Issued October 18, 1915.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

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

SOIL SURVEY OF JACKSON COUNTY, GEORGIA.

BY

DAVID D. LONG, OF THE GEORGIA STATE COLLEGE OF AGRICULTURE, AND MARK BALDWIN, OF THE U. S. DEPARTMENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1914.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1915.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., May 26, 1915.

SIR: Under the cooperative agreement with the Georgia State College of Agriculture a soil survey of Jackson County was carried to completion during the field season of 1914.

I have the honor to transmit herewith the manuscript and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1914, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

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

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MAP.

Soil map, Jackson County sheet, Georgia.

SOIL SURVEY OF JACKSON COUNTY, GEORGIA.

By DAVID D. LONG, of the Georgia State College of Agriculture, and MARK BALDWIN, of the U. S. Department of Agriculture.

DESCRIPTION OF THE AREA.

Jackson County is situated in the northeastern part of the State of Georgia. It is very irregular in outline. Its greatest width from north to south is about 22 miles, and its greatest length from west to east about 20 miles. The county has an area of 346 square miles, or 221,440 acres. It is bounded on the north by Hall and Banks Counties, on the east by Madison and Clarke Counties, on the south by Clarke, Oconee, Walton, and Barrow Counties, and on the west by Barrow and Hall Counties. A part of the eastern boundary is formed by Little Sandy Creek, and a part of the southern boundary follows Mulberry River. The boundary lines of the county are the subject of continued dispute, and in certain places the line is indefinitely located. In such cases it is placed on the soil map according to the best local information obtainable.

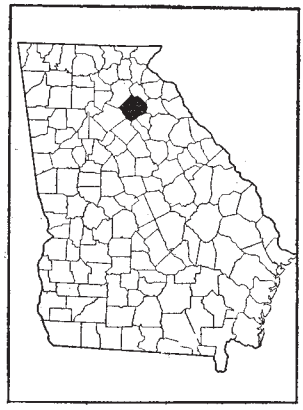

FIG. 1.—Sketch map showing location of the Jackson County area, Georgia.

Jackson County is situated in the heart of the Piedmont section of the State. The physiographic province known as the Piedmont extends across the State in a northeast-southwest direction. It comprises the area locally known as the "red hills of Georgia." In Jackson County this province, in a broad sense, consists of a rolling plain or plateau. The sky line is generally even. This plain slopes to the southeast and is dissected by an intricate drainage system. The general elevation ranges from 700 to 900 feet above sea level, the valley floors of the larger streams lying 75 to 150 feet lower. The higher stream divides rise to altitudes of 1,000 feet or more in the northern part of the county. The more detailed topographic features of the county are determined by erosion. The divides are generally smooth, undulating, or gently rolling, with a gentle slope on each side toward the stream courses, the surface becoming steeper and more irregular as the stream valleys are approached. Occasional interruptions are caused by deep, narrow, V-shaped gullies or heads of

streams. In many cases the slopes are long and gentle. In general, this county lies within the smoothest part of the Piedmont province. The hilly sections and steep-sided slopes usually occur along the larger streams and at points of confluence of some of the smaller streams. Such areas are encountered in the vicinity of Woods Bridge, near Hurricane Shoals, along the Oconee River, and at various points along Mulberry River. The area of hilly land is small. The northwestern section of the county has the most uneven topography.

The county, in general, is thoroughly drained, all of it lying within the Oconee River system. The Oconee River, with its tributaries, drains about 40 per cent of the county, including all the northern part. The Middle Oconee and its various tributaries, the most important of which is Mulberry River, drain the southern and western parts of the county.

Jackson County was established in 1796, comprising an area originally included in Franklin County. At that time it embraced a large part of northeastern Georgia. Subsequently other counties have been formed from parts of its original territory, the latest change being made within recent years through the formation of Barrow County.

The first settlements are reported to have been made in 1786 in the southern part of the county. The earliest settlers were from other parts of Georgia, and later homeseekers from South Carolina, North Carolina, and Virginia came into the county.

The population of Jackson County is reported in the 1910 census as 30,169, showing an increase of about 6,000 during the preceding 10 years. The recent formation of Barrow County reduced the population reported in the 1910 census about one-sixth. The white population has been materially increased during the last 10 years by settlers from the mountain counties of the State.

Jefferson, the county seat, is centrally located and is one of the oldest towns of the State. It has a population, according to the census of 1910, of 1,207. Commerce is the most important town in the county. It is situated in the eastern part, about 9½ miles from Jefferson. Its population is reported as 2,238. Maysville, with a population of 805, is located on the northern boundary, being partly in Banks County and partly in Jackson County. It is an important trading point. Hoschton, in the southwestern section, is locally an important trading and shipping point. Pendergrass, with a population of 239, Braselton, with 105, and Nicholson, with 167, are towns of local importance.

The county is fairly well supplied with transportation facilities. The Athens Branch of the Southern Railway, connecting with the main line of the Southern at Lula, crosses the eastern part of the county, passing through Center, Nicholson, Commerce, and Mays-

ville, and extends to Athens, Ga. The Gainesville Midland Railway between Athens and Gainesville extends through the central part of the county, passing through Jefferson, Pendergrass, and Talmo. The Monroe Branch of this road traverses the western section and passes through Hoschton and Braselton.

The county has a good public-school system. The rural and urban school buildings are among the best in the State. Every part of the county is supplied with the rural delivery of mail. All sections are reached by a well-developed system of public roads.

The chief markets for the products of the county are Gainesville, Athens, and Atlanta.

CLIMATE.

The climate of this general region is characterized by long, hot summers and short, mild winters. The maximum temperatures are not so high as the latitude would indicate.

The records of the Weather Bureau station at Athens, Clarke County, about 4 miles south of Jackson County, are representative of local climatic conditions. The highest temperature recorded at this place is 102° F. Records kept at Gillsville, Hall County, a few miles northwest of Jackson County, for 17 years also give 102° F. as the highest temperature. Here this temperature was recorded in July; at Athens it occurred in June. The mean annual temperature is reported at Athens as 60.5° F. The mean temperature for the summer is about 77° F., for the spring and fall about 61° F., and for the winter about 43° F.

The cold periods in winter usually follow rains, and often after continuing for a few days are followed by warm periods. Relatively high humidity intensifies the effect of cold considerably. The lowest temperature recorded at Athens is −3° F., and this is reported in February.

The relatively high temperatures during the summer and the lack of continued freezing weather during the winter are conditions which materially affect the soils of the county. The organic matter is burned out during the summer, while owing to the absence of freezing in winter the soil is not opened so deeply as in the Northern States and is consequently more subject to erosion. Owing to these conditions, deep plowing is particularly needed.

