SOIL SURVEY OF SCREVEN COUNTY, GEORGIA.

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DESCRIPTION OF THE AREA.

Screven County is situated along the eastern border of the State of Georgia. It lies due east of the geographical center of the State and about midway between Augusta and Savannah. The Savannah River flows along the eastern side of the county and forms the boundary between the States of Georgia and South Carolina. The county is irregular in shape, the greatest distance north and south being 39 miles and east and west 30 miles. The area embraces 650 square miles, or 416,000 acres.

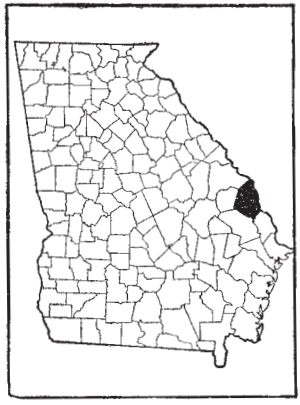

FIG. 47.—Sketch map showing location of the Screven County area, Georgia.

The topography of the county is characteristic of the Coastal Plain and embraces a number of different surface features that generally characterize this physiographic province. The most extensive topographic feature is the broad divide between the Savannah and Ogeechee Rivers. It consists of gently rolling ridges with rounded crests and slopes that are more or less uneven because of numerous knolls and many ravines occupied by small streams and drainage swales. In places the slopes are abrupt and somewhat broken. Numerous perennial and intermittent streams have cut from 20 to 70 feet below the crests of the ridges, but there is an occasional area of smooth, level land. In general, the topography of this section permits the use of improved implements. This region comprises the greater part of the county, being developed chiefly in the central part. Its southern boundary extends from 3 miles north of Newington, westward through Captolo to Ogeechee, and northward to the Jenkins County line. The general northern limit runs from the county line southeast along Brier Creek to Jacobsons Landing, then southward to Buck Creek Church, and then with a broad, sweeping turn bends eastward and back to near Newington. The general elevation ranges from 150 to 300 feet above sea level. Sylvania has an elevation of 238 feet.

The northeastern part of the county has a gently rolling to undulating surface, with a few streams cutting through to produce ridges. The drainage is effected in part by seepage to a large number of depressions or ponds, which are irregular in shape and range in size from a fraction of an acre to as much as 700 acres. Elevations near the Savannah River are 60 feet and at the highest points about 230 feet. This region includes steep slopes from the upland to the bottom lands along the Savannah.

In the southern and southeastern parts of the county the surface is smooth and level, with undulating slopes extending from the higher parts to the many flat, poorly drained areas along the streams. The surface relief is sufficient to cause good drainage, and a few distinct ridges have steep slopes. There are depressed areas, such as ponds and long seepage basins, which differ in many respects from those in the northeastern part of the county. The southeastern part of the county, beginning near Newington, has a typical "flatwoods" topography. This region consists of extensive flats, with only slight differences in elevation, the higher, well-drained parts being only a few feet above the irregular areas of poorly drained land. This section is dotted by numerous cypress ponds. The elevation ranges from 110 to 140 feet above sea level.

A number of local flat areas, surrounded by distinct bluffs, occur locally within the general region of rolling land. The depressions have little relief and are intermittently wet and dry.

Along many of the streams there are flat areas which are continually wet or swampy. The terraces or old-alluvial areas have smooth and level surfaces, are generally well drained, and are usually marked along the outer margins by a perceptible rise to the upland. This terraced topography is well developed along the Ogeechee River, the north fork of Ogeechee Creek, Brier Creek, Beaverdam Creek, and the Savannah River.

The greater part of the county is well drained by a dendritic drainage system. Parts of the county are drained through subterranean channels, particularly the northeastern part and a broad area north of the Ogeechee River. In the flatwoods section much of the drainage is accomplished by seepage, the water accumulating in ponds, where it is held until evaporated. The drainage waters of the county are carried into the Atlantic Ocean by the Savannah and Ogeechee River systems. The crest of the divide between the two systems is marked approximately by the public road between Millen, Jenkins County, and Sylvania and the Dixie Highway to the Effingham County line.

The main tributaries of the Savannah River are Brier, Beaverdam, and Buck Creeks. The main streams flowing into the Ogeechee River are Ogeechee and Horse Creeks. The creek waters are generally sluggish and dark colored.

Screven County was organized December 14, 1793, and was one of the early counties of the State. It was settled before the Revolutionary War by English and Scotch settlers. Later settlers came from other parts of the State. In 1920 the population of the county was 23,552. It is all classed as rural and is well distributed.

Sylvania, the county seat and chief trading point, is centrally located. Its population in 1920 was 1,413. Smaller towns and their populations are Rocky Ford, 522; Oliver, 288; Newington, 364; and Hilltonia, 262. A number of trading points are found throughout the county.

The railroad facilities are adequate for the needs of the county. The Central of Georgia Railway from Savannah to Atlanta passes through the county within a mile of the southwest boundary. The Savannah & Atlanta Railway, extending from Savannah and connecting with the Central of Georgia Railway at Camak, Warren County, passes through the central part of the county in a general north and south direction. The Sylvania Central Railway is a short line connecting Sylvania with the Central of Georgia Railway at Rocky Ford.

The public roads reach all parts of the county. They are built of natural earth material, sand and clay, are maintained in fair condition, and are passable during the entire year.

Telephone service connects the more important towns and trading points throughout the county. Rural mail service is extensive.

Savannah, Macon, and Augusta are the chief outside markets for the agricultural products of the county.

CLIMATE.

The climate of the region in which Screven County is located is characterized by short, open winters, long, hot summers, and an adequate precipitation well distributed throughout the year.

The most disagreeable weather occurs in January and February, as rains are frequent and each rain is followed by a cold spell of one or two days, during which the temperature often falls below 15° F. and thin skims of ice form around the edges of still water. The lowest temperature on record is 9° F. These spells are followed by several days or as much as a week of balmy weather. Hardy winter vegetables can be grown during these months with little protection.

The spring and fall months are the most delightful of the year. The summer months are hot, but the heat is moderated by the many thunderstorms. The variations in temperature for the summer range from 51° F. to 106° F., the mean being 80.9° F.

The rainfall averages 44.89 inches for the year and is well distributed. The driest weather is in the fall, which is favorable for the harvesting season. In the driest year on record the precipitation was 32.04 inches, which was sufficient for crop production, as the heaviest rainfall occurred during the growing season. There are only small flurries of snow.

The average growing season, i. e., the period between killing frosts, extends from March 24 to November 6, which is 227 days. The latest killing frost on record in the spring occurred on April 26 and the earliest in fall on October 21.

The table below is compiled from the records of the Weather Bureau station at Millen, in Jenkins County, and is fairly representative of climatic conditions in Screven County.

Normal monthly, seasonal, and annual temperature and precipitation at Millen, Jenkins County.

[Elevation, 158 feet.]

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1910).	Total amount for the wettest year (1912).
	° *F.*	° *F.*	° *F.*	*Inches.*	*Inches.*	*Inches.*
December	48.5	83	10	3.30	1.70	2.85
January	48.3	82	12	2.96	2.19	7.50
February	48.9	85	9	4.24	4.32	5.21
Winter	48.6	85	9	10.50	8.21	15.56
March	58.0	89	20	3.90	1.33	7.45
April	64.6	97	30	2.74	.90	6.92
May	73.8	102	41	2.94	2.75	3.99
Spring	65.5	102	20	9.58	4.98	18.36
June	79.7	105	51	5.25	5.92	6.46
July	81.7	106	54	5.81	2.04	5.45
August	81.3	103	58	5.25	3.25	8.23
Summer	80.9	106	51	16.31	11.21	20.14
September	69.4	103	43	3.54	2.19	3.77
October	65.8	98	26	2.77	3.65	1.30
November	55.8	86	20	2.19	1.80	2.24
Fall	63.7	103	20	8.50	7.64	7.31
Year	65.2	106	9	44.89	32.04	61.37

AGRICULTURE.

The agricultural development of Screven County has followed the lines which have characterized the development of the southern counties of the State. The upland territory supported a heavy growth of longleaf pine, with a scattering of hardwoods, while along the streams the forest was chiefly hardwoods, including cypress, gums, and oaks. The early settlers cleared small tracts of the virgin timber and produced such crops as corn, oats, wheat, buckwheat, and barley, which were sufficient for their sustenance. Cattle and hogs were given the open range, on which they did not thrive very well, as the grasses were not very nutritious. Cattle and hogs formed the surplus products and were usually driven to Savannah and bartered for necessities other than those which could be produced. Sheep also grazed on the open range and were kept chiefly for the wool for making clothing.

The native forests offered good returns in the production of naval stores and were extensively used for this purpose. Following this, the timber was cut and sawed into lumber for market. With the timber removed the lands were gradually taken up for farming.

When transportation facilities had been established for the handling of naval stores and lumber, markets became more accessible and the crops of a self-sustaining system gave way to crops which could be more economically produced. Cotton soon became important,

and this crop took first place in the agricultural system immediately following the Civil War, when a cash crop was in demand. It was produced almost to the exclusion of other essential crops. Corn, oats, beef, and pork were not produced in sufficient quantities to supply local needs.

The present agriculture is centered about the production of cotton. It is the cash crop, and all business conditions, such as credits and land values, are dependent upon it. In 1919 the boll weevil made its first serious inroads on the cotton crop in this county, and, while the crop for 1920 will be extensive, it is generally believed that the acreage will be considerably reduced. In fact the system of agriculture is at a turning point, and more attention will be given to subsistence crops.

As reported by the census, cotton was grown in 1919 on 48,847 acres, with a production of 21,720 bales, or an average of 0.44 bale per acre. In 1909 it was grown on 49,962 acres, with a production of 26,061 bales, or an average of 0.52 bale per acre. The cotton is marketed in Macon, Augusta, or Savannah.

Corn occupies the largest acreage and ranks second in importance. It is becoming more important in the agricultural system as feed for work stock and hogs. It was grown on 53,344 acres in 1919, with an average yield of 12.3 bushels per acre. The production at the present time is not sufficient to supply the local demands. The crop is fed to stock or is ground by local mills into meal.

Oats were grown in 1919 on 2,210 acres, with a total yield of 32,036 bushels, or an average of 14.5 bushels per acre. They are usually fed in the straw to work stock. The production is insufficient to supply local needs.

Cowpeas and velvet beans annually are more extensively grown and are recognized as important crops. They are used primarily to supply the crying need for organic matter in the soils, which have been depleted of their original content of this element of fertility through the production of clean-cultivated crops from the beginning. By their use the fertility of the soils has been materially increased. Most of the cowpea crop is cut for hay, but some seed is gathered. Velvet beans are used more or less for hog feed. These crops are not always harvested, but in many cases are hogged down.

Peanuts are grown chiefly for hog feed, the hogs being turned in on the matured peanuts in the fields. Many farmers plan to grow peanuts more extensively as a cash crop in place of cotton.

