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

SOIL SURVEY OF BERKELEY COUNTY, SOUTH CAROLINA.

BY

W. J. LATIMER, IN CHARGE, F. Z. HUTTON, CLARENCE LOUNSBURY, A. H. MEYER, AND M. EARL CARR.

W. E. McLENDON, INSPECTOR, NORTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1916.]

WASHINGTON:
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1918.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., August 30, 1917.

SIR: The accompanying report and soil map cover the survey of Berkeley County, South Carolina, one of the projects undertaken by the bureau during the field season of 1916.

I recommend that the report and map covering this work be published as advance sheets of Field Operations of the Bureau of Soils for 1916, as provided by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

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

CONTENTS.

ILLUSTRATIONS.

FIGURES.

MAP.

SOIL SURVEY OF BERKELEY COUNTY, SOUTH CAROLINA.

By W. J. LATIMER, In Charge, F. Z. HUTTON, CLARENCE LOUNSBURY, A. H. MEYER, and M. EARL CARR.—Area Inspected by W. E. McLENDON.

DESCRIPTION OF THE AREA.

Berkeley County lies near the central part of the eastern boundary of the State of South Carolina. Its southern extremity is only a few miles from the city of Charleston, on an ocean inlet. The county is about 40 miles wide and 50 miles long, and irregular in outline. It is bounded on the northeast by Williamsburg and Georgetown Counties, on the southeast by Charleston County, on the southwest by Dorchester County, and on the northwest by Orangeburg and Clarendon Counties. It is the second largest county in the State, and has an area of 1,238 square miles, or 792,320 acres.

With the exception of the southern end, which reaches into the tidal region, the county lies within the Lower Pine Belt of the Coastal Plain. The surface in general is level to undulating, and the differences in elevation slight. Along the bluffs of the larger streams and their tributaries the upland is gently rolling and well drained, but back from the bluff the land, even at the same elevation, is flat and poorly drained, with extensive flats broken only by occasional low sand ridges running parallel to the coast. The larger of these flats are called "bays" and the smaller "savannas."

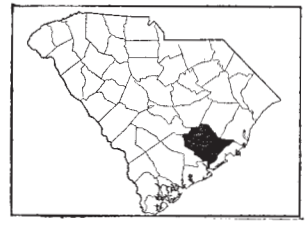

FIG. 1.—Sketch map showing location of the Berkeley County area, South Carolina.

The stream valleys are broad but comparatively shallow, with large areas of swamp or tidewater marsh. The first bottoms are bordered in places by extensive low terraces. Large areas of low swamp land occur in the northern part of the county along the Santee River from the Orangeburg County line to a point a few miles below St. Stephen, along Four Hole Swamp bordering the county on the northwest, along Cypress and Wassamasaw Swamps, and about the headwaters of Cooper River and its tributaries. Tidal marsh is prominently developed in the southern part of the county along Cooper River and most of its tributaries.

There are five large areas of flat land, generally known as "bays." The flat north of Summerville, lying between the bluffs along Cypress Swamp and the Summerville and Moncks Corner Road is known as Black Toms Bay; the area between Bethera, Huger, and Honeyhill on the one side and Wambaw Creek on the other as Hellhole Bay; that between Bethera on the southeast and St. Stephen on the north as Walleye Bay; that between Pineville and Pinopolis

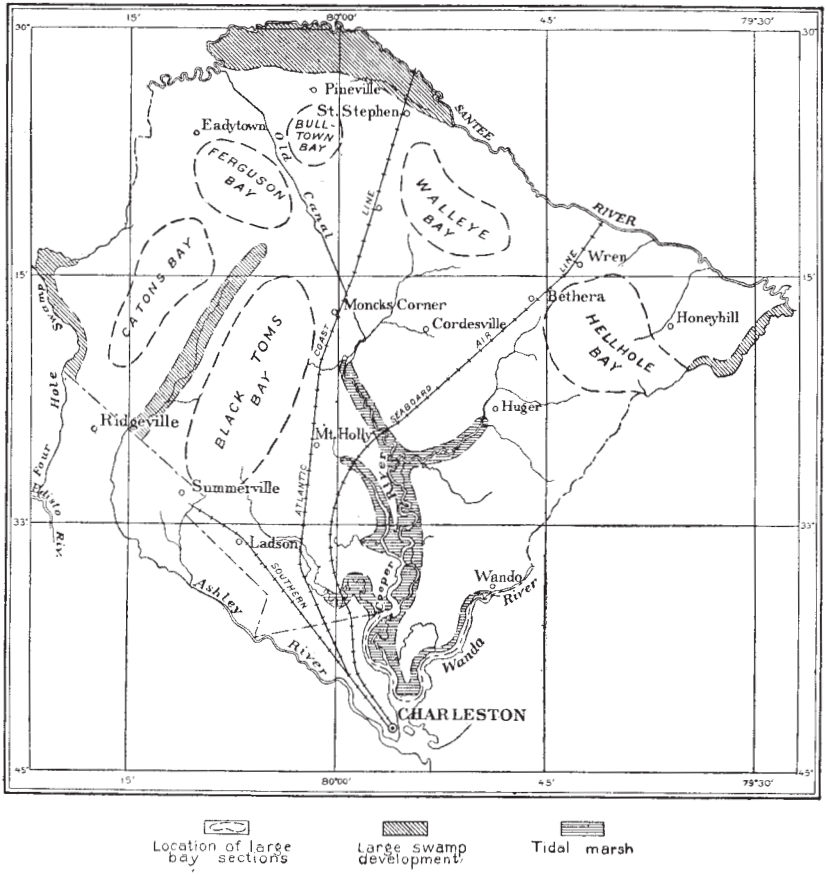

FIG. 2.—Sketch map showing location of "bays," swamp areas, and tidal marshes.

as Bulltown Bay and Ferguson Bay; and that between Cypress Swamp and Four Hole Swamp as Catons Bay. (See fig. 2.)

The county is tributary to four drainage systems. The central and southern part is drained by the Cooper River and its tributaries. A comparatively narrow strip along the northern and northeastern boundaries of the county is drained by short lateral streams into the Santee River. A large area in the central-southwestern part of the county is drained into the Ashley River through Cypress Swamp and a few smaller tributaries. A small strip along the southern

part of the northwestern boundary drains into the Edisto River through Four Hole Swamp. The various drainage systems have not cut far back into the upland, and extensive flat areas are not sufficiently drained to remove the surface water. The streams have cut down to base level and the currents are sluggish. The flow is impeded by the choking of the channels with vegetation and forest débris. As a rule the valley floors are not more than 20 to 60 feet below the level of the adjoining upland.

The elevation of the county ranges from tide level in the southeastern part to more than 150 feet above in the vicinity of Pinopolis, and possibly 200 feet at several places in the northern part.

The section now included in Berkeley County was settled and developed early in the history of South Carolina. Berkeley County was formed in 1882 from the Charleston District, with Mount Pleasant as the county seat. In 1895 a section of the county bordering the coast was added to Charleston County, and the county seat was moved to Moncks Corner. Since that time two other small areas have been added to adjoining counties. A small, thickly settled strip including the town of Summerville was incorporated with Dorchester County in 1897, and about 50 square miles of land along the northwestern boundary was annexed to Orangeburg County in 1910.

The early settlers in this region were English and French. The present population consists largely of descendants of the original settlers. The early settlements were made along the tidewater and the larger inland streams. Early development was rapid and large estates were established. Many ruins of old mansions, public buildings, roads, causeways, ducts, and canals exist as evidence of the high state of early development. Since the Civil War many of the old holdings have been abandoned, and the buildings have fallen into decay or have been burned. The majority of the former owners have moved away and many of the negro laborers have gone to the interior pine lands, where they are engaged in growing cotton. At the present time the tidewater areas are all but deserted, the population now being centered within reach of the railroads. The county is most thickly populated in the southeastern part, southeast of a line extending roughly from Summerville to Pinopolis, thence to Moncks Corner and west of the Atlantic Coast Line Railroad to the Charleston County line, and along the bluffs of the Santee River in the vicinity of St. Stephen northward to the Orangeburg County line. The remainder of the county is sparsely settled. The density of the population is given as 19 persons per square mile in the 1910 census. The total population is reported as 23,487, including the inhabitants in the area subsequently separated in the forma-

tion of Orangeburg County. The entire population is classed as rural. A considerable number of persons are engaged in lumbering and phosphate mining. Native white persons constitute 22.1 per cent of the total population, foreign-born white persons 0.2 per cent, and negroes 77.6 per cent. The foreign-born element consists mainly of Japanese, who are engaged in rice culture on one of the larger plantations, and a few Germans who have settled in the vicinity of St. Stephen.

There are no large towns within the county. The population of Moncks Corner, the county seat, is reported as 232 in the 1910 census. This town is situated on the Atlantic Coast Line Railroad near the center of the county. St. Stephen, situated on the same railroad just south of the Santee River, is probably the largest and most important town in the county. In 1910 it had a population of 408. Pinopolis is a small town about 4 miles north of Moncks Corner, with a reported population of 150. It is noted for its healthful location. Lincolnville, on the Southern Railway 2 miles south of Summerville, has a population of 341, consisting entirely of negroes.

Berkeley County is served by three lines of railroad radiating from Charleston. The Southern Railway extends in a northwesterly direction, traversing the county for about 12 miles and then running parallel to and within a short distance of the county line for about 14 miles. A main line of the Atlantic Coast Line Railroad (double track) runs north across the center of the county. The Seaboard Air Line Railway has a new branch running northeast from Charleston for about 40 miles. This serves an undeveloped part of the county. In addition to the rail transportation facilities, the Cooper River and Wando River are navigable for a considerable distance with large boats and much farther with small boats. The Santee River is navigable for steamers through its entire course bordering the county. The Ashley River is navigable for some distance above the point where it touches Berkeley County.

There are many old State roads in the county, but they are not kept in good condition. That from Ten Mile on the Charleston County line to Carns Crossroads and thence to Summerville is surfaced with sand and gravel and is kept in good condition for automobile traffic. Two spurs extend from the main highway, one running about 3 miles to Mount Holly and another from Ten Mile to the Cooper River marsh. The remainder of the public-highway system consists of ordinary roads upon which little improvement work has been done.

Only the larger towns in the county, such as St. Stephen, Moncks Corner, Pinopolis, and Mount Holly, and a few hunting-club houses, have telephone service.

The towns of Summerville and Ridgeville in Dorchester County, and Eutawville and Holly Hill in Orangeburg County, situated a short distance from the Berkeley County line, are trading and marketing centers. Charleston is the principal market for the farm products of Berkeley County.

CLIMATE.

The climate of Berkeley County is mild and equable. The winters are moderate and of short duration. The summers are comparatively warm.