The mean annual precipitation is reported at Athens as about 51 inches. The precipitation for the driest year recorded was about 35 inches, and for the wettest year about 63 inches. The rainfall is heaviest during the months of January, February, and March, and fields need protection of cover crops during these months to prevent erosion. The average precipitation for August is also relatively heavy. The lightest rainfall occurs in October and November, and this distribution is favorable to the harvesting of the cotton crop.

There is an average growing season of about 226 days, according to the records of the Athens station. The average date of the last killing frost in the spring is reported as March 27, and of the first in the fall, November 8. The latest date of killing frost recorded in the spring is April 17, and the earliest in the fall October 24.

The data in the following table are compiled from the records of the Weather Bureau station at Athens:

Normal monthly, seasonal, and annual temperature and precipitation at Athens, Clarke County.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	43.8	79	4	4.18	4.44	4.34
January	41.9	79	6	5.19	2.92	3.93
February	44.1	75	−3	5.34	5.15	7.26
Winter	43.3			14.71	12.51	15.53
March	52.1	86	19	5.20	3.10	4.58
April	60.0	87	29	3.72	1.69	6.57
May	69.9	96	38	3.60	1.76	1.97
Spring	60.7			12.52	6.55	13.12
June	76.2	102	43	4.42	2.93	3.82
July	78.3	100	56	4.72	2.55	3.81
August	77.2	99	56	5.40	5.37	18.43
Summer	77.2			14.54	10.85	26.06
September	72.0	99	42	3.53	1.05	1.88
October	59.3	87	32	2.50	0.99	4.01
November	51.3	83	19	2.98	2.58	2.34
Fall	60.9			9.01	4.62	8.23
Year	60.5	102	−3	50.78	34.53	62.94

AGRICULTURE.

Agriculture has been the chief interest of Jackson County from its earliest history. The county was originally covered by a heavy growth of chestnut, poplar, white oak, and shortleaf pine. This valuable forest growth was removed to make way for agricultural development. A very small part of the timber was utilized, the greater part being burned in clearing the land.

The early agriculture consisted of the production of crops needed for home use. Among these were oats, wheat, rye, buckwheat, corn, and barley. Meat products were obtained from hogs and

cattle, while sheep were raised for wool for clothing. The live stock grazed in the open forests. The undergrowth was burned off annually in order to provide better grazing land. In later years, when markets became available, cotton was grown to a small extent.

Between 1860 and 1870 a demand for a money crop was felt, and the present agriculture took shape. Cotton met this demand most satisfactorily and became the principal crop of the county. Other crops received increased attention, however, and the present agriculture of the county consists mainly of the production of cotton, corn, oats, wheat, and cowpeas, and the raising of live stock. Statistics showing the relative importance of the various crops in Jackson County from one census period to another are of little value, owing to the fact that the boundaries of Jackson County have been changed in the formation of Barrow County.

Cotton, the most important crop, occupies about one-half of the improved land of the county. Jackson County, including the area recently separated to form Barrow County, produced 36,767 bales of cotton from 82,893 acres in 1909. Within late years it has ranked fourth among the counties of the State in cotton production.

The yields of this crop vary on the different soils of the county. In dry seasons and when droughts occur in May and June the largest yields are obtained from the Cecil sandy loam and Appling sandy loam soil types. In average seasons and in wet seasons the Cecil clay loam and Cecil clay give the best results. Yields, however, vary largely with differences in management. Cotton is confined to the upland soils, none being grown on the Congaree soils. The average acreage yield for the county is slightly less than one-half bale.

The land is prepared for cotton in several different ways. A method used by the most progressive farmers, and one which is becoming more popular, consists in breaking the land in the fall with a 2-horse plow, and harrowing in the spring with a double-disk or spike-tooth harrow. In some cases on the heavy Cecil clay loam and Cecil clay types the land is again broken in the spring before the rows are laid off. On land which is capable of producing 1 bale per acre the rows are usually about 4 feet apart. In some cases, however, they are 3½ feet and in others 5 feet apart. The fertilizer is generally distributed in the furrows which mark the rows, the beds being constructed by turning four furrows over these rows. Either part or all of the fertilizer is applied in this way. This practice in some cases has given way to better methods which leave the land as nearly level as possible after the last cultivation of the crop. The date of planting cotton ranges from about April 15 to May 15.

The first cultivation of the cotton is given about the time the tender plants appear. The progressive farmers use a diverse harrow for this purpose, while in other cases the cotton is "barred off" by

running two furrows along the cotton row, leaving it on a small ridge, and then breaking the "middles" with a sweep or scrape.

The cotton is thinned to the desired distance by hand hoes, a distance of 12 to 20 inches being left between the plants. After this the soil is thrown close to the rows by the diverse harrow, and subsequent cultivations are performed by the use of the "sweep." The largest yields are produced where the farmers cultivate a sufficient number of times to maintain a good dust mulch and to prevent a growth of weeds. Four to ten cultivations are given to the crop. The crop is "laid by," or given its last cultivation, the latter part of July, either a "planet junior" or a diverse harrow being used.

Fertilizers for cotton are generally applied before planting. When large quantities are used two applications are made, the second consisting of a side dressing about the time the blooms appear. The fertilizer is applied at the rate of 200 to 600 pounds per acre. The various mixtures contain from 8 to 10 per cent phosphoric acid, 2 to 4 per cent nitrogen, and 2 to 4 per cent potash. The fertilizers having the higher percentages of potash are used on sandy lands. A formula of 10–3–4 has proved a good mixture for cotton, although a 9–3–2 mixture is more common.

Of numerous varieties of cotton grown, the Langford and Pulnott are the most popular. The latter, having originated in this region, is well suited to local conditions. Other varieties grown are Cook's Improved, Sunbeam, and Cleveland, while a variety locally known as "Sumnerous Half-and-Half" is grown to some extent, the latter being susceptible to anthracnose.

Corn is produced on about 20 per cent of the improved land of the county. This grain is receiving increasing attention, but not enough is produced to supply local needs, and a small quantity is shipped into the county. The average yield is about 11 bushels per acre. The largest yields are obtained on the bottom-land, or Congaree, soils. Cultivation of this crop is not so thorough as in the case of cotton. The land is bedded in the fall or spring and then subsoiled by running a subsoil plow in the water furrow. In a few cases the land is prepared as it is for cotton, except that the crop is planted in the water furrow on the upland soils instead of on a ridge. On the Congaree soils the corn is planted on a slight ridge or bed. Large yields have been obtained on land which has been thoroughly broken and harrowed and where level cultivation is practiced. The land is harrowed and cross-harrowed after planting to keep the soil in a loose, pulverulent condition.