Rye is grown to a small extent, chiefly for winter pasture for hogs and cattle. Very little wheat is sown.

Sweet potatoes are produced in sufficient quantities to supply local needs. Potatoes, sugar cane, sorgo, and beans, peas, and other garden crops are produced on many farms to supply home needs.

The livestock industry is of very little importance throughout the county. The beef and pork produced are not sufficient for local needs. The census reports that there were 17,328 cattle and 36,722 hogs in the county in January, 1920. Dairying is not practiced on a commercial scale. The production of pork is looked upon as a possible substitution for cotton, and many farmers are improving their stock by well-bred sires of the Poland-China, Duroc-Jersey, Hampshire, and Berkshire breeds. The cattle are also being improved to some extent. There is one herd of Hereford cattle in the county.

The value of various classes of farm products of Screven County is shown in the following table, compiled from the reports of the census of 1920:

Value of farm products in 1919.

Crops by classes:		Livestock and livestock products:	
Cereals	$1,193,891	Animals sold and slaughtered [1]	$362,800
Other grains and seeds	17,181	Dairy products, excluding home use	52,826
Hay and forage	216,672	Poultry and eggs	173,704
Vegetables	284,564	Honey and wax	1,872
Fruits and nuts	29,507	Wool	1,274
All other crops (chiefly cotton)	4,711,313		7,045,604

The methods of preparation and cultivation of the land for the various crops are gradually improving, but are still far behind the most improved practices. The methods are those usually followed where the greater part of the land is handled by share tenants. On farms that are operated or managed by owners better methods are employed.

Cotton land is plowed in the early winter and spring, depending upon weather conditions. It is generally considered desirable to prepare the land in the late fall, but this is often difficult on account of gathering the previous crop. The land is generally broken with one-horse plows and laid off in rows, and the depth of plowing rarely exceeds 3 or 4 inches. On the better farms the land is plowed broadcast with a two-horse plow to an average depth of about 6 or 8 inches. Later it is laid off in rows by plowing out a furrow, in which the fertilizer is placed, and turning the soil over the fertilizer so as to form a bed. On this bed or ridge the seed is drilled. Some farmers no longer plant on beds, but use level culture. Planting starts late in March and continues through April. The interrow areas, or "middles," are cultivated to keep down the grass, and when the young plants attain sufficient size they are thinned to a stand with hand hoes. Subsequent cultivations are given by the use of sweeps and scrapes. The crop is continuously cultivated until July, when it is "laid by." The idea of cultivation is to keep down the grass, with little thought of conserving moisture. The crop is picked as it matures. A number of different varieties are grown throughout the county, a few of the more popular varieties being Cleveland Big Boll, King's Improved, Toole, Cooks, Dongola, and Half-and-Half.

The land for corn is not prepared as thoroughly as for cotton. Some farmers break the land broadcast, but others plow out a furrow and plow the land as cultivation proceeds. The corn is planted in the water furrow. Fertilizers, if used, are distributed at the time of planting. Much of the corn is dropped by hand, but on a large number of farms it is planted by a combination corn planter and fertilizer distributer. Corn is planted from about the middle of March to late May. It receives two or three cultivations. The leaves are pulled for fodder in late July or early August. The prolific varieties are used.

Oats are seeded in a number of ways, being sown broadcast and plowed under, disked in, or drilled in on plowed and harrowed land. They are sometimes sown between the rows of cotton with small drills.

[1] Not reported by the census. Estimated.

It is best to sow oats as early in the fall as possible, but owing to the press of work it is often as late as December before the crop is in. Oats are harvested in late May, generally with a cradle. A very small part of the crop is threshed. Wheat and rye are sown about the same as oats.

Cowpeas when intended for soil improvement and hog pasture are drilled or sown broadcast in the cornfields about the time of the last cultivation of the corn. As a hay crop they are sown broadcast after oats and are cut in October. Velvet beans are planted like cowpeas in the cornfields for soil improvement and are usually "hogged down" during the fall. Peanuts are planted and used in like manner. Some of the cowpeas are picked for seed and for food. Velvet beans are picked by hand for seed or for hog feed to a small extent. Few peanuts are harvested.

The great diversity of soil types in the county is generally recognized by the farmers, especially with reference to cultural methods and productiveness, but not with reference to their adaptation to various crops, as the single-crop system followed affords little opportunity for adaptation. The Norfolk sandy loam, Norfolk fine sandy loam, Ruston sandy loam, Tifton sandy loam, Orangeburg sandy loam, and Augusta sandy loam types are recognized as the strongest and most desirable soils for the general farm crops now produced. The other types are considered less desirable, and in some cases undesirable except for pasture.

The rotation of crops is not general in this county. The crops are changed as often as possible, but on many farms cotton has been grown continuously on the same land for many years. A rotation which is followed to a small extent consists of (1) cotton, (2) corn with cowpeas or velvet beans between the rows, (3) oats or rye followed by cowpeas for hay.

Commercial fertilizers are largely depended upon to sustain yields against the decrease that invariably follows a one-crop system. The expenditures for fertilizer are increasing rapidly. The census reports an expenditure of $252,169 in 1909; in 1919 it was $773,908. The fertilizers are practically all ready-mixed goods and are used chiefly for cotton. The quantities applied range from 200 pounds to 600 pounds per acre, the average being 300 pounds. The mixtures are chiefly 8–2–2, 9–2–2, or 9–2–3[2] grades. In recent years a large part of the fertilizer has consisted of mixed acid phosphate and cottonseed meal. Nitrate of soda is sometimes applied as a top dressing for cotton. Corn is not given the same fertilization as cotton. Sometimes 200 to 300 pounds per acre of mixed fertilizer is used, or a small quantity of stable manure is applied in the drill and is followed by a top dressing of nitrate of soda. On many tenant farms no fertilizer is used. A top dressing of 100 pounds per acre of nitrate of soda is the chief fertilization given to oats and rye.

Mules are the principal work stock. A few tractors are used. The implements are generally light in character and of the type commonly used throughout the sandy region of the South. Improved implements are found on some of the more progressive farms. In many cases the use of machinery is prevented by stumps in the fields.

[2] Percentages, respectively, of phosphoric acid, nitrogen, and potash.

The negro population is depended upon chiefly for farm labor. In 1920 the expenditure for farm labor was $312,554 or an average of $235 per farm. Labor is generally scarce. Farm hands for day labor are paid $1.50 to $1.75 a day; by the month they receive $25 to $30, including house rent. Cotton is picked at standard rates per 100 pounds.

The greater part of the county is farmed by tenants. The proportion of farms operated by tenants has steadily increased from 29.7 per cent in 1880 to 69.7 in 1920. The large holdings are divided into 30 to 40 acre tracts, which are termed "one-horse farms," and these are rented for cash, standing rent, or share rent. The standing rent varies from 1,000 to 1,500 pounds of lint cotton per farm. Under the share-rent plan the landlord usually furnishes the stock, implements, and half the fertilizer, the tenant furnishes the labor and half the fertilizer, and the products of the farm are divided equally.

The average assessed value of land in Screven County in 1920, as reported by the census, was $26.18 per acre. Land values vary greatly not only according to improvements and location, but also with the price of cotton. Unimproved lands of low quality and situated in poorly developed sections are held at $5 to $10 an acre. Good lands, well developed and well located, are held as high as $100 an acre.

SOILS.

Screven County is situated in the Atlantic Coastal Plain region of Georgia. It embraces a part of the so-called flatwoods area of the Coastal Plain and also a part of the more rolling section. The greater part of the county is underlain by irregularly bedded sand, clay, and gravel. The soils of the county are dominantly sandy in the surface soil, and several of the types are prevailingly sandy throughout soil and subsoil.

The soils of Screven County are mainly light in color, only the Portsmouth loam and Peaty muck being exceptions to this rule. The prevailing color of the surface soils ranges from light gray to dark gray. Only a small quantity of organic matter has accumulated in these soils, as practically the entire area has been forested. There is considerable variation in the color of the subsoil throughout the county. In the better drained areas the subsoils are prevailingly yellow to red, whereas in the poorly drained sections they are generally intensely mottled.

The soils of the county are practically neutral or are slightly acid in character. The Portsmouth and some of the more poorly drained types apparently contain organic acid, but these can be readily neutralized by the addition of liberal quantities of lime. There are small areas of soil, especially of the Leon sand, in which is developed a hardpan layer consisting of a coffee-ground colored, indurated sand, partly cemented by organic matter and iron.

The soils of the county contain striking differences in color and structure, and these apparently are due to the topography and drainage conditions. With the exception of the Susquehanna sandy loam, the heavy plastic clay subsoils are developed in the low flat situa-

tions and are highly mottled, red and yellow being conspicuous in the basic gray color. The Portsmouth loam and Peaty muck owe their dark color to the growth and decay of vegetable matter.

The Norfolk, Tifton, Ruston, and Orangeburg types are the soils upon which the agriculture of the county is largely based. These are the well-drained soils of the county and have friable sandy clay subsoils. The Susquehanna sandy loam has for the most part good natural surface drainage, but the impervious character of the subsoil does not permit free circulation of air and water. The Coxville, Plummer, Portsmouth, and Grady soils represent the poorly drained upland soils and have not been developed to any extent in this county. The Grady soils occupy the characteristic saucerlike depressions lying a few feet below the surrounding soils. These are wet for the greater part of the year and in some places serve as catchment basins for the seepage waters.

The greater part of the county is underlain by the irregularly bedded sand, clay, and gravel of the Altamaha formation, consisting of cherty limestones, sands, and clays. Small areas, chiefly narrow strips along streams, are of the Alum Bluff formation, which is composed of greenish sand and clay and beds of fuller's earth, phosphatic sand, impure limestones, and marl.[3] The Vicksburg and Alum Bluff formations are generally covered by deposits of Pleistocene material, so that the formations themselves do not exert a great influence upon the character of the soils. In that section of the county where the Vicksburg limestone formation occurs, there are a number of depressed areas or sink holes, formed, it is believed, through the solution and sinking of the underlying rock beds.

On the basis of differences in origin and mode of formation, the soils may be classified as upland soils and alluvial soils. The alluvial soils are further divided into old-alluvial soils occupying terraces and recent-alluvial soils occupying the first bottoms along streams.

The upland types naturally fall into two groups. The first group, consisting of types with friable or open sand or sandy clay subsoils, comprises the well-drained soils of the Norfolk, Ruston, Tifton, and Orangeburg series. The types of the second group have subsoils of mottled, plastic, sticky, impervious clay, and are generally characterized by inferior drainage, which may range from fair to very poor. This is generally due to inhibited drainage through the impervious subsoil and to lack of relief. Of this group, the Susquehanna series is the best drained because of its more favorable topography. The Dunbar series comes next, having less relief, and the Coxville, Plummer, Grady, and Portsmouth series follow in order, the Portsmouth being the most poorly drained of the upland soils.

