

Issued September 18, 1914.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS—MILTON WHITNEY, Chief.

SOIL SURVEY OF BAMBERG COUNTY,
SOUTH CAROLINA.

BY

W. E. McLENDON.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1913.]



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1914.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., March 25, 1914.

SIR: In the extension of soil-survey work in the State of South Carolina, work was undertaken in Bamberg County during the field season of 1913.

I have the honor to transmit herewith the manuscript report and map covering this work, and to request their publication as advance sheets of Field Operations of the Bureau of Soils for 1913, as authorized by law.

Very respectfully,

MILTON WHITNEY,
Chief of Bureau.

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

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MAP.

Soil map, Bamberg County sheet, South Carolina.

SOIL SURVEY OF BAMBERG COUNTY, SOUTH CAROLINA.

By W. E. McLENDON.

DESCRIPTION OF THE AREA.

Bamberg County is situated in the southwestern part of South Carolina. It comprises an area of 237,440 acres, or 371 square miles. The county is irregular in shape, and is bounded on the north and northeast by Orangeburg County, from which it is separated by the South Fork Edisto and Edisto Rivers, on the southeast by Colleton

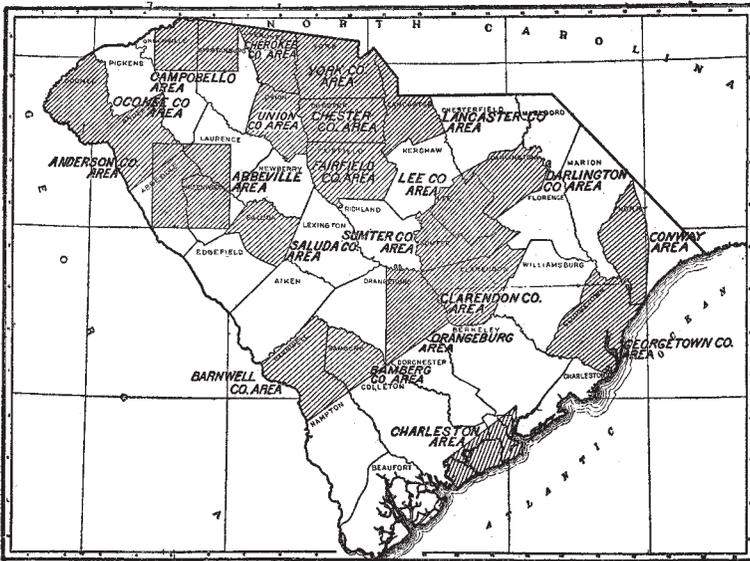


Fig. 1.—Sketch map showing areas surveyed in South Carolina.

County, and on the southwest and west by Barnwell County. The Big Salkehatchie River, paralleling the general southeasterly course of the Edisto River, flows along the southwestern boundary.

The county is centrally located in the Coastal Plain region and possesses some of the features of both the "upper" and "lower" pine belts. That section of the county west of a line from Bamberg through Olar to the southwest corner is very largely in the upper pine belt. A large part of this section is flat, but very little of it is so wet as to be unsuited for agricultural purposes and some of it, particularly the section west of Bamberg and north of the Southern

Railway, is a high, level to gently rolling country. Through the section south of Denmark the surface features are more variable. A large part of this section is comparatively flat, although some irregular areas lie considerably above the general level of the surrounding country. The topography of such areas ranges from nearly level to rolling. East of this section the characteristic flat features of the lower pine belt are typically developed. A large total area of level or slightly depressed country is so poorly drained as to have scarcely any agricultural value in its present condition. Some of the most extensive of the flat, poorly drained areas occur along the southeastern boundary of the county, extending over the line into Colleton County. The central section of the county, while nearly level in general outline, is marked by numerous shallow depressions ranging from very small to a mile or more in extent, and surrounded by sandy lands from 3 to 10 feet above the surface of the depressed areas. All such depressions are wet throughout the year, and some are in a condition of true swamp, usually supporting a heavy growth of cypress or gum. In several places there are deep saucerlike depressions without any drainage outlet and appearing somewhat like sink holes in a limestone country. A few of these depressions, such as those near Govan, form lakes, and the majority of the others are swampy.

The elevation of Bamberg County above tide level ranges from 40 to 100 feet in the river bottoms and from about 100 to possibly 175 feet in the uplands. From the higher lying areas along the western boundary there is a gradual slope to the southeast. Owing to the comparatively slight elevation of the region stream development has not progressed far enough to modify greatly the original plain features. The streams flow in poorly defined channels and are tortuous and sluggish. All of them are bordered by overflow strips, the width of which ranges from about a rod along the smaller branches to a mile along the Big Salkehatchie River and 2 miles along the South Fork Edisto and Edisto Rivers. Generally the larger swamps are bounded by slopes 20 to 50 feet high, rising rather abruptly to the level of the upland plain. Back of these, for some distance, are level to gently undulating strips with fairly good drainage, and these usually give way to slightly lower, poorly drained lands, including in some instances large inter-stream areas. The streams, as they grow smaller in the upper courses, are bordered by gentler and lower slopes, until at their headwaters they occupy mere swales. The greatest stream development has taken place in the upper pine belt sections, while throughout the eastern part of the county there are but few streams of local origin and large areas in which there are no streams.

The Edisto and Big Salkehatchie Rivers, along the northeastern and southwestern boundaries, respectively, and the Little Salkehatchie, extending in an approximately parallel course through the

center of the county, receive all of the drainage of Bamberg County. Lemon Creek is the largest stream having its headwaters within the county. It rises near Denmark and flows in a southeasterly direction, uniting with the Little Salkehatchie near the southeastern boundary. Colstons Branch, draining a large section in the south-central part of the county, is the next most important tributary of the Little Salkehatchie. Among the streams flowing into the South Fork Edisto and Edisto Rivers are Snake Branch and Sykes, Hays, and Brier Creeks. Georges, Old Mill, and Threemile Creeks are the largest streams emptying into the Big Salkehatchie.

Bamberg County was established in 1897 from a part of Barnwell County, and the town of Bamberg was made the county seat at that time. The settlement of the section began in the early part of the eighteenth century. The settlers were mainly English from the coast section and to some extent from Virginia and farther north. The later settlers included immigrants from Ireland, Germany, and possibly a few from France. The present population consists largely of descendants of these settlers, and of negroes. The total population of the county is given in the 1910 census as 18,544.

The county has a system of public roads which is extensive enough to meet present requirements, but the majority of the roads are not well cared for and are too sandy to permit the hauling of heavy loads. In most sections clay is present near the surface, so that the expense of claying the roads should not prove prohibitive. A system of good sand-clay roads could be constructed and maintained at a reasonably small cost. Some work has already been done along this line with fairly satisfactory results, and in general road improvement is receiving increasing attention.

The railroad facilities are perhaps better than in any other county of the Coastal Plain region of the State. The Southern Railway line between Charleston and Augusta crosses the northern part of the county in a general east-west direction. The Seaboard Air Line between Columbia and Savannah crosses the western part from north to south, and the Atlantic Coast Line Railroad between Sumter and Augusta extends across the northwestern section. These three roads intersect at Denmark, about 6 miles west of Bamberg. Ehrhardt, in the southeastern part of the county, is the terminus of a branch connecting with the main line of the Atlantic Coast Line between Charleston and Savannah. Besides these a line is being constructed between Bamberg and Ehrhardt. For the western edge of the county additional transportation facilities are afforded by the Southern Railway, passing through Blackville, Barnwell, and Allendale. The Hunters Chapel section is the most remote from the railroad, being 8 to 10 miles from Branchville in Orangeburg County and 6 to 8 miles from Ehrhardt.

Bamberg, the county seat, is the largest town of the county. It has a population of about 2,000, and is an important local market. Considerable trading is also done at Denmark, which is about half the size of Bamberg, and at Ehrhardt and Olar. Ehrhardt has a population of about 350 and Olar a little over 300. Midway is an old but small place 3 miles east of Bamberg. It has a population of about 100. Govan, 3 miles north of Olar, has a population of a little more than 100. Lees is a small town about 4 miles west of Denmark. Aside from the large sawmills at Edisto, Ehrhardt, and on the Seaboard Railway south of Olar, the only manufacturing enterprises of any importance consist of a cottonseed-oil mill at Denmark and an oil mill and a cotton factory at Bamberg.

The county is well supplied with schools and churches.

Rural free delivery of mail is afforded all sections of the county.

CLIMATE.

The county has a very mild climate, with an abundant rainfall and a growing season long enough for the maturity of a great variety of crops. Spring weather begins the latter part of February, and there is little danger of frost after March 10. Garden planting is done in January and February, while corn planting begins about March 10 and cotton planting after April 1. Summer weather sets in before the end of May and continues well into September. October and November are very pleasant months, with weather favorable as a rule to the gathering of crops. The winters are short and so mild that farming operations can be carried on almost uninterruptedly, and no expensive housing is required for cattle, hogs, sheep, etc. During some winters there is no snowfall. For a long period of years it would average 1 or 2 inches.

There is no Weather Bureau station in this county. The nearest station is at Blackville, Barnwell County, where the conditions are essentially the same as in Bamberg, so that the figures given below are representative.