The corn rows are laid off 4 to 6 feet apart, and the distance between stalks in the drill ranges from 18 inches to 2 feet, depending entirely upon the productiveness of the land. It is desirable to plant the crop in March, as early planting usually produces better yields. If it is impossible to get the crop planted at this time many farmers

prefer to wait until May, in order to escape the dry weather which usually occurs in April. This crop is not given so many cultivations as cotton.

Fertilization of corn varies considerably. Many farmers do not use commercial fertilizers. As a rule fertilizers of the same grade as those used for cotton are applied at the rate of 200 to 300 pounds per acre at the time of planting. Some farmers apply a similar quantity as a side dressing. The heaviest fertilization of the crop is given where an additional side dressing of 100 pounds of nitrate of soda is applied.

Prolific varieties of corn, mainly the Hastings, Whatleys, and Marlboro, are grown on the upland soils, while big-eared varieties are grown on the bottom soils. The leaves are stripped from the stalks for forage during the latter part of August.

The production of oats is gradually increasing and assuming its proper relation to the agriculture of the county. This crop is seeded in several different ways. In some cases it is seeded after the land is broken and harrowed, the grain being sowed with an ordinary grain drill. Where this method is used it is necessary to have a firm seed bed. Where the oats follow corn, the land is disked and deep furrows are laid off 14 to 18 inches apart. Where oats are to be grown on land planted in cotton, three deep furrows are run between every two successive cotton rows, and after the stalks are cut in the spring, the entire field is harrowed.

The crop is seeded in September or October, the earlier sowing being better, as the crop is less subject to winter-killing and is more able to stand droughts in the spring. The yields of oats range as high as 60 bushels per acre under the best methods, though the average yield for 1909 was only about 13 bushels. Oats are generally fertilized at the time of seeding. A mixture of phosphoric acid and potash is used, while in the spring applications of sodium nitrate at the rate of about 100 pounds per acre are made. On the sandy soils the latter is added in two applications. Fulghum is an early maturing and very productive variety, and promises to become the most profitable in the county. The Appler, Bancroft, and Texas Rustproof are also grown.

Wheat is grown to a small extent. Ordinarily the yield is low, approximately 7 to 15 bushels per acre. The seed is generally sown broadcast and plowed under.

Very little rye is produced in the county. Rye constitutes a good cover crop to protect the soil from erosion during the winter months, when the fields would otherwise be bare. It also affords winter grazing, after which it can be plowed under to supply needed organic matter to the soils or it may be cut green for hay. This fourfold purpose which rye can be made to serve renders it a valuable adjunct to the cropping system of the county. The seed can be sowed broadcast

in the cotton and corn fields in October or November, after which the the cotton or corn may be harvested with little or no damage to rye.

Cowpeas are not grown extensively, but as a soil renovator and as a means of supplying organic matter this legume is particularly valuable. The seed is generally sowed between the corn rows.

The development of the cattle industry of the county is retarded by the Texas fever tick, and there are only a small number of pure-bred beef cattle in the county.

The hogs in this county are usually of good breed. Purebred Berkshires, Duroc Jerseys, and Tamworths are common. The quantity of pork and beef produced is not large enough to supply local needs.

The horses of the county are being improved. The Percheron is the most popular breed. The work stock consists mainly of mules.

The expenditure for fertilizer in this county is high. The 1910 census reports an expenditure of $274,196 for fertilizers in 1909, 90.5 per cent of the farmers reporting outlay. About 10 per cent of the commercial fertilizer used is mixed at home. Commonly higher grades are used when mixing is done at home than when ready-mixed fertilizers are bought.

Improved farm implements are gradually coming into use. Two-horse plows, subsoil plows, and disk plows are used for breaking the land. Disk, diverse, spike-tooth, and spring-tooth harrows are used for preparing the seed beds and in part for the cultivation of the crops. Only a few weeders are used. Some binders are found, but the greater part of the grain is harvested with the cradle.

According to the census of 1910, 72.6 per cent of the farms are operated by tenants, and of these about two-thirds are white. The tenancy is usually on a share basis, the land owners providing the stock, implements, and fertilizer, and receiving one-half of the crop. Where the implements and stock are furnished by the tenant, the owner receives one-fourth of the cotton and one-third of the corn produced, and pays for a similar proportion of the fertilizer used. On a cash basis the land is rented for $5 to $8 an acre, depending upon its productiveness.

The 1910 census reports an expenditure of $102,341 for labor in 1909. Day laborers are paid at the rate of $1 a day for general farm work. Where hired for longer periods laborers generally receive $20 a month, and during harvest seasons their board in addition. Cotton is picked at standard rates of 50 to 60 cents per hundred pounds of seed cotton.

About 92 per cent of the county is in farms. The average size of farms is reported as 55.6 acres, of which on an average 34.4 acres is improved. Most of the farms contain between 20 and 175 acres. As the census classes each tenancy as a farm, the average holding is

considerably larger than the figures given above. There is much room for development in the county through subdivision of the large holdings.

SOILS.

The soils of Jackson County are unusually uniform in characteristics and regular in their occurrence. The upland types belong to the Piedmont Plateau province, while the bottom-land, or alluvial, types belong to the River Flood Plains province. The Piedmont Plateau includes practically the entire county.

In the Piedmont Plateau the soils are directly derived from the underlying rocks through the processes of weathering, disintegration, and decay. The material has been subsequently modified but little, if at all, by agencies such as moving ice, moving water, or wind. Consequently the soils immediately overlie the parent rocks. Differences expressed by the texture or color of the soil are chiefly due to differences in the parent rock. Aside from this, erosion has to some extent affected the texture by removing in places a part or all of the sandy material, leaving a surface soil of heavy material.

The materials from which the soils are derived are chiefly old metamorphic rocks, consisting principally of gneisses and schists. The predominant rocks are gneisses ranging from fine to coarse grained. Hornblende schist is second in importance, and talc schist is found to a small extent. Quartz also occurs in places.

The weathering of these rocks has given rise to the characteristic red Piedmont soils, which belong to the Cecil series. Three types of this series are encountered, the Cecil sandy loam, Cecil clay loam, and Cecil clay. The Cecil sandy loam occurs chiefly in the more nearly level areas, where erosion has not been active. It is also found in rolling or irregular topographic positions, as is the clay loam, which emphasizes the fact that its origin is chiefly due to a more siliceous parent rock than that which gives rise to the clay loam and clay types. There is sufficient sandy material at the surface to give the type a gray color in contrast to the red of the other two members of this series. The Cecil clay loam is an intermediate type between the Cecil sandy loam and Cecil clay. In many cases it approaches the light character of the former and the heavy surface features of the latter. Erosion has been active in its formation, removing a part of the sandy material and leaving a heavy surface soil.