The soils have been classified into soil series and soil types on the basis of origin, color, structure, and texture. The type is the unit of classification; the series represents a grouping of types similar in all respects except texture. Twenty-six types, with three phases, and two miscellaneous types, Peaty muck and Swamp, are mapped in Screven County.

[3] Geological Survey of Georgia, Bul. No. 26.

The Norfolk series includes types having surface soils that range in color from light gray to yellowish gray or brownish gray and a subsoil consisting of yellow sand and sandy clay of varying texture. The series is represented in this county by the Norfolk coarse sand, sand, loamy sand, fine sand, sandy loam with a deep phase, and the fine sandy loam.

The Orangeburg series consists of types in which the surface soils are brown or grayish brown and the subsoil is bright red and friable. One type of this series, the sandy loam, is mapped.

The Ruston series is intermediate in characteristics between the Norfolk and the Orangeburg. The surface soils range from brownish gray to grayish brown and the subsoil is reddish yellow to yellowish red and fairly friable. The loamy sand and sandy loam types of the series are mapped in this county.

The Tifton series includes types with grayish-brown to light-brown surface soils and a yellow to slightly reddish yellow subsoil. The series is characterized by the presence of considerable quantities of small rounded ironstone pebbles, a feature distinguishing it from the Norfolk. One type, the sandy loam, is mapped in this county.

The types of the Susquehanna series have gray to brownish-gray surface soils and a subsoil consisting of heavy, plastic, impervious clay, which is mottled, chiefly with yellow and red and some gray. The sandy loam of this series is mapped.

The types of the Coxville series are characterized by gray or brownish-gray surface soils and a subsoil of heavy, plastic, impervious clay, of a gray basic color, conspicuously mottled with red and with some yellow. This series is usually developed in extensive flats and has poorer drainage than the Susquehanna soils. The Coxville sandy loam is the only type mapped.

In the types of the Dunbar series the upper part of the soil profile is like that of the Norfolk soils, while the lower part is identical with the lower subsoil of the Coxville series. In its physical features it is intermediate between the two and it usually occupies an intermediate topographic position. The Dunbar sandy loam is mapped in this survey.

The types of the Grady series have gray, dark-gray, or drab-gray surface soils, and a plastic, heavy clay subsoil, mottled gray and yellow and in places red. The types occupy depressions or sinks that are poorly drained, many of them being saturated except in the driest seasons. They differ from the Coxville soils in that the depressions are deeper, and consequently the poorly drained condition is more nearly continuous. The Grady sandy loam and clay loam types are mapped.

The types included in the Plummer series have gray to bluish-gray surface soils and a light-gray to drab-gray subsoil, locally mottled gray, yellow, and brown. The Plummer soils differ from the Grady in that they have a friable sandy clay subsoil instead of a plastic, impervious subsoil. They are poorly drained and generally occupy low, flat positions. The Plummer sand and sandy loam, with a cypress-pond phase, are developed in this county.

The Portsmouth series is characterized by black surface soils and a gray or mouse-gray friable subsoil. The series is usually found in small depressions. The Portsmouth loam is the only type mapped.

In the Leon series the surface soil is usually a light-gray, grading into very light gray to white material. The characteristic feature of this series is a brown hardpan layer composed of sand cemented more or less firmly by iron and organic matter. The subsoil is stained from the hardpan above and may pass into white material in the lower part. The Leon sand is mapped in this county.

Of the old-alluvial or terrace soils, the Cahaba, Kalmia, and Augusta series represent the more friable and well-drained soils, the Leaf series has a plastic subsoil and is less well drained, and the Myatt series includes the poorly drained soils.

The Cahaba series consists of types with grayish-brown or brownish-gray surface soils and a subsoil of reddish-yellow to yellowish-red sandy clay. The Cahaba fine sandy loam is the only type in this county.

The surface soils of the Kalmia series are gray to yellowish gray and the subsoil is yellow and friable. The sand and sandy loam types are mapped.

In the Augusta series the upper part of the profile is much like the Kalmia and the lower subsoil is a mottled red, yellow, and gray, compact and rather heavy, but not plastic, sandy clay. The sandy loam represents the series in this survey.

In the Leaf series the surface soils are brownish gray to gray or bluish gray, and the subsoil is a mottled red, yellow, and gray, sticky, waxy, impervious clay. The Leaf fine sandy loam with a well-drained phase was mapped.

The types of the Myatt series are similar to the Plummer soils of the uplands, but differ in that they occur in the low or poorly drained parts of the terraces. The Myatt sandy loam and Myatt sand represent this series in the county.

The first-bottom or recent-alluvial soil is classified as Swamp, which includes materials of wide range in texture and structure that could not be separated as soil types.

All the soils of the county respond readily to the use of commercial fertilizers. When these soils are supplied with a larger quantity of organic matter, thus enabling them to absorb more rainfall, a greater benefit may be expected from the use of the fertilizers. As practically all of the upland types are sandy in the surface soil, the addition of organic matter will also improve greatly the physical character of the soil. These soils in their natural condition are not high in the elements of plant food, but they can be readily improved by the incorporation of organic matter, and by the use of commercial fertilizers they can be made to produce good yields of crops.

Detailed descriptions of the soil types of the county are contained in the following pages of this report, together with discussions of their agricultural use, adaptation, and value, and a few suggestions for their improvement. The following table gives the actual and relative extent of the soil types. Their location is shown on the accompanying map.

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sandy loam	87,808	27.2	Coxville sandy loam	5,056	1.2
Deep phase	25,280		Dunbar sandy loam	4,352	1.1
Swamp	73,728	17.7	Grady sandy loam	3,968	1.0
Norfolk sand	62,592	15.0	Ruston loamy sand	3,840	.9
Plummer sandy loam	23,296	5.7	Plummer sand	2,816	.7
Cypress-pond phase	512		Norfolk fine sand	1,920	.5
Susquehanna sandy loam	19,520	4.7	Kalmia sandy loam	1,920	.5
Ruston sandy loam	18,048	4.3	Orangeburg sandy loam	1,600	.4
Norfolk loamy sand	16,128	3.9	Myatt sand	1,216	.3
Leaf fine sandy loam	12,096	3.1	Portsmouth loam	960	.2
Well-drained phase	832		Grady clay loam	896	.2
Tifton sandy loam	12,864	3.1	Cahaba fine sandy loam	768	.2
Myatt sandy loam	9,728	2.3	Norfolk coarse sand	640	.2
Peaty muck	6,784	1.6	Leon sand	576	.1
Norfolk fine sandy loam	6,080	1.5			
Augusta sandy loam	5,120	1.2	Total	416,000	.....
Kalmia sand	5,056	1.2			

NORFOLK COARSE SAND.

The surface soil of the Norfolk coarse sand is a gray, loose, coarse sand, which may become yellowish in the lower part. The subsoil, beginning at an average depth of about 7 inches, is a yellow coarse sand which continues without much change to a depth of 3 feet or more.

The Norfolk coarse sand is not extensive in the county. It occupies a few well-developed areas and has a rolling and more or less uneven surface. Drainage is well established.

Practically all of this type is cleared of the native vegetation and is used in the production of the common crops of the county. The yields are generally about the same or but slightly lower than on the associated Norfolk sand. The value of this land ranges from $15 to $20 an acre, depending upon the location and improvements.

NORFOLK SAND.

The surface soil of the Norfolk sand as mapped in this county in virgin areas consists of an upper layer of 2 inches of dark-gray, loose sand, passing into a yellowish-gray sand of similar texture, which continues to an average depth of about 6 inches. The subsoil is a loose, incoherent, yellow sand which may extend to a depth of several feet. In cultivated areas the surface soil is ordinarily light gray, with a slight brownish tinge, and ranges from 4 to 7 inches in depth, with an average of 6 inches.

Throughout the extent of this type there are numerous variations. Small areas in which the material is coarser than typical are found in the central part of the county; in other sections the material is finer in texture. These spots, of fine or coarse texture, are of small extent and are not of sufficient importance to map as distinct soil types. In places the soil contains a relatively large percentage of fine material and is more loamy and coherent. This condition is a gradation toward the Norfolk loamy sand, small areas of which are also included. This variation occurs chiefly in the vicinity of Newington and north of Cameron. In the more rolling regions there are areas which approach a sand-hill phase of the type. Here the soil is distinctly

lighter colored and the immediate surface is especially leached and nearly white. This material is also more loose and incoherent than typical. In some small areas the surface soil has a brownish color, and the subsoil is slightly redder, approaching the Ruston sand. In the flatwoods section of the county, between the Effingham County line and the Savannah River, the color is distinctly lighter both in the surface soil and subsoil.

The Norfolk sand is well developed in all parts of the county in areas of various sizes. The largest and most important areas are mapped in the southeastern part of the county bordering the alluvial plains of the Savannah River from Buck Creek to the Effingham County line. A number of typical areas lie along the eastern side of Ogeechee Creek. A well-defined area in the north-central part of the county extends from the vicinity of Hilltonia southward along the east side of Beaverdam Creek. Smaller areas are scattered throughout all parts of the county, but are most numerous in the western part.

The Norfolk sand is derived from beds of unconsolidated sand, and in general it is mapped where these beds of sand have the greatest depth.

The type varies considerably in topography. The largest areas have a level to undulating surface, with sufficient relief for good drainage. Throughout the central part of the county the topography is more rolling and the surface features include broad ridges and long gentle slopes. As the major stream courses are approached, the slopes become steeper and are more or less cut by narrow drainage ways, producing a choppy appearance. In the northeastern part of the county the most rugged features are developed along the Savannah River, where steep hills or bluffs rise from the flood plains to the upland. In the southeastern part of the county the surface consists of level flats, which lie only a few feet higher than the surrounding poorly drained types. The topography as a whole permits the use of all farm implements, including tractors, except on the narrow strips of bluff along the Savannah River. The soil is well drained, both the topography and the open loose structure of the soil being favorable; in the more rolling areas drainage is sometimes excessive.

The Norfolk sand supports a native growth of post oak, blackjack oak, longleaf pine, and some hickory. On some areas the growth is nearly all oak and on others it is principally pine. The trees ordinarily do not grow as large as on the heavier types. The undergrowth, consisting of wire grass and broom sedge, is abundant in some places and sparse in others. Less than 50 per cent of the type is cleared and less than 40 per cent is under cultivation.

The type is used in the production of the staple crops of the county, with generally low yields for all crops. Cotton averaged about one-fourth bale per acre, and under the best conditions yielded as much as one-half bale prior to the advent of the boll weevil. Corn yields from 5 to 12 bushels, with an average of about 10 bushels per acre. Cowpeas produce about one-half ton of hay in good seasons. Heavy applications of commercial fertilizer and barnyard manure are necessary to produce good yields.

The price of land of the Norfolk sand ranges from $10 to $25 an acre, depending upon the improvements and location. The higher prices are usually for land situated near the towns and associated with more productive types.

