PART II.

AGRICULTURAL DESCRIPTIONS

OF THE

COUNTIES OF GEORGIA.

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The county descriptions comprised in this portion of the report were made up in part from data obtained from the state geological records, in part from reports of correspondents, and in part from published reports of the state department of agriculture. Errors have doubtless crept into the descriptions because of imperfect data, but in the main they are correct.

The county headings, with the exception of regional areas, are from the census returns of 1880. The term *woodland* has reference to the original condition of the country without respect to tilled lands. The estimate of the product per acre in seed-cotton and in lint has been made upon the basis of 475 pounds of lint per bale, reported by a number of cotton merchants in Atlanta and Savannah to be the average bale of the season of 1879–'80; also upon the generally accepted ratio of 1 pound of lint to 3 pounds of seed-cotton.

To each county description is appended an abstract showing the character of its lands as reported by correspondents, except for a few counties, from which no answers to schedule questions were received. It will be noted that there is sometimes a discrepancy between the statements of the cotton product per acre and that reported as the actual product as given in the census returns. This may be explained in several ways. Correspondents report that which would be an average yield in *good* seasons and under *fair culture*. It naturally happens that a large number of planters in each cotton county fail to give *fair culture* to the crop, and the result is a diminished average product per acre. Again, the season of 1879–'80, the census cotton year, was one of dryness, and the crop was considered short, making the product per acre smaller than it would otherwise have been.

The counties are arranged with regard to agricultural regions, the names of all comprised in each region, either wholly or in part, being placed at the first and in the order in which they appear. Those whose descriptions are given in other regions are marked by an asterisk (*), and reference is made to the region. The abridgment of many of the county descriptions is made necessary for the following reasons: 1. Because of a comparatively small county area, which precludes much variety in its lands; 2. Because of the great similarity of counties embraced within large regions, such as the metamorphic and pine and wire-grass regions, where lands of the same character reach over a large territory; 3. Because of so large a number of counties in the state, a full and detailed description of each of which would require a far greater space than can be spared in this report, besides making intolerable the vast amount of repetition in such descriptions. The reader is therefore generally referred to Part I or to the abstract which may accompany the county for detailed descriptions of soils and other features of each region that are represented in a county.

NORTHWEST GEORGIA. (a)

(Embraces the following counties and parts of counties, Murray: Whitfield, Catoosa, Walker, Dade, Chattooga, Gordon, Floyd, Polk, Bartow, and a small part of Paulding.*)

MURRAY.

Population: 8,269.—White, 7,362; colored, 907.

Area: 420 square miles.—Woodland, all.

Tilled lands: 42,494 acres.—Area planted in cotton, 5,937 acres; in corn, 14,338 acres; in wheat, 8,178 acres; in oats, 2,168 acres; in rye, 128 acres.

Cotton production: 1,917 bales; average cotton product per acre, 0.32 bale, 459 pounds seed-cotton, or 153 pounds cotton lint.

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a The description of the counties of Northwest Georgia are by A. R. McCutchen, special agent.

About 20 per cent. of the surface of Murray county is a mountainous region belonging to the Cohutta range, and is confined to the eastern side of the county in a width of from 3 to 7 miles.

The coves and valleys of the mountainous area afford uniformly productive lands, and the soils here vary much in relation to the proportions of sand, lime, and clay, but may generally be described as sandy loams. A common feature of the valleys on the eastern side of the county is the great abundance of cobble-stones. These are so large and so numerous in some localities as to be a great obstacle in the cultivation of the lands. At a distance of 2 or 3 miles west of the mountains there are good bodies of rolling uplands with red calcareous soils. (See general description.) These lands are bordered on the west, in the central and northern parts of the county, by ridges with gray gravelly soils, and on the southwest by a nearly level area of several miles in extent, which has a poor gravelly and sandy soil and is known as the "flatwoods". (See page 24.) The lands between the above-mentioned ridges and the Connasauga river have a brown clay soil, underlaid by argillaceous shales.

Good bodies of alluvial lands occur on all the streams west of the mountains, the most important in extent being that of the Connasauga and the Coosawattee bottoms.

ABSTRACT FROM THE REPORT OF WILLIAM J. JOHNSON, OF SPRING PLACE.

The lands cultivated in cotton include the black sandy loams, somewhat elevated, the gray sandy, and the red or mulatto soils. The chief soil is commonly designated *hickory land*, and consists of a coarse sandy and gravelly loam varying in color from gray to blackish and black, and is 6 inches deep. The subsoil is a clay loam of a reddish-yellow color, which contains all kinds of gravel, and is generally underlaid by soft, slaty rock at about 2 feet. Tillage of this land is difficult in wet and easy in dry seasons. The average size of the farms is 200 acres, and one-fifth of the cultivated area is planted in cotton. The usual and most productive height of the plant is from 3 to 4 feet, which in wet, warm weather inclines to run to weed, and can only be remedied by topping. Fresh land produces from 800 to 1,000 pounds of seed-cotton per acre. No cotton is planted here without fertilizers of some kind, and the crop is improved by their use. On old land the staple rates one-eighth of a cent higher per pound than on fresh land. Crab-grass and rag-weeds are most troublesome. Five per cent. of this land originally cultivated now lies "turned out", but it improves considerably in ten years. The slopes are not much damaged by washing and gullying, while the valleys are improved to the extent of 20 per cent. or more. Successful efforts have been made to check the damage by horizontalizing, hillside ditching, and by throwing brush and other rubbish into the gullies.

The *gray soil* covers one-half of the region, and is coextensive with the hickory land just described. It is a fine sandy and gravelly loam, varying in color from whitish-gray to blackish, and is 4 inches deep. The character of the subsoil and the tilling qualities of the surface soil are like those of the hickory land. The soil is early and warm if well drained, but late and cold if ill drained. One-half of its cultivated area is planted in cotton. The usual and most productive height of the plant is 2 feet, and it never runs to weed. The seed-cotton product per acre on fresh land is 500 pounds. One-fifteenth of this gray soil lies "turned out", which improves by resting, especially if it grows up in pine bushes.

The third quality of soil is called *red* or *mulatto soil*, black-jack or slaty land, which includes one-fifth of the region, and is known to extend for 20 miles in each direction. The soil is a sandy and gravelly loam of a whitish-gray color, 3 inches thick. The subsoil is a light yellow clay, containing a variety of pebbles, underlaid by slate-rock at one foot. Tillage is difficult in wet and easy in dry seasons, and the soil is early and warm, but ill drained. The chief crops are wheat and cotton, the latter occupying about one-fifth of the tilled lands. The usual and most productive height of the plant is from 2 to 2½ feet. The seed-cotton product per acre on fresh land is 400 pounds. There are no troublesome weeds on this soil if it be tolerably cultivated. About one-fifth of such land once cultivated now lies "turned out", and does not improve much while in that condition. The slopes wash and gully a little, and are seriously damaged, while the valleys are improved by the washings. No efforts have been made to check the gullying.

The balance, or about one-tenth of the land of this region, consists of the *bottoms* of rivers, creeks, and smaller streams. It is of superior quality, and produces all the cereals, grasses, and clover to perfection, but is not suitable for cotton, because the latter grows too much to weed and does not open many of its bolls.

Cotton is ginned as fast as picked, and is sent to Dalton by wagon.

WHITFIELD.

Population: 11,900.—White, 9,689; colored, 2,211.

Area: 330 square miles.—Woodland, all.

Tilled lands: 44,199 acres.—Area planted in cotton, 4,068 acres; in corn, 19,992 acres; in wheat, 8,168 acres; in oats, 5,443 acres; in rye, 193 acres.

Cotton production: 1,240 bales; average cotton product per acre, 0.30 bale, 435 pounds seed-cotton, or 145 pounds cotton lint.

The mountains altogether cover an extent within Whitfield county of about 40 square miles, the northern part of the county being divided by bands of low ridges, with generally narrow intervening valleys. A large proportion of the surface of the county consists of comparatively level areas, and this is especially true of the eastern and southeastern portions.

Of the cultivated lands of the county a considerable proportion is river and creek alluvial land. The most important of these are those of the Connasauga river and Coochulla, Mill, East Chickamauga, and Swamp creeks. The soil of the Connasauga bottoms is more sandy than that of most of the smaller streams.

The finest quality of uplands is found in Red Clay valley, in the northern part of the county. This valley extends from Tennessee, a distance of 9 miles, in this county, with an average width of about 1 mile. The lands are generally rolling, and have a durable soil that is easily cultivated and almost equally well adapted to all crops. This soil is calcareous and is of a dark red color, with a subsoil of a somewhat lighter shade than the virgin soil, but differing in appearance but little after a few years' cultivation. These lands are found also at Dalton; also on the western base of Chattoogata and Rocky Face mountains and on the eastern side of Crow valley. The lands of this character cover an extent of nearly 20 square miles.

The uplands of greatest extent are the clay lands, amounting to 125 square miles. These belong to Dogwood valley, on the west of Chattoogata mountain, to some narrow valleys in the northern part of the county, and to comparatively broad areas in the eastern and southern portions. Some of these on the southeast are nearly level,

and are rather unproductive from imperfect natural drainage. The county contains ridge lands, with a gray gravelly soil amounting to about 100 square miles. These lands, except along the borders of the valleys, are but little cultivated. There are two low and narrow ridges, one crossing the western part of the county and the other extending a few miles into the southern part, with unproductive sandy land. Cotton crops average 12.3 acres per square mile. Dalton is the principal produce market.

CATOOSA.

Population: 4,739.—White, 4,127; colored, 612.

Area: 160 square miles.—Woodland, all.

Tilled lands: 24,600 acres.—Area planted in cotton, 367 acres; in corn, 10,783 acres; in wheat, 5,911 acres; in oats, 1,503 acres; in rye, 62 acres.

Cotton production: 111 bales; average cotton product per acre, 0.30 bale, 432 pounds seed-cotton, or 144 pounds cotton lint.

A sandstone ridge of 500 or 600 feet in height, known as Taylor's ridge south of Chickamauga gap and as White Oak mountain north of this gap to its terminus in Tennessee, extends nearly north and south through Catoosa county. Another ridge of like character, but of a somewhat less altitude, known as Dick's ridge, runs nearly parallel with this on the east at a distance of about 1 mile. The country to the east and west of Taylor's and Dick's ridges is divided up by belts of low ridges, with intervening valleys, comparatively broad on the western and narrow on the eastern side of the county. The drainage is toward the north, except in the northeastern portion of the county, where the tributaries of East Chickamauga creek run in a southwesterly direction.

The valley of West Chickamauga, and also that immediately west of Taylor's ridge and White Oak mountain, contain productive brown and red calcareous lands. The two valleys cover an area of about 36 square miles, and include within their limits about half of the cultivated lands of the county. Nearly one-fourth of this extent is covered by the rich alluvial lands of West, Middle, and East Chickamauga creeks. Though the streams often overflow the bottom lands during the heavy winter and early spring rains, they are not generally rapid, and such lands are seldom injured by washing. The lands of Peavine valley and the shale valleys east of Dick's ridge, with an area altogether of about 24 square miles, are second in importance. The soil contains less lime, and the uplands are somewhat less productive, though the bottom lands are often of equally good quality, that of Peavine creek having a good extent for the size of the stream, being from one-fourth to half a mile in width and about 9 miles in length within the county. There is an extent of about 45 square miles, with a gray siliceous gravelly soil, belonging to four lines of ridges that cross the county parallel with Taylor's ridge and White Oak mountain.

Ringgold, on the Western and Atlantic railroad, and Chattanooga, Tennessee, are the principal markets for produce.

ABSTRACT FROM THE REPORT OF W. J. WHITSITT, OF RINGGOLD.

The lowlands consist of the second bottom of Chickamauga creek; the uplands of strips of rolling lands, separated by intervening level valleys, with clay subsoils.

The chief soil cultivated in cotton is commonly designated *rolling gravelly land*, and includes two-thirds of the area of this region, extending 20 miles north, 50 south, 15 east, and from 12 to 15 miles west. This soil is a coarse sandy and gravelly loam of a whitish-gray color, varying sometimes to mahogany and orange, and is 4 inches deep. The subsoil is heavier than the surface soil, and in some places is red, pulverizing easily, and in others pale in color and inclined to be tough, and contains flinty white gravel. Tillage of the soil is easy, especially in dry seasons; but in wet weather it is inclined to form in clods. It is moderately early and warm, and tolerably well drained. Corn, oats, wheat, and grasses were the only crops until 1878, since which year cotton production has been rapidly on the increase. The rolling lands are best adapted to cotton, and the valleys and bottoms to corn and grasses. One-third of the cultivated area is planted in cotton. The usual and most productive height attained by the plant is 2½ feet. It inclines to run to weed on very rich soils, such as those of the bottoms, which is restrained and bolling favored by using fertilizers and planting closer in the drill.

The seed-cotton product is 1,000 pounds per acre, rating in market as strictly good middling, the best in the south. After five years' cultivation the seed-cotton product per acre is 400 pounds, but its original production is maintained even at twenty years by the use of fertilizers. The ratio of seed to lint is the same as in the case of fresh land, and the staple is as long but not so fine, and rates two grades below that from fresh land. The most troublesome weeds are crab-grass and crowfoot. Lands which were formerly "turned out" as unprofitable for the culture of corn and wheat are now being taken in and planted in cotton.

The soil on slopes washes and gullies readily, but the damage done to the slopes is not irreparable, and the valleys are slightly benefited by the washings. To check the damage hillside ditching has been recently practiced successfully.

Cotton is shipped as soon as ginned, by railroad, to Rome.

WALKER.

Population: 11,056.—White, 9,492; colored, 1,564.

Area: 440 square miles.—Woodland, all.

Tilled lands: 69,756 acres.—Area planted in cotton, 5,797 acres; in corn, 26,033 acres; in wheat 15,115 acres; in oats, 5,915 acres; in rye, 166 acres.

Cotton production: 2,009 bales; average cotton product per acre, 0.35 bale, 495 pounds seed-cotton, or 165 pounds cotton lint.

The surface of Walker county presents a great diversity of features, having table-land mountains on the west side and sharp-topped mountains on the east, with the intermediate country subdivided into valleys, knobby belts of ridge lands of varying widths and narrow sandstone ridges running parallel with the mountains in their general direction or encircling the ends of terminating spurs.

The general altitude of the county is above that of the surrounding country. Its water-courses have their sources within its limits, and run into each of the adjoining counties and into the states of Alabama and Tennessee. The valleys range from 800 to 1,200 feet and the mountains from 1,500 to 2,300 feet above the level of the sea.

The general directions of the drainage from a water-divide that crosses the county in a northeast and southwest direction are northward into the Tennessee river and southward to the Coosa river.

About one-eighth of the county is mountainous, (*a*) and, including with this the steeper portion of "the ridges", about one-fifth of its surface is probably too steep for cultivation. The mountain sides are generally rich, and are covered with a heavy growth of timber. The lands of the county outside of the table-lands are all more or less calcareous. The larger portion of the lands of McLemore's cove, continuing toward the north side of the county in West Chickamauga valley and for several miles in Chattanooga valley, embrace rich calcareous soils. The same lands are also found in Duck and Dry Creek valleys continued north of the water-divide in Crawfish valley, and is found again in Dry valley and at the western base of Taylor's ridge. Lands similar to these in character of productiveness, but with a dark red soil, are found in the valleys west of John's, Horn's, and Chattoogata mountains. The area of these valleys altogether amounts to about 95 square miles, about 40 per cent. of which is cleared and under cultivation. These valleys have fine clover lands, and have been devoted mostly to corn, wheat, and oats. Lands having a brown loamy soil, containing much less clay and more sand than those of the above-named valleys, are found in West Armuchee valley, in the shinbone valleys, and for a few miles in the northern part of Chattanooga valley. These lands have an extent of 57 square miles, with 75 per cent. under cultivation, and are well adapted to corn, wheat, and oats, and are nearly the only lands on which cotton has been grown with success without fertilizers. West Armuchee valley is nearly the only locality in the county in which this crop was grown to much extent before the recent general use of commercial fertilizers. Peavine and Chattooga valleys and a part of East Armuchee valley afford a brown clay soil, covering an area of 35 square miles, with 40 per cent. under cultivation. (See analyses of soils, pages 25 and 27.)

The table-land, with a sandy soil, has an extent of 70 square miles, and "the ridges", with a gray gravelly soil, occupy 120 square miles. About 5 per cent. of these consist of cleared lands, and perhaps about one-fourth of the entire area of each is either too steep or else too rocky for cultivation. The soils of the alluvial lands are generally argillaceous, though those on West Armuchee creek and portions of Chattanooga and Duck creeks are somewhat sandy. The county has a great number of streams, most of which are small; but the creek bottoms constitute in the aggregate a considerable proportion of the cultivated lands.

ABSTRACT FROM THE REPORT OF J. A. CLEMENTS, OF VILLANOW.

Cotton is late in maturing on lowlands unless they are dry and sandy; hence the chief soil cultivated in cotton is the *sandy or gravelly* and more or less *calcareous upland.* This upland is rather level, covers about 40 per cent. of this region, and consists of narrow valleys, coves, and basins, bordered by ridges or mountains. Its natural growth is red oak, hickory, walnut, Spanish oak, chestnut, etc. The soil is a brown and blackish coarse sandy and gravelly loam 5 inches thick. The subsoil is more clayey than the surface soil, is generally deep red, sometimes yellow, and does not require artificial drainage. It contains flinty concretions, soft "black gravel", and rounded and angular pebbles, and is underlaid by limestone with flinty concretions from 2 to 35 feet. This soil is generally easily tilled, is early, warm, and well drained, and is apparently best adapted to corn. The chief crops are corn, wheat, oats, and cotton, one-fourth of the cultivated area being planted with the latter. The plant attains a height of from 2 to 2½ feet, and is most productive at 2 feet. On dark, rich soil, and in wet seasons in June and July, the plant inclines to run to weed, which is restrained and bolling favored by planting closely and using fertilizers.

The seed-cotton product per acre when the land is fresh is 800 pounds, and 1,545 pounds make a 475-pound bale of lint which rates in the market as low middling. After 15 years' cultivation the product is 500 pounds per acre, 1,630 pounds making a 475-pound bale; but the staple is not quite so good as that from fresh land. Crab-grass is the most troublesome on this soil. About 3 per cent. of such land originally cultivated now lies "turned out", but by the help of fertilizers it produces well when again cultivated. Slopes are seriously damaged by washing and gullying, and the valleys are also slightly injured by the washings. Horizontalizing and hillside ditching are practiced to check the damage, and with good success when properly done.

ABSTRACTS FROM REPORTS OF J. A. CLEMENTS AND W. F. TAPP, OF VALLEY STORE (CHATTOOGA COUNTY), AND F. M. YOUNG, OF GREENBUSH (ARMUCHEE VALLEY).

Clay and slaty red and yellow lands.—This soil covers from 35 to 50 per cent. of this region, and extends over the ten counties of northwest Georgia. The soil varies from a clay loam to clay, and in color from gray to yellow, brown, and blackish, and is 6 inches deep. The subsoil is usually yellow, but sometimes red, heavier than the surface soil, is impervious when undisturbed, and improves by cultivation and exposure at the surface. It is underlaid at from 1 foot to 20 feet by soft, red, slaty rock or shales, and in places by limestone. The soil is easy to till in dry, but difficult in wet seasons, is early, warm, and well drained, and is apparently best adapted to wheat, corn, cotton, and oats. One-third of it is planted in cotton. The usual and most productive height of the plant is from 2½ to 3 feet. Too much rain in July and August inclines it to run too much to weed, but this may be restrained and bolling favored by shallow cultivation, close planting, topping, and the use of highly ammoniated fertilizers. The product of seed-cotton per acre of fresh land is from 750 to 1,000 pounds, 1,525 pounds making a 475-pound bale of lint, which rates in the market as middling. After twenty years' cultivation the product of seed-cotton per acre is 400 pounds, 1,515 pounds then making a 475-pound bale of lint, which rates lower than that from fresh land. Crab-grass is the most troublesome weed. About one-tenth of this land originally cultivated now lies "turned out", and when again cultivated does not produce as well as when first cleared. Slopes in some places are damaged by the washing and gullying of the soil, but the washings damage the valleys very slightly in some places and improve them considerably in others. To check the damage hillside ditching, horizontalizing, and deep plowing are practiced, with good success; hillside ditching is least effectual.

Bottom lands.—The creek bottoms form about one-fifteenth of the land of this region. They bear a natural growth of white oak, hickory, walnut, poplar, maple, and chestnut. The soil is a dark-colored, fine sandy and gravelly loam, 7 inches thick. The soil is apparently best adapted to cotton and corn, but one-half of it is planted in cotton. The plant attains the height of from 3 to 4 feet, and is most productive at 3 feet. It inclines to run to weed in wet seasons, which may be restrained by heavy fertilizing, close planting, and shallow cultivation. The seed-cotton product per acre of fresh land is from 1,000 to 1,600 pounds, 1,485 pounds making a 475-pound bale of lint, which rates in the market as middling. After from fifteen to forty years' cultivation the product per acre is 1,000 pounds, the ratio of seed to lint and the quality of the staple being about the same as in the case of fresh land. The most troublesome weed is crab-grass. None of this land lies "turned out".

a In the table-lands of Lookout and Pigeon mountains the escarpments only are included in this estimate.

DADE.

Population: 4,702.—White, 3,618; colored, 1,084.
Area: 180 square miles.—Woodland, all.
Tilled lands: 17,148 acres.—Area planted in cotton, 32 acres; in corn, 8,336 acres; in wheat, 3,996 acres; in oats, 2,999 acres.
Cotton production: 12 bales; average cotton product per acre, 0.38 bale, 534 pounds seed-cotton, or 178 pounds cotton lint.

Lookout valley, with an average width of about 3 miles, extends across Dade county in a northeasterly and southwesterly direction between the table-land of Lookout mountain on the east and that of Sand mountain on the west. The altitude varies from 600 to 800 feet above sea-level, while the table-lands on each side rise from 800 to 1,200 feet above the valley. Two nearly parallel ridges of from 100 to 200 feet in height subdivide the main valley for most of its extent into three divisions, and the portions lying between these ridges and the mountains are usually quite narrow and trough-shaped, and are known as the "back valleys". A large portion of the county lies on the Lookout and Sand mountain table-lands.

The county is drained northward into the Tennessee river by Lookout creek and its tributaries, with the exception of a small area in the northwestern corner of the county.

The valley lands are not surpassed in productiveness by any of equal extent in the state, the soils being all More or less calcareous, that of the central part of the valley being especially well suited to cereals, grasses, and clover. Some of these lands are nearly level, others are rolling, while toward the northern terminus of the valley they become quite hilly and afford a better yield of wheat. The soils of the back valleys are generally somewhat sandy. (For a description of the table-lands see page 28.)

Very little cotton has been planted in this county; but from the present rate at which the area of cotton culture is extending in the adjoining county of Walker and elsewhere in the state, where neither the land nor the climate can be better suited, it may be inferred that this crop may soon become an important production of the county, especially on the sandy lands of the back valleys and on Lookout and Sand mountains.

ABSTRACTS FROM THE REPORTS OF T. J. LUMPKIN, M. D., OF RISING FAWN, AND W. A. CHAMBERS, OF MORGANVILLE.

The cotton-plant grows large and bolls well, but it is rather cold, and the seasons are so short here that the bolls do not open well unless fertilizers are used. The chief soil cultivated in cotton is the *sandy loam*, in patches, for example, on the second bottom of Lookout creek, near Lookout mountain, which covers about one-fifth of this region, and extends about 30 miles north and much farther in other directions. It bears a natural growth of hickory, oaks, chestnut, walnut, poplar, beech, gums, and pine. The soil varies from a fine sandy to a gravelly loam, and from whitish-gray to yellow, brown, and black in color, and has a depth of from 1 foot to 4 feet. The subsoil is a heavy mulatto clay hard-pan (on the uplands it is a stiff, reddish clay), contains hard, white, rounded gravel, and is underlaid by hard limestone at from 3 to 40 feet. Tillage of this soil is difficult in wet but rather easy in dry seasons, and the soil is early and warm when well drained.

The chief crops are corn, wheat, and oats, but the soil is apparently best adapted to corn and wheat. Not more than one-fiftieth of the cultivated area of this soil is planted in cotton. The seed-cotton product per acre is from 1,000 to 1,500 pounds when the land is fresh, the lint rating as middling. Old land produces from 500 to 1,000 pounds of seed-cotton per acre, and 1,545 pounds then make a 475-pound bale of lint, which is a little shorter than that from fresh land. Crab-grass is the worst weed, cocklebur being the next. The soil on slopes washes and gullies readily, but farmers prevent serious damage by horizontalizing and hillside ditching. The valleys are damaged only to a very limited extent by the washings.

The second kind of land is designated as *black lime land*, and extends from the Tennessee river on the north to the Coosa river on the south. The soil is a black calcareous loam from 2 to 8 inches deep, underlaid by a hard, heavy mulatto subsoil, which is again underlaid by limestone at from 8 to 40 feet. Tillage of this land is easy in dry but difficult in wet seasons. The soil is late and cold, but well drained, and is apparently best adapted to corn. Very little cotton is planted on it.

Dade county is connected with Chattanooga and Rome by rail, freight being from 50 cents to $1 per bale.

CHATTOOGA.

Population: 10,021.—White, 7,981; colored, 2,040.
Area: 400 square miles.—Woodland, all.
Tilled lands: 50,802 acres.—Area planted in cotton, 12,906 acres; in corn, 20,078 acres; in wheat, 7,930 acres; in oats, 6,044 acres; in rye, 95 acres.
Cotton production: 5,247 bales; average cotton product per acre, 0.41 bale, 579 pounds seed-cotton, or 193 pounds cotton lint.

The mountains and steep sandstone ridges of Chattooga county cover altogether about 68 square miles, and the low, nodular ridges 110 square miles. Of the 170 square miles of comparatively level areas about 30 are situated on table-lands of Lookout mountain, ranging in altitude from 1,200 to 2,000 feet above the sea, and the remaining area is in valleys ranging in altitude from 700 to 800 feet. Nearly one-fourth of the valley lands have a brown-loam soil, embracing mostly those on the east of Taylor's ridge, and particularly the lands of Dirt Town and Shinbone valleys.

Broom Town valley and Chattooga valley cross the county between Lookout mountain and Taylor's ridge and are parallel with them. These afford good clay lands, commonly distinguished here as *mulatto lands*, and are uniformly productive where there is a good depth of clay or subsoil above the underlying shales, as is the case with most of the extent of these two valleys. The area is about 45 square miles.

Of the more calcareous lands, of which there are about 30 square miles, some lying next to Taylor's ridge, on the west, have a dark red soil; and that of Dry valley, and some of the lands immediately east of Shinbone ridge, have a brown and sometimes a gray soil, with an intermixture of gravel, derived from the bordering ridges.

The result of recent trials in the cultivation of cotton with fertilizers on the sandy lands of Lookout mountain is very favorable. The lower average temperature on the table-lands in comparison with the valleys is perhaps

more than counterbalanced by its greater uniformity, there being but little difference in the daily minimum temperature, and by the general absence of chilling dews, as well as by a less severity and a longer delay of frosts in the fall.

The gray gravelly lands extend over nearly one-third of the surface of the county. The improved lands of this class, of which there is but a small proportion, are confined mainly to the borders of the ridges to which they belong.

There are fine bodies of alluvial lands along the Chattooga river and many of the smaller streams. The bottom lands east of Taylor's ridge, and those of some of the streams running from Lookout mountain, are sandy to some extent. The cotton crop is sold either at Trion Factory, in this county, or in Rome.

ABSTRACTS FROM THE REPORTS OF A. P. ALLGOOD, OF TRION FACTORY, AND C. D. HILL, OF RACCOON MILLS.

The chief soil is commonly designated *gray land*, which includes about three-fourths of the cultivated land of this region and extends throughout the county. Its chief timber is oak and hickory. It is a gravelly clay loam of a gray color 6 inches thick. The subsoil is red and white clay, somewhat leachy, which contains "black gravel" and angular white pebbles. In some places it is underlaid by clay, and in others by limestone, not far from the surface. The soil is rather easily tilled in dry seasons, is somewhat early and generally well drained, and is best adapted to cotton, corn, and oats, which, together with wheat, potatoes, and sorghum, are the chief crops of this region. About two-fifths of this soil is planted in cotton. The plant attains a height of 3 feet, at which it is most productive. Wet, hot seasons and deep culture incline it to run to weed, but this may be checked and bolling favored by surface cultivation or by topping, or by both.

The product of seed-cotton per acre of fresh land is from 800 to 1,000 pounds, 1,450 pounds being required for a 475-pound bale of lint rating as middling. After five years' cultivation the product is from 300 to 600 pounds of seed-cotton, and 1,500 pounds make a 475-pound bale of lint, which is shorter, but otherwise better than that from fresh land. The troublesome weeds are rag-weed and crab-grass. Some of this land has been lying out only because the fences were destroyed during the late civil war and have not been rebuilt till recently; such are now the best cotton lands in this region. Slopes are somewhat injured by washing and gullying, but the valleys are improved by the washings. Horizontalizing is successfully practiced to check the damage.

Additional descriptions of the mulatto and bottom lands, by C. D. Hill.

The *mulatto soil* forms a small part of the cultivated area, and occurs in patches in many parts of the county. Its growth is oak, hickory, chestnut, poplar, with occasionally walnut. The soil is a mahogany-colored loam from 8 to 12 inches thick, and is generally gravelly. The subsoil is a very red clay, free from gravel or grit, and excellent for making brick; in some places it contains "black gravel". Limestone underlies it at various depths. The soil is comparatively easy to cultivate in wet or dry seasons, is early and moderately well drained, and is apparently best adapted to corn and wheat. Cotton does very well in some seasons, but in others does not open well. One-third or more of this soil is planted in cotton. The plant attains a height of from 3 to 4½ feet, but is most productive at 3 feet. It inclines to run to weed generally, and the tendency is increased by too much rain and by deep plowing.

The seed-cotton product per acre of fresh land varies from 600 to 1,200 pounds, about 1,485 pounds making a 475-pound bale of lint, which is of good quality, but is a little rough. After five years' cultivation the product is from 400 to 800 pounds per acre, and about 1,515 pounds then make a 475-pound bale of lint, which is not so long, but is of better quality than that from fresh land.

Rag- and hog-weeds, and especially crab-grass, are most troublesome on this soil. Little or none of such land lies "turned out", as it is more durable than the gray land and has a better subsoil. The slopes are not so much damaged by washing and gullying as those of the gray land. The *bottoms*, varying in width from 100 yards to half a mile, are as long as the streams, and bear a natural growth of poplar, sweet gum, wild cherry, beech, white oak, and hickory. The soil varies from brown to black, is from 2 to 3 feet thick, and is composed of fine silt and sand. The subsoil is fine sandy, and makes a transition into leachy, crawfishy clay below, which is in some places underlaid by rock at from 10 to 20 feet below the surface. The soil is easily tilled in dry seasons, is late, cold, and frequently ill drained, and is best adapted to corn and clover. Very little cotton is planted on it, because it is subject to rust. The plant frequently grows from 5 to 7 feet high, but is more likely to bear a crop when from 3 to 4 feet high, yielding from 600 to 1,200 pounds of seed-cotton per acre. After five years' cultivation the product is not diminished; the ratio of seed to lint is the same, the staple is perhaps smoother, and the plant is less inclined to run to weed. The most troublesome weeds are cocklebur, Spanish needle, and crab-grass. None of this land lies turned out.

Shipments are made to Rome, by wagon, commencing on the 15th of October, freight being $2 per bale.

GORDON.

Population: 11,171.—White, 9,347; colored, 1,824.

Area: 360 square miles.—Woodland, all.

Tilled lands: 69,467 acres.—Area planted in cotton, 8,668 acres; in corn, 22,661 acres; in wheat, 14,239 acres; in oats, 6,069 acres; in rye, 169 acres.

Cotton production: 3,301 bales; average cotton product per acre, 0.38 bale, 543 pounds seed-cotton, or 181 pounds cotton lint.

There are two ranges of mountains in Gordon county running nearly parallel, Horn's and Salacoa, respectively on the west and east side of the county. The intermediate portion of nearly 20 miles' width is subdivided into narrow valleys by bands of knobby ridges.

A large proportion of the cultivated area is of the alluvial lands of the Oostenaula river and its tributaries. The large streams of the county are remarkably crooked, and their broad bottom lands can hardly be excelled in productiveness. Between Horn's mountain and the Oostenaula river there is a fine body of rolling uplands with brown loam soils (see general description). The lands of this character have an extent of 25 square miles. Most of the valley uplands east of the Oostenaula river, covering 90 square miles, are brown or red clay lands underlaid by shales, and are of the character often designated as "mulatto lands". The gray gravelly lands have an area of nearly 70 square miles, in two sets of ridges running through the central portion of the county. The eastern belt of ridges has a width of 3 or 4 miles, and contains some sandy land. On the western side of the county there is a section of several miles in width, extending nearly through the county, covered with steep, slaty hills. These lands are generally poor and but little cultivated. The Oostenaula and the Coosawattee rivers are navigable for small boats for a part of the year.

ABSTRACT FROM THE REPORT OF AARON ROFF, OF CALHOUN.