The mean annual temperature, as recorded at Pinopolis, is 53.2° F. Zero weather is unusual and lasts for only short periods. The average temperature for the winter season is 47.8° F. In the summer months extreme temperatures of 100° are common and may occur daily for periods of several days. The mean summer temperature is about 78° F. For the spring months the mean temperature is about 63°, and for the fall months about 64°. The temperature of the tidewater section averages about 2 degrees higher than that of the remainder of the county, owing to the effect of the adjoining large bodies of water and the lower elevation. This is of decided advantage in the growing of early truck crops.

The mean annual precipitation of about 50 inches is favorably distributed throughout the year for general farming, stock raising, and truck farming. The heaviest precipitation occurs in the spring and summer months, when needed by growing crops. Even in the driest years there is sufficient rain in the spring and summer for maturing the ordinary crops. Snow is of rare occurrence. A few inches of snow may fall once in about every 8 or 10 years, but as a rule the fall amounts to only a trace.

The normal growing season, according to the records of the Weather Bureau station at Pinopolis, in the upland interior, extends from March 4 to November 29. The tidewater section has a longer growing season. According to the records of the station at Charleston the normal growing season here extends from February 19 to December 11. The latest killing frost recorded at the Charleston station occurred April 2 and the earliest on November 9. A wide range of crops can be grown in Berkeley County and two or even three successive crops of certain kinds can be grown in one season. No difficulty is encountered in wintering cattle, and the long growing season and the mild winters make possible the production of ample feed for stock. The climate is especially well suited to trucking.

The tables below are compiled from the records of the Weather Bureau stations at Charleston and Pinopolis. The records of the Charleston station represent more closely the climatic conditions in

the southern one-third, and those of the Pinopolis station the conditions in the remainder of the county.

Normal monthly, seasonal, and annual temperature and precipitation at Charleston.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1850).	Total amount for the wettest year (1876).
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	51.3	78	10	3.15	1.94	5.85
January	49.3	80	10	3.45	2.16	.63
February	51.7	80	7	3.41	1.94	2.43
Winter	50.8	80	7	10.01	6.04	8.91
March	57.2	94	24	3.72	5.17	2.54
April	63.8	90	32	2.99	2.10	4.93
May	72.4	98	46	3.47	2.64	3.77
Spring	64.5	98	24	10.18	9.91	11.24
June	78.5	101	49	5.39	.14	14.98
July	81.3	104	64	7.26	.66	11.26
August	80.3	100	62	6.97	4.56	5.10
Summer	80.0	104	49	19.62	5.36	31.34
September	76.2	100	49	5.46	1.17	11.26
October	67.1	93	37	3.93	.58	14.32
November	58.1	83	23	2.87	.63	1.35
Fall	67.1	100	23	12.26	2.38	26.93
Year	65.6	104	7	52.07	23.69	78.42

Normal monthly, seasonal, and annual temperature and precipitation at Pinopolis.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1849).	Total amount for the wettest year (1891).
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	47.9	85	10	2.94	1.37	1.42
January	47.3	82	9	3.08	.24	1.87
February	48.1	82	−3	3.54	.89	1.54
Winter	47.8	85	−3	9.56	2.50	4.83
March	56.7	95	13	3.71	1.21	5.02
April	62.1	92	26	2.93	.26	1.73
May	70.9	97	38	3.72	2.99	4.38
Spring	63.2	97	13	10.36	4.46	11.13

Normal monthly, seasonal, and annual temperature and precipitation at Pinopolis—Continued.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1849).	Total amount for the wettest year (1891).
	° *F.*	° *F.*	° *F.*	*Inches.*	*Inches.*	*Inches.*
June	76.6	99	43	5.89	0.92	3.29
July	78.4	103	54	6.09	8.00	10.71
August	78.1	101	56	6.33	5.55	28.80
Summer	77.7	103	43	18.31	14.47	42.80
September	74.1	101	39	4.63	1.03	5.30
October	64.1	91	29	3.15	1.96	2.36
November	54.7	92	13	2.45	.50	2.08
Fall	64.3	101	13	10.23	3.49	9.74
Year	63.2	103	−3	48.46	24.92	68.50

AGRICULTURE.

The early settlers in this territory attempted the growing of European crops under European methods of farming, but this proved a failure. Gradually other crops were introduced which were better suited to the climatic and economic conditions and proved highly successful.

Rice was introduced about 1700 and soon became the leading crop. At first it was grown only on the poorly drained upland areas and in the inland swamps. Water culture was introduced in 1783 by planters on the Goose Creek lowlands. This method of production reduced the amount of labor required and removed many of the uncertainties previously encountered. It made available extensive areas along the Cooper and Santee Rivers. With the building of rice mills, some of which were operated by water power, the production of this crop was further stimulated. Rice production continued important until the time of the Civil War, when the change in labor conditions rendered it difficult to continue operations and many of the large plantations were abandoned. Other factors also have influenced the decline of rice production, such as the competition of rice grown in Louisiana and Texas largely with the use of labor-saving machinery, the ravages of the rice weevil in recent years, and the introduction of more profitable crops, such as cotton.

The production of corn began at an early period in the settlement of the county. From 1740 to 1790 corn was grown for export, but

since that time, notwithstanding the increased acreage, the consumption has been greater than the production.

Indigo was first planted about 1742. It continued one of the leading crops until the time of the Revolutionary War, after which time the discontinuance of the bounty that had been granted by the English Government led to the substitution of more profitable crops.

Cotton was introduced about 1750, but it was not grown in an important way until about 1800. Prior to the Civil War cotton was grown by the rice planters as an adjunct to rice, being planted on the pine barrens. After the war cotton growing on an extensive scale began, and the production has steadily increased. Owing to the low price of cotton during the period 1840–1850 a considerable acreage was put in grain, but as the price of cotton advanced the growing of small grain was practically abandoned. Sweet potatoes have been grown extensively since the early settlement of the county. Flax, madder, rye, and barley have been grown in a small way.

At the present time the agriculture of Berkeley County consists of general farming and stock raising, with trucking and dairying as important industries in certain sections.

Cotton is the leading crop in point of acreage and production, and the chief cash crop of the county. In 1909, according to the census, there were 30,749 acres in cotton, producing 17,415 bales, of a value of more than $1,000,000. The entire crop, both lint and seed, is sold. Corn is the second crop in importance. In the 1910 census corn is reported on 24,037 acres, producing 391,195 bushels. Corn is grown largely for local use in feeding work stock and hogs. Oats constitute the third crop in importance. A total of 2,041 acres is reported in oats in 1909, with a production of 38,630 bushels. The acreage in oats has increased considerably since 1910, especially in the last two years. The entire crop is used to feed work stock.

Rice may be considered a minor crop. Only 1,408 acres were devoted to rice in 1909, producing 41,917 bushels. The acreage in rice at present is probably less than in 1910. Among the minor crops of the county sweet potatoes, cowpeas, and potatoes are important. Sweet potatoes in 1909 were grown upon 1,524 acres, with a yield of 99,568 bushels. The crop is used largely for home consumption, but a part is disposed of at the Charleston market and shipped mainly to New York. Irish potatoes are reported on 623 acres, producing 19,607 bushels. Cowpeas were grown on 1,910 acres and a production of 10,818 bushels of seed is reported. The greater part of the acreage in cowpeas is cut for hay, which is used locally for feeding stock. The census reports 877 acres in grain cut green, the forage being largely utilized in feeding dairy cows. Sugar cane is reported on only 43 acres.

Vegetables common to the southern Coastal Plain States are grown on nearly all the farms for home use. Melons are produced in sufficient quantity to supply home demands and the local markets and some small shipments are made. On Daniels Island about 1,000 acres are devoted to truck farming. In 1916, however, no planting was done owing to the shortage of potash fertilizers. Irish potatoes, cabbage, and cucumbers are the principal truck crops grown.

Little attention is given to fruit growing in Berkeley County. There are several small peach orchards, and most of the farms have a few scattered peach trees. Scuppernong grapes do exceedingly well in many places. Strawberries are grown for home use. Blackberries grow wild in abundance, but no effort is made to cultivate this crop.

The census reports the number of cattle in Berkeley County in 1910 as 15,800, of which 5,411 were dairy cows. Horses numbered 1,819, mules 1,595, hogs 33,026, and sheep and goats 5,634. A total of 1,627 cattle are reported sold or slaughtered in 1909, in addition to 4,607 hogs and 630 sheep and goats. The total value of all live stock in the county is reported in 1910 as $856,335.

Certain sections of Berkeley County are maintained by mutual consent as an open range, and the farmers raise a large number of cattle, hogs, and goats, which are largely sold at the Charleston market. The open-range system is not very satisfactory, as there is considerable loss of stock, and much time is necessarily consumed in looking after the animals. In the sections where fencing is necessary little stock is raised. There are three dairies in the vicinity of Summerville and one near the Charleston County line, from which cream and milk are shipped to Charleston and Summerville.

Little attention has been given to improving the live stock, and practically all of it is nondescript. On a few farms improved breeds of hogs have been introduced, principally Berkshire, Poland China, and Duroc Jersey. These have mixed with the native stock, producing a type of hog that is well suited to the local conditions. The dairies have imported purebred Jersey bulls and are improving their herds.

The soil and topographic features have noticeably influenced the agriculture of the county. The gently rolling and well-drained areas are largely in cultivation, except much of the sandy land, which is now abandoned owing to the high cost of fertilizer. Only a small part of the level land requiring artificial drainage is under cultivation. Much of the open pine-woods land is used for pasture. The low swamps and marshes are not farmed at present, although formerly they were used extensively for rice. The large swamp along the Santee River was at one time cultivated, but it has been abandoned for over 100 years on account of floods. The large bays are not farmed, but the high land along the escarpment of the

swamps in most cases is used for crop production. It is generally recognized that the well-drained and well-aerated soils are best suited to cotton, and that corn and oats can be grown to advantage on soils that require artificial drainage.

Cotton, which requires good drainage, is largely grown in sandy areas. The soil is not turned to form the seed bed, the common practice being to bed the new furrows on the alleys of the former seed bed. The practice followed by the best farmers and by farmers on the heavier land is to break the land broadcast at the first occurrence of favorable weather. The rows are laid off 3½ to 4 feet apart, and the land is turned to the marking row with a bull-tongue plow, leaving a trench in which the fertilizer is placed by either a hand drill or a fertilizer drill. After mixing the fertilizer the soil is turned to the trench, forming a bed upon which the seed is planted with a planter. If the land is low or heavy the bed is made high, while on sandy land it is low. The rows of young plants are thinned with hand hoes. Early cultivations are usually deep, and are made with a plow. Those following, which are as frequent as needed to keep down grass, are shallow and are made with a sweep. One-horse draft is used. The long growing season favors the production of big-boll varieties of cotton. Early in the history of the county only the long-staple or black-seed varieties were planted, but at the present time short-staple cotton also is grown. Peterkin, King, Cooks, and Cleveland Big-Boll are the leading varieties grown. Most of the farmers pay little attention to varieties.