The great need of this type is organic matter, which must be supplied continually as the loose nature of the soil and subsoil favor rapid decay and loss through leaching. It is therefore desirable to establish a system of farming under which large quantities of organic matter may be supplied annually. Velvet beans, cowpeas, compost, and stable manure can be used with success. The soil is light and easy to work and crops upon it mature early. Where shipping facilities and markets are available, the type should be used for those crops in which early maturity is an asset and whose acre value is sufficiently high to warrant the use of large quantities of fertilizer. Certain truck crops answer this description.

NORFOLK FINE SAND.

The Norfolk fine sand has a surface soil of light brownish gray, mellow, velvety fine sand which extends to an average depth of 7 to 8 inches and normally becomes yellowish in the lower part. The subsoil is a pale-yellow mellow fine sand which continues to a depth of 36 inches without much change, though in some places it is more loamy in the lower part or grades into a fine sandy clay within the last few inches of the profile. Other local variations consist of spots where the material is more or less loamy from the surface down through the subsoil or spots which are slightly coarser than typical.

The Norfolk fine sand, which is not extensive, is confined principally to the northeastern corner of the county, where it is associated with the Norfolk fine sandy loam. The largest areas lie in the vicinity of Mobley Pond.

The type occurs on a high upland plain in a region which is traversed by few streams, but contains numerous depressions into which the run-off flows. The surface is undulating or billowy and the soil well to excessively drained. The open subsoil tends to make conditions droughty in seasons of light rainfall.

The forest growth is almost entirely longleaf pine, with a scattering of oaks in some parts. About 60 per cent of the type is cleared and under cultivation. The yields on the type are lower than on the Norfolk fine sandy loam and generally somewhat higher than on the Norfolk sand. The yields of cotton ranged from one-fifth to one-half bale per acre before the boll weevil came. Corn yields from 8 to 14 bushels and oats from 10 to 12 bushels. This land is considered more desirable than the Norfolk sand, and the improvements on it are generally better.

Land values range from $15 to $35 an acre, depending upon location and improvements.

This type is a special-purpose soil, well suited for early vegetables, where market and shipping facilities warrant their production. The improvement of the soil lies chiefly in increasing the content of organic matter, which can be accomplished by growing leguminous crops, especially velvet beans and cowpeas, or other green-manure crops.

NORFOLK LOAMY SAND.

The Norfolk loamy sand as mapped in Screven County presents two variations. The first is developed mainly in the southern part of the county. It has a surface soil of gray to brownish-gray loamy sand which becomes more yellowish in the lower part and extends to an average depth of about 7 inches. The subsoil is a yellow to bright-yellow, smooth, friable loamy sand without much change to a depth of 3 feet or more. Included are small spots of the Ruston loamy sand and small areas that grade toward the Norfolk sand on the one hand or the Norfolk sandy loam on the other.

The second variation has a light-gray to gray, open, loose sandy surface soil extending to about 6 inches and becoming yellowish-gray in the lower part. The subsoil begins as pale-yellow sand, passes into a loamy sand, and at about 24 to 30 inches grades into a heavy sandy loam, which passes at about 36 inches into a very light sandy clay. This soil is intermediate in general characteristics between the Norfolk sand and the Norfolk sandy loam, deep phase, and grades toward the one or the other as it becomes lighter or heavier in the lower part of the subsoil. This variation as developed throughout the central part of the county has an undulating to gently rolling topography, but in some places it is decidedly rolling. The largest areas are in the southern part of the county near the Central of Georgia Railway from Ogeechee to Oliver. The small areas mapped in the southeastern part of the county in the flatwoods section have a level surface and lie about 3 to 5 feet above the surrounding poorly drained soils. The topography of the Norfolk loamy sand insures good drainage everywhere.

The characteristic vegetation on this type is longleaf pine, with a scattering of oaks and hickory. In some places, however, the oaks predominate. Over 50 per cent of the type is cleared and is used for general farming. The yields of the various crops are not quite as high as on the Norfolk sandy loam, but are higher than on the Norfolk sand. The Norfolk loamy sand is lighter than is generally desired for general farm crops. The texture and the structure of the type indicate that it is a special-purpose soil, particularly suited to the production of early maturing vegetables, providing market and shipping facilities warrant their production. Potatoes are produced with success and may be followed by a crop of sweet potatoes. In other counties of the State this type produces good cantaloupes, watermelons, and peanuts.

The soil is light and can be handled successfully with light implements. Large quantities of fertilizer should be used in two or more applications to obtain the greatest benefit and prevent the loss of fertilizer through leaching.

The price of this land varies from $20 to $35 an acre, depending upon location and improvements.

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam consists of a layer of loamy sand or light sandy loam, about 7 inches thick, gray to brownish gray in the upper part, and in most places yellowish gray in the lower part. The subsoil typically begins as a pale-yellow loamy sand

and gradually becomes heavier with increasing depth, passing through a light sandy loam into a heavy, friable, bright-yellow sandy clay at an average depth of 18 inches. The sandy clay layer continues to a depth of 3 feet or more. In the central and northern parts of the county the lower part of the subsoil is normally somewhat heavier and tough, owing chiefly to the close approach of a substratum of mottled yellow, red, and gray clay.

This type includes a number of variations. As mapped throughout the central part of the county, on the divide between the Ogeechee and Savannah Rivers, the profile is very irregular. It appears that in this region formations of clay have been covered by sand deposits which vary in thickness at almost every point from the crest of the ridges down to the bottom of the slopes. As a result, the subsoil is very irregular in its depth below the surface and the upper part lacks uniformity in texture and color. The texture varies from sand to heavy sandy loam and the color from pale yellow to bright yellow. The thickness of this layer also is variable, ranging from 8 to 30 inches. Where the heavy sandy clay lies below 24 inches, the soil is mapped as a deep phase. The type also includes spots of typical Norfolk fine sandy loam and coarse sandy loam, which are so irregular in occurrence and intricately associated that they could not be separated on a map of the scale used in this survey.

In an important variation found in a number of places throughout the central section of the county the soil becomes heavy with increase in depth and at about 30 inches passes into a subsoil having the characteristics of the Susquehanna subsoil. In an area near Lewis this heavy subsoil material comes within 15 inches of the surface in numerous very small spots, so that the area has a very mixed appearance and might properly be described as a mixture of Norfolk and Susquehanna sandy loams, with the former type prevailing.

Small, narrow areas of the Ruston sandy loam are included with the type. They usually occur on the upper parts of the slopes, but in some places on lower slopes. In the northern part of the county, several miles from Millhaven, the subsoil lies close to the surface and is heaver than typical. These areas approach in character the Marlboro sandy loam, and small spots of the typical Marlboro are included. A few pebbles occur in the soil, but not in such large quantities as on Tifton sandy loam.

Several areas of appreciable size near Hook School and 3 miles west of Bascom have a surface soil of typical Norfolk coarse sandy loam, but were included as their combined area was not sufficient to justify the establishing of another type.

The Norfolk sandy loam, which is the most extensive soil in the county, is mapped in large areas in all sections. It is derived from unconsolidated marine deposits which vary considerably in different parts of the county, which accounts for the many variations, the more important of which have already been noted. Throughout the central part it appears that the beds of sand were deposited over eroded beds of clay, and the line of contact can be seen in many places. In the northern part, or within the region of the sink depressions, the deposits are considerably finer and produce a soil that is generally more silty in texture than that found in the southern part.

The Norfolk sandy loam occurs under three topographic conditions. On the divide between the Ogeechee and Savannah Rivers the surface features consist of rounding ridges and gentle slopes cut by heads of streams, so that practically the whole region is rolling land with very few smooth or flat areas. In the northern part of the county the surface is rolling or gently undulating without pronounced ridges, but characterized by a large number of sink-hole depressions. In places throughout the southern and eastern parts, especially in the extreme southeast corner of the county, the surface is level to flat, with only sufficient relief for good surface drainage. The topography allows the use of machinery. The type is well drained.

The Norfolk sandy loam originally supported a heavy forest, consisting principally of longleaf pine, red, black, and post oaks, and some hickory. About 75 per cent of its area has been cleared. The type is used in the production of the staple crops of the county. Cotton is the principal crop. The yields have ranged from less than one-half bale to more than 1 bale per acre, depending upon the management. The average yield per acre is about one-half bale. Under boll-weevil conditions the yield of cotton will be greatly reduced unless satisfactory methods of control shall be developed. Corn is the second crop, with yields that range from about 12 bushels per acre on tenant farms to as much as 60 or 70 bushels on pet acres. The average for the county on this type is about 15 bushels per acre. The average yield of oats is also about 15 bushels. Rye, cowpeas, velvet beans, sugar cane, peanuts, and sweet potatoes are promising crops. Cotton usually receives 300 to 600 pounds of fertilizer per acre.

The price of land of this type ranges from $30 to about $100 an acre, depending upon the location and improvements.

The Norfolk sandy loam is one of the most desirable soils of the county for general farming and special crops. The soil can be handled with light implements. It is open and loose, absorbs moisture readily, and, where the subsoil is relatively heavy, has good moisture-holding capacity. One of the needs of this type is organic matter, which can be supplied by turning under green-manure crops, such as crimson clover, cowpeas, or velvet beans. The type is adapted to many special crops, among which are early potatoes, sweet potatoes, light-leaf plug wrapper or cigarette tobacco, and truck crops, such as peas, beans, lettuce, cucumbers, cantaloupes, and watermelons. It has proved a good soil for peaches in some sections. In other counties of the State the type has produced good returns from alfalfa on fields that were heavily limed before seeding.

Norfolk sandy loam, deep phase.—The Norfolk sandy loam, deep phase, includes those areas in which the sandy clay subsoil appears below a depth of 24 inches. The surface soil is similar to that of the typical development, but in places it is somewhat lighter in color and looser in structure. The upper part of the subsoil is a friable pale-yellow sand to slightly loamy sand, which in many places continues without change to a depth below 24 inches and in other places may gradually become heavier as the depth increases. The sandy clay subsoil is reached at depths of 24 to 36 inches. Where found at the lower depth, the phase grades into Norfolk loamy sand, typical areas of which may be included. A number of small local areas contain spots in which the surface soil is coarser than typical.

The deep phase of the Norfolk sandy loam is developed chiefly in the south-central part of the county between Sylvania and Newington, in the southeastern part in the vicinity of Blue Springs School and Coursey School, and throughout the north-central part between Sylvania and Beaverdam Creek, particularly near Hook School. Smaller areas are scattered throughout the county.

In the central part of the county the phase occupies rolling divides; in the southern part the surface is more even, and several small tracts in the flatwood section have a level surface, elevated slightly above the poorly drained types.

This phase in general has a slightly lower agricultural value than the typical soil, on account of the depth at which the heavy subsoil occurs. However, for some crops there is no great difference, especially where the soil is well supplied with organic matter and the land well handled. Some farmers prefer this phase for tobacco, as the lower yields are compensated by a higher grade of product. On tenant farms the yields are only slightly lower on the phase than on the typical soil. The phase has about the same uses, responds to the same methods of improvement, and sells for the same prices as the typical sandy loam.