The river lands are sandy and earlier than the valleys of the uplands, and are therefore better for cotton. The lands cultivated in cotton are the gray sandy, the chocolate-colored calcareous, and the red soils. The *gray sandy soil*, covering one-fourth of the area of this region, is known to extend 20 miles in each direction, and bears a natural growth of hickory, walnut, poplar, pine, and oak. The soil is a fine sandy and gravelly loam, chiefly of a gray color, and is 6 inches deep. The subsoil is a red clay, and is underlaid by rock. The soil is late and cold, and is difficult to cultivate in wet seasons. The average size of farms is 300 acres, and the chief crops are corn, wheat, oats, and cotton; but the soil is apparently best adapted to cotton. The usual and most productive height of the cotton-plant is 3 feet. Rainy weather or excessive manuring inclines the plant to run to weed, which may be restrained and bolling favored by topping.

The seed-cotton product per acre of fresh lands is 800 pounds, the lint rating as first class. After five years' cultivation the product is 600 pounds per acre, with first-class lint. Hog-weeds and rag-weeds are most troublesome. No land of this kind now lies "turned out"; and that which was out is again cultivated, and produces as well as originally, and in some instances better than at first. Slopes wash and gully very little, and are not seriously damaged in this way, while the valleys are benefited by the washings. No efforts have been made to check the damage.

Shipments are made as fast as the cotton is ginned, by the Western and Atlantic railroad, to Atlanta, Rome, and Dalton, rate of freight being 12½ cents per 100 pounds.

FLOYD.

Population: 24,418.—White, 14,958; colored, 9,460.

Area: 540 square miles.—Woodland, all.

Tilled lands: 96,479 acres.—Area planted in cotton, 30,615 acres; in corn, 29,872 acres; in wheat, 9,251 acres; in oats, 8,413 acres; in rye, 52 acres.

Cotton production: 14,545 bales; average cotton product per acre, 0.48 bale, 678 pounds seed-cotton, or 226 pounds cotton lint.

The surface of Floyd county varies from nearly level to hilly and mountainous, the principal mountains being in the northwestern part of the county. The valleys in this portion of the county have a nearly level or rolling surface, and are not generally subdivided by ridges, as is common in most of the country to the north and west. The eastern side of the county is covered principally with cherty ridges, with two or three narrow valleys extending nearly north and south. The southern and southwestern portions are similarly divided, but have broader valleys and comparatively narrow ridges.

The large streams have but little fall, and take a winding course, with broad bottoms on one or both sides. The soil of the river bottoms, and that of some of the creeks, particularly in the northwestern part of the county, is sandy in such proportion as to promote easy culture. These sandy bottoms are among the most productive for all crops, with a special adaptation to the growth of cotton, yielding from 600 to 800 pounds of seed-cotton per acre without fertilizers. There are several valleys with rich calcareous lands in the southern and eastern parts of the county. Van's valley affords the largest body of these lands. (For description, see Cedar valley, Polk county.) The valleys in the northwestern part of the county have generally a brown loam soil, with here and there, next the mountains, a gray gravelly or rocky soil. The gravelly ridge lands cover a large proportion of the eastern and southern parts of the county. The "flatwoods" extend through the county near the Oostanaula and Coosa rivers. These land are generally level, are about 50 feet above the high water mark of these rivers, and are covered with a growth of short-leaf pine and scrubby red and post oaks. Cotton is grown here with success on the better lands without fertilizers, and is one of the chief crops on all cultivated land.

Rome is the chief market. The Coosa and Oostanaula rivers are navigable for small boats.

ABSTRACT FROM THE REPORT OF GEORGE S. BLACK, OF ROME.

The seasons are rather short for cotton. It is considered unsafe to plant before April 15, and killing frosts appear early in October; besides this, there are long, withering droughts through July and August. The south and east of the county are in the freestone region, the north and west in the limestone region, and we are on the division line. The soils are so various that it would be impossible to obtain a 100-acre field that would not contain two, or even four, qualities or colors of soil. It frequently happens that a small brook, over which one can step, divides two distinct qualities of soil in respect both to color and to production. This county has some very productive land, but it is scattered about in patches.

The soils cultivated in cotton are uplands, valleys, and bottoms of rivers and creeks, and vary in color from gray to brown, mahogany, and blackish, and are composed of coarse sand, gravel, and clay, in varying proportions, in different places. Very *sandy soil* is found only in narrow strips near water-courses. The natural timber growth is oak, hickory, pine, poplar, walnut, maple, beech, birch, ash, cherry, gum, etc. Such soils have an average thickness of 6 inches, and extend 70 miles west, 40 east, 50 north, and 100 miles south. The subsoils are heavier than the surface soils; those of river bottoms and valleys are red, very stiff and tenacious clays, and those of portions of creek bottoms and flat uplands are yellow clay and less tenacious. They contain "black gravel" and a variety of pebbles, white ones excepted, and are underlaid by gravel and rock at from 10 to 30 feet.

The soils are difficult to till in wet seasons, and are early and warm, but ill drained. The chief crops of this region are corn, cotton, oats, pease, potatoes, wheat, barley, rye, etc., the first five being best adapted to this region. Cotton occupies one-third of the soil. The plant attains the height of from 3 to 8 feet, the higher the more productive. It inclines to run to weed on rich bottom land, and elsewhere if there is too much rain; early topping will check it and favor bolling.

The product per acre of fresh land varies from 600 to 800 pounds of seed-cotton, 1,485 pounds making a 475-pound bale of lint, which rates in the market as middling. After ten years' cultivation the product per acre is 400 to 500 pounds on uplands and five- to seven-tenths more on bottoms, 1,545 pounds then making a 475-pound bale of lint, which does not differ in quality from that on fresh land.

The troublesome weeds are hog-, rag-, and smart-weeds, and crab-grass is worse than all the rest combined. Not more than one-twentieth of the arable land lies "turned out", and the producing capacity of it has not again been tried. The slopes wash and gully readily, but are not yet seriously damaged, while the valleys are rather improved by the washings. Some slight and only partially successful efforts have been made to check the washing by horizontalizing, hillside ditching, and terracing.

ABSTRACT FROM THE REPORT OF JOHN H. DENT, OF CAVE SPRING.

The upland *red, clayey loam* includes two-thirds of the cultivated lands for 10 miles around, and bears a natural growth of oak, hickory, etc. The soil is 16 inches deep, and its tillage is difficult in wet seasons; it is late, cold, and ill drained. It is apparently equally well adapted to cotton, corn, oats, potatoes, sorghum, and clover, but cotton occupies half its area. The usual and most productive height of the plant is about 4 feet; it inclines to weed in wet seasons, and is restrained by topping. Fresh land produces 1,200 pounds of seed-cotton per acre, and the staple rates as good ordinary; after four years' cultivation the product is 900 pounds, and the staple compares favorably with that from fresh land. The most troublesome weed is rag-weed. About one-twentieth of this land lies "turned out", but produces well when again cultivated. The slopes wash and gully readily, but the valleys are only slightly injured by the washings. To save the slopes, horizontalizing and hillside ditching are successfully practiced.

The time for shipping cotton is from the 1st of October to the 1st of January. It is sent to Rome, Savannah, Charleston, and New York, the rate of freight being from $1 50 to $2 per bale.

POLK.

Population: 11,952.—White, 7,805; colored, 4,147.

Area: 330 square miles.—Woodland, all.

Tilled lands: 54,233 acres.—Area planted in cotton, 16,774 acres; in corn, 16,331 acres; in wheat, 6,538 acres; in oats, 6,114 acres; in rye, 28 acres.

Cotton production: 8,126 bales; average cotton product per acre, 0.48 bale, 690 pounds seed-cotton, or 230 pounds cotton lint.

The surface of Polk county is hilly and mountainous. Dug Down mountain extends along the southern and eastern sides of the county, trending east and west on the south side, but curving around to the northeast on the east side and presenting a steep escarpment toward the north and northwest. Three bands of nodular ridges extend from the north side of the county nearly to Dug Down mountain, leaving narrow valleys next to this mountain, which connect almost at right angles with the valleys that lie between the ridges. Cedar valley is 9 miles long and from 1 mile to 6 miles wide, and is a fine body of undulating upland, with a rich calcareous soil of a brown or red color and a red subsoil. Van's and Euharlee valleys are similar. (See analysis of soils, page 27.)

The valley lands on the western side of the county are generally sandy, and sand-rocks of small sizes are often scattered abundantly over the surface, especially in the valleys around or near Indian mountain. The valley lands are nearly all of the best grade of uplands, and, taken altogether, they embrace within the county about one-fourth of its extent. The gravelly gray lands, belonging mostly to ridges, cover about one-third of the extent of the county. In the central portion of the eastern belt the lands are approximately level or but slightly rolling, and are covered with a growth of long-leaf pine; but in the more broken areas, as elsewhere in lands of this character, the prevailing growth is that of the different varieties of oak, with hickory, chestnut, and short-leaf pine. Southeast and south of Dug Down mountain there is a limited area of poor, hilly lands with a gray sandy and rocky soil and a growth principally of red oak, short-leaf pine, and chestnut.

In relation to cotton culture, in comparison with other portions of northwest Georgia, the lands of this county show rather the best average yield per acre for this crop. This is owing in part to a somewhat more favorable climate, being the most southern county in this part of the state, as well as to the general fertility of the lands, which will bear a nearly equally favorable comparison in the production of the cereal and other crops.

ABSTRACTS FROM THE REPORTS OF S. M. H. BYRD, OF CEDARTOWN, AND T. J. THOMPSON, OF ROCKMART.

Lands are distinguished as bottom, valley, and hill lands. Valley and hill lands are best for cotton, especially the slopes facing to the south and southeast. The bottom lands are cold and late, and are well suited to corn, but not to cotton unless well prepared and stimulated by fertilizers. The bottom lands are always level, and lie along the streams. The valleys are from 2 to 10 miles wide and from 10 to 30 miles long, and are rolling. The soil of the valleys and hills is in all respects very much alike. Cotton in this county rates high, becoming inferior on old lands if not fertilized. The *mulatto* or *red land* is the best for cotton. Its soil is a red or brownish clay loam from 6 to 12 inches deep; the subsoil is heavier, and has the color of chocolate and dark red, which becomes somewhat impervious to water as the cultivation of the surface soil goes on. It is underlaid by iron ore and limestone. One-half the cultivated land is of this kind; it extends about 20 miles eastward and westward across northern Alabama. Its growth is post oak, red oak, and hickory. The best lands are held in tracts of from 400 to 2,000 acres; poorer lands in smaller divisions. The soil is easily tilled in dry, but with difficulty in wet seasons; it is early, warm, easily drained, and apparently best adapted to the cereals. The chief crops of the region are cotton, corn, oats, wheat, sorghum, potatoes, and clover. Cotton comprises half the crops on this land. The plant grows from 2 to 5 feet high, and is most productive at 5 feet; on fresh land or very rich spots it inclines to grow to weed, which may be restrained by using non-ammoniated phosphates. The seed-cotton product per acre of fresh land is from 800 to 1,000 pounds. After ten years' cultivation the product is from 500 to 600 pounds, but it takes more to make a bale. The most troublesome weeds are hog-weed, carrot-weed, and May-pop. One-fourth of this land (originally cultivated) now lies "turned out", but if the land is not badly gullied and washed it produces well when again cultivated. The slopes are seriously washed and gullied, but the washings rather improve the valleys. Horizontalizing and hillside ditching are practiced, and are partially successful in saving the soil of the slopes.

The second quality of soil (as described by Mr. S. M. H. Byrd) is designated *gray land*, which covers three-eighths of the cultivated land, and extends in the same directions and as far as the red land first described. Its timber is hickory, walnut, white oak, and ash. The soil is a whitish-gray loam, containing gravel, and is from 4 to 10 inches deep. The subsoil is heavier, has a pale red color, and contains flinty rock and white angular pebbles. The soil is easily tilled in any season, but the rocks and gravel are troublesome. It is a little late and cold, but naturally well drained, and is apparently best adapted to cotton, with which one-half its area is planted. The plant grows a little taller on this than on red land while fresh; on very rich spots, or on fresh land, it inclines to run to weed, which may be restrained by using phosphates. The product per acre of fresh or of old land is as given in the case of red land. When this soil begins to fail, poverty-weeds and cinquefoil will appear on it. A little more than one-fourth is "turned out"; it produces well for a few years when again cultivated.

The third quality of soil, as given by Mr. Byrd, is that of the *bottoms*, which includes one-eighth of the cultivated area, and extends as far as the red and gray soils. Its natural timber is white oak, ash, beech, birch, walnut, sycamore, linden, poplar, hickory,

elm, and maple. The soil is a fine silt loam of a whitish color when old or blackish when freshly cleared, and varies from 6 to 24 inches in depth. The subsoil is heavier, and varies from a good yellow clay to white or pipe-clay, and is somewhat impervious. This soil is difficult to till in wet seasons, is late and cold, and is best adapted to corn. Less than half of it is planted in cotton. The plant attains a height of from 3 to 7 feet, and is most productive at about 5 feet; it inclines to run to weed in ordinary seasons, and many believe that close planting will restrain it and favor bolling. Dry seasons are best for cotton on such land. The seed-cotton product per acre of fresh land is from 1,000 to 1,500 pounds, and the production does not decline nearly so rapidly as on rolling lands or uplands. The most troublesome weeds are cocklebur, rag-weed, and in some spots smart-weed. Excepting pipe-clay spots that never were rich, very little of this land lies "turned out".

Pine lands, as described by J. T. Thompson, of Rockmart.

The *pine belt* is 10 miles wide, extends into Floyd and Bartow counties, and is the most densely timbered pine land in northern Georgia. Its soil is variously composed of fine and coarse sand, gravel, and clay; its color varies from gray to brown and blackish, and reaches 3 inches below the surface. The subsoil is heavier; it is a light yellow, coarse sandy loam; in some places it is white pipe-clay, in others red clay. It is generally leachy, contains a variety of gravel, and is underlaid by sand, gravel, and generally much rock.

The chief difficulty encountered in tillage is the abundance of rock at the surface. The soil endures drought very well. It is early, warm, and well drained, and is apparently best adapted to cotton and oats. The land is poor and poorly watered, and has very few springs and very little running water. It is hard to prevent wells from caving in; they are as deep as 80 feet, at which depth it is hard to find water. Not much of this land is cultivated. The cotton-plant attains a height of from 18 to 36 inches, the higher the more productive; it all opens well, and does not run to weed. The soil rather needs fertilizers. In ten years its production is decreased one-third, without any material variation of the quality of the staple or ratio of seed to lint. Product per acre of fresh land is from 500 to 800 pounds of seed-cotton, and from 1,425 to 1,485 pounds make a 475-pound bale of lint as good as any in market. Crab-grass is the chiefly troublesome weed. Only a small amount of such land lies "turned out". Slopes wash and gully badly if the soil is not held by gravel; the damage is not serious, and the valleys are slightly benefited by the washings. To save the slopes a very little hillside ditching and horizontalizing is done, and with very good success.

Cotton is shipped, by railroad, to Cartersville at 50 cents per bale, or to Rome at $1 25 per bale.

BARTOW.

Population: 18,690.—White, 12,419; colored, 6,271.

Area: 500 square miles.—Woodland, all.

Tilled lands: 88,231 acres.—Area planted in cotton, 21,969 acres; in corn, 26,874 acres; in wheat, 15,265 acres; in oats, 9,852 acres; in rye, 164 acres.

Cotton production: 10,111 bales; average cotton product per acre, 0.46 bale, 657 pounds seed-cotton, or 219 pounds cotton lint.

The surface of Bartow county is rolling and mountainous, with broad valleys of excellent lands. The mountains belong to the western escarpment of the metamorphic plateau extending into the east and southeast portions of the county. This is cut through by the Etowah river and by a number of smaller streams. West of this range for several miles the country is divided up without regularity of outline into nearly level valleys and steep slaty hills. Etowah river crosses the county from east to west, and about two-thirds of its surface is drained by this river and its tributaries.

The most valuable uplands are the red clay lands, commonly distinguished in this county as red mulatto lands. These lands are found around Cartersville, in Pine Log valley, and in various other localities, forming a large proportion of the cultivated area. The production is from 25 to 30 bushels of corn, from 8 to 15 bushels of wheat, and from 750 to 800 pounds of seed-cotton to the acre, fertilizers being used only with cotton.

Most of the valley land, particularly that of Oothcalooga valley, is argillaceous and more or less calcareous, and is cultivated principally in corn, wheat and oats. The soil varies in color here from a light red to a dark brown.

The gray gravelly ridge lands cover perhaps one-third of the surface of the county. In the southwestern corner of the county these lands are nearly level and somewhat sandy, and are covered with a prevailing growth of long-leaf pine, with red and post oaks. There are some gray and red sandy lands on the east side of the county that have not been cultivated to any great extent, but with fertilizers they give a good yield of cotton. In the southeastern part of the county the soil is of a light red color, and loose quartz-rocks are scattered abundantly over the surface. The alluvial lands of the Etowah river are somewhat sandy and very productive, yielding from 750 to 800 pounds of seed-cotton to the acre without fertilizers. That of the smaller streams, especially of all on the north side of this river, is more argillaceous, and is not suited to the cotton crop. (See analyses of soils, page 27.)

ABSTRACTS FROM THE REPORTS OF J. O. M'DANIEL, OF ALLATOONA, AND A. F. WOOLLEY, OF KINGSTON.

Both latitude and altitude make the season rather too short for cotton, but by the use of stimulating fertilizers a good average yield is obtained. The upland soils vary from red to gray, and the transition is often very abrupt. On the bottoms cotton is later than on the uplands, on account of later planting and coldness of the soil; it is therefore liable to be prematurely frost-killed.

The kinds of soil cultivated in cotton are: 1. Brown sandy loam of the hilly, rolling, and level table-lands; 2. Blackish clay loam of the low bottoms; 3. Gray gravelly clay of the uplands. The *brown sandy loam* of the table-lands, from 6 to 12 inches thick, includes half the arable area of this region, and extends across the southern part of the county. Its timber is hickory, walnut, white oak, ash, poplar, beech, etc. Its red subsoil is a very tough, tenacious, and impervious hard-pan, containing flinty, hard, rounded pebbles in small patches, but otherwise almost free from stone, underlaid by gravel and rock at from 15 to 20 feet. The soil is easily tilled in moderately dry seasons, and is early and warm, but ill drained. The chief crops are cotton, corn, wheat, oats, clover, pease, potatoes, and sorghum. This soil is best adapted to cotton, which occupies from one-half to two-thirds of its tilled lands. The plant usually attains a height of 30 inches, but is more productive at 36 inches. An excess of rain inclines it to run to weed; the remedy consists in shallow cultivation, and as little as possible of it. Fresh land produces 1,000 pounds of seed-cotton per acre. After thirty years' cultivation the product is 600 pounds per acre, about 1,485 pounds making a

475-pound bale of lint, which is shorter than and inferior to that from fresh land. Rag-weeds, hog-weeds, and crab-grass are most troublesome. One-fortieth of this land lies "turned out". When again cultivated it produces as well as when fresh, but does not last so long. Slopes do not readily wash or gully, but in some instances they are seriously damaged. Horizontalizing and hillside ditching are successfully practiced to check the damage.

The *blackish clay bottom soil* includes one-fourth of the arable land of this region. The soil is 6 inches deep, and is late, cold, ill drained, and rather difficult to till in wet seasons. The subsoil is heavier, and is an impervious, yellowish clay hard-pan, underlaid by gravel and rock at from 15 to 20 feet. The soil is apparently best adapted to corn, but one-third of the cultivated area is planted in cotton. The plant attains a height of from 3 to 6 feet, but is most productive at 4 feet. It runs to weed in wet weather, for which there is no remedy. The seed-cotton product per acre is from 1,000 to 1,500 pounds; after thirty years' cultivation the product is 800 pounds. About 1,425 pounds from fresh land and about 1,460 pounds from old land make a 475-pound bale. The staple from old land is inferior to that from new, but the difference is hardly appreciable. The most troublesome weeds are rag-weeds, morning-glories, and grass. None of this land lies "turned out".

The *gray gravelly upland clay soil* includes one-fourth of the cultivated area of this region, and is 6 inches deep. It is known to extend 10 miles around, and bears a natural growth of post oak, red oak, pine, black-jack oak, etc. The heavier subsoil is a light yellow, very stiff, impervious hard-pan, containing flinty, hard, angular gravel of white and other colors, and is underlaid by rock at from 30 to 50 feet. The soil is early, warm, but ill drained, and is difficult to till in wet seasons. It is apparently best adapted to cotton, with which one-half its area is occupied. The plant attains a height of from 2 to 3 feet; is most productive at 3 feet, and is not inclined to go to weed. The seed-cotton product per acre of fresh land is from 400 to 600 pounds; after thirty years' cultivation it is no less; 1,485 pounds from fresh land, or from 1,485 to 1,545 pounds from old land, make a 475-pound bale of lint. The staple from old land does not differ appreciably from that of new land; both are good. Crab-grass is the most troublesome weed. One-tenth of this land lies "turned out", and after a long rest produces very well again. Slopes are seriously damaged by the washing and gullying of the soil upon them; the washings also injure the valleys to the extent of 5 per cent. To check the damage horizontalizing and hillside ditching are very successfully practiced.

Shipments are made, as soon as the cotton is ready, by rail, to Atlanta at $1 per bale.

THE BLUE RIDGE REGION (METAMORPHIC).

The Blue Ridge region embraces all of the counties of Rabun, Towns, Union, Fannin, Gilmer, Pickens, Dawson, Lumpkin, White, and Habersham. The north county-lines of the latter four rest on the crest of the ridge. The first five counties are out of the cotton region proper, and but a brief mention is necessary.

RABUN.

Population: 4,634.—White, 4,437; colored, 197.

Area: 400 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 18,209 acres.—Area planted in cotton, 45 acres; in corn, 8,810 acres; in oats, 455 acres; in wheat, 457 acres; in rye, 1,675 acres.

Cotton production: 14 bales; average cotton product per acre, 0.31 bale, 444 pounds seed-cotton, or 148 pounds cotton lint.

Rabun county occupies the extreme northeastern corner of the state, and is a region of mountains with comparatively little land suitable for tillage. It is well timbered (one-half pine on the mountains), and its soils are chiefly gray, sandy, and gravelly, with clay subsoils. A belt of red land enters the county from the southwest and reaches to Clayton, the county-seat. (For description of lands, see regional part, page 32.) The Atlantic and Gulf water-divide passes northward through the western part of the county. The lands of the Tennessee valley (2,000 feet above the sea) are generally level and highly productive, and here also are situated the largest farms. The county is too broken and transportation to railroad stations too difficult to make the culture of cotton very profitable.

TOWNS.

Population: 3,261.—White, 3,157; colored, 104.

Area: 180 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 14,198 acres.—Area planted in cotton, none; in corn, 7,001 acres; in oats, 830 acres; in wheat, 2,055 acres; in rye, 1,339 acres.

Cotton production: None.

Towns county lies on the north side of the Blue Ridge along the North Carolina line, and is drained by the headwaters of the Tennessee river, which flow northwestward. The surface is broken and well timbered. Its soils are gray, sandy, and gravelly, and underlaid by clay subsoils. (See regional description, page 32.)

No cotton is produced, except, perhaps, in small patches for home use. Corn is the chief crop, with some wheat and rye and a little oats.

NOTE FROM HOWELL C. STANDRIDGE, OF HIAWASSEE.—The soil, as a general thing, is of a dark gray color, though all varieties occur. Dark loamy soils are found on or near the mountains. Cotton in this county grows finely as far as the stalk is concerned, but does not mature. The seasons are too short and cold.

UNION.

Population: 6,431.—White, 6,321; colored, 110.

Area: 330 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 30,347 acres.—Area planted in cotton, 12 acres; in corn, 14,347 acres; in oats, 2,139 acres; in wheat, 4,612 acres; in rye, 1,934 acres.

Cotton production: 5 bales; average cotton product per acre, 0.42 bale, 594 pounds seed-cotton, or 198 pounds cotton lint.

Union county lies chiefly on the north side of the Blue Ridge. Its surface is mountainous and broken, well timbered, and drained by streams forming in part the headwaters of the Tennessee river. Soils are mostly gray, sandy, and gravelly, with clay subsoils, as in the adjoining counties. (See regional description, page 32.) The chief crop is corn, with an acreage five times that of any other crop.

NOTE FROM C. J. WELLBORN, OF BLAIRSVILLE.—The seasons are too short, and the shade is too great in this county for the successful production of cotton for market. It is only planted in patches, and while the plant grows luxuriantly it fails to mature or to open before the frosts come. The *red clay lands*, while not the best of the county, are the only ones on which cotton is planted, and then fertilizers are used. They comprise 10 per cent. of the county area, and have a growth of all varieties of oaks, hickory, walnut, buckeye, white, yellow, and spruce pine, cherry, and poplar.

FANNIN.

Population: 7,245.—White, 7,112; colored, 133.

Area: 390 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 27,197 acres.—Area planted in cotton, none; in corn, 14,220 acres; in oats, 1,005 acres; in wheat, 3,649 acres; in rye, 2,099 acres.

Cotton production: None.

Fannin county, on the north side of the Blue Ridge, resembles in general the other counties of the region in its metamorphic rocks, sandy and red clayey soils and clay subsoils, and in its timber growth. Its drainage is northward to the Tennessee river. The lands are described in the following abstract.

Cotton is scarcely planted, except in small patches.

ABSTRACT FROM THE REPORT OF ADAM DAVENPORT, OF MORGANTON.

The lands of the county vary greatly from one ridge to another, being in patches of from 1 acre to 20 acres each. They may be classed as—

Black sticky uplands, lying mostly on southern slopes, and hence better for cotton than the other lands. They comprise about 12 per cent. of the lands of the county, and have a growth of hickory, oak, walnut, honey-locust, mulberry, and spicewood. The soil has a depth of 10 inches, with a clay subsoil. The chief crops are corn, wheat, rye, oats, and potatoes, to the first of which this soil is best adapted. Cotton is planted only in a few small patches for home use, and yields about 600 pounds per acre. The lands are early, warm, well drained, and difficult to cultivate in wet seasons.

The *heavy mahogany-colored clay uplands*, having eastern or southern inclinations, comprise one-half the lands, and have a growth of oak, chestnut, pine, hickory, and black-jack. They are best adapted to wheat or corn.

The *sandy bottom lands* of Toccoa river have a dark-gray soil 2 feet in depth, and a growth of walnut, hickory, fir, buckeye, maple, etc. These are best adapted to corn and rye. Cotton grows luxuriantly, but is liable to be killed prematurely by frosts. Under the most favorable circumstances only about 100 pounds of lint are obtained per acre from these lands.

GILMER.

Population: 8,386.—White, 8,258; colored, 128.

Area: 480 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 30,273 acres.—Area planted in cotton, 122 acres; in corn, 16,178 acres; in oats, 582 acres; in wheat, 5,903 acres; in rye, 950 acres.

Cotton production: 32 bales; average cotton product per acre, 0.26 bale, 375 pounds seed-cotton, or 125 pounds cotton lint.

Gilmer county lies at the southwestern termination of the Blue Ridge. Its surface is rolling and in part mountainous, is well timbered, and is drained westward by the headwaters of the Coosawattee river. In general soil features it resembles the region already described. There is, however, a smaller percentage of its lands under cultivation (9.9 per cent. of county area) than in any county of the region excepting Rabun. Its chief crops are corn, wheat, rye, and oats. Scarcely any cotton is planted.

PICKENS.

Population: 6,790.—White, 6,645; colored, 145.

Area: 230 square miles. Woodland, all; metamorphic, nearly all.

Tilled lands: 26,834 acres, or 18.2 per cent. of county area.—Area planted in cotton, 2,210 acres; in corn, 12,774 acres; in wheat, 5,992 acres; in oats, 1,619 acres; in rye, 357 acres.

Cotton production: 734 bales; average cotton product per acre, 0.33 bale, 474 pounds seed-cotton, or 158 pounds cotton lint.

Pickens county is divided diagonally by the continuation of the Blue Ridge chain passing through the county from northeast to southwest. These mountains have an altitude of from 1,500 to 2,500 feet, while the rest of the county is broken and hilly. On the north of this range the county is watered by Talking Rock creek and its tributaries, flowing northwestward into the Coosawattee river. On the south are the headwaters of Long Swamp and Stone creeks, flowing southward, tributaries of the Etowah river.

The various schists and gneisses are found over the greater part of the county, forming by their decomposition their characteristic sandy and mulatto lands. East from Jasper, the county-seat, mica-schists at first appear, then a wide belt of sandstones, and finally gneisses at the county-line. To the west and northwest are found shales, sandstones, and mica-schists, with hornblendes near Talking Rock, and the lands are mostly sandy, with red and yellow clay subsoils. Cotton is produced only in patches. Nineteen per cent. of the county area is too mountainous for tillage, and of the remainder 33 per cent. has been cleared and is partially under cultivation. Wheat yields 5

bushels, corn 15 bushels, and oats 8 bushels per acre. On the northwest, where the Pine Log range of mountains cross the county, there are found white marbles of excellent quality. In other sections gold and other minerals exist.

The lands under tillage comprise 18.2 per cent. of the county area. Of this 8.2 per cent. is in cotton, averaging 9.6 acres per square mile.

DAWSON.

Population: 5,837.—White, 5,479; colored, 358.

Area: 180 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 24,958 acres.—Area planted in cotton, 2,189 acres; in corn, 14,906 acres; in wheat, 4,649 acres; in oats, 882 acres; in rye, 186 acres.

Cotton production: 850 bales; average cotton product per acre, 0.39 bale, 552 pounds seed-cotton, or 184 pounds cotton lint.

Dawson county touches the Blue Ridge chain only on the northwestern corner, but the rest of the country is hilly and broken. The rocks are highly micaceous, with the exception of an area of sandstone northwest of Dawsonville. There is a belt of red hornblendic lands south of the town, but the lands in general are gray and sandy, with clay subsoils. The Chattahoochee and the Etowah rivers approach very near each other on the northeast, and are separated only by a low ridge. Twenty-one and seven-tenths per cent. of the county area is under tillage, and 8.8 per cent. of this is in cotton, averaging 12.2 acres per square mile. Ten per cent. of the county is too mountainous for tillage.

LUMPKIN.

Population: 6,526.—White, 6,075; colored, 451.

Area: 290 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 21,019 acres.—Area planted in cotton, 269 acres; in corn, 11,232 acres; in wheat, 2,781 acres; in oats, 1,554 acres; in rye, 582 acres.

Cotton production: 109 bales; average cotton product per acre, 0.41 bale, 576 pounds seed-cotton, or 192 pounds cotton lint.

Lumpkin is one of the chief gold-bearing counties of the state, Dahlonega being the center of large mining operations. The surface of the county is hilly, and in the north mountainous. The principal streams are the Etowah river and the Chestatee. Twenty-five per cent. of the county is too mountainous for tillage. The soils are of the gray sandy and red clayey varieties, with clay subsoils, usual to the metamorphic region. (See regional description, page 32.) The average yields are 12 bushels of corn, 7 of oats, and 15 of wheat per acre. The average of cotton product per acre is very high as compared with that of other counties of the metamorphic region. Tilled lands comprise 11.3 per cent. of the county area; of this 1.3 per cent. is devoted to cotton, which averages 0.9 acres per square mile.

Shipments are made by wagon to the nearest railroad station, and there mostly sold to local buyers.

John C. Brittain, of Dahlonega, says:

The altitude of this county is too great for the cultivation of cotton, being from 1,600 to 3,500 feet above sea-level. Consequently no cotton, except a little for home use, is made in the county.

WHITE.

Population: 5,341.—White, 4,751; colored, 590.

Area: 180 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 19,889 acres.—Area planted in cotton, 228 acres; in corn, 11,097 acres; in oats, 2,228 acres; in wheat, 2,319 acres; in rye, 489 acres.

Cotton production: 68 bales; average cotton product per acre, 0.30 bale, 426 pounds seed-cotton, or 142 pounds cotton lint.

The surface of White county is rolling and broken, largely mountainous, and well timbered. The topographical and agricultural features are fully given in the following abstract, taken from the unpublished geological report on this county made by the late Professor F. H. Bradley, formerly of the state survey:

Nearly half of the surface of White county is occupied by the spurs of the Blue Ridge, along whose crest lies the northern boundary-line. On the northeast we find the heavy mass of Tray mountain, with long, high spurs and deep, narrow valleys, including such small amounts of level land that all but the outermost portions are destitute of houses and fields. In the northwest, on the contrary, the Horse range, a distinct spur of the Blue Ridge, and running at right angles to its general trend through fully half the length of the county, furnishes considerable high, flat areas, upon which are located several farms. Between this and Buzzard mountain, still northwest, along Town's creek, a narrow belt of farms follows the Tessentee turnpike; and along Spoiled Cane creek, between the Horse range and Tray mountain, another belt follows the Unicoi turnpike far toward the crest of the divide. The valleys at the base of the mountains are from 1,500 to 1,700 feet above the sea, the mountains from 3,000 to 4,435 feet. Through the center and southern portion of the county there is a rather scattering string of isolated knobs, of which Yonah (3,168 feet high) is the most prominent. The valleys have mostly a southerly trend with the spurs of the Blue Ridge, excepting Nacoochee valley, which lies nearly due east and west and forms a sort of gathering place or "low-ground" for all the smaller streams, which here form the Chattahoochee river.