The Cecil clay is the heaviest type in the area. It owes its origin in some degree, particularly along steep slopes, to the removal of the lighter soil material and exposure of the heavy clay subsoil material. However, it results mainly from the weathering of a fine-grained, dark-colored hornblende schist. A small quantity of diorite is also encountered among the rocks which contributed to the formation of this soil.

The Appling series is not extensively represented in Jackson County. This series differs from the Cecil mainly in having a gray surface and a mottled yellow and red, stiff clay subsoil instead of the red subsoil of the Cecil series. These differences are probably due mainly to differences in the character of the parent rock and in weathering. The series is derived chiefly from massive layers of gneiss which outcrop conspicuously in places.

In the River Flood Plains province the various types are formed by the washing and deposition of material by stream action. They are the result of the deposition of material carried by flood waters during times of overflow. The original material consists of upland soil derived from the igneous and metamorphosed igneous rocks. The alluvial soils are mainly brownish red or red in color, and belong to the Congaree series. Two types of this series are mapped, the Congaree fine sandy loam and the Congaree silty clay loam. The latter type is developed chiefly in those regions where the streams flow through areas of Cecil clay.

The Altavista series comprises one type, the Altavista sandy loam. This soil is developed on stream terraces or second bottoms and occurs as small bodies of old alluvium now well above overflow. The type is characterized by a gray surface soil and a mottled red and yellow and bluish subsoil.

The soil mapped as Meadow (Congaree material) can not be classified as a definite alluvial soil type on account of its lack of uniformity in texture and color. It is alluvial in origin.

The areas of Rough stony land represent the outcropping of a tilted granite-gneiss stratum which extends across the county.

Thus seven soil types and two miscellaneous classifications are recognized in Jackson County. Of these, four are upland types, two are first-bottom soils, and one a second-bottom type. The soils include some of the most widely distributed and important soils of the Piedmont section of the United States. These soils have been farmed in some places for over 100 years and have remained productive where judiciously managed.

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

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Cecil clay loam	136,704	61.7	Appling sandy loam	3,712	1.7
Cecil sandy loam	43,136	19.5	Rough stony land	576	.2
Cecil clay	16,320	7.4	Altavista sandy loam	256	.1
Meadow (Congaree material)	9,728	4.4			
Congaree fine sandy loam	6,656	3.0	Total	221,440	
Congaree silty clay loam	4,352	2.0			

Cecil Series.

The Cecil series includes the most important and widely distributed soils of the Piedmont Plateau. The surface soils are gray, brown, or red. The subsoils consist of red clay. Quartz sand and mica flakes are usually present in the subsoil. Rock outcrops are rare, but fragments and bowlders of the parent rock are found in places on the surface. The topography is rolling to hilly, with level to undulating areas in situations where stream erosion has not been particularly active. These soils are of residual origin, and are derived principally from granite and gneiss, which have weathered to great depths. The drainage as a rule is excellent. The three types encountered in Jackson County cover 88.6 per cent of its area.

CECIL SANDY LOAM.

The Cecil sandy loam is predominantly a gray to brownish-gray sand or loamy sand, underlain at 6 to 12 inches by a yellowish-red, heavy sandy loam. This quickly grades into a stiff, brittle, brick-red clay which extends to depths of 3 to 20 feet or more. The subsoil is somewhat plastic and sticky when wet. Finely divided flakes of mica are common in the heavy red clay. The subsoil material rests immediately upon the parent rock, which is sometimes within 3 feet of the surface. The gradation between the subsoil and the rock is generally marked by the subsoil becoming more friable and less completely weathered and gradually passing into a mixture of soil and decomposed rock and then into the rotten rock.

Quite noticeable variations from the typical development of this soil are encountered. In places there is an intermediate stratum between the soil and subsoil, the type consisting of a gray sand which at a depth of 8 inches passes into a yellow loamy sand. This becomes heavier with increasing depth, passing into a yellow, friable sandy loam which at a depth of 12 to 18 inches grades into the typical red clay subsoil. This is the lightest phase of the Cecil sandy loam, and in places it approaches the Appling sandy loam so closely that the line of separation is largely arbitrary. Another prominent phase consists of a reddish-brown heavy sandy loam surface soil, underlain at about 7 inches by the characteristic subsoil. A third phase consists of a gray, loose, loamy sand underlain at 7 or 8 inches by the heavy subsoil, the line of demarcation being clearly defined.

The Cecil sandy loam is residual in origin, and is derived chiefly from gneiss and hornblende schists. Granite contributes to the type to a small extent in several parts of the county, chiefly in the western and southwestern sections. The hornblende schists are not so compact and fine grained as those which give rise to the Cecil clay and clay loam types. Much of the sandy material is no doubt supplied by the weathering of small dikes or stringers of quartz. Fragments

of the parent rock and quartz veins are scattered over the surface to some extent, but are insufficient in quantity, except in local areas, to give the type a stony character. The subsoil has the structure of the parent rock, as is noticed in vertical exposures along road cuts.

The Cecil sandy loam is widely developed, being second only to the Cecil clay loam in extent. It is most extensively developed in the western part of the county beyond Pond Fork and the Middle Oconee River. Other large areas are found in the southern part of the county and in the vicinity of Dry Pond, Commerce, Maysville, and Center.

The Cecil sandy loam is encountered on level to gently undulating stream divides, and in some cases on steep slopes and rolling ridges. The surface is generally undulating, and the surface relief affords ample drainage.

The Cecil sandy loam, owing to its physical characteristics, is a desirable soil for all the crops of the region. The light-textured surface renders the cultivation and preparation of the land easy. This is especially attractive to many farmers on account of the light implements usually on hand for these purposes. The soil is loose and absorbs precipitation readily, the water passing into the heavy subsoil, where it is held in reserve for future use of crops. A good surface mulch is easily maintained. In dry seasons the best crops of the county are obtained on this type and on the Appling sandy loam, and the type is commonly referred to as a "dry-season soil."

The Cecil sandy loam is an earlier soil than any other member of the Cecil series. When there is a drought in the early part of the season, as in May or June, the growth on this type far surpasses that on the heavier Cecil clay and clay loam. The type can be worked under a wide range of moisture conditions. Frequently this soil is cultivated immediately after heavy showers, while on other types such practice is ruinous. The greatest needs of this type are the incorporation of organic matter and frequent shallow cultivation.

