

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE,
ANDREW M. SOULE, PRESIDENT; DAVID D. LONG,
IN CHARGE SOIL SURVEY.

SOIL SURVEY OF BURKE COUNTY,
GEORGIA.

BY

E. T. MAXON, IN CHARGE, C. E. DEARDORFF,
W. A. ROCKIE, AND J. M. SNYDER.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1917.]



WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1919.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., January 10, 1919.

SIR: During the field season of 1917 a soil survey was made of Burke County, Georgia. This work was done in cooperation with the State of Georgia, and the area was selected after conference with State officials.

I have the honor to transmit herewith the manuscript report and map covering this area, and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1917, as provided by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. D. F. HOUSTON,
Secretary of Agriculture.

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MAP.

Soil map, Burke County sheet, Georgia.

SOIL SURVEY OF BURKE COUNTY, GEORGIA.

By E. T. MAXON, In Charge, C. E. DEARDORFF, W. A. ROCKIE, and J. M. SNYDER.—Area Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Burke County, Georgia, lies directly east of the center of the State, adjoining the eastern State boundary. Waynesboro, the county seat, is about 90 miles northwest of Savannah, and 30 miles south of Augusta. The county has an area of 812 square miles, or 519,680 acres.

The general surface is predominantly gently rolling to rolling, with occasional level areas in the southwestern part of the county and some rather broken and hilly areas in the northern and northwestern parts.

Parts of the central and southern and southwestern sections have level, undulating to gently rolling surfaces with many depressions and circular sinks of flat land. Along the Savannah and Ogeechee Rivers and most of the creeks are extensive strips of flat first-bottom land which are subject to frequent overflow or remain in a saturated condition the greater part of the year. There are steep but low bluffs in many places along the Savannah River. Second bottoms or terraces, consisting of almost flat, benchlike areas, occur along some of the larger creeks. These areas lie from 3 to 10 feet above the first bottoms. There usually is a marked bluff line or escarpment between these second bottoms, or terraces, and the uplands.

The elevation of the county ranges from about 185 feet above sea level in the extreme southwestern part to about 285 feet above sea level in the northern part. The altitude at Midville on the Ogeechee River in the southwestern part of the county is reported as 186 feet, at Shell Bluff Landing, in the northeastern part of the county on the Savannah River, as 238 feet, and at Waynesboro, in the center of the county, as 286 feet above sea level.¹

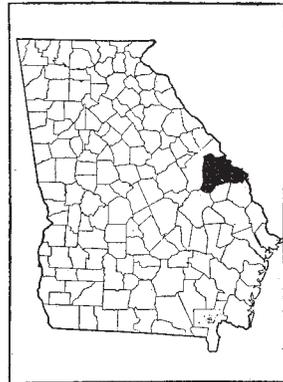


FIG. 1.—Sketch map showing location of the Burke County area, Georgia.

¹Bul. 26, Geol. Survey of Ga.

The northwestern corner of the county probably is the highest part. The prevailing slope of the county is from northwest to southeast.

The upland region of the county has a well-established drainage system; a network of small streams with shallow valleys covers the uplands, affording good natural drainage for nearly every farm. The county immediate along the larger streams is undulating to rolling, with occasional steep slopes and bluffs. The steeper slopes are found in the northern and northwestern portions of the county, where the underlying formations are more susceptible to erosion. Escarpments varying from 25 feet to 85 feet high overhang portions of the swamp along the Savannah River. The low upland in the southwestern part of the county is characterized by many depressions which usually are connected with the general drainage system. These depressions are naturally poorly drained and contain water during the winter and spring months, though later they become practically dry. Some of them are artificially drained by open ditches.

The northern end and the western side of the county are largely drained by McBean and Brier Creeks. McBean Creek receives a small part of the drainage of the extreme northern section of the county, and empties into the Savannah River. A relatively small body of swamp occurs along McBean Creek, and the adjoining slopes are relatively steep. Brier Creek, the largest stream wholly within the county, flows through the north-central part from northwest to southeast. This stream flows sluggishly through a flat swamp varying in width from a few yards to over 1,200 yards. Narrow second bottoms or terraces occur to only a small extent along Brier Creek. This stream with its tributaries drains the northern half of the county. Buckhead Creek with its branches affords adequate drainage for the south-central part of the county. This stream also flows sluggishly through a narrow swamp. The Ogeechee River, receiving the drainage of the extreme southwestern part of the county, flows with a meandering course through a swamp varying in width from one-fourth mile to more than 2 miles. The Savannah River also flows through a swampy alluvial plain, varying in width from a few feet to as much as 2 miles on the Burke County side.

The region embracing the present territory of Burke County was settled prior to the Revolutionary War by English, Irish, and Scotch pioneers from the older English Colonies. Later settlers came in from the Carolinas. No marked influx of settlers has taken place in recent years. The white settlers outside the towns mainly occupied the northwestern and southeastern parts of the county. Burke County originally was laid out as St. George's Parish in 1758, but was renamed in 1777. The original area has since been reduced, parts being used in the formation of other counties. The population of the

county is given in the census of 1910 as 27,268, of which 90 per cent is classed as rural. The rural population averages 25.7 persons to the square mile.

Waynesboro, in the central part of the county, is the county seat and the commercial center of the region. According to the last census, Waynesboro had a population of 2,729, and Midville, a progressive town in the southwestern corner, a population of 603. Rosier, Vidette, Gough, Saint Clair, Greens Cut, Munnerlyn, and Sardis are small railroad points, trading centers for their immediate localities.

Good transportation facilities are afforded by three railroads. The Central of Georgia traverses the center of the county from north to south, passing through Waynesboro and across the southwestern corner through Midville. The Savannah & Atlanta Railway extends through the center of the county from southeast to northwest, passing through Sardis, Waynesboro, and Saint Clair. The Georgia & Florida extends through the extreme western part of the county. The towns of Keysville, Saint Clair, Gough, and Midville are on this road.

The principal roads of the county, which radiate from all the larger towns, are well improved. Churches and schools are numerous, and practically all the rural districts are supplied with rural mail delivery service.

Drinking water of good quality is obtained in most sections from surface and deep wells.

Augusta, Savannah, Macon, and Atlanta are the important outside markets for the products of the county. Much of the cotton is sold in Waynesboro and in the other towns of the county, and later shipped to distant markets.

CLIMATE.

Burke County lies within a region of mild winters and long warm summers. Freezing temperatures occur, but snow is seldom seen. There is no Weather Bureau station in this county, but the records of the station at Louisville, Jefferson County, are fairly representative of the general climatic conditions. The mean temperature for the winter months, December, January and February, is about 48° F., and for the summer months of June, July, and August, about 80° F. For the spring and fall months, it is about 65° F. The mean annual temperature is about 64° F. Uniform weather conditions usually prevail over the entire county, as there are no marked topographic features to cause local variations.

The average date of the first killing frost in the fall is November 8, and of the last in the spring March 17, giving a normal growing season of 236 days. The earliest date of killing frost reported at the Louisville station is October 21, and the latest date April 15.

The mean annual precipitation is approximately 46 inches. The distribution of the rainfall throughout the year is fairly uniform and is favorable for a diversified agriculture.

The following table is compiled from the records of the Weather Bureau station at Louisville, Jefferson County:

Normal monthly, seasonal, and annual temperature and precipitation at Louisville, Jefferson County.

(Elevation, 259 feet.)