The valleys have generally a fertile soil, and are mostly cultivated, producing good crops of corn and sorghum-cane, with smaller areas devoted to rice, hay, and pasturage. The second bottoms (or terraces, some 70 feet above stream-level) and lower uplands are mainly cultivated in corn and wheat, with some oats, tobacco, cotton, potatoes, etc., in small quantities for home use. Most of the bottom lands give evidence, by graves, pottery, implements, etc., of having been under cultivation for several centuries. While the vegetable portion of the soil has often recuperated through lying fallow for years and through having crops of weeds and grasses plowed under, yet the mineral portion has not thus been restored, except by the floods which occasionally overflow the lowest portions of the bottoms and deposit sediment.

The ridges of the lower half of the county are dry and mostly sandy. At the southern extremity they bear considerable areas of good yellow pine timber, together with tracts of scrubby oak, hickory, etc. Passing northward, the pine rapidly decreases and the hard woods increase in amount and variety. In the northern and more mountainous portion the forests have been less cut away, and the ridges, as well as the valleys, are therefore more abundantly watered and covered with a heavy growth of large timber—white, red, and Spanish oaks, hickory, black walnut, maple, chestnut, poplar, locust, cherry, gum, hemlock, holly, sassafras, etc. The soil here is mostly a black loam, and is covered with a scattering undergrowth of sourwood, etc., and an abundant growth of pea-vines, wild grasses, etc., thus making this a favorite pasture-ground.

HABERSHAM.

Population: 8,718.—White, 7,357; colored, 1,361.

Area: 400 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 28,365 acres.—Area planted in cotton, 1,762 acres; in corn, 14,797 acres; in wheat, 2,458 acres; in oats, 1,921 acres; in rye, 602 acres.

Cotton production: 597 bales; average cotton product per acre, 0.34 bale, 483 pounds seed-cotton, or 161 pounds cotton lint.

Habersham county has for its most prominent feature the various high mountain ranges and points, all well timbered. The Blue Ridge lies on the northern boundary, Tallulah mountain, an offshoot, trending southward to the Chattahoochee ridge. The surface of the country, exclusive of the mountains, is rolling, with valleys and uplands, and presents large areas of excellent lands for cultivation. Only 10 per cent. of the entire county is too hilly for tillage.

The rocks of the county comprise a great variety of the metamorphic series, and are highly siliceous. A belt of magnesian or talcose slates, with a limestone stratum of varying thicknesses, containing some galena, passes several miles south of Clarksville in a southwest course. The belt is so narrow that the lands on either side are not perceptibly benefited by the presence of the limestone. Lime-kilns have been in operation at several of these limestone exposures. The table-lands on the northeast have a sandy soil, derived from a dark sandstone (the almost exclusive rock), and are thinly settled, being too hilly for cultivation to any great extent.

Large areas of red-clay land occur in several portions of the county, especially on the north, where a belt 2 or 3 miles wide passes north of Batesville. (For description of lands and analyses, see general part, page 33.)

Tilled lands comprise 11.1 per cent. of the county area, and of this 6.2 per cent. is in cotton, averaging 4.4 acres per square mile.

The Raleigh and Augusta Air-Line railroad furnishes transportation to market.

ABSTRACT FROM THE REPORT OF C. H. SUTTON, OF CLARKSVILLE.

The *red lands* are the only ones devoted to cotton, and comprise the largest part of the area under cultivation. They have a soil 6 inches deep and a mica-clay subsoil. The growth is pine, oak, hickory, chestnut, ash, etc. Cotton comprises one-twentieth of the crops, and fertilizers are used to hasten its maturity. The yield is from 300 to 800 pounds of seed-cotton. The crops are troubled most with rag-weeds, cocklebur, Spanish needles, and crab-grass. The uplands wash readily if there is much mica-clay in the soil, otherwise not. But little damage is done. The crops of the county are corn, wheat, oats, potatoes, etc.

MIDDLE GEORGIA (METAMORPHIC).

This region embraces the counties of Franklin, Hart, Banks, Hall, Forsyth, Milton, Cherokee, part of Bartow,* Haralson, Paulding, Cobb, Fulton, De Kalb, Gwinnett, Jackson, Madison, Elbert, Oglethorpe, Clarke, Oconee, Walton, Rockdale, Clayton, Campbell, Douglas, Carroll, Heard, Coweta, Fayette, Spalding, Henry, Newton, Morgan, Greene, Taliaferro, Wilkes, Lincoln, and Columbia; parts of McDuffie, Warren, and Hancock; Putnam, parts of Baldwin, Jones, Bibb, and Jasper; Butts, Monroe, Pike, Upson, parts of Crawford, Taylor,* Talbot, Meriwether, Troup, Harris, and Muscogee.

FRANKLIN.

Population: 11,453.—White, 8,906; colored, 2,547.

Area: 330 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 61,117 acres.—Area planted in cotton, 16,901 acres; in corn, 20,523 acres; in wheat, 6,520 acres; in oats, 4,627 acres; in rye, 15 acres.

Cotton production: 5,723 bales; average cotton product per acre, 0.34 bale, 483 pounds seed-cotton, or 161 pounds cotton lint.

The surface of Franklin county is rolling and hilly, 5 per cent. being too much so for tillage. It is well timbered, and comprises the usual gray, sandy, and gravelly, as well as red-clay lands. (See regional description, page 34.) The latter chiefly prevails, a wide belt of a deep red color, derived from hornblendic rocks, passing through from northeast to southwest. These are frequently covered by thin layers, 2 or 3 inches deep, of sandy soils, which, by intermixture with the clays, produce a mulatto soil, usually dark from decayed vegetation. The growth is hickory, dogwood, and various oaks. Twenty-eight and nine-tenths per cent. of the area of the county is under tillage, 27.7 per cent. of these lands, averaging 51.2 acres per square mile, being in cotton. Corn, wheat, and oats are the other chief crops.

ABSTRACT FROM THE REPORT OF O. C. WYLY, OF CARNESVILLE.

The lands of the county are intermixed very generally, and comprise the red and the gray sandy and gravelly. The general yield is 400 pounds of seed-cotton per acre on fresh lands, and an increase of 100 or 200 pounds after four years' cultivation. The lint rates as middling. One-sixth of the lands now lies out; they wash readily, doing much damage. These old lands produce cotton finely, and are troubled chiefly with crab-grass and hog-weed.

Shipments of cotton are made by the Elberton and Air-Line railroad, or by wagon, to Athens, at 50 cents per 100 pounds.

HART.

Population: 9,094.—White, 6,212; colored, 2,882.

Area: 330 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 39,759 acres.—Area planted in cotton, 14,923 acres; in corn, 14,312 acres; in wheat, 4,646 acres; in oats, 4,876 acres; in rye, 10 acres.

Cotton production: 5,094 bales; average cotton product per acre, 0.34 bale, 486 pounds seed-cotton, or 162 pounds cotton lint.

Hart is a rolling, timbered county, with level table-lands between the streams. Gray sandy lands, from mica-schists, cover almost the entire county south from Hartwell and north for several miles. Red lands then prevail to the Franklin county-line, formed from the decomposed hornblende rocks. (For character of lands, etc., see general description, page 29.) All of the lands of the county are considered tillable. The lands under cultivation comprise 18.8 per cent. of the county area; 37.5 per cent. of tilled lands is planted in cotton, averaging 45.2 acres per square mile. Its yield per acre is a little more than the average for the region.

ABSTRACT FROM THE REPORT OF C. W. SEIDELL, OF HARTWELL.

The gray lands are chiefly devoted to cotton. They cover two-thirds of the county, lie along the uplands at some distance from the creeks and rivers, have a sandy gray upland loam soil from 3 to 4 inches in depth, with generally a red-clay subsoil, and contain much quartz gravel. The growth is principally pine, with some oak, hickory, gums, ash, etc. The soil is early and easily tilled, producing cotton, corn, wheat, rye, oats, and potatoes. Cotton comprises two-thirds of the crop, grows to a height of 3 or 4 feet, runs to weed on very rich land, and yields about 250 pounds of seed-cotton per acre. Cultivation of three years improves it and increases the yield to 375 and 400 pounds. Crab-grass is the most troublesome weed. Very little of the land now lies out, and it washes but slightly on slopes. The bottoms of Savannah river are rich and productive, and are best adapted to corn. In this county the cotton crops are cut short by early frosts in the fall, but this is obviated by the use of fertilizers, which causes cotton to open in time to prevent damage.

Shipments are made to Augusta, Charleston, and Baltimore. The rates of freight are $3 25 to Baltimore and $2 75 to Charleston per bale.

BANKS.

Population: 7,337.—White, 5,830; colored, 1,507.

Area: 320 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 31,261 acres.—Area planted in cotton, 8,251 acres; in corn, 11,789 acres; in wheat, 3,036 acres; in oats, 2,022 acres; in rye, 24 acres.

Cotton production: 2,960 bales; average cotton product per acre, 0.36 bale, 510 pounds seed-cotton, or 170 pounds cotton lint.

Banks county, with its northern boundary resting on the Chattahoochee ridge at an elevation of a little over 1,600 feet above the sea, gradually declines southward from the foot of the ridge, the general elevation being then about 700 feet. The surface of the country is hilly, 2 per cent. being too much broken for successful tillage. Sixty-seven per cent. of the entire county is still covered with its original timber-growth of oaks, short-leaf pine, chestnut, hickory, and gum on the uplands, and gum, ash, maple, oak, and poplar on the bottoms and lowlands. The tributaries of Broad river flowing southeast into the Savannah, drain the surface of the county.

The usual variety of gray sandy and red clayey soils, with their clay subsoils, occur throughout the county. (See general description, page 34.)

Red clay lands cover the southern portion of the county, and a narrow belt lying 6 miles north of Homer extends in a southwesterly course across the county. These red lands are interspersed throughout with gray sandy soils, while the rocks, though chiefly hornblendic, are associated with gray and micaceous gneisses. The lands along the streams are sandy, while the bottoms are narrow and present but small areas suitable for cultivation. The lands devoted to the cultivation of cotton are the uplands, which have a depth of from 6 to 10 inches and a red-clay subsoil.

The cultivated lands comprise 15.3 per cent. of the county area. Cotton is the second crop in acreage, and averages 25.8 acres per square mile, or 26.4 per cent. of tilled land. Its average product per acre is above that of the region at large, and also of the state.

ABSTRACT FROM THE REPORT OF C. C. SANDERS, OF GAINESVILLE.

This county is too near the mountains to produce cotton well. The cold and late springs incident to the high elevation above sea-level retard the growth of cotton in early spring and the early frosts of autumn prevent opening. With fertilizers and good cultivation the crops since the war have generally come in in sufficient time. Several classes of land may be distinguished, viz:

1. *The red, gray,* and *mulatto uplands,* covering three-fourths of the county, and best adapted to corn, wheat, oats, and potatoes, though cotton comprises one-third of the crops, and yields on fresh lands 800 pounds of seed-cotton per acre. After five years' cultivation (unmanured) the yield is only from 300 to 500 pounds, and 1,545 pounds are required for 475 pounds of lint. The stalk grows to an

rage height of 3 feet, is most productive at 2½ feet, and inclines to run to weed in wet weather after a drought. Crab-grass is the st troublesome enemy to contend with. While these uplands wash readily on slopes, the damage done is but slight, and the valleys benefited by the deposits of sand and clay.

2. The *light sandy lands* extend but 2 or 3 miles along small creeks, are 1 foot in depth, and have a heavy clay subsoil. They are late, d, and well drained, easy to cultivate, yielding, when fresh, 1,000 pounds of seed-cotton per acre. After five years' cultivation the ld is from 600 to 900 pounds. But one-tenth of this land is planted in cotton, which grows to a height of about 4 feet, but is most ductive at 3 feet.

3. The *high and dry sandy bottoms* of the creeks comprise but a small area for several miles along the creeks, and have a growth of oak, m, poplar, and a depth of 18 inches. They are early, warm, and easy to cultivate in dry weather, and but very little cotton is planted on m. They yield from 1,000 to 1,500 pounds of seed-cotton per acre when fresh, and from 800 to 1,000 pounds after five years. Very tle, if any, of the lands of the county is turned out to rest. Shipments of produce are made by railroad to Gainesville.

HALL.

Population: 15,298.—White, 13,040; colored, 2,258.

Area: 540 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 64,981 acres.—Area planted in cotton, 12,245 acres; in corn, 26,632 acres; in wheat, 8,771 acres; oats, 4,798 acres; in rye, 369 acres.

Cotton production: 5,133 bales; average cotton product per acre, 0.42 bale, 597 pounds seed-cotton, or 199 unds cotton lint.

Hall county is divided by the Chattahoochee river, on the south side of which, at a distance of several miles, a ridge forming the Atlantic and Gulf divide. The surface of the county north and south of this ridge is hilly d broken. On the north, and lying near the railroad line, is a narrow stratum of magnesian limestone, with ssociated galena in localities, accompanied by magnesian and talcose slates; but the belt of these is not wide ough to give to the lands any marked difference from those of the other rocks. In the southern part of the county ere is a belt of red lands derived from decomposed hornblendic rocks, which also comprise a large part of the lands the county, though the gray sandy lands are most abundant, being derived from gneisses and mica-schists filled ith gold-bearing quartz veins. (For description of soils, see page 34.)

Gold-mining is carried on extensively in the country north of Gainesville. Ten per cent. of the county is too illy for tillage, and 30 per cent. has been cleared. The crops are corn, wheat, oats, cotton, potatoes, grapes, and uits. The percentage of county area under tillage is the same as that of Hart (18.8 per cent.), cotton averaging 2.7 acres per square mile, or 18.8 per cent. of tilled lands. Cotton has been planted in this county since 1872, and nly with the use of fertilizers.

The average yield of the county per acre is excellent, there being but nine counties in the state with a greater ercentage.

ABSTRACT FROM THE REPORT OF DR. M. F. STEPHENSON, OF GAINESVILLE.

Cotton is planted equally on gray sandy and red uplands and on alluvial lowlands, and comprises one-fourth of the crops. The *ulatto* and *red lands* are considered the best, and constitute one-half of the area of the county. The soil has a depth of 2½ inches, with reddish-brown subsoil and a growth of oak, hickory, walnut, cherry, poplar, and pine. It is easy to till, and is early and well drained, coducing half a bale, or 700 pounds of seed-cotton per acre on fresh lands. It is improved by cultivation, yielding the fifth year from 700 900 pounds of seed-cotton per acre. The stalk is most productive at a height of 2 feet, and is troubled most by rag-weeds. One-tenth the land originally under cultivation now lies out, and when taken in again is almost as productive as when fresh, and fully as much if deep planting is practiced. These lands wash readily, but no serious damage is done.

The *gray sandy lands* are best adapted to cotton culture. They produce from 300 to 700 pounds of seed-cotton when fresh, but nly 300 pounds after five years' cultivation. The growth is oak, hickory, dogwood, and poplar. The *bottom lands* have a fine, sandy am soil from 5 to 12 feet deep, yielding from 400 to 600 pounds of seed-cotton after five years' cultivation.

Under the old system of farming the average yield was of wheat from 7 to 10 bushels per acre; now, under the new, the yield is from 0 to 30, and sometimes 40 to 46 bushels. Of corn cultivated 2½ inches deep without manure the yield ranged from 10 to 15 bushels; now, y turning under green crops in the fall, with lime composted with ashes and muck, the product is from 20 to 60 bushels, with promise of 100 nd more. Clover is our main helper. Sheep-raising is being introduced successfully. Our people are slow to adopt modern improvements; nly 14 farmers in the whole county have adopted modern systems, and they more than double their crops with the same labor. With 2½ eet of subsoiling they could quadruple their products. With proper tillage we can make 2 bales of cotton per acre, instead of half a ale; 100 bushels of corn instead of 15 bushels, and 50 bushels of wheat instead of 7.

We cling to the old and ancient system of "animalism"—just enough to live on—and let science go. Nine-tenths of our farmers feed ll their crops with the same manure, without respect to character of soil or wants of each crop. I have raised 427 bushels of Irish otatoes from one acre, highly manured with ashes, which the year before made only 17 bushels. It is the kind of food, and not the quantity iven to the crops, that produces best yields.

Shipments of cotton and other produce are made by railroad.

FORSYTH.

Population: 10,559.—White, 9,072; colored, 1,487..

Area: 250 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 53,042 acres.—Area planted in cotton, 12,121 acres; in corn, 20,324 acres; in wheat, 7,797 acres; n oats, 6,040 acres; in rye, 74 acres.

Cotton production: 5,044 bales; average cotton product per acre, 0.42 bale, 594 pounds seed-cotton, or 198 pounds cotton lint.

The monotony of a rolling metamorphic country is varied in Forsyth county by Sawnee mountain, a low range of hills north of Cummins, which passes at first in an easterly direction, connects with Coal mountain, and turns northward in the northeastern part of the county, forming the water-divide between the Chattahoochee and Etowah

rivers. The highest point of Sawnee mountain is only 400 feet above the surrounding country and 1,968 feet above the sea. The crest of the ridge is sharp and the sides rather steep, a micaceous sandstone (itacolumite) outcropping along the summit. Five per cent. of the county is too hilly and broken for tillage, and one-half of the rest has been cleared. The northern part lies in the gold belt, and its lands are mostly gray sandy and gravelly, with narrow belts of red clays.

In the central part there is a belt of red and mulatto lands 6 or 8 miles wide, from mica-schists and some hornblendic gneisses, while on the south the lands are again gray and gravelly, with large quartz fragments lying on the surface. This also is gold-bearing. One-third of the county area is under tillage, and of this 22 9 is in cotton, which has an average of 48.5 acres per square mile. The soils are described in the following abstract:

ABSTRACT FROM THE REPORT OF H. C. KELLOGG, OF PLEASANT GROVE.

The lands may be classed as follows: *Red or mulatto uplands*, covering three-fourths of the county, with a sandy clay soil from 6 to 18 inches deep and a subsoil mostly of red clay, firm and compact, and which drains easily. These lands are best adapted to corn and wheat, though of late years the culture of cotton has increased 100 per cent., and it now comprises one-third of the crops. The average yield on fresh land, and also on land ten years in cultivation, is 600 pounds per acre, or 800 when manured, 1,485 pounds making 475 pounds of "middling" lint from fresh and 1,425 pounds from old lands, the lint then rating as good middling. The lands are found to produce cotton better when old than when fresh, and hence only 10 per cent. of the lands now lie out, while a few years ago there was 20 per cent. Very little damage is done by washing of the hills. Rag-weed and crab-grass are troublesome.

The *gray sandy and gravelly lands*, covering one-fourth of the county, are found mostly on ridges, and have a light red or yellow subsoil at 6 inches depth. Cotton very seldom runs to weed on this land, but grows to a height of 3 feet, and produces, when fresh and after four years' cultivation, 500 pounds of seed-cotton per acre, the staple rating the same as on red lands. These old lands are also considered best for cotton.

Cotton is shipped, soon after ginning, by wagon, to the railroad, and thence to Atlanta. Rates are 90 cents for 40 miles, and $1 for 50 miles, per bale.

MILTON.

Population: 6,261.—White, 5,484; colored, 777.

Area: 110 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 30,629 acres.—Area planted in cotton, 9,989 acres; in corn, 13,039 acres; in wheat, 4,187 acres; in oats, 3,025 acres; in rye, 113 acres.

Cotton production: 4,490 bales; average cotton product per acre, 0.45 bale, 642 pounds seed-cotton, or 214 pounds cotton lint.

The surface of Milton county is rough and broken, the water-divide between the Chattahoochee and Etowah rivers passing through it. The lands are largely gray sandy and gravelly, with clay subsoils, and their surface is covered with quartz fragments from the many large veins and seams (gold-bearing) that intersect the mica-schists and gneisses. In some localities the rocks are highly garnetiferous, covering the soil with this small rounded material. The county is well timbered with oak, hickory, and pine, and a variety of undergrowth.

Ten per cent. of the area of the county is either too hilly or too swampy for cultivation, and about 40 per cent. has been cleared. The uplands yield 15 bushels of corn per acre when cultivated.

The lands are similar in character, and the methods of culture are the same as in the lower part of Forsyth county, and 43.5 per cent. of the county area is under cultivation; 32.6 per cent. of this is in cotton, the average being 90.8 acres per square mile. The average yield of cotton for the county is excelled but by five counties of the state, due probably in part to the rich alluvial valley lands of the Chattahoochee river on the southern border.

Cotton is hauled by wagon to the railroad, and thence shipped to Atlanta.

CHEROKEE.

Population: 14,325.—White, 12,699; colored, 1,626.

Area: 470 square miles.—Woodland, all; northwestern, 11 square miles; metamorphic, 459 square miles.

Tilled lands: 63,289 acres.—Area planted in cotton, 13,739 acres; in corn, 26,330 acres; in wheat, 10,283 acres; in oats, 5,172 acres; in rye, 416 acres.

Cotton production: 5,615 bales; average cotton product per acre, 0.41 bale, 582 pounds seed-cotton, or 194 pounds cotton lint.

The entire surface of Cherokee county is hilly, 15 per cent. being too broken for cultivation, especially in the northwest and west, where the Pine Log range of mountains passes through the county. On the east the lands are more level, and on the south, along Little river, they are undulating

The lands embrace the usual gray sandy and gravelly and the red clayey varieties common to the region. (See general descriptions, page 32.) A few miles south of Canton small common garnets cover the lands in great abundance.

The surface of the county is well timbered with oaks and hickory, and is comparatively sparsely settled.

The dark gray gravelly lands predominate, especially in the northern part of the county, and are interspersed throughout with small patches of red. On the south of Canton there are a number of narrow belts of red lands derived from hornblendic rocks. The largest of these belts has a width of several miles. Twenty-one per cent. of the county area is under tillage, and 21.7 per cent. of these tilled lands are in cotton, the average being 29.2 acres per square mile; its yield per acre is large.

The following experiment of M. S. Paden, of Woodstock, was reported to the state department of agriculture:

Soil, gray and sandy, with a mulatto subsoil, was cleared about thirty years ago. Original growth, red oak and black-jack, with some chestnut and pine. The land had been lying out since the war, and had grown up in sassafras and young pines. When again cleared and planted the yield of the rows was about 245 pounds of seed-cotton per acre. Those rows having 200 pounds of fertilizers per acre freshly applied yielded from 840 to 1,085 pounds per acre. The application of lime alone gave a yield of 490 pounds per acre. Eight different brands of commercial fertilizers were separately used in this experiment, the result of each being noted.

ABSTRACTS FROM THE REPORTS OF ELIAS C. FIELD, OF CANTON, AND M. S. PADEN, OF WOODSTOCK, NEAR THE COBB COUNTY-LINE.

The lands of the county are: 1. The *red clay* or *mulatto uplands*, considered the best in the county, though comprising but one-fourth of the area with its belts and patches. Corn succeeds better than cotton on this soil, though the latter comprises one-half of the crops. Six hundred pounds of seed-cotton per acre are raised on fresh and 400 pounds on old lands of ten years' cultivation. Three feet is the most productive height of the stalk, and very heavy manuring and topping are practiced to prevent its running to weed in wet weather. The most troublesome weeds are cocklebur and hog-weeds. The cotton rates as good middling. The growth on the uplands is post oak, poplar, hickory, with some buckeye. The soil is 6 inches deep, and has a deep red-clay subsoil, rather free from sand, which bakes very hard when first exposed, but gradually partakes of the nature of the soil. It is quite impervious when undisturbed. The lands formerly worn out are now considered the best cotton lands of the uplands, as they are loose and sandy, and fertilizers can be used to great advantage.

2. The *light sandy bottom lands* are thought by some to be the best cotton lands of the county. They extend along the streams in small patches sometimes for miles, and have a growth of pine, sweet gum, sourwood, and poplar. The depth is but a few inches to a very stiff mulatto subsoil, which is underlaid by sand and gravel at 2 feet. Cotton comprises 25 per cent. of the crops on these lands. They have a productiveness equal at first to the red lands, but wear out more rapidly. In ten years the land produces but 200 pounds per acre without the aid of fertilizers, and as a consequence about one-half of this land now lies out. Sorrel and "poor Joe" are the most troublesome weeds.

3. The *dark sandy second bottoms* of the streams comprise but a small proportion of the lands of the county, and differ from the sandy first bottoms in yielding but 500 pounds of seed-cotton per acre at first and 300 after ten years' cultivation, and in having as troublesome weeds the Spanish needles and smart-weed. One-fourth of this land now lies out, and is injured one-fourth by the washings of the hills. The growth of these bottoms is beech, birch, willow, and sweet and black gums.

Cotton on the low and flat lands is liable to be late and is more subject to being killed by frost than on the uplands, and hence the latter are preferred as cotton lands. In this county the crops are slow in starting, but grow very rapidly through the latter part of May and on until matured. Before the late civil war very little cotton was planted in this county, but by the use of fertilizers it has been brought up to a high standard.

As soon as ready, cotton is shipped by the North Georgia narrow-gauge railroad to Marietta at 40 cents, or to Atlanta for $1 per bale.

BARTOW.

(See "Northwest Georgia"

HARALSON.

Population: 5,974.—White, 5,821; colored, 153.

Area: 330 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 28,225 acres.—Area planted in cotton, 4,860 acres; in corn, 13,048 acres; in wheat, 4,909 acres; in oats, 2,736 acres; in rye, 88 acres.

Cotton production: 2,035 bales; average cotton product per acre, 0.42 bale, 597 pounds seed-cotton, or 199 pounds cotton lint.

The Dug Down mountains of Haralson county form the northern limit of the metamorphic region in this part of the state. Southward from the mountains the surface of the county is well timbered, broken, and hilly, with mostly the dark-gray sandy lands described in the general part, page 32. A red clay belt crosses in a southwesterly course into Carroll county. Seven and one-half per cent. of the surface of the county is said to be too hilly for cultivation, and 3 per cent. is of irreclaimable swamp. The rocks are the usual metamorphic gneisses and mica-schists, filled with gold-bearing quartz seams and veins.

The tilled lands embrace 13.4 per cent. of the county area. Of these 17.2 is in cotton, its average being 14.7 acres per square mile. The yield per acre is more than that of the region or of the state at large.

ABSTRACT FROM THE REPORT OF W. C. M'BRAYER, OF DRAKETOWN.

The cotton lands of the county may be classed as gray uplands, red uplands, and white piny woods soil.

1. The *gray sandy uplands*, with oak and hickory growth, comprise two-thirds of the county area, and are best adapted to corn, wheat, and oats, though 60 per cent. is planted in cotton. The yield is 800 pounds of seed-cotton per acre on fresh lands and from 500 to 700 pounds after five years' cultivation. Rag- and hog-weeds are most troublesome. The lands wash readily after three or four years, but the damage done is not great. Efforts to check it are made by hillside ditching and by rock dams.

2. The *red lands* extend northeast or southwest indefinitely, and are from 3 to 10 miles wide. The growth is hickory, oak, chestnut, poplar, dogwood, buckeye, persimmon, and black gum. In all respects these lands resemble the gray sandy lands already mentioned.

Shipments of cotton are made to Atlanta and Rome.

PAULDING.

Population: 10,887.—White, 9,903; colored, 984.

Area: 340 square miles.—Woodland, all; northwestern, 46 square miles; metamorphic, 294 square miles.

Tilled lands: 52,654 acres.—Area planted in cotton, 16,158 acres; in corn, 21,953 acres; in wheat, 6,372 acres; in oats, 6,101 acres; in rye, 116 acres.

Cotton production: 7,352 bales; average cotton product per acre, 0.46 bale, 648 pounds seed-cotton, or 216 pounds cotton lint.

The northern part of Paulding county, perhaps comprising one-half of its entire area, is very hilly and broken. The Dug Down mountain chain covers a large portion of it. A water-divide also comes in from the Lost and Kennesaw mountain range on the east and turns southwest and south into Carroll county. The streams are thrown

into three directions by these ridges, those on the north emptying into the Etowah river, those on the southeast into the Chattahoochee, and the rest into the Tallapoosa, on the southwest. On the south the country is rolling but nearly all tillable. The entire county is well timbered, and about 53 per cent. is said to be cleared, 8 per cent. being too mountainous or rocky for tillage. Gold and copper ores and asbestus are found in the county. A small area of the county on the north is covered by the conglomerates and sandstones of the northwestern region. Its lands are sandy, and the section is but little in cultivation, except along the larger streams.

Over the rest of the county southward the red clays and gray sandy soils are found intermingled throughout, but all have yellow or red clay subsoils, and are similar to other lands of the region (see pages 32, 33). The red lands form one or two narrow belts across the county, agreeing in course with their accompanying hornblendic rocks, viz, southwest and northeast.

In going from Dallas to Draketown, on the southwest, red lands are found to predominate for the first 4 miles; then a belt of 2 miles of gray sandy lands is crossed, followed by three-fourths of a mile of red lands again. Thus they alternate through the county. On the southeast they alternate in belts of from one-half mile to one mile in width. Granite outcrops are abundant in this southeast section. One area 4 miles south of Dallas has a width of 4 miles and a growth of long-leaf pine. Tilled lands comprise 24.2 per cent. of the county area. Of these 30.7 are in cotton, with an average of 47.5 acres per square mile. The crops of the county are cotton, corn, wheat, oats, and potatoes.

Cotton is one of the principal crops of the county, and with the aid of fertilizers the average yield per acre is high. But four counties of the state are above it in this respect.

ABSTRACT FROM THE REPORT OF J. R. PREWETT, OF DALLAS.

The gray sandy and the red clay lands are chiefly devoted to cotton culture. The *gray sandy* lands comprise three-fifths of the area of the county, and has a depth of 4 inches, a yellow-clay subsoil, and a growth of post, white, and red oaks, hickory, pine, and some poplar. Cotton, which comprises one-half of the crops, grows to a height of from 3½ to 4 feet, and yields 900 pounds of seed-cotton per acre on fresh land. Ten years' cultivation (unmanured) reduces this yield to 450 pounds, and 1,545 pounds are then required to make 475 pounds of lint. Rag-weed gives cotton crops most trouble. One-fifteenth of these lands now lies out, and with ten or fifteen years' rest yield as well as at first. Both uplands and valleys are injured to some extent by the washing away of the soil and the formation of gullies. Some farmers make efforts to check the damage, and with good success.

The *red lands* have a growth of oak and hickory and an orange-red sandy clay loam soil 6 inches in depth, underlaid by red clay. The soil is early, warm, well drained, and difficult to till in wet seasons. Cotton comprises one-third of the crops, grows to a height of 3½ feet, and yields 600 pounds of seed-cotton per acre on fresh land. Ten years' cultivation (unmanured) reduces this yield to 300 pounds. Two per cent. of this land now lies out, and unless fertilized does not yield well again. The uplands do not wash much.

Shipments of cotton are made to the various towns along the railroad, by wagon, at 40 cents per 100 pounds.

COBB.

Population: 20,748.—White, 14,734; colored, 6,014.

Area: 400 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 88,578 acres.—Area planted in cotton, 27,250 acres; in corn, 29,699 acres; in wheat, 10,147 acres; in oats, 6,789 acres; in rye, 85 acres.

Cotton production: 13,092 bales; average cotton product per acre, 0.48 bale, 684 pounds seed-cotton, or 228 pounds cotton lint.

The surface of Cobb county is rolling and hilly, with also a number of isolated and prominent low mountains. A dividing ridge, or water-divide, passes through the county, Sweat mountain on the northeast, Black Jack and Kennesaw in the center, and Lost mountain on the west, being prominent points of the ridge, without which it would hardly be noticed, on account of the slight elevation.

The first two of these mountains are composed of quartz-rock almost exclusively, and are situated on the southeastern side of a broad belt of deep red lands derived chiefly from hornblendic rocks. (See analysis, page 35.) Kennesaw and Lost mountains are composed of hornblendic gneisses and schists, and are in the northern part of the red belt as it passes westward out of the county. Kennesaw is the most prominent of these mountains, standing out so high above the rolling country around as to be seen from a great distance. All of these mountains have narrow summits and abrupt sides, their trends following the course of the red belt as marked on the map. On the north of this water-divide are Allatoona and Noonday creeks, flowing northward into the Etowah river; on the south the drainage of the streams is into the Chattahoochee river. On the north, at the Cherokee county-line, the red belt has a width of only 3 or 4 miles, which increases to 8 or 10 miles after it reaches the middle of the county and turns westward. The soil is deep and usually quite free from gravel. In the northwestern corner of the county the country is rolling, with a gray sandy soil full of quartz gravel, overlying a red and yellow clay subsoil at depths of from 6 to 12 inches. Some red land is found in this section also. This part of the county is gold-bearing.

On the south of the red belt the soils are very changeable. A large granite area lies between Marietta and Powder Springs on the southwest, the soils of which are gray and deep sandy. Associated with it are gray gneisses, with biotite mica and mica-schists. This last, with quartz seams, covers nearly all the eastern and southeastern portions of the county, which is rolling and hilly, the valleys between the hills being chiefly cultivated. The soil is usually gray and sandy, though occasional red spots of an outcropping syenite or decomposed hornblendic rock appear. On cultivation, the thin sandy soil becomes mixed with the clay subsoil, and a reddish or mulatto soil is the result.