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam is a brownish-gray, mellow, smooth loamy fine sand, with an average depth of 7 or 8 inches, and as the soil approaches the subsoil it generally assumes a more yellowish gray color. The subsoil begins as a pale-yellow mellow loamy fine sand, gradually becoming heavier and brighter in color to an average depth of 15 inches, where it passes into a bright-yellow heavy fine sandy clay, which in places is slightly sticky. Locally the lower part of the subsoil contains slight mottlings which mark a gradation to a mottled indurated substratum.

In a number of areas the heavy subsoil lies at considerably lower depths. In this deep variation, which occurs chiefly in the vicinity of Canes Store, the soil is usually lighter gray than typical, the upper part of the subsoil is generally lighter yellow and looser than typical, and the heavy subsoil appears below 24 inches, in places lying as deep as 30 inches. In contrast to this there are other areas in which the heavy subsoil approaches to within plowing depths of the surface and the subsoil generally is heavier and somewhat more sticky than typical. This variation is an approach to the Marlboro fine sandy loam, spotlike areas of which are included on account of their small extent. Small rounded ironstone pebbles are scattered on the surface in a few spots around the crests of ridges and on the brows of some slopes. These spots approach the characteristics of the Tifton soils, but are too small to show separately.

The Norfolk fine sandy loam is developed in the northeastern section north of Brier Creek from the Burke County line southward for about 5 miles. The areas are within the drainage basins of Rocky and McDaniel Creeks.

This type has a generally undulating surface. It occupies uplands with a wavy surface and broken by sink-hole depressions. Drainage is well established throughout.

The Norfolk fine sandy loam originally was covered with a heavy stand of longleaf pine and a scattering of oaks and hickory. Nearly

all the type is now cleared and farmed. The region in which this type occurs was one of the first to be occupied by the early settlers. The crop yields vary according to the methods of farming. Cotton yields ranged from one-fourth to three-fourths bale per acre before the advent of the boll weevil, and under the best conditions some farms produced a bale or more per acre. Yields of corn range from 10 to 30 bushels, the average being about 20 bushels per acre. Oats are estimated to yield from 12 to 15 bushels.

The Norfolk fine sandy loam is a very desirable soil, especially well suited to general farming. The type, though heavier than the other members of this series, is sufficiently light to be worked successfully under a wide range of moisture conditions and with the light farming implements common to the cotton regions. The price of this land varies from $40 to $80 an acre, depending upon location and improvements.

This type should be improved by following the practices suggested for the Norfolk sandy loam. The incorporation of organic matter should have special attention.

ORANGEBURG SANDY LOAM.

The Orangeburg sandy loam as typically developed has a grayish-brown friable loamy sand surface soil, with an average depth of 7 to 8 inches. The subsoil usually has an upper section consisting of reddish-yellow to yellowish-red friable sandy loam to light sandy clay, which at an average depth of 15 inches grades into the typical subsoil of bright-red friable sandy clay.

As mapped the type includes some variations. One consists of small areas from which the surface material has been removed and a heavy red subsoil material exposed. These areas are really the Greenville clay loam, but they are not of sufficient extent to be shown on the map. In other included areas the soil and upper subsoil resemble the Norfolk sandy loam, and the heavy subsoil appears at low depths in the soil profile. This variation represents a gradation of the Orangeburg sandy loam into the surrounding areas of Norfolk sandy loam. Some small areas have a finer textured surface soil than is typical; this is generally true of the areas mapped in the northeastern part of the county. In other places a few ironstone pebbles are present.

The Orangeburg sandy loam is confined to a few areas in the northeast corner of the county and one in the vicinity of Jackson School in the east-central part. It has an undulating to rolling topography. The larger areas occupy broad divides and gentle slopes and the smaller ones occur principally on the brows of slopes of small knolls. The topography is favorable to the use of improved farm implements and is not steep enough to make terracing necessary. The areas are all well drained.

All this type is cleared and under cultivation. The general crops of the county are produced, with yields equal to or exceeding the general average of the county. Cotton, the principal crop, yielded from one-third bale to 1 bale per acre, with an average of about one-half bale, prior to the invasion of the boll weevil. The corn yields ordinarily range from 12 to 18 bushels, higher yields being obtained

on a few farms. Oats average about 15 bushels per acre, with higher yields under the best conditions. The crops are handled about as described in the chapter on agriculture. Land of this type is held at $30 to $80 an acre, depending largely upon the character of improvements.

The Orangeburg sandy loam is a strong productive soil and is generally held in high esteem. It is well suited to the production of all general farming crops, as well as special crops, such as peaches and vegetables. The soil can be materially improved and maintained in a high state of productiveness through systems of cropping that return large quantities of organic matter to the soil.

RUSTON LOAMY SAND.

The surface soil of the Ruston loamy sand is a grayish-brown sand, rather loose and incoherent, grading into a loamy sand. The subsoil is a more or less loose and incoherent reddish-yellow to reddish-brown loamy sand which extends to a depth of 3 feet or more. In places the subsoil is less loamy than typical; in other places the subsoil is pale yellow in the upper part and develops the characteristic subsoil color only in the lower 18 inches of the soil profile. This latter variation represents a gradation toward the Norfolk sand. Locally the lower subsoil is red, resembling the Orangeburg subsoil.

The Ruston loamy sand is one of the less extensive types of the county. It is developed chiefly in the eastern part on the bluffs bordering the alluvial lands of Buck Creek and of the Savannah River below Black Creek. Other areas lie in the north-central part of the county near Bascom, Millhaven, and about 2 miles southeast of Harmony Church.

The Ruston loamy sand has an undulating topography. It occurs chiefly on knolls and slopes, especially on the slopes surrounding some of the depressed areas. The type is well drained, both topography and the open structure of the soil and subsoil favoring the removal of excess rainfall.

The forest on this type consists of longleaf pine, with a large admixture of various oaks, which are more or less stunted. Practically 50 per cent of the type is cleared, but not all this is under cultivation, as many large fields overgrown with broom sedge are lying idle. Yields are relatively low on this type, except where the soil is well supplied with organic matter or where much fertilizer is applied. The average for cotton is about one-fourth bale and of corn about 10 bushels per acre. Cowpeas average about one-half ton of hay. Land values on this type are low, ranging from $15 to $25.

This soil will respond to the methods of improvement recommended for the Norfolk sand.

RUSTON SANDY LOAM.

The Ruston sandy loam has a surface soil of light grayish brown loamy sand, 6 or 8 inches deep. The subsoil typically is a yellow or reddish-yellow sandy loam, to a depth of 12 to 30 inches, and below this a heavy, friable, yellowish-red or reddish-yellow sandy clay. The lower subsoil in places is very compact and in other places tough and slightly plastic. This latter condition represents a gradation

toward the characteristics of the Susquehanna subsoil and is accounted for by the fact that the subsoil is underlain by a substratum of material which usually gives rise to the Susquehanna soils where exposed to weathering. Small spots of Susquehanna soils may be included. There are also included small areas of the Norfolk sandy loam, in which the subsoil is less red than typical, and of the Orangeburg sandy loam, where it is redder than typical. In some places there is also a slight sprinkling of the pebbles characteristic of the Tifton soils.

The Ruston sandy loam is developed chiefly in the southern and north-central parts of the county. In the southern part the principal areas lie in the vicinity of Ogeechee and north of Halcyondale. Important areas are mapped in the north-central part near Sylvania, Lewis, Bascom, Bascom School, and Hurst School and several large areas occur in the northeastern corner of the county.

The topography is predominantly undulating to rolling. The type occupies some of the more broken or irregular slopes along the streams. The small areas throughout the county occur as brows of slopes or small knolls within the general region of the Norfolk soils, where the subsoil appears to have developed a more reddish color, owing without doubt to better oxidation. The areas are well drained. On some of the steeper slopes it is necessary to terrace the land to prevent erosion.

The Ruston sandy loam supports an almost pure stand of longleaf pine. About 40 per cent of the land has been cleared and placed in cultivation. The common crops of the county are grown and the yields are about the same as on the Norfolk sandy loam.

Land values range from $25 to $75 an acre, the location and the improvements on the land being the chief factors determining the price.

The Ruston sandy loam is generally considered a productive soil. It has a wide range in adaptation, and is suited to both general farming and special crops. The soil can be handled under a wide range of moisture conditions and can be tilled with the light implements commonly used in the cotton belt, while the subsoil is sufficiently heavy to maintain a good supply of moisture for plant growth.

TIFTON SANDY LOAM.

The Tifton sandy loam as developed in Screven County has a surface of grayish-brown loamy sand to light sandy loam which extends to an average depth of about 7 or 8 inches and usually becomes more yellowish in color in the lower part. The subsoil is a bright-yellow heavy sandy loam to light sandy clay to a depth of about 15 to 18 inches, where it passes into a friable, heavy, sandy clay of a yellow to somewhat reddish yellow color. The subsoil normally contains red mottlings, apparently due to the disintegration of soft ironstone pebbles. The distinguishing feature of this soil is the presence on the surface and through the soil material of about 25 per cent of small rounded ironstone or ferruginous pebbles, with an average diameter of about three-eighths inch. The pebbles are reddish brown in color and give rise to the local name "red pebble land." Included with the type are small areas in which the surface soil is coarser or finer than typical, the surface soil being generally finer in texture

in the northeastern part of the county. There are also spots in which the pebbles are less numerous, in which case the soil grades toward the Norfolk sandy loam.

The Tifton sandy loam is developed in some large areas and in numerous small ones. The most important areas lie in the southwestern part of the county, particularly in the vicinity of Thomasboro. Numerous smaller areas are scattered throughout the county, especially on the rolling divide between the Ogeechee and Savannah Rivers. There are a number of well-developed areas in the northern part near Dalton Church.

The more extensive areas have an undulating to gently rolling topography and occupy broad ridges with smooth tops and long gentle slopes to the stream courses. The relief is sufficient to give good surface drainage, with no slopes steep enough to cause erosion. The small spots of the type occur on knolls or brows of slopes and are surrounded by soils of the Norfolk series.

Practically all the type is cleared and farmed. The original forest consisted chiefly of longleaf pine, with some scattered oaks. The type is utilized in the production of all the common crops and is held in high esteem. Before the arrival of the boll weevil cotton commonly yielded a bale per acre, and on special fields or prize patches considerably more, while the average yield was about three-fourths bale. Corn produces from 12 to 20 bushels per acre, the average being about 18 bushels. On special plots which are well fertilized 30 to 40 bushels per acre are obtained. Oats average about 15 bushels, but when fertilized heavily will produce as much as 30 to 40 bushels per acre. The type also gives good yields of peanuts, cowpeas, velvet beans, potatoes, sweet potatoes, and sugar cane.