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1908).
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	47.5	79	7	3.13	2.76	2.33
January.....	47.1	80	9	3.28	1.90	7.13
February.....	48.9	82	17	4.94	3.76	4.35
Winter.....	47.8	82	7	11.35	8.42	13.81
March.....	58.0	94	19	4.44	3.13	6.31
April.....	63.7	93	29	3.13	.88	10.56
May.....	72.1	99	40	3.61	3.00	1.60
Spring.....	64.6	99	19	11.18	7.01	18.47
June.....	78.3	103	47	4.80	4.09	6.83
July.....	80.4	104	58	5.54	2.62	2.11
August.....	80.1	103	58	5.24	10.12	3.92
Summer.....	79.6	104	47	15.58	16.83	12.86
September.....	75.6	100	42	3.61	.43	2.39
October.....	64.5	95	28	2.36	.46	2.47
November.....	55.1	87	18	2.21	3.16	1.03
Fall.....	65.1	100	18	8.18	4.05	5.89
Year.....	64.3	104	7	46.29	36.31	51.06

¹ Temperature for cold wave of Feb. 13, 1899, not included in record.

AGRICULTURE.

The early settlers of Burke County were mostly farmers, and from the outset farming has been the chief industry of the county. The first crops, grown chiefly for subsistence, comprised corn, wheat, potatoes, and various vegetables. Hogs, cattle, and poultry were kept by every farmer. Later, as settlement became more general, cotton and cowpeas were grown and live stock raised more extensively. With the advent of the cotton gin the acreage devoted to cotton

rapidly increased, and general farming, with cotton as the chief income crop and the other crops grown solely for subsistence, became established and has continued to the present time as the prevailing form of agriculture. However, flour, corn meal, pork, and lard are imported every year, as the present type of agriculture does not provide for a sufficient production of these food staples to supply the home demand.

The 1910 census reports 58 per cent of the total area of the county in farms. The total number of farms is given as 3,907. The average size of these farms is about 91 acres, each tenancy being classed as a farm. Of the land in farms 67.3 per cent, or an average of about 61 acres per farm, is reported improved.

Burke County is one of the leading cotton-producing counties in Georgia. A total of 104,786 acres is reported in cotton in 1909, with a production of 46,741 bales. A small part of the other crops, such as corn, oats, hay, and vegetables, may be sold at local markets, but no crop other than cotton is important as a source of income. All the crops except cotton are grown chiefly as subsistence products, used either for feeding work stock, cattle, hogs, and poultry, or for consumption in the home.

The acreage in corn is considerably less than that in cotton, the census of 1910 reporting 61,014 acres in 1909, with a yield of 639,059 bushels. A much larger acreage is now devoted to the production of corn. Cowpeas follow corn in importance. This crop is reported on 10,902 acres, with a total production of 36,468 bushels. The oat crop is relatively unimportant. A total of 2,087 acres is reported in 1909, with a yield of 27,697 bushels. Wheat and rye are grown to a very small extent.

Hay and forage crops are relatively unimportant in Burke County. The 1910 census reports a negligible acreage in tame or cultivated grasses and coarse forage, with 3,770 acres in grains cut green. The average yield of the hay crops is less than 1 ton per acre. Cowpeas and velvet beans are being grown more extensively, the vines and beans being utilized for forage or plowed under to improve the soil.

Miscellaneous crops include beans, peanuts, Irish potatoes, sweet potatoes, sugar cane, and sorghum. Sweet potatoes were grown on a total of 1,038 acres in 1909, yielding about 86,000 bushels, and sugar cane on 578 acres, with a total production of 3,970 tons.

Only a small acreage is devoted to fruit production. In 1909 there were 4,182 peach trees and 1,150 apple trees in the county. The number of pecan groves has greatly increased in recent years. Fig trees and scuppernong grape vines are found on many farms. Wild blackberries and dewberries grow in abundance. Strawberries are grown by a few farmers for home use and do well.

The live-stock industries are relatively unimportant in this country. The 1910 census reports 107 calves, 1,061 other cattle, and 10,219 hogs sold or slaughtered in 1909, with 3,106 dairy cows on farms. The following table gives the relative value of the various classes of farm products of Burke County as reported in the census of 1910:

Value of all farm products, arranged by classes.

	<i>Dollars.</i>		<i>Dollars.</i>
Cereals.....	633,574	Live stock and products:	
Other grains and seeds.....	68,752	Animals sold and slaugh-	
Hay and forage.....	53,947	tered.....	120,564
Vegetables.....	71,781	Dairy products, excluding	
Fruits and nuts.....	2,208	home use.....	33,777
All other crops (chiefly cotton).....	3,357,054	Poultry and eggs.....	59,087
		Total value.....	4,400,744

The farmers generally recognize differences in the adaptation of the various soils to certain crops and varieties of crops, and a few are guided in a measure by such knowledge, but in general, little attention is given to soil selection and crops are planted indiscriminately on all the different types. Exceptions to this general rule were noted in the preference of the lighter sandy soils for corn, the moist lands for sugar cane, and the upland soils, rather than the bottoms, for cotton.

The agriculture throughout the county is uniform in classes of crops grown, soil management, and methods of farming. The land is plowed in the winter, as weather conditions permit. Plowing usually is done with a one-horse or two-horse plow, though occasionally three-horse or four-horse disk plows are employed.

In general, the farm equipment is inadequate for thorough preparation and cultivation of the land. Heavy plows, disk harrows, smoothing harrows, and efficient labor-saving implements are not in general use. The work stock consists almost entirely of mules, which are best suited to farm work in this region. Some horses and a few oxen are utilized as draft animals.

Cotton is planted with a planter immediately after the drilling of fertilizer in the furrow. The next work after planting is thinning or chopping out with hoes. The rows are barred off with a plow, and the plants are thinned to stand 10 or 15 inches apart. Later harrows, weeders, or sweeps are used between the rows at intervals of about 10 days in a system of shallow cultivation, until the crop is laid by. Hand hoeing is necessary several times in the season to remove the grass and weeds. Commercial fertilizers are sometimes applied after the crop is well started. The crop is picked as it matures. Yields of cotton average something more than one-third bale per acre, ranging from less than this to an extreme of two bales, depending on the type of soil, method of cultivation, and fertilization.

Corn land usually is prepared like cotton land, but the corn is often grown on less productive soil, and receives less attention and less fertilizer than cotton. The seed is dropped by hand in a furrow and covered with a plow or a two-shovel cultivator. The fertilizer is applied at time of planting. Harrows, sweeps, and cultivators are utilized in the cultivation of the crop. The blades usually are pulled, stacked, and used for fodder for the work stock during the winter and spring months. Corn yields are generally low, ranging from 6 to 20 bushels per acre, and averaging about 10 bushels for the county.

Velvet beans are often planted along the corn rows or in the middles after the corn has come up. The beans are either harvested by hand or left in the field to be eaten by the stock, the refuse being turned under by plowing. Land for oats, rye, and wheat is plowed broadcast prior to seeding and again after harvest in preparation for a summer crop of cowpeas. Only a small acreage is devoted to the grain crops, and the yields are low. The special crops, such as Irish potatoes, sweet potatoes, melons, other vegetables, and sugar cane, are planted in small patches and receive more attention than the general farm crops.

Crop rotation is not practiced extensively, though many of the farmers recognize its importance. The growing of cotton and corn, with patches of sugar cane, potatoes, and vegetables, continuously on the same land is the usual system of tenant farming. On the average one-horse farm of 40 acres from 20 to 30 acres are devoted to cotton and the remainder to corn, excepting a small patch of some forage crop.