Normal monthly, seasonal, and annual temperature and precipitation at Blackville, Barnwell County, S. C.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	47.0	89	14	3.74	2.39	2.36
January.....	46.1	80	12	2.87	2.53	3.88
February.....	46.1	79	-3	4.68	4.08	3.14
Winter.....	46.4	11.29	9.00	9.38

Normal monthly, seasonal, and annual temperature and precipitation at Blackville, Barnwell County, S. C.—Continued.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	° F.	° F.	° F.	Inches.	Inches.	Inches.
March.....	58.3	99	19	3.48	4.11	4.08
April.....	63.3	95	29	3.35	0.63	1.05
May.....	73.4	102	38	3.82	1.86	5.45
Spring.....	65.0			10.65	6.60	10.58
June.....	79.7	103	42	5.70	4.87	11.38
July.....	81.7	105	57	5.39	1.67	7.80
August.....	80.5	104	54	5.98	7.83	10.83
Summer.....	80.6			17.07	14.37	30.01
September.....	75.6	100	42	3.92	3.17	2.65
October.....	68.2	95	30	2.88	0.68	2.04
November.....	55.5	89	19	2.08	2.78	0.90
Fall.....	66.4			8.88	6.63	5.59
Year.....	64.6	105	-3	47.89	36.60	55.56

The rainfall averages about 48 inches annually and is well distributed throughout the year. It is heaviest during the months of June, July, and August, when crops require the most moisture. Exceptionally hot weather is usually of short duration, although rather oppressive on account of the high humidity. The mean annual temperature is 64.6° F. The winter mean is 46.4° and the summer mean 80.6°, while those of the spring and fall are practically the same as the annual mean.

The average date of the last killing frost in the spring is March 19, and of the first in the fall November 16. This gives a growing season of about 8 months. The earliest date of killing frost in the fall recorded at the Blackville station is October 24 and the latest date in the spring April 15. Occasionally light frosts occur as late as April 15 and as early in the fall as October 25.

AGRICULTURE.

The beginning of the agricultural development of Bamberg County dates back to about 1750, when the first permanent settlements were made. Prior to this time the population was scattering and migratory, consisting of hunters, traders, trappers, and a few others who devoted practically all of their time to herding cattle and driving them to distant markets. After the first permanent settlers began the practice of farming as the chief means of livelihood, others moved

in gradually until about all of the lands were taken up. At the outset agricultural development was confined to the better drained lands, including the Orangeburg, Tifton, Norfolk, and Kalmia soils, the preference being for the coarse sandy loam, sandy loam, and fine sandy loam types. From the beginning the Orangeburg and Tifton soils were recognized as the best for general farming purposes. As a result they were more rapidly and extensively improved than the others and still comprise the best lands of the county. The extensive wet lands mapped in the Portsmouth and Myatt series and as Swamp have never been farmed to any extent, and for a long time were considered practically worthless, though later these lands, particularly the extensive flat areas supporting a good growth of pine, were valued for their forest growth.

The system of farming evolved by the settlers when there were no near-by markets or transportation facilities continued without any radical changes until the Civil War. Corn and wheat were the main crops, but oats, rice, grasses for hay, and several other crops were grown to a small extent. For a short time, while a bounty was provided by the English Government, indigo was grown to some extent and proved very profitable. The bounty was removed during the Revolutionary War, and the industry came into direct competition with that of the East Indies and declined rapidly, being practically abandoned by the end of the eighteenth century. With the introduction of the cotton gin in 1794, cotton began to attract attention as a commercial crop and afterwards grew steadily in importance. Corn was an article of export at first, but as cotton received greater attention the production of the former declined until not enough was produced for home use. Some of the wheat was shipped to outside markets and some was ground into flour at local water mills. Much of the corn was, and is still, ground into meal for local use. The raising of stock, chiefly hogs and cattle, soon became an important industry. Practically all of the farmers kept at least a few hogs, cows, and sheep. The tendency was to produce nearly everything needed on the farm and to buy as little as possible.

Nearly all of the larger holdings were developed as typical slave plantations. These were an important feature in the agriculture of the county until 1860. A very substantial prosperity was built up and maintained upon these plantations in spite of the fact that the methods of farming were poor. With the smaller farmer conditions were less favorable. To keep the soil in a productive state was not considered of any special importance, as lands were cheap and plentiful, and in the case of the plantations there was an abundance of labor. If a field became run down to a point where it would not produce profitable crops, it was not an unusual thing for it to be thrown out of cultivation and other lands cleared to take its place.

Although farming was the chief industry, considerable attention was given to the products of the forests for both domestic use and for export. Turpentine gradually developed into an important industry, and lumber, shingles, staves, etc., were exported. In lumbering the longleaf pine has always been the most important tree. It was the chief growth on nearly all of the well-drained and fairly well drained areas. Very little of this forest remains.

Conditions improved gradually until the Civil War, when the agriculture of the region received a setback from which it has never fully recovered. During the war the lands had become badly run down and a large total area had been abandoned, and when agriculture was resumed after the war there was little left in the line of stock and implements. There was also an urgent need of money. So the farmers drifted into the growing of cotton, which always found a ready market. As the acreage of cotton was increased less attention was given to stock raising and to the growing of corn, wheat, oats, grasses, and such other crops as were needed on the farm. This marked the beginning of the one-crop system which has continued a serious handicap up to the present time in the agricultural development of the region. There is now no necessity for such a system as there was at the time of its inception. With little or no stock other than the work animals there has been very little manure to return to the soil, and the methods of tillage and cropping have in general been very careless, being carried on without any reference to crop adaptability or special requirements of the soil. As a result the yields have been low and unsatisfactory. To offset this commercial fertilizers have been extensively used.

A long period of depression followed the Civil War. The farmers suffered great financial difficulties and a large number of farms changed hands through the foreclosure of mortgages. Many farmers seeing no future for agriculture in the region sold out, generally for a low price, and moved away. In many cases the owners rented their farms and moved into the towns, and this change was a further hindrance to progress. Following this depressed period conditions improved gradually until shortly after 1890, when the price of cotton fell below the cost of production. This resulted in the introduction of bright-leaf tobacco, which proved quite profitable to some farmers, but the majority continued in the old system of cropping until cotton again became profitable. During recent years the average price paid for cotton has been high enough to make its production profitable, and decided improvement in the growing of this crop has taken place. As a result of the high prices received for cotton the tobacco crop has been entirely abandoned. Where the farms are operated by the owners they are worked largely on a cash basis. A small number of the tenant farmers also pay cash for their fertilizers and supplies,

and a general improvement in agricultural conditions is indicated by the introduction of good farm stock and the increasing use of the latest improved types of farm implements.

While improvements and evidences of better agricultural conditions are to be seen on all sides, hardly the beginning of the agricultural possibilities of the county has been realized. The soils on the average are not producing more than one-third what they should of any of the crops now grown, yet each farm is burdened with a heavy fertilizer expense. Only a very small number of farmers realize the importance of diversified farming. Soils are being used in many instances for crops to which they are not adapted, whereas they are admirably adapted to some other crops which would prove more profitable. It is not generally realized that the present system of growing cotton as the only money crop and buying a large part of the necessities for home use, as is now generally done, can not lead to any substantial prosperity. Besides the opportunities afforded by the naturally well drained lands, the extensive swampy upland areas, now too wet for agricultural purposes and practically worthless, can be drained and brought under cultivation at a very reasonable cost. In their present condition they are a menace to health.

According to the 1910 census, 45,893 acres are devoted to cotton, with a production of 23,861 bales. In the 1900 census a production of 17,870 bales from 38,162 acres is reported. A total of 31,761 acres was devoted to corn, with a production of 392,668 bushels, as compared with 38,043 acres and a production of 383,080 bushels reported in 1900. In 1900 a production of 42,180 bushels of oats from 2,954 acres is reported, while 96,767 bushels were produced from 5,063 acres ten years later. According to the 1910 census 1,643 acres are devoted to peanuts, producing 36,330 bushels. Hay is grown on 2,582 acres, giving a production of 2,237 tons. Among the less extensive crops there is a total of 85 acres in rye reported, producing 1,098 bushels; 114 acres in Irish potatoes, producing 11,590 bushels; 407 acres in sweet potatoes, producing 43,272 bushels; 398 acres in sugar cane, producing 61,555 gallons of sirup; 15 acres in rice, producing 237 bushels, and 1,304 acres in miscellaneous vegetables. The fruits and nuts, mainly pecans, were valued at \$9,610.

Cotton and corn are by far the most important crops in the county, although not enough of the latter is grown to satisfy the home demand. The rented farms are devoted almost exclusively to these two crops. Cotton is grown on a far greater acreage than any other crop on all of the different soil types under cultivation, and it is for this crop that a very large part of the commercial fertilizer used in the county is bought. No attempt is made to grow cotton without the use of commercial fertilizers. The average yield of cotton for the entire county is about one-half bale per acre. This is possibly a little above

the average for the State, but it is entirely too low for the crop to be profitable. The average yield is lowered to some extent by the use of lands not suited to cotton production, but the main cause of low yields is the lax methods generally practiced. Yields of at least three-fourths to 1 bale per acre should be secured on the lighter sandy lands, and from 1 bale to 2 bales on the better lands. The Orangeburg sandy loam, Tifton sandy loam, and Tifton coarse sandy loam are considered the best cotton soils, being easy to till and yet holding improvements well. The Norfolk coarse sandy loam, sandy loam, and fine sandy loam are also good cotton soils, but on account of the greater depth to clay it is somewhat more difficult to keep them in a productive state. The rougher deep sandy areas are not suitable for cotton production, but those that are level or nearly so and have clay within 4 or 5 feet of the surface although requiring more fertilizer and more careful treatment, can be made to produce good crops.

The average yield of corn is about 12 bushels per acre. On some of the best farms it has been demonstrated that these can be greatly increased, as yields as high as 100 bushels per acre have been secured. All of the Portsmouth soils now too wet for cultivation would make excellent corn lands if drained.

The growing of oats is important on only a few of the farms in the county. A large number of farmers, particularly among the tenants, do not grow oats, while on many farms the crop is grown in small patches of 5 acres or less. The importance of this crop in the agriculture of the region is, however, being more generally recognized. The average yield is low, but this is due in a large measure to lax methods and the impoverished condition of the soil. Good yields can be secured on the Orangeburg, Tifton, and Norfolk soils, except on the deeper sandy areas, and no other crop will prove better suited to the Portsmouth soils where properly drained. By following the oats with cowpeas it is possible to gather two crops from the same land in one year. In addition, the soil is left in better condition for the next succeeding crop.

