it becomes a heavy, plastic, drab-colored clay loam. This same character of subsoil extends some distance up Gubahatchee Creek. The soil, also, along that creek is heavier than in its typical development.

West of Cole Station, along the Tallapoosa River, elevations of extremely fine sand, which seldom exceed a height of 10 or 12 inches, mark the surface of this type. The subsoil of this area contains more very fine sand than is found in the larger area farther down the river.

The high bottom lands occupied by this type are very flat, and

sometimes are overflowed during the winter season, but inundations during the crop season are exceptional. The topography is so level, however, that most of the type requires ditching to secure adequate drainage.

The Ocklocknee clay is an alluvial soil, derived chiefly from the decomposition products of the metamorphic material which borders the area on the north. This material has been brought down during flood time and deposited as alluvial flats along the course of the river and the lower reaches of its tributaries.

The Ocklocknee clay occupies one of the most productive bottoms of the area, and good crop yields are always secured, except in abnormally wet seasons. In favorable seasons cotton yields from one-half bale to 1 bale per acre, with an application of 200 pounds of commercial fertilizer, and corn yields 40 bushels per acre without the use of fertilizer.

The following table shows the results of mechanical analyses of this type:

Mechanical analyses of Ocklocknee clay.

No.	Locality.	Description.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
10358	2¼ miles W. of Milstead.	Fine sandy loam, 0 to 22 inches.	0.1	0.5	1.0	21.2	23.1	36.3	17.8
10356	2 miles W. of Milstead.	Dark clay, 0 to 20 inches.....	.0	.5	.6	2.8	8.4	50.4	36.6
10359	Subsoil of 10358..	Dark clay loam, 22 to 36 inches.	.0	.5	1.4	9.7	17.2	43.3	27.2
10357	Subsoil of 10356..	Yellow micaceous clay, 20 to 36 inches.	.0	.3	.9	8.1	10.1	39.4	41.0

MEADOW.

The Meadow of Macon County consists of low-lying, nearly flat areas adjacent to stream courses, which are overflowed to such an extent that they are almost continually in a condition too moist for cultivation. Many of these areas never have been cleared, and support a growth of water-loving trees, while others are occupied by small bay swamps. Very little of this type is ever tilled.

AGRICULTURAL METHODS.

The methods of cultivation followed in Macon County do not differ essentially from those in general use in this section of the South. Land is so plentiful, because of sparse population, that soils easily tilled are the most sought, and extensive tracts are not tilled at all. Most

of the upland types of soil are mellow and easy to work, and it is very rare that any land is sodded.

There is little variation in methods of tillage. Little plowing is done in the fall, though probably it is the preferable time for the heavy and rough soils. The land is broken in the winter or early spring to a depth of 3 or 4 inches, with a small one-horse plow. On the bottom lands and on the stiff upland soils the use of a disk harrow after plowing is highly beneficial, but comparatively few are used. The soil on the sandy types is so loose and mellow that further working is considered unnecessary. If cotton is to be planted, the land is so turned as to form narrow beds. Fertilizer is applied at the rate of from 100 to 600 pounds per acre, and the seed is dropped with a one-horse planter. Cultivation is continued throughout the season by the use of single plows. While crops are cultivated sufficiently to keep the weeds down, the best farmers cultivate cotton from five to seven times, while probably more than one-half the acreage is cultivated but two or three times. In general, shallow cultivation should be given after each rain, and as often as possible at other times.

Cotton is the one important crop, and consequently the product of almost sole consideration. The only method of cropping, or of rotation, is to plant as much cotton as possible. The low price of that staple, or other circumstances, may make it necessary to raise sufficient corn and other crops for home use, but the feeling seems prevalent that such secondary crops are, at best, but necessary evils. After the war money had to be advanced to the majority of farmers to enable them to grow their crops for the year, and as cotton was the sole money crop, it was grown to the exclusion of all other crops in order to give security to the one who had advanced the money. This custom, inaugurated by necessity, was a serious handicap for many years to the development, or even the maintenance, of agricultural interests, and few were able before 1880 to resume the custom of producing their own provisions. Examples worthy of emulation are not infrequent, for the most thrifty farmers make a practice of producing sufficient supplies for home use and then growing as much cotton as possible for the money crop. The greatest mistake made by most of the negroes and by many of the white people is to place entire dependence upon cotton and plan to buy the chief part of their supplies for subsistence.