Commercial fertilizers are used on all crops to some extent, cotton receiving the heaviest application. The 1910 census reports a total expenditure of \$443,493, or \$113.51 on each farm, for about 91 per cent of the farms of the county, for commercial fertilizers. Cotton land receives from 200 to 600 pounds per acre of a mixture of phosphoric acid, nitrogen, and potash analyzing from 8-2-1 to 10-2-0 at the time of planting. Applications of sodium nitrate are sometimes made at a later date. Smaller applications of commercial fertilizer are used on corn land. A small quantity of barnyard manure is often available on the larger farms, and where this is utilized smaller applications of commercial fertilizer are applied. Lands that are heavily fertilized return correspondingly high yields. Under the most favorable conditions cotton has yielded 2 bales per acre and corn 45 to 75 bushels per acre.

Most of the available farm labor is colored, as are most of the tenants. The supply of labor is adequate. The average wage is \$12 to \$18 a month with house and provisions, while day laborers are

paid from 50 cents to 75 cents. The census of 1910 reports a total expenditure of \$337,743 for labor in the county in 1909, about 56 per cent of the farms reporting the employment of labor.

There are many large land holdings in Burke County, ranging from 1,000 to 50,000 acres, but these large tracts are divided into small farm units, termed one-plow or one-horse farms, comprising 35 or 40 acres each. Some very extensive farming operations are carried on by individuals and firms. According to the census of 1910 only 14.4 per cent of the farms are operated by the owners, and practically all the remainder by tenants. Two forms of renting are practiced. Under the "crop" system, the tenant furnishes the labor and one-half the fertilizer, while the owner furnishes the work stock, the seed, and one-half the fertilizer, each receiving one-half of the gross receipts. Under this system the owner generally supervises the farm operations through an overseer who looks after several tenants. Under the "rent" system, the owner receives a stipulated quantity of lint cotton, usually 1,000 to 1,250 pounds, for the use of 35 or 40 acres. The tenants buy provisions from month to month, giving a lien on the prospective cotton crop.

Land values vary considerably, according to the soil type, improvements, and location with respect to markets. The extreme range is from \$3 to \$150 an acre, most of the land being held for \$15 to \$35. The average assessed value of farm land is given in the 1910 census as \$12.31 an acre, but values have increased considerably since that year. Very few sales of farm land are made.

Burke County has a large area of good farm land, much of which is under cultivation. With intensive farming, heavy yields of cotton, corn, oats, and crops for home consumption can be produced.

SOILS.

The soils in Burke County are all typical of the Atlantic Coastal Plain, being more or less sandy at the surface and underlain at variable depths by sandy clay and clay. They have been formed by the weathering of unconsolidated sands, sandy clays, and marls derived from transported sedimentary materials, classed geologically as the Barnwell, McBean, and the Altamaha formations.¹

The Barnwell formation underlies the northern part of the county, west of a north and south line from Hatchers School to Bettsford Church, and has given rise to the red soils, characterized by a rolling to hilly topography with numerous well-defined water courses which have easily cut their valleys through the unconsolidated mass. These valleys are sometimes 50 to 200 feet below the level of the ridges and small plateaus, and the hills may be furrowed by deep gullies and

¹Bul. 26, Geol. Survey of Ga.

ravines. Local areas throughout this region carry on the surface and throughout the subsoil angular fragments of fossiliferous flint, silicious or sandy chert, and white sandstone and quartzite. The soil series predominating in this region are the Orangeburg, Greenville, and Ruston.

The McBean formation occurs most extensively through the central and southern parts of the county, although small developments occur in all parts. This is a plateau region, varying from nearly level to only gently rolling and characterized by many small depressions or lime sinks, which result from the solution of the underlying calcareous marls. The Norfolk and Grady series predominate in this region.

The Altamaha upland is not especially well developed in this county, but it does occur in the southern and western parts. It comprises a region with a rolling topography and smooth slopes. The surface soils are sandy and underlain by heavy, tenacious, mottled sandy clay subsoils. The Norfolk, Susquehanna, and Ruston and Tifton soils are mapped in this region.

The flood plains along the Ogeechee and Savannah Rivers, which rise in the Piedmont, comprise recent alluvium that has been washed chiefly from the residual soils of this region of crystalline rocks. The tributary streams that flow through areas of Coastal Plain soils contribute small quantities of reworked material of sandy texture. The second bottoms, or terraces, are occupied by soils of the Kalmia, Leaf, and Myatt series.

Based upon the manner of their formation and accumulation, and on position as well, the soils of the county are classed in two general groups: (1) The upland soils and (2) the alluvial soils. The alluvial soils may be divided into two groups, based on position; (*a*) First-bottom soils and (*b*) second-bottom, or terrace, soils. The upland soils are divided on the basis of origin, color, topography, drainage, etc., into seven series, the Norfolk, Tifton, Ruston, Orangeburg, Greenville, Susquehanna, and Grady. These are subdivided on the basis of texture into nine soil types.

The Norfolk series is characterized by the grayish color, loose structure, and sandy texture of the surface soils, and by the yellow color, friable structure, and the sand to sandy clay texture of the subsoils. Two types are mapped, the Norfolk sand and sandy loam. The topography varies from nearly level to gently rolling, and the drainage is well established. The Norfolk soils predominate in this county, being extensively and typically developed in all sections, except the northwestern.

The Tifton soils are similar in color and in structural characteristics to the corresponding members of the Norfolk series, differing

from the Norfolk mainly in the presence of 15 to 35 per cent of small, rounded, reddish-brown concretions or accretions. This series is represented by one type, the Tifton sandy loam, which occurs in small widely scattered areas through the uplands of the county in association with the Norfolk soils.

The Ruston series is characterized by gray to slightly brownish gray surface soils and dull reddish yellow or yellowish-red subsoils. This series is intermediate between the Norfolk and Orangeburg series in color of the subsoil and between the Norfolk and Susquehanna in the plasticity of the subsoil. Two members of the Ruston series are recognized, the sand and sandy loam. These types are distributed throughout the county.

The Orangeburg soils have grayish to grayish-brown surface soils, and bright-red moderately friable sandy clay subsoils. The topography is undulating to rolling and the drainage is well established. One type, the sandy loam, is mapped.

The Greenville soils are characterized by dull-red to reddish-brown surface soils and deep-red soils. The topography is rolling, and drainage is well established. The Greenville sandy loam is mapped in Burke County.

The Susquehanna series includes soils having a gray to slightly reddish gray surface soil and a heavy, tenacious, plastic sandy clay subsoil of mottled red and gray or red, gray, and yellow color. The series is represented by a single type, the Susquehanna sandy loam.

The soils of the Grady series have a gray to dark-gray surface soil and a heavy plastic subsoil, mottled with yellow and gray or gray and red. This series occurs as small depressions or lime sinks throughout the country. Drainage is poor because of the heavy subsoil and the low gradient. One type, the Grady sandy loam, is mapped.

The most recently formed soils of the region occur as first bottoms along the streams, the material representing alluvium derived from both local and foreign sources. These soils are subject to change with every overflow. The largest body in this county occurs along the Savannah River and represents material largely brought down from the Piedmont region to the north. Such soil, having a dark-brown surface soil and a mottled subsoil and carrying a variable quantity of mica particles, is classed with the Congaree series. Only one type, the silt loam, is mapped. Areas of recent alluvium, washed from near-by regions and having no uniform color, structure, and texture, are classed as swamp. Swamp is mapped along all the larger streams of the county.