Corn is cultivated under the Williamson plan or a modification of it. During the last few seasons modification of the method has not been so common as formerly on account of the lack of fertilizer. Corn usually is planted well down in the furrow and the soil is thrown toward the plants at each cultivation, so that they are left on a ridge when the crop is laid by. Most of the leading farmers use some fertilizer before planting. Where the old method of growing corn is followed on sandy land and no fertilizer is used the yields are low. On the light-textured soils yields are comparatively low even with the use of fertilizers. In low areas satisfactory yields are obtained under the old method. On many farms cowpeas are seeded in the corn field at the last working. Dent corn is grown almost exclusively, but little attention is paid to varieties. Corn usually is topped and the fodder stripped from the stalk. The dairy farms grow a small acreage of corn for ensilage.

Oats are largely sown broadcast, but drills are used by the most advanced farmers. The crop is generally harvested with reapers. Acid phosphate, at the rate of 200 to 250 pounds per acre, usually is applied before seeding. Nitrate of soda is used as a top-dressing

at the rate of about 75 to 150 pounds per acre. Texas Red Rust-proof is grown more extensively than any other variety.

Two methods are used in growing rice. Dry culture is used on the upland and in the lowland areas where the supply of water is not sufficient for irrigation. The seed is sown in drills and about the same cultivation is given as for cotton. The yields range from 15 to 50 bushels per acre, depending upon the character of soil and the culture given. Wet cultivation of rice is practiced on flats which may be irrigated from ponds or upland reservoirs; in river swamps, where water can be conducted from above by canals; and on tidal flats so situated that they can be flooded with fresh water at high tide. These are diked against the tide and drained by flood gates. Fertilization is unnecessary on these lands. Owing to the soft condition of the ground after flooding, horse-drawn implements can be used only to a very small extent, although drills and mowers can be employed. The prevailingly low yields of rice are due to the fact that much of the crop is planted in upland areas or in fields that are not properly irrigated.

Improved labor-saving machinery is used only on a few farms owned by the most prosperous farmers or by companies. The buildings on most of the farms are small, as the system of farming followed does not call for barns of large capacity. The work stock consists almost entirely of mules.

No systematic rotation of crops is followed. The general practice is to devote as much well-drained land to cotton as possible, and to put a sufficient acreage in corn to feed the work stock and fatten the hogs. When the crop is short corn is purchased from outside points, and imported corn is largely used to feed the work stock in the lumber camps. The area in oats is small for the reason that this grain is grown as a winter crop and is cut too late to be followed by cotton or corn the same year. Cowpeas are sometimes seeded after oats, which with the volunteer growth of crabgrass are cut for hay. The truck farmers on Daniels Island plant an early crop of Irish potatoes, cabbage, or cucumbers, and follow these with cotton, corn, or sweet potatoes.

Commercial fertilizers are ordinarily used for nearly all crops, especially cotton, but not to the extent that prevails in other cotton-growing sections of the State. In 1899 the total amount expended in the county for fertilizer, according to the census, was $54,350; by 1909 this had increased to $118,293. In the latter year 55.6 per cent of the farms reported the use of fertilizer. It seems that the percentage of farms using fertilizer and the quantity purchased steadily increased until the recent rise in prices caused by the scarcity of certain ingredients. The high cost of fertilizers at present almost prohibits their use by the poorer class of farmers. The fertilizers

used were mainly 8–2–2,[1] 8–3–3, and 8–4–4 mixtures. Some phosphoric acid, kainit, and cottonseed meal were used, both separately and mixed in varying proportions. The home mixing of fertilizers has received little attention. Some nitrate of soda has been used as a top-dressing. Most farmers purchase one grade of fertilizer for use on all crops. Since commercial fertilizers became scarce and expensive the smaller quantities used are low in potash content, analyzing 8–3–2 or 8–3–1, and in some cases contain no potash whatever. Many substitutes are used, such as muck, decayed organic matter from swamps, pine needles, leaves, and ashes from hardwood trees. Little lime is used. Marl has been applied in small quantities in the past, but very little is used at the present time. Little use is made of green manure. Cowpeas are the only legume grown, and only a small total acreage is devoted to this crop. Only in a few instances is stable manure used, except on garden patches.

According to the census 42 per cent of the farms employed hired labor in 1909, with a total expenditure of $157,442, or an average of $113.21 for each farm. Farm labor consists almost entirely of negroes. On one large plantation several families of Japanese are employed. Negro labor is plentiful. Wages range from 50 cents to $1 a day. In the more thickly populated sections men get 75 cents to $1 a day and boys and women 50 to 60 cents. In the sparsely settled communities 60 to 75 cents a day is the average wage of a farm laborer. Monthly wages range from $15 to $20. Cotton pickers are paid at the rate of 50 cents a hundredweight. Most of the farm labor is performed by the owner or renter and his family.

The average size of farms as reported by the 1910 census is 99.1 acres. Only 44 per cent of the area of the county is reported in farms, the remainder being held by timber or phosphate companies or as game preserves. On the average, one-fourth the land in farms is improved. The total number of farms is reported as 3,518, of which 54 include more than 1,000 acres. On the larger farms the proportion of land under cultivation is small. According to the census about three-fourths of the farms range between 3 and 50 acres in size, each tenancy being tabulated as a "farm."

Owners operate 67.7 per cent of all farms, tenants 32.2 per cent, and managers 0.1 per cent. Most of the farms operated by tenants are rented on a cash basis, the ordinary rent ranging from $1 to $10 an acre, depending upon the location and purpose for which the land is used. General farming land away from the towns rents for $3 to $3.50 an acre. Where land is rented on a share basis the owner usually furnishes one-half the seed and fertilizer and receives one-

[1] Formulas are stated in the order of phosphoric acid, nitrogen, and potash.

half the crop. In many cases circumstances render it necessary for the owner to furnish stock, implements, fertilizer, and seed, and in these cases he receives a larger proportion of the crop.

The price of land varies widely, ranging from $1 to $100 an acre. The average improved farm land sells for $25 to $45 an acre.

SOILS.

Berkeley County lies entirely within the Coastal Plain region. The soils are sedimentary in origin, being derived from unconsolidated beds of sand and clay, the material of which was washed from the region of the Appalachian Mountains and Piedmont Plateau and deposited on the floor of a sea that once covered this general region. Since the final elevation of the land above sea level changes have taken place in the original surface. Streams have cut broad channels and deposited considerable reworked material in the terrace and bottom lands. Sandy areas have been affected more or less by wind action, and many changes in the soil material have resulted from leaching and from the accumulation of organic matter. Changes are traceable also directly to chemical action, as in oxidation and deoxidation, and these have varied from place to place with different conditions, especially in drainage.

A line running in a general northeast and southwest direction through the county, passing near Lincolnville, Strawberry, Cordesville, and Wren roughly separates a region of coarse-textured from a region of fine-textured soils. The coarse soils occur to the north, while the fine-textured soils, although developed in large areas to the north, predominate south of this line. A belt of fine sand soils extends along the southeastern boundary of the county below a line drawn roughly through Midland Park and Honeyhill. A belt of sandy loam material lies between Pinopolis and a point near Summerville.

The bottom-land soils along the Santee River are derived directly from the Piedmont Plateau and Appalachian Mountain regions, while the bottom-land material along the other streams is derived from local wash. Along the larger streams in the southern part of the county the bottom land is affected by tide water and represents Tidal marsh. The water is saline to variable degrees.

Along the river bluffs the land is more rolling than elsewhere and is well drained and well aerated. Back from the bluff the surface is more nearly level and extensive areas of "bay" land and large savannas are encountered. The bays in general are covered with a dense growth of bay, gallberry, and moss, and usually have water standing on the surface a part of the year. The savannas are of two kinds, some consisting of fairly high lying, open pine woods

and known as "pine savannas," and others lower land covered with water and a growth of grasses, known as "open savannas." Many of these savannas are encountered in the broad areas referred to as bays. The large bays in the northern part of the county, viz, Catons, Black Toms, Ferguson, Bulltown, and Walleye Bays, are fairly high lying and include predominantly light soil material such as sands and sandy loams. The Hellhole Bay region is low and the soil is predominantly heavy.

The soils of Berkeley County may be grouped in two general classes: Upland soils, of sedimentary origin, derived from beds of unconsolidated sands and clays, and first-bottom, or alluvial soils, deposited within the present flood plains of the streams. For convenience of classification and mapping, soils are grouped into series on the basis of origin, color, and other general characteristics. The series is subdivided into types on a basis of texture. The type is the unit in mapping. The upland soils are included in the Norfolk, Ruston, Coxville, and Portsmouth series and the first-bottom soils in the Johnston and Congaree series and Tidal marsh.

The types of the Norfolk series have gray surface soils and yellow, friable subsoils. The topography ranges from gently rolling to undulating, giving good drainage and aeration. The Norfolk sand, fine sand, sandy loam, fine sandy loam, and very fine sandy loam are mapped in this survey.

The Ruston series includes brownish-gray surface soils and yellowish-red to dull-red, compact but friable subsoils. The surface is gently rolling, which insures good drainage and thorough aeration. The Ruston sandy loam, fine sandy loam, and very fine sandy loam types are mapped in Berkeley County.

The surface soils of the Coxville series are dark gray to gray, and the subsoil mottled drab and yellow, compact, plastic, and tenacious clay. The topography is invariably flat to gently undulating and drainage imperfect. The Coxville sandy loam, fine sandy loam, very fine sandy loam, and silt loam are mapped in this county. The sandy loam and fine sandy loam each include a well-drained phase.

The members of the Portsmouth series have dark-gray to black surface soils and mottled gray, drab, and yellow subsoils. The surface soil contains a considerable accumulation of organic matter. The subsoil is not very compact, but is plastic and sticky and is usually water-logged below a depth of 24 inches. The surface is level. In this county the Portsmouth fine sand, sandy loam, fine sandy loam, silt loam, and clay loam are mapped.

The Johnston series includes types having black, loamy surface soils and gray or steel-gray subsoils, mottled with brown. The subsoil usually is plastic and sticky, but it is not very compact except in the types of heavier texture. These soils occupy the first bottoms

along streams of local origin. The topography is level and the drainage poor. The Johnston loam and clay loam are mapped in Berkeley County.

The types in the Congaree series are characterized by brown surface soils and yellowish-brown to brown subsoils. Neither the surface soil nor the subsoil is very compact, even in the heavier types; they are decidedly loamy in structure. The silty clay is the only type of this series encountered in Berkeley County. It is developed in the first bottoms along the Santee River and is subject to overflow.

Tidal marsh includes areas periodically covered with tidewater.