The greater part of the type has been cleared of its native vegetation and is now used for agriculture. Small areas are forested with hardwoods and shortleaf pine. The type is used for the production of cotton, corn, oats, cowpeas, and wheat. The yields of these crops vary considerably with seasonal conditions and soil management. Corn yields 15 to 40 bushels, oats 20 to 60 bushels, and cowpeas for hay one-half to three-fourths ton or more per acre. Wheat yields are lower on this type than on the heavier soils, ranging from 8 to 15 bushels per acre.

In other sections this soil is utilized for the commercial production of peaches, Irish potatoes, cantaloupes, and dark-leaf plug tobacco. Sweet potatoes do well on it, and it is well suited to late-maturing vegetables and market-truck crops for local shipment.

CECIL CLAY LOAM.

The surface soil of the Cecil clay loam consists of a brown or brownish-red heavy sandy loam or clay loam. It is underlain at 6 to 10 inches by a stiff, brittle red clay subsoil, which is more or less sticky, tenacious, and plastic when wet. The subsoil characteristically carries a smaller quantity of finely-divided mica particles and small, angular quartz or sand grains.

The type includes several variations. It is not uncommon to find a surface covering of sandy loam, 3 or 4 inches in depth and either brownish red or brownish gray in color. This grades abruptly into the heavy clay subsoil. Where such land is plowed to a proper depth sufficient clay is intermixed with the soil to give it a typical clay loam texture. This is the lightest phase of the type and approaches the Cecil sandy loam. On the other hand, there are small areas in which the surface soil is shallow and heavier than the typical. This variation closely approaches the Cecil clay. The Cecil clay loam is an intermediate type between the sandy loam and clay types of the Cecil series. The surface has a very spotted appearance, due to the presence of small areas of sandy loam and clay which can not be mapped separately on account of their small size and rather close association. Areas of this soil frequently have a surface veneering of material of variable texture, ranging from sand through sandy loam to clay.

As a whole this type is remarkably free from stone. In small local areas, however, there are sufficient rock fragments to give the type a stony character. The stones are mainly quartz fragments from outcrops of quartz veins or stringers. Fragments of the parent rock are also found. Such stony areas are indicated by stone symbols on the map. Smaller fragments, as gravel, occur in small local areas. In some cases the gravel is present in sufficient quantity to impart a friable structure to the soil and is an advantage in retarding erosion and conserving moisture. Areas of this character are too small to be mapped satisfactorily.

The Cecil clay loam is derived from the underlying rocks through processes of weathering. The gradation from the soil to the underlying rock is shown along road cuts, where the subsoil grades into a mixture of decomposed rock and subsoil underlain by rotten rock, and this by the unweathered rock. The parent rock is 3 to 20 feet below the surface. Where it is near the surface the lower subsoil usually contains an appreciable quantity of mica and soft decomposed rock material.

Chief among the contributing rocks are the gneiss and hornblende schists. To some extent erosion has carried away the sand constituent of the surface soil, leaving the surface material heavier.

This type is the predominant soil of the county, covering 61.7 per cent of its area. It is encountered in all sections, some continuous tracts comprising several square miles.

The Cecil clay loam has a rolling topography. It occupies smooth, gently undulating stream divides, long, gentle slopes, and rough, steep hillsides cut by deep gullies or the heads of streams. A hilly phase is developed in a few local areas which can not be shown satisfactorily on the map. Such areas occur in the vicinity of Woods Bridge and along Walnut Fork in the western part of the county. Throughout the type the construction of terraces is necessary to counteract erosion. The drainage is good.

Nearly all of this type has been cleared. The remaining forest growth consists of various species of oak, hickory, and other hardwoods, with a large percentage of shortleaf pine. The type is used for the production of staple crops. Cotton is the most important crop, yielding a bale or more per acre where the land is thoroughly prepared and the crop properly cultivated. Without proper attention yields average only one-third to one-fourth bale per acre. Corn yields 15 to 40 bushels or more per acre. Oats with proper attention produce 60 bushels or more per acre, although the yields commonly range from 25 to 40 bushels. Wheat produces 10 to 20 bushels per acre. Cowpeas and forage crops do well. In addition to its adaptability to general farm crops, this type can be used profitably for the production of peaches and a heavy dark-colored tobacco. Owing to its physical features it is better suited to general farming than to the production of special crops.

The Cecil clay loam is one of the most productive types of the Piedmont region. The soil can be worked within only a narrow range of moisture conditions. Where plowed too wet or too dry it forms clods which are difficult to break down. It does not, however, clod so badly or so readily as the Cecil clay. For the proper preparation of a seed bed it is necessary to use heavy implements. There is a general need throughout this type for deeper plowing and the incorporation of organic matter to maintain an open structure after the land is thoroughly broken. The growing of cover crops during the winter months tends to prevent erosion and to increase the productivity of the soil. Liming is beneficial.

CECIL CLAY.

The Cecil clay consists of a deep-red, friable heavy clay loam or clay, underlain at depths of 3 to 6 inches by a brick-red, stiff, heavy clay, which extends to depths of 3 to 15 feet or more. The subsoil material grades into the parent rock, which is frequently encountered within the 3-foot soil section. The subsoil becomes less stiff and tenacious as the soft weathered rock is approached. A distinguishing feature

of this type is the deeper or dark-red color of the surface material. In local areas and along the boundaries between this and lighter textured soils there are small strips of Cecil clay loam, which can not be mapped separately on account of their intricate association.

This type is largely the result of erosion having removed a lighter textured soil material, leaving the raw clay exposed. This is the case particularly along the steep slopes of stream courses. For the greater part, however, the material is derived from the weathering of a dark, fine-grained hornblende schist, which gives rise to a heavy soil. Fragments of the parent rock are disseminated throughout the soil mass and are scattered over the surface. The clay subsoil in road cuts frequently shows the structure of the parent rock. Some of the stony material in the subsoil and on the surface is derived from a few quartz veins which occur throughout the type. The type as a whole, however, is not very stony. The stones occur only in small, local areas. Finely divided mica particles are commonly encountered in the subsoil.

The Cecil clay is most extensively developed in a belt extending from Commerce westward for about 8 miles. A second important development is an area extending southward from Victory Hill School. Several important areas are developed in the vicinity of Jefferson, a part of that town being located on this type. Other areas one-fourth to 1 square mile or more in size occur elsewhere.

The Cecil clay occupies high, rolling to hilly ridges and low, steep slopes along the stream courses. Smooth, undulating high stream divides occur, but the type is usually encountered in some of the most hilly regions of the county. The hills are principally due to the resistant character of the hard parent rock.

The occurrence of the type on low, steep slopes is due to excessive erosion. Although it is found in the most hilly regions, the type is not eroded and is not terraced to so great an extent as the other types of this series. Owing to the topography the drainage is good. In some cases the run-off is too rapid to permit the absorption of sufficient moisture. To remedy this, the loosening of the soil by deep plowing and the incorporation of coarse organic material is effective.