The soils formed by stream action and now lying above normal overflow are recognized as second-bottom or terrace soils. They

have a level topography and in this county are divided into three series, the Kalmia, Leaf, and Myatt.

The Kalmia soils have grayish sandy surface soils and a yellowish sand or sandy clay subsoil. They have a flat topography and generally poor drainage. The Kalmia sand and sandy loam are mapped in this county. These types occur along the larger streams.

The surface soils of the Leaf series are gray to brownish gray, and the subsoil consists of mottled gray, yellow, and red, heavy plastic clay. Only one type, the sandy loam, is mapped. This occurs in small bodies along Brier and Buckhead Creeks.

The Myatt soils are poorly drained, occurring in flat depressions on the terraces along the larger streams. The surface soils are dark gray, and the subsoils are mottled gray, yellow, and brown.

The following table gives the name and actual and relative extent of each soil type mapped in Burke County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sandy loam.....	136,704	32.4	Susquehanna sandy loam.....	7,680	1.5
Deep phase.....	31,552		Kalmia sand.....	6,912	1.3
Norfolk sand.....	117,824	22.7	Greenville sandy loam.....	6,016	1.3
Ruston sandy loam.....	58,624	11.9	Shallow phase.....	320	
Deep phase.....	3,712		Myatt sandy loam.....	2,944	.6
Orangeburg sandy loam.....	43,456	9.1	Tifton sandy loam.....	2,112	.4
Deep phase.....	3,968		Kalmia sandy loam.....	1,408	.3
Swamp.....	44,992	8.6	Leaf sandy loam.....	896	.2
Grady sandy loam.....	33,152	6.4			
Congaree silt loam.....	9,664	1.8	Total.....	519,680	
Ruston sand.....	7,744	1.5			

NORFOLK SAND.

The surface soil of the Norfolk sand is dominantly a light-gray to gray sand to a depth of 2 to 6 inches. It is underlain by pale-yellow to yellow sand which continues throughout the remainder of the 3-foot soil section. Both the soil and subsoil are generally loose, open, and porous. In the type as mapped there are some slight variations from the typical. In forested areas and in some of the low depressions the surface soil may have a dark-gray color due to the accumulation of organic matter. In some places the surface has a shallow covering of white sand, and in local areas the surface soil has a brownish cast and the subsoil a reddish tinge when moist. Bordering the sandy loams the lower subsoil of the Norfolk sand is slightly loamy in texture, and occasionally it passes into a light sandy loam in the lower part of the 3-foot section. The sand where exposed in freshly plowed fields is subject to drifting.

The Norfolk sand is one of the most extensive types in Burke County. It is found chiefly in the northeastern and eastern parts of the county, where it occurs along the Savannah River in a belt 4 to 8 miles wide and broken only by small bodies of other soils. Other areas are mapped in the northern and northwestern parts of the county.

The surface features of this type are prevailingly undulating to gently rolling, with numerous low ridges and knolls resembling those of the sand-hill region, and small circular depressions. Both the surface drainage and internal drainage are well established, owing to the high position of the type and also to the open structure of both the soil and subsoil, which allows the rain water to pass readily downward. Some of the more rolling areas are excessively drained and are sometimes droughty. The best crops are generally obtained in seasons of normal rainfall.

Most of this type has been cleared and cultivated. A part of the cultivated area has been abandoned, however, and now supports a scattered growth of pine and a thick growth of scrub oak. Cotton, the principal crop, yields from one-quarter to three-quarters bale per acre, depending upon the quantity of fertilizer used and care in cultivation. Corn is grown to a considerable extent, the yields ranging from 5 to 20 bushels per acre. Some oats, cowpeas, velvet beans, watermelons, and garden vegetables are produced. Heavy applications of commercial fertilizer or barnyard manure are necessary for the production of paying crops on this type.

This soil ranges in value from \$5 to \$15 an acre, depending upon location and improvements.

The Norfolk sand is a warm, well-drained soil. It is very easy to cultivate and requires only shallow plowing. It is well suited to the production of early truck crops, rye, and peanuts. For the profitable production of peanuts it is necessary to lime the soil. This type is greatly benefited by the application of barnyard manure and by turning under green-manuring crops, such as rye and crimson clover, and the growing of soy and velvet beans. Incorporating organic matter in the soil in this way renders it more retentive of moisture and at the same time supplies much of the nitrogen necessary for the production of paying crops.

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam consists of a gray loamy sand or light sandy loam which passes at about 6 inches into a pale-yellow loamy sand or light sandy loam. This extends to a depth of 8 to 20 inches, with an average of about 15 inches. The subsoil is a bright-yellow friable sandy clay which, as

a rule, is slightly sticky. Throughout much of the type, particularly the more rolling parts, the subsoil is slightly heavier and more sticky than the typical Norfolk sandy loam subsoil as mapped in many areas in Georgia. Practically all this type in the southern part of the county is underlain at depths of 4 to 15 feet by an intensely mottled or blotched sandy clay or clay deposit belonging to what is known as the Altamaha formation. In small areas of 1 acre to 10 acres, this formation is encountered within the 3-foot section. The texture and structure of the Norfolk sandy loam is quite uniform throughout the county, but the subsoil along the contact with the Grady sandy loam frequently is slightly heavier than typical and shows mottlings of gray. In several small patches small rounded quartz gravel constitutes 10 to 35 per cent of the soil mass. The location of these areas is indicated on the soil map by gravel symbols.

The Norfolk sandy loam is the predominant soil type in Burke County. It is most extensively and typically developed through the southern half of the county, being the prevailing soil, particularly in the southwestern part. It is streaked and cut by many narrow strips or winding bodies of Grady sandy loam. Level or undulating to gently rolling surface features are characteristic of the type. Along the watershed of Barkcamp Creek in the southwestern part of the county many areas of this soil occupy flat or nearly flat positions. Over nearly all the type the topography is favorable for general farming and for the use of improved farm machinery. Natural surface drainage is well established over this type except in the more nearly level areas and in that part of the type in close proximity to the Grady sandy loam. In these flat areas the water escapes slowly, and they are in a wet condition during the winter and early spring months. Good drainage could be provided, however, by open ditches. On some of the slopes bordering the streams the type is somewhat excessively drained, and the run-off causes slight erosion. Terraces are constructed in many places to prevent such washing.

Agriculturally, the Norfolk sandy loam is one of the most important soils of the county. It is estimated that approximately 85 per cent of the type is under cultivation. Cotton is the principal crop. It yields from one-half bale to 2 bales per acre, depending upon the fertilization and methods of farming. Corn is the crop of next importance, and produces from 12 to 30 bushels per acre, although some very high yields have been obtained where the soil was heavily manured or fertilized and properly tilled. Oats, rye, cowpeas, soy beans, velvet beans, and sugar cane give satisfactory yields. Wheat is grown on a small acreage and yields well. Cowpeas yield from one-half to 1½ tons of hay per acre. Sweet potatoes are grown

in an important way for home consumption, and yields are good. The sirup manufactured from the sugar cane produced on this type has a bright color and a good flavor and seems superior to that made from cane grown on the heavier and darker colored soils. Practically all kinds of garden vegetables, Irish potatoes, peanuts, and fruits for home use are grown with good results.

Cotton receives from 250 to 2,000 pounds of fertilizer per acre, analyzing 8 per cent phosphoric acid, 2 per cent nitrogen, and 1 per cent potash, or in some cases, 10 per cent phosphoric acid and 2 per cent nitrogen, omitting potash, as under existing conditions it can not easily be obtained. Formerly, with potash more readily available, cotton was fertilized with an 8-3-3 mixture. Corn is given a light application of commercial fertilizer with a side dressing of nitrate of soda.