In the following pages of this report the various soils are described in detail and their relation to agriculture is discussed. The distribution of the soils is shown on the accompanying map and the actual and relative extent of each type is shown in the table following:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Coxville fine sandy loam	128,320	18.4	Tidal marsh	33,280	4.2
Well-drained phase	18,176		Portsmouth clay loam	27,648	3.5
Norfolk fine sandy loam	91,840	11.9	Coxville silt loam	23,808	3.0
Deep phase	2,176		Portsmouth fine sand	20,736	2.6
Johnston loam	62,336	7.9	Norfolk sand	17,344	2.2
Portsmouth fine sandy loam	58,304	7.4	Ruston sandy loam	15,040	1.9
Norfolk fine sand	57,600	7.3	Johnston clay loam	13,632	1.7
Coxville sandy loam	39,808	5.3	Ruston very fine sandy loam	10,496	1.3
Well-drained phase	2,304		Portsmouth sandy loam	10,304	1.3
Norfolk sandy loam	40,960	5.2	Portsmouth silt loam	2,496	.3
Ruston fine sandy loam	40,000	5.0	Norfolk very fine sandy loam	2,368	.3
Coxville very fine sandy loam	37,760	4.8			
Congaree silty clay	35,584	4.5	Total	792,320	

NORFOLK SAND.

The surface soil of the Norfolk sand to a depth of about 6 to 8 inches is a gray, incoherent sand. This passes into a subsoil of yellow, incoherent sand, which extends to depths of 3 to 5 feet before grading into a loamy sand and then into a yellow sandy clay. In a few places the loamy sand is encountered in the lower part of the 3-foot soil section. Even in forested areas the surface soil is fairly light gray in color.

In some small areas the soil varies from the typical, being loamy in character and resembling the Ruston loamy sand. These areas have a gray sand surface soil about 8 inches deep, grading into a yellowish-brown loamy sand. Both surface soil and subsoil are fairly loose and open in structure. The sandy clay substratum is not encountered above the depth of 4 feet, and lies about 6 feet below the surface in

most places. This soil occurs along Biggin Swamp opposite the Biggin Churchyard. It is used for the same crops as the typical Norfolk sand and gives about the same yields.

The Norfolk sand occurs in scattered areas throughout the northern two-thirds of the county. The largest areas are near Bethera, extending along the Seaboard Air Line Railway for distances of several miles. Small detached areas occur east of St. Stephen along the Santee River bluff, and irregularly shaped bodies are mapped along the borders of Pigeon and Mosquito Bays. Smaller, rounded or oval-shaped areas of this type occur within areas of the Norfolk sandy loam.

The type occupies ridges lying higher than the surrounding types and running parallel to the coast or to the streams. The topography is undulating to gently rolling or ridgy, insuring ample surface drainage. The porous nature of the surface soil, subsoil, and substratum render the percolation of moisture excessive, and the soil is droughty, crops suffering after even short periods of dry weather.

Probably less than 5 per cent of the Norfolk sand area is under cultivation. The original forest growth consists of longleaf pine, scrub oak, and blackjack oak. Most of the longleaf pine has been cut, leaving oak as the dominant growth. Cotton is the most important crop. Corn, oats, and rye are grown on a small scale, and small patches are devoted to sweet potatoes. Cotton yields one-fourth to one-half bale per acre, the yield depending upon the season and the kind and quantity of fertilizer applied. Corn when fertilized yields 15 to 20 bushels per acre, while 10 bushels is considered a fair yield where no fertilizer is used. Sweet potatoes give good yields.

Crops as a rule are planted in a deep furrow or low bed well below the level of the middles, in order to have the moisture conditions as good as possible. The soil may be plowed immediately after rains, and light implements are sufficient for thorough cultivation.

Little or no organic matter is incorporated in the soil. Even when prices for commercial fertilizer were normal little was used on this land. Cotton is about the only crop fertilized. It is given ordinarily an acreage application of about 300 to 600 pounds of an 8–3–3 or 8–2–2 mixture. With present prices the quantity of fertilizer used is negligible, and some areas of this type have been abandoned because of the expense of proper fertilizer applications.

The land is held at prices ranging from $2 to $20 an acre, the price depending mainly upon location and improvement. The average value of the unimproved land is about $5 an acre.

The Norfolk sand is naturally a droughty soil and in need of organic matter. An increase in the organic-matter content improves the moisture-holding capacity of the type. Growing legumes and turning under cover crops are beneficial.

Corn burns in dry seasons and for this reason is not especially adapted to this soil. Fair yields, however, are obtained when the Williamson method is followed. Cotton probably is better adapted to this soil than any other general farm crop grown. Such legumes as cowpeas, soy beans, and velvet beans are fairly well suited to the type. Early truck crops, such as cucumbers, potatoes, and melons probably would give fairly good results with the incorporation of organic matter and heavy fertilization. Cowpeas and crabgrass should give fairly good yields of hay on this type.

NORFOLK FINE SAND.

The surface soil of the Norfolk fine sand is a gray, incoherent fine sand, about 6 to 10 inches deep. This grades into a subsoil of pale-yellow, slightly compact fine sand, which extends to depths of 36 inches or more. A yellow fine sandy clay substratum is encountered usually at a depth of about 4 feet, but in many places this lies at least 10 feet below the surface.

A broad belt of this soil extends along the entire Charleston County line, except where interrupted by the valley of Cooper River. Small areas are scattered over other parts of the county. The type occurs on ridges lying well above the level of the surrounding soils.

The topography is gently rolling to undulating. Drainage is excessive and crops suffer in periods of dry weather.

Possibly 40 per cent of the type is cleared and under cultivation. The remainder is forested with longleaf pine and scrub oak. There is little underbrush, and a very sparse growth of grass occurring in scattered bunches.

Cotton occupies one-half the cultivated acreage and corn about one-fourth. Oats, rye, cowpeas, and vegetables are grown in patches. The yields of cotton range from about one-fourth to one-half bale per acre. Fertilizer is always used in growing cotton on this soil, and sometimes for corn. Where corn is grown under a modification of the Williamson method, the yields range from 25 to 35 bushels per acre. Where little or no fertilizer is used, as is the case on many of the tenant farms, the average yield is only about 10 bushels per acre. Nearly all the vegetables common to this section of the country are grown in gardens, but trucking is carried on in only a few places, where sweet potatoes and Irish potatoes are grown. Heavy applications of fertilizer are used in growing truck crops. Irish potatoes yield about 100 to 150 bushels per acre, and sweet potatoes 150 to 250 bushels. Peaches, pears, plums, and Scuppernong grapes are produced for home use, and seem to do well. Little attention, however, is given to fruit growing. Cowpeas are the only legume grown, and this crop occupies only a small acreage.

It gives a fairly good yield of hay. This soil is not very well suited to grasses and it is used to only a small extent for pasture.

Land of the Norfolk fine sand type is valued at $10 to $25 an acre, the price depending upon the location.

The Norfolk fine sand is not a strong soil, but it responds readily to fertilizers and animal or green manures. Its moisture-holding capacity is moderate under normal conditions, but may be increased by turning under organic matter. The soil is easily tilled, requiring only a light draft, and it can safely be cultivated under a wide range of moisture conditions.

NORFOLK SANDY LOAM.

The soil of the Norfolk sandy loam to a depth of 4 to 8 inches is a gray, light loamy sand, fairly loose and open in structure, passing into a pale-yellow, slightly coherent, loamy sand or light sandy loam. The true subsoil is encountered at depths of 12 to 24 inches and consists of a yellow, friable sandy clay. In places the depth to the sandy clay subsoil exceeds 24 inches and in a few places it is not reached within 30 inches of the surface. The substratum is in most places a compact sandy clay of the same general nature as the subsoil, but where this type is associated with the Coxville soils the substratum is usually similar to the Coxville subsoil.

The Norfolk sandy loam occurs in scattered areas throughout the northern half of the county. The largest areas are encountered on a well-defined ridge extending from Pine Ridge School to Moncks Corner; in a belt extending from Pineville to Russellville and thence to the head of Walker Swamp; and in another belt reaching from the Orangeburg County line to the western margin of Bulltown Bay, skirting the northern border of Ferguson Bay.

This soil occupies well-drained upland areas lying above the general level of the surrounding areas, except those occupied by the Norfolk sand. The topography is gently rolling to undulating. In the more nearly level areas the surface soil is slightly darker as a rule and there is a tendency toward red mottlings in the lower part of the soil section. Both surface drainage and underdrainage are good, but artificial drainage is beneficial in the lower lying, more nearly level areas.

The Norfolk sandy loam is one of the most extensively farmed types in the county. Possibly 60 per cent of the land is cleared and under cultivation, and about 80 per cent of the remainder is cut-over land. The original timber growth consisted principally of longleaf pine and scattered scrub oak. Some areas along the Santee bluffs are timbered with shortleaf pine. The underbrush is not very thick, and most of the type occurs as open pine woods, with a growth of wire grass.

Cotton, corn, and oats are the most important crops, cotton covering by far the largest acreage. Minor crops grown are rye, cowpeas, sweet potatoes, sugar cane, and vegetables. Very little stock is kept.

Cotton yields an average of one-third to three-fourths bale per acre. On the best improved areas of the type, with good fertilization, the yield is sometimes as high as 1 bale per acre. Corn yields about 15 to 25 bushels per acre. Where no fertilizer is used the yield is about 10 to 15 bushels, while under the Williamson plan yields range from 35 to 40 bushels per acre.

In preparing the seed bed the soil usually is turned to a shallow depth in the spring. In some cases the corn or cotton beds are laid off on the old middles. Cotton is planted well below the level of the middle, in order to have the best moisture conditions possible. Corn is planted in a still deeper furrow than cotton.

In normal times more fertilizer is used on this type than on any other in the county, with the possible exception of the Norfolk fine sandy loam. An acreage application of 500 to 1.000 pounds of an 8–3–3 or 8–2–2 grade is made for cotton.

This type may be improved by turning under green-manure crops to increase the organic matter and nitrogen content. It is a good general-farming type, well suited to cotton. It is also well adapted to truck-crop production, and in areas near transportation lines can be profitably utilized for this purpose.

NORFOLK FINE SANDY LOAM.

The soil of the Norfolk fine sandy loam to a depth of 8 to 14 inches is a gray loamy fine sand to light fine sandy loam. The surface soil usually grades into the subsoil through a 4 to 8 inch layer of yellow, light fine sandy loam. The subsoil proper is a yellow fine sandy clay, slightly compact and friable in structure. The type is fairly uniform, but occasionally in the deep subsoil faint mottlings occur which resemble those in the Coxville soils, though they are less numerous. Upon Daniels Island the surface soil has a slight brownish cast. The substratum of the type in most cases consists of Coxville material.

The Norfolk fine sandy loam occurs in irregular areas throughout the county. The largest areas lie in the vicinity of Lincolnville, Ladson, Pinopolis, and St. Stephen, between Ararat and Red Bank Landing, and to the south and west of Bulltown Bay. The type occurs on ridges standing well above the surrounding soils. It is developed in many places along the bluff line of the swamps, but more often there is a strip of Ruston soil between this type and the swamp. The topography ranges from undulating to gently rolling, giving good surface drainage. The friable nature of the subsoil and substratum allow free underdrainage.

The forest growth on this soil consists predominantly of longleaf pine, with scattered blackjack oak, white oak, live oak, sweet gum, and dogwood trees. The undergrowth usually is sparse. The land is known locally as open pine woods. It supports a fair growth of native grasses, largely wire grass.