All of the other crops are of minor importance. Scarcely any attention is given to the raising of hogs and cattle. The raising of such stock in connection with general farming offers opportunities which are little appreciated. Hogs could be raised at a very low cost on account of the great variety of feed crops that could be grown, including cowpeas, rye, rape, peanuts, artichokes, and many others. The growing of cowpeas and other legumes results in the improvement of the soil and an increase in crop yields. The production of pecans is now receiving considerable attention, and in time no doubt this will develop into an important industry. The trees do well on almost any of the well-drained areas, but the best soils for the purpose are the Tifton coarse sandy loam and all of the Norfolk soils,

except the deeper sandy areas. The Norfolk coarse sandy loam, sandy loam, and fine sandy loam and the Tifton sandy loam are excellent trucking soils. Near the railroads these could be used profitably in growing early vegetables, melons, and berries for the northern markets. A small quantity of asparagus is being grown at Bamberg now, and good prices are received for all that is shipped.

Greater thoroughness is needed in the preparation of the soil for crops, as well as in subsequent cultivation. Best results with cotton and corn are had where the land is first broken thoroughly with a two or three horse turning plow, then harrowed to good tilth if inclined to be cloddy or rough from the presence of much trash, before the rows are laid off. In the case of cotton the planting is done on as nearly level ground as possible, so that improved weeders, harrows, and cultivators can be used, thus saving both time and labor, besides minimizing the loss of moisture through evaporation. The cotton is barred off and then "chopped," or thinned. Hoeing is one of the main items of expense in the production of cotton, and every effort is made to reduce the amount of such work. The farmers too often plant their crop on poorly prepared land and afterwards try to get the soil in good condition while cultivating the crop, generally by deep plowing.

Frequent cultivation is necessary in order to keep down grasses and weeds, but an equally important function of cultivation is to conserve the moisture in the soil for the use of the plants. From a compact surface such as is left after a rain evaporation is very rapid, but with a loose mulch formed at the surface by shallow cultivation the underlying soil gives up its moisture much more gradually. This accounts for the necessity of cultivating as soon as the soil is in condition. The best results are had where the cultivation is shallow and frequent as long as the crop is growing or fruiting. Deep plowing is often the means of almost ruining crops which at the outset gave every promise of turning out well.

The rotation of crops has been given little or no attention by the majority of the farmers. Its importance as a means of increasing the resources of the farm or of keeping the soil in a productive state is not understood. Cotton may be grown upon the same land for a long term of years, or it may be alternated with corn and oats in an irregular way. For the farmers to practice a systematic rotation of crops that would keep the soils in a productive state without any heavier expense for fertilizer and at the same time get much better yields it is not necessary to seek any new crops. One of the great factors in maintaining a soil in a productive state is to keep it well supplied with humus, and if inclined to be wet to supply adequate drainage. The present one-crop system is largely responsible for the very low humus content now found in all of the soils under cultiva-

tion, and their correspondingly low state of productiveness. A good rotation is cotton one or two years, corn one year, and oats and cowpeas the third year, followed by cotton again or such other crop as the conditions demand. Cowpeas are best planted in the corn middles. In the late fall rye, vetch, bur clover, or some other suitable winter cover crop is planted. The best rotations always include cowpeas and other legumes.

While little attention is given to the rotation of crops as a means of keeping the soil productive, commercial fertilizers are being used in increasing quantities. The amounts and grade of fertilizer needed depend upon the condition of the soil and the crops grown. These are problems that can be worked out only by experiment, since the proper use of fertilizer depends upon the particular system of cropping practiced by the individual farmer. In general, all of the drained lands of the county respond to the use of all three of the elements of commercial fertilizers, nitrogen, phosphorus, and potash. The fertilizers give the best results on deeply and thoroughly prepared soils which are well supplied with humus, or, in other words, where the systematic rotation of crops is followed.

For cotton the applications of fertilizer range from 150 to 800 pounds to the acre. The farmers generally use ready-mixed or "complete" fertilizers, containing phosphoric acid, potash, and nitrogen in varying proportions, ranging in analysis from 8-2-2 to 10-4-4. In some cases the fertilizers are mixed on the farm, acid phosphate, kainit, and cottonseed meal being used. The applications for corn are usually lighter than for cotton, and may be made at planting time, or a part at planting time, and the remainder while the crop is growing.

Nitrate of soda as a top dressing for oats and cotton is growing in favor. If properly applied and the weather conditions are favorable it results in marked increases in the yields.

The extent of development in Bamberg County is shown by the nature and value of farm property and the relative production of various crops as reported by the United States census for 1900 and 1910. No earlier records are available because the county was a part of Barnwell County until 1897. In 1910 a total of 192,451 acres is reported in farms and of this 111,019 acres are improved. These figures show a slight increase over the total acres in farms as well as of the improved land reported in 1900. In the 1910 census the land, exclusive of buildings, etc., was valued at \$3,526,104, as against \$1,336,050 reported in the census for 1900. The buildings are valued at \$735,787, implements and machinery at \$194,078, and domestic animals, poultry, and bees at \$747,531. In 1900 the farm buildings were valued at \$364,530, the implements and machinery at \$116,050, and the domestic animals, etc., at \$295,533.

The average size of farms in the county, according to the 1910 census reports, is 85.7 acres. This includes the tenant holdings as farms. On some of the larger places as they were once operated there may be a dozen or more tenant farms, each ranging from 25 to 100 acres or more in extent. Among the land-owning class of farmers the farms range from 100 to 500 or more acres in size. Of the total number of farms as reported in the 1910 census, 31.3 per cent are operated by the owners. Almost all the tenants are negroes. Most of the tenants operate the farms with one or two horses, although a few farm on a larger scale. Generally from 20 to 30 acres of cultivable land is considered a one-horse farm. The owner furnishes a house, a certain amount of land for each mule or horse the tenant has, and receives as rent either a stipulated proportion of the crop or a cash payment to be made in the fall. The cash rental in case of the one-horse farms ranges from \$1 to \$5 an acre. The share-cropping system is by far the most popular. Under this system the owner generally furnishes everything but the labor and receives as rent from one-half to three-fourths of the crop produced. Where the house, and, and a part or all of the fertilizer is furnished the owner receives half of the crop, and where only the house and the land is furnished from one-fourth to one-third of the crop is paid as rent.

The extensive renting of farms has a tendency to retard the development of the agriculture of the county. Farm labor is usually secured without difficulty at 75 cents to \$1 a day, or for a monthly wage of \$12 to \$15, with house and board furnished. According to the 1910 census, the amount expended for labor in 1909 was \$137,926.

Until 1896 land values in the county were quite low, but since that time they have been rising rapidly, reflecting in a general way the prosperity of the region. In the 1900 census reports the average value of land in the county is given as \$7.65 an acre, whereas in 1910 it had risen to \$18.32 an acre. Leaving out the extensive swamp lands, which are of little or no value, the average value of the lands under cultivation is about \$25 an acre. The deep sandy areas least suitable for agricultural purposes are valued at \$3 to \$10 an acre, the Norfolk coarse sandy loam, Norfolk sandy loam, and Norfolk fine sandy loam at \$20 to \$60 an acre, and the Orangeburg sandy loam, Tifton sandy loam, and Tifton coarse sandy loam at \$40 to \$75 an acre.

Considering the opportunities afforded, the farming land is still very reasonable in price and should prove attractive to settlers

SOILS.

The Piedmont Plateau and Coastal Plain regions of the State, commonly known as the "Up Country" and "Low Country," respectively, form two main agricultural belts, differing as widely in the origin of their soils as in their general topographic features. Geolog-

ically the Piedmont region is much older than the Coastal Plain region. Its rocks are mainly of crystalline and highly metamorphic character. During ancient times a vast amount of material was washed from the Piedmont and spread out over the old ocean floor, resulting in a series of unconsolidated formations, overlying each other almost horizontally. So, while the Piedmont soils are derived directly from the decay of the underlying rocks, those of the Coastal Plain are from unconsolidated material of complex origin, transported and otherwise modified by water action.

Bamberg County lies entirely in the Coastal Plain, and its soils are characteristic of the region, being unlike any of those of the Piedmont. The soils of the alluvial bottom lands are of more recent origin than those of the uplands. They are developed along all of the creeks and larger streams of the county. Most of the alluvial lands occur as first bottoms and are swampy, but through the Edisto River Swamp there are a number of slightly elevated or second-bottom areas which are practically above overflow and are used for agriculture.

On the basis of the character of the original material and the subsequent changes brought about by weathering and different conditions of drainage four general groups or series of soils have been identified in the uplands of the county. The Orangeburg series comprises those areas in which the surface material is sandy and has a decidedly brownish or reddish cast, the subsoil, which occurs either within 3 feet of the surface or at greater depths, consisting of a red clay. The complete series would include all grades of material from coarse sand to clay, but only three types, the sand, sandy loam, and fine sandy loam, are present in this county. The Tifton series is closely related to the Orangeburg, but is characterized by the bright-yellow or greenish-yellow color of the subsoil and the presence of a large quantity of small iron concretions in both soil and subsoil. In this series the coarse sandy loam and sandy loam are mapped. Another series, the Norfolk, includes those soils with a yellow to yellowish-brown light sandy clay subsoil within 3 feet of the surface, and the deeper sandy areas, other than those classed with the Orangeburg. The Norfolk soils differ from those of the Tifton series in the deeper and lighter sandy soils, the lighter textured subsoil, and the absence of any appreciable quantity of iron concretions. In the Norfolk series the coarse sand, sand, fine sand, coarse sandy loam, sandy loam, and fine sandy loam were recognized. The Tifton soils are considerably stronger agriculturally than the corresponding types of the Norfolk, and are almost equal to those of the Orangeburg series. The Portsmouth series comprises the poorly drained areas including the extensive pine flats and swampy depressions characterized by dark-gray to

black soils and gray mottled subsoils. This series is represented by the coarse sandy loam, sandy loam, fine sandy loam, and loam.