The Norfolk sandy loam is considered one of the most valuable soils of the county. The price of this land ranges from \$15 to \$50 or more an acre, according to location and improvements. Very little of this land is changing hands at the present time. The rent for a farm of about 40 acres usually is 1,500 pounds of lint cotton. The Norfolk sandy loam is regarded as one of the best cotton soils of the county, and is also well adapted to the growing of general farm crops. The surface is favorable for the use of modern farm machinery, and the light, open structure of the soil makes the use of light implements feasible. The soil responds readily to fertilization or the incorporation of barnyard manure or green vegetable matter. The light color indicates a lack of organic matter in the soil, and this can be supplied by the growing and turning under of crimson clover, soy beans, or cowpeas, and the growing of velvet beans. The heavier areas of the type should be plowed deeper and be more thoroughly pulverized. The deeper sandy surface soil and lighter textured areas require only shallow plowing but frequent cultivation. The large yields of corn, cotton, and other crops produced by some of the best farmers and by the boys' corn clubs indicate that the type has a high productive capacity where properly handled.

Norfolk sandy loam, deep phase.—The Norfolk sandy loam, deep phase, has a surface soil of light-gray to gray medium or slightly loamy sand, 6 or 8 inches deep. This is underlain to a depth of 22 or 36 inches by a pale-yellow to bright-yellow loamy sand. In the lower part of the 3-foot section the material gradually becomes heavier, grading into a sandy loam or light sandy clay. This phase is intermediate in texture and in agricultural value between the typical sandy loam and the sand type. As mapped, it may include small areas of each of these types.

This phase occurs in scattered areas throughout the Norfolk uplands, especially around the heads of streams or along divides. The

topography is undulating to gently rolling, and drainage is well established.

The phase has a slightly lower agricultural value than the typical sandy loam, but is more productive than the sand type. Cotton and corn are the main crops. Cotton yields one-third to one bale per acre, and corn 10 to 15 bushels per acre. Oats, cowpeas, and other vegetables are grown for home use. Commercial fertilizers are used to some extent for the various crops.

Land values vary according to the character of adjacent soil types, location with regard to markets, and character of improvements. The price usually is from \$15 to \$20 an acre.

Application of barnyard manure and compost and the turning under of green crops to supply organic matter are needed to improve this soil. The growing of cowpeas and velvet beans is beneficial, especially where the vines are turned under.

TIFFON SANDY LOAM.

The surface soil of the Tifton sandy loam to a depth of 6 inches is a gray, grayish-brown or light-brown loamy sand or light sandy loam. Below this and extending to a depth of 8 to 15 inches, it is a yellow sandy loam or loamy sand. The subsoil proper is a bright-yellow friable sandy clay, in places rather compact and slightly sticky. Locally the subsoil has a reddish cast and contains soft iron accretions. Noticeable quantities of small rounded iron concretions or accretions of a brown color are scattered over the surface and to a limited extent through the 3-foot section. The presence of these is the chief difference between this soil and the Norfolk sandy loam.

The Tifton sandy loam is not extensively developed in this county. It occurs in a few small patches through the uplands in association with the heavier Norfolk soils. It is found along the ridges and on the knolls in better drained positions. The surface features are undulating to gently rolling. Drainage is everywhere well established. This is a warm, early soil, friable and easily handled. It is one of the most desirable farming soils in the county, and approximately 95 per cent of it is under cultivation. Cotton is the main crop. It yields one-half to 1½ bales per acre. Corn also does well. The methods of handling this soil do not differ materially from those on the typically Norfolk sandy loam.

RUSTON SAND.

The surface soil of the Ruston sand consists of 5 to 10 inches of a grayish-brown medium sand. The subsoil is a dull reddish brown or yellowish-red sand or slightly loamy sand, extending without change to depths of more than 3 feet. The type includes small bodies

of Orangeburg sand which have a brown surface soil and a red loamy sand subsoil. These were not separated on account of their small size.

This type is relatively inextensive. Small areas are found in nearly all parts of the county, except the southwestern section. They occupy slopes leading to the smaller drainage courses and are closely associated with areas of the Norfolk sand and the deep phase of the Orangeburg sandy loam.

The surface is gently undulating, and this with the open structure of both the soil and subsoil material gives good drainage. Less than 45 per cent of the type is under cultivation. The principal crops grown are cotton and corn. Yields are relatively low except where the crop is heavily fertilized.

The soil is light and loose and warms up early in the season. It is well adapted to many truck crops. The addition of organic matter in the form of stable manure or green manure crops is needed.

Little of this land is changing hands at present. The prices range from \$3 to \$15 an acre.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a gray or grayish-brown light sandy loam or loamy sand, which grades at about 6 inches into a yellowish or reddish-yellow sandy loam. This extends to a depth of 8 to 12 inches and rests upon a subsoil of reddish-yellow or yellowish-brown, and in places dull-reddish, heavy, rather compact sandy clay. Mottlings or streaks of red and brown are encountered locally in the lower subsoil. Small areas along slopes often have a shallow surface soil which is darker and heavier than typical. Around some of the stream heads and depressions, especially where the Grady and Susquehanna soils are well developed, the subsoil is a clay of tough, slightly plastic structure and mottled red and gray and yellow color. Such areas have the subsoil characteristics of the Susquehanna soils.

This type has a pebbly variation which is shown on the map by gravel symbols. Two or three small areas of this variation are found in the western and southeastern parts of the county. The largest area contains approximately 225 acres and is situated $1\frac{3}{8}$ miles south of Rocky Creek Church. These pebbly areas differ from the typical soil in carrying from 15 to 35 per cent of small brownish concretions on the surface and through the soil section. The depth of the surface soil may also be slightly less than in the typical areas.

The Ruston sandy loam occurs in all parts of the county, especially along the streams and minor drainage courses. Large areas are mapped in the vicinity of Saint Clair in the northwestern part of the county.

The topography ranges from undulating to rolling, with occasional broken slopes along the larger streams and depressions. Drainage usually is well established. On the rolling to sloping areas erosion is more or less active, and terracing is necessary on the steeper slopes.

Approximately 80 per cent of the Ruston sandy loam is under cultivation. Cotton is the main crop, with yields ranging from one-third to one bale per acre. Corn does well, producing from 10 to 20 bushels per acre. Rye, oats, cowpeas, and garden vegetables are grown successfully.

This soil is handled in about the same manner as the Norfolk sandy loam and similar types of the region, with probably more attention given to terracing to prevent erosion. Little care is taken to improve the soil by the use of rotations or to protect it during the winter by growing cover crops. The yields are maintained through the use of commercial fertilizers.

The price of land of this type of soil ranges from \$12 to \$35 an acre.

Ruston sandy loam, deep phase.—The surface soil of the deep phase of the Ruston sandy loam is a gray to grayish-brown sand or loamy sand. The subsoil lies from 10 to 30 inches below the surface, but ordinarily at 22 to 26 inches, and consists of a dull brownish red or yellowish-red heavy sandy clay. The surface soil usually is light gray, like the Norfolk types. The phase as mapped often varies within short distances from a sandy loam to a sand, but the variations are of small extent.

This phase is not extensive in Burke County. It is closely associated with other Ruston soils in the northwestern and eastern parts of the county. The topography is undulating to gently rolling, and the drainage is good.

This soil is not important in the general agriculture of the county on account of its small extent. It is handled in about the same manner as the sand types of the Norfolk and Ruston series. The yields of the crops ordinarily grown are slightly larger than on the latter types.