Land of this type ranges in price from $60 to $100 an acre, depending upon location and improvements.

The Tifton sandy loam is a strong productive soil, well suited to the production of general and special crops. The soil is ordinarily easy to handle and can be stirred under a wide range of moisture conditions. It also can readily be improved, especially by the incorporation of organic matter, as by turning under green-manure crops. In other counties of the State alfalfa has been produced successfully on this soil. The type is also used in some places in the production of pecans and peaches.

SUSQUEHANNA SANDY LOAM.

The Susquehanna sandy loam as mapped in this county is variable in its profile. In the greater part of the type, however, the surface soil consists of a gray to light brownish gray sand to loamy sand, which becomes more yellowish in the lower part, and has an average depth of about 7 inches. The typical subsoil is developed in two sections; the upper or lighter section consists of a pale-yellow sand to loamy sand, which in most places becomes heavier with depth and passes into a yellow tough sandy clay extending to a depth of about 20 to 22 inches; the lower subsoil is a strongly mottled plastic and impervious clay, the base color being normally a dull red, and the mottlings various shades of yellow, gray, and drab. In lower situations the color carries a larger proportion of grays and yellows, and in places is mottled with bright red.

As mapped in this county the type includes a number of variations. In some places, especially on slopes and knolls, the surface material is decidedly coarse; in others it is finer than typical. Several areas of fine sandy loam are included in the central part of the county. The upper section of the subsoil varies from a maximum of 20 inches to 1 inch in thickness, or it may be entirely wanting, the surface soil resting directly on the heavy clay subsoil. Locally the heavy subsoil is exposed, producing small gall spots. Throughout the type there are small areas of the Norfolk sandy loam, Norfolk sand, and Plummer sandy loam, which are so intricately associated with the general areas and so small in extent that they could not be separated on a map of this scale.

The Susquehanna sandy loam occurs in fair-sized areas, as well as narrow strips along stream courses and on the brows of slopes. The largest areas are on the rolling divide between the Ogeechee and Savannah Rivers. Well-developed areas lie between the headwaters of Ogeechee Creek and Beaverdam Creek, particularly near Lewis and Rock Hill School. Southeast of Sylvania the development extends in a series of irregular areas to Black Creek. Smaller bodies are scattered throughout the central part of the county.

The Susquehanna sandy loam is developed from beds of heavy clays of marine origin which underlie a great part of the county, but are exposed only in the regions where this type occurs. In many places the material constitutes a substratum under the Norfolk types and is commonly encountered in digging wells.

This type has a distinctive topography. The surface is sharply undulating, and knolls, ridges, and intervening low areas give the type an irregular and choppy appearance. On slopes the surface is especially uneven on account of numerous drainage ways. The topography generally favors surface drainage, except in the narrow depressed areas. The drainage, however, is imperfect because of the impervious nature of the lower subsoil, which restricts the internal movements of moisture and is the cause of the many seepage areas along the slopes and in spots throughout the extent of this soil.

This type originally supported a good growth of longleaf pine with scattering oaks, and some gum trees in the depressed areas and around the poorly drained spots. Most of the timber has been removed and about 30 per cent of the land is cleared and cultivated. The general farm crops are produced, with yields that are generally lower than the average of the county. Under ordinary methods of cultivation cotton yields about three-eighths bale per acre and corn and oats about 10 to 12 bushels. Peanuts are grown to some extent and are generally hogged down. Velvet beans give good returns.

The Susquehanna sandy loam is difficult to handle. Although the surface soil is light, it often bakes and crusts when dry, and when wet it is boggy on account of the moisture held by the impervious subsoil. It is recognized as cold, clammy land, and in wet years crops are slow to start and sometimes drown out. Moderately dry seasons with light showers well distributed are the most favorable for this type of soil.

The agriculture is not as well developed on this type as on the Norfolk soils. The price of this land averages $10 to $15 an acre throughout the county, except near Sylvania, where, owing to its proximity to town, it is held as high as $75 an acre.

DUNBAR SANDY LOAM.

The surface soil of the Dunbar sandy loam is a light-gray to brownish-gray loamy sand 7 or 8 inches deep. The subsoil is developed in two distinct sections. The upper part is a pale-yellow loamy sand to sandy loam grading into a bright-yellow sandy clay which continues to depths of 15 to 24 inches. This is underlain by a very heavy, plastic, sticky, impervious clay, having a gray color with mottlings of a bright brick red and shades of yellow and gray. The profile of this type is like the Norfolk sandy loam in the upper section and like the Coxville sandy loam in the lower section, being intermediate between the two. Consequently in the development of this type there are small spots that approach the Norfolk characteristics and other spots that are more like the Coxville.

The Dunbar sandy loam is developed in areas scattered throughout the central part of the county, the most important being in the vicinity of Sylvania.

This type generally has a level to gently undulating topography and occupies positions distinctly lower than the Norfolk soils and higher than the typical Coxville soils. Surface drainage is generally well established, but the internal movement of water is retarded by the impervious lower subsoil. Artificial drainage is desirable.

The forest growth consists chiefly of scattered longleaf pine and a few hardwoods. A small proportion is cleared and used chiefly in the production of corn, which yields from 10 to 12 bushels per acre. Yields of oats are estimated at 10 to 15 bushels, cotton one-fifth to one-third bale, and cowpea hay one-half to three-fourths ton per acre. The price of this land rarely exceeds $20 an acre.

COXVILLE SANDY LOAM.

The surface soil of the Coxville sandy loam consists of a dark-gray to bluish-gray loamy sand from 4 to 12 inches deep, with an average depth of 8 inches. The subsoil is typically developed in two sections. The upper part consists of a bluish-gray or drab-gray loamy sand grading to light sandy clay, but lighter in color than the surface soil, and extending to a depth of 12 to 18 inches. The lower part is a plastic, sticky, waxy clay, gray in color, with conspicuous mottlings of shades of gray, yellow, and dark brick red.

The areas of this type include some slight variations. A number of areas in which the surface soil is a smooth velvety fine sandy loam, representing the Coxville fine sandy loam, were included on account of their close association and small total extent. A few knolls slightly higher than the surrounding land represent spots of the Dunbar sandy loam. Low spots which are more like the Plummer sandy loam are also included. In addition there are slight gradations toward the characteristics of the Susquehanna sandy loam and low, poorly drained areas in which the surface soil is dark gray to almost black.

The largest area of the Coxville sandy loam lies along Buck Creek about 4 miles east of Sylvania. A number of small areas are scattered throughout the south-central and north-central parts of the county.

This type is generally characterized by its low position and its flat and even surface. It normally lies lower than the surrounding country and is flanked in many places by conspicuous bluffs which separate it from the surrounding types. On account of its low position water accumulates on the surface in wet spells and the impervious subsoil prevents the free internal movement of moisture, so that the general drainage is only fair. However, it is intermittently wet, and in ordinary seasons the drainage is sufficient to allow cultivation.

The native growth consists of a scattering of pine, with gum and cypress in low spots and an undergrowth principally of broom sedge and wire grass. A few isolated fields in the higher situations are cultivated, and on these corn and oats yield about 10 to 12 bushels per acre. Most of the type is used for pasture. This land generally has a low value and is usually sold in conjunction with surrounding lands.

A well-established system of drainage is essential for the development of agriculture on this type. When thoroughly drained the land will be suited for general farming.

GRADY SANDY LOAM.

The surface soil of the Grady sandy loam is a dark-gray, friable sandy loam with an average depth of 8 inches. The subsoil begins as a gray to bluish-gray, friable sandy loam, passes quickly into a heavy sandy clay, and at an average depth of 12 to 15 inches grades into a characteristic heavy, sticky, impervious clay, which varies in color from light gray to a dark slate gray and is mottled with shades of brown, yellow, and red. In the southern part of the county the subsoil is somewhat lighter in color.

This type as mapped contains a number of variations. In a number of the areas the soil is considerably darker in color than typical, and in places it has a thin layer of mucky material over the surface. In other areas the subsoil is not as heavy and as plastic as typical, but is more like the heavy sandy clay subsoil of the Plummer series. Some small areas of the type may carry all the variations above mentioned, as well as other variations which could not be shown separately. During the progress of this survey many areas of this type were covered with water, so that it was impossible to determine their character as closely as desired.

The type is developed in small spots widely scattered throughout all parts of the county except the flatwoods region. The areas occupy depressions or sinks ranging in size from one-fourth acre to as much as 200 acres. Most of them are circular or oval shaped, but some are long, winding depressions of variable width which serve as slight drainage ways. The floors of these areas are generally 2 to 4 feet below the level of the surrounding soils. The surface is generally flat or slightly inclined toward the center, where there may or may not be a small body of water even during driest periods. The areas serve for the most part as basins for the accumulation of the run-off from surrounding soils. They are continuously wet except in the driest seasons and can not be used for agriculture.

The type is covered by a growth of cypress, slash pine, gum, some oak, and some mayhaw. Around the edges of the ponds there are usually some conspicuously large water oaks. In those areas which are more or less continuous and serve as drainage ways there are also found the maple, elm, and other water-loving trees and plants. Artificial drainage is necessary for the utilization of this soil. In some places this would be more or less difficult, but drainage of these areas would be of material advantage from a health standpoint. When drained the land could be used for such crops as oats, corn, and sugar cane.

GRADY CLAY LOAM.

The Grady clay loam has a surface soil of gray to dark-gray or drab, heavy, silty clay loam to clay, which ranges from 3 to 8 inches in depth, the average depth being about 5 inches. The subsoil is variable, ranging from a light gray to a dark slate gray in color and in texture from a heavy, sticky, plastic clay to a more or less mealy or crumbly heavy clay, which is compact and impervious. The subsoil is typically mottled with shades of red, yellow, gray, and brown, or a combination of any or all of these colors. In places the subsoil is more sandy than typical.

The Grady clay loam occurs in small scattered areas throughout the flatwoods section of the county, but more particularly in the northern part toward the Burke County line. The areas vary in shape from circular or oval to more or less elongated and winding. The soil occupies the floors of the sink holes that are supposed to have been caused by the dropping of the underlying limestone, as well as ordinary depressions in the original surface of the country. Practically all the areas are poorly drained and a number of them contain water almost continuously except in very dry seasons. They are unsuited for agriculture unless artificially drained. Some areas are drained by open ditches and utilized for corn, oats, and forage crops with a fair degree of success.

The vegetation is mixed and varies on the different areas. Some areas are savanna and covered only by marsh grass; others support a few water oaks or mayhaw; while in still others maple, cypress, and gum are found. Large water oaks usually grow at the edges of the areas.

PLUMMER SAND.

The Plummer sand has a surface soil averaging about 7 inches of drab or bluish-gray sand. The subsoil is composed of sand of a lighter gray color, with some mottling of brown, yellow, and gray. In places the subsoil is slightly sticky in the lower part. In a few places the surface soil is a light-gray sand and the subsoil is very light gray to almost white. The color of the Plummer sand is due to poor drainage.