Practically all the Cecil clay has been cleared of its native forest growth and is utilized for agriculture. Small patches are forested with shortleaf pine and hardwoods, mainly oak and hickory. Cotton is the chief crop produced, as the type is considered better adapted to cotton than to corn. With proper methods, however, good yields of corn have been produced.

Cotton yields one-third to 1 bale or more per acre. The wide variation in yields is due to differences in farm practices. Corn yields 12 to 20 bushels or more per acre. This is considered a good soil for wheat and oats, the latter yielding 20 to 40 bushels or more per acre.

The heavy texture of the Cecil clay influences its use for agriculture. The type is more productive in wet seasons than in dry seasons, chiefly because the soil does not absorb moisture readily, and because of the difficulty of maintaining a good dust mulch to conserve the moisture. During the dry periods of early summer it is difficult to obtain a good stand of cotton or corn. The soil works into a good tilth if plowed when in the proper physical condition, but if broken when wet or when too dry heavy clods are formed, and these generally remain during the entire growing season and seriously interfere with cultivation. The soil can not be properly prepared with the small one-horse plow. Heavy implements and work stock are required. The low crop yields are chiefly due to the use of light implements. The type is limited in its adaptation to crops by its heavy texture.

Truck crops are grown only for local consumption. This type has been used successfully in the Virginia-Carolina region for the production of dark export tobacco and plug-wrapper tobacco. Peaches are produced successfully on this soil in the central part of the State. The type is also well suited to the production of grass, clover, small grains, and cowpeas.

For its improvement the Cecil clay requires deep plowing, accompanied by the turning under of organic matter to prevent the soil from quickly running together again; thorough harrowing; and shallow and frequent cultivation. The rotation of crops and the use of high-grade fertilizers are also needed. Lime is beneficial to the soil.

Appling Series.

The Appling soils are prevailingly grayish, ranging to pale yellow. The subsoils are mottled or streaked with yellow, red, and occasionally gray or drab. This series is developed in the Piedmont Plateau, and is residual from schist, hornblende schist, gneiss, and granite. The topography is about the same as that of the Cecil series, but possibly somewhat less rolling.

APPLING SANDY LOAM.

The surface soil of the Appling sandy loam consists of a moderately loose sand to loamy sand of a light-gray to whitish color. The subsoil is encountered at depths of 8 to 12 inches, and consists of a pale-yellow, loose, loamy sand which grades through a yellow sandy loam into a yellow sandy clay showing mottlings of red. Below 24 to 30 inches there is usually a dull-red or yellowish-red, brittle clay resembling in color the subsoil of the Cecil. There are patches which have a brownish-yellow subsoil, with mottlings of various shades of red. Small areas are also found in which the subsoil is pale yellow. These areas should properly be mapped as the Durham sandy loam,

but they are so small and so intricately associated that they can not be separated on a map of the scale used. Usually this phase is encountered near the rock outcrops, and the subsoil is composed chiefly of decomposed rock. The type grades imperceptibly into the lightest and deepest phase of the Cecil sandy loam, from which it is separated by a largely arbitrary boundary line. The Appling sandy loam is locally called "deep sandy land" or "white land." The immediate surface is so light in color that it reflects the sunlight.

The Appling sandy loam is derived from the weathering of massive layers of gneiss. This rock outcrops conspicuously as bowlders and as flat, smooth surface areas one-fourth acre to 100 square feet or less in size. The subsoil is frequently underlain by the rock within a few feet of the surface. In such cases the subsoil grades into the soft decomposed rock, which in turn grades into less completely weathered gneiss. In some places this soil is derived from schists, but such areas are usually small and are developed along slopes where they have not been subjected to the same degree of weathering as the adjoining areas of Cecil soil.

The Appling sandy loam is chiefly developed in two large areas at Talmo and north of Center Union School in the western part of the county. Small areas of 20 to 100 acres are distributed throughout the county.

This type occupies some of the smoothest topographic areas of the county. It comprises level to gently undulating interstream areas and smooth, long, gentle slopes to the stream courses. Broken and rugged slopes are encountered, but these are local in character and usually occur at the heads of streams. The topography of the type as a whole is very gently rolling. The drainage everywhere is complete and thorough. Terraces are built to a small extent to prevent erosion.

The type has been cleared of its native vegetation, consisting of hardwoods, such as oak, hickory, dogwood, poplar, tulip, and shortleaf yellow pine. The land is used in the production of the staple crops of the county. Cotton yields one-third to 1 bale per acre, corn 15 to 30 bushels, and oats 20 to 45 bushels. Cowpeas, peanuts, and sweet potatoes produce good yields. In general, this type is somewhat less productive than the Cecil soils, but under certain conditions, as in times of drought, the yields are somewhat higher.

The Appling sandy loam is easily brought into good tilth for a seed bed, and is easily cultivated. It warms up early in the spring, can be prepared for planting early, and supports vegetation at an earlier date than any other type in the county. Owing to its light texture, it can be worked under a wide range of moisture conditions, no damage resulting from cultivation after heavy showers. The rainfall passes rapidly through the surface soil into the subsoil, where it is easily

conserved by keeping the top soil in a loose condition. Light implements can be used in handling this land.

The Appling sandy loam is adapted to a wider range of crops than any other soil in the county. It is well suited to general farm crops, and can also be used successfully for special truck crops for local market and for canning purposes. Tomatoes, English peas, Irish potatoes, and other vegetables are grown successfully. This type is used in the tobacco-growing districts for the production of a light-leaf plug wrapper and cigarette tobacco.

For its improvement the type is in need of the restoration of organic matter in the form of green-manuring crops, such as cowpeas, rye, or oats. The turning under of such crops increases the moisture-holding capacity and the general productiveness of the soil. The type is deficient in organic matter.

Congaree Series.

The Congaree soils are brown. They range in places to reddish brown, and there is comparatively little change in color, structure, and texture from the surface downward. Occasionally grayish and yellowish mottling is encountered in the subsoil of poorly drained areas. These soils are developed in the overflowed first bottoms of streams of the Piedmont region and in similar positions in the Coastal Plain along streams issuing from the Piedmont. The material is derived from the soils of the Piedmont region, with some admixture of Appalachian material, and in the Coastal Plain an admixture of Coastal Plain material. These soils are usually poorly drained.

CONGAREE FINE SANDY LOAM.