All of the first bottoms, on account of their very mixed character and wet condition rendering them unfit for agricultural purposes, are classed as Swamp. The second-bottom areas give rise to two series the Kalmia and the Myatt. The relation of the two is the same as that of the Norfolk and Portsmouth in the uplands, the Kalmia including the better drained areas with gray soils and yellow subsoils, and the Myatt the poorly drained areas characterized by dark-gray to black soils and gray or gray and brown mottled subsoils.

Including Swamp, 20 types of soil are mapped in Bamberg County. Their names and relative extent are given in the following table:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sandy loam.....	37,632	17.8	Norfolk coarse sandy loam....	4,480	1.9
Deep phase.....	4,672		Portsmouth loam.....	3,520	1.5
Swamp.....	32,320	13.6	Kalmia sandy loam.....	3,264	1.4
Norfolk fine sandy loam.....	26,496	11.2	Portsmouth coarse sandy loam.....	2,688	1.1
Portsmouth sandy loam.....	23,616	9.9	loam.....	2,496	1.1
Norfolk coarse sand.....	20,992	8.8	Orangeburg fine sandy loam..	448	.2
Portsmouth fine sandy loam..	20,672	8.7	Myatt sandy loam.....	384	.2
Norfolk sand.....	15,296	6.4	Orangeburg sand.....	320	.1
Orangeburg sandy loam.....	10,752	4.5	Myatt loam.....	192	.1
Tifton sandy loam.....	10,176	4.3	Kalmia coarse sand.....		
Tifton coarse sandy loam.....	9,536	4.0			
Norfolk fine sand.....	7,488	3.2	Total.....	237,440

GRAY SOILS.

SEDIMENTARY MATERIAL—SANDS AND CLAYS.

NORFOLK SERIES.

The surface soils of the Norfolk series are prevailingly gray, ranging from light gray to grayish yellow. The subsoils are yellow and have a friable structure. These soils occupy nearly level to rolling uplands throughout the Atlantic and Gulf Coastal Plain. They are derived mainly from Piedmont-Appalachian material.

NORFOLK COARSE SAND.

The soil of the Norfolk coarse sand is a gray to brownish-gray coarse sand to a depth of 4 to 6 inches. The subsoil is a yellow to yellowish-brown coarse sand, extending to a depth of 3 feet or more and passing into a yellowish-brown, or in places a reddish-brown coarse sandy clay. Over a large part of the type clay occurs within 6 feet of the surface, and in many places it is encountered at a little

over 3 feet. The shallower areas are characterized by a brownish-gray slightly loamy soil and a yellowish-brown subsoil which at depths of 2 or 3 feet becomes somewhat brighter in color and more coherent. Generally as the depth to clay increases the soil becomes lighter in color and less coherent and is also less productive.

Throughout the type the soil is deficient in humus, and owing to the open, porous structure of the material to a considerable depth it is leachy and droughty.

The Norfolk coarse sand is one of the most extensive types of the county. Its principal development is in the eastern section, where large areas skirt the Edisto Swamp and occur along both sides of Lemon Creek. Other areas are found farther back in the inter-stream areas, forming low ridges around the swampy depressions and in the extreme northwestern part of the county near Gents Branch Church and along the edge of the Big Salkehatchie River Swamp.

The surface is level to slightly irregular and sloping, except where the type extends to the rather steep slopes along the main swamp. The narrow areas skirting the inland swamps, or so-called "bays," to the southeast of Bamberg and others of similar occurrence form low, flat ridges sloping gradually along their margins. The natural drainage is good, but is effected almost entirely by percolation rather than surface run-off. There is little or no erosion. Small, wet areas occur throughout the type. These are like the Portsmouth coarse sandy loam and would be shown as this type except that they are not large enough to be mapped separately.

The Norfolk coarse sand represents the coarsest and deepest sandy deposits of Coastal Plain material. The occurrence of the type and its surface features over a very large part of the county suggest the idea of an old delta plain.

The original timber growth consists of longleaf pine, intermixed with some oak, hickory, and other hardwoods. Where the sand is deepest and lightest in color the trees, particularly the oaks, consisting of the blackjack, red, and post oak varieties, are scrubby. While not a naturally productive soil, the Norfolk coarse sand is extensively cultivated, being used principally for cotton and corn. The average yields are very light, but by crop rotation and the liberal use of barnyard manure and commercial fertilizers as much as one-half to three-fourths bale of cotton and 25 to 50 bushels of corn per acre are secured.

The type is too light and leachy for general farming. It can be made to produce good crops of cotton, corn, etc., but the expense involved is usually too great to allow much profit. The benefits from the use of fertilizers are not lasting and on account of the depth and leachy nature of the sand, are very uncertain. On the other hand, the

type is successfully used in some sections of the Coastal Plain for special lines of farming, including the production of early truck, melons, potatoes, and probably pecans.

The type can be materially improved by the rotation of crops, growing cowpeas during the summer, and keeping the soil covered in the winter with rye, vetch, or bur clover. In this way the soil is kept fairly well supplied with humus and made much less droughty. In addition, such treatment largely eliminates the necessity for the use of commercial fertilizers.

NORFOLK SAND.

The soil of the Norfolk sand to a depth of 4 to 6 inches consists of a light-gray incoherent to slightly loamy sand. The subsoil to a depth of 3 to 6 feet is a pale-yellow to light yellowish brown sand of similar texture, grading below into a sandy clay which is usually yellowish brown in color. In the deeper phases of the type the soil, generally consisting of almost pure quartz sand, is very light gray in color, incoherent, and droughty, but where the depth to clay is not much over 3 feet, as is the case in most of the level areas, it is somewhat loamy and fairly retentive of moisture. The natural productiveness of the type as a whole is low, but varies considerably depending upon the depth to clay, surface features, and whether the soil is incoherent or contains enough humus and fine-earth material to render it slightly loamy.

The Norfolk sand, though not extensive, is widely distributed throughout the county. One of the largest areas occurs southeast of Olar. This area is generally level and constitutes the most desirable development of the type. Other important areas are encountered southwest of Olar, near Hightowers Mill, and skirting the Little Salkehatchie River Swamp on the north for a distance of about 10 miles. Several small areas occur long the Lemon Creek Swamp south of Bamberg. The natural drainage of the type is good except in marginal areas grading into the wet Portsmouth land.

The type is derived from the sandier phases of the Coastal Plain deposits, the material being similar to the Norfolk coarse sand, except that is a grade finer in texture and perhaps more completely assorted. On the whole it does not carry as much iron-bearing material as the Norfolk coarse sand, and for that reason has no brownish cast to the soil except in the shallowest loamy phases. In some places the material has been reworked and moved about by wind action, and probably it is through this agency that some of the deepest light sand areas have been formed.

The native forest growth consists of a rather thin growth of long-leaf pine and scrubby oaks, the better areas having a preponderance of pine and those of a very light nature scarcely anything but scrubby

post oaks and blackjack oaks. About 60 per cent of the type is cleared and under cultivation, being used principally for cotton and corn, which give light and uncertain yields. Some of the minor crops grown are oats, cowpeas, sorghum, and sweet potatoes. Sweet potatoes do well. The present system of farming with the prevailing low yields is not profitable, but by careful management, including the proper rotation of crops and the liberal use of manure and commercial fertilizers, the type can be made to produce one-half to 1 bale of cotton and 25 to 50 bushels of corn per acre. The best results are obtained from the use of commercial fertilizers when only part of the amount to be used is applied at the time of planting and the remainder as the crop is growing. Soluble nitrogenous fertilizer, as nitrate of soda, is best applied as a top dressing. While commercial fertilizers are beneficial, the soil is mainly in need of humus.

NORFOLK FINE SAND.

The Norfolk fine sand is a light, incoherent to slightly loamy fine sand extending to a depth of 3 to 10 feet and resting upon a sandy clay. The soil to a depth of 4 to 6 inches is gray to light gray in color, owing to the presence of small quantities of organic matter, while the underlying material is pale yellow to light yellowish brown. In cultivated areas the soil is quite light in color and becomes compact with the depletion of the organic-matter supply. The capacity of the soil for holding organic matter is very low, and even in the forested areas there is not much present. The type is leachy, and in the absence of organic matter or humus it is droughty, and fertilizers do not give satisfactory results. Where well supplied with humus, the type is fairly retentive of moisture and can be made to produce medium light to good crops.

The largest areas of the type occur around Govan in the western part of the county. One important area extends along the south side of the Little Salkehatchie River Swamp near the Colleton County line. The soil in this area is not so fine textured as in those in the western part of the county, but the surface is more regular and the depth to clay ranges from 3 to 5 feet, except in local spots.

The Norfolk fine sand is derived from material of the same depth and appearance as that giving rise to the Norfolk sand, but differing in being finer textured and less open and porous. The surface ranges from level to somewhat hilly, and all areas are naturally well drained.

The native forest growth varies in different areas, its nature depending largely on the topography. As a rule the hilly areas, like some of those just north of Govan, support a thin growth of longleaf pine with a smaller undergrowth of scrubby oak. The more nearly level areas in which clay is nearer the surface support a good growth of pine with some oak.

About half of the type is under cultivation, being used principally for the production of cotton and corn. The average yields are light and unprofitable. The yield of cotton rarely exceeds one-half bale and of corn 10 to 15 bushels per acre. Half of these amounts is more nearly the average. Those areas in which the clay occurs at greater depths and having irregular surface features are not suited to cultivated crops. The better areas can be made to produce fairly good and remunerative crops by applying rough manures and commercial fertilizers and growing cowpeas and other legumes in systematic rotations.

The soil is mainly in need of humus. Where the organic-matter content is not maintained the soil is not only droughty but the results obtained from the use of fertilizers are rarely satisfactory. The Norfolk fine sand is so light that it has a very low capacity for holding fertilizers, and best results are had where only a part of the fertilizer is applied at the time of planting, particularly where the total application is to exceed 200 or 300 pounds per acre.