The type is confined to that part of the county lying north of Brier Creek and east of Harmony Church. It occupies flat or depressed areas which have poor surface drainage, the run-off from surrounding lands accumulating in these depressions and remaining until lost by evaporation or by slow seepage.

The type supports a scattered growth of longleaf pine, some gum, water oak, and a few cypress. It has no agricultural value except for pasture.

PLUMMER SANDY LOAM.

The Plummer sandy loam has a dark-gray to bluish-gray sand or loamy sand surface soil, of an average depth of 8 or 10 inches. The subsoil is a light-gray or bluish sand to loamy sand which grades at a depth ranging from 18 to 24 inches into a heavy sandy clay, mottled with shades of gray, yellow, and in places brown. The type includes small areas of the Plummer sand, which commonly occur in the region of the Norfolk soils. There are also small areas of Plummer fine sandy loam. In some places, particularly in the region of the Susquehanna soils, the subsoil of this type is very heavy, is marked with shades of red, and resembles the subsoil of the Coxville sandy loam.

The Plummer sandy loam occurs in all parts of the county. Generally it occupies narrow strips of poorly drained land along streams and drainage ways, as well as narrow seepage areas. The type is developed in this section through the seepage of underground waters and in some places it extends well up on the sides of steep slopes, especially where these slopes are underlain by impervious clay. In the southeastern part of the county or the region of the flatwoods the type is extensively developed as lowlands or poorly drained areas associated with the better drained soils. The areas here are generally broader and follow topographic lines to a large extent, always being confined to the lower situations. This type is characteristically poorly drained, which is the main cause for its bluish color. The poor drainage in the rolling sections is due to seepage, while in the flatwoods it is due to a low topographic position. Drainage improvement on the type therefore presents two distinct problems.

Very little of this type is under cultivation, the cultivated lands being the edges of fields of better drained soils. Under present conditions the type is practically useless except for pasture and forestry. The native growth consists of scattered pine, with some oak, gum, bay, gallberry, and other water-loving plants. A characteristic plant on this type is the pitcher plant, or trumpet flower.

Plummer sandy loam, cypress-pond phase.—The Plummer sandy loam, cypress-pond phase, is mapped in the southeast corner of the county, where it occupies small round or elongated ponds that lie lower than the typical soil. The material of the phase is almost identical with that of the type. The native vegetation includes a larger percentage of water-loving plants and trees, particularly cypress, which ordinarily does not occur on the typical development in the broad flats of this section of the county. The phase would be more difficult to drain than the type.

PORTSMOUTH LOAM.

The surface soil of the Portsmouth loam as mapped in this county ranges from very dark gray to black loam or mucky sandy loam, but in its greatest extent it is a smooth black loam which imparts a dark stain to the hands when touching it. This may extend to a depth of 15 inches. It is underlain by a heavy, sticky, sandy clay

of a mouse-gray or drab color mottled with yellow, gray, and brown. In places the subsoil is a white sand or a brownish-stained sand which is saturated and has somewhat the nature of quicksand; in other places the subsoil is a heavy, plastic, impervious clay much like that of the Grady soils.

This type is mapped principally in small areas scattered throughout the southern and eastern parts of the county. It is confined to depressed areas that are poorly to very poorly drained and completely saturated for the greater part of the year, owing to the accumulation of surface waters from adjacent land. The areas lie from 4 to 20 feet below the level of the surrounding lands.

Owing to the poor drainage, this soil is not used for agriculture. It supports a heavy growth of cypress and gums and in places a thick undergrowth of water-loving herbaceous plants, such as smilax, bamboo, and titi. When drained, reclaimed, and limed, the type would produce good yields of corn, soy beans, and other crops, including potatoes, cabbage, and onions.

LEON SAND.

The surface soil of the Leon sand is a light-gray to dark-gray, loose, incoherent sand to a depth of 3 inches, where it passes into a white, loose, incoherent sand which extends to depths of 12 to 18 inches, where a hardpan appears. This hardpan layer ranges from 2 to 6 inches in thickness and consists of indurated coffee-brown loamy sand, cemented by organic matter in combination with ferruginous compounds. When dry this layer is very compact, but when wet it can be penetrated with ease. Below this the subsoil is a loose incoherent sand, stained brownish from the hardpan above, which generally continues to a depth of 3 feet, but which in places is pure white in the extreme lower part.

The Leon sand is mapped in a few small areas in the vicinity of Harmony Church. It has a level surface. The drainage in some places is excessive and in others not so well developed. The hardpan prevents internal movement of soil moisture.

The native vegetation consists of a scattered forest growth, including some longleaf pine, and an undergrowth of gallberry, saw palmetto, runner oak, some broom sedge, and wire grass. Practically none of the type is cleared. It is usually sold in conjunction with adjoining lands.

The Leon sand has little value for agriculture. It affords some pasturage, but is best suited for forestry. It should be practically the last upland type to be improved in the county, especially as there are large areas of better soils waiting to be developed.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam is a brownish-gray to light-brown, smooth, mellow loamy fine sand, with an average depth of 7 or 8 inches. The subsoil is a reddish-yellow or yellowish-red fine sandy loam, which gradually becomes heavier, and at depths varying from 12 to 24 inches passes into a reddish-yellow or yellowish-red fine sandy clay, which is generally friable but in places some-

what tough and heavy. In spots the surface soil grades toward a sandy loam; in other spots the subsoil is less reddish and resembles the subsoil of the Kalmia fine sandy loam. There are also small included areas with a decidedly red friable subsoil, which represent inclusions of the Chattahoochee fine sandy loam.

The Cahaba fine sandy loam is not extensive in the county. The largest area lies near the mouth of Beaverdam Creek. Other areas are scattered throughout the terraces of the Savannah River. The type is developed principally on terraces, or former flood plains, that are now well above overflow and have a slightly undulating or more or less uneven surface. It also occupies terrace escarpments and slight slopes and knolls where favorable drainage and oxidation have developed the characteristic color. The drainage is generally good.

Practically all of the type has been cleared of the native growth, but a small part is covered by a second growth of loblolly pine. Under the prevailing methods of farming cotton has averaged from one-third to three-eighths bale, while corn averages about 12 bushels per acre. Land of this type is held at prices ranging from $15 to $30 an acre.

KALMIA SAND.

The Kalmia sand consists of a surface layer of gray loose sand which becomes yellowish gray in the lower part. It has an average depth of 6 inches. The subsoil is a pale-yellow, loose, incoherent sand which continues to 3 feet without much change. In places the lower section is more loamy; in other places it grades at a depth of 32 to 36 inches into a light sandy clay. Locally the material is finer than typical.

The type occurs in scattered areas of various sizes on the terraces of the Ogeechee and Savannah Rivers. A number of small but well-defined areas are also mapped along Brier, Beaverdam, and Ogeechee Creeks.

The Kalmia sand is derived from old alluvium deposited by the rivers in the early stages of development and now no longer subject to overflow. The type has the undulating, smooth topography characteristic of the river terraces. The areas lie slightly higher than the surrounding Myatt types. The drainage is good.

The Kalmia sand supported a growth of longleaf pine, with a scattering of oaks, but most of the land has been cleared and is utilized in the production of staple crops. The yields are relatively low. Corn averages about 8 to 10 bushels and peanuts 12 to 20 bushels per acre. The yields of cotton are low. Land of this type is usually sold in conjunction with surrounding soils.

The Kalmia sand is better suited for special crops than for general farming crops. If market and shipping facilities should warrant their production, this will prove a desirable soil for early truck crops. The improvement of this soil lies in maintaining an adequate supply of organic matter. The soil is very loose and somewhat droughty, and organic matter would increase its moisture-holding capacity. Fertilizers should be applied in several applications to avoid loss by leaching.

KALMIA SANDY LOAM.

The surface soil of the Kalmia sandy loam is a gray to light brownish gray mellow sandy loam to loamy sand which extends to an average depth of 7 inches. The subsoil usually begins as a mellow loamy sand of pale-yellow color, gradually becoming heavier with increasing depth, successively passing through a sandy loam and a light sandy clay, until at an average depth of 18 to 20 inches it is a friable, heavy, bright-yellow sandy clay. Here and there the lower subsoil contains slight mottlings of gray. In some areas the heavy subsoil material appears only in the lower part of the profile at depths of 30 to 36 inches, in which case the soil approaches very closely a loamy sand type.

Included with the type are several areas of the Kalmia fine sandy loam, which were not separated on account of their close association with the sandy loam.

The Kalmia sandy loam is a well-developed terrace soil. It is mapped in several areas along Beaverdam and Brier Creeks and in the southern part of the county on the terraces of the Ogeechee River. It has the smooth, undulating topography generally characteristic of the terraces. The drainage is good.

Most of this type is cleared and used in the production of cotton, corn, oats, cowpeas, and velvet beans. The yields are generally good, being equal to those on the Norfolk sandy loam and in places exceeding the average of that type.

AUGUSTA SANDY LOAM.

The Augusta sandy loam has a surface soil of brownish-gray to yellowish-gray loamy sand, with an average depth of about 7 or 8 inches. The subsoil begins as a pale-yellow loamy sand and gradually becomes heavier with increasing depth, passing through a yellow sandy loam and light sandy clay, until at an average depth of about 18 inches it grades into a rather tough but friable heavy sandy clay, mottled yellow, red, gray, and brown, the base color being prevailingly yellow. A characteristic feature of the subsoil is a more or less smooth or slick feel, which is probably due to the content of mica, which in places is rather conspicuous.

Included with this type are small spots of Leaf sandy loam, in which the subsoil is more plastic. In many places the soil grades finer than typical, and a few areas of fine sandy loam are included. There are also areas in which the upper part of the subsoil has a reddish-yellow color.

The type occurs in large areas on the second bottoms or terraces. The most important development extends from near Millhaven along the northeast side of Brier Creek to the Swamp areas of the Savannah River. A few scattered areas lie south of this creek, and a number of small areas are mapped on the terraces of the Savannah River in the northeastern part of the county.

The Augusta sandy loam has a level or very gently undulating surface, with sufficient slope toward the streams to afford good drainage. It is seldom overflowed. The areas are interrupted by depressions occupied by other types of soil. The drainage is generally good,

although the internal drainage is not thorough on account of the compactness of the subsoil. In wet seasons some of the lower parts remain wet for some time.

The Augusta sandy loam is considered a very desirable soil. All of it is cleared and utilized in the production of staple crops. Cotton has averaged somewhat less than one-half bale per acre and yields of a bale per acre have been common under improved methods, but much lower yields will be obtained under boll-weevil conditions. Corn averages from 12 to 15 bushels and oats from 12 to 25 bushels per acre, with higher yields on the best farms.

Land of this type ranges in price from $30 to $80 an acre, the location and improvements usually being the determining factors.

This soil, besides being well suited for general farming crops, can also be used to advantage in the production of special crops if shipping facilities and market conditions should warrant their production. Improvement of the soil can be effected by means of crop rotations and the addition of organic matter.