Very few cattle are kept in the county, and little effort is made to save the small amounts of manure which might be had. Formerly the chief dependence was placed upon cotton seed for fertilizer, and smaller amounts of commercial fertilizer were used than at present. The increase in the price of cotton seed, however, has caused more of it to be sold, until now more than half the farmers use a cheap grade

of commercial fertilizer, at an average rate of 200 pounds per acre. The remainder use similar amounts of a compost made of 200 pounds of acid phosphate and 100 pounds of cotton-seed meal, or apply the cotton seed intact, sometimes destroying its germinative properties by the use of steam.

Corn usually is planted on lands which produce the poorest yields of cotton. It receives little attention in cultivation until cotton is cared for, and the yields are low. The excess of the acreage of cotton over the combined acreage of other crops precludes the possibility of regular rotation, and cotton frequently is grown on the same field from five to twenty years in succession. The best farmers make some effort to rotate crops, but they are unable to follow a perfect system because of the large acreage of cotton. One of the most successful rotations practiced is oats mowed while still in the milk for hay, followed by cowpeas the same season, succeeded by cotton and corn the next year, when cowpeas may be sown in the corn at the last cultivation. Oats are considered somewhat exhaustive to the land, but the roots of the cowpeas following the same season more than make up for this and leave the land in good condition for cotton. Rust-proof oats only can be grown here.

In Bulletin No. 81 of this Department, Professor Tracy advocates, for areas where two-thirds or more of the land is used for cotton, with no permanent hay fields, the following rotation: "First year, cotton; second year, corn and cowpeas and winter oats and vetch; third year, cotton. The corn should be planted as early as possible, and at the last cultivation cowpeas should be sown between the rows. The crop can be harvested by September, when the ground should be sown at once with a mixture of turf oats and hairy vetch. The oats and vetch will grow throughout the winter, furnishing excellent winter grazing, or they may be cut for hay in April in time for planting cotton again."

It is extremely unfortunate for the best development of the area that conditions are such as to militate to no uncertain degree against the adoption of definite and regular crop rotations. There is no doubt that in a period of ten years more cotton can be obtained from a given field if rotated with other crops at least twice than if the field were planted to cotton for ten successive years, and, furthermore, the products of the other crops would be clear gain. Better systems of crop rotation must be adopted if the agricultural resources of the county are to be developed to a degree commensurate with their natural possibilities.

AGRICULTURAL CONDITIONS.

At no time during the last ten years has the condition of the farmers of Macon County been so prosperous as at present. The striking success of a few and the more valuable examples of others whose progress

has been slow and steady, while overcoming adverse circumstances and conditions such as the average farmer of this region has to meet, show clearly that constant and consistent effort, supported by intelligent conduct of business, are the chief requisites here for successful farming.

It can not be said, however, that the farming class, considered as an entirety, is prosperous. Several causes have contributed to this condition. The price of cotton, which until recently had been generally low for several years, is ascribed commonly as the all-potent reason. This view would be correct if it were necessary to adhere strictly to the agricultural methods, more or less slack and improvident, which have been the rule rather than the exception, but lack of energy, indifference to improvement of methods, and the failure to adjust farming operations to changed conditions play a no less important part in the general welfare of the farming class. Many became so reduced financially in years of unprofitable production of cotton that, at best, recovery could be but slow. This discouraged many who have been drifting along hoping for better times, yet hardly ready to avail themselves of the possibilities which improved conditions have brought.

There are but few farmers in the county who have sufficient capital to manage independently their yearly business. Fortunately, the system of loaning followed here is much better adjusted than in some other counties in the State. Few white farmers buy of merchants on credit, but instead are furnished with money by their banks, at a stated rate of interest, with which they pay cash to merchants for supplies. This method, although the rate of interest can not be low, is found in actual practice to be by far the most economical plan for the farmer.

The tenure of farms varies in different sections of the county. North of the latitude of Tuskegee 75 per cent or more of the landowners live on and till their own farms. South of this line at least 75 per cent of the landowners live in Tuskegee or some other town and rent their land to tenants. In the southwestern corner of the county not less than 90 per cent of the landholders are nonresident, many of them living in Montgomery. The tendency which has prevailed for some time for the white farmer to move to town and to rent his farm under some system of tenantry is one of the most serious problems with which this section has to cope.

The share-tenant system is the usual method of renting land, whereby the owner furnishes the land, the work animals, one-half of the fertilizer, pays one-half the bill for ginning, and receives one-half of the crop, while the other half goes to the tenant for labor and feeding the work animals.