While the type is too light for general farming, it is used successfully for some lines of special farming, including the growing of early vegetables for market. The best areas produce good yields of asparagus, Irish potatoes, beans, lettuce, etc., and are suited to the production of peaches, figs, grapes, raspberries, blackberries, and watermelons. Many crops suitable for hog feed, such as chufas, rape, artichoke, and sorghum, will find the type congenial. Market gardening is hardly practicable for much of the type at the present time, but the farmers are beginning to appreciate the advantages of the diversification of crops with the raising of chickens and hogs, and this will make room for improvement of conditions on some of the cultivated areas.

NORFOLK COARSE SANDY LOAM.

The soil of the Norfolk coarse sandy loam is a gray to light-brownish loamy coarse sand with a depth of 4 to 6 inches. The soil is underlain by a yellow to yellowish-brown loamy coarse sand to light coarse sandy loam, and this in turn grades rather abruptly at a depth of 15 to 24 inches into a yellowish-brown coarse, gritty, friable sandy clay. While the soil is rather light and open, it is not unduly droughty and responds more readily to good treatment than any of the deeper sandy lands. Like the lighter soils, however, it loses humus rapidly, and a systematic rotation of crops is necessary to keep up the supply.

The type is not very extensive, and is confined to the eastern part of the county where it is associated with the Norfolk coarse sand, the two types being of the same origin. Some of the more important areas occur at Bamberg, 5 miles southeast of Bamberg, around Hunters Chapel, and along the public road leading through Midway and Farrells Cross Roads.

The surface is level to gently undulating and all areas are naturally well drained.

The original forest growth consisted of longleaf pine with some oak, hickory, and other hardwoods. Practically all of the type is now under cultivation. Corn and cotton are the main crops and give light to fair yields, depending upon season and methods of farming. Under the careless methods generally practiced the yield of cotton averages about one-half bale and of corn from 10 to 15 bushels per acre. The best farmers by giving some attention to the rotation of crops and making liberal applications of fertilizer secure from one-half to 1 bale of cotton and from 20 to 50 bushels of corn per acre. Some oats are grown, but the soil is too light and dry for this crop, the yield usually being unsatisfactory.

NORFOLK SANDY LOAM.

The soil of the Norfolk sandy loam is a gray medium loamy sand to light sandy loam from 4 to 6 inches deep. This is underlain by a yellowish sand to light sandy loam, extending to a depth of 15 to 18 inches, where it grades rather abruptly into a yellow to yellowish-brown, light, friable sandy clay. To a depth of 2½ to 3 feet the clay is nearly uniform in color, while below this it is in places more or less mottled with gray, yellow, and brown colors. The soil is generally deficient in humus, and light gray in color and not very loamy. This soil differs from the Tifton sandy loam in having a less loamy soil, a greater average depth to clay, a lighter textured clay subsoil, and in the practical absence of iron concretions. It is not as strong agriculturally as the Tifton and Orangeburg sandy loams, and owing largely to the greater depth of the sandy material it is more difficult to keep in a high state of cultivation.

The Norfolk sandy loam is widely distributed over the county but its total area is not great. The most important areas occur to the south of Bamberg, extending through the central part of the county to the southern edge, around and southwest of Denmark, and scattered through the section east of Bamberg between the Edisto River and Lemon Creek. The topography is level to gently sloping, and the natural drainage is good except in local areas.

The original forest growth consisted largely of longleaf pine with a scattering of oak and other hardwoods.

Nearly all of the type is cleared, and is used almost exclusively for general farming with cotton and corn as the most important crops. Oats are grown to a small extent, with some sorghum, sweet potatoes, and cowpeas. The yields vary widely, depending upon the amount and kind of fertilizer used and the methods of farming. Cotton yields from one-third to 1 bale, corn 10 to 25 bushels, and oats from 15 to 40 bushels per acre. Under better methods of farming these

yields are materially increased. Owing to its light, sandy nature, the soil is best adapted to intensive farming, including the production of a much wider variety of crops. This type of soil is being used successfully in the Pudding Swamp section of Clarendon County and in Florence, Darlington, and Dillon Counties for the production of bright-leaf tobacco. The best areas for tobacco are those in which the clay is encountered at a depth of 15 or 16 inches of the surface and where the topography is more even. It is also used in the production of asparagus, watermelons, cantaloupes, cabbage, peas, beans, Irish potatoes, beets, raddishes, lettuce, and strawberries. It is one of the best soils of the section for pecans, and several small orchards have been started.

The systematic rotation of crops is necessary to keep up the humus content of the soil. The possibilities of the type can not be realized without a liberal supply of humus.

Norfolk sandy loam, deep phase.—The deep phase of the Norfolk sandy loam comprises those areas in which the depth to clay ranges from 18 to 30 inches and whose surface for the most part is uneven or gently rolling. The soil to a depth of 4 to 6 inches is a medium sand, very deficient in humus, light gray in color, and only slightly loamy. The underlying sandy material is light yellow in color and incoherent, except just above the clay where it is somewhat browner and more loamy. The clay is yellowish brown, light, and quite friable, being practically a sticky sandy loam in places.

This phase occurs in areas south of Bamberg on both sides of Lemon Creek and southwest of Denmark near Hightowers Mill. Practically all of the soil is cultivated, being used for the same line of farming as the main type, though the average yields are somewhat lighter owing to the deeper sandy nature of the soil and the greater difficulty in keeping it in a productive state. It is a better special purpose soil than general farming soil, though it can be used successfully under proper management in growing cotton and corn.

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam consists of 4 to 6 inches of a gray loamy fine sand to light fine sandy loam, underlain by a pale-yellowish sandy material of about the same texture though somewhat less coherent, extending to an average depth of about 15 to 18 inches. The subsoil proper is a yellow to yellowish-brown, friable fine sandy clay. In some of the lower lying, flat areas and where the type grades into the Portsmouth fine sandy loam the clay is mottled near the surface, but more generally it is solid in color to a depth of 3 to 5 feet, where it is mottled with gray, yellow, and bright brownish, or red. The variation in the depth to clay is from 15 to 24 inches. Where the clay is shallowest it is usually somewhat heavier than in

deeper sandy areas, and corresponding differences occur in the overlying sandy material. The soil is very deficient in humus in nearly all of the cultivated areas, being light gray in color and quite sandy. It is easily tilled and responds readily to scientific methods.

The Norfolk fine sandy loam is an important type both in point of extent and agriculturally. Large areas occur around Ehrhardt and farther north along Colstons Branch and Little Salkehatchie River. Other important areas are developed at Olar and Govan and between Denmark and Bamberg. The surface is typically flat, but some irregularities occur in every field, either in the form of gentle undulations or as slight depressions. Some areas extend to gentle slopes or to the edges of the swamps. Only the flat areas and the slight depressions need artificial drainage.

The type is derived from the finest of the Coastal Plain materials, occurring in the better drained uplands.

Originally this soil supported a medium to heavy growth of long-leaf pine. Practically all of this, however, has long since been removed, and a very large part of the type is cultivated. A great many of the fields have a ragged appearance on account of the old stumps having been allowed to stand. The stumps hinder farming in that they not only make it difficult to use improved implements, but take up considerable space.

The Norfolk fine sandy loam is used principally for cotton and corn, and in a small way for oats, cowpeas, sorghum, sweet potatoes, sugar cane, and vegetables for home use. In a few places it has been used for tobacco production, but this industry has practically been abandoned. It is, however, one of the best soils in the State for tobacco growing, and also for growing early truck, including strawberries, Irish potatoes, and a variety of vegetables.

Crop yields vary widely, depending upon the methods of cultivation and the amount of fertilizer used. Cotton yields from one-third to 1 bale, corn from 10 to 50 bushels, and oats from 15 to 60 bushels per acre. With improved methods of cultivation the yields secured can be greatly increased over the best obtained now. The soil is naturally deficient in humus. Where well supplied with this constituent good yields of some of the crops grown are secured without the use of fertilizer. In all cases the use of fertilizer is most effective where the supply of humus is maintained. The growing of leguminous crops in systematic rotation results in marked improvement.

ORANGEBURG SERIES.

The Orangeburg soils are predominantly gray, ranging to reddish brown. The soils are open structured, and the subsoils consist of friable sandy clay. This series is confined to the uplands of the Atlantic and Gulf Coastal Plain, being most extensively developed

in a belt extending from southern North Carolina to central Texas. The materials forming the soils were originally washed from the Piedmont and Appalachian regions.

ORANGEBURG SAND.

The Orangeburg sand consists of 4 to 6 inches of a gray to brownish-gray, medium to rather coarse textured sand, underlain by a red or reddish-brown, somewhat coherent sand extending to a depth of 3 feet or more. At greater depths the sand grades into a red sandy clay like the subsoil of the Orangeburg sandy loam. The soil, as mapped in Bamberg County, varies somewhat from the typical Orangeburg sand. The underlying material, however, is typical.

The Orangeburg sand is not extensively developed, and is of little importance agriculturally. Two small areas occur near Hightowers Mill, and others are developed between Denmark and Binnaker Bridge and near the point at which Sykes Creek enters the South Fork Edisto Swamp. One area occurs about 3 miles northwest and another 3 miles south of Bamberg. Excepting the area south of Bamberg, occupying a low knoll, the type is confined to the slopes bordering stream courses.

The type is derived from sandy deposits of the Coastal Plain that are considerably deeper than those deposits giving rise to the Orangeburg sandy loam and have more of a brownish to reddish cast than the material from which the Norfolk sand is derived.

The original forest growth consists of pine, usually shortleaf, oak, hickory, and dogwood. In areas from which timber has been removed but where the land has not been cleared scrubby oaks constitute the principal growth.

Possibly half of the type is cleared, being used for cotton and corn, which give light and uncertain yields. Its best uses are for peaches, pecans, and grapes.

ORANGEBURG SANDY LOAM.