The table below gives the results of mechanical analyses of samples of the soil, subsurface, and subsoil of the type:

Mechanical analyses of Augusta sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
257047	Soil	3.6	19.9	12.7	36.4	15.6	8.7	3.1
257048	Subsurface	2.8	16.5	10.1	28.8	14.1	18.6	8.9
257049	Subsoil	1.8	10.6	6.1	19.5	8.9	13.2	39.9

LEAF FINE SANDY LOAM.

The surface soil of the Leaf fine sandy loam is a dark-gray or bluish-gray loamy fine sand having an average depth of about 6 inches. The subsoil is a bluish-gray or drab fine sandy loam which gradually becomes heavier with depth, grading into a fine sandy clay, and passing at about 18 to 20 inches into a heavy, plastic, sticky, impervious clay, prevailingly gray in color, but conspicuously mottled with red and yellow. The gray color predominates in the subsoil of the type, whereas in the well-drained phase the lighter colors predominate.

This type is developed on the second bottoms or terraces along the Savannah and Ogeechee Rivers and along Brier and Beaverdam Creeks. It occupies low, flat positions, and the natural surface drainage is everywhere poor. However, much of the type can be drained and reclaimed by ditching. During wet seasons rain water and seepage water accumulate on the surface.

None of this type is in cultivation at present, but much of it is used for grazing cattle. Part of it supports a growth of pine and some hardwoods. When drained and reclaimed, this soil will produce only fair yields of corn, cotton, and oats. It is less desirable than the well-drained phase of the type.

Leaf fine sandy loam, well-drained phase.—The surface soil of the Leaf fine sandy loam, well-drained phase, is a brownish-gray to grayish-brown, friable, mellow fine sand, with sufficient very fine sand to

make it smooth and velvety. The average depth is 7 or 8 inches. The subsoil consists of two sections. The upper part is a yellow friable fine sandy loam passing into a friable bright-yellow fine sandy clay, which continues to an average depth of 18 to 20 inches. The lower is a heavy, sticky, waxy, impervious clay, strongly mottled with red, yellow, and gray. The depth to this heavy part of the subsoil varies from 12 inches to 28 or 30 inches. As mapped the phase includes small areas of the Leaf sandy loam.

Areas of this phase occur on the terraces along the Savannah River from near Burtons Ferry to the mouth of Brier Creek.

This phase occupies terraces that are no longer subject to overflow, except at a few places along the Savannah River, and here the areas are above all but the highest floods. It has a smooth to gently undulating topography and fair surface drainage. The internal drainage, however, is imperfect on account of the impervious subsoil, which prevents the downward movement of moisture and causes the soil to fill with water during wet seasons.

The larger part of this phase has been cleared of its forest cover, which consisted of loblolly pine, some longleaf pine, and a scattering of oaks and hickory. About 80 per cent of this phase is under cultivation. The common crops are produced with a fair degree of success, the yields being slightly lower than on the Augusta sandy loam.

MYATT SAND.

The surface soil of the Myatt sand is a gray or bluish-gray friable sand which extends to an average depth of 7 or 8 inches. The color of the subsoil is also mouse gray or bluish gray, but of somewhat lighter shade, and carries mottlings of gray, yellow, and brown. The material of the subsoil is a medium sand extending to depths of 3 feet or more without much change, except in spots where it becomes more loamy or passes into sandy clay at depths of 34 to 36 inches. A small area near Dover contains a stratum of dark-colored material which resembles the hardpan of the Leon sand. The type also includes small areas in which the surface material is of finer texture than typical.

The Myatt sand is derived from sand beds believed to be old-alluvial deposits. The areas are smooth and level, low lying, and poorly drained. The soil is saturated, except in the driest seasons. This type occupies terraces of the Ogeechee River in the vicinities of Dover and Cameron.

Practically the entire area of Myatt sand is forested with longleaf or loblolly pine, gum, haw, and some oak. Owing to its poor drainage it is used only for pasture and has a low valuation.

MYATT SANDY LOAM.

The Myatt sandy loam has a surface soil of dark-gray loamy sand with an average depth of 6 or 7 inches. This is underlain by a light-gray to bluish-gray or drab sand to loamy sand, which at an average depth of 20 inches will pass into a sandy clay of gray or drab color, mottled with yellow, gray, and brown. Throughout this type there are places in which the lower subsoil is less sandy and more plastic and impervious than typical and approaches the characteristics of

the Leaf sandy loam. In other places the light-gray sand of the upper subsoil continues to a depth of 36 inches without much change and the Myatt sand type is developed. In a few spots there is a slight hardpan layer similar to that found in the Leon sand.

The Myatt sandy loam is mapped chiefly in the southern part of the county on the terraces of the Ogeechee River. Other important areas are mapped along the north side of Brier Creek.

This type occurs as poorly drained or depressed areas and is the terrace equivalent of the Plummer sandy loam of the uplands. The poor drainage, which is due in part to seepage but principally to its low position, precludes its use for any purpose except pasture. Several areas, however, have been in cultivation at some time. The forest growth includes water oak, post oak, gum, slash pine, loblolly pine, and some cypress.

The land values on this type are low. A complete system of artificial drainage is necessary to bring this land under cultivation. When reclaimed the land probably will produce fair yields of corn, oats, and forage crops.

SWAMP.

Swamp includes the bottom-land areas that are almost continuously under water or in a saturated condition, that support a heavy growth of water-loving trees and shrubs, and that vary to such an extent in the character of material that no definite type can be established. In these areas the stream courses divide into many channels, and in places it is difficult to determine the exact location of the channel. The soil material, while variable, is usually dark colored in the lower situations. On some small islands there are deposits of nearly white sand or gray and yellow sands which in themselves are very much mixed. The material is also subject to change with every overflow.

Swamp is mapped along the rivers and creeks of the county. The broad areas along the Savannah River contain more or less material brought down from the Piedmont region. This material is characterized by a reddish color and a silty clay loam texture. Other large areas of Swamp lie along the Ogeechee River and Ogeechee Creek, where they vary in width from 300 feet to as much as one-half mile. Along Beaverdam Creek the Swamp has an average width of about one-half mile, while along Brier Creek the Swamp is from one-half to 1 mile wide.

The Swamp is densely forested with such species as cypress, ash, gum, bay, magnolia, tulip poplar, swamp maple, and swamp pine. Swamp is used only for hog pasture.

PEATY MUCK.

The Peaty muck as mapped in this county is variable. In general it is of brown peaty material intermixed with thoroughly decomposed vegetable matter and an appreciable percentage of fine earthy material. In places this extends to depths of 3 feet or more without change; in other places it is underlain at a depth anywhere from 18 to 36 inches by compact saturated sand which more or less resembles quicksand, or by very heavy, plastic, impervious clay.

A number of large areas of Peaty muck are mapped throughout the county, the most important being in the vicinity of Harmony Church in the northern part of the county, 1½ miles north and 3 miles east of Elmwood School, in the vicinity of Newington, and 10 miles south of Sylvania. The areas occupy depressions or ponds which are very poorly drained, being completely saturated during the entire year except in seasons of protracted drought. They are covered by a very dense growth of water-loving plants, including slash pine, gum, cypress, bay, magnolia, maple, titi, bamboo, smilax, and many other species.

SUMMARY.

Screven County is situated along the eastern border of Georgia, about midway between Savannah and Augusta. It embraces an area of 650 square miles, or 416,000 acres.

Several different topographic forms are found in this county. These embrace flatwoods, undulating plains marked by the presence of sink depressions, rolling uplands, alluvial terraces, and flat swampy first-bottom areas.

Drainage of the county is generally well established by a network of streams or by depressions in which the run-off of the surrounding lands accumulates. The drainage is carried by the Savannah and Ogeechee River systems. Some areas are poorly drained.

In 1920 the population of the county was 23,552. Sylvania is the county seat and chief town.

The railroad facilities are adequate for the needs of the county and are supplied by the Central of Georgia, Savannah & Atlanta, and Sylvania Central Railways.

The climate is characterized by short open winters and long hot summers, with adequate rainfall well distributed throughout the year.

The agriculture of the county has been centered about cotton production. Owing to the presence of the boll weevil there is now a greater diversity of crops. Corn is second in importance and is followed by oats, cowpeas, velvet beans, peanuts, and sweet potatoes.

There is not enough beef and pork produced to meet local needs. Dairying is followed only in a small way.

Methods of crop production are improving. Crop rotations are practiced to some extent and commercial fertilizers are used rather freely.

The majority of the farms are operated under the tenant system.

The soils of the county are derived chiefly from unconsolidated Coastal Plain deposits. There are 26 soil types and 3 phases, exclusive of Swamp and Peaty muck. The soils are classed in two groups, upland or bottom land (alluvial), according to the mode of formation. The upland types may be divided into well drained and poorly drained soils. The alluvial soils consist of old-alluvial material on the stream terraces and recent-alluvial material in the present flood plains.

The Norfolk soils are the most extensive in the county. The sandy loam is a strong productive soil, upon which a large part of the products of the county is produced. The fine sandy loam is of small extent, but has a high agricultural value. The coarse sand, sand,

fine sand, and loamy sand are the lighter types of this series and are less productive. They are especially suited for special crops, where markets and shipping facilities are available.

The Orangeburg sandy loam is a strong productive soil, but has only a small total area.

The Ruston sandy loam is a desirable soil for agriculture, but is not important because of small extent. The Ruston loamy sand is a lighter soil and less productive.

The Tifton sandy loam is a strong productive soil and is generally regarded with favor.

The Susquehanna sandy loam is mapped throughout the central part of the county and is characterized by its mottled, heavy, plastic subsoil.

The Dunbar sandy loam is of small extent. It is like the Norfolk soils in the upper part and like the Coxville in the lower part of the profile.

The Coxville sandy loam is mapped in flats that are intermittently wet. The drainage is retarded by the plastic subsoil, which has a gray basic color mottled with streaks of red. Very little of this type is under cultivation.

The Grady sandy loam and clay loam types occupy many of the depressions of the county. On account of poor drainage they are not used for crops.

The Plummer sand and sandy loam types are mapped along drainage ways and in low or depressed areas. They are poorly drained and are little used for farming.

The Portsmouth loam is of small extent and occupies depressed areas that support a heavy growth of water-loving vegetation.

The Leon sand is a poorly drained type with a hardpan layer in the subsoil.

Of the stream-terrace soils, the Augusta, Cahaba, and Kalmia soils are the most productive and generally desired for farming.

The Leaf fine sandy loam is not an extensive type, and is less desirable because of poor drainage, due in part to the impervious subsoil.

The Myatt sandy loam and Myatt sand types are poorly drained soils on the stream terraces.

Swamp consists of undifferentiated alluvial material which is saturated the greater part of the year and is covered by a heavy swamp growth.

Peaty muck occurs in depressions and is not used because of poor drainage.

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