The river valleys are not very wide, unless at some turn of the river where the current has been so long thrown against the opposite bank as to wear it away and leave an alluvial deposit in the bend. Some of these are subject to overflow, and all are very productive. The county is well timbered, and 34.6 per cent. of its area is under cultivation. Of the tilled lands 30.8 per cent. is in cotton, the average of that crop being 68.1 acres per square mile. Cobb is one of the two counties of the state having the highest average yield of cotton per acre, almost half a bale.

Shipments of cotton are made from Marietta to Atlanta by railroad.

J. T. Lindley, of Powder Springs, reports to the department of agriculture the results of an experiment on the dark mulatto land that has been under cultivation thirty-three years:

Fertilizers occasionally used; original growth, oak, hickory, and chestnut; yield without fertilizers, 700 pounds of seed-cotton; yield with 200 pounds commercial fertilizers from 1,000 to 1,470 pounds of seed-cotton. Another experiment with 300 pounds of fertilizers yielded 2,650 pounds of seed-cotton.

ABSTRACTS FROM THE REPORTS OF H. M. HAMMETT, OF MARIETTA, AND JAMES ROSWELL KING, OF ROSWELL.

The seasons in this county being very short, it is found necessary to use fertilizers to hasten the maturity of cotton crops. A *sandy loamy soil* is best adapted to the cultivation of cotton, comprising two-thirds of the lands of the county, and having a growth of pine, post, red, and white oaks, and hickory, poplar, and beech, a depth of 10 inches, and a grayish-red clay subsoil. The soil contains much quartz gravel. It is late, ill drained, and easy to till in wet but difficult in dry seasons, and is best adapted to corn; but if fertilized, cotton grows best. Cotton forms one-third of the crops, grows to a height of from 2 to 3 feet, and produces from 500 to 700 pounds per acre on fresh lands. Three years' cultivation reduces the yield to 300 pounds. The plant is inclined to run to weed when planted too close on rich land in wet weather, or when it is fertilized by strong stable manure. The usual methods of restraining it are topping and the use of commercial fertilizers. The staple rates as low middling, but the fiber is shorter on old lands. Rag-weeds and crab-grass are most troublesome on these lands, about 10 per cent. of which now lie out, but after a rest they produce as well as at first. They wash readily, doing serious damage in some places, but improving the valleys. Hillside ditching is employed to prevent this, and with satisfactory results.

The *red clay lands*, interspersed with the gray, cover about one-fourth of the county, and have a heavier subsoil at a depth of from 5 to 10 inches, containing flinty angular pebbles. The growth is post and red oaks, hickory, and pine—more hickory than on the sandy lands. It is easily tilled in dry weather, is cold and ill drained, and is best adapted to small grain, though cotton comprises about half the crops. The height usually attained by cotton on this soil is 3 feet, and it yields from 250 to 500 pounds of seed-cotton per acre, 1,545 pounds being required for 475 pounds of lint, rating as low middling. Three years' cultivation reduces this yield to 150 or 250 pounds of seed-cotton. Very little of this land now lies out, and it does not as readily wash as the sandy land.

FULTON.

Population: 49,137.—White, 28,295; colored, 20,842.

Area: 200 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 38,735 acres.—Area planted in cotton, 10,038 acres; in corn, 13,988 acres; in wheat, 2,836 acres; in oats, 3,069 acres; in rye, 24 acres.

Cotton production: 4,285 bales; average cotton product per acre, 0.43 bale, 609 pounds seed-cotton, or 203 pounds cotton lint.

The surface of Fulton county is rolling and well timbered, and mostly suitable for tillage, 2½ per cent. being said to be too broken.

The Atlantic and Gulf water-divide, entering the county from the east, turns southward at Atlanta to East Point and into Clayton county. The altitude of Atlanta is 1,050 feet above sea-level and 288 feet above the Chattahoochee river where crossed by the Western and Atlantic railroad.

The country north of Atlanta is covered with a gray sandy, gravelly soil, with large fragments of quartz-rock lying upon the surface and thickly deposited in many places, derived from somewhat gold-bearing quartz seams in the mica-schists and gneisses which form these lands. On the extreme north, near the river, there are large areas of gray lands, and these are also found on the west of the city toward the river.

On the southwest there is a large granitic area, with many abrupt and rounded hills and huge masses of granite, forming a rough and broken country. The rocks are coarsely crystalline, and are accompanied in some places by hornblendic material. The lands are gray, sandy, and gravelly, the material being usually coarse; the subsoils are yellow and red clays, which sometimes are exposed by denudation. Narrow belts of red lands also accompany the hornblendic outcrops of the section. The country embraced by the granite is bounded by Sandy creek on the north, while the Central railroad lies a little to the east of it, extends into Campbell county on the south, and on the west is separated from the river by a narrow belt of itacolumite sandstone and mica-schists.

The southeastern part of the county has a great variety of soils, derived from mica-schists, hornblende, gray gneisses, and steatites (soapstone). The red clay soils seem to predominate, and when sandy soils exist the red-clay subsoil approaches frequently so near the surface as to be turned up by the plow, forming with the gray soil a red mulatto land.

A prominent ridge of soapstone or saponite, with asbestus and serpentine, begins 3 miles south of Atlanta, and, passing along the south side of South river near the county-line, enters De Kalb county. The valleys formed in the bends of the rivers are in some places quite broad, and have a rich and highly productive sandy loam soil. They are, however, devoted to corn, as cotton is too liable to injury from early frosts and is too late in maturing. The stalk also is inclined to run to weed. The lands under tillage comprise 30.3 per cent. of the county area, cotton being the chief crop, its acreage embracing 25.9 per cent. of the tilled lands, and averaging 50.2 acres per square mile. The average yield is comparatively high, the county ranking ninth in the state in its cotton product per acre.

The city of Atlanta is the market for the cotton product of many of the counties, a large cotton factory using much of that brought in; but the greater part, after being reduced in bulk at the Morse steam cotton-compress, is shipped to northern or European markets over the many railroad lines that center in the city. The rates of freight are per 100 pounds.

The following experimental results were reported by Colonel I. W. Avery, of Atlanta, to the department of agriculture:

The soil was an ordinary clay land with a clay subsoil, that had been cleared for fifty years and manured the previous year. The yield in 1879 was 500 pounds of seed-cotton per acre without fresh manures; with 200 pounds of commercial fertilizers of various brands, and applied alone and in composts, on twenty-five experimental plats, the yield varied from 700 to 1,380 pounds of seed-cotton per acre, eighteen of the plats yielding over 1,000 pounds each per acre.

ABSTRACTS FROM THE REPORTS OF J. C. TUCKER, OF BEN. HILL P. O., AND THOMAS MOORE, OF BOLTONVILLE.

The *uplands*, with their gray and red soils, are the cotton lands of the county, one-third of the area under cultivation being devoted to that crop. The growth of the uplands is poplar, hickory, a variety of oaks, pine, sweet and black gums, and occasionally ash and dogwood. The soil has usually a depth of 6 inches over a red and sometimes yellow subsoil, which bakes in the sun and wind. The land is early, warm, well drained, and easy to till, producing crops of corn, cotton, wheat, oats, potatoes, and sorghum, but is adapted to corn, cotton, and oats.

Cotton grows to a height of 2 feet in dry and 3 feet in wet seasons, producing 600 pounds of seed-cotton on fresh lands. After four years' cultivation this yield is reduced to 400 pounds, and in ten years to 300 pounds. The staple also is shorter and the seed lighter.

About one-half of this land now lies out and is grown up in sedge-grass or in old-field pines or "pine orchards". The latter do well when taken in again, but lands covered with sedge-grass remain poor for a year or two. Most of the fields are cut up by the washings of the land. Hillside ditching, and also deep plowing, prevent this damage to a great extent. Crab-grass is the chief enemy to crops on these uplands. The rag-weed is very common.

DE KALB.

Population: 14,497.—White, 9,954; colored, 4,543.

Area: 280 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 60,023 acres.—Area planted in cotton, 19,318 acres; in corn, 21,034 acres; in wheat, 5,866 acres; in oats, 5,974 acres; in rye, 36 acres.

Cotton production: 8,008 bales; average cotton product per acre, 0.41 bale, 591 pounds seed-cotton, or 197 pounds cotton lint.

The surface of De Kalb county has the usual undulating character of the metamorphic region. Stone mountain, a bald mass of granite, is the most prominent point in the county, and the village near its foot, Stone Mountain, formerly had the name of New Gibraltar. These granites extend east and south over the rest of the county, covering it with gray sandy and gravelly soils and yellow clay subsoils. Over the rest of the county are found the usual red clay and gray sandy lands, with the intermediate grades of mulatto.

A red belt, and the only one of any extent, passes through the county, via Decatur, from Gwinnett, into Fulton county, south of Atlanta, and has a general width of about 5 miles. North of this the lands are gray and gravelly, with fragments of quartz on the surface, and are slightly gold-bearing. On the south of the red belt the county is also gray sandy until the ridge of soapstone or saponite is reached in the southern portion. This ridge enters from Fulton county with an easterly trend, but is not continuous. Asbestus (short fiber) is associated with the rock. The lands from these rocks are rather red, but the area is not very great, and the magnesian character of the material, from decomposition, is lost in the soil by its large intermixture with other constituents. Seventy-five per cent. of the county is said to have its original timber growth.

A little more than one-third of the county area is under cultivation. Cotton acreage is less than that of corn, but comprises 32.2 per cent. of the tilled lands, and averages 69 acres per square mile. Fertilizers are used in its culture, and the yield for the county is very good. There are but fourteen counties of the state having a greater average yield.

ABSTRACTS FROM THE REPORTS OF F. A. RAGSDALE, OF LITHONIA, AND T. J. FLAKE, OF PANTHERSVILLE.

The soils may be classed as bottom and upland gray, red, and mulatto lands. There is but little bottom land in the county, and it is seldom planted in cotton, as that crop runs too much to weed and matures too late; corn and oats alone are planted. The uplands are very much mixed. The mulatto soil is best for all crops, the red next; but the gray is easier cultivated, and the increase in the number of acres to both stock and hands renders the gray soil preferable for cotton. One hand, with a mule, can cultivate so much more of the gray lands than of the red or mulatto that the result is a greater total number of bales.

The *gray upland soils* cover about two-thirds of the county. They are usually gravelly and fine sandy to a depth of 3 or 4 inches, and have a stiff clay subsoil. These lands are moderately well drained and easy to till. The chief crops of the county are corn, cotton, wheat, oats, and sweet potatoes, but this land is best adapted to cotton and oats. The former grows to a height of 30 inches, producing from 700 to 800 pounds of seed-cotton per acre when fresh, or from 300 to 400 pounds after six years' cultivation. Crab-grass and "poor Joe" are most troublesome on gray soils. One-fifth of these lands now lie out, and when taken in again yield about 500 pounds of seed-cotton per acre. They suffer serious damage by washing on slopes, but the valleys are not much injured by it. Hillside ditching is practiced to obviate the damage.

The *red uplands* are not continuous, and are the wheat lands of the county. They have a growth of oak and hickory principally, with some chestnut, poplar, black-jack, ash, etc. The soil is a stiff red clay, which, when exposed to the sun, bakes and becomes very hard, and plowing is then impossible. It has a depth of 4 or 5 inches, and contains hard, rounded, and angular rocks. When well drained it is earlier than the gray soil. Cotton grows to a height of from 30 to 48 inches, producing 800 pounds of seed-cotton per acre when fresh and 600 pounds after six years' cultivation. About 10 per cent. of this land now lies out, but after a rest of two or three years it is equal to fresh land.

"*Ginger-bread*" *mulatto soils* cover about one-sixth of the county, interspersed with the red and the gray. The growth is oak, hickory, dogwood, poplar, etc. Its depth is 5 or 6 inches over a heavier subsoil, which, when broken up, becomes much like the surface soil. It is easier cultivated than the red, and resembles it in productiveness. The *bottom lands* are not devoted to cotton, as it usually runs to weed too readily and matures too late. These lands are therefore given up to corn and oats. Near the creeks and rivers the crop is most liable to be killed earlier by fall frosts than a few miles away, on the ridges, and it is also later in growing off in the spring.

Fifteen hundred and forty pounds of seed-cotton make 475 pounds of lint, which, when clean, rates as middling. Shipments are made to Atlanta by railroad or by wagons.

GWINNETT.

Population: 19,531.—White, 16,016; colored, 3,515.
Area: 470 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 96,582 acres.—Area planted in cotton, 27,549 acres; in corn, 36,568 acres; in wheat, 11,138 acres; in oats, 8,526 acres; in rye, 98 acres.
Cotton production: 11,810 bales; average cotton product per acre, 0.43 bale, 612 pounds seed-cotton, or 204 pounds cotton lint.

The surface of Gwinnett county is rolling, hilly, and in places somewhat broken. It is well timbered. The Atlantic and Gulf water-divide passes southwestward through the western part of the county near the Chattahoochee river, but with an ascent so gradual from the east as not to be perceptible, except on the north, where the county is hilly and broken, Hog mountain being the most prominent range of hills. The latter, with its unusual southeast trend, forms a sharp bend in the "divide" to the southeast. The summit of the mountain is narrow, with outcrops of itacolumite sandstone. A belt of deep red lands enters the county at the southern terminus of Hog mountain and passes through Lawrenceville southwest into De Kalb county. It has a width of several miles.

Across the lower part of the county, northeast and southwest, and to within 3½ miles of Lawrenceville, is a belt of granite, a continuation of the Stone Mountain region, with "flat rocks" and rounded bowlders and a level country for the most part. Quartz crystals are abundant in localities along the granite belt, but with one terminal only complete.

Along the river there are some valley lands having a sandy loam soil, rich and very productive, but not very broad. Cotton on these lowlands runs too much to weed and is late; hence the uplands are preferred for that crop. The lowlands are devoted to corn.

The upland country along the river is very broken and hilly as far back as the "divide". Of the entire county 5 per cent. is said to be too broken for tillage.

The lands under cultivation comprise 32.1 per cent. of the county area. Of these, 28.5 per cent. is in cotton, with an average of 58.6 acres per square mile. In its cotton product per acre there are but seven counties in the state that rank above Gwinnett.

ABSTRACT FROM THE REPORT OF R. D. WINN, OF LAWRENCEVILLE.

The cotton lands of the county embrace the light gray sandy, the red clays on slopes and level places, and the chocolate or mulatto soils. The *gray sandy soils*, with their tough red-clay subsoils, cover two-thirds of the county, and have a growth of oaks of all species, hickory, chestnut, ash, beech, etc. They are well adapted to all crops that are produced in the county, viz, corn, wheat, oats, rye, cotton, sweet and Irish potatoes, pease, beans, tobacco, etc. But one-half of the cultivated land is devoted to cotton. The hillsides and slopes wash readily, doing serious damage to the uplands, but very little to the valleys, as the "settlings" are beneficial. One-fifth of the area originally under cultivation now lies out. When grown up in pines, after fifteen or twenty years, and reclaimed with fertilizers, the land yields as well as ever.

Fresh lands produce from 500 to 800 pounds of seed-cotton, or one-third this weight of lint, which rates as good middling. Cultivation for eight years reduces this to 300 or 400 pounds, with a slightly inferior staple, 1,425 pounds then making 475 pounds of lint. Crab-grass is most troublesome. The deep red clay land, after twenty years' cultivation, without fertilizers, yields from 600 to 800 pounds of seed-cotton per acre. Its growth is post and red oaks and pine.

Shipments are made mostly to Atlanta.

JACKSON.

Population: 16,297.—White, 11,139; colored, 5,158.
Area: 360 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 67,109 acres.—Area planted in cotton, 24,874 acres; in corn, 27,675 acres; in wheat, 7,485 acres; in oats, 7,355 acres; in rye, 34 acres.
Cotton production: 9,482 bales; average cotton product per acre, 0.38 bale, 543 pounds seed-cotton, or 181 pounds cotton lint.

The surface of Jackson county is rolling or undulating, with extensive level areas, and the entire county was at one time thickly timbered with post oak, pine, hickory, poplar, chestnut, etc.

A broad belt of red lands extends from Franklin county on the northeast through the center of this county to Jefferson county. Its width is from 8 to 10 miles, and the lands are mostly derived from hornblendic rocks. Gray lands are found throughout the belt, and are the prominent feature of the northern and western parts of the county.

The entire county is considered tillable, the lands under cultivation comprising 29.1 per cent. of the county area. Corn has the greatest acreage, that of cotton averaging 69.1 acres per square mile, or 37.1 per cent. of the tilled lands.

ABSTRACT FROM THE REPORT OF E. M. THOMPSON, OF JEFFERSON.

The lands under cultivation may be classed as the red and gray uplands, the dark second-bottom lands of branches, creeks, and rivers, and the alluvial bottoms of Oconee river. The *uplands* are chiefly the cotton lands, as the crops of the lowlands are often caught by early frosts, and the stalk is inclined to run to weed. The soil is sandy and gravelly to a depth of 1 or 2 inches, and has a hard and dark red-clay subsoil impervious to water, which is easy to cultivate, and is early if well drained. The crops of the county are corn, cotton, wheat, oats, and potatoes, but three-fifths of the land is planted in cotton. Fresh lands yield from 300 to 500 pounds of seed-cotton per acre, rating as middling. Hog- and rag-weeds are most troublesome. One-fourth of the land now lies out, and by several years' rest it produces well when again cultivated. In some localities it is seriously damaged by washings, and the valleys are also sometimes injured to a small extent. Hillside ditching is resorted to by some to check the damage, and when properly done is successful.

The *second bottoms* of the creeks and rivers cover about one-sixth of the county, and have a fine sandy clay loam soil 2 feet in depth and a dark red-clay subsoil or white pipe-clay. The growth is chestnut and gum. The soil is difficult to till in wet seasons, but easy in dry. Cotton comprises one-sixth of the crops on these bottoms, grows to a height of 4 feet, and yields from 800 to 1,000 pounds of seed-cotton. Cockleburs and rag-weeds are most troublesome. Very little of this land now lies turned out.

The *bottom lands* on creeks and rivers have a growth of maple, poplar, walnut, and beech, and a clay loam soil 3 feet in depth, underlaid by a white pipe-clay. The soil is difficult to till, and only a very small percentage of cotton is planted on it, although it sometimes yields as much as 1,200 pounds of seed-cotton per acre the first year; but 600 or 800 pounds is the yield after the second year. The staple rates the very highest. Rag-weeds are most troublesome.

Shipments are made to Athens by wagon, and to Savannah by railroad.

MADISON.

Population: 7,978.—White, 5,392; colored, 2,586.

Area: 300 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 51,716 acres.—Area planted in cotton, 13,029 acres; in corn, 14,471 acres; in wheat, 6,168 acres; in oats, 4,631 acres; in rye, 28 acres.

Cotton production: 4,918 bales; average cotton product per acre, 0.38 bale, 537 pounds seed-cotton, or 179 pounds cotton lint.

The surface of Madison county is hilly and broken and well timbered. A north and south dividing ridge on the west throws nearly all of the waters eastward into the several forks of Broad river. The lands are nearly all gray or gravelly, with patches of mulatto here and there, and are derived mostly from gray biotite gneisses and mica-schists. Five per cent. of the county is said to be too hilly for cultivation, and 1 per cent. too swampy.

On the northwest, near the Banks county-line, is a belt of red lands from hornblendic gneiss, and on the east occurs an exposure of soapstone rocks.

The bottom lands, while rich, are not very extensive, and are chiefly devoted to corn. The lands under cultivation comprise 26.9 per cent. of the county area. Of these lands, 25.2 per cent. are in cotton, its average being 43.4 acres per square mile. The average yield per acre is not as great as in some of the adjoining counties; it is, however, over the "third of a bale per acre" rule. Fertilizers are used extensively, and an instance of the results that might be expected from them when properly applied is shown.

In the experimental report of B. F. O'Kelley, of this county, both the red and the gray lands were used:

1. Dark red soil of a yellow, loose nature and clear of rocks; had been cleared for about fifty years and grown up in old-field pines; recleared in 1876 and planted in sorghum, corn, and wheat; no fertilizers used. Original growth, oak, hickory, dogwood, and pine. In 1879 it yielded without fertilizers 390 pounds of seed-cotton per acre; with 200 pounds of commercial fertilizers the yield was from 1,020 to 1,270 pounds per acre.

2. Light sandy soil with gray subsoil; cleared twenty years, and no fertilizers ever applied. Original growth same as No. 1. Yield 490 pounds of seed-cotton without fertilizers and 930 pounds with 200 pounds of fertilizers. The season of 1879 was dry.

ABSTRACT FROM THE REPORT OF R. M. MERONEY, OF DANIELSVILLE.

The lands of the county may be classed as gray sandy, comprising one-half of the area; mulatto, comprising one-fourth; and gray gravelly, nearly the same amount. The *gray sandy soils*, with gravelly gray subsoils at a depth of 2 inches, have a growth of pine, oaks, hickory, and black-jack. The soil is easily cultivated, is early, warm, and well drained, and is best adapted to cotton, which comprises about one-half of the crops. Cotton grows to a height of from 18 to 40 inches, and yields 600 or 700 pounds of seed-cotton per acre on fresh land. After five years' cultivation this yield is only from 200 to 400 pounds, 1,425 pounds from fresh and 1,485 pounds from old land making 475 pounds of middling lint. One-fourth of the soil now lies out, and when taken in again produces as well as ever for a few years, and when fertilized holds its own afterward. The lands are much injured by washing, and valleys are damaged 10 per cent. Some efforts have been made to check it.

The *red or mulatto lands* are considered the best for grain, though one-half of the crops consists of cotton. The sandy surface is only 1½ or 3 inches deep. The subsoil is gravelly and somewhat sandy, and the growth is pine, black, red, Spanish, black-jack, and post oaks, and hickory. These lands are inclined to bake hard in dry weather. Cotton grows from 2 to 4 feet high (most productive at 2½), and yields from 500 to 700 pounds of seed-cotton per acre on fresh land. The stalk runs to weed with deep cultivation, to prevent which topping and shallow cultivation are resorted to. After five years' cultivation the yield is only from 300 to 400 pounds, and, while the staple is about the same, a little more seed-cotton is required to make 475 pounds of lint. The crops are troubled most with hog-weed and crab-grass. About one-fourth of this land now lies out.

The *gravelly soils*, with coarse gravelly subsoils at 2 inches depth, comprise about one-fourth of the lands of this county, and are not considered well adapted to anything. Very little cotton is planted on them, as its yield is only from 150 to 200 pounds of seed-cotton per acre, and the stalk grows to a height of only 10 or 15 inches on fresh land. Five years' cultivation reduces this yield to 50 or 100 pounds of seed-cotton per acre. The crop is much troubled with poverty-weed and crab-grass. One-half of this land now lies out, and is worthless afterward. It washes badly, and no efforts have been made to reclaim it.

This latitude is rather too high for cotton cultivation, and the seasons are rather short. Cotton is frequently killed in the spring or injured in the fall by frost. In the latter case a yellow cotton is produced, and occasionally the bolls are prevented from opening.

Shipments of cotton are made to Athens at $1 per bale.

ELBERT.

Population: 12,957.—White, 6,085; colored, 6,872.

Area: 440 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 79,406 acres.—Area planted in cotton, 25,833 acres; in corn, 20,369 acres; in wheat, 7,688 acres; in oats, 5,552 acres; in rye, 50 acres.

Cotton production: 8,826 bales; average cotton product per acre, 0.34 bale, 486 pounds seed-cotton, or 162 pounds cotton lint.

Elbert county lies along the Savannah river, and is bordered by Broad river on the west and south. Its surface is mostly rolling and somewhat hilly, and is well timbered with oak, hickory, and pine. It is covered chiefly with gray sandy and gravelly soils, underlaid by clays, derived from granites and gneisses. Areas of red lands occur throughout the county. The granite around Elberton is a fine-grained siliceous rock with small particles of biotite mica, but not in sufficient quantity to form red lands. These gray sandy granite lands extend 5 miles south of Elberton to a narrow strip of red clay derived from hornblendic material. South of this is a flatwoods belt, from 5 to 7 miles in width, which extends from the Savannah river (north of the mouth of Broad river) in a westerly course into Oglethorpe county. Professor D. C. Barrow says of this belt:

The surface is broad and level, with ponds of water and a growth of stunted black-jack oaks. The land is a dark pipe-clay kind of soil with coarse gravel in places, and is almost useless for agricultural purposes; in wet weather very boggy, and in dry as hard as a brick. It seems to have been at one time a long marshy and boggy slough. The underlying material is a kind of siliceous and rough clay-stone, with seams of angular quartz.

The sandy and red lands are similar in character to other lands of the region. (See regional description, page 36.) The bottom lands of the rivers cover but a small area. It is estimated that 65 per cent. of the county is cleared land. Tilled lands comprise 28.2 per cent. of the total area, the population averaging 29 persons per square mile. Cotton is the chief crop, its acreage being 58.7 acres per square mile, or 32.5 per cent. of the lands under cultivation.

The following experiments have been reported to the state department of agriculture:

EUGENE B. HEARD, of Elberton: Fresh land, soil dark; subsoil, yellow clay. Growth, hickory, post oak, and second growth of pine. Without fertilizers the yield was about 600 pounds of seed-cotton per acre; with 200 pounds commercial fertilizers the yield on four plats ranged from 1,050 to 1,230 pounds.

A. F. SMITH, of Coldwater: Old land, soil gray and gravelly, with yellow subsoil. Original growth, pine, oak, and hickory. Was turned out twelve years before as exhausted upland, and was covered with broom-sedge; never fertilized. The season of 1879 was poor, and a large portion of the crop did not mature. Without fertilizers, the average yield was 70 pounds of seed-cotton; with 100 pounds, the yield was about 297; with 200 pounds, about 355 pounds of seed-cotton per acre.

ABSTRACT FROM THE REPORT OF ROBERT HESTER, OF ELBERTON.

Cotton, which comprises one-half of the crops of the county, is confined to the *gray sandy lands*, which are early, warm, well drained, easy to till, and best adapted to its growth. The stalk reaches an average height of 3 feet, and topping is done to prevent its running to weed in wet weather and to favor bolling. Crab-grass is the most troublesome. The uplands wash readily, and injury is done to them and to the valleys to the extent of 25 per cent. One-half of the area formerly under cultivation now lies out; after resting it yields very well, but wears out again in three-fourths of the time. It is estimated that three acres will on an average produce a bale of 450 pounds. The staple rates as middling. The gray lands cover three-fourths of the county area.

Shipments of cotton are made, as soon as baled, to Charleston, Baltimore, and New York, by rail.

OGLETHORPE.

Population: 15,400.—White, 5,469; colored, 9,931.

Area: 510 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 92,772 acres.—Area planted in cotton, 35,306 acres; in corn, 22,019 acres; in wheat, 7,184 acres; in oats, 6,310 acres; in rye, 19 acres.

Cotton production: 12,336 bales; average cotton product per acre, 0.35 bale, 498 pounds seed-cotton, or 166 pounds cotton lint.

The surface of Oglethorpe county is rolling and broken, resembling in its general features the adjoining counties. The greater part is drained into the Savannah river, the divide between it and the Oconee river lying in the western part of the county; on the south another dividing ridge gives to the Ogeechee river some of the drainage water. In the middle of the county there is a granitic ridge, extending in a slight northeasterly course into Elbert county and dividing the tributaries of Broad river into two groups—those on the north flowing directly into Broad river, the rest emptying first into Long creek, and thence northeast into Broad river.

The granites extend south to Long creek and southwest into the upper part of Greene county, the hills becoming lower, though the country is very broken.

In the southeastern part of the county the black-jack flatwoods pass in a southward course to the red belt just south of Woodstock. It has here a width of 3 or 4 miles, and the lands are more sandy than in Elbert county, producing cotton for a few years only. (See description in Wilkes county, p. 102.) On the north of the granites the red lands cover the rest of the county, with mixtures of gray sandy areas. (See analysis of land, page 36.)

The soils of the granitic area are gray, gravelly, and sandy, with red mulatto lands intermixed. Quartz crystals are found in abundance in various sections, and include some large and beautiful amethysts. Of the county area 3 per cent. is too broken for cultivation. The crops are corn, cotton, wheat, oats, and potatoes, and 28.4 per cent. of the county area is under cultivation. Cotton is the chief crop, its acreage comprising 38.1 per cent. of the tilled lands, and averaging 69.2 acres per square mile.

ABSTRACT FROM THE REPORT OF WILLIAM L. JOHNSON, OF STEPHENS.

The uplands of the county vary from sandy to red stiff mulatto and black-jack soils in large areas. Cotton on the lowlands is liable to be late and prematurely frost-killed; hence the uplands are preferred when the soil is fair.

The *sandy uplands*, lying mostly level in fields of from 10 to 20 acres, comprise one-half of the tillable lands of the county. The growth is oak, pine, ash, gum, and hickory. The soil has a depth of 8 inches or more, with a tough yellow clay subsoil, which becomes cloddy at first, but changes in a short time by cultivation to the color of the soil. It contains coarse gravel and sometimes pebbles, and is underlaid by a very stiff clay. The soil is early when well drained, and is easy to till. Cotton, which comprises one-half the crops, grows to a height

of 3 feet, and yields from 800 to 1,000 pounds of seed-cotton per acre. Crab-grass gives the most trouble to cotton crops; weeds follow grain crops. Lands turned out thirty years ago and cleared now do better in cotton for three years than the original forest lands. These uplands are much injured by washing and gullying, and the valleys are often greatly injured. Horizontalizing and hillside ditching are very successful in checking the damage.

The *red uplands*, comprising one-third of the lands of the county, have the same growth as the gray sandy, and are usually rolling and hilly. The soil is a red or mixed clay loam, 10 inches in depth, with a tough yellow-clay subsoil, which pulverizes quickly and changes color on being exposed. It is early when well drained, rather difficult to till, and is best adapted to grain, though cotton comprises one-half the crops. Cotton grows to a greater height on this land than on the gray sandy, and runs to weed in wet weather unless fertilizers are used, which prevent it and favor bolling. In other respects it resembles the gray sandy. In some localities a great deal of this land lies turned out, and when reclaimed it does not produce as well as the sandy lands. The uplands wash readily, causing serious injury to the valleys.

The *bottom lands* differ in character, some being stiff and others a dark sandy loam. The soils are about 2 feet deep, and are underlaid by a stiff pipe-clay or gravel. They are hard and cloddy in dry seasons, and are best adapted to corn. They are more or less liable to overflow, and but little cotton is planted on them. The plant grows usually 5 or 6 feet high, and runs to weed when the rows are close together, or in wet weather. The yield is from 1,000 to 1,500 pounds of seed-cotton per acre.

Shipments are made to Augusta, by railroad, at $2 per bale.

CLARKE.

Population: 11,702.—White, 5,313; colored, 6,389.

Area: 180 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 23,337 acres.—Area planted in cotton, 8,020 acres; in corn, 7,394 acres; in wheat, 1,387 acres; in oats, 1,755 acres; in rye, 36 acres.

Cotton production: 3,310 bales; average cotton product per acre, 0.41 bale, 588 pounds seed-cotton, or 196 pounds cotton lint.

Through the middle and western sections of Clarke county flow the several forks of the Oconee river, separated on the east from the tributaries of the Broad river by a low ridge running north and south, which is also a part of the main Oconee and Savannah water-divide. The surface of the county is very hilly and broken, being deeply cut by the various streams. The county was once heavily timbered, but it has been estimated that 78 per cent. of the original forest has been removed. The lands of the county present the usual variety of the red clay and gray sandy soils, more or less gravelly, that are found over the entire metamorphic region, and are underlaid by clay subsoils. They occur very much intermixed, but, as in other counties, there are large areas in which one is predominant.

There are two belts of red (hornblendic) lands that extend across the county, and another red area covers the southern portion. Otherwise the lands are chiefly gray and sandy. They are described in the accompanying abstract. (See also analysis on page 33.) The bottom lands are very narrow, the uplands often approaching to the water's edge and forming high bluffs.

A little more than one-fifth (20.3 per cent.) of the county area is under cultivation. Cotton is the chief crop, its acreage comprising 34.4 per cent. of tilled land and averaging 44.6 acres per square mile. The product per acre is comparatively high. Athens is the chief market for the county.

The following experiment was reported to the department of agriculture by Thomas W. Gean, of Athens:

Soil thin, with red-clay subsoil; has been cleared fifty years; part of the time an old field. Original growth, post oak, chestnut, and short-leaf pine. No manures previously used. Yield, without fertilizers, about 425 pounds of seed-cotton per acre. With over 200 pounds of fertilizers the yield varied from 989 to 1,130 pounds per acre.

EXPERIMENTAL FARM OF THE UNIVERSITY OF GEORGIA.—Thin gray soil, with red-clay subsoil; not cultivated for thirty years. Original growth, pine and oak. Yield of non-fertilized rows averages 294 pounds; with 200 pounds of various fertilizers the yield varies from 534 to 1,193 pounds of seed-cotton per acre.

ABSTRACT FROM THE REPORT OF PROFESSOR D. C. BARROW, JR., OF THE UNIVERSITY OF GEORGIA, ATHENS.