The soil of the Orangeburg sandy loam to a depth of 4 to 6 inches is a medium-textured sandy loam, ranging from gray to brownish gray in color. Immediately below this is a yellowish to reddish-brown sandy loam which becomes heavier with depth and grades at 8 to 15 inches into the typical subsoil consisting of a red friable sandy clay. In the shallowest areas the brownish soil rests directly upon the clay at a depth of about 6 inches. The typical subsoil is red with no mottling to a depth of 3 feet or more, but in local spots, especially about the heads of small streams and along some of the lower slopes affected by a slight amount of seepage, it is more of a yellowish red or yellowish brown, approaching the color of the Tifton sandy loam. Over a large part of the type the depth to

clay does not exceed 6 to 8 inches, and such areas are characterized by a loamy soil with a pronounced brownish cast, while as the depth to clay increases the soil is sandier and lighter colored, being gray at the surface and yellowish brown below. On some of the slopes where erosion has been active nearly all of the surface soil has been removed, leaving the red sandy clay exposed.

The type is confined mainly to the northern and western sections of the county. It is largely in the upper pine belt and is characterized generally by a heavy mixed growth of longleaf pine, oak, and hickory. The largest and most typically developed areas occur in a broad strip skirting the South Fork Edisto Swamp from north of Bamberg to Hayes Creek, north of Denmark. The next most important areas are developed south of Denmark, and several smaller areas occur near Salem Church, near Lees, and north of Philadelphia Church.

The topography ranges from level to gently rolling. The type is elevated and is well drained.

The Orangeburg sandy loam is derived almost entirely from the Coastal Plain material. Where the clay is encountered at shallow depths good drainage has been established. The clay of the subsoil is considerably heavier than the subsoil of the Norfolk sandy loam and possibly a little heavier than that of the Tifton sandy loam, which seems to be of the same origin. Its deep-red color is in striking contrast to the yellow of the Norfolk. In places small iron concretions are scattered over the surface and intermixed with the soil material, but usually such areas are small, being confined to knolls and slopes.

Practically all of the type is under cultivation. It is the best land in the county for cotton and one of the best in the State for all lines of general farming except the growing of bright-leaf tobacco, to which it is not adapted, the leaf produced being rather too coarse and dark colored. At Ridge Springs in Saluda County and in places through the south-central part of Georgia this type of soil has proved especially adapted to the growing of peaches for the market, and there seems to be no reason why they can not be grown with equally as good results on the type in this county, where shipping facilities are near. The soil is easily handled and by careful management, including the deep preparation of the soil and the rotation of crops, can be kept in a high state of productiveness. It is not as leachy as the deeper sandy soils, nor is it droughty except where carelessly handled. The effects of fertilizers are more lasting than on any of the lighter textured types.

Cotton and corn are the principal crops, but a large acreage is devoted to oats and cowpeas, the latter usually being grown with the corn and after the oats. The yields of cotton range from one-half to 1 bale and of corn from 25 to 50 bushels per acre.

ORANGEBURG FINE SANDY LOAM.

The soil of the Orangeburg fine sandy loam is a gray to brownish-gray fine sandy loam. This is underlain at 4 to 6 inches by a yellowish-brown fine sandy loam which grades into a red, friable fine sandy clay at a depth of 8 to 15 inches. In the shallower areas the soil is considerably browner in color and more loamy than in those where the depth to clay ranges from 12 to 15 inches. In the deeper areas the soil is very deficient in humus, light in color, and quite-sandy.

This type is less extensive than the Orangeburg sandy loam. The largest areas occur in the vicinity of Govan. There is a small area at Olar, and another north of Ehrhardt where Colstons Branch joins the Little Salkehatchie River.

The type is derived from the finer grained Coastal Plain material. But for its finer texture and its consequent somewhat more compact and heavier nature it is similar to the Orangeburg sandy loam. It occupies level to undulating and gently rolling country and has excellent drainage. The topography of this type is particularly favorable for agricultural operations.

Practically all of the type is cleared and under cultivation to cotton, corn, oats, and a few minor crops. It is an excellent soil for cotton and other general farm crops, being easy to till and to keep in a productive state. It can be made to produce 1 bale to 2 bales of cotton per acre and heavy yields of corn, oats, and cowpeas. The ordinary yields under present methods are two-fifths to three-fourths bale of cotton, 10 to 25 bushels of corn, and 15 to 30 bushels of oats per acre

TIFTON SERIES.

The Tifton soils are prevailing gray, ranging to brownish gray. The subsoils consist of bright-yellow, friable sandy clay. Small iron concretions occur on the surface and throughout the soil section. The topography varies from flat to gently rolling, and drainage is good. The Tifton series extends through southern South Carolina across Georgia into Alabama. The soils are sedimentary from the sandy clays of the Coastal Plain region.

TIFTON COARSE SANDY LOAM.

The soil of the Tifton coarse sandy loam, to an average depth of about 6 inches, is a brownish-gray to gray, light coarse sandy loam. This is underlain by a yellow coarse sandy loam which becomes heavier with depth, grading into a yellowish-brown or in some places a greenish-yellow coarse sandy clay. Within the 3-foot section the clay shows little if any mottling, but at greater depths it is highly mottled in places with gray, brown, and red. Small iron pellets are scattered over the surface and throughout the soil, being particularly

numerous in places in the underlying clay. Those areas occupying rather prominent knolls and hill slopes are as a rule the most gravelly. The clay subsoil is somewhat friable, but considerably more compact and sticky than the subsoil of the Norfolk sandy loam. The soil is easily tilled and is fairly retentive of moisture, even though in most places it is very deficient in humus.

The Tifton coarse sandy loam is confined to the northwestern corner of the county, where it occupies high, well-drained country. The topography ranges from level to very gently rolling. The most extensive area of the type is the broad strip extending from Hays Creek north of Denmark westward to the Barnwell County line. Other important areas occur west of Denmark.

The type is derived from Coastal Plain deposits.

The original forest growth consisted largely of a mixture of long-leaf pine, oak, hickory, and dogwood. The growth is indicative of a fairly strong, well-drained soil with a fair supply of potash-bearing mineral. The type is highly prized for agriculture, and nearly all of it is under cultivation. While it carries considerable coarse material, the soil is made up largely of the medium and fine grades of sand, with small quantities of silt and clay, and is not unduly droughty.

Cotton produces from one-half to 1 bale, corn from 15 to 50 bushels, and oats from 15 to 40 bushels per acre. The average yields are rather low, owing to the fact that most of the type is handled very carelessly by negro tenants, but where proper methods are followed medium to good yields are secured. The type is well adapted to general farming, and can also be used successfully in growing a variety of special crops.

The soil is mainly in need of humus and the systematic rotation of crops.

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

Mechanical analyses of Tifton coarse sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
242019.....	Soil.....	7.2	20.6	16.2	26.9	12.4	9.7	7.1
242020.....	Subsoil.....	7.9	14.5	11.1	19.3	8.3	8.1	30.7

TIFTON SANDY LOAM.

The Tifton sandy loam is a gray to brownish-gray light sandy loam, underlain at 4 to 6 inches by a yellow sandy loam. The subsoil is encountered at 8 to 15 inches, and consists of a yellowish-brown or bright-yellow, rather heavy, friable sandy clay. Small

iron pellets in varying quantities are scattered over the surface and disseminated throughout the soil and subsoil. These pellets are generally present in only small quantities, but in places they are sufficiently abundant to impart to the soil the character of a gravelly sandy loam. The soil is easy to handle and by careful management can be kept in a high state of productiveness. The type in general has been improperly handled. As a result it is very deficient in humus, and does not respond readily to the use of commercial fertilizer.

This type is almost equal to the Orangeburg sandy loam, and is considerably more productive and responsive to good treatment than the Norfolk sandy loam. In topography, drainage, and texture and structure it may be considered as intermediate between the Orangeburg sandy loam and the Norfolk sandy loam. It occupies level to gently sloping, well-drained areas.

Like the coarse sandy loam this type is confined to the northern part of the county. Large areas occur a short distance west of Bamberg, north of Denmark, at Lees, and about halfway between Bamberg and Olar.

The Tifton sandy loam was originally forested with longleaf pine, with some oak and hickory. The growth of hardwoods was heavier than on the Norfolk sandy loam, but not so heavy as on the Orangeburg sandy loam.

Nearly all of the type is under cultivation. It is highly prized for cotton and the other general crops of the section. Cotton produces from one-half to 1 bale, corn 20 to 50 bushels, and oats 20 to 60 bushels per acre.

This soil is well adapted to diversified farming, including the production of all the crops now grown and many truck crops.

WATER-LAID MATERIAL (OLD ALLUVIUM)—MIXED DERIVATION.

KALMIA SERIES.

The surface soils of the Kalmia series are gray, ranging to grayish yellow, and the subsoils are mottled gray and yellow. The series is developed along streams of the Coastal Plain region on terraces lying largely above overflow. The Kalmia soils occur most extensively in the Gulf Coastal Plain region of Mississippi and Alabama. They are derived largely from Coastal Plain soils, although along the larger streams issuing from the Appalachian Mountains and Piedmont Plateau more or less of the soil from this region is present. In the better drained situations the subsoils are yellow, the soils of such areas resembling very closely the corresponding members of the Norfolk series. The Kalmia soils are closely related to the Cahaba, dif-

fering mainly in their poorer drainage and the consequent less oxidized condition of their subsoils. The surface is usually flat and drainage is deficient.

KALMIA COARSE SAND.

The soil of the Kalmia coarse sand, to a depth of 4 to 6 inches, is a gray to light brownish gray slightly loamy coarse sand. The subsoil, to a depth of 3 feet or more, is a pale yellow to light yellowish gray, loose coarse sand, carrying quantities of fine gravel.

The type is inextensive and of little importance agriculturally. One of the largest areas, containing about 60 acres, is developed at Holmans Bridge. There is another area of about the same size about 2 miles north of Bamberg. Several smaller areas occur between Midway and Edisto and northeast of Farrells Cross Roads.