The Norfolk fine sandy loam is one of the most important agricultural soils in the county. Probably 50 or 60 per cent of the land is under cultivation, and the type includes a large part of the improved farm lands of the county. The principal crops produced are cotton, corn, and oats. Cowpeas, sorghum, and sugar cane are grown to a small extent. Irish potatoes, sweet potatoes, cabbage, cucumbers, beans, tomatoes, turnips, beets, lettuce, kale, and onions are the vegetables commonly grown, the first four named being produced for market. The type probably has more home orchards than any other soil in the county, but no commercial orchards are maintained. Peaches predominate, followed by pears, summer apples, plums, grapes, and figs. There are a few pecan trees, which seem to do well. Very little stock is kept. Most of the soil of this type lying within the "open-range" country is fenced and cultivated. There are four dairy farms on this type. Much of the feed used, including corn, roughage, and oats, is produced on the type, while some of the adjoining poorly drained areas are used for pasture land. In cultivating corn both the old method and a modification of the Williamson plan are used. The yields range from 20 to 50 bushels per acre, depending upon the quantity of fertilizer used, the cultural methods pursued, and the nature of the season. In dry years the yields usually are very low. Cotton produces about one-half to one bale per acre, the yields varying with the quantity of fertilizer used. Oats yield about 20 to 30 bushels, Irish potatoes 100 to 250 bushels, and sweet potatoes 150 to 250 bushels per acre.

This soil does not require heavy draft for plowing, and as a rule it is plowed deeper than any other soil in the county. It can be stirred very soon after rains without danger of clodding. It is easily improved and maintained in a productive condition. Fertilizer is used more extensively than upon any other soil in the county. On account of the ease with which the soil is handled, it is held in high esteem. Land values range from $25 to $100 an acre, exclusive of timber, the selling price varying with the condition of the land and the distance from railroads or other means of transportation.

The productiveness of this soil can best be maintained by turning under green crops, growing legumes, and using commercial fertilizer. It is adapted to a wide range of crops which are not grown or which receive but little attention but are produced on this soil successfully

in other counties of this and adjoining States. Tobacco is grown successfully in adjoining counties to the north.

Norfolk fine sandy loam, deep phase.—The deep phase of the Norfolk fine sandy loam includes areas in which the yellow, friable fine sandy clay subsoil is encountered below a depth of 24 inches. The surface and subsurface material is a loamy fine sand, fairly loose and open in structure. The topography is slightly more rolling than that of the typical soil, and the drainage is excessive. The phase is suited to the same crops as the typical soil, but it is not quite so productive. It is, however, a stronger soil than the Norfolk fine sand, and its productiveness can more easily be maintained. The deep phase occurs on ridges or in other situations slightly elevated above the remainder of the type. The largest areas occur east of Good Shepherd Church, west of Bethera, and east of Lincolnville. The forest growth is essentially the same as that on the main type, except that scrub oak and blackjack oak are more abundant. The methods of handling the soil are practically the same as in the case of the typical Norfolk fine sandy loam.

NORFOLK VERY FINE SANDY LOAM.

The surface soil of the Norfolk very fine sandy loam is a gray very fine sandy loam about 8 to 10 inches deep, grading into a pale-yellow very fine sandy loam. The surface soil is loamy and friable. The subsoil is encountered at depths of 12 to 14 inches, and consists of a bright-yellow, friable, compact very fine sandy clay to clay, containing a few red mottlings in the lower part of the 3-foot profile. This soil seems to be an intermediate type between the Coxville and Ruston very fine sandy loams, the Ruston representing a more advanced stage of oxidation.

The Norfolk very fine sandy loam is not very extensive. The largest areas occur near Bonneau, and a few scattered areas are mapped south of Mount Holly. The type occupies the bluffs of swamps or slightly elevated ridges associated with the Coxville very fine sandy loam. The topography is gently undulating and the surface drainage is fairly good. The substratum, however, is of Coxville material and the underdrainage consequently is sluggish.

About two-thirds of the total area of this soil is cleared and in cultivated crops. The native forest growth consists of longleaf pine, with a scattered growth of dogwood and other hardwood trees. There is little underbrush, the surface being covered with a comparatively thick growth of grass. The forested land is utilized as pasture.

Cotton, corn, and oats are the principal crops, ranking about the same in importance as on the fine sandy loam. This soil is slightly

stronger than the other members of the Norfolk series, but it is harder to handle and hence is not so highly esteemed. Where properly farmed, however, it is more productive. Cotton yields about one-third to 1 bale per acre, corn 15 to 35 bushels, and oats 25 to 35 bushels. Sweet potatoes and Irish potatoes and other vegetables are grown for home use, and with proper cultivation make good yields. Cowpeas, sugar cane, and sorghum are grown in patches. A small number of cattle, hogs, and goats graze on the open range on this soil.

The cultural methods on this soil are essentially the same as those practiced on the fine sandy loam. The selling price of the land ranges from $15 to $40 an acre.

This soil is fairly heavy. It can not be cultivated safely soon after rain, as it is inclined to puddle. With the addition of organic matter and the use of lime it produces good crops of cotton, corn, and oats with small applications of commercial fertilizer. It is not quite so well suited to cowpeas as are the other Norfolk soils, but is better adapted to such crops as oats, wheat, and grass. This soil in certain other sections of the State has been brought to a very high state of cultivation. It is considered an excellent type for general farming, stock raising, and dairying. Fruits, including peaches, plums, pears, figs, grapes, and strawberries, are grown successfully, and the type is well suited to such legumes as vetch and soy beans. Good yields of an excellent grade of bright tobacco are produced in Horry County, S. C., and Irish potatoes are grown successfully as an early truck crop in other parts of the State on this type.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a gray to brownish-gray loamy sand, passing at a depth of 6 or 8 inches into a yellowish, friable sandy loam which extends to depths of 12 to 20 inches. The subsoil consists of a reddish-yellow, yellowish-red, or dull-red, friable sandy clay, which is compact in the lower part of the 3-foot section. The substratum consists of a plastic sandy clay, often mottled with red.

The Ruston sandy loam occurs on ridges or escarpments along swamps. Its topography is undulating to rolling, giving good natural drainage. The largest areas of the type occur along the bluff of the Santee River Swamp, mainly in the vicinity of Pineville and Wren. Scattered areas are encountered in the northern half of the county.

The natural forest growth on the type consists of longleaf pine, with scattered shortleaf pine in places, and oak, hickory, and dogwood. A large part of the type is under cultivation. Cotton is grown much more extensively than any other crop. Corn, oats, and cowpeas are next in importance, ranking in the order named.

The cotton acreage is probably equivalent to the combined acreage of these three crops. Sweet potatoes, sorghum, and sugar cane are grown in patches. Peaches, pears, plums, grapes, and figs are grown on a small scale around most of the farm homes, and practically all the vegetables common to this section of the State are grown in farm gardens.

Cotton yields three-fourths to 1 bale per acre when fertilized, and averages about one-half bale per acre where no fertilizer is used. Corn yields 20 to 40 bushels per acre when grown under a modification of the Williamson plan. Oats yield 25 to 35 bushels per acre. Cowpeas and crab grass make a heavy yield of hay.

Fertilizer is used on practically all the crops grown. Cotton is treated with an acreage application of 300 to 800 pounds of an 8–3–3 or 8–2–2 mixture, and corn with 200 to 400 pounds of similar mixtures supplemented by 100 pounds of nitrate of soda. In some cases an acreage application of 250 pounds of acid phosphate is made. Small applications of acid phosphate, ranging from 200 to 250 pounds per acre, are made for oats, with 75 to 150 pounds of nitrate of soda applied as a top-dressing in the spring. Compost, woods earth, leaves, and stable manure also are used for fertilizing.

The methods of handling this soil are practically the same as in the case of the other well-drained, well-aerated soils. The selling price of the land is fairly high, practically all the type ranging in value from $30 to $60 an acre.

The same means of improvement are applicable to the Ruston sandy loam as to the Norfolk sandy loam and the Ruston fine sandy loam.

RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam is a gray to grayish-brown loamy fine sand or light fine sandy loam, grading at a depth of about 4 to 8 inches into a yellowish-gray or pale-yellow, light fine sandy loam which continues to a depth of 10 to 24 inches. The subsoil where typically developed is a yellowish-red fine sandy clay, which is fairly compact but friable. The type is intermediate between the Orangeburg and Norfolk soils in both color and structure.

Where this soil is closely associated with the Coxville series, occurring in a strip between the Coxville soils and swamp areas or on a ridge traversing these types, the deep subsoil, below 24 inches, is of the same general character as the tough, plastic clay of the Coxville types, with red and yellow mottlings. The Ruston fine sandy loam here seems to represent a gradation between the Norfolk and Coxville soils. In a few areas along the escarpments of Goose Creek and the Cooper River the subsoil is deeper red in color and more friable than typical, resembling the Orangeburg subsoil.

The Ruston fine sandy loam occurs in well-drained, well-aerated upland areas on ridges or escarpments along the swamps.

The topography is gently undulating to rolling or sloping. The surface drainage consequently is good, and the type lies high enough to insure good underdrainage and thorough aeration.

The Ruston fine sandy loam occurs in scattered areas in nearly all parts of the county, but is most extensive in the northern, eastern, and southern parts, along the bluffs of the Santee and Cooper Rivers, and the tributaries of the latter stream from the west.

Probably as much as 50 to 60 per cent of this type is cleared and under cultivation. The original forest growth consists of longleaf pine, some shortleaf pine, and a scattering of hardwood trees, mainly oak, hickory, dogwood, and sweet gum.

Cotton is the principal crop. Corn ranks next in importance and oats third. Oats probably occupy a larger acreage on this soil than on any other in the county, but this grain is much less extensively grown than corn, and probably occupies less than one-fourth the acreage of cotton. Cowpeas, sugar cane, sweet potatoes, and vegetables are minor crops. Some peaches, plums, grapes, and figs are grown for home use. Irish potatoes and cabbage are grown to some extent on this soil on Daniels Island.

Cotton yields one-half to 1 bale per acre, the returns varying with the fertilization and the nature of the season. Corn yields about 25 to 40 bushels per acre where fertilized. Without fertilizers the yields usually are somewhat less than 20 bushels per acre. Oats yield 25 to 30 bushels per acre. This crop is practically always fertilized. Cowpeas and crab grass produce heavy yields of hay.

Fertilizer is used with most crops on this soil. The usual acreage application for cotton is 400 to 800 pounds of an 8–3–3 or 8–2–2 mixture, for corn 200 to 350 pounds, and for oats 200 to 250 pounds of the same mixtures, 75 to 150 pounds of nitrate of soda also being applied to the oats in the spring.

The price of land of this type ranges from $20 to $100 an acre, according to the location.