The Congaree fine sandy loam consists of a brown to reddish-brown fine sandy loam or loamy fine sand, which at a depth of 8 to 12 inches passes into a dark-brown silty clay loam or into darker colored material of about the same texture as the surface soil. Mica flakes are a common constituent of both the soil and subsoil. Owing to its derivation the soil and subsoil of this type are variable both in texture and color. In many places the surface soil is a fine sand, sand, or sandy loam, while a vertical section of the subsoil shows strata of material of different textures, depending upon its deposition. These strata range in color from brown to dull gray and in texture from a sand to a silty clay. Small areas of silty clay and of Meadow, which can not be mapped separately on account of their small size and intricate association, are included with this type.

This type is developed in the flood plains of most of the smaller streams of the county. It is more uniform and more typically developed in the broad overflow lands of the larger streams. Chief among these streams are Allen Creek, Walnut Fork, Pond Fork,

Mulberry River, and the Oconee River. The typical soil also extends along Gravelly Creek in the northern part of the county. Along the smaller streams the texture is somewhat coarser and more variable than usual.

The Congaree fine sandy loam is an alluvial soil, consisting of sediment deposited by flood waters in the stream valleys. The material comprises the wash from soils which are derived from the weathering of old metamorphic-igneous crystalline rocks of the Piedmont region. Each inundation of flood-water deposits new material over the surface, increasing the productiveness of the soil and affecting more or less its texture.

The topography of this type is uniformly flat, with a gentle slope from the edge of the upland toward the stream channel. In some places these bottoms attain a width of as much as one-half mile, while in other places they narrow down to a mere fringe along the stream channel. They are generally wider at the point of confluence of two or more streams. The drainage of these areas is everywhere inadequate. The waters rise rapidly with every rain and the type is overflowed with each rise of 2 to 4 feet. Crops are often destroyed during the flood stages of the streams.

Only a small part of the Congaree fine sandy loam is now under cultivation. Corn is practically the only crop grown in these bottoms. It produces as much as 40 to 100 bushels an acre. In many places this type affords excellent grazing, the natural growth being Bermuda grass and lespedeza. The type is valuable for use in conjunction with the uplands for dairying or stock raising.

The native forest growth, consisting of sycamore, tulip, swamp maple, sweet gum, water oak, ironwood, and willow, has been cleared from the greater part of the type. This soil is easily plowed and brought into a good tilth for a seed bed, and subsequent cultivation is easily performed. Light implements can be used. When once broken a good surface mulch is easily maintained by the use of proper implements. The growing of a cover crop in the fall is necessary, so that the usual freshets in the winter and spring will not remove the soil. Areas which are subject to washing by overflow are best kept in pasture.

CONGAREE SILTY CLAY LOAM.

The Congaree silty clay loam consists of a dark reddish brown or chocolate-colored silty clay loam of a smooth, friable structure, which generally continues to a depth of 3 feet or more without much change in texture or color. Finely divided particles of mica are abundant in the soil and subsoil, and impart a somewhat greasy or smooth feel to the material. This type varies in texture and color according to its deposition. In some places the surface contains an appreciable quantity of fine sand, while in the subsoil there are strata of silty clay

or sandy material of a brown or bluish-gray color. The type includes areas of Congaree clay loam, fine sandy loam, and Meadow which are too small to be shown satisfactorily on the soil map.

The type is developed along the bottoms of the larger streams of the county, chiefly along the Middle Oconee and Mulberry Rivers. It is also encountered along the upper part of Parks Creek in the vicinity of Apple Valley, where this creek flows through the Cecil clay. In this area the immediate material has a deep-red instead of the characteristic reddish-brown color, while the subsoil is the same as that of the typical development.

The Congaree silty clay loam is an alluvial soil. It consists of materials washed from the uplands and deposited by flood waters.

This type is very productive, but is not utilized to any great extent on account of its poor drainage. The flat bottoms are overflowed with each heavy precipitation, and this frequently causes crop losses. Areas which are not so frequently overflowed are utilized for the production of corn, which yields 40 to 100 bushels per acre. This soil in the early stages of the development of the county formed the chief farming areas, but with the removal of the forests the land overflowed more often and in many places the bottom land was ruined by the deposition of sand, the fields being abandoned or used only for pasture. The type can be reclaimed by the deepening of the stream channels, the construction of deep ditches, and the building of levees. Under present conditions it affords good grazing by reason of its luxuriant natural growth of Bermuda grass and lespedeza. The native vegetation is similar to that on the Congaree fine sandy loam.

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

Mechanical analyses of Congaree silty clay 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*
253613	Soil	0.0	0.6	0.7	5.3	6.8	53.6	33.0
253614	Subsoil	.1	.2	.6	4.7	8.3	53.2	33.0

ALTAVISTA SERIES.

The surface soils of the Altavista series are gray, and the subsoils yellow or mottled yellow and gray or yellow, gray, and red. The series is developed as well-defined to rather indistinct stream terraces lying above normal overflow. These soils are encountered in the Piedmont region and in the near-by Coastal Plain along streams issuing from the Piedmont. The material is typically alluvial in origin, but in places near foot slopes some colluvial material has been

mixed with the alluvial deposits. In places also the subsoil appears to be, at least in part, residual. The flatter areas are in need of surface drainage.

ALTAVISTA SANDY LOAM.

The surface soil of the Altavista sandy loam is a light-gray loamy sand, grading into a pale-yellow sandy loam at about 6 inches. The typical subsoil begins at about 10 to 15 inches and consists of a mottled yellow and gray or mottled red and yellow sandy clay. Occasionally at a depth of about 24 inches a bluish plastic sandy clay is encountered.

The Altavista sandy loam occupies level terraces along the larger streams of the county, and lies well above the reach of ordinary flood waters. It is mapped in small areas along the Mulberry, Oconee, and Middle Oconee Rivers in the southern part of the county. Other areas too small to be indicated on the map are included with the upland soils.

The type is chiefly alluvial in origin, and the soil consists of upland residual material, carried and assorted by the streams and deposited during floods. Following the deposition of the terrace material the streams have cut deeper channels and are forming new flood plains.

Practically all of the Altavista sandy loam mapped in this county is under cultivation. In agricultural value and crop adaptation it is similar to the Cecil sandy loam of the uplands. Drainage is good. In some places subirrigation is beneficial.

Miscellaneous Material.

MEADOW (CONGAREE MATERIAL).

The areas of Meadow (Congaree material) comprise bottom or overflowed land which is so variable that it can not be classed as a definite type. The soil is widely variable in color and texture. It consists chiefly of washed-in sand, and the areas are mainly sand flats, over which the stream spreads. In many cases the streams flowing through these bottoms have no definite channels. The material comprises sand, sandy loam, fine sand, fine sandy loam, and clay. A vertical section also shows some variation through the different strata.