Land of this type is not changing hands at the present time.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam is a grayish-brown to brown loamy sand or light sandy loam, passing at 5 to 8 inches into a reddish-yellow light sandy loam which extends to depths of 10 to 18 inches. The subsoil is a bright-red friable sandy clay of moderately compact structure. It will be noted that the depth of the light surface material varies greatly. The shallower areas approach the characteristics of the Greenville sandy loam, as mapped in various areas in the south, while the deeper areas have somewhat the characteristics of the deep phase of the Orangeburg sandy loam.

The Orangeburg sandy loam is an important soil in Burke County. It occurs most extensively and typically in the northern and north-western part of the county, with smaller bodies scattered along the streams in other sections.

It occupies flat-topped plateaus, ridges, and rolling slopes. The topography is gently undulating to rolling, and the drainage is thorough. A few small areas along McBean Creek have relatively steep slopes, and here tillage is difficult. Such areas are subject to erosion.

Between 50 and 75 per cent of this type is under cultivation. It is easily tilled, naturally fairly productive, and responsive to applications of fertilizers. Cotton is the leading crop, with corn second in importance. Oats, wheat, rye, and beans are grown in a small way. Cotton yields from one-third to one bale per acre, averaging about one-half bale. Corn yields from 12 to 18 bushels. Yields of oats and wheat under the ordinary methods employed are likewise moderate. Beans do well.

This soil is handled in about the same manner as the other types of like texture in the county. Commercial fertilizers are generally used on cotton and corn, and smaller applications are given the grain crops.

Land of this type is held for \$15 to \$25 an acre.

The high yields obtained where the best methods of cultivation, rotation, and fertilization are followed indicate that with proper management, this soil can be brought to a relatively high state of productiveness.

Orangeburg sandy loam, deep phase.—The Orangeburg sandy loam, deep phase, differs from the main type in having a deeper and lighter surface soil, a more open structure, and a lower agricultural value. The surface soil is a gray to grayish-brown loamy sand ranging in depth from 5 to 20 inches. This is underlain by a dull reddish yellow loamy sand or light sandy loam which grades at depths between 22 to 36 inches into a bright-red sandy clay. The phase often varies from a sandy loam to a sand within a short distance, and it includes small patches of Ruston and Norfolk loamy sand.

The deep phase of the Orangeburg sandy loam is mapped in a few areas along Brier and McBean Creeks. The topography is gently rolling, and drainage is well established.

The phase is largely devoted to the production of crops, chiefly cotton, corn, and beans. Yields are lower than on the typical sandy loam. Practically the same methods of cultivation are practiced on this soil as on adjacent types.

The soil is deficient in organic matter, which can be supplied by applying manure and compost and by growing and turning under green-manure crops.

The addition of organic matter tends to prevent the leaching out of fertilizers, increases the moisture-holding capacity of the soil, and makes it more coherent, and, consequently, more retentive of moisture.

GREENVILLE SANDY LOAM.

The surface soil of the Greenville sandy loam is a reddish-brown to dull-red sandy loam 5 to 12 inches deep. The subsoil is a dark-red friable sandy clay or clay which is moderately compact and heavy. In a few local areas the surface soil is a loamy sand to fine sand. In patches on the steep slopes and knolls the surficial sandy material has largely been removed, exposing the red sandy clay subsoil. These spots belong to the clay loam or sandy clay loam types, but their occurrence is so irregular and the individual areas are so small that they can not be separated satisfactorily.

This type occurs in close association with the Orangeburg soils, especially along Brier Creek and its tributaries in the north-central and northwestern parts of Burke County. It occupies the rolling uplands and slopes to streams where erosion is active. Drainage is good. The soil is open and porous and readily absorbs the rainfall.

The Greenville sandy loam is a good farming soil, and approximately 65 per cent of it is under cultivation. Cotton is the main income crop and corn the chief grain crop. Cotton yields on the average about one-half bale per acre, and corn ordinarily 15 to 25 bushels per acre. Wheat, oats, rye, beans, and cowpeas are grown to a small extent and give satisfactory yields.

Commercial fertilizers are generally used on the cotton and corn crops. The methods of tillage are similar to those practiced on adjoining soils.

The prices of this land range from \$20 to \$25 an acre, depending on location and improvements.

The Greenville sandy loam can be built up to a high state of productiveness by adding barnyard manure, by turning under green-manuring crops, and by following a systematic crop rotation, including cowpeas or velvet beans.

Greenville sandy loam, shallow phase.—The shallow phase of the Greenville sandy loam consists of a reddish-brown to dull-red heavy sandy loam 3 to 5 inches deep, grading into a dull-red sandy clay loam. This continues for a few inches and passes into a moderately friable clay which extends to depths of more than 3 feet. The depth of the sandy covering is variable within short distances, being extremely shallow upon the points of ridges and along the steeper slopes where erosion is active.

This phase is not extensive in Burke County. It is mapped in small bodies along the south side of Brier Creek, northwest of Waynesboro. Some of the areas are too small to be outlined accurately on the map.

The phase occurs on slopes and along low knolls and ridges. The topography is rolling and the surface drainage is good.

This phase is recognized as a strong soil, well adapted to general farm crops. Approximately 75 per cent of it is under cultivation. Cotton, the principal crop, yields from one-third bale to 1½ bales per acre.

This soil requires more than ordinary care in tillage. When wet it becomes sticky and clods easily. Heavy equipment is required to properly work this land.

Land of this phase is valued at \$20 to \$35 an acre.

For the improvement of this soil there is a general need for the use of heavier equipment, deeper plowing, definite crop rotation, and the addition of organic matter, with thorough pulverization of the soil before planting.

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

Mechanical analyses of Greenville sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
254905.....	Soil.....	1.8	17.0	13.8	42.0	5.4	6.6	13.2
254906.....	Subsoil.....	2.0	14.0	11.0	29.6	4.0	5.5	33.8

SUSQUEHANNA SANDY LOAM.

The Susquehanna sandy loam consists of 4 to 6 inches of a loamy sand or light sandy loam of light-gray to yellowish-gray color, underlain by a yellowish, compact sandy loam which is mottled with red and gray below a depth varying from 14 to 20 inches. The lower subsoil is a tough and plastic clay, mottled red, gray and yellow. This type as mapped in Burke County has a patchy appearance, numerous "gall spots" being encountered where the surface covering is shallow or entirely lacking and the mottled heavy subsoil is exposed. The type includes small areas that have more the characteristics of the Ruston soils in color, but a markedly tough and somewhat plastic structure. A few small patches of Norfolk soil also are included.

The Susquehanna sandy loam is not extensive, being found only in small areas in the southeastern and western parts of the county. It usually occurs on slopes or low knolls and around depressions. Surface drainage is fairly well developed. The slope usually is sufficient to insure adequate run-off, but the impervious structure of the subsoil prevents the downward percolation of water, resulting in a cold, imperfectly drained soil.

A large percentage of this soil is under cultivation. Cotton and corn are the main crops. Yields are lower than on the Norfolk and associated soils. Commercial fertilizers are used as on the other soils of the county.

Very little of this land is changing hands at the present time. It is held at prices ranging from \$8 to \$15 an acre.

GRADY SANDY LOAM.