Another method of rental in common use is for the renter to pay a stated amount of cotton for the use of the land. The rate usually paid is 1 bale for about 25 acres, from which the average crop is 3 to 4 bales. To this entire area the renter applies about 1 ton of commercial fertilizer, which he has bought on credit. General supplies are also obtained on credit. Rent is a preferred claim, and in unfavorable seasons the entire crop is barely enough to pay it. The landlord often sells the tenant his provisions and takes a lien on the crop as security. In an average year the renter can pay his obligations, but seldom has anything left. "Advancing" to tenants under such a system involves great risks, and the landlord or merchant who advances must exact a rate of interest which at first sight seems excessive, to make good the losses sustained from shiftless tenants. By such methods a large percentage of the tenants are left in debt at the end of the year, and begin a new year under similar arrangements, hampered by the obligations of the preceding season. In favorable seasons the tenant might save some money, but it is usually squandered before spring. Even the cotton seed which has been saved for the next season's crop is often sold during the winter, and the tenant has nothing with which to plant the next crop until it is "advanced" to him.

Land holdings vary much in size, ranging from 50 acres to 17,000 acres, but the greater part of the county is divided into farms containing from 100 to 500 acres each. Farms are not as large in the northern part of the county as in the southern part, where most landowners rent several hundred acres to negroes in parcels of 25 to 30 acres each. Real estate is seldom subjected to mortgage because small, risky loans can not be obtained at the legal rates of interest, and resort is had to notes with personal security.

Much complaint is heard throughout the county about the inefficiency of labor, and frequently the statement is made that conditions are growing steadily worse.

For a long time Macon County has depended chiefly on cotton as its export crop, and all other farming operations have been subservient to its production. The staple of cotton classed as "middling" includes the bulk of the crop, but high grades of middling are produced in favorable years. Of the soils mapped the Norfolk fine sandy loam yields the best staple. Unfortunately, no special price is paid in the local market for the highest grade of middling cotton, and thus sufficient incentive to try to improve the staple is lacking. Experiments being conducted within the area at the present time, however, give much promise as to improvement in the length of staple, and definite conclusions from these experiments are awaited with much interest.

Corn is the crop of second importance, but the yields obtained are needlessly low. The fact that a poor field of Norfolk gravelly loam, not only lighter in texture than the average of that type but lighter also than the average upland soil of the country, has been brought, economically, and within a few years, from a gullied, nonproducing condition to yield 40 bushels of corn per acre should prove a valuable lesson to the large class of farmers who obtain yields of from 6 to 15 bushels per acre. The common belief that only low yields of corn can be grown here has been shown to be erroneous, and although it may be impossible or impracticable to obtain yields to compare with those of a higher latitude, sufficient example and proof are at hand to demonstrate conclusively that this section should grow corn sufficient for its own needs. This is true not only because corn may be grown at a profit when fitting methods are followed, but also because corn is needed in the crop rotation necessary to successful farming in the area.

Little wheat is produced in the county. Rust has been very troublesome, and, although less prevalent on the sandy types of soil than on the heavier soils, the growing of wheat is of doubtful economy. Rust-proof oats are the only kind that can be grown successfully. Clover is a risky crop under the present methods of farming, but if the ground were thoroughly prepared it is probable that a fair stand could be secured. Successful crops have been grown in the county, even under very ordinary conditions, and this is enough to indicate that it should be tried by those who are willing to make the necessary effort to produce it. Sweet and Irish potatoes are grown for home use, but they can not be important crops at present on account of the distance from markets and high freight rates. Peaches, cherries, and grapes for home use and the local markets are raised successfully on the sandy soils. Enough apples are grown to supply partially the home market, but the area is not suited to their production.

Practically no attention is paid to the adaptation of soils to crops. Bottom lands seem to be preferred for the production of all crops, while of the upland types the sandy soils, which are easy to till, are chosen and the heavy clay soils are avoided. With the exception of sugar cane, the same crops are grown on all the soils.

The Seaboard Air Line Railway crosses the southern part of the county, and the Western of Alabama Railway the northern part. From Chehaw, a station on the latter road, a branch railway extends to Tuskegee, a distance of 5 miles. Freight rates are so high as to place a practically prohibitive tariff on the shipment of any farm products except cotton, and the cost of supplies brought into the county is increased in similar ratio.

On the heavier soils in the southern part of the area the pub-

lic dirt roads become very muddy and nearly impassable at times during the winter, but in the summer they are in good condition, except immediately after a rain. In the upper part of the county, on the more sandy soils, the roads are always passable, but ill-suited to heavy hauling at any time.

The population of Tuskegee, the county seat and only town of importance in the area, is 2,170. Many of its residents own farms, and hence there is almost no local market within the area. Montgomery, the nearest city of importance, is 18 miles from the county line and 40 miles from Tuskegee, and affords very little market for Macon County products. The distance from markets and the high freight rates are serious obstacles to the agricultural development of the area.

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