In appearance the Kalmia coarse sand is quite similar to the Norfolk coarse sand. The material of this type, however, has been re-worked by the streams and is therefore grouped with the alluvial soils. The type is confined to second bottoms or low, elevated areas throughout the Edisto and South Fork Edisto Swamps. Lying from 5 to 8 feet above the mean level of the river and from 3 to 6 feet above the adjoining land, the type is above overflow except during exceptionally high floods.

The surface is level to slightly irregular. Owing to the open structure of the sand the drainage is good, although the water table is within 4 to 8 feet of the surface.

The type was originally forested with a mixed growth of shortleaf pine, oak, hickory, and a few other trees. Most of it is now cleared and cultivated, being used almost entirely for cotton and corn. The yields are light and unprofitable, for the type is not suited to general farming. It might be used to produce good crops of watermelons, sweet potatoes, and certain early vegetables.

KALMIA SANDY LOAM.

The soil of the Kalmia sandy loam to a depth of 4 to 6 inches is a gray, light sandy loam. The soil grades abruptly into a yellow or light yellowish brown sandy loam which is underlain at a depth of 12 to 18 inches by a yellow to yellowish-brown, mottled, rather compact sandy clay. The upper part of the clay is fairly uniform in color, but below a depth of $2\frac{1}{2}$ to 3 feet it is mottled with gray, yellowish brown, and red. Throughout the type there are small slightly elevated areas in which the soil is almost a true sand. If these were large enough to be shown separately on the map they would be classed as the sand type of the series. The heavier phase of the type, in which the clay occurs at a depth of about 12 inches, is confined to the lower lying, very flat areas and slight depressions.

The Kalmia sandy loam is a second-bottom type derived from old alluvial deposits. It occurs principally as slightly elevated areas in the swamps of the South Fork Edisto and Edisto Rivers. The surface of such areas is nearly flat, and they are not more than 3 to 5 feet above the surrounding swamp lands. They are rarely if ever overflowed, but owing to the low elevations and consequent high water table, which is usually encountered within 5 feet of the surface, the drainage is naturally poor.

The chief occurrence of the type is from north of Bamberg to beyond Fitts Bridge, where a number of areas form almost a continuous strip averaging less than a half mile wide. Two small areas are mapped along the road leading from Bamberg to New Bridge, one near the Atlantic Coast Line trestle and another at Holmans Bridge.

Shortleaf or loblolly pine, with a scattering admixture of oak and gum, constitutes the principal native growth.

Practically all of the type was cleared and cultivated before the Civil War, but since the war a large part of it has been abandoned and is now forested with shortleaf pine. Cotton is the most extensive crop grown, yields of one-fourth to one-half bale per acre being secured. Corn produces from 5 to 15 bushels per acre. The yields are not only light as a rule but uncertain on account of imperfect drainage. With good drainage, which can be provided at reasonable cost, the soil is capable of producing much better crops. There is need for better methods of tillage and for greater attention to the rotation of crops. The soil is deficient in humus.

MYATT SERIES.

The Myatt soils are gray. The subsoils range from gray to mottled gray and yellow and are practically impervious. These soils occupy the poorest drained areas of the Coastal Plain stream terraces. They are mainly above overflow, but the surface is so flat that they remain inundated for long periods after heavy rains. They are closely associated with the Cahaba and Kalmia soils and are composed of old alluvium, consisting of reworked Coastal Plain material.

MYATT SANDY LOAM.

The soil of the Myatt sandy loam consists of 6 to 8 inches of dark-gray to black sandy loam carrying a high percentage of organic matter. The soil is underlain by a grayish loamy sand to sandy loam, which at a depth of 12 to 15 inches grades into a mottled gray, close-structured sandy clay. The clay is mottled mainly with yellow and brown, with occasional reddish spots at greater depths,

The Myatt sandy loam is confined to a few comparatively small areas northeast of Bamberg, where it is associated with the Kalmia sandy loam. It is a second-bottom type, like the Kalmia sandy loam, but occurs at a lower level than that type, being intermediate between the Kalmia and the Swamp. It is a wet soil and can not be farmed in its present condition. The water table is within 3 feet of the surface, and the lowest areas are frequently overflowed.

The forest growth consists principally of loblolly pine, with a scattering of willow oak, water oak, sweet gum, and black gum. The undergrowth consists of coarse water-loving grasses, cane, and broom sedge.

None of the type is cultivated, owing to its wet condition, and its best use is for pasture. With proper drainage it is capable of producing good crops of corn, forage, strawberries, and a wide variety of vegetables.

MYATT LOAM.

The soil of the Myatt loam to a depth of 5 to 6 inches is a dark-gray to black loam with a high percentage of organic matter. Usually it is faintly mottled with brown immediately below the surface, and this mottling increases in intensity with depth. Owing to the poor drainage the soil has a close, compact structure which renders cultivation difficult. The subsoil to a depth of several feet is a mottled gray or yellowish-gray, rather tough, plastic clay. The material is mottled with brown near the surface, but at a depth of 2 feet or more it is bright red in spots, resembling the Leaf soils.

The Myatt loam is a second-bottom type, though it is generally so wet as to be comparable with Swamp. Its elevation is intermediate between the Kalmia sandy loam and the Swamp lands, and it is overflowed only during exceptional freshets.

The type is very inextensive and occurs as slightly elevated areas in the swamps of the South Fork Edisto and Edisto Rivers. There are three areas of this soil at Edisto, two near Fitts Bridge, north of Farrells Cross Roads, and two along the road between Bamberg and Cannons Bridge.

The type has no value for farming in its present wet condition. The coarse grasses and cane it supports afford some summer pasturage. It is not more than 2 or 3 feet above the Swamp lands, which are almost constantly under water, and can not be thoroughly drained at any reasonable cost, unless the drainage is effected through some extensive project for the drainage of the entire swamp surrounding the areas of this type.

The forest growth is similar to that of the Myatt sandy loam, consisting principally of water oak, black gum, and loblolly pine. Some of the timber has a commercial value.

BLACK SOILS.

SEDIMENTARY MATERIAL—SANDS AND CLAYS.

PORTSMOUTH SERIES.

The Portsmouth soils are prevailing black, but may also be dark gray. The surface soils are high in organic matter. The subsoils are light gray to mottled gray and yellow. The material of the heavier members is plastic, although carrying noticeable quantities of sand. These soils occupy flat to slightly depressed, poorly drained areas and are most extensively developed in the low, seaward part of the Atlantic Coastal Plain and that part of the Gulf Coastal Plain east of the Mississippi River. The Portsmouth soils are sedimentary from Coastal Plain deposits.

PORTSMOUTH COARSE SANDY LOAM.

The soil of the Portsmouth coarse sandy loam is a dark-gray to black coarse sandy loam 6 to 8 inches deep, carrying a high percentage of organic matter. It is underlain by a gray or light-gray coarse sand to sandy loam, which extends to a depth of 12 to 18 inches. The typical subsoil consists of a gray mottled with yellow or brown, tough, plastic sandy clay, which is usually coarse and gritty. While the organic-matter content of the soil is high throughout the type, it varies considerably with different conditions of drainage, the type being almost true Muck in the swampy areas.

The Portsmouth coarse sandy loam occurs in the eastern part of the county, where it is generally associated with the Norfolk coarse sand, occupying depressed, poorly drained areas. Some of the more important areas are encountered near Bamberg and Midway. The large so-called "bays" between Bamberg and Midway comprise this type. This development of the type, like the other areas, is rimmed with well-drained sandy lands having an elevation of 5 to 10 feet. The area is in a swampy condition and is forested with cypress and gum.

The soil, like the Norfolk soils, is derived from the Coastal Plain deposits. The difference between this type and the Norfolk soils is due to the poor drainage of this soil, for it is only under such conditions that so much organic matter could accumulate in the soil. The clammy, plastic, and impervious nature of the subsoil is due to the lack of aeration and oxidation of the constituent material.

Scarcely any of the type is under cultivation. A part of the area just east of Bamberg has been drained and is used principally for oats and corn, which give fairly good yields. The swampy areas are unfit for agriculture and are a menace to health in their natural condition.

PORTSMOUTH SANDY LOAM.

To a depth of 6 to 8 inches the Portsmouth sandy loam consists of a dark-gray to black sandy loam or sand which is quite loamy owing to the presence of organic matter. The subsurface soil is a gray sandy loam or loamy sand extending to a depth of 15 to 18 inches. The subsoil is a gray mottled with yellow and brown plastic sandy clay.

The type comprises two phases, differing not so much in the character of the material as in their occurrence and forest growth. The large bodies of the type in the eastern corner of the county are typical pine flats, low and wet but not in a condition of true Swamp except in occasional shallow swales. The main timber growth is longleaf pine. The remainder of the type occurs for the most part in shallow, swampy depressions in areas of the better drained soils of the Norfolk series. The soil in these areas is rather mucky, owing to the presence of large quantities of organic matter, and the subsoil is more impervious than in the open pine flats and less mottled, being mainly drab in color.

The largest area of this type is developed in the southeastern part of the county along the Colleton County boundary line, while other large and small areas are scattered over the southeastern half of the county.

Small areas of the Portsmouth sandy loam are under cultivation, generally in connection with some of the better drained lands. Where drainage has been provided it gives fairly good yields of oats and corn, but cotton goes too much to weed. The extensive undrained areas are practically worthless in their present condition except for the timber they support. Heavy applications of lime are beneficial to areas to be brought under cultivation.

Owing to the proximity of natural drainage ways to a greater part of the type, the establishment of artificial drainage is comparatively simple and inexpensive.

PORTSMOUTH FINE SANDY LOAM.