This soil as a rule is not sour, but if cover crops are turned under it is a good practice to use lime. The applications need not exceed 400 to 500 pounds per acre. In handling this soil care should be taken not to plow or disturb the ground too soon after a rain, as there is danger of puddling the subsurface soil. The type as a rule is deficient in organic matter, as is indicated by the light-gray or ashy color of the surface soil, and cover crops should be turned under to increase the supply.

RUSTON VERY FINE SANDY LOAM.

The surface soil of the Ruston very fine sandy loam is a gray very fine sandy loam, light and loamy in texture and 4 to 8 inches deep. This passes into a pale-yellow very fine sandy loam, which is slightly heavier than the surface material, but friable. The subsoil is encountered at depths of 8 to 12 inches and is a yellowish-red to dull-red, compact but friable very fine sandy clay. In places it shows yellowish mottlings below 30 inches.

This soil occupies ridges or bluffs along the swamps. It has a rolling to gently undulating topography, which insures ample drainage. The type is mapped in scattered areas between Strawberry Road and Fosters Creek. Comparatively large areas occur north of Bonneau, and around Nigger Head Branch and Alvin, in the eastern part of the county.

This soil is not farmed as extensively as the fine sandy loam. It is comparatively shallow and more difficult to handle, and the lighter soils are preferred. The native forest growth consists mainly of longleaf pine, with scattered sweet gum, hickory, and dogwood trees. There is very little underbrush, and the land is covered with a growth of "dropseed" grass, which furnishes fairly good grazing during the spring and summer months.

Cotton is the leading crop, followed by corn and oats. Sweet potatoes, sugar cane, and various vegetables are grown in patches. Cotton yields one-half to three-fourths bale per acre, corn 15 to 35 bushels, and oats 20 to 30 bushels. The equipment and draft animals used on this soil are not adequate for the proper handling of the crops. The plowing usually is shallow, and little or no organic matter is added to the soil. Small quantities of fertilizer are used in growing the staple crops.

This soil is in need of deeper plowing and the addition of organic matter and lime. The crops best suited to the type are cotton, oats, wheat, and cowpeas. In growing the last three crops much of the cultivation necessary in growing cotton is saved, which is a considerable item on soils as difficult to till as this soil. Such truck crops as cabbage and beans, as well as strawberries, would succeed, but the type is not so well suited to the production of early truck as are the lighter soils.

COXVILLE SANDY LOAM.

The surface soil of the Coxville sandy loam consists of a gray to dark-gray sandy loam, about 6 to 8 inches deep, passing into a mottled yellow and gray, friable sandy loam. The subsoil is reached at a depth of 12 to 14 inches and consists of a mottled drab, yellow,

and red sandy clay, compact and somewhat plastic in structure. In many places the red mottling is not very pronounced, but the material usually has the typical Coxville texture.

The Coxville sandy loam occurs in areas scattered over the northern two-thirds of the county. The surface is comparatively level, and as a result drainage is poorly established.

The forest growth consists largely of longleaf pine. Very little of the land is cleared and farmed. The type supports a good growth of grass which furnishes grazing in the spring and early summer.

The selling price of this land ranges from $5 to $20 an acre.

It is necessary to provide artificial drainage before crops can be grown successfully on this type. As a rule the soil is acid, and heavy applications of lime are necessary to obtain the best results. This soil when properly drained is suited to the same crops as its well-drained phase and should be handled under the same general farming methods.

Coxville sandy loam, well-drained phase.—The surface soil of the Coxville sandy loam, well-drained phase, consists of a light-gray to gray sandy loam, to a depth of 6 or 8 inches, where it grades into a pale-yellow, heavy but somewhat friable sandy loam. The subsoil is encountered at a depth of 12 to 16 inches and consists of a mottled gray, yellow, and red, heavy, plastic, and rather compact sandy clay. The red mottling becomes more pronounced below about 24 inches.

The well-drained phase occurs in irregular areas scattered over the northern two-thirds of the county. It is developed largely along the slopes bordering the swamps. The topography is undulating to gently rolling. The surface drainage is fairly good, but the compact substratum prevents the free downward movement of water.

The forest growth on this type consists mainly of longleaf pine, with scattered white oak, dogwood, and other hardwood trees common to the region. Probably about 40 per cent of the land has been cleared and put under cultivation. Cotton, corn, and oats are the leading crops. Cowpeas, sweet potatoes, and sugar cane are grown in small patches. Little live stock is kept.

The yields on this soil are slightly higher than on the well-drained phase of the Coxville fine sandy loam. The same general-farming methods are used as on the Ruston sandy loam and other well-drained, sandy loam upland types. Commercial fertilizer is used with all the principal crops.

The selling price of this land ranges from $15 to $40 an acre.

This soil is greatly improved by increasing the organic-matter content through the application of barnyard manure or green manure. Liming also is beneficial. The soil when properly handled gives

good yields with little fertilization. Clodding results if the land is plowed when too wet.

A variation of this phase is encountered in an area of about 300 acres, situated 1½ to 2 miles southeast of Moncks Corner, where the deep subsoil contains varying proportions of decomposed or partially decomposed marl. The soil for a few inches above the marl and also the soil material intermixed with the marl is drab to yellow in color. This soil seems to be more productive than the remainder of the phase. It produces heavy yields of corn, cowpeas, and crab-grass hay.

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

Mechanical analyses of Coxville sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
242847	Soil	6.2	17.0	8.0	38.0	6.4	18.7	5.9
242848	Subsoil	3.4	12.4	5.8	25.6	4.8	22.1	25.8

COXVILLE FINE SANDY LOAM.

The surface soil of the Coxville fine sandy loam consists of a gray to dark-gray fine sandy loam, which passes at a depth of about 4 to 6 inches into a yellowish-gray to yellow fine sandy loam. The subsoil, encountered at 8 to 12 inches, consists of a mottled gray and yellow, heavy fine sandy clay, containing bright-red mottlings below 20 to 24 inches. It is compact and plastic in structure. In forested areas the soil in the upper few inches is black.

The largest areas of the Coxville fine sandy loam occur in Ferguson Bay, Bulltown Bay, the northern part of Black Toms Bay, and around Bull Head Bay. Smaller areas are scattered through other parts of the county.

The type occupies broad flats having a level to gently undulating topography. Drainage is naturally poor. Some of the low-lying areas along the Cooper River lie only 3 to 5 feet above tide level, and have the appearance of terraces.

The forest growth consists predominantly of longleaf pine, with little or no underbrush. The surface is covered with a growth of "dropseed" grass.

This soil requires artificial drainage before it can be cultivated, and it is not very extensively farmed. Probably less than 10 per cent of it is under cultivation. It consists largely of open pine woods land, which is burned over each season and furnishes fairly good pasturage in the spring and early summer.

Cotton is the leading crop. Corn is next in importance and oats rank third. Cowpeas and crab grass are grown for hay to a small

extent. Cotton yields about one-fourth to one-half bale per acre. Small quantities of fertilizer are generally used on this soil. Corn is not grown under improved methods, very little fertilizer is used, and the yields are relatively low. The yield of peavine and crab grass is moderate. Oats probably average 15 bushels per acre.

Cattle, hogs, and goats graze on this soil on the open range. Owing to its low position, very few farm buildings are found on it.

The price of land of the typical Coxville fine sandy loam ranges from $5 to $20 an acre. Much of the type is held at $10 an acre.

When properly drained and given applications of lime at the rate of 1,500 to 2,000 pounds per acre, this type is about as productive as its well-drained phase. Around Chadbourne, N. C., and Conway, S. C., strawberries are grown successfully on a commercial scale. Cabbage is a successful crop around Meggett, S. C., and in the Monteeth-Minehardt trucking section near Savannah, Ga.

Coxville fine sandy loam, well-drained phase.—The surface soil of the Coxville fine sandy loam, well-drained phase, consists of a gray, light fine sandy loam, about 6 to 8 inches deep, grading into a yellow, friable fine sandy loam which extends to a depth of 12 to 16 inches. The subsoil is a mottled gray, yellow, and red fine sandy clay of stiff and plastic structure. The red mottling is more pronounced and the drab mottlings less in evidence than in the typical soil.

The surface is level to gently rolling, affording fairly good drainage. Much of the phase can be cultivated without artificial drainage. The forest growth consists largely of longleaf pine, with little undergrowth.

Possibly 40 per cent of this land is cleared and under cultivation. Cotton occupies an acreage equal to that of all the other crops combined. Corn is next in importance, followed by oats and cowpeas. Nearly all the vegetables common to this region are grown in home gardens. Fruit, consisting of pears, plums, peaches, and figs is grown only in small orchards. Cattle, goats, and hogs are raised in small numbers.

Yields are slightly higher than on the typical soil. Cotton yields average one-half to three-fourths bale per acre. In exceptional cases, with heavy fertilization, 1 bale per acre is produced. Corn when fertilized yields 25 to 30 bushels per acre. Where no fertilizer is used yields of 15 to 20 bushels per acre are obtained. Oats yield 25 to 35 bushels per acre with the use of 250 pounds of acid phosphate and 75 to 100 pounds of nitrate of soda per acre.

Much of the land of this phase is farmed by tenants, and the farm equipment is inadequate. The total quantity of fertilizer used is small and the farms in general are not well managed.

This soil has a higher value than the main type, selling for $20 to $40 an acre.

Applications of lime will improve the physical condition and correct the acidity of this soil. The addition of organic matter, in the form of manure or compost, and the turning under of cover crops will improve the structure and increase the productiveness.

Strawberries do well on this phase, being grown successfully in North Carolina and in other parts of South Carolina. Cabbage does well, as do also such truck crops as beans, turnips, tomatoes, and beets. The sweet potatoes grown on this soil are better suited for marketing than the "stringy" potatoes produced on sandier soils.

COXVILLE VERY FINE SANDY LOAM.

The surface soil of the Coxville very fine sandy loam consists of a dark-gray very fine sandy loam which grades at a depth of 4 to 6 inches into a light-gray, compact but friable very fine sandy loam. The subsoil, encountered at a depth of 10 to 12 inches, consists of a mottled drab, yellow, and red very fine sandy clay, which is compact, plastic, and tenacious. The red mottling becomes more pronounced in the lower part of the 3-foot section. In poorly drained spots the surface soil to a depth of 4 to 5 inches is dark gray or almost black, and the subsoil shows considerable drab mottling. Where better drainage exists the surface soil is grayer, and the upper part of the subsoil is yellow, resembling that of the Norfolk series. The red mottlings here are brighter than typical.

The Coxville very fine sandy loam occurs in a large area between Back River and Fosters Creek and in areas in the vicinity of Palmerville and Pine Grove School. A smaller area is mapped between Strawberry and Wappoota Creek, and small, detached areas occur throughout the eastern part of the county. The type has a fairly level to gently undulating topography, and is known locally as pine savannas. Practically the entire type is in longleaf-pine forest, with an undergrowth of grass.

This soil requires artificial drainage before crops can be produced. Heavy applications of lime and the incorporation of organic matter are necessary to put the soil in proper physical condition for cultivation. Extreme care must be taken not to cultivate the soil when too wet, as puddling results and the yields show a marked decrease. This soil is adapted to the same general range of crops as the fine sandy loam type.