The lands may be classed as red clays, gray sandy, mulatto, and alluvial bottom soils. The *red clay lands* cover about 65 per cent. of the county area, and extend chiefly in two belts across the county, each about 6 miles wide. The dark red soil has a depth of about 18 inches, with a tough red-clay subsoil, which is excellent for bricks. The soil is fine grained and compact, retaining moisture for a long time, having little sand in its composition. It is very durable, resisting both weathering influences and the taking up of its riches by the plants, and produces crops for a number of years with very little decrease in yield. Its growth is red, Spanish, black, and white oaks, chestnut, pine, hickory, dogwood, and some walnut. The soil is cold and naturally well drained, and is tolerably easy to till in wet seasons. It is best adapted to corn, clover, and wheat, though cotton forms 60 per cent. of the crops. Fresh lands produce from 900 to 1,000 pounds of seed-cotton, and this yield continues for a number of years without any apparent diminution. About 1,545 pounds of seed-cotton are required to make 475 pounds of lint, the staple rating as good middling. The lands are not troubled so much by weeds as by crab-grass. They also have a tendency to wash, and on steep hillsides are much damaged; the valleys are also injured by these washings, especially on small streams. Hillside ditching is practiced with good success in checking the damage.

The *gray sandy lands*, which form a belt 3 miles wide in the middle of the county, comprise 30 per cent. of the lands. The soil is gray and more or less sandy, 16 inches deep, and is underlaid by light yellowish or reddish clay, much less tough than that of the red lands and much less retentive of moisture. It is not as durable as the red lands, is generous in giving up its plant-food, and is more readily washed off by rains than is the red. It also decreases in productiveness more readily. The growth is white, red, Spanish, and post oaks, hickory, pine, and chestnut, this last being more abundant than on red lands. Whenever it is possible, farmers use chestnut rails for fencing purposes, and gray lands are often marked by chestnut fences. These lands are best adapted to cotton and oats, 75 per cent. of the former being planted. The yield is from 1,000 to 1,200 pounds of seed-cotton per acre. While the soil is not so durable as the red land, it recuperates more readily and produces very well for a few years after a rest.

The *bottom lands*, comprising 5 per cent. of the lands of the county, are variable in width, and are never very wide. The growth is birch, hickory, pine, oak, walnut, and frequently considerable white oak. The soil is a dark alluvial loam, sometimes underlaid by a tough pipe-clay, white or bluish in color. The land is best adapted to corn, 10 per cent. only of cotton being planted. Cocklebur and rag-weeds are most troublesome.

OCONEE.

Population: 6,351.—White, 3,327; colored, 3,024.
Area: 160 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 34,223 acres.—Area planted in cotton, 12,303 acres; in corn, 9,930 acres; in wheat, 2,136 acres; in oats, 2,215 acres; in rye, 29 acres.
Cotton production: 4,257 bales; average cotton product per acre, 0.35 bale, 492 pounds seed-cotton, or 164 pounds cotton lint.

Oconee county embraces a long and narrow area between Barber creek and the Oconee river on one side and the Appalachee river on the west. The surface is hilly. A high dividing ridge passes longitudinally through the county, the streams flowing in either direction being very short.

The southern portion of the county is covered with gray sandy lands, which extend to within 3 miles of Watkinsville, on the Union Point road; the rocks are micaceous in character, with garnets and feldspar.

The red lands form a belt across the county from the upper portion of Clarke southward into Morgan county. Watkinsville lies within this belt, the lands extending 1½ miles west and 3 miles south. Hornblendic gneiss forms the prominent rock on the eastern and biotite gneiss on the western half of the belt. Gray lands cover the extreme northwestern section.

The subsoils of all of the lands are mostly yellow and red clays. The character of the soils and methods of cotton culture are similar to those of Clarke county. The timber growth is chiefly red and post oaks, hickory, and short-leaf pine, and it is estimated that 58 per cent. of the growth has been cut away. One-third of the county area is under cultivation, and of this 36 per cent. is in cotton, the chief crop averaging 76.9 acres per square mile. The average product per acre is much less than that of Clarke county, though greater than for the region or state at large.

Shipments are made by wagons to Athens, where most of the cotton is sold.

WALTON.

Population: 15,622.—White, 9,321; colored, 6,301.
Area: 400 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 82,628 acres.—Area planted in cotton, 31,797 acres; in corn, 26,769 acres; in wheat, 9,418 acres; in oats, 6,454; in rye, 97 acres.
Cotton production: 12,534 bales; average cotton product per acre, 0.39 bale, 561 pounds seed-cotton, or 187 pounds cotton lint.

Walton county is largely covered with red clay and mulatto lands. This is especially the case in the middle of the county, where the belt is very wide and extends in every direction from Monroe.

Narrow areas of gray sandy lands are found on both sides of this red section, and in the extreme west appear the granites of the large central region. The difference between the gray sandy and the granitic lands is so slight that they might very well be classed together. The gneisses also are granitic in character, and black mica enters largely into the composition of both. The subsoils are very generally the usual red and yellow clays of the metamorphic region.

The surface of the country is hilly and broken, 1½ per cent. being too much so for successful tillage. There are two prominent and isolated points in the county, viz, Alcova and Jack's mountains, the former having an elevation of 1,088 feet above the sea, or about 200 feet above Social Circle. They are formed of sandstone or quartzites, and have rounded summits.

Thirteen per cent. of the county area is reported to be of irreclaimable swamp. Over half of the original timber has been cleared away. The lands under cultivation embrace 32.3 per cent. of the county area. Cotton is the chief crop, its acreage having an average of 79.5 acres per square mile, or 38.5 per cent. of the tilled lands. In product per acre the county ranks well among the counties of the state.

ABSTRACT FROM THE REPORT OF R. H. CANNON, OF WALNUT GROVE.

The uplands alone are planted in cotton, and may be classed as light gray and red lands. The *gray sandy lands* cover about 80 per cent. of the county, and have a growth of pine, oak, hickory, chestnut, and dogwood. The soil is 3½ inches deep; the subsoil is a buff-colored clay, unproductive when not mixed with the soils. The crops of the county are cotton, corn, wheat, potatoes, and oats. Cotton comprises half of these crops, and yields 600 pounds in the seed per acre on fresh gray lands. Cultivation of five years reduces the yield to 450 pounds, and 1,545 pounds make 475 of lint, which is hardly as good as that from fresh land. Cotton grows from 30 to 45 inches high, and is most troubled by rag-weeds. One-half the land now lies turned out, and, if not washed, is, after resting, as good as the original. Hillside ditching and horizontalizing prevent this washing, but some of the uplands are already much injured. The valleys do not suffer.

The *red lands* comprise 20 per cent. of the tillable lands, and have a growth of pine, oak, hickory, chestnut, dogwood, and gum. The subsoil of these lands is hard and stiff, and is inclined to bake when exposed to the sun. Cotton comprises half the crops, grows 36 to 50 inches high, and yields as on the sandy lands.

Cotton was first planted in this county about the year 1820, but for several years was raised only in limited quantity. About the year 1830 the area devoted to cotton began to increase, and has continued to increase ever since, the largest crop being that of the present year. Commercial fertilizers were first used here in 1866.

Cotton is sold to local buyers at the nearest railroad station, and thence it is shipped to Augusta, Atlanta, or Savannah.

ROCKDALE.

Population: 6,838.—White, 4,149; colored, 2,689.

Area: 120 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 33,529 acres.—Area planted in cotton, 14,448 acres; in corn, 9,951 acres; in wheat, 3,268 acres; in oats, 2,401 acres; in rye, 25 acres.

Cotton production: 4,385 bales; average cotton product per acre, 0.30 bale, 432 pounds seed-cotton, or 144 pounds cotton lint.

Rockdale is covered almost entirely by granite rocks (in bowlders or flat rock) and granitic soils (see general part, page 35). In the extreme eastern part gray sandy soils, derived from gneisses, generally prevail.

The surface of the county is rolling and broken, with an elevation of a little over 900 feet above the sea. It is estimated that at least 4½ per cent. of the lands are too rocky for cultivation, and that 65 per cent. of what was once well timbered have already been cleared.

The crops of the county are cotton, corn, wheat, oats, rye, pease, and potatoes, with fruits, viz, peaches, apples, pears, grapes, etc. Tilled lands comprise 43.7 per cent. of the county area. Cotton has by far the greatest acreage, its average being 120.4 acres per square mile, or 43.1 per cent. of the tilled land. In the former regard it ranks as sixth in the state, but in percentage of tilled land many counties are above it. Its product per acre is low.

ABSTRACT FROM THE REPORT OF W. L. PEEK, OF CONYERS.

The soils may be classed as sandy, with red subsoil; red, with stiff clay subsoil; and sandy, with yellow sandy subsoil. The *gray sandy soils*, with red subsoils, cover half of the county, and are the chief cotton lands. They extend 40 miles east and west and 15 north and south, and have a growth of hickory, red and post oak, pine, and chestnut. The soil is only from 1 inch to 3 inches deep, and is underlaid by rock at from 1 foot to 2 feet. Twenty per cent. of the lands once under cultivation now lie out. They wash readily, doing serious damage occasionally. Cotton grows to a height of one-half to 3 feet, yielding on fresh land from 500 to 1,000 pounds of seed-cotton per acre, the lint rating as middling. Cultivation of ten years reduces this yield to 300 or 400 pounds, the staple remaining about the same. Crab-grass is most troublesome.

Cotton comprises one-half the crops, and shipments are made by railroad to Augusta at 75 cents per bale, and to Atlanta at 50 cents.

CLAYTON.

Population: 8,027.—White, 4,938; colored, 3,089.

Area: 140 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 39,995 acres.—Area planted in cotton, 17,422 acres; in corn, 11,458 acres; in wheat, 3,849 acres; in oats, 3,496 acres; in rye, 24 acres.

Cotton production: 6,606 bales; average cotton product per acre, 0.38 bale, 540 pounds seed-cotton, or 180 pounds cotton lint.

Clayton county is almost entirely included in the central granite area. The Atlantic and Gulf water-divide passes southward through it, the Central railroad marking its summit, which otherwise is not prominent.

The northern part of the county is undulating and hilly, the summits of the ridges being rounded or often flat, in many places furnishing areas of almost level lands, well suited for farms. The lower portion of the county is not so hilly. The streams have low banks and narrow, sandy bottom lands. The soils are mostly the usual gray sandy or gravelly, peculiar to the granites (see general part, page 35).

One per cent. of the area of the county is said to be too broken and the same proportion too swampy for tillage. The character of the soil and growth and methods of culture are similar to those of adjoining granitic counties.

A large proportion of the original timber growth has been removed. Lands under cultivation embrace 44.6 per cent. of the county area, cotton being the chief crop, its acreage averaging 124.4 acres per square mile, or 43.6 per cent. of the tilled lands. In the former regard it is surpassed only by the counties of Pike, Troup, and Houston. Cotton is shipped by railroad either to Atlanta, Macon, or Savannah.

The experiment with fertilizers, by J. M. Hull, of Jonesboro', on sandy lands that had been under cultivation for fifteen years and partially manured, gave the following results:

The yield without fresh application of fertilizers was about an average of 800 pounds per acre of seed-cotton. With fertilizers the yield varied from 950 to 1,120 pounds in twenty-five experiments with different fertilizers. The season was unfavorable for cotton. With corn, the application of fertilizers increased the yield from 13 to 18 bushels.

CAMPBELL.

Population: 9,970.—White, 6,085; colored, 3,885.

Area: 240 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 61,411 acres.—Area planted in cotton, 21,448 acres; in corn, 14,056 acres; in wheat, 5,774 acres; in oats, 5,269 acres; in rye, 31 acres.

Cotton production: 8,986 bales; average cotton product per acre, 0.42 bale, 597 pounds seed-cotton, or 199 pounds cotton lint.

The surface of Campbell county is rolling, broken, and hilly, and is well timbered. The Chattahoochee river forms its northern boundary, receiving the drainage from a large portion of the county. On the southeast the streams are tributary to Flint river.

Granitic lands cover the largest part of the county in two separate areas, which, however, unite on the north. The largest of these covers that part of the county lying east of the Atlanta and West Point railroad, and forms a

portion of the large central granite region of the state. The country is high and rolling, with some broad and level tracts, the rock appearing both as outlying bowlders and as "flat rock". The latter is seen at Palmetto, where it forms for a short distance the bed of the railroad. Both the black and light varieties of mica enter into the rock composition, and red lands are found occasionally, though the soils are generally gray and sandy.

The other granite area forms a narrow belt near to and parallel with the Chattahoochee river, and on the southeast side of it is a strip of itacolumite sandstone with mica-schists, which form the ridge on which Campbellton is situated.

The granite appears in large bowlders, and these on the southwest are very numerous and "weather" slowly. Between the two granite outcrops or sections there is a region of country broken and hilly, with broad level areas, and having gray, mulatto, and red lands, the latter forming a belt which extends southwestward into Coweta county. Some trap-rocks are found a short distance west of Palmetto. This central portion is comparatively thinly settled. Within the bends of the Chattahoochee river there are large tracts of alluvial lands, level, highly productive, and nearly, if not quite, all in cultivation. Forty per cent. of the county area is under tillage, the chief crops being cotton, corn, oats, and some wheat. Cotton has the largest acreage, comprising 34.9 per cent. of the tilled lands, and averaging 89.4 acres per square mile. Its yield per acre is high, the county ranking as eleventh in the state.

Shipments are chiefly made to Atlanta.

DOUGLAS.

Population: 6,934.—White, 5,463; colored, 1,471.

Area: 190 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 29,330 acres.—Area planted in cotton, 9,520 acres; in corn, 10,586 acres; in wheat, 3,521 acres; in oats, 3,189 acres.

Cotton production: 4,099 bales; average cotton product per acre, 0.43 bale, 615 pounds seed-cotton, or 205 pounds cotton lint.

The surface of Douglas county is hilly and broken, and 10 per cent. is thought to be too much so for successful tillage. The drainage is all to the Chattahoochee river, which forms the southern boundary. There are two belts of granite extending across the county in an easterly course. One of these, in the northern part, forms a low ridge, on which Douglasville, the county-seat, is situated, and extends from Pine mountain, near Villa Rica on the west, to Salt Springs on the east, where it passes northward into Cobb county. The soil of this ridge is gray gravelly and sandy, and, owing to its narrow and rocky area, is not very much under cultivation. On the north of this belt the red clay lands predominate, derived from decomposed hornblendic material. Some of the lands have a thin sandy soil over the red clays.

The other narrow granitic belt lies in the middle of the county from Crawfish creek eastward, and is characterized by a level country and a growth of long-leaf pine. The soil is gray sandy and rocky. Between these granite belts the country is rolling and the lands are mostly red or mulatto-colored clays, with frequently a thin sandy soil.

South of the middle granite belt the country is at first but slightly hilly, but near the river it becomes very broken and rough, with high hills facing the river valley. The soil is very gravelly, from the innumerable small quartz veins that exist in the underlying and outcropping gneisses. Garnets enter largely into the composition of these rocks in localities. (See analysis, page 33.)

The river valleys are in this county wide and very fertile, and are largely devoted to cotton culture. But 24.1 per cent. of the county area is under cultivation, the acreage of corn being greater than that of any other crop. Cotton has an average of 50.1 acres per square mile, and embraces 32.5 per cent. of the tilled land. In its cotton product per acre the county ranks with Fulton and Gwinnett, or as seventh in the state.

ABSTRACTS FROM THE REPORTS OF J. E. HENLEY, M. D., OF CAMPBELLTON, AND F. M. DUNCAN, OF DOUGLASVILLE.

Cotton comprises nearly one-half the crops of the uplands. A cold and wet spring usually occurs, which is injurious to the cotton-plant, and, if followed by a dry summer and wet fall, results in a total failure of the crops.

The *gray lands* of the uplands cover three-fifths of the county, and have a growth of oak, hickory, chestnut, black-jack, and pine. They yield from 700 to 1,000 pounds of seed-cotton per acre when fresh, or 400 pounds after ten years' cultivation. The staple rates as low middling, but from old lands is shorter and finer than at first; 1,545 pounds make 475 pounds of lint. The height of the stalk is from 3 to 5 feet, running to weed in wet places. The liberal application of fertilizers prevents this tendency.

The *red and mulatto lands* differ from the gray in having sometimes walnut and but little pine. They are best adapted to wheat, though producing cotton as well as the gray lands. Hog- and rag-weeds and crab-grass are very troublesome on all the uplands. About 10 per cent. of lands once cleared now lie turned out.

The *river valleys* are in many places in this county quite wide and rich, and furnish the county with a large part of its cultivated lands. The growth is sweet gum, white and red oak, hickory, walnut, poplar, elm, maple, etc. The soil is a dark, fine sandy loam, 10 inches in depth, over a red clay. It is best adapted to cotton, which comprises one-half of the crops, grows to a height of from 3 to 5 feet, and yields 1,000 pounds of seed-cotton per acre when fresh and 800 after twenty years' cultivation, 1,720 pounds of seed-cotton making 475 pounds of lint. The crops are most troubled with rag-weeds, and especially crab-grass. To prevent these bottom crops from running to weed commercial fertilizers are used. One-tenth of the lands now lies turned out, being much benefited by rest.

Shipments are made about the 1st of December to Atlanta, by rail, at $1 per bale.

CARROLL.

Population: 16,901.—White, 14,591; colored, 2,310.

Area: 540 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 85,683 acres.—Area planted in cotton, 22,593 acres; in corn, 28,964 acres; in wheat, 10,414 acres; in oats, 7,729 acres; in rye, 134 acres.

Cotton production: 9,300 bales; average cotton product per acre, 0.41 bale, 588 pounds seed-cotton, or 196 pounds cotton lint.

Carroll county has a rolling surface, and is covered very generally with gray sandy and gravelly soils. Quartz fragments, some quite large, are found in various sections, and common garnets from the size of a pea to an inch or two in diameter are often associated with the gneisses.

Red lands from hornblende occur in small and large areas over the county, but the most prominent are on the Tallapoosa river, northwest of Carrollton, and along the county-line on the north. The county is well timbered throughout with oak, hickory, short-leaf pine, etc., and 24.8 per cent. of its area is under cultivation. The county properly belongs to the chief gold belt of the state, and several mines are worked. Copper ores also exist. Corn is the chief crop of the county, while cotton comprises 26.4 per cent. of the tilled area, and averages 41.8 acres per square mile. In average product per acre it ranks as seventeenth. The following experiment was reported to the state department of agriculture by G. A. McDaniel:

The yield of freshly-cleared *gray sandy land* without fertilizers is 300 pounds per acre; the same with 200 pounds of commercial fertilizers, 800 pounds of seed-cotton per acre. On land nine years in cultivation and previously fertilized the yield was 860 pounds per acre; the same with a fresh application of 200 pounds gave a yield of from 1,067 to 1,330 pounds of seed-cotton per acre. Red lands that had been twenty-five years in cultivation and partly manured gave a yield of 800 pounds. The application of 250 pounds fertilizers produced a yield of 1,200 pounds per acre.

ABSTRACT FROM THE REPORT OF R. H. SPRINGER, OF WHITESBURG.

The uplands vary greatly in character, from good to those worthless except for timber. They are preferred to the bottom lands, which are late in their crops. Three varieties or classes of soils are distinguished. The *light sandy uplands*, with pine, oak, and hickory growth, and a depth of 6 inches to a red or yellow or clay subsoil, is early, warm, well drained, easy to till, and is best adapted to cotton, which comprises about 50 per cent. of the crops. It yields when fresh about 600 pounds of seed-cotton per acre, or 200 pounds of lint, rating as first-class low middling. Ten years reduces this yield to 250 pounds of seed-cotton and the staple to "ordinary", 1,545 pounds being required to make 475 pounds of lint. The plant runs to weed with too much rain, heavy fertilizing being the remedy. Crab-grass and rag-weeds are most troublesome on this land. Horizontalizing is used, with only partial success, in preventing the clay washings from hillsides, which cover up and impoverish the valleys.

The *red lands*, with their heavy red-clay subsoils and growth similar to that of the gray lands, are early, warm, and easy to till. Cotton, which comprises one-third of the crops, grows to a height of 2 feet, and yields, when the land is fresh, 700 pounds of seed-cotton per acre, 1,485 pounds making 475 pounds of lint. The land rapidly deteriorates, and in ten years the product is only about 200 pounds of seed-cotton, 1,545 pounds being required for 475 pounds of lint.

The *bottom lands*, 6 inches deep, with red and yellow clay subsoils, are also devoted largely to cotton, which grows 4 feet high and yields 800 pounds of seed-cotton per acre on fresh land, the lint rating as first class. These lands also rapidly fail, and in ten years the yield is only 300 pounds, and its lint rates second class.

Shipments of cotton are made, by railroad, to Newnan, and thence to Atlanta and other points.

HEARD.

Population: 8,769.—White, 5,674; colored, 3,095.

Area: 290 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 47,761 acres.—Area planted in cotton, 17,348 acres; in corn, 17,209 acres; in wheat, 4,900 acres; in oats, 3,092 acres; in rye, 40 acres.

Cotton production: 5,900 bales; average cotton product per acre, 0.34 bale, 486 pounds seed-cotton, or 162 pounds cotton lint.

The Chattahoochee river divides Heard county into two sections. On the east side there is a granite belt or ridge from 150 to 200 feet above the river, which crosses it below Franklin and extends into Alabama. The rest of the county on the east and southeast is rolling and broken, the ridges being broad and flat, with granites and gray gneisses, which form gray sandy and gravelly soils, and have a growth of oaks, hickory, and chestnut on the uplands, and beech, maple, poplar, and sweet and black gums along the streams.

The country west of the river is rugged and mountainous, rising toward the northwest to an elevation of 600 feet above the river. This northwestern portion is extremely broken and hilly and rather thinly settled. Black Jack ridge crosses the corner of the county from Carroll county into Alabama.

The "Backbone" ridge lies to the west, having in its formation itacolumite sandstone and magnesian rocks; but to the northwest the formation is chiefly composed of mica-schists and gray gneisses full of small quartz veins, forming soils mostly gray, with the usual associated red clays and sands in patches and narrow belts. These lands extend southward over the rest of the county, which is much more level. The growth of this western section is tall long-leaf pine, scrub oak, and hickory, and on uplands some small areas have oak, hickory, and chestnut exclusively. On the banks of the streams are poplars, gum, ironwood, laurel, and wild cucumber trees.

About 2 per cent. of the county area is said to be too broken for tillage, and the same amount is of irreclaimable swamp. The lands under cultivation comprise 25.7 per cent. of the county area. Cotton and corn have nearly the same acreage, the former having an average of 59.8 acres per square mile, or 36.3 per cent. of the tilled lands.

The effect of judicious fertilization on both gray and red lands is shown in the following experiments by J. C. Brewer, of Antioch, on three plats of land:

1. Gray sandy soil, red-clay subsoil, cultivated six years; no manure previously used. Original growth, pine, hickory, post oak, and red oak. Yield without fertilizers, 630 pounds of seed-cotton per acre; yield with fertilizers, from 910 to 1,111 pounds of seed-cotton.

2. Soil and growth same as No. 1; has been but slightly manured previously, and has been in cultivation fifty years. Yield, about 600 pounds per acre; when freshly fertilized, from 910 to 1,137 pounds of seed-cotton per acre.

3. Stiff red clay soil; original growth, oak, hickory, poplar, and black gum. Cleared in 1874, and well fertilized each year. Yield, 1,500 pounds per acre; yield with fresh fertilizers, from 1,610 to 1,977 pounds of seed-cotton.

In this last plat the effect of yearly fertilization is shown by the large yield without fresh applications. These results were corroborated in the next year by a still greater yield.

ABSTRACT FROM THE REPORT OF R. H. JACKSON, OF FRANKLIN.

The *gray sandy lands* of the county are the ones chiefly devoted to cotton. The gray soils of the river bottoms are also very rich, have a depth of 36 inches, and produce cotton very well. The gray lands of the uplands have a depth of from 2 to 8 inches, with a red or yellow subsoil. The soil is easily tilled, and produces good crops of cotton, corn, wheat, and oats, but is best adapted to cotton. This grows to a height of 48 inches, producing from 800 to 1,000 pounds of seed-cotton per acre, the lint rating as good ordinary. After a few years' cultivation the yield is diminished from 300 to 600 pounds, or, if manured, from 500 to 1,000 pounds per acre, and 1,660 pounds are required to make 475 pounds of lint. Rag-weeds and crab-grass are most troublesome to these crops. One-twentieth of the land now lies out, due probably to the washing and gullying to which the soil is very subject. The valleys are not much injured. Hillside ditching, when well done, is successful in checking the damage.

Cotton, when baled, is hauled to La Grange in wagons, and there sold to merchants.

COWETA.

Population: 21,109.—White, 9,305; colored, 11,804.

Area: 440 square miles —Woodland, all; metamorphic, all.

Tilled lands: 116,956 acres.—Area planted in cotton, 48,494 acres; in corn, 28,980 acres; in wheat, 9,392 acres; in oats, 10,385 acres; in rye, 76 acres.

Cotton production: 16,282 bales; average cotton product per acre, 0.34 bale, 477 pounds seed-cotton, or 159 pounds cotton lint.

The general elevation of Coweta county is about 975 feet. Its surface is hilly and broken on the east and west, and higher, though quite level in the central portion—the water-divide. The lands embrace belts of gray and red soils underlaid by clay subsoils. The small streams are tributary in part to the Chattahoochee river on the west and in part to the Flint on the east.

On the west and northwest is a large area of feldspathic granites—a very broken and hilly country having a gray sandy and gritty soil with quartz gravel. On the east of this the country is more level, with a belt of gneisses 5 miles in width, also giving a gray sandy soil, intermixed with some red lands, from associated mica-schists and hornblendic rocks. Between this belt and Newnan on the east, a distance of 8 or 10 miles, are two belts of red hornblendic clay lands, extending a little east of north into Campbell county and southward into the northwestern corner of Meriwether county. But little quartz is found in these belts, and between the belts are found the gray feldspathic soils. East of Newnan to Sharpsburg are chiefly red soils, derived from hornblendic rocks and mica-schists, but east to the county-line the lands are chiefly gray, with outcrops of feldspathic gneisses and some granite. These latter soils are characteristic of the northeast, east, and southeast portions of the county. They contain much quartz gravel, and the country is very broken, with a prominent growth of long- and short-leaf pine, and oaks, chestnut, and hickory. The largest trap dike in the state has its upper limit in this county just north of Newnan, and passes east of White Oak creek, with an increasing width southward into Meriwether county. Its breadth is about 125 yards. The rocks are of all sizes, very hard and rounded, the weathered and decomposed surface forming deep yellow soils; its area is not tillable.

The lands under tillage embrace 41.5 per cent. of the county area. The crops are cotton, corn, small grain, sorghum-cane, and potatoes. The acreage of cotton is by far the largest, averaging 110.2 acres per square mile, or 41.5 per cent. of the tilled lands. In the former respect the county ranks as tenth in the state and as fourth in the total number of bales produced.

ABSTRACTS FROM THE REPORTS OF A. W. STOKES AND BENJAMIN LEIGH, OF NEWNAN.

The lands of the county may be classed as—

1. *Gray sandy or pine-woods lands*, covering the largest part of the county, and having gray sandy soils, 3 inches deep, sometimes black in the pine woods from decayed vegetation. The subsoil is a pale red clay, compact and stiff, changing sometimes to a pale yellow, and to white about the swamp, baking hard when exposed, but gradually becoming like the surface soil when properly cultivated. The soil is easy to till in dry seasons, is early when well drained, and is best for cotton, to which one-half of the cultivated soil is devoted. The plant usually grows 18 inches high, and is most productive at 24, yielding 600 pounds of seed-cotton per acre on fresh land, 1,545 pounds being required to make 475 pounds of lint. After five years' cultivation the yield is reduced to 300 pounds, and 1,660 pounds make 475 pounds of lint, which is harsh, short, and dry, and generally classed one grade lower than that from fresh land. The crops are troubled with rag-weed, crab-grass, and "May-pop" vines. In warm, rainy weather the plant is liable to run to weed; topping and manuring restrain it. One-half, and in some parts of the county three-fourths of the land lies out, but if vegetable matter be applied it yields nearly as well as at first. The soil washes and gullies badly, doing serious damage to the valleys below, almost destroying their fertility. Horizontalizing and hillside ditching are resorted to with success in checking the damage.

2. The *red stiff or mulatto lands* cover about one-fourth of the county, and have a growth of post and red oaks and hickory, with some chestnut, poplar, and pine. The soil is gravelly in places, has a depth of from 4 to 8 inches and a stiff, tough red-clay subsoil, that bakes very hard when worked wet. It is properly called hard-pan, is quite impervious, and is ruinous when mixed with the soil. The soil is early if well drained and not worked too wet. It is best adapted to wheat, corn, and oats, though cotton comprises about one-third of the crops. This latter grows to a height of 2 feet, producing, when fresh, 500 pounds of seed-cotton per acre with long and strong lint. Five years' cultivation reduces the yield to 300 pounds, and the lint is shorter, harsher, and rates about two grades lower; 1,660 or 1,720 pounds are required to make 475 pounds of lint. The "May-pop" and "saw briers" are most troublesome. Two-thirds of this land now lies turned out. The land washes badly, ruining the valleys below. Terracing the uplands and leveling the valleys are found to be beneficial.

3. The *bottom lands* along the streams are very narrow, and, while extremely rich, are not as much esteemed for cotton as even the indifferent uplands. The stalk runs too much to weed, and does not mature soon enough to produce a remunerative crop before frost. Heavy manuring and thick planting seem to obviate this difficulty, especially when planted with an early variety of seed.

Cotton is sold at Newnan, the county-seat.

FAYETTE.

Population: 8,605.—White, 5,742; colored, 2,863.
Area: 220 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 59,278 acres.—Area planted in cotton, 21,787 acres; in corn, 14,195 acres; in wheat, 4,259 acres; in oats, 3,477 acres; in rye, 16 acres.
Cotton production: 7,131 bales; average cotton product per acre, 0.33 bale, 465 pounds seed-cotton, or 155 pounds cotton lint.

A prominent feature of Fayette county is the prevalence of gray granitic soils over the entire county, with here and there a spot of red land, from associated hornblendic rocks. The county lies in the fork of Flint river and Line creek, while Whitewater creek flows south through the middle portion. The granite outcrops are not as prominent as in counties north, and seem to have been disintegrated more fully.

The surface of the country is slightly hilly and undulating, but all of it is probably tillable. Two narrow belts of red lands occur at 2½ and 5 miles, respectively, south from Fayetteville, each with a width of from one-half to three-fourths of a mile. One-half of the county is said to have been cleared of its timber growth, which comprised oak, hickory, and pine; but near Brook's station long-leaf pine forms a prominent feature.

The tilled lands embrace 42.1 per cent. of the county area. Cotton is the chief crop, and has an average of 99 acres per square mile, or 36.8 per cent. of the lands under cultivation. The average product per acre is low, although fertilizers are used more or less in cotton culture.

ABSTRACT FROM THE REPORT OF ISAAC G. WOOLSEY, M. D., OF FAYETTEVILLE.

The lands of this county consist of creek and branch bottoms, and uplands, or a mixture of gray, red, or mulatto soils, with clay subsoils.

The *uplands* are devoted chiefly to cotton culture, the gray sandy lands being better than the red.

The *gray lands* cover 75 per cent. of the area of the county, and have a growth of oaks of several varieties, pine, chestnut, and hickory. The soil is from 3 to 6 inches deep, and has a clay subsoil. It is rather late, cold, and ill drained, is easy to cultivate, and is best adapted to cotton. The crops of the county are cotton, corn, wheat, oats, potatoes, etc. Cotton comprises 60 per cent. of these, grows to a height of from 2 to 4 feet, and yields 800 pounds of seed-cotton per acre when fresh. By a cultivation of six years the yield is reduced some 300 or 500 pounds, and the fiber becomes shorter; 1,545 pounds make 475 pounds of lint. Very little of the land lies out, and when it is again taken in it yields almost as much as when fresh. It is very much injured by washing, but this is readily prevented by hillside ditching and rock dams. The valleys are usually improved by the washings of the uplands. Crab-grass is the chief enemy to cotton crops. But little cotton is planted on the creek bottoms, as it is liable to rust.

Cotton is shipped by railroad either to Atlanta or to Savannah.

SPALDING.

Population: 12,585.—White, 5,439; colored, 7,146.
Area: 220 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 53,335 acres.—Area planted in cotton, 22,935 acres; in corn, 15,560 acres; in wheat, 4,084 acres; in oats, 3,132 acres; in rye, 18 acres.
Cotton production: 7,418 bales; average cotton product per acre, 0.32 bale, 462 pounds seed-cotton, or 154 pounds cotton lint.

The surface of Spalding county is rolling and broken, well timbered, and is about equally divided between the gray granitic lands on the north and the red and gray sandy lands on the south. The Central railroad, in its southerly course through the county, has its road-bed along the top of the Atlantic and Gulf water-divide, a low ridge with gradual descents eastward, and to the Flint river on the west. Griffin, which is situated on this ridge, has an altitude of 975 feet above the sea. The granitic lands, with their gray sandy and gravelly soils, cover all the northern part of the county to within 3 miles north of Griffin, the region also extending southward through the county on the west. Black mica enters largely into the composition of the rock, producing in some localities a red soil.

A narrow belt of red land is found 3 miles north of Griffin, crossing the Newnan railroad 4 miles west of the town and covering a large area in the southern part of the county. On the southeast both gray and red lands are found intermixed, but the gray predominates. Three per cent. of the county area is said to be too swampy and 2½ per cent. too broken for cultivation. Lands under cultivation comprise 37.1 per cent. of the county area, and are chiefly planted in cotton, corn, and small grain. Cotton has the greatest acreage, and averages 104.3 acres per square mile, or 43 per cent. of tilled lands.