The Portsmouth fine sandy loam consists of 6 to 8 inches of a dark-gray to black, mucky fine sandy loam, grading below into a gray or light-gray less coherent fine sandy loam, and underlain at a depth of 15 to 18 inches by a gray or drab mottled with yellow plastic fine sandy clay. In some places the clay is almost solid gray in color, and in others it is highly mottled with yellow and brown. The swampy areas are generally the least mottled. Owing to the poor drainage the soil clods badly where cultivated, although it is naturally friable because of its high humus content.

The type is widely distributed, but is most extensively developed in the southern and eastern sections of the county. There is a large

area between Farrells Cross Roads and Hunters Chapel, and others between Ehrhardt and Olar and between Olar and Bamberg. The surface is flat and all areas are poorly drained, some being in a condition of typical Swamp. Many of the smaller areas occur as well-defined depressions from 3 to 10 feet lower than the surrounding country. Usually these areas are swampy and are forested with gum and cypress. The typical growth on the less swampy areas consists mainly of a mixture of loblolly pine and gum.

The Portsmouth fine sandy loam is derived from the same kind of material as its associated and surrounding types. The black color of the soil, and its high content of organic matter, and the gray color and close structure of the subsoil are the result of long-continued conditions of poor drainage.

The type is too wet to be used for farming, and in its present condition it has little value except for the timber it supports and for grazing. The least swampy areas afford fairly good pasturage during the spring and early summer months. Where thoroughly drained and properly limed the type is valuable for agriculture, especially for growing corn, oats, and forage crops. It is well adapted to certain truck crops as cabbage, onions, celery, and strawberries.

PORTSMOUTH LOAM.

The soil of the Portsmouth loam is a dark-gray to black loam with a depth of 6 to 8 inches. Even in the lightest colored areas, the organic-matter content runs high, and in many places the soil approaches the condition of true Muck, being very black in color and quite mellow. The subsoil grades within 1 to 3 inches from a gray loam or clay loam into a mottled gray and brown, plastic clay.

The type is widely distributed throughout the county, but in the aggregate it is not very extensive. Some of the more important areas occur southeast of Olar and to the east and south of Bamberg. Small, scattered areas are encountered throughout the western part of the county.

The type is developed as well-defined depressions ranging from an acre or so to several hundred acres in extent and surrounded by some of the well-drained soils which rise rather abruptly to a height of 3 to 10 feet. All of the type except a small acreage which has been artificially drained is in a condition of true Swamp, being inundated the greater part of the time and supporting a medium to heavy growth of gum and cypress with a dense undergrowth of brambles and in places water-loving vegetation.

This type, like the other members of the Portsmouth series, is an upland soil, and owes its dark color and peculiar structural properties to the poor drainage conditions to which it has been subjected for a long period of time.

A few of the small areas associated with the Tifton sandy loam and the Orangeburg sandy loam have been drained and are used for growing corn and oats. A part of the area just east of Bamberg has been drained, but the drainage is not thorough and crops are somewhat uncertain. In addition to open ditches to carry off the surplus water after heavy rains and to serve as the main drainage ways, tiling between the ditches is necessary to drain the soil thoroughly. Liming is also necessary to neutralize the natural acidity of the soil and to improve its structural properties.

Where undrained the soil has no value except for the timber it supports. All areas of this type are susceptible of drainage, and the majority of them at a cost that would justify the undertaking. With good drainage the type is valuable for the production of corn, oats, forage crops, and probably some special crops.

MISCELLANEOUS MATERIAL.

SWAMP.

The low-lying, overflowed strips bordering the streams and ranging in width from a few feet along the smaller creeks to nearly 2 miles along the South Fork Edisto and Edisto Rivers are classed as Swamp. Not only are such areas very wet and subject to frequent overflow, but the soil is too mixed in character to permit any accurate separation based upon differences in mechanical composition.

Those areas along the South Fork Edisto, Edisto, and Big Salkehatchie Rivers are the most uniform in texture. The soil to a depth of 12 to 24 inches is a black, mucky sandy loam to clay loam. Where the soil is a sandy loam the subsoil is usually a plastic sandy clay, while the loam and clay loam soil is underlain by a rather heavy, plastic clay, gray or mottled gray in color.

In a few of the smaller areas the soil is a black loam to clay loam, underlain by a mottled gray, stiff, plastic clay, but more generally it is a sandy loam overlying a gray sandy loam to sandy clay subsoil.

All of the areas mapped as Swamp are heavily forested, the larger areas mainly with cypress and the smaller with a mixture of cypress, gum, maple, oak, poplar, and water-loving species of other families.

In their present condition the Swamp lands are of no value for farming. The artificial drainage of the larger areas along the rivers would be a difficult and expensive undertaking, but many of the smaller areas can be drained at a reasonable cost. Where drained they make valuable farming land, producing heavy yields of corn and forage crops.

SUMMARY.

Bamberg County, with an area of 237,440 acres, or 371 square miles, is situated in the southwestern part of South Carolina and is centrally located in the Coastal Plain region.

It comprises two topographic divisions corresponding in a general way with what are known locally as the "upper pine belt" and the "lower pine belt." That section west of a line from Bamberg to the southwest corner of the county is largely in the upper pine belt, and has a level to gently rolling topography with only a small total area of swampy lands. The section east of the line referred to is in the lower pine belt. The topography is nearly flat, and the section includes numerous depressions in a condition of true Swamp, with extensive areas too flat to be properly drained. As all through the Coastal Plain region, the streams are bordered by wide, swampy overflow bottoms. The elevation above sea level ranges from about 100 feet in the eastern part to 150 feet or more in the western part of the county.

The drainage is effected mainly through the Edisto and Big Salkehatchie Rivers and their tributaries.

The county was established in 1897 from a part of Barnwell County, and Bamberg, with a population of about 2,500, was made the county seat. The white population consists largely of descendants of the early settlers, the foreign-born population being small. According to the 1910 census the total population is 18,544.

The county has excellent railroad facilities and an extensive system of public roads. The rural delivery mail service reaches all sections.

The climate is very mild and adapted to a wide diversity of crops, the growing season covering a period of about 8 months.

The interests of the county are very largely agricultural, with cotton as the most extensive and only important money crop.

Farm labor is usually available at reasonable cost.

Twenty types of soil are mapped in the county, 15 in the uplands and 5 in the lowlands. Of the lowland types, all of the first bottoms are classed as Swamp, while some slightly elevated second bottoms in the Edisto Swamp comprise the coarse sand and sandy loam types of the Kalmia series and the sandy loam and loam of the Myatt series.

The soils of the uplands are classed, according to origin, color, and structural properties, into four distinct series—the Orangeburg, Tifton, Norfolk, and Portsmouth.

The Portsmouth soils, while wet and undesirable, can generally be drained at a reasonable cost and converted into very valuable farm lands. In their present condition they are not only unfit for agriculture but are a menace to health. The other three series include practically all of the lands under cultivation.

The Norfolk coarse sand is an extensive type, and though light and rather droughty it is farmed extensively to cotton, corn, and a few other crops. It is a good special purpose soil and is best adapted to a variety of early truck crops, melons, and pecans.

The Norfolk sand is used extensively for cotton and corn, and in a small way for oats and cowpeas, which usually give light yields. It is best adapted to early truck, sweet potatoes, watermelons, cowpeas, rye, and such crops as chufas, artichokes, and rape for hog feed. The more nearly level areas where carefully managed are capable of producing good crops of corn, cotton, and vetch.

The Norfolk fine sand has a low value for the crops now grown, about half of it being under cultivation. The most irregular areas are not desirable for cultivated crops, but the smoother areas are adapted, under proper economic conditions, for the production of early vegetables, sweet potatoes, watermelons, cowpeas, especially for the seed, and rye.

The Norfolk coarse sandy loam is not extensively developed, but it is considered a fairly good soil for cotton and corn. It is rather leachy, droughty, and requires careful handling. It is a soil that will ordinarily give better results with early vegetables than with the staple crops.

The Norfolk sandy loam is an important type agriculturally, and is nearly all under cultivation. It is used almost exclusively for cotton, corn, and oats. Where properly handled good yields are obtained. The type is well adapted to trucking, asparagus and many other vegetables doing well. It has also been used successfully in growing tobacco.

The Norfolk fine sandy loam is used for the same purposes and has about the same adaptation as the Norfolk sandy loam.

The Orangeburg sandy loam and the Orangeburg fine sandy loam are on the whole the most highly prized soils in the county for general farming, being easy to handle and holding improvement well. They are used principally for cotton, corn, oats, and other general crops. These soils are particularly valued for peach production in certain parts of Georgia.

The Orangeburg sand is very inextensive and of little importance agriculturally. Scarcely any of it is farmed, the yields being very light.

The Tifton sandy loam is an extensive and important type. It is highly prized for cotton, corn, oats, and forage crops. It is a stronger soil than the Norfolk sandy loam, and has an agricultural value about equal to that of the Orangeburg sandy loam.

The Tifton coarse sandy loam is also an important general farming soil, though not quite as productive as the Tifton sandy loam, being slightly more droughty and somewhat more difficult to keep in a

productive state. It is well adapted to such special crops as pecans, peaches, watermelons, and sweet potatoes.

In the Portsmouth series the sandy loam, fine sandy loam, and the loam are mapped. These soils are too wet to be farmed, and only small tracts in fields of better drained types are cultivated. They produce fair to heavy yields of corn and oats and with drainage will make good agricultural land.

The Kalmia coarse sand and sandy loam are inextensive types. The cleared areas give light yields of cotton, corn, and a few other crops. Drainage is poor.

The Myatt sandy loam is wet to swampy and has no agricultural value in its present condition.

The Myatt loam is also wet, except in a small area at Edisto, and even this is not adequately drained. In its present condition the type has no agricultural value. Drainage of the Myatt soils will be difficult and expensive.

Swamp has no value except for the timber it supports. Some of the smaller areas can be easily drained, but the large areas along the rivers can only be reclaimed by leveeing and pumping. Where drained this type has a value about equal to that of the well-drained Portsmouth soils.



[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on the field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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