COXVILLE SILT LOAM.

The surface soil of the Coxville silt loam consists of a dark-gray to black silt loam, passing at a depth of about 4 to 6 inches into a

light-gray silt loam, which extends to a depth of 8 to 12 inches. The subsoil is a mottled gray and yellow, plastic silty clay, containing bright-red mottlings below 20 inches.

The Coxville silt loam is prominently developed in the Hellhole Bay section, and scattered areas occur throughout the county. The type occupies flat to slightly uneven areas, locally known as pine savannas, and has very poor drainage. The forest growth is scant, consisting entirely of longleaf pine, with no underbrush. The surface is covered with grass, which is burned over each season and furnishes good pasturage during the spring and early summer.

Most of this land is in open range and small numbers of cattle, hogs, and goats graze upon it in certain seasons. In late summer the grass dies out and there is little subsistence for stock. None of the land is under cultivation.

The selling price of this type ranges from $5 to $10 an acre.

The Coxville silt loam requires artificial drainage before crops can be grown successfully. In addition organic matter must be added and heavy applications of lime made before good yields can be produced. This soil is best suited to wheat, oats, corn, and grass.

PORTSMOUTH FINE SAND.

The surface soil of the Portsmouth fine sand is a black, loamy, fine sand, ranging in depth from 6 to 10 inches. It has a good content of organic matter. The subsoil consists of a gray fine sand which usually is saturated and in many places resembles quicksand.

This type occurs in large, poorly drained flats or depressions, known locally as bays. The largest areas are in Black Toms Bay, Pigeon Bay, Mosquito Bay, Ocean Bay, and a large bay north of Burtons.

The forest growth consists of loblolly pine, with a thick undergrowth of gallberry and bay. This type is not used for the production of crops. A part of the land is fenced and used for pasture in its native state, while other areas are burned over and grazed as open range.

It is doubtful whether this soil would prove sufficiently productive to warrant improvement of the drainage.

PORTSMOUTH SANDY LOAM.

The surface soil of the Portsmouth sandy loam ranges from dark gray to black, and consists of a slightly compact, friable sandy loam, about 10 to 12 inches deep. The subsoil is a drab-colored, compact, and sticky sandy clay, mottled in places with yellow and brown.

The type occurs in swales between sand ridges and in bays of varying size. Fairly large developments are encountered in the

vicinity of Carns Crossroads and south of Chicora, and small, scattered areas occur in the northern half of the county. The topography is level or only gently sloping, and drainage is poor.

A very small part of the type is cleared and under cultivation. The forest growth consists almost entirely of longleaf pine, with scattered sweet-gum trees. The undergrowth in most places consists of a fairly thick stand of gallberry and bay. Where the undergrowth is sparse the land is covered with wire grass.

Cotton, corn, and oats are about the only crops grown, and these occupy only a small acreage. Much of the type is used as pasture land for cattle, hogs, and goats.

The selling price of land of this type is not high, ranging from about $5 to $25 an acre.

Where properly drained this soil is capable of producing good yields of cotton, corn, oats, sorghum, and hay. Cabbage, beans, strawberries, tomatoes, lettuce, onions, and beets are grown successfully on this type in certain sections of the southern Coastal Plain. It is not so well adapted to legumes as the naturally better drained soils. Liming is needed to correct acidity.

PORTSMOUTH FINE SANDY LOAM.

The Portsmouth fine sandy loam as typically developed has a black, mellow, fine sandy loam surface soil about 8 to 10 inches deep, which is underlain by a subsurface stratum several inches in thickness of light-gray, sticky fine sandy loam. The subsoil consists of a gray, compact, and decidedly sticky fine sandy clay, showing drab and yellow mottlings.

Several variations of the type occur, differing in topography and forest growth. In places the type occupies saucerlike depressions or small bays in areas of the Norfolk fine sandy loam. In such places the soil is uniformly black to a depth of about 10 inches, and there is very little yellow mottling in the subsoil. The forest growth in these small bay areas consists almost entirely of cypress and black gum, with a fringe of gallberry and bay. The center of the area usually is inundated and without undergrowth.

In the northern part of the county long, narrow, irregularly outlined areas or broad, oval-shaped depressions, about stream heads, are mapped, in which the black soil layer is shallow and the yellow mottling in the subsoil very pronounced. The natural growth is mainly pine, with a scattering of sweet gum or black gum, and an undergrowth of gallberry and bay.

Another variation consists of long, narrow strips about the margins of swamps, occupying the same relative position as the Plummer soils. The type here includes patches of the Plummer fine sandy loam, which have a dark-gray surface soil and a gray subsoil, as well as spots

in which the subsoil contains mottling typical of the Coxville soils. The surface is sloping, but the soil receives seepage water from the higher lying types. The forest growth consists of longleaf pine and sweet gum, with an abundant undergrowth of gallberry and broom sedge in places, and numerous pitcher plants in the open-woods areas. This sloping variation is developed about the margins of Black Toms and Ferguson Bays and on the slopes along the upper courses of Wassamasaw and Sawmill Branch, and around Lincolnville.

In a comparatively large area of this type in the lower end of Black Toms Bay the surface soil is typical, but the subsoil is much lighter in texture than the average for the type.

The typical Portsmouth fine sandy loam occurs mainly in large bays, such as Black Toms Bay, Catons Bay, Tupelo Bay, Bulltown Bay, and in small bays scattered over the northern half of the county. The topography is level and drainage is very poor. The forest growth consists of longleaf and loblolly pine, with an undergrowth of gallberry and bay.

Very little of this type is under cultivation. Where farmed it usually is devoted to oats or corn. Oats yield 20 to 40 bushels and corn 15 to 35 bushels per acre. Fertilizer is generally used. Acid phosphate is applied at the rate of 200 to 250 pounds per acre and nitrate of soda in some cases is used as a top-dressing.

Drainage is not thorough enough for the best results on this soil. The type is largely open range, and cattle, hogs, and goats graze upon it when the grass on the higher lying soils fails. Much of the land outside the range is fenced and used for pasture. In its native condition this type makes good pasture land for hogs. With thorough drainage and liming it is capable of producing good yields of most of the crops grown in this region.

The selling price of this land ranges from $5 to $25 an acre, depending mainly upon the location.

This soil is best suited to such general farm crops as oats, corn, and sorghum and to such truck crops as cabbage, onions, cucumbers, lettuce, and strawberries. Even with good drainage the soil holds too much water in wet seasons for crops such as cotton, tobacco, and cowpeas, which require a well-aerated soil.

PORTSMOUTH SILT LOAM.

The surface soil of the Portsmouth silt loam, extending to a depth of 8 to 10 inches, is a black, mellow silt loam, carrying a relatively high percentage of very fine sand and a large percentage of organic matter. The subsoil is a gray or mottled gray, yellow, and brown sticky, heavy silt loam, passing within a few inches below the surface soil into a mottled gray and yellow plastic silty clay.

This type occurs in fairly large areas east of Mudville School along the State road, to the west of Pinopolis, north of Barrow School in the Black Toms Bay section, and north of Eadytown.

The surface is flat and the type is very poorly drained. It is not used for crops and supports a dense growth of cypress, black gum, and pine, with an undergrowth of bay. The type either is in open range or is fenced and used as pasture land.

The price of this land is about $10 to $20 an acre.

A small area of this type is included in the Clemson Experiment Farm in the adjoining county of Dorchester and has been cleared and under cultivation for about 6 years. The land has been well tiled and treated with about 2,000 pounds of marl per acre. This process has changed the color of the surface soil to gray or dark gray and has caused the yellow mottling in the subsoil to be more pronounced. While the soil remains somewhat compact and plastic, it is less sticky than typical. Heavy yields of corn, oats, and cowpeas and crab-grass hay have been obtained and cotton, millet, sorghum, and soy beans have been grown successfully with the use of fertilizer.[1] The type seems best suited to oats.

PORTSMOUTH CLAY LOAM.

The surface soil of the typical Portsmouth clay loam consists of a dark-gray to black, somewhat compact and plastic clay loam, about 6 to 10 inches deep. The subsoil is a mottled yellow, drab, and brown, compact, sticky clay loam. In the lower part of the 3-foot soil section the color is lighter, being drab in places. Occasionally the surface soil and subsoil are not very compact, but are sticky. In the better drained spots the mottling in the subsoil is reddish brown, and even the surface soil shows some brown mottlings.

This type is most prominent in the Hellhole Bay section; it occurs also in scattered areas in the southern part of the county, occupying low, flat, poorly drained areas.

This soil is not used for agriculture, but abandoned canals, ditches, and dikes indicate that a considerable acreage was at one time used for the production of rice. From the tree growth it appears that this land was abandoned about the time of the Civil War. It is said that the soil was very productive, yielding from 40 to 60 bushels of rice per acre. The land is covered now with a growth of cypress and gum, with longleaf and black pine, beech, and myrtle in the areas of slight elevation.

This type at one time sold for high prices, but at present it can be bought for $1 to $10 an acre, exclusive of the timber.

With thorough drainage and proper handling this soil is capable of producing good crops of corn, oats, onions, cabbage, lettuce, and

[1] See Bul. 167, S. C. Expt. Sta.

celery without the use of fertilizers. A satisfactory drainage system, however, would be difficult to install, as the general level of the type usually is low. Rice could be grown if the soil were put in proper condition and a reserve water supply made available.

JOHNSTON LOAM.

The Johnston loam varies considerably in texture from place to place, owing to its derivation from different soils and to the deposition of the material under different conditions of current. The surface material is generally black and high in organic matter. The subsoil usually is a gray, sticky sandy clay, in which the texture of the sand varies from fine to coarse. In the northern part of the county the surface soil tends toward a fine sandy loam or a sandy loam in texture, and in the southern part toward a clay loam.

The type occupies overflow areas along most of the smaller streams in all parts of the county. The forest growth consists chiefly of cypress and black gum, with a scattering of sweet gum, birch, and willow. The underbrush is very dense, consisting of bay bush, laurel, brambles, and green briers. The type is used mainly as pasture land and is cultivated to only a very small extent. Corn and rice are grown in small patches. Corn yields about 20 to 25 bushels per acre, and rice about 15 to 20 bushels. The cultivated fields are not very well supplied with artificial drainage, and where the type is devoted to rice little or no attempt is made to control the water supply.

The price of this land, exclusive of timber, is very low, ranging from about $1 to $5 an acre.

This soil if drained would produce good yields of corn and hay, but crops would be in constant danger of injury by inundation. Any system of drainage to be effective must necessarily be extensive, including a canal to drain the entire swamp.

JOHNSTON CLAY LOAM.

The surface soil of the Johnston clay loam is a dark-gray to almost black, slightly compact and plastic, medium-heavy clay loam. In a few places small rusty-brown mottlings are present. The subsoil is a gray clay loam, mottled with drab, brown, and rusty brown, and is compact, plastic, and tenacious in structure.