ABSTRACTS FROM THE REPORTS OF J. M. KELB, S. F. GRAY, AND H. T. PATTERSON, OF SUNNY SIDE.

The chief cotton lands are the uplands, with their variety of red, gray, and mulatto soils. The lowlands have but a small area devoted to cotton on account of early fall frosts, which cut off the crop.

The *gray lands*, with their sandy soils, from 3 to 12 inches deep, comprise 60 per cent. of the area of the county. The subsoil is a red and yellow clay, gradually mixing with the surface soil, and when plowed in wet weather is apt to bake. The growth is red, white, post, and Spanish oaks, chestnut, hickory, pine, poplar, gum, ash, birch, and elm. The soil is best adapted to cotton, though all crops do well, and the peach and grape are profitably cultivated. Cotton, comprising 50 per cent. of the crops, grows to an average height of 3 feet, and yields 1,000 pounds of seed-cotton per acre on fresh lands, with middling lint. After six years' cultivation the product is

600 pounds per acre, and 1,545 pounds are required for 475 pounds of lint. Rag-weeds and crab-grass are most troublesome. Ten per cent. of these lands now lie out, and, as they usually grow up in sedge-grass, they soon are as good as when fresh. No damage is done by the washing or gullying of the uplands.

The *red lands*, which are interspersed with the gray and have the same growth, have a red-clay loam soil, from 3 to 10 inches in depth, over a red and stiff clay subsoil. Cotton is planted to the extent of 50 per cent., grows to 3 feet in height, and yields 800 pounds of seed-cotton per acre on fresh land and 500 pounds after six years' cultivation. Rag-weed, crab-grass, and May-pop vines are most troublesome. Ten per cent. of these lands also lie out, but produce finely after a rest. These red uplands do not wash much.

The *mulatto lands*, or a mixture of the red and gray, have the same growth as above. Cotton grows to a height of from 3 to 5 feet, but is most productive at 4 feet, and yields 1,200 pounds of seed-cotton per acre on fresh land and 1,000 pounds after six years' cultivation. Five per cent. of these lands now lies out. Cotton is sold, as soon as ginned, at Griffin or other stations.

HENRY.

Population: 14,193.—White, 7,961; colored, 6,232.

Area: 400 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 73,583 acres.—Area planted in cotton, 35,730 acres; in corn, 21,903 acres; in wheat, 7,406 acres; in oats, 5,321 acres; in rye, 44 acres.

Cotton production: 10,930 bales; average cotton product per acre, 0.31 bale, 435 pounds seed-cotton, or 145 pounds cotton lint.

Henry county is rolling and hilly, the streams all flowing eastward from the Atlantic and Gulf water-divide, which crosses the southwestern corner of the county. The lands are almost entirely granitic, with gray sandy and gravelly soils, associated with patches, and a few narrow belts of red sandy clays or mulatto lands. At Locust Grove, McDonough, and northward are found areas of red lands, derived largely from the biotite mica of the rocks, while over the rest of the county these spots are abundant.

Of the lands of the county 1⅔ per cent. is said to be too broken and 3 per cent. too swampy for tillage. It is thought that 68 per cent. of the original timber growth has been removed. The lands under cultivation embrace 28.7 per cent. of the county area, and of this 48.6 per cent. is in cotton, the chief crop, its average being 89.3 acres per square mile.

ABSTRACT FROM THE REPORT OF J. A. C. WYNN, OF WYNN'S MILL.

The lands of the county may be classed as follows: Gray sandy and red uplands, with a small area of sandy bottoms. The *sandy and gray uplands*, comprising one-half of the county area, with a stiff clay subsoil and a growth of red and post oaks and hickory, are best adapted to cotton and corn, one-half of the cultivated lands being devoted to the former. The uplands wash readily, injuring the valleys slightly. Very little of the land now lies idle, as the old lands are found to produce very well by the application of 100 pounds of guano per acre. Fresh lands yield 800 pounds of seed-cotton per acre. The lint rates as good middling. After ten years' cultivation the yield is 500 pounds, with low middling staple; 1,545 pounds are then required to make 475 pounds of lint. Rag-weeds are most troublesome.

The *bottom lands* have a growth of poplar, sweet gum, white oak, and beech, and are best adapted to corn, but little cotton being planted on them.

Cotton is sold to local buyers.

NEWTON.

Population: 13,623.—White, 6,740; colored, 6,883.

Area: 260 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 65,039 acres; area planted in cotton, 27,801 acres; in corn, 17,112 acres; in wheat, 4,892 acres; in oats, 4,999 acres; in rye, 36 acres.

Cotton production: 7,796 bales; average cotton product per acre, 0.28 bale, 399 pounds seed-cotton, or 133 pounds cotton lint.

Newton county, through the center of which flows the Yellow river and other parallel streams, all flowing southward into the South river, has a slightly rolling surface.

That portion of the county east of Covington to within 4 miles of Rutledge has chiefly sandy red clay lands, produced from the decomposition of biotite gneisses, which are the prevailing rocks. From Covington westward to Rocky Plains a gray sandy soil predominates, with yellow or red subsoils; while still farther westward are gray granitic lands, with flat outcrops of the rock. The granite is fine grained, and is much used for building purposes. These various belts extend north and south through the county parallel with the streams.

There are in the county cotton and woolen mills, and flour, corn, and lumber mills are abundant. Sixty-three per cent. of the tillable land is said to have been cleared. Of the total area 39 per cent. is under tillage. Cotton is the chief crop, with an average of 106.9 acres per square mile, or 42.8 per cent. of the tilled lands. Its average product per acre is very low.

ABSTRACTS FROM THE REPORT OF L. F. LIVINGSTON, OF COVINGTON, AND JESSE W. WALKER, OF SOCIAL CIRCLE.

Cotton is not grown on the lowlands, as it will not mature and is killed by frost. The soil of the bottoms is a black loam, underlaid by whitish clay.

The cotton lands of the county may be classed as (1) a stiff red clay soil and subsoil, filled with gravel; (2) a light sandy soil, with clay subsoil, free from gravel; (3) a mulatto clay soil, free from gravel. Of these the *red clay uplands* are chiefly devoted to cotton, which comprises half of the crops. They have a coarse gravelly clay soil, 3 inches deep, a red-clay subsoil, gravelly and very productive when turned up a few months before cultivation; the growth is post, red, and black oaks, hickory, and pine. These lands extend from Covington 60 miles south, 70 miles east, and 40 miles north. They are early, warm, and well drained, easy to cultivate in dry but difficult in wet weather, and are best adapted to cotton. The cotton-plant grows to a height of from 15 to 24 inches, but runs to weed with

excessive rains, which is prevented by very shallow plowing and fertilizing with ammoniated fertilizers. Fresh lands yield 800 pounds of seed-cotton per acre. Its lint rates as middling. Ten years' cultivation without rotation or care of the soil reduces the yield to 400 pounds, but with a better staple. The older the land the better the staple, a good staple requiring a slow growth. "Crop" grass, a variety peculiar to this soil, is most troublesome to the crops. Hog-weeds appear after crops of wheat and oats. "Poor Peter" is also a troublesome weed. But very little red land now lies out; all is reclaimed and in cultivation. The uplands, and sometimes the valleys, are seriously injured by the washing and gullying of the soils, but some valleys are improved 50 per cent. Hillside ditching and horizontalizing are practiced to prevent injury, and with good success when properly done.

The *sandy gray soils*, extending west from Covington, have a growth of oak, chestnut, and pine, a depth of 5 inches, and an orange-red clay subsoil, not productive when turned up with the soil. The soil is early, warm, and well drained, easy to cultivate in dry and wet seasons, and is best adapted to cotton and potatoes. About one-half the cultivated lands is devoted to cotton, which grows to a height of from 10 to 18 inches and yields 600 pounds of seed-cotton per acre on fresh land. Ten years' cultivation reduces this to 300 pounds. The land is injured by washings, but the valleys are not much damaged.

The *mulatto lands* cover a very small portion of the county in a narrow belt reaching south, with a growth of hickory and oak. The brown or mulatto clay soil has a depth of from 4 to 6 feet, and is best adapted to cotton, which comprises two-thirds of the crops and grows to a height of from 2 to 4 feet, yielding 1,200 pounds of seed-cotton per acre on fresh land and 800 pounds after ten years' cultivation. Rag-weeds are most troublesome. One-eighth of these lands now lies turned out, but will produce well when again taken in. They do not wash or gully as readily as the gravelly clay lands.

The cultivation of cotton in this county has increased rapidly in the past ten years, owing to the use of fertilizers and to improved preparation and cultivation.

Shipments of cotton are made from Covington to Atlanta and to Augusta.

MORGAN.

Population: 14,032.—White, 4,249; colored, 9,783.

Area: 400 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 82,315 acres.—Area planted in cotton, 35,243 acres; in corn, 22,510 acres; in wheat, 4,980 acres; in oats, 4,017 acres; in rye, 111 acres.

Cotton production: 7,358 bales; average cotton product per acre, 0.21 bale, 297 pounds seed-cotton, or 99 pounds cotton lint.

Morgan county is hilly, and has a gradual fall from the west to the Oconee river on the southeast, all the streams flowing in that direction. The Georgia railroad passes through the center of the county almost east and west.

A broad belt, in which red lands predominate, passes north and south, extending in width from 4 miles east of Rutledge eastward to 1½ miles east of Madison, where gray sandy lands appear. Other narrow belts are found beyond this, and over the southern part of the county the red lands are very prevalent. These lands are formed from granites in which biotite gneiss is a large constituent, and which gives to the former their red character.

The gray lands of the northeast part of the county, and also on the east of Sugar creek, are very gravelly, and abound in quartz fragments, differing in that respect from the gray sandy lands on the west and south.

It is estimated that 5 per cent. of the county area is too hilly for successful cultivation, and that 2 per cent. consists of irreclaimable swamp lands. Some of the uplands between the streams present broad level areas, which are choice lands for cultivation; 62½ per cent. of the original forest has been cleared. The crops of the county are cotton, oats, corn, potatoes, and wheat.

There are in the county a cotton factory, carriage and wagon factories, and flour, corn, and lumber mills.

Lands under tillage embrace 32.2 per cent. of the county area. Cotton has an average of 88.1 acres per square mile, or 42.8 per cent. of tilled lands. The average product per acre of cotton is very small.

ABSTRACT FROM THE REPORT OF GRANT D. PERRY, OF MADISON.

The lands vary greatly from one stream to another, but may be generally classed as follows: Dark red loam, 4 inches deep, with red subsoils, and covering half of the county; gray sandy lands, 3 inches deep, with red subsoils, comprising 40 per cent. of the area; alluvial river lands or bottoms, comprising 10 per cent. of the area.

The *red lands* have a growth of oak, hickory, chestnut, poplar, gum, ash, and persimmon. Cotton comprises 60 per cent. of the crops on this soil, grows from 3 to 6 feet high, runs to weed in wet weather unless prevented by plowing close to the stalk, and yields from 800 to 1,000 pounds of seed-cotton per acre. The lint rates as good middling. After twenty years' cultivation the yield is diminished to 450 pounds. Crab-grass is most troublesome. Forty per cent. of these lands now lie turned out and are much injured by washing, which also damages some of the valleys.

The *gray lands*, having a growth of oak, hickory, chestnut, persimmon, and pine, are best adapted to cotton and oats, and are late and easy to cultivate. Seventy per cent. of cotton is planted on them. It grows to a height of from 2 to 4 feet, yielding 1,000 pounds of seed-cotton per acre on fresh land and 450 pounds after twenty years' cultivation.

The *bottom alluvial lands* along the creeks and large streams have a width of from 100 to 600 yards and a growth of gum, willow, alder, poplar, and oak. They have a clay loam soil from 10 inches to 10 feet in depth and a blue clay subsoil. The soil is late and somewhat difficult to till in wet seasons, and is best adapted to corn and oats. Cotton on these bottom lands is liable to be too late for full maturity. It grows to a height of from 4 to 7 feet, is most productive at 4 feet, and runs to weed in wet weather, which is prevented by plowing near the stalk and breaking the roots. Its yield on fresh land is 1,200 pounds of seed-cotton per acre, and after twenty years' cultivation the yield is 600 pounds, provided the uplands have not washed down and covered up the good soil with sand. Crab-grass gives most trouble on these bottoms. About 30 per cent. of the land lies out, but it produces well when again taken in.

Dry weather is a great drawback to the growth of upland cotton. The land is so poor that it must be stimulated with commercial fertilizers, which add so much to the cost that without good seasons there is no profit. Shipments are made by railroad to Augusta.

GREENE.

Population: 17,547.—White, 5,573; colored, 11,974.
Area: 340 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 91,224 acres.—Area planted in cotton, 40,037 acres; in corn, 25,827 acres; in wheat, 6,473 acres; in oats, 6,674 acres; in rye, 92 acres.
Cotton production: 12,448 bales; average cotton product per acre, 0.31 bale, 444 pounds seed-cotton, or 148 pounds cotton lint.

The surface of Greene county along the Oconee river is very hilly, with steep ascents from the river, but eastward the slopes are more gentle.

In the southeastern part of the county there is a large granitic area, in which the rocks appear in immense bowlders, having coarse feldspar crystals and forming gray gravelly soils. The granitic section extends westward to Richland creek, northwest to within one mile of Greensboro', and thence eastward.

A wide belt of red clay lands from hornblendic gneiss borders the granitic region, passing through Union Point, Greensboro', and thence southward. Westward from this to the river on the west, and northward for several miles, are gray sandy lands, with a few granite outcrops, interspersed with small areas of red lands. In the northern part of the county the red lands again predominate. (See analyses of soils, pages 33 and 35.)

It is thought that 58 per cent. of the county (originally timbered with oak, hickory, and pine) has been cleared. At present, however, but 41.9 per cent. of the total area is under tillage. Cotton is the chief crop, and averages 117.8 acres per square mile, or 44.9 per cent. of the tilled land. In the former regard the county ranks as seventh in the state, but in product per acre it is very low.

ABSTRACT FROM THE REPORT OF J. B. Y. WARNER, OF GREENSBORO'.

The *gray sandy uplands*, covering two-thirds of the county, are the chief cotton lands. They have sometimes a whitish, but usually red clay subsoil. The cotton stalk grows to a height varying from 6 inches to 6 feet, and is most productive at 2 or 3 feet. It runs to weed on red and rich lands during wet weather. Crab-grass, rag-weed, etc., give the crops much trouble. The lands produce from 1,000 to 1,500 pounds of seed-cotton when fresh. In some cases the yield in ten years is not more than half of this. About one-half of the lands originally under cultivation now lies out, and, if not washed much before turning out, yields a fair crop when again taken in. Some of the valleys and uplands are ruined by the washing of the latter; deep plowing is in rare instances practiced to prevent it, and with good success. The growth of the uplands is oak, hickory, chestnut, poplar, pine, dogwood, and black and sweet gums.

Shipments are made, via Augusta, to Charleston and to Savannah by rail.

TALIAFERRO.

Population: 7,034.—White, 2,312; colored, 4,722.
Area: 180 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 46,616 acres.—Area planted in cotton, 14,058 acres; in corn, 9,901 acres; in wheat, 3,086 acres; in oats, 4,305 acres; in rye, 34 acres.
Cotton production: 4,758 bales; average cotton product per acre, 0.34 bale, 483 pounds seed-cotton, or 161 pounds cotton lint.

Through Taliaferro county there passes a ridge in an easterly course, dividing the tributaries of the Little river and of the Ogeechee, and marked by the Georgia railroad. Crawfordville, situated on this ridge, has an elevation of 618 feet above the sea.

The general surface of the county is rolling, with granites on the southwest, center, and northeast, clay-slates on the east of Crawfordville toward Raytown, and hornblendic rocks on the north, each with their characteristic gray gravelly, gray clayey, and red clay or mulatto lands.

The crops of the county are corn, cotton, wheat, oats, and sorghum. The entire county is tillable, and 50 per cent. of the original timber growth is thought to have been removed. The tilled lands comprise 40.5 per cent. of the total area, cotton being the chief crop, with an average of 78.1 acres per square mile.

ABSTRACT FROM THE REPORT OF LIONEL L. VEAZEY, OF CRAWFORDSVILLE.

The cotton lands of the county are classed as red, mulatto, and gray, and are all adapted to corn and cotton. Cotton comprises half the crops, grows to a height of from 3 to 5 feet, and yields 800 pounds of seed-cotton per acre (sometimes more) on fresh land. After three years' cultivation the yield is only 600 or 800 pounds per acre, 1,545 pounds of seed-cotton making 475 pounds of lint, which rates as first-class from new lands and a little lower from old. Carrot- and hog-weeds are most troublesome. One-fourth of the lands now lies out; after fifteen or twenty years' rest they produce almost as well as fresh lands. The uplands wash readily and are seriously damaged, but the valley lands are rather improved.

Shipments of cotton are made to Augusta.

LINCOLN.

Population: 6,412.—White, 2,254; colored, 4,158.
Area: 280 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 37,813 acres.—Area planted in cotton, 12,798 acres; in corn, 11,029 acres; in wheat, 2,125 acres; in oats, 7,035 acres; in rye, 13 acres.
Cotton production: 3,861 bales; average cotton product per acre, 0.30 bale, 429 pounds seed-cotton, or 143 pounds cotton lint.

The surface of Lincoln county is rolling and hilly, the most prominent point being Graves' mountain, on the west. A belt of granite extends through Lincolnton to the mountain, and another outcrop is found in the southwestern corner of the county, both forming gray sandy and gravelly soils. Over the rest of the county the red clayey and gray sandy lands are found in alternating belts. About 2½ per cent. of the area is too hilly or broken for cultivation. (See analysis of soil, page 37.)

Gold is being mined extensively. Graves' mountain is composed of a soft, friable sandstone, containing crystals of rutile, etc.

The drainage of the county is to the Savannah river. It is estimated that 37 per cent. of the original timber growth has been cleared; 21.1 per cent. of the total county area is under cultivation in corn, wheat, cotton, oats, and potatoes. Cotton is the chief crop, with an average of 45.7 acres per square mile, or 33.9 per cent. of the tilled lands.

The following experiment was reported by J. M. Dill, of Clay Hill, to the Georgia department of agriculture:

The land was a sandy loam, with clay subsoil, and had been in cultivation sixty years. The original growth was white and red oaks, hickory, etc.; had been lightly manured previous to 1879. Without fertilizers the yield was 665 pounds per acre; with fertilizers and compost, from 935 to 1,470 pounds of seed-cotton.

Another plat in the same field the following year gave, without additional fertilizers, 665 pounds average per acre; with fertilizers and composts, from 1,085 to 1,295 pounds of seed-cotton.

ABSTRACTS FROM THE REPORTS OF C. R. STROTHER AND N. A. CRAWFORD, OF LINCOLNTON.

Cotton is planted here on the uplands and bottoms. The upland is the surest for a crop, is planted earlier and matures faster, and is not so liable to rust as the sandy bottoms. The loamy bottoms with favorable seasons sometimes yield 1,500 pounds of seed-cotton per acre, but because of the better yield of corn on these lowlands they are but little devoted to cotton. From one-third to one-half of the uplands under cultivation is devoted to cotton.

Of the uplands the *gray sandy lands* having red-clay subsoils are best for cotton, and those are selected which are on southern slopes of hills, being more exposed to the rays of the sun in the spring and better protected from frosts and cold winds. The growth of these lands is post oak, black-jack, and hickory. The soil has a depth of about 6 inches to a stiff red-clay subsoil. The rocks are decomposed or disintegrated to a depth of 20 or 30 feet. The soil is early, warm, well drained, and easy to till, and is best adapted to cotton and oats. The former grows to a height of 3 feet, and runs to weed on fresh lands in wet weather, unless prevented by using stable manure, either in drill or broadcast. On fresh lands the yield is from 600 to 1,000 pounds of seed-cotton per acre, which is reduced to 500 pounds in five years' cultivation if not alternated with wheat or oats, 1,425 pounds from fresh and 1,545 from old lands making 475 pounds of lint, the staple in the former sometimes rating higher and bringing in market 1 cent more per pound. Crab-grass is the most troublesome on these gray lands. Seven-tenths of these lands originally in cultivation now lie out, and have a growth of old-field pine. They do not produce well when taken in again without the use of fertilizers. The valleys would be injured 50 per cent. by the washing and gullying of the gray uplands if a system of ditching or draining were not kept up by the best class of farmers.

The *red clay lands* also have a growth of oak and hickory and a subsoil of tough red clay, mixed with yellow streaks, yielding readily to a good two-horse subsoil plow. The soil is early when well drained, and is not difficult to work either in wet or in dry seasons, and all the crops succeed well if they receive proper attention. Cotton grows to a height of 30 inches, yielding 1,000 pounds per acre in dry seasons. In these clay lands, when the plant is inclined to run too much to weed, the use of superphosphates seems to check it and favor bolling. After five years' cultivation the yield is 400 or 600 pounds, the lint becoming lighter and the staple not so long. Rag- and hog-weeds are most troublesome on these clay soils; other varieties are easily subdued. About one-third of these lands now lies out, producing better cotton crops than when fresh when again taken in.

Gray gravelly soils.—Interspersed with the red and gray varieties are gray sandy soils having a yellow or black gravel, with much quartz. The depth is 3 or 4 inches, with a yellowish-white sand, very porous and miry in wet weather. This is underlaid by sand and gravel. This soil is adapted to corn and oats; cotton grows to a height of 3 feet, and yields 700 pounds of seed-cotton per acre when fresh and 300 or less after five years' cultivation.

Shipments of cotton are made, by wagon and by boat, to Augusta at $2 per bale.

WILKES.

Population: 15,985.—White, 5,173; colored, 10,812.

Area: 460 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 88,776 acres.—Area planted in cotton, 30,891 acres; in corn, 21,493 acres; in wheat, 4,287 acres; in oats, 11,855 acres; in rye, 463 acres.

Cotton production: 11,109 bales; average cotton product per acre, 0.36 bale, 513 pounds seed-cotton, or 171 pounds cotton lint.

The surface of Wilkes county is undulating and broken, the dividing granite ridge extending east and west through the middle of the county. The soil of this ridge is gray and sandy, and reaches southward over most of the county. To the northward there is a belt of alternating red clays and sands, the former apparently predominating. This belt has a southward course from Elbert county, and a width of but a few miles. Good clay subsoils underlie all of the county lands. A small part of a flatwoods belt lies still northward, on the county-line, and is a continuation of the flatwoods of South Carolina. The prominent growth of this belt is black-jack; the growth elsewhere is oak, pine, and hickory.

The bottom lands are narrow and sandy, and where above overflow are devoted chiefly to the culture of corn, owing to the liability of injury to cotton crops by rot and frosts. About one-third (30.2 per cent.) of the county area is now under cultivation, and 20 per cent. is said to consist of worn-out lands now lying out and covered with a growth of old-field pine. A small percentage also consists of irreclaimable swamp and of lands too broken for tillage.

Cotton is the chief crop, comprising 34.8 per cent. of the tilled lands, and averaging 67.2 acres per square mile. Its product per acre is greater than that of either the region or state at large.

ABSTRACT FROM THE REPORT OF JOHN T. WINGFIELD, OF WASHINGTON.

The lands are quite variable within very short distances, and "spotted" might be a good term to apply to them, as very fine and very poor lands are contiguous, or within a few hundred yards of each other. They may be classed as red, gray, and sandy.

The *red clays* are the best lands. Their soils are 4 inches deep, with a red-clay subsoil, and rock at 10 feet. The lands seem to be best for oats, though cotton forms two-thirds of the crops. Fresh lands yield 800 pounds of seed-cotton per acre. The seeds of the first picking are heavier than those of subsequent ones, and hence from 1,425 to 1,780 pounds are required to make 475 pounds of lint. Cultivation of ten years (unmanured) reduces the yield to 200 pounds of seed-cotton, and the staple is much shorter. Hog-weeds are most troublesome. One-third of the red lands originally under cultivation now lies out. These lands produce freely for only three years after being again taken in, but wash readily, and are much injured.

The *gray lands*, with their 3 inches of fine sandy and gravelly soils and yellow and white clay subsoils, are the chief cotton lands of the county. Cotton planted on fresh land yields 1,000 pounds of seed-cotton per acre. Ten years of cultivation (unmanured) reduces this yield to 300 pounds, but the staple is longer, thus differing from that of the red lands.

The *flatwoods* of the upper part of this county and in the adjoining counties of Elbert and Oglethorpe have a black soil with a yellow-clay subsoil, producing all the cereals finely and continuously, making cotton successfully from 4 to 6 years after clearing, but after that producing a sufficiency of weed but no bolls, and being ruined by rust.

Shipments of cotton are made to Augusta, per railroad, at 32 cents per 100 pounds.

COLUMBIA.

Population: 10,465.—White, 3,030; colored, 7,435.

Area: 290 square miles.—Woodland, all; sand hills, 70 square miles; metamorphic, 220 square miles.

Tilled lands: 54,362 acres.—Area planted in cotton, 25,302 acres; in corn, 15,632 acres; in wheat, 1,095 acres; in oats, 3,804.

Cotton production: 8,313 bales; average cotton product per acre, 0.33 bale, 468 pounds seed-cotton, or 156 pounds cotton lint.

The face of Columbia county is much broken, 1 per cent. being too broken for successful tillage; 2½ per cent. is of irreclaimable swamp, and of the rest 70 per cent. is said to have been cleared. On the south, and covering probably one-fourth of the county, are the sandy pine hills of the "central cotton belt", with a predominant growth of long-leaf pine, the northern limit being several miles north of Sawdust, and at the Richmond county-line on the southeast. The rest of the county lies within the metamorphic region.

On the southeast, and extending north along the river above the mouth of Kiokee creek, are the cold clay lands of the siliceous "clay-slate" region, a continuation westward of that region in South Carolina, and limited by the granite lands around Appling, the county-seat. These latter are comprised within an area extending 3 miles north, 5 miles southwest and northeast, and 4 miles south of the town.

Flat exposures are common, the largest being reported to cover 125 acres. Red clay lands are found north of this section, forming narrow belts, and intermixed with the dark-sandy soils of feldspathic gneisses. The lands under cultivation embrace 29.3 per cent. of the total county area, and of these 46.5 per cent. are in cotton, the average of this crop being 87.2 acres per square mile. Its product per acre is that of the region at large.

ABSTRACT FROM THE REPORT OF HON. H. R. CASEY, M. D., OF APPLING.

Cotton is cultivated on all classes of land, but experience gives the preference to the *gray or light sandy and mulatto*, which has a depth of 3 or 5 inches and a subsoil varying from deep red clay to yellow sandy clays, with pipe-clay in small spots. The growth is oak in its varieties, hickory, walnut, sassafras, persimmon, and short-leaf pine. These lands being warm, early, well drained, and easiest to cultivate, are best suited to cotton, which comprises one-half of the crops. The yield is 800 pounds of seed-cotton per acre, the lint rating as good middling. Cultivation of five years reduces the yield to 600 pounds, but otherwise produces no change. The stalk grows to an average height of 3 feet, its tendency to run to weed when crowded and in wet weather being checked by shallow cultivation but deep preparation of the land. The crops are troubled with hog-weed, May-pop vines, sheep-sorrel, crab-grass, etc. When the lands are coarse sandy, they wash very readily; otherwise but slightly. Considerable damage is done to the hills if too long neglected, while some of the valleys are much benefited by the deposits.

The *red clay lands*, from decomposed hornblendic rocks, cover about one-third of the county. The growth is oak, hickory, walnut, short-leaf pine, dogwood, and cedar. The soil is several feet in depth, there being but little perceptible difference in the subsoil. It is late and cold, and difficult to till in both dry and wet seasons. Its product on fresh land is 700 pounds of seed-cotton, and it fails faster than gray land. The unstained staple rates as good middling.

The *light sandy, gravelly, crawfishy soils* cover but a small area, and have a growth of black-jack, chincapin, and scrub oak. Cotton grows to a height of only from 6 inches to 1 foot, and yields from 200 to 400 pounds of seed-cotton on fresh land, the product being still less after a few years. Small grain best suits these lands.

Shipments of cotton are made by rail or by wagon to Augusta.

McDUFFIE.

Population: 9,449.—White, 3,430; colored, 6,019.

Area: 330 square miles.—Woodland, all; sand hills, 107 square miles; metamorphic, 223 square miles.

Tilled lands: 54,381 acres.—Area planted in cotton, 24,819 acres; in corn, 13,935 acres; in wheat, 2,779 acres; in oats, 5,616 acres; in rye, 10 acres.

Cotton production: 7,439 bales; average cotton product per acre, 0.30 bale, 426 pounds seed-cotton, or 142 pounds cotton lint.

McDuffie county has its area about evenly divided between the metamorphic and the pine-hills regions, the line of separation passing 1 mile or 2 miles north of Thomson, and then turning southwestward into Warren county.

The upper or northern part of this county is rolling, with outcropping metamorphic rocks, which are filled with gold-bearing quartz veins along the Little river. The gray sandy lands predominate, the red, forming large areas, being intermixed with them. The entire county was once thickly timbered, but now about half is said to have been cleared. The metamorphic section has the usual oak and hickory growth, while the pine hills are covered with their characteristic long-leaf pine, black-jack, and sweet-gum growth.

The crops of the county are cotton, corn, wheat, oats, potatoes, and sugar-cane.

Lands under tillage comprise 25.7 per cent. of the county area, and of these 45.6 per cent. are in cotton, its average being 75.2 acres per square mile. The product per acre of the county is below that of the region.

In comparing the enumeration reports of production of cotton in this county it is found that the largest yield per acre is in the militia district occupying the central part. The results are as follows: The northern part of the county averages 420 pounds of seed-cotton; the central part, 510 pounds; the southwestern part, 405 pounds; the southeastern part, 495 pounds per acre. The greater productiveness of the southeastern pine hills over the gray sandy lands of the north is due, apparently, to the liberal use of fertilizers.

ABSTRACT FROM THE REPORT OF A. E. STURGIS, OF THOMSON.

The lands of the county may be classed as dark-gray sandy, with clay subsoil, which are preferable for cotton; mulatto or red lands, also well adapted to cotton; sandy or pine lands, inferior to either of the others. Crops on the bottom lands are liable to be caught by frosts, and are also more subject to the boll-worm, to rust, and to rot than on the uplands; hence these lands are but little under cotton cultivation. These lowlands comprise the marshy, sweet-gum, and gallberry flats of the pine-hills region.

The *dark-gray soils*, comprising three-eighths of the lands of McDuffie, are from 4 to 12 inches deep, with a tough, yellow clay subsoil and a growth of post oak, big-bud hickory, and dogwood, with some red oak. One-third is planted in cotton. The plant grows to a height of from 1 foot to 4 feet, but is most productive at 3 feet, yielding from 800 to 1,200 pounds of seed-cotton per acre on fresh land. After ten years' cultivation the yield is from 400 to 600 pounds. From fresh lands 1,425 pounds make 475 pounds of lint, which rates as middling to good middling; from old lands 1,485 pounds are required for a bale, the lint rating as low middling to middling. The crops are troubled most with crab-grass. But little land lies out, and when taken in again it produces as well as at first. The gray uplands wash readily, and in some localities serious damage is done to them. The valleys, too, become filled up with sand, which injures their productiveness. Ditching is practiced with success in preventing this washing.

The *red lands*, covering one-third of the county, have clay loam soils 1 foot or 2 feet deep, a red clay, putty-like subsoil, a growth of oak, hickory, dogwood, poplar, and walnut, and are best adapted to wheat, oats, rye, and barley, though one-third is planted in cotton. The stalk of the latter runs to weed in wet weather and from deep plowing, unless restrained by topping and plowing shallow with a sweep. It yields on fresh land from 1,000 to 1,500 pounds of seed-cotton per acre, and from 600 to 800 after ten years' cultivation unmanured. Hog-weeds are most troublesome. Though washing readily, but little serious damage is done to the uplands, and none to the valleys.

The *pine lands* of the southern part of the county have a coarse sandy and gravelly soil from 1 foot to 2 feet deep, a yellow subsoil, underlaid with "chalk" (white pipe-clay) 10 feet below, and a growth of long-leaf pine, black-jack, and sweet gum, with black gum and poplar on the swamps. On the hills are red ferruginous pebbles. The lands are best adapted to pease, potatoes, and melons, though one-eighth is planted in cotton. Cotton grows to a height of 2 feet, and yields from 600 to 800 pounds of seed-cotton on fresh lands. Ten years' cultivation reduces this to 200 pounds. Crab-grass is most troublesome. A small proportion of these lands now lies out. They wash readily, suffering serious damage in some localities, and frequently render the valleys unfit for cultivation. Hillside ditching is practiced on every farm, and is very successful in preventing damage.

Shipments of cotton are made to Augusta at 1.5 cents per pound or 75 cents per bale.

WARREN.

Population: 10,885.—White, 4,039; colored, 6,846.

Area: 290 square miles.—Woodland, all; sand hills, 98 square miles; metamorphic, 192 square miles.

Tilled lands: 53,966 acres.—Area planted in cotton, 24,991 acres; in corn, 16,450 acres; in wheat, 3,649 acres; in oats, 4,885 acres.

Cotton production: 7,885 bales; average cotton product per acre, 0.32 bale, 447 pounds seed-cotton, or 149 pounds cotton lint.