The surface soil of the Grady sandy loam consists of a grayish to dark-gray or bluish-gray sand or sandy loam from 6 to 12 inches deep. The upper subsoil is a sticky sandy loam of gray to light-gray or almost white color, extending to an average depth of about 18 inches and underlain by a mottled brown, yellow, and red, plastic sandy clay or clay. In some areas the surface soil to a depth of 2 or 3 inches is dark brown. Variations in texture are frequent, the material ranging from loose sand to heavy silty clay, but these variations are not of sufficient agricultural importance to warrant separation.

One area of approximately 200 acres, immediately north of Idlewood, is a clay. The surface soil to a depth of 2 to 4 inches is a grayish heavy silt loam or silty clay, and this is underlain by a heavy plastic clay, mottled with brown, yellow, and red. This area is poorly drained. It has been cleared in part, but is not utilized for crop production.

The Grady sandy loam occupies circular and sinuous depressions slightly lower than the surrounding country. These are found in all parts of the county, though they are best developed in the central, western, and southwestern sections. Many of the areas are too small to be outlined accurately. Drainage is inadequate, and ditching is generally resorted to to carry away excess surface water. Water often stands on this type in the depressions or pondlike areas during the winter and spring months.

Only a very small percentage of this land has been cleared for cultivation; the remainder supports a growth of pine, gum, tupelo, and some cypress. The undergrowth consists of reeds, briers, and water-loving vegetation.

Where cleared, this soil is well suited to the growing of corn and to grazing. Applications of lime should prove beneficial.

KALMIA SAND.

The Kalmia sand is a gray to slightly brownish gray, loose sand grading at 6 or 8 inches into a pale-yellow sand which continues to a depth of 3 feet or more. In a few local areas the lower part of the

3-foot section is a loamy sand, slightly mottled with gray. It is one of the inextensive and unimportant types of the county.

The type is similar in character to the Norfolk sand, although it differs from the Norfolk in formation and position. It occupies level second bottoms along the larger streams of the county, especially Brier, Buckhead, and Beaverdam Creeks and the Ogeechee River.

The loose, open structure of the soil and subsoil favors thorough drainage except where the water table lies near the surface.

This is one of the less extensive and less important types of the county, and most of it is covered with a mixed stand of shortleaf pine and oak. A small percentage has been cleared and put under cultivation to the crops common to the region. The yields are comparable with those obtained on the Norfolk sand. Heavy fertilization is essential to good yields. The type is well suited to the raising of vegetables and small truck crops. Rye, peanuts, and watermelons can be grown successfully.

KALMIA SANDY LOAM.

The Kalmia sandy loam consists of a light-gray or grayish-brown loamy sand, 4 to 6 inches deep, underlain by a yellowish loamy sand which extends to a depth of 8 to 12 inches. The subsoil is a yellow, friable sandy clay, often mottled with gray in the lower part. In a few local areas the texture varies toward a fine sandy loam or loamy fine sand.

The Kalmia sandy loam occurs as flat areas on the terraces or second bottoms of the larger streams of the county, especially along Brier and Buckhead Creeks. Drainage is fairly good, except in low-lying areas.

Only a small percentage of this type is cultivated. Yields are fair, depending upon the quantity of fertilizer used and the methods employed in cultivation. Cotton and corn are the chief crops, cotton yielding one-third to three-fourths bale per acre and corn 15 to 25 bushels. Oats, peas, beans, sugar cane, and vegetables also are grown. Commercial fertilizers are generally used for these crops. The type is well suited to the production of staple farm crops.

This soil usually is sold in conjunction with upland type, and no separate value can be given for it.

LEAF SANDY LOAM.

The Leaf sandy loam is a gray or grayish-brown sandy loam 4 to 6 inches deep, grading into a yellowish sandy loam which extends to a depth of 8 to 14 inches. The subsoil begins as a yellow sandy clay

or clay, and quickly grades into a mottled yellow red and gray, tough plastic clay. The depth of the lighter surface material varies from place to place, and the intensity of mottling in the subsoil also is variable.

This type is not extensive, occurring on the terraces along Brier and Buckhead Creeks in the southern part of the county. It occupies nearly level or slightly undulating positions on the second bottoms adjacent to the streams. The natural drainage in the flatter areas is poorly developed, the more rolling bodies are sufficiently well drained for crop production.

Only a small part of this type is under cultivation. Cotton and corn are grown, and moderate yields are obtained where the soil is fertilized.

Artificial drainage is necessary before all of this soil can be utilized profitably for the production of farm crops.

MYATT SANDY LOAM.

The surface soil of the Myatt sandy loam is a dark-gray to almost black loamy sand underlain at a depth of 4 to 6 inches by a grayish loamy sand or sand. The subsoil, encountered at depths between 15 and 22 inches, is a gray to drab or mottled gray, yellow, and brown sandy loam or sandy clay. Occasionally variations are found where the depth to the subsoil is greater than 22 inches.

This type occurs in flat, slightly depressed areas on the larger terraces, or second bottoms, bordering the streams of the county. Drainage is poor, and water stands on the surface during a part of the year.

This type is not tilled; it supports a growth of shortleaf pine, swamp pine, gum, and some cypress. Artificial drainage is necessary before the land can be used for growing crops. With such improvement, corn, oats, and other grains should do well.

CONGAREE SILT LOAM.

The surface soil of the Congaree silt loam prevailing consists of brown to dark-brown silt loam, ranging in depth from 8 to 12 inches. The subsoil of the more uniform areas is generally a brown to light-brown, heavy compact silt loam to silty clay loam. Small mica flakes usually are present in the surface soil and occasionally in the subsoil. Considerable variation in texture and structure occurs throughout the type, as is to be expected in alluvial soils. Bordering the Savannah River there usually is a very narrow strip of brown fine sand or fine sandy loam. In the depressions and old sloughs some distance from the river and near the upland, the soil is a heavy silty

clay loam. In many places the subsoil consists of strata of fine sand, fine sandy loam, and silt loam.

This type occurs in strips varying in width from about 100 feet to approximately 2 miles in the first bottoms of the Savannah River. The surface is prevailingly flat or level. Along the stream bank the river has deposited fine sand in the form of levees a little higher than the general surface, and other irregularities consisting of sloughs and depressions break the generally smooth surface of the broader areas. While the type lies several feet above the normal level of the river, all of it is subject to heavy and protracted overflow.

The Congaree silt loam is not under cultivation. It supports a heavy growth of elm, oak, some cypress, and gum, and an undergrowth of reeds, bamboo, briars and palmetto, and other water-loving vegetation. This soil is naturally one of the most fertile and durable in the county, but under present drainage conditions it can not be safely utilized for crop production. For its reclamation, leveeing and the use of flood gates for the escape of rain water are required. When reclaimed the land should produce heavy yields of corn and grass. In other parts of the South this soil is successfully used for the production of these crops.

SWAMP.

Swamp includes the first bottoms that are either saturated with water or under water during the greater part of the year. The material in these areas is extremely variable in color, texture, and structure and would be difficult to classify with definite soil types, even if the land were reclaimed. The surface soil usually is sandy and gray to brown in color. The subsoil varies from a loose, water-soaked gray sand to heavy silt loam or clay, varying in color, and in many places mottled.

Areas of Swamp lie along all the larger streams of the county. The largest areas border the Ogeechee River, Brier Creek, Buckhead Creek, and their tributaries. This land is not under cultivation, but it affords some pasturage during the summer and fall months. It supports a growth of gum, swamp pine, oak, elm, and occasionally cypress, with a heavy undergrowth of cane, reeds, and other water-loving plants.

Some areas of Swamp along the smaller streams might be reclaimed by deepening and straightening the stream channels and constructing levees. With such improvements they should produce good yields of corn, sugar cane, and forage crops.