Occasionally deposits of marl and phosphate underlie this soil at shallow depths and in several places the bottom land has been mined and fragments of phosphate rock, gravel, and sand cover the surface.

The Johnston clay loam occupies first-bottom, overflow positions along the larger streams. It is most extensive along the headwaters of Back River, Wadboo Swamp, and Fosters, Echaw, and

Wambaw Creeks. The type occurs along many smaller swamps in the southern half of the county. The nature of the soil indicates that it was deposited in quiet water. The topography is level and the drainage poor, the type being largely in a swampy condition. The forest growth includes cypress, black gum, and other hardwood trees, with an undergrowth consisting largely of briers. There is practically no grass growth.

At the present time this soil is not farmed, but at one time it was extensively used for rice culture. When so used it probably had a high value, but at present, in its native state, it can be bought for $1 to $10 an acre. The expense of draining the type would be large, entailing extensive operations, but with reclamation and proper improvement the land would be productive. It should produce good yields of corn, oats, sorghum, and hay, and of such truck crops as cabbage, onions, and lettuce. The soil is very heavy and requires heavy draft animals and implements for plowing. A large area of this soil in the vicinity of Mount Holly has been drained by canals and is to be cultivated as soon as cleared.

CONGAREE SILTY CLAY.

The surface soil of the Congaree silty clay consists of a brown silty clay to silty clay loam, having a slight tinge of red and showing faint mottlings of gray. The subsoil, encountered at a depth of 8 to 12 inches, is a mottled gray, drab, and brown silty clay. Neither surface soil nor subsoil is very compact. Both are friable when dry and plastic when wet, and both contain a considerable quantity of small mica particles.

In places along the stream banks and extending back in intermittent strips the soil is inclined to be sandy, consisting of a loamy fine sand near the channel and grading back into the silty clay.

This type occupies the overflowed first bottom along the Santee River. It is most extensive in the broad bottom areas reaching from the opening of the Old Santee Canal to the mouth of Mattassee Branch, a few miles below St. Stephen. The land is traversed by sloughs, which in places broaden into lakes. The type occupies a very low bottom position and is subject to deep and prolonged overflows, which leave a thin deposit of reddish-brown soil on the surface. The land is fairly level and drainage is poor. The forest growth consists largely of cypress, with a scattered growth of gum, elm, sycamore, oak, ironwood, and hickory. There is some underbrush, but practically no grass on this type.

The Congaree silty clay has not been farmed for over 100 years on account of floods. During the period from about 1754 to 1784 it is said to have been used for growing rice, corn, and indigo with heavy yields. At present this land is valued at less than $1 an acre.

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

Mechanical analyses of Congaree silty clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent*
242825	Soil	0.1	0.7	0.9	8.6	4.9	28.0	57.2
242826	Subsoil	.3	1.1	.7	10.8	17.6	36.2	33.5

TIDAL MARSH.

The term Tidal marsh is applied to the low flats along the streams affected by tidal action, the land here being wholly or partially covered at high tide by salt or brackish water, and exposed at ebb tide.

The soil consists of a gray or dark-drab, sticky clay loam, which passes at a depth of about 10 to 12 inches into a blue, sticky clay or clay loam. Neither the surface soil nor subsoil is very compact. Throughout the entire 3-foot section the soil contains large quantities of partially decayed vegetable matter and is porous.

Tidal marsh is developed along the Cooper River and its tributaries. It extends in a broad strip from the Charleston County line to the junction of the East and West Branches of the Cooper River, thence along the West Branch to Wadboo Bridge, and along the East Branch to Huger Bridge. It also borders Goose Creek to the dam of the Charleston Waterworks, along Fosters Creek to the Seaboard Air Line Railway trestle, along Back River, and along the Wando River to Guerins Bridge.

The surface is flat and is dissected by small drainage ways at intervals of a few hundred feet. The vegetation consists mainly of marsh grass, with small patches of reed grass. These grasses have a low feeding value, even if the flats were not too boggy for grazing.

The marshes situated farther up the rivers, where fresh water could be obtained for irrigation, were at one time diked and extensively used for growing rice. It is doubtful whether the greater part of the marsh land could be profitably reclaimed and used for agriculture at present.

SUMMARY.

Berkeley County is situated in the eastern part of South Carolina, in the Lower Pine Belt region of the Coastal Plain. It has an area of 1,238 square miles, or 792,320 acres.

The topography is level to gently undulating, and the elevation ranges from tide level to 150 feet above. The drainage is largely

performed by the Santee River and Cooper River. Drainage is poorly established in parts of the upland.

The earliest settlements in Berkeley County were made by the English and French Hugenots, from whom the present population is largely descended. In 1910 the population was 23,487,[1] of which less than one-fourth were white. The majority of the inhabitants are engaged in farming and some in lumbering and mining phosphate. St. Stephen and Lincolnville are the largest towns in the county. Moncks Corner, with a population in 1910 of 232, is the county seat. Pinopolis is a small residence town.

Three railroads traverse the county and furnish adequate rail transportation for most sections. The Santee, Cooper, Wando, and Ashley Rivers are also used for transportation. The city of Charleston, situated only a few miles from the southern extremity of Berkeley County, is the principal market for the farm products.

The climate of Berkeley County is mild in winter and warm in summer. The mean annual temperature is slightly over 63° F., and the average annual precipitation ranges from 49 to 52 inches in different sections. The active growing season is about eight months long.

Agriculture in Berkeley County developed under the plantation system. Early in the history of the county rice became the leading crop, with cotton as a supplemental product. After the Civil War rice growing declined, and about 1870 cotton became the leading crop. The agriculture at the present time consists of the production of general farm crops and raising live stock on a small scale. Cotton, corn, and oats are the important crops. Rice, cowpeas, sorghum, sugar cane, and sweet potatoes are less important. Trucking is carried on in certain sections. Little fruit is grown. The stock, consisting chiefly of cattle and hogs, is kept on the open range. A few dairies in the county ship milk and cream to Charleston.

The farmhouses as a rule are not large, and the barns and outbuildings usually are small. Improved farm machinery is used by comparatively few farmers. The work stock consists mainly of mules. No systematic rotation of crops is practiced. Commercial fertilizer, under normal conditions, is used in large quantities in growing the important crops. Farm laborers are largely negroes, of which the supply is ample.

The average size of the farms, counting each tenancy as a "farm," is about 99 acres. The price of farm land ranges from $1 to $100 an acre, depending upon the location, the nature of the soil, and the condition of drainage.

[1] This includes population of small area since added to Orangeburg County.

Berkeley County lies wholly within the Coastal Plain Province. The soils are derived by weathering from unconsolidated sands and clays. Twenty types of soil, exclusive of Tidal marsh, are mapped. These are grouped in six series, of which the Norfolk, Ruston, Coxville, and Portsmouth include the upland soils, and the Johnston and Congaree the bottom-land soils.

The Norfolk and Ruston soils are well drained and the most important soils in the county. Probably 60 per cent of their total area is under cultivation. They have a comparatively wide range in texture and consequently in crop adaptation.

The Coxville soils are the most extensive in the county. In general they require artificial drainage before crops can successfully be produced.

The Portsmouth soils are poorly drained and are not at present used for farming. Small areas were used for rice production at one time, and could now be used for that crop if reclaimed. Thorough drainage must be provided before other crops can be grown successfully. It is doubtful whether the Portsmouth fine sand would give yields sufficiently high to warrant the cost of reclamation.

The Johnston soils are poorly drained and are not farmed, although they were used extensively in early days for growing rice. If thoroughly drained, the soils would be adapted to other crops.

The Congaree silty clay is subject to deep and prolonged overflows and is not at present farmed. Reclamation would be expensive.

The Tidal marsh is of little value on account of inundation by tides. It contains more or less salt. Such land has been reclaimed by diking in some parts of the county.

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[PUBLIC RESOLUTION.—No. 9.]

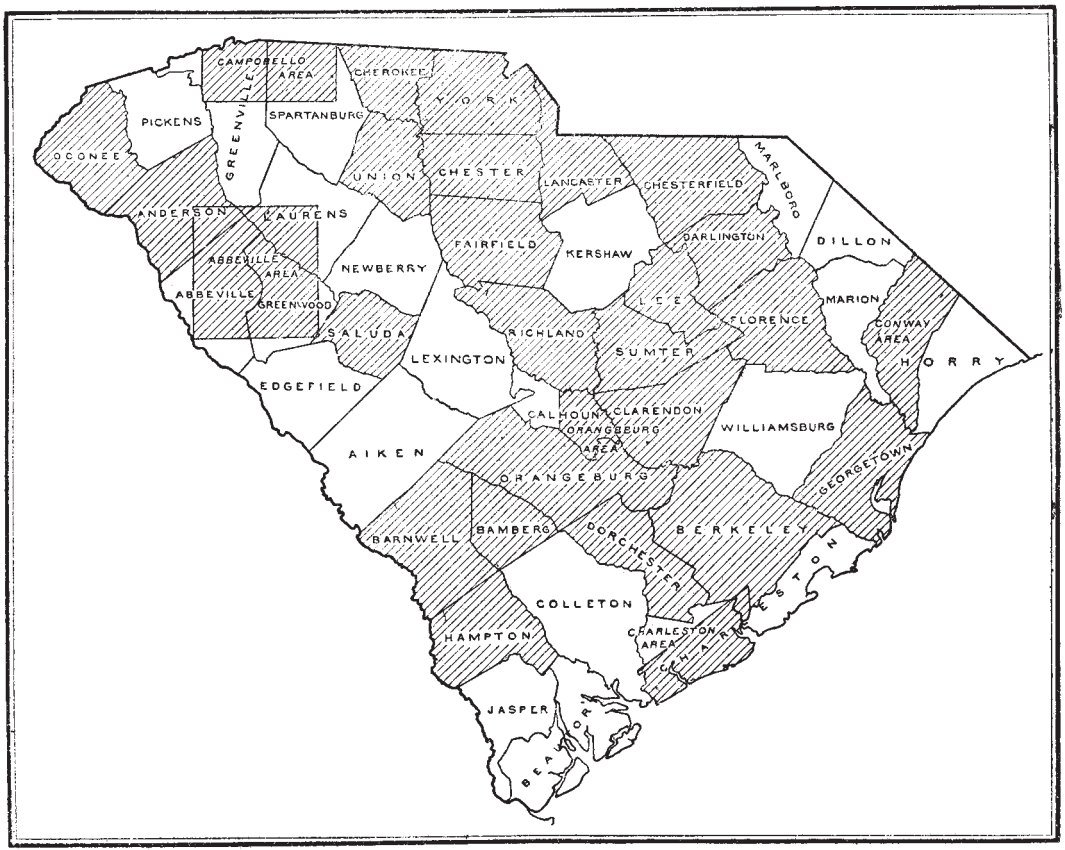
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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 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.]



Areas surveyed in South Carolina.

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