Warren county lies partly in the metamorphic and partly in the pine- and sand-hills region, the two divisions differing greatly in surface features. The water-divide between the Savannah and Ogeechee river systems passes slightly northwestward through the county.

The metamorphic région extends southward to 6 miles beyond Warrenton, and on the creeks its rocks are exposed much farther south. The red and gray sandy lands occur in the north and northwest, granitic (pink feldspar) lands at Warrenton and southward, and gray clay lands at Camak.

The southern part of the county is covered with white sands and clays of the pine hills, and has a growth of long-leaf pine and black-jack.

The surface of the entire county is well timbered, rolling, and broken, but all considered tillable, and 29.1 per cent. is under cultivation in cotton, corn, wheat, oats, potatoes, etc.

There is but little bottom land on the creeks of the northern portion of the county. Cotton is the chief crop, and has an average of 86.2 acres per square mile, or 46.3 per cent. of the tilled lands.

ABSTRACTS FROM THE REPORTS OF JAMES A. SHIVERS AND JOHN S. JOHNSON, OF WARRENTON.

The soils of Warren county may be classed as red clay lands, rocky and rolling; light gray lands, rolling, and with a clay subsoil; and fine sandy table-lands of the pine hills.

The *red clay lands* are considered the best land of the county for crops in general. They comprise about one-third of its area; have a depth of from 4 to 6 inches, a red and yellow clay subsoil, very tough, but when properly worked in season are easy to manage. The growth is oak and hickory. The soil is difficult to till in wet but easy in dry seasons. One-third of the soil under cultivation is devoted to cotton.

The plant grows to a height of from 12 to 36 inches, and runs to weed with too much rain in June and July. It yields on fresh land from 800 to 1,000 pounds of seed-cotton per acre. After two years the yield is 1,200 pounds; four years, from 700 to 1,000; six years, from 600 to 900; and after ten years, from 500 to 800 pounds. Hog-weeds and crab-grass are most troublesome. From one-third to one-half of the land lies out. When again taken in these lands make better cotton for a few years, and are preferred, as they are easier cultivated. The uplands are seriously damaged by washing, but the valleys are improved from 10 to 20 per cent. Horizontalizing is practiced with success in checking the damage and in reclaiming old hillsides.

The *gray lands*, with red subsoils at a depth of from 4 to 18 inches, lie away from the water-courses, and have a growth of oak, hickory, ash, gum, maple, and pine. The lands are best adapted to cotton, and comprise one-third of the area of the county. The average height of cotton is 24 inches, and it yields from 1,000 to 1,200 pounds of seed-cotton per acre on fresh land. Cultivation of cotton for four years reduces this yield to 1,000 pounds, and for six years from 600 to 800 pounds.

The *sandy piny woods* of the southern part of the county cover one-third of its area, and have, besides the pine, a growth of black-jack. The soil is from 1 foot to 10 feet deep to a white clay. It is easy to till, early, warm, and well drained, and is best adapted to corn, wheat, and oats. On this land cotton grows to a height of 4 feet, and yields from 400 to 600 pounds of seed-cotton per acre. Cultivation of two years reduces this to 300 or 400; six years, to 200 or 300 pounds. One-third of this land now lies turned out, and is greatly improved by rest. These light and sandy uplands wash readily and do serious damage, but the valleys seem to be improved by the deposit of sand.

Fourteen hundred and twenty-five pounds of seed-cotton on all the lands of the county make 475 pounds of lint, except on the old lands of the pine hills, where 1,545 pounds of seed-cotton are required.

Shipments are made to Augusta by railroad at $1 20 per bale.

HANCOCK.

Population: 16,989.—White, 5,044; colored, 11,945.

Area: 520 square miles.—Woodland, all; sand hills, 132 square miles; metamorphic, 388 square miles.

Tilled lands: 99,397 acres.—Area planted in cotton, 42,773 acres; in corn, 33,328 acres; in wheat, 5,913 acres; in oats, 6,503 acres; in rye, 120 acres.

Cotton production: 15,010 bales; average cotton product per acre, 0.35 bale, 501 pounds seed-cotton, or 167 pounds cotton lint.

Hancock county is one of the border counties whose area embraces partly metamorphic and partly pine and sand-hills regions, with soils of greatly different character. The surface is mostly rolling, especially in the metamorphic portion of the county, which embraces the greater area, and which extends in width from the northern county-line to several miles south of Sparta. On the south the lands are more level, and embrace the sandy pine uplands. The Ogeechee and Oconee water-divide passes northward through the county, these two streams forming, respectively, the eastern and western boundaries.

In the metamorphic or northern section of the county there are two granitic regions: one a narrow strip on the north, next to Greene county; the other, of the pink feldspathic variety, in the region of Sparta, extending in a belt northeast and southwest. Long-leaf pine is a prominent growth on its gray sandy lands. Between these two granitic regions the lands are gray and more or less rocky, a red-clay subsoil usually underlying the surface at 6 to 12 inches. (See analysis of soil, page 37.)

The red lands pass across the county in a rather narrow northeasterly belt 4 miles north of Sparta and just south of the northern granite area. Its growth is chiefly oak and hickory.

The sand and pine hills of the southern part of the county embrace sandy ridges and level uplands, with often deep sand beds covering plastic and variegated clays. Long-leaf pine is a prominent growth of this region. The entire surface of the county is considered tillable, and it is thought that 56 per cent. of the original growth has been removed. The tilled lands embrace 29.9 per cent. of the total area, and are chiefly (43 per cent.) devoted to cotton, its average being 82.3 acres per square mile. The county ranks as eleventh in the state in its total acreage of cotton. The following experiment with fertilizers was made by John Turner, of Culverton, on gray sandy land:

The land has been in cultivation about sixty years and has been manured. The original growth was oak and hickory. The yield without fertilizers was 595 pounds of seed-cotton per acre. With commercial fertilizers and composts it ranged from 1,015 to 1,260 pounds of seed-cotton.

ABSTRACT FROM THE REPORT OF W. J. NORTHEN, OF SPARTA.

The culture of cotton in this county is confined almost exclusively to the uplands. Cotton fails to open on bottoms, and but few persons attempt to raise it on such land.

The uplands may be classed as darkish gray, mulatto, and red lands. The *gray land* is the chief cotton land, and covers one-third of the area of the county; has a depth of 4 or 5 inches, a mulatto or red subsoil, and a growth of oak and hickory. The crops of the county are cotton, corn, oats, wheat, potatoes, etc. The gray land is chiefly devoted to cotton, the red to small grain. Three-fourths of the land now lies out, and if allowed to grow up in pines the yield for a few years is equal to three-fourths of that of fresh land. The sandy nature of the land is favorable to the rapid washing away of the soil on hillsides, by which serious damage is done, though the valleys are usually improved. Owing to carelessness in opening the hillside ditches very little success attends the attempts to check the damage.

Cotton comprises one-half the crops, fresh lands yielding nearly one bale per acre. The height to which the plant grows varies from 6 inches to 3 feet, a medium being most productive. The use of fertilizers favors bolling and prevents running to weed. After fifteen years' cultivation the yield is about 400 pounds of seed-cotton per acre. Indigo- and hog-weeds are most troublesome.

The *mulatto soils* differ but little in character from the gray. Cotton seems to come to maturity, but does not open until the frosts crack the bolls, and it is then too much damaged to bring a fair price in market. The subsoil is a heavy clay, and the land is hard to cultivate.

Shipments are made by railroad, via Sparta, to Augusta, immediately upon baling.

PUTNAM.

Population: 14,539.—White, 3,518; colored, 11,021.

Area: 360 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 72,664 acres.—Area planted in cotton, 35,819 acres; in corn, 23,175 acres; in wheat, 2,855 acres; in oats, 2,881 acres; in rye, 93 acres.

Cotton production: 9,678 bales; average cotton product per acre, 0.27 bale, 384 pounds seed-cotton, or 128 pounds cotton lint.

Putnam county is hilly and rolling. Its streams all flow south and southeast, and unite with the Oconee river, which forms its eastern boundary.

A large proportion of the land is of a red clay or mulatto character, the gray sandy soils being found interspersed in large and small areas throughout. The rocks forming these lands are mostly biotite gneisses, with some granites and mica-schists. Hornblendic gneisses occur north of Dennis' station.

Very little of the surface of the county is too hilly for cultivation; 2½ per cent. is too swampy. The lands under cultivation, comprising 31.5 per cent. of the county area, are devoted to cotton, corn, wheat, oats, potatoes, etc.

Cotton is the chief crop, its acreage being 49.3 per cent. of the tilled lands, and averaging 99.5 acres per square mile. Its average product per acre is very low.

The following result of an experiment with fertilizers by J. T. Dennis, of Eatonton, is reported:

Mulatto land that had been lying turned out twenty-five or thirty years and had grown up in old-field pines was used. Original growth, oak and hickory. Average yield, without fertilizers, 463 pounds per acre; yield with 200 pounds of fertilizers, per acre, from 630 to 910 pounds of seed-cotton.

ABSTRACTS FROM THE REPORTS OF ROBERT C. HUMBER AND J. T. DENNIS, OF EATONTON.

The lands are nearly all of a uniform character, comprising deep-red clay, light gray, and light sandy pine lands.

The *deep-red clay lands* cover from three-fourths to four-fifths of the surface of the county, and extend 30 miles north and 20 south, and across the county east and west. The soil has a depth of 2 feet, and has a heavier red-clay subsoil, that bakes very hard after summer rains and is very clammy, absorbing moisture readily when pulverized. The growth is oak, hickory, ash, poplar, and pine. The lands are best adapted to cereals, though fully one-half is planted in cotton. Too much rain and too deep plowing cause the cotton-plant to run to weed. Its average height is 2½ feet. It yields about 1,000 pounds of seed-cotton per acre on fresh land, and 500 pounds after ten years' cultivation. In the latter the staple is much shorter, and 1,665 pounds of seed-cotton are required for 475 pounds of middling lint. Rag- and hog-weeds are most troublesome. Fully one-half of these lands now lies out. They produce well for the first two or three years when again taken in, but are much damaged by washing and gullying, and the valleys are injured to a considerable extent. Hillside ditching prevents damage, but the quickest and surest remedy is to plant Bermuda grass on the slopes.

The *light gray lands* suffer from rust. They comprise one-sixth of the area of the county, and have a growth of post oak and hickory. The subsoil is a light yellow clay, which is underlaid by clay. The greater part of the crops is of cotton, which grows to a height of 3 feet, and produces from 1,500 to 2,000 pounds of seed-cotton per acre on fresh land. Ten years' cultivation reduces this yield to 600 pounds. One-half of the land now lies out, being much damaged by washing away of the soil, and the sand damages the valleys very greatly. Hillside ditching meets with partial success.

The *light sandy pine soils* cover but a small area in the county. They are coarse sandy and gravelly, and of a whitish color. The bottom lands are sometimes injured by early frosts.

Cotton is either shipped to Savannah by railroad at 45 cents per 100 pounds, or to Milledgeville at 25 cents per 100 pounds.

BALDWIN.

Population: 13,806.—White, 4,512; colored, 9,294.

Area: 240 square miles.—Woodland, all; oak, hickory, and pine uplands, 12 square miles; sand hills, 138 square miles; metamorphic, 90 square miles.

Tilled lands: 61,464 acres.—Area planted in cotton, 27,832 acres; in corn, 17,599 acres; in wheat, 1,607 acres; in oats, 1,858 acres; in rye, 73 acres.

Cotton production: 7,921 bales; average cotton product per acre, 0.28 bale, 405 pounds seed-cotton, or 135 pounds cotton lint.

Baldwin county, one of the counties whose area embraces in part the metamorphic region on the north and in part the pine and sand-hills region on the south, has a rolling and hilly surface, drained by the Oconee river and its tributaries.

The metamorphic region reaches northward from Milledgeville, its rocks forming belts of gray sandy and red clay lands, all with red or yellow clay subsoils. A granite belt (pink feldspar) with gray sandy lands occupies its southern border, which has a width of several miles and extends northeast and southwest. Red clay lands, from (black mica) gneisses, cover large areas 4 miles north of Milledgeville. (See analysis, page 35.) From Milledgeville southward the pine hills, with their deep sandy soils and sand-beds, rise high above the metamorphic, and are covered with long- and short-leaf pine and an undergrowth of black-jack, with some other growth. Underneath the lands are heavy beds of white and variegated plastic and impervious clays.

It is thought that 62 per cent. of the original growth of the county has been removed. Tilled lands now comprise 40 per cent. of the county area, and are devoted to cotton, corn, small grain, potatoes, etc. Cotton is the chief crop, and averages 116 acres per square mile (45.3 per cent. of tilled lands), the county ranking eighth in the state in this regard. Its product per acre is, however, small. There is a large cotton factory in the county. (For experiment of Hon. F. C. Furman with fertilizers on worn-out land, see page 58.)

The following description of the region around Milledgeville is taken from "A visit to the United States", by Sir Charles Lyell, 1846:

It is striking, around Milledgeville, to see so many large detached and rounded bowlders of granite lying on the surface of the soil and all strictly confined within the limits of the granite region. One of these, on the slope of a hill 3 miles from the town, resting on gneiss, measured 12 feet in its largest diameter, and was 4 feet high.

The surprising depth of some of the modern ravines in the neighborhood of Milledgeville suggests matter of curious speculation. At the distance of 3½ miles west of the town is a ravine. Twenty years ago it had no existence, but when the trees of the forest were cut down, cracks 3 feet deep were caused by the sun's heat in the clay; and during the rains a sudden rush of water through these cracks caused them to deepen at their lower extremities, from whence the excavating power worked backward, till, in the course of twenty years, a chasm measuring no less than 55 feet in depth, 300 yards in length, and varying from 20 to 180 feet in width was the result. In the perpendicular walls of this great chasm appear beds of clay and sand, red, white, yellow, and green, produced by the decomposition, *in-situ*, of hornblendic gneiss, with layers and veins of quartz, and of a rock consisting of quartz and feldspar.

ABSTRACT FROM THE REPORT OF JAMES C. WHITAKER, OF MILLEDGEVILLE.

The lands of the county may be classed as light sandy uplands, with clay subsoil, and light isinglass (mica) lowland soils.

The *light sandy soil* comprises three-fourths of the lands of the county, and has a growth of pine, with scrub black oak and dogwood. The crops of the county, besides cotton, are oats, corn, and wheat, and this land is best adapted to the first two. Ten per cent. of the land now lies out, and produces well when taken in again if manure is used. The uplands are seriously damaged by washing, but the valleys are not injured. But few efforts are made to check the damage, hillside ditching meeting with poor success. One-half of the crops is of cotton, which grows to a height of 3½ feet, and yields 700 pounds of seed-cotton per acre, or an average of 200 pounds of lint, which rates as middling. After ten years' cultivation the land yields only 500 pounds of seed-cotton, the staple then being low middling. Crab-grass is most troublesome.

The *bottom lands* of the Oconee river are narrow in the upper part of the county, but widen out to the south, with a heavy growth of cottonwood, ash, and maple, and an undergrowth of cane. The soil is a light sandy, yellowish loam on the river and a dark mucky sand on the creeks, very deep, and well adapted to corn. It is warm, but ill drained, and is easily tilled. Cotton forms one-half of the crops, growing to a height of from 5 to 6 feet, producing 1,200 pounds of seed-cotton when fresh. It is improved by ten years' cultivation, its yield increasing to 1,500 pounds. The staple is not, however, as good as on fresh land, being stained by lateness of the seasons. Burr-weeds are most troublesome on these bottom lands.

Shipments are made, as fast as cotton is ginned, to Savannah, by rail, at 40 cents per 100 pounds.

JONES.

Population: 11,613.—White, 3,753; colored, 7,860.

Area: 470 square miles.—Woodland, all; sand hills, 55 square miles; metamorphic, 415 square miles.

Tilled lands: 70,928 acres.—Area planted in cotton, 29,820 acres; in corn, 22,464 acres; in wheat, 2,685 acres; in oats, 3,010 acres; in rye, 147 acres.

Cotton production: 8,297 bales; average cotton product per acre, 0.28 bale, 396 pounds seed-cotton, or 132 pounds cotton lint.

Jones county in its agricultural features belongs in part to the metamorphic and in part to the pine and sand-hills region, the railroad from Macon to Milledgeville, in its route through this county, nearly marking the line of separation between the two regions. In some of the excavations along its line the white kaolin and variegated clays, as well as fossil-shell beds (at Smith's summit) of the central cotton belt, are exposed, while at a very short distance north of the railroad, and sometimes penetrated by it, are the granites and gneisses, either as solid rock or in a state of disintegration. This metamorphic division is hilly, 2 per cent. being said to be too broken for successful tillage. Pink feldspathic granite forms a belt in the lower part of this metamorphic area.

The lands south of Clinton are very generally red and clayey from hornblendic gneisses. Northward the gray sandy soils, with their clay subsoils, prevail, covering a belt several miles in width. Small areas of red lands are interspersed throughout the section, and a wide belt is found crossing the northwestern corner of the county.

The southeastern portion of Jones, covered by the pine hills and gray sandy lands, is underlaid largely by the white and variegated clays.

Smith's summit, a high point on the railroad, shows the following section in the railroad cut: 12 feet, red sandy clay under the soil; 8 inches, joint clay; 3 feet, joint clay, with fossil-shell casts; 6 feet, joint clay containing shells and a stratum of calcareous nodules filled with a yellow rotten clay. "Quicksand" is found below this at 6 feet depth.

The hills are capped with red clay, and a few miles southeastward is found the siliceous shell-rock similar to that near Macon.

As is usual in the metamorphic region, the bottom lands along the streams are narrow, though very rich. The uplands are chiefly devoted to cotton culture. One per cent. of the county is said to be irreclaimable swamp, and 2 per cent. is too hilly for tillage. The lands under cultivation in this county embrace 23.6 per cent. of its area, and are devoted to cotton, corn, small grain, potatoes, etc. Cotton is the chief crop, and has an acreage of 63.4 acres per square mile, or 42 per cent. of the tilled lands.

Macon is the market for the county, cotton being hauled in wagons.

BIBB.

Population: 27,147.—White, 11,429; colored, 15,718.

Area: 240 square miles.—Woodland, all; sand hills, 119 square miles; metamorphic, 121 square miles.

Tilled lands: 52,179 acres.—Area planted in cotton, 20,724 acres; in corn, 14,325 acres; in wheat, 748 acres; in oats, 4,101 acres; in rye, 44 acres.

Cotton production: 5,858 bales; average cotton product per acre, 0.28 bale, 405 pounds seed-cotton, or 135 pounds cotton lint.

Bibb county is divided into two unequal parts by the Ocmulgee river. The county is also situated on the line between the metamorphic and pine-hills belts, the largest area being in the latter.

The city of Macon marks the northern limit of navigation on the river, and also the southern limit of the metamorphic or mineral region in the county. Shoals are formed in the bed of the stream here by the outcropping rocks of the last-named region, while immediately north of the city the same rocks outcrop on the uplands.

East Macon, or that part on the east side of the river, is situated on the clays of the pine-hills belt, which are also found northeastward toward Milledgeville. The siliceous shell-rock or buhr-stone of the lower country is found in this section at Artape's quarry, and white coral limestone is found at Brown's mount and at other points.

On the southwest the metamorphic line extends toward Knoxville, in Crawford county; and southward from this line, and covering the largest part of the county, are the pine hills.

The metamorphic section of the county is hilly and broken, with gray gneiss outcrops for a few miles northwest of Macon; hornblendic rock and a little trap are then associated with it. The soils of this northwestern section are red, mixed with gray sands in patches and small areas. The red often caps the hills and covers the highlands, while the valleys are of a mulatto color—a mixture of the gray sandy and red soils.

The southern part of the county is hilly, and is covered with deposits of drift sands and clays with rounded pebbles, a growth of large pine, and an undergrowth of black-jack and some water oak.

Seven miles south of Macon are red hills, 75 feet above the valleys, showing 25 feet of white clays under the 50 feet of red clay. The bed of white marl lying between the white and red clays in Crawford county does not appear here.

The red-clay hills extend northeast through the county, and underlying the clays are frequently found beds of silicified fossil shells (Tertiary). It is thought that about 75 per cent. of the original timber growth has been removed, and that 10 per cent. is of irreclaimable swamp. Thirty-four per cent. of the county area is under cultivation in cotton, corn, oats, wheat, pease, and sweet potatoes. Cotton is the chief crop, with an average of 86.4 acres per square mile, or 39.7 per cent. of tilled lands. Its average product per acre is low.

W. D. H. Johnson, of Holston, reports an experiment on a sandy loam soil that had been in cultivation for 40 years:

Soil, 12 inches deep with a red-clay subsoil; land well supplied with humus. Original growth, oak and hickory. The results reported are: Yield, without fertilizers, 527 pounds per acre; with 200 pounds commercial fertilizers, about 760 pounds of seed-cotton.

Macon, the railroad center of this part of the state, is the market for many of the adjoining counties. It contains two cotton factories which consume a part of the cotton marketed there.

ABSTRACT FROM THE REPORT OF W. D. H. JOHNSON,(a) OF BOLINGBROKE.

The lands of the county may be classed as dark mulatto, gray sandy, and red clay.

The *mulatto and red lands* have a growth of oak and hickory. The soil is from 1 inch to 10 inches deep, and has a stiff red-clay subsoil. The lands are early, warm, ill drained, and easy to till, producing good crops of corn, cotton, oats, wheat, pease, and potatoes, but are best adapted to cotton, which grows to a height of 3 feet, running to weed in excessive wet weather in August. The plant yields on fresh land 1,000 pounds of seed-cotton per acre, but only 700 pounds after 5 years' cultivation. Crab-grass alone is troublesome. Two-thirds of this land now lies out. When taken in again it is as good as new for the first three or four years. The uplands are much injured by the washing of the soils, but the valleys are benefited 50 per cent. Hillside ditching is resorted to in order to check the damage.

The *gray sandy lands* have also a growth of oak and hickory. The soil has a depth of 12 inches over a yellow gravelly subsoil. It is late and warm, easy to cultivate, and is best adapted to cotton, which grows to a height of 2 or 3 feet, and produces 1,200 pounds of seed-cotton when fresh and 800 pounds after 5 years' cultivation. One-third of these lands now lies out, and does not produce well when again taken into cultivation. The lands wash readily, doing serious damage, and ruining the valleys by the heavy deposit of sand. Hillside ditching and horizontalizing are not effectual in checking the damage.

Cotton is shipped, as fast as ginned, by wagon to Macon.

JASPER.

Population: 11,851.—White, 4,258; colored, 7,593.

Area: 380 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 87,203 acres.—Area planted in cotton, 27,606 acres; in corn, 23,303 acres; in wheat, 4,649 acres; in oats, 2,687 acres; in rye, 33 acres.

Cotton production: 6,741 bales; average cotton product per acre, 0.24 bale, 348 pounds seed-cotton, or 116 pounds cotton lint.

Jasper county differs but little from the counties around it. The country is undulating on the north and rolling or hilly on the south, a dividing ridge between the Ocmulgee and Oconee tributaries lying near the central north and southern portion of the county.

The lands of that part of the county north of Monticello are mostly dark gray and sandy, with yellowish clay subsoils, and are formed from mica-schists and gneisses, the former having quartz seams somewhat gold-bearing. Mulatto and red lands are interspersed throughout the section. These uplands are generally well drained into the Ocmulgee river on the west and the Oconee on the east. The lands on the south of Monticello are for the most part a red clay, the soil being more or less sandy. They extend to the county-line on the south, and are formed chiefly from hornblendic rocks.

Lands under tillage embrace 39.5 per cent. of the county area, and $3\frac{1}{2}$ per cent. are said to be too broken and $1\frac{2}{3}$ per cent. too swampy for cultivation. Cotton is the chief crop (31.7 per cent. of tilled land), with an acreage averaging 72.6 acres per square mile. The average product per acre is extremely low.

a Secretary of the Ocmulgee Farmers' Club.

ABSTRACTS FROM THE REPORTS OF WILLIS NEWTON, OF SHADY DALE, AND WILLIAM D. MADDOX, OF MONTICELLO.

The lands may be classed as bottoms, gray sandy glades, and red and mulatto. On bottom lands the cotton is late in growing, inclines to run to weed, is liable to rot and to overflow, and is late in maturing. The gray or mulatto uplands are preferred, as on them cotton matures quickly, is more prolific, and retains its fruit, and it is not subject to as many disasters as on bottom or red lands.

The *gray lands* are of two classes, viz, a dark gray sandy loam (principal growth post oak) with a stiff clay subsoil, and a light gray soil with a clay subsoil, not so productive. The first of these is the chief cotton land of the county, two-thirds of the crops being cotton. The soil is only 2½ or 3 inches deep, and is early and cold, but easy to till. The yield on fresh land is about 1,000 pounds of seed-cotton per acre, or 800 pounds after ten years' cultivation, 1,485 pounds from either making 475 pounds of lint. Crab-grass is most troublesome. The growth is post, red, Spanish, and white oaks, hickory, poplar, pine, dogwood, haw, and gum. One-third of the land lies out, but when again reclaimed it is nearly as productive as at first, and even more productive if fertilized. Horizontalizing is practiced with great success in preventing the washing of the hillsides, from which these gray uplands and valleys suffer.

The *mulatto or chocolate lands* are the next in importance as cotton lands, and are also well adapted to grain. They are found in sections containing from 1,000 to 5,000 acres each, and have a native growth of oak, hickory, poplar, and pine. The soil, a clay loam, is 3½ inches deep, has a stiff gravelly subsoil, and is difficult to till in wet weather. In all other respects, including productiveness, it resembles the gray lands.

The *glade lands*, also covering but a small area, have a growth of black-jack, post oak, and haw bushes. The soil is a coarse gravelly clay loam, 2 inches deep, with a yellow clay subsoil, and is best adapted to corn, though one-half is planted in cotton, and its yield is 1,200 pounds on fresh lands and 500 after ten years (unmanured). One-half of the land lies out; it washes readily, doing serious damage, but no efforts are made to check it.

The *red and stiff lands*, with a growth chiefly of oak, hickory, chestnut, poplar, and pine, have a depth of 4 inches and a red or yellow subsoil. The soil is early and well-drained, difficult to till in wet and easy in dry seasons, and is best adapted to grain. Of the crops planted on this land one-half is cotton. It grows to a height of 3 feet, and yields on fresh land about 800 or 1,000 pounds of seed-cotton per acre, 1,545 pounds being required to make 475 pounds of lint. Ten years' cultivation reduces the yield to 500 or 700 pounds, and the staple is not so good. Crab-grass also gives much trouble. About one-third of this land now lies out; it does not recuperate as rapidly as the gray, and when fertilizers are used it yields from 600 to 800 pounds of seed-cotton per acre. These uplands wash readily, doing serious damage and injuring the valleys 25 per cent. Hillside ditching and horizontalizing meet with only partial success in checking the damage.

Shipments of cotton are made to Madison or Eatonton by wagon, and thence by railroad to Savannah or to Augusta.

BUTTS.

Population: 8,311.—White, 4,277; colored, 4,034.

Area: 180 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 49,090 acres.—Area planted in cotton, 20,755 acres; in corn, 15,880 acres; in wheat, 4,135 acres; in oats, 2,254 acres; in rye, 37 acres.

Cotton production: 6,829 bales; average cotton product per acre, 0.33 bale, 468 pounds seed-cotton, or 156 pounds cotton lint.

The surface of Butts county is generally rolling, with much level area. Granitic lands are found on the northwest, and a ridge of red land from biotite granite extends from Flat shoals, on the Towaliga river, to Key's ferry, just below the junction of the South river with the Ocmulgee. Another ridge, formed from masses of quartz-rock, passes from High falls northeastward to and beyond Indian springs, a noted place of summer resort. With the exception of the narrow red belt mentioned the lands are almost entirely gray and sandy.

In the granitic section the rocks are usually found in fragments, though large areas are sometimes found covered with masses of granite in which the feldspar is found in coarse crystals. The ridges are often very sandy.

One per cent. of the area of the county is said to be too broken and 2 per cent. too swampy for successful tillage. Forty-five per cent. of the original timber growth is thought to have been removed. The county is drained eastward into the Ocmulgee river, the eastern boundary.

Lands under tillage embrace 42.6 per cent. of the area, and are devoted to cotton, corn, small grain, potatoes, etc.; 42.3 per cent. of these lands are in cotton, which averages 115.3 acres per square mile, the county ranking as ninth in the state in this regard.

Cotton is hauled to Griffin or other railroad stations, and thence sent to market or sold off of the wagons to local buyers.

MONROE.

Population: 18,808.—White, 6,693; colored, 12,115.

Area: 470 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 106,673 acres.—Area planted in cotton, 44,979 acres; in corn, 29,884 acres; in wheat, 6,742 acres; in oats, 6,765 acres; in rye, 246 acres.

Cotton production: 13,354 bales; average cotton product per acre, 0.30 bale, 423 pounds seed-cotton, or 141 pounds cotton lint.

The surface of Monroe county is rolling, but not too much so for successful tillage. It gradually falls in elevation to the east and southeast, having an altitude of 875 feet on the railroad on the west, 735 feet at Forsyth, and 625 feet at Prattsville. Its drainage is to the Ocmulgee river, the eastern boundary. A broad belt, in which prevail red clay lands, from hornblendic rocks and gneisses having black mica, passes diagonally through the central portion of the county, while on either side the lands are chiefly gray and sandy. The county on the northwest is generally granitic in character, with predominating gray lands, though there are large areas of red soils, from the decomposition of the black mica, which enters largely into the composition of the rock. Quartz fragments are also abundant on the surface. On the southeast hornblendic gneiss, associated with the gray gneisses, occurs abundantly, and the red and gray lands are very much intermixed. (See analysis of soil, page 35.)

The lands of the water-courses have a rich, dark, chocolate-colored soil, and are well timbered. Tilled lands embrace 35.5 per cent. of the county area, and of these 42.2 per cent. are devoted to cotton, the chief crop. Cotton thus has an average of 95.7 acres per square mile, though in actual acreage for the entire county (44,97 9) the county ranks as seventh in the state. On the other hand, in product per acre it is extremely low (423 pounds of seed-cotton), there being 85 counties whose average each is greater.

ABSTRACT FROM THE REPORT OF R. C. M'GOUGH, OF FORSYTH.

There are in this county many varieties of upland soil, from deep stiff red to light sandy loam. The lowlands (unless largely intermixed with sand) are not well adapted to cotton, which grows luxuriantly but matures very slowly. The area covered by these lands is very limited, and is usually devoted to corn or oats. The uplands seldom fail in producing good crops.

The *light sandy lands* cover one-half the county area; soil, 6 inches deep. The subsoil is a very tenacious and impervious red clay, sometimes yellow, containing hard, white gravel and rounded pebbles of hardened clay or sandstone, and underlaid by gravel and quartz at from 1 foot to 15 feet. The lands are easily tilled in wet and dry weather when well prepared and manured. They are late and cold unless well drained, producing crops of cotton, corn, wheat, oats, rye, sweet potatoes, and pease, but are best adapted to cotton, oats, and potatoes. Cotton, comprising two-fifths of the crops planted, grows 3 or 4 feet high when manured, and runs to weed from excessive rains unless prevented by the use of superphosphates and nitrogenous manures. The yield of these lands when fresh is from 600 to 1,000 pounds of seed-cotton per acre, and the same after ten years' cultivation if any care has been bestowed on them. The staple is the same on both old and fresh land, the buyers making no difference in prices. Hog-, carrot-, or rag-weeds, and especially crab-grass, are the greatest source of trouble. About one-tenth of these lands now lies out; when again cultivated it produces better than the original soil. The lands do not wash readily, except in some sections, where serious damage is done to hillsides, and the valleys are improved. By deep plowing, heavy manuring, and building stone dams across the hollows, the damage is successfully checked. The growth of these gray lands is oak, hickory, short-leaf pine, chestnut, poplar, beech, sweet gum, etc.

The *red lands*, comprising something less than one-half the area of the county, have a growth of the various kinds of oaks, hickory, buckeye, chestnut, walnut, etc. The soil is a yellow or red clay loam, with sometimes coarse, red sand (alternating with gray), from a few inches to several feet deep; the subsoil is much the same, but underlaid at a depth of 10 or 12 feet by a thick bed of loose, gray earth, with no adhesive properties, called "well dirt", porous and leachy, with many perennial springs. The soil contains large and small pebbles, from the disintegration of the granite, which is sometimes found at a depth of from 5 to 30 feet. The land is difficult to till, in wet weather being sticky and in dry seasons very hard and compact. It is, however, early, warm, and well drained, and best adapted to corn and wheat. One-third is planted in cotton, which grows to a height of from 1 foot to 2 feet without manure, the higher the better, and runs to weed in long, continuous wet seasons. Early planting with nitrogenous manures and rapid work facilitate bolling. Crab-grass and poverty-weed, or stone-clover, are the troublesome weeds. Three-fourths of the red lands now lie out. They wash so readily and so much damage is done that they are seldom reclaimed. The yield in seed-cotton is 1,000 pounds on fresh lands, and from 100 to 400 pounds after twenty-five years' cultivation. About 1,500 pounds are required to make 475 pounds of lint, and no difference is made in the staple.