This land is sold only with the adjoining uplands. Its value depends largely upon the character of the timber growth.

SUMMARY.

Burke County, Georgia, lies on the eastern boundary of the State, about midway between its northern and southern extremities. It has an area of 812 square miles, or 519,680 acres.

The topography is prevailingly undulating to rolling. The general slope is toward the southeast. The elevation ranges from about 185 feet above sea level in the southwestern corner of the county to about 285 feet in the northern part.

The Savannah River on the east and the Ogeechee River on the south, with their tributaries, mainly Brier, Beaverdam, Buckhead, and Barkcamp Creeks, are the principal drainage ways

Burke County was settled prior to the Revolutionary War. A large part of the present population has descended from the early settlers. The population in 1910 was 27,268, 90 per cent of which was rural. Waynesboro, the county seat, is the largest town.

Three railroad systems operate in the county and afford good transportation facilities. The main highways are of good construction and well maintained.

The climate is mild. The mean annual temperature is about 64° F. There is a normal growing season of 236 days. The mean annual precipitation is approximately 46 inches.

The 1910 census reports 3,907 farms in the county, each tenancy being classed as a farm, comprising 58 per cent of the total area. Of the farm land 67.3 per cent, or 61.1 acres per farm, is reported improved. The average size of farms is given as 90.8 acres. There are a number of very large land holdings. Approximately 85 per cent of the farms are operated by tenants, according to the census, most of whom rent "one-horse" farms of 35 or 40 acres. The average assessed value of farm land is given in the 1910 census as \$12.31 an acre.

Cotton is the most important crop grown, with corn, oats, rye, peas, beans, and vegetables grown to a less extent. Cotton is the cash crop, other crops being grown for home use. Live stock, chiefly hogs, with a much smaller number of cattle, is relatively unimportant.

Commercial fertilizers are used extensively and are supplemented to some extent by barnyard manure and compost.

Farm labor is largely colored. The usual wage is \$12 to \$18 a month.

The upland soils are derived from unconsolidated sediments of the Coastal Plain region. Exclusive of Swamp, 14 soil types, representing 11 series, are mapped in Burke County.

The Norfolk sandy loam is one of the most extensive soil types in the county and one of the most desirable for cotton. Cotton and

corn are the main crops, and yields are good. The deep phase of this type is also extensive. It has a lower agricultural value than the sandy loam. Cotton and corn are the main crops grown.

The Norfolk sand is an extensive type. The largest areas are mapped in the eastern part of the county. Only a small part is under cultivation, and yields are comparatively low. This soil is best suited to truck crops.

The Tifton sandy loam occurs in a few small areas. It is handled in the same manner as the adjacent soil types, and produces good yields.

The Ruston sandy loam occurs in all parts of the county. It corresponds in value with the Norfolk sandy loam. Cotton and corn are the important crops and give good yields. The deep phase of the Ruston sandy loam is of small extent and is relatively unimportant agriculturally. It is handled in about the same manner as the sand types of the Ruston and Norfolk series.

The Ruston type has a very limited occurrence and is an unimportant soil type. It is best adapted to special crops.

The Orangeburg sandy loam, with its deep phase, is an important soil type. Both the main type and the phase are mapped largely in the northern part of the county. General farming is practiced, with cotton and corn as the main crops. Oats, rye, peas, beans, and vegetables are grown, and do fairly well. This soil can be made very productive.

The Greenville sandy loam and its shallow phase are important soils, though not extensive in this county. They are well suited to cotton, corn, and small grains. Heavy equipment is necessary to work these soils to best advantage.

The Susquehanna sandy loam is mapped in a few small areas. This type is handled in about the same manner as adjoining soils. Crop yields are fair.

The Grady sandy loam occurs in small depressed areas and is poorly drained and uncleared. Much of this type could be reclaimed by ditching, and after such improvement corn and sugar cane should do well.

The Kalmia sand and sandy loam types are found along the terraces of the larger streams, except the Savannah River. These soils are not used to any important extent for agriculture.

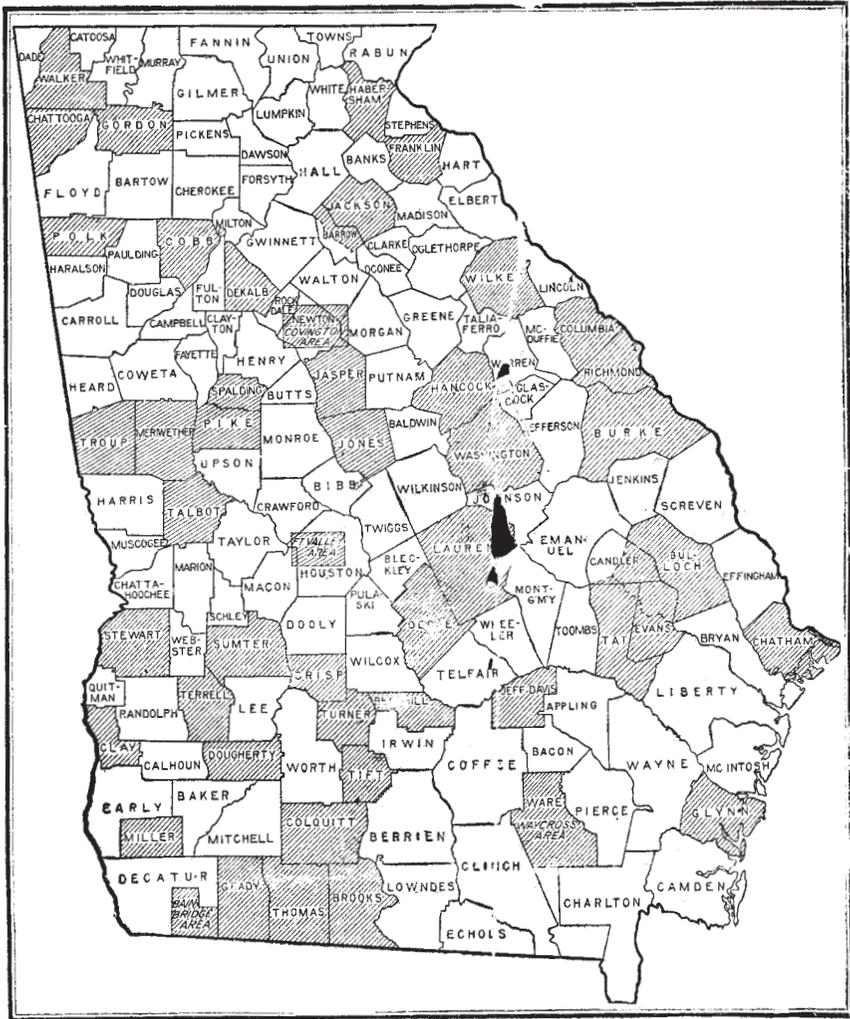
The Leaf sandy loam occurs on level terraces along streams. It is inextensive and unimportant in this county.

The Myatt sandy loam is a poorly drained type found on the terraces. It is not under cultivation and requires drainage before it can be used for growing crops.

The Congaree silt loam occurs along the Savannah River bottom and is subject to overflow. It is forested with swamp pine, gum, and cypress. It is poorly drained and is not tilled, but with reclamation should prove a strong soil.

Areas of Swamp are found along all the streams. The material of these areas is widely variable in color, texture, and structure. The Swamp areas require drainage, and after reclamation are very productive. Much of the Swamp is forested. The areas afford a little pasturage.





Areas surveyed in Georgia.

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