Meadow (Congaree material) occurs along many of the streams of the county. It is typically developed along such streams as Big Sandy, Little Sandy, Parks, Candler, Stockton, and Dosters Creeks, and along various smaller branches.

This soil material is derived through the same process as the Congaree soils. It has been deposited since the upland soils have been cleared.

The native growth consists of alder, willow, reeds, and flags. Some land which is now classed as Meadow (Congaree material) was within comparatively recent years productive bottom land of a fine sandy loam or silty clay loam texture. To-day these areas are practically worthless.

ROUGH STONY LAND.

The Rough stony land classification includes areas in which outcrops of gneiss are so abundant that the land can not be utilized for any purpose except to some extent for pasture or forestry. The rock occurs chiefly as large bowlders. It also occurs as flat, level areas of rock, not much higher than the surface of the surrounding land, and comprising several acres. Some of the bowlders range from approximately 8,000 cubic feet to several hundred cubic feet in size. The soil in these stony areas is a gray or yellowish-gray sand, underlain at about 8 inches by a yellow loamy sand or sandy loam, which grades downward into the rock material.

Areas of Rough stony land are encountered in very small narrow strips from the vicinity of Jefferson westward. Their greatest development is in the vicinity of Academy School, northwest of Jefferson. Local outcrops occur farther west, about 1½ miles north of Walnut Church and 1½ miles north of Center Union School. This land has no agricultural value.

SUMMARY.

Jackson County is situated in the northeastern part of Georgia. It has an area of 346 square miles, or 221,440 acres. It is located in the heart of the Piedmont section of the State. The elevation ranges from about 600 to 1,000 feet or more above sea level.

The entire county is well drained. The Oconee and Middle Oconee Rivers are the largest streams.

Jefferson is the county seat and Commerce, with a population of over 2,000, is the most important town.

Transportation facilities are afforded by the Athens Branch of the Southern Railway and by two branches of the Gainesville Midland Railway.

The summers are hot and the winters mild. The mean annual temperature is about 60° F. The precipitation is ample for the growing crops. It averages about 51 inches annually. There is a normal growing season of about 226 days.

Agriculture has been the chief industry of Jackson County from the time of its earliest settlement. Cotton is the principal crop. About half of the improved land of the county is used for its production. The average yield per acre is somewhat less than one-half bale. Corn is second in importance. About one-fifth of the improved land is used for this crop. In most cases it does not receive

proper attention, and yields are low. Oats are becoming an important crop, and yields are good on all the soils of the county. Wheat is grown to a small extent. Rye is an excellent winter cover crop. Cowpeas are grown for forage and as a soil renovator.

The development of stock raising and dairying is retarded by the Texas-fever tick. The county is quarantined on this account. Interest is taken in the improvement of work stock, and Percheron horses are being introduced.

The soils of the county are derived from old metamorphic rocks of unknown age. They are classed in two broad groups—residual soils and alluvial soils.

The Cecil soils predominate. The Cecil clay loam is the most widely developed type in the county. It is well suited to general farming and to the production of peaches. The Cecil clay is a heavy soil, and requires more careful treatment than the clay loam. It is an excellent soil for grass, grain, and cotton. The Cecil sandy loam is a productive type well suited to general farming.

The Appling sandy loam is used for general farming. It is well adapted to a wide range of special crops, including light-leaf cigarette tobacco and vegetables.

The Congaree silty clay loam and fine sandy loam types are not used to any great extent on account of their poor drainage. They are productive alluvial soils, and are capable of producing as much as 100 bushels or more of corn per acre. They afford excellent pasturage.

The Altavista sandy loam is not extensively developed. It consists of old alluvial material and occurs as a terrace. It produces good returns of general farm crops.

Meadow (Congaree material) and Rough stony land have no agricultural value.

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[PUBLIC RESOLUTION—No. 9.]

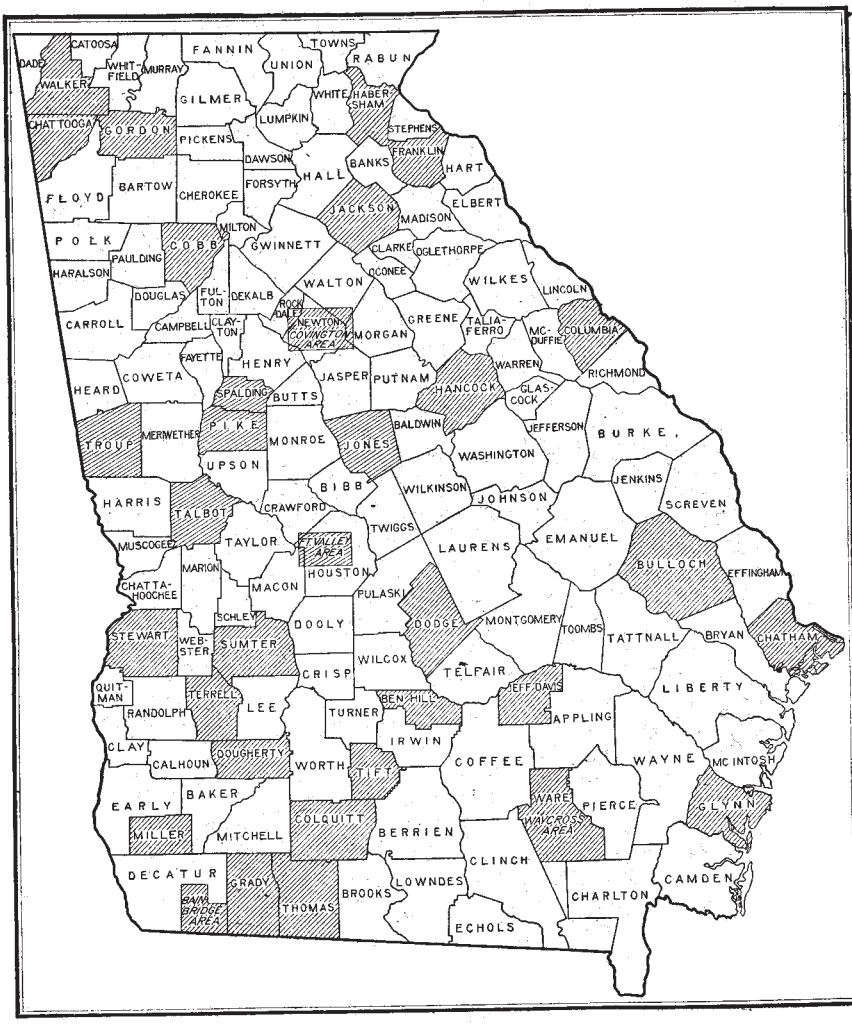
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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 Georgia.

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