There is a *light sandy loam*, 10 inches in depth, with a heavier subsoil, that accompanies the gray lands, but occupies very narrow limits. It has more poplar, "big-bud" hickory, and ash than is found on other soils. Cotton does well on this land, retaining its fruit better, and yielding from 800 to 1,000 pounds of seed-cotton per acre. Crab-grass is troublesome. None or very little of the land lies out, and is not much injured by washing.

Cotton is sold in Forsyth as fast as ginned, and from there shipped by the Central railroad to Savannah and to Atlanta.

PIKE.

Population: 15,849.—White, 7,780; colored, 8,069.

Area: 290 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 93,620 acres.—Area planted in cotton, 38,755 acres; in corn, 29,243 acres; in rice, 7 acres; in oats, 5,596 acres; in wheat, 7,510 acres; in rye, 136 acres.

Cotton production: 12,431 bales; average cotton product per acre, 0.32 bale, 456 pounds seed-cotton, or 152 pounds cotton lint.

The surface of Pike county is rolling and broken in places, though there is very little that does not afford excellent lands for cultivation. It is well watered by the tributaries of Flint river, its western boundary, and by Big Potato creek, which flows southward through the county.

The greater part has been cleared, and now more than one-half of the entire area is in cultivation. The average of lands under tillage is 322.8 acres per square mile, an average greater than in any other county of the state.

The lands are the usual metamorphic varieties, dependent upon the character of the rocks, and differing from each other within small areas. They embrace soils more or less clayey and red to great depths and gray sandy or gravelly soils, the subsoil of which is a yellow or reddish clay at a depth of from 6 to 10 inches from the surface. A large region of red and excellent farming lands, derived mostly from hornblendic rocks, occurs on the west, between Big Potato creek and Flint river, reaching from the northern part of the county south through Upson county. It is largely under cultivation, and is thought to be best adapted to grain, though a large percentage is devoted to the culture of cotton, the yield in good seasons being from 600 to 800 pounds of seed-cotton per acre.

The lands of the rest of the county are mostly gray sandy and gravelly, sometimes very rocky, with reddish clay subsoils, timbered with oak and hickory. They are best suited to cotton, and yield an average of a third of a bale, or 500 pounds of seed-cotton, per acre; but in good seasons the yield is often as much as 800 pounds. These lands are derived from granite and gneisses, the former being the prevailing rock on the northwest, where it appears in numerous outcrops, giving to the country a broken and somewhat hilly character, and on the northeast, where it graduates into the gneisses of the rest of the county, the surface is more level. Black or biotite mica enters largely into the composition of these rocks.

The chief crops of the county are cotton, corn, wheat, and oats. Cotton has the largest acreage, and comprises 41.4 per cent. of the lands in cultivation, and averages 133.6 acres per square mile. This average is exceeded in the entire list of counties only by Troup, which has 153.9 acres per square mile. Its corn acreage is 100 acres, and its wheat about 26 acres per square mile.

UPSON.

Population: 12,400.—White, 6,133; colored, 6,267.
Area: 310 square miles.—Woodland, all; metamorphic, all.
Tilled lands: 72,475 acres.—Area planted in cotton, 30,551 acres; in corn, 23,143 acres; in wheat, 6,751 acres; in oats, 3,205 acres; in rye, 23 acres.
Cotton production: 8,540 bales; average cotton product per acre, 0.28 bale, 399 pounds seed-cotton, or 133 pounds cotton lint.

The surface of Upson county is hilly or rolling and in places rather undulating, the drainage of the greater part being to the Flint river, on the western boundary. The Flint and Ocmulgee divide passes through the northeastern part of the county. There are low ranges of mountains on the northwest, which are a continuation of the Pine and Oak mountains of Meriwether and Talbot counties, but here turn northward, their sandstones forming gray sandy lands. Through Thomaston and northeastward along the line of the railroad the level uplands are formed by granites. The lands are mostly gray on this upland, while between it and the mountains red lands are most prominent.

On the south from Thomaston there is a large area of sandy pine lands, but over the rest of the county, east and southeast, the red soils form the largest proportion of the lands, interspersed with gray sandy areas. It is said that 2 per cent. of the county area is too hilly for tillage.

Tilled lands comprise 36.5 per cent. of the surface of the county, and of these 42.2 per cent. are in cotton, the chief crop, averaging 98.6 acres per square mile.

ABSTRACTS FROM REPORTS FROM THOMAS J. MIDDLEBROOKS, OF BARNSVILLE, AND E. W. ROSE, OF "THE ROCK" POST-OFFICE.

The gray sandy and red lands of the county are devoted chiefly to cotton, the red soils having been worn greatly by previous cultivation and thus fitted for its successful production. The crops of the county are cotton, wheat, and corn. Both uplands and bottoms may be planted in cotton with but little danger of loss by frosts. It is, however, best to use some fertilizer on bottom lands for surety.

The *gray lands* have a growth of pine, hickory, black-jack, post, and white oaks. The soil varies from a fine to coarse sandy and gravelly, from 4 to 10 inches in depth, with a yellow subsoil, changing to a fine and heavy red clay below. The soil is late, cold, well drained, and easily tilled, and is best adapted to cotton, though when fresh it is good corn land. Of all the lands in cultivation one-half is devoted to cotton. This grows to a height of from 2 to 3 feet, and runs to weed on fresh pine-woods land, which is checked by deep culture and the use of ammoniacal manures. Its yield is from 600 to 800 pounds of seed-cotton per acre on fresh land, and from 400 to 500 pounds after five years' cultivation of good land. The staple is larger and better from fresh land, 1,485 pounds from fresh and 1,722 pounds from old lands making 475 pounds of lint. Rag-weeds are the most troublesome. Not more than 10 per cent. of these gray lands now lie out. They produce well when taken in again and cultivated with fertilizers. These uplands do not wash readily, and but little damage is done either to them or to the valleys.

The *red lands* have a growth of oak, hickory, chestnut, poplar, etc., a depth of from 8 to 10 inches, and a fine stiff clay subsoil, somewhat impervious to water. The soil is early, warm, well drained, and best adapted to corn and wheat unless long under cultivation, when cotton does well. One-third is planted in cotton; it grows to a height of 2½ feet, and runs to weed only on fresh land. It yields from 600 to 800 pounds of seed-cotton per acre on fresh lands, and 400 pounds after ten years' cultivation, the staple then being inferior. Rag- and hog-weeds are most troublesome. About 10 per cent. of the red land now lies out, and after a few years' rest produces moderately well if gullying is prevented. The lands do not wash very readily, and no serious damage is done unless neglected and allowed to gully in course of time. The valleys and bottoms are ruined sometimes by the washing from the uplands. We have an abundance of material on hand to fill up all the gullies, and it pays to use it.

Cotton is either sold at Thomaston, or shipped thence to Savannah.

CRAWFORD.

Population: 8,656.—White, 3,940; colored, 4,716.
Area: 340 square miles.—Woodland, all; sand hills, 161 square miles; metamorphic, 179 square miles.
Tilled lands: 53,531 acres.—Area planted in cotton, 24,754 acres; in corn, 16,737 acres; in wheat, 2,040 acres; in oats, 2,688 acres; in rye, 46 acres.
Cotton production: 6,765 bales; average cotton product per acre, 0.27 bale, 390 pounds seed-cotton, or 130 pounds cotton lint.

Through Crawford county passes the southern limit of the metamorphic region of the state, Knoxville, the county town, being on this line. In a branch in the southern edge of the town is an outcrop of gray gneiss. From that point to the Houston county-line the country is covered with the sands and clays of the pine hills.

The entire surface is hilly and rolling, the Atlantic and Gulf water-divide passing in a southerly course through its center. Flint river forms a part of the western boundary.

The lands of the metamorphic area of the county are gray and gravelly, interspersed with red clay belts and tracts, and underlaid by clay subsoils. A belt of cold, gray clay lands, from clay-slates, occurs along the border of the region, forming high banks on the east side of Flint river.

The red clay hills of the central cotton belt are represented in the county by a small area at Rich Hill, a few miles southeast of Knoxville. This hill has an elevation of 100 or more feet above the level of the country, its summit being of red sandy clay, 50 feet in thickness. Under this are 6 or 8 feet of joint clay, 35 feet of white coral limestone, and finally a white joint clay, 50 feet of which is exposed in a deep gully.

The rest of the county on the south of Knoxville is covered by the sands of the pine hills, white and deep on the hill-tops, with gray soils in the lowlands, in which the underlying white clays outcrop occasionally. Nearly one-fourth (24.6 per cent.) of the county is under cultivation, and 40 per cent. is said to have been cleared of its original timber growth. Cotton, corn, wheat, and oats are the crops of the county. Cotton, the chief crop, has an average of 72.8 acres per square mile, or 46.2 per cent. of the tilled lands. Its product per acre is very low.

ABSTRACT FROM THE REPORT OF R. LE SNEUR, OF KNOXVILLE.

The following soils are distinguished in the county, viz: First and second bottoms on the river and other streams; (2) red and yellow lands; (3) sandy soils of the pine hills. The *sandy pine hills soil* is the chief one. It is best adapted to oats as a general thing, though three-fifths of the crops are of cotton. Two-fifths of the county is of this sandy land, which has a growth of short- and long-leaf pine, red, white, water, and post oaks, hickory, ash, elm, poplar, etc. The depth to the white and variegated colored clays is from 3 inches to 3 feet, giving lands well and ill drained but easy to cultivate. Cotton grows to a height of from 1 foot to 6 feet, yielding at 4 feet 500 pounds and upward of seed-cotton per acre on fresh lands, with low middling lint. Cultivation of ten years reduces this yield to 300 pounds, and in some localities even more is produced without manure. Light crops have resulted usually from exhausted and poor lands and indifferent cultivation.

Both valleys and uplands are injured by the washing away and gullying of the latter, and but slight efforts have been made to check the damage, which amounts to 10 or 15 per cent.

One-third of the lands now lies out. The crops are much troubled with crab-grass, morning-glory, hog-weed, rag-weed, etc.

Cotton is shipped by wagon to Macon at 50 cents per 100 pounds.

TAYLOR.

(See "Central cotton belt".)

TALBOT.

Population: 14,115.—White, 4,448; colored, 9,667.

Area: 360 square miles.—Woodland, all; sand hills, 74 square miles; metamorphic, 286 square miles.

Tilled lands: 74,037 acres.—Area planted in cotton, 36,310 acres; in corn, 25,696 acres; in wheat, 3,882 acres; in oats, 3,652 acres; in rye, 82 acres.

Cotton production: 10,325 bales; average cotton product per acre, 0.28 bale, 405 pounds seed-cotton, or 135 pounds cotton lint.

Talbot county has for its most prominent features a mountainous region on the north, a rolling and broken county with gray and red lands southward beyond Talbotton, the pine-hills region on the south, and through the county from the north to the pine hills the broad trap dike, extending in a direct line between the chalybeate springs of Meriwether to Talbotton and southward to a point not far from Geneva.

Pine mountain, on the north, along which the county-line runs, is about 325 feet above the valley; Oak mountain, lying parallel, is 135 feet high. Both are of sandstone, which dips in opposite directions (anticlinal), and have narrow summits. Between them is the broad valley already mentioned in Harris county. It is here broader, and with perhaps more red lands than in Harris. The rocks forming the soils are hornblendic granites (syenites) with quartz ridges or "burst-ups" and gneisses.

South of Oak mountain there are hills of varying heights, which give to the county a rough or broken character. On the east the lands are chiefly red clays, from decomposed hornblendic rocks and granites, and have a width of about 3 miles, and lie parallel with Oak mountain; but on the west and south gray sandy or mulatto lands predominate. These lands have the usual red and yellow clay subsoils. Granite accompanies the trap dike throughout in this section south of the mountains. The mass of trap-rocks is so dense as to leave no tillable land within the belt, and the rocks are used largely for building fences. They disintegrate very slowly.

The sands and variegated clays of the pine hills, besides covering all the lower part of the county, form low ridges between the streams northward for some miles.

On the hill at Geneva, and also in a greater mass on the southeast in the bed of a creek, is found a cemented mass of gravel, white clay, and mica, or what seems to be a granite *débris*.

Six per cent. of the county area is said to be too broken and 2¾ per cent. too swampy for successful tillage. Lands under tillage embrace 32.1 per cent. of the county area, though 70 per cent. of the original timber growth is said to have been removed. Cotton is the chief crop (49 per cent. of tilled lands), having an average of 100.9 acres per square mile, the county ranking as seventeenth in the state in this regard.

ABSTRACTS FROM THE REPORTS OF W. M. GORMAN, OF GENEVA, AND WILLIAM H. ELLISON, OF SHILOH, HARRIS COUNTY.

The lands of Talbot county may be classed as gray post-oak uplands, red lands (including mulatto), and light sandy bottom.

The *gray lands* have a gravelly soil 6 inches deep, a bright-red clay subsoil, crumbling when exposed to the air for a length of time, and a growth of post oak, hickory, and poplar. Cotton comprises half the crops, grows to a height of from 3 to 5 feet, and yields from 800 to 1,000 pounds of seed-cotton per acre on fresh land. Ten years' cultivation (unmanured) reduces this to 300 or 500 pounds, 1,545 pounds from old land making 475 pounds of lint, rating as good middling for the first, but inferior for the last. Crops are troubled with rag- and hog-weeds. More than one-half of these lands originally under cultivation now lies out. After a long rest they produce very well for four or five years. The uplands and valleys are both much injured by the washing of the upland soils unless well ditched, and even this is only partially successful in checking the damage.

The *red lands* occur in patches sometimes a mile or two in extent, and have a growth of hickory, poplar, red, and white oak. The soil is a red gravelly clay loam, 12 inches deep, with a sticky subsoil, which becomes hard when exposed. It is early when well drained and easy to cultivate in dry weather, and is best adapted to grain, though cotton is largely planted on it. The latter crop grows to a height of from 3 to 7 feet, and runs to weed when the land is new or the seasons are wet. Fertilizing and proper cultivation prevent this. It yields 600 or 800 pounds of seed-cotton per acre on fresh land and 300 or 400 pounds after ten years' cultivation. One-third of the land now lies out. The uplands and valleys are both injured very materially by the washing of the upland soil, but very little effort is made to check the damage.

The *creek bottoms* are usually very narrow and not much in cultivation. The growth is poplar, ash, white oak, willow, etc. The soil is a dark sandy loam, 2 feet in depth, and has a tough yellow clay subsoil. It is best adapted to corn and cotton, and is generally devoted to the former. There is not sufficient underdrainage for cotton, and therefore frequent rains, especially in July and August, cause it to shed and the bolls to rot. It is also more liable to the boll-worm and to be injured greatly by early frosts. It is only with a dry, late fall that the lowlands can be relied on. Cotton grows to the height of 8 feet on fresh land, and yields from 1,000 to 1,500 pounds of seed-cotton per acre, and the same after ten years' cultivation. The lint rates as good middling.

The *mulatto lands*, comprising a large part of the lands of the county, have a growth of various oaks, hickory, chestnut, poplar, pine, gum, and walnut. The soil, a fine sandy clay loam of various colors, has a depth of 12 inches, and a light to deep stiff red-clay subsoil. It is best adapted to grain, though one-half of the crops is of cotton. It yields 600 pounds of this latter crop per acre when fresh and 400 pounds after eight years' cultivation.

Shipments of cotton are made to Macon and to Columbus by railroad.

MERIWETHER.

Population: 17,651.—White, 7,797; colored, 9,854.

Area: 490 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 124,118 acres.—Area planted in cotton, 49,676 acres; in corn 35,842 acres; in wheat, 8,026 acres; in oats, 7,340 acres; in rye, 209 acres.

Cotton production: 15,154 bales; average cotton product per acre, 0.31 bale, 435 pounds seed-cotton, or 145 pounds cotton lint.

Meriwether county on the southeast is especially rough and hilly, a large section along the river from Pine mountain northward, via Red Bone, nearly to Woodbury, known as "the cove", being nearly impassable to wagons. Mineral springs occur along the foot of Pine mountain, the Chalybeate, Warm, and White Sulphur (not at the foot) being noted places of resort for the people of Columbus and other cities. Flexible sandstone is found near Warm Springs. The top of the mountain just southward has a very broad and level surface and a sandy soil.

Northward to Greenville the county is rolling and broken, the lands gray and sandy, with red clay soils in some places. There are granite outcrops just east of the White Sulphur springs.

Quartz gravel and rock in large quantities exist on these lands, derived from veins and seams in the mica-schists, which occur abundantly. Northwest of Greenville a granite belt is found passing westward into Troup county at Mountville, and another on the northeast, occupying the section between Line creek and the wagon-road leading from Location, in Coweta county, south to Flat Shoals. The rock forms large bowlders on the surface. Long-leaf pine is a prominent growth on the gray gravelly lands of the section.

On the northwest of the county a broad area or belt of red clay lands enters from Coweta county west of Grantville, and, passing in a southerly course to within 6 or 7 miles of Mountville, turns westward into Troup county. Hornblendic gneiss is the prevailing rock of this belt, and gold has been mined largely just east of it.

While the general surface of the county is rolling and broken, only 6 per cent. is too much so for cultivation, and large areas of level uplands are found in various sections; 78 per cent. of it is said to have been cleared.

Lands under tillage comprise 39.6 per cent of the area, and are devoted to corn, cotton, wheat, oats, rye, barley, potatoes, etc. Cotton is the chief crop (40 per cent. of tilled land), and has an average of 101.4 acres per square mile, ranking fifteenth in the state in this regard and fifth in the total number of acres in cotton.

ABSTRACT FROM THE REPORT OF J. E. G. TERRELL, OF GREENVILLE.

The soil is mostly ridge land or upland, and produces cotton well, and unless the early frosts are unusually severe the fruit all matures. The stalk is generally small, but because of its locality it fruits and matures well. The flat or low lands are in considerable amount and produce cotton well if a good fertilizer is used to make the bolls open well.

The *sandy and light uplands* comprise at least two-thirds of the area of the county, and alternate with small belts of red lands for 10 miles in every direction. The soil is coarse, sandy and gravelly, 14 inches deep, with a clay subsoil and a growth of oak, hickory, and pine. Cotton comprises one-half the crops, and grows 3 feet high. It runs to weed in wet springs and summers unless topped early in July and fertilized with guano, and produces from 600 to 700 pounds of seed-cotton on fresh lands per acre, or 300 to 350 pounds after years of cultivation, with a shorter and more brittle staple, and is most troubled with rag-weeds, "poor Peter," and May-pop vines.

One-fifth of the land now lies out, but produces well for three years when reclaimed with fertilizers. Much damage is done by the washing of the uplands, and the valleys are sometimes ruined. Hillside ditching is in some places a satisfactory means of preventing or checking the damage.

Cotton is hauled to La Grange and to other points on the Atlanta and West Point railroad for sale or shipment.

TROUP.

Population: 20,565.—White, 6,595; colored, 13,970.

Area: 430 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 129,046 acres.—Area planted in cotton, 66,188 acres; in corn, 38,677 acres; in wheat, 7,342 acres; in oats, 6,975 acres; in rye, 87 acres.

Cotton production: 18,655 bales; average cotton product per acre, 0.28 bale, 402 pounds seed-cotton, or 134 pounds cotton lint.

Chattahoochee river cuts off the northwest corner of Troup county, which is rough, broken, and quite hilly. Granites occupy the extreme corner, while southward from it are alternating ridges and belts of quartz, gneisses, and hornblendic rocks, with their respective rocky, gravelly, and sandy gray and red lands, the latter being prominent as far south as the road leading from La Grange to Fredonia, Alabama.

The surface of the country is broken and rolling, a line of narrow quartz ridges having a southwest trend occurring east of West Point and terminating in Alabama. The drainage of the county is entirely to the Chattahoochee river, on the west.

The most prominent feature of that part of the county east of the river is the deep red-clay land, a belt of which, several miles wide, extends from the northeast to and a little beyond La Grange, another small area lying northeast from West Point.

The main red region extends to Yellow Jacket creek, on the north, with narrow areas of gray lands. Gray soils, when found, are usually so thin that in plowing a mulatto variety is produced by the mixture of the underclay with them. These red lands are formed chiefly from hornblendic gneisses and syenites, the latter producing, by decomposition, the more clayey and deeper red soils. (See analysis, page 39.)

Along the southern line of the red belt there are outcrops of magnesian rocks, such as serpentine and soapstone. Near Mountville, on the east, these are accompanied by asbestus and chrome iron ore. Two miles north of West Point corundum and asbestus are found, with another outcrop of soapstone. Other localities of soapstone are on the west side of the river from La Grange, and on the Heard county-line not far from Corinth.

On the north of this belt are gray sandy hills, from the washings of which the wide bottom of Yellow Jacket creek has been covered with deep sand. They extend nearly to the Heard county-line, where red lands again predominate.

In the southeastern part of the county, embracing all lying south of a line from 3 miles north of Mountville to Flat Shoals creek, near West Point, the lands are gray sandy and gravelly, and are formed largely from gray biotite gneisses. Areas of red lands occasionally occur in this section, and in some places the rocks are garnetiferous.

Bordering this section on the northward is a belt of biotite granites, the rocks outcropping frequently in bowlders of very coarse material, accompanied by black tourmaline crystals. The soil is coarse and sandy. At Mountville the country is quite level, but becomes more broken on the southwest, until the belt terminates apparently with the quartz ridges near West Point already mentioned.

Tilled lands embrace 46.9 per cent. of the county area, an average of about 300 acres per square mile. It has, next to Pike and Houston counties, the largest percentage of tilled area in the state. Five per cent. of the area is said to be swampy, 3⅓ per cent. too broken for tillage, and 75 per cent. of the area cleared of its timber. Cotton is the chief crop, its average being 153.9 acres per square mile, or 51.3 per cent. of tilled land. In the former regard it ranks first in the state, in total acreage fourth, and in total bales fourth. Its product per acre is low.

ABSTRACTS FROM THE REPORTS OF DR. WILLIAM P. BEASLEY AND C. W. MABRY, OF LA GRANGE.

The soils may be classed as red clays, gray, or mulatto, and are all planted in cotton.

The *red lands* are the best, and cover about three-quarters of the area of the county, and especially of the uplands. They are interspersed with gray and mulatto soils, and have a growth of oak, pine, hickory, poplar, ash, black gum, buckeye, and chestnut. The soil has a depth of from 2 to 12 inches and a red-clay subsoil. Cotton comprises two-thirds of the crops, which grows from 1 foot, or "bumble bee size", to 5 feet high, and is inclined to run to weed when highly fertilized and when there is a great deal of rain while it is putting on fruit. It may be dwarfed or restrained by plowing close to the plant and cutting the lateral roots. On fresh land the yield is from 700 to 1,000 pounds of seed-cotton per acre; after eight to ten years' cultivation (unmanured), only 500 to 700, and after thirty years 300 to 400 pounds. The lint from old land is not as long as that from fresh land, but the seeds are lighter. The staple is classed as middling. Crab-grass is most troublesome to all crops. Old lands that have been lying out for a few years and have grown up in pines produce well for a few years if slightly fertilized. The hills are subject to washing or gullying, and sometimes the damage done is very serious to both uplands and valleys.

Those farmers who have tried terracing the hillsides prefer that method of checking the damage to all others. Dr. Beasley says: "Cotton production has greatly decreased within the last few years in this immediate section in spite of the reclaiming of old pine fields and the increased introduction and use of the various commercial fertilizers; and I am of the opinion that less and less will be produced here annually until our system of farming is radically changed and the soil has a chance to recuperate from the continued production regardless of rotation of crops."

Shipments are made to Atlanta, Savannah, and to New York.

HARRIS.

Population: 15,758.—White, 6,450; colored, 9,308.

Area: 470 square miles.—Woodland, all; metamorphic, all.

Tilled lands: 91,989 acres.—Area planted in cotton, 43,203 acres; in corn, 26,871 acres; in wheat, 5,549 acres; in oats, 5,438 acres; in rye, 23 acres.

Cotton production: 12,677 bales; average cotton product per acre, 0.29 bale, 417 pounds of seed-cotton, or 139 pounds cotton lint.

The chief topographical feature of Harris county is Pine mountain, a low though prominent range passing through the central part of the county into Alabama. Oak mountain enters on the east, and south of Pine mountain, with which it lies nearly parallel, to Hamilton, its terminal being on the eastern edge of the town.

Pine mountain, the higher of the two, has an elevation of 375 feet above the level of the country. Both have narrow summits, on which sandstone, dipping in opposite (anticlinal) directions, is found outcropping. Between the two mountains there is a fine valley, several miles wide, of red and gray lands, very productive, and mostly under cultivation.

The country northwest of the mountains is rolling, with lands mostly gray and sandy, but eastward they are more level. On the south the surface of the country is very similar, except from Hamilton westward to the river, which is very hilly and broken. For some miles south of the mountain the lands are gravelly and sandy, with a prominent growth of long-leaf pine in some sections.

On the south and southeast of Hamilton the lands are interspersed with red clays and are of a better class. A small outcrop of soapstone occurs at Kingsboro', with some hornblendic gneisses. The growth here is oak, hickory, pine, and a few cucumber trees.

The rocks of the county are chiefly gray gneisses with biotite mica and mica-schists. Loose fragments of quartz are very abundant on the surface in some sections.

Seven per cent. of the county area is said to be too hilly for successful tillage, and 75 per cent. has been cleared of its original growth. The streams have narrow bottoms of a rich, dark, loamy soil, but are not devoted to cotton culture.

Tilled lands comprise 30.6 per cent. of the county area, and of these 47 per cent. is in cotton, the chief crop, its average being 91.9 acres per square mile. The county ranks tenth in the state in total cotton acreage.

ABSTRACT FROM THE REPORT OF JAMES M. MOBLEY, OF HAMILTON.

The lands of the county are very much mixed, gray sandy, red sandy, and red clays occurring often within the same field.

The *sandy soils* are best for cotton, the dark clay lands being best adapted to wheat. The subsoil is generally a fine red or yellow clay. The crops of the county are cotton, corn, wheat, potatoes, rye, and sugar-cane. Cotton grows to a height of 2½ or 3 feet, and is inclined to run to weed in rainy seasons and on red or dark clay lands. A little less plowing and more guano will check this tendency and favor bolling. The yield is 800 pounds of seed-cotton per acre on fresh and 400 pounds on old land, 1,485 pounds on the last making 475 pounds of lint, the staple becoming inferior. The most troublesome weeds are hog- and coffee-weed, bull-nettle, Jamestown weeds, and May-pop vines. The uplands wash readily, doing serious damage unless checked, which is usually accomplished by ditching. One-third of the lands now lies out. When again taken in they produce very well for a few years, and cotton especially does well when the lands are level and without gullies. The climate is mild and healthy and well adapted to cotton culture, early frosts in the fall alone being injurious. The frosts of April and May seldom do much damage. One-third of the lands under cultivation is devoted to cotton.

Shipments are made to Columbus.

MUSCOGEE.

Population: 19,322.—White, 8,995; colored, 10,327.

Area: 210 square miles.—Woodland, all; sand hills, 123 square miles; metamorphic, 87 square miles.

Tilled lands: 44,718 acres, or 33.3 per cent. of county area.—Area planted in cotton, 11,625 acres; in corn, 8,263 acres; in wheat, 310 acres; in oats, 2,071 acres; in rye, 31 acres.

Cotton production: 3,268 bales; average cotton product per acre, 0.28 bale, 402 pounds seed-cotton, or 134 pounds cotton lint.

Muscogee county overlaps the granitic and metamorphic region on the north and the sandy long-leaf pine hills on the south, the Southwestern railroad almost marking the line of separation between them, while along the river is a broad and level valley extending nearly to Upatoi creek.

A small proportion of the area of the county is too hilly for cultivation. The bottom lands are about 25 feet above the river, and are not subject to overflow. Columbus is situated in this level valley, and at the foot of what here is a metamorphic terrace, which for some distance up the river is quite level, its dark, rich sandy loam soil being underlaid at a few feet by a layer of large water-worn pebbles and agates, in some places 4 feet thick, which become smaller eastward, and disappear within a few miles of the river. Underlying these uplands, and forming the high and long falls across the river, are metamorphic rocks, which differ in character from the more common varieties in other parts of the state.

Granites outcrop over most of the metamorphic section of this county, forming generally a broken country, and by disintegration a sandy and gravelly soil, with the usual red lands. The feldspar in the rock is frequently of the pink variety and large. The rocks that form the falls and the immense shoals from Columbus northward are highly siliceous, and contain biotite and some coarse, pink feldspar, which is also found below the falls. This feldspar by its decomposition probably gives to the thick beds of clays below the falls their pinkish and variegated colors. This metamorphic outcrop forms the limit of river navigation from the southward.

The pine hills of the country south of the metamorphic are high and level, having an altitude of about 200 feet above the creeks. They are covered with a growth of long-leaf pine, black-jack, with some oak. The soil is sandy and often deep, and fragments of ferruginous sandstone lie in abundance on their summits. These lands extend northward for some distance between the creeks in the metamorphic section, and yield an average of only from 5 to 7 bushels of corn or 300 pounds of seed-cotton per acre. The clays that underlie these hills are exposed along the river bluff, and near Upatoi creek are overlaid by the peculiar sand, mica, and kaolin conglomerate found in Taylor county near Geneva. Blue clay marls, having but a small proportion of carbonate of lime but some large fossil shells, outcrop in the banks of Upatoi creek for several miles, and for a very short distance north on the river bluff.

The river valley lands are somewhat open, with very small tracts of prairie. In the metamorphic the red lands, while most durable, are best for small grain, the gray sandy soils being preferred for cotton. They yield 12 or 15 bushels of corn and from 7 to 10 of wheat per acre, cotton varying from 500 to 800 pounds on the red to 800 or 1,000 on the gray land.

One-third of the county area is under tillage in cotton, corn, small grain, potatoes, etc. Cotton is the chief crop, though it comprises but 26 per cent. of the tilled lands, its average being 55.4 acres per square mile. The product per acre is low.

There are at Columbus and above on the river many large cotton factories, which consume a great part of the cotton of this part of the state as well as of the adjoining portion of Alabama.

ABSTRACT FROM THE REPORT OF JAMES C. COOK, OF COLUMBUS.

The land of the county comprises three kinds, viz: River and creek bottoms, upland red and gray oak and hickory lands, and long-leaf pine lands. The lowlands are preferred for cotton when the seasons are not wet, but the uplands are chiefly planted, as they are well drained, and on them cotton matures earlier.

The *uplands of the metamorphic section* north of Columbus have mostly a gray sandy soil, though these are interspersed with red clays, and usually have a red-clay subsoil. They cover about one-half of the county, and have a growth of oak, hickory, dogwood

and ash, interspersed with pine. The soil varies from fine to coarse sandy and gravelly, and has a depth of from 2 to 4 inches, and a heavier subsoil, which, when plowed up, becomes like the surface soil, and is best adapted to cotton, oats, and pease. Cotton comprises one-half the crops, grows to a height of 4 feet, and produces from 600 to 1,000 pounds of seed-cotton when fresh and 300 to 600 pounds after years of cultivation. From 1,350 to 1,660 pounds will usually make 475 pounds of lint. This, as well as the sandy hills soil of the southern section, washes readily, and would do serious damage but for hillside ditching. One-fourth of this land now lies out, improving very sensibly by rest.

The *dark sandy loam and clay lands*, comprising about one-fourth of the county, include the bottom and valley lands. The soil is a fine sandy clay loam from 5 to 12 inches in depth, with a heavier subsoil, which becomes like the soil by cultivation. It is early when well drained and generally easy to cultivate. The clayey areas are hard to break when dry. Cotton, comprising one-half the crops, grows to a height of from 4 to 6 feet, and is most productive at this height, yielding from 1,000 to 1,500 pounds of seed-cotton when fresh. A few years' cultivation reduces this 600 or 1,000 pounds. Cockleburs and morning-glory vines are most troublesome. One-tenth of this land now lies out, producing well when again taken in.

The *southern sandy long-leaf pine region*, covering one-fourth of the county, has a gray sandy soil from 12 to 24 inches in depth, a sandy subsoil of a yellow or red color, and a growth of pine and black-jack. Sand or gravel underlies this in places. The soil is early when well drained, otherwise late; easy to cultivate, and best adapted to cotton and potatoes. Cotton comprises two-thirds of the crops, and grows to a height of from 3 to 4 feet, but runs to weed in wet weather unless topped, and yields from 600 to 800 pounds of seed-cotton per acre when the land is fresh. After a few years this yield is only from 200 to 300 pounds. One-fourth of this soil now lies turned out, and it is improved by rest.

A number of large cotton factories are located along the Chattahoochee river.

Shipments of cotton are made to Savannah by railroad.

CENTRAL COTTON BELT.

The central cotton belt includes, in whole or in part, the counties of Columbia,* Richmond, Burke, Screven,* Jefferson, Glascock, McDuffie,* Warren,* Hancock,* Washington, Johnson,* Laurens, Wilkinson, Baldwin,* Bibb,* Twiggs, Pulaski, Houston, Crawford,* Taylor, Talbot,* Marion, Muscogee,* Chattahoochee, Stewart, Webster, Schley, Macon, Dooly,* Sumter, Lee, Terrell, Randolph, Quitman, Clay, Calhoun, Dougherty, Baker,* and Early.

COLUMBIA.

(See "Metamorphic or middle Georgia region".)

RICHMOND.

Population: 34,665.—White, 17,185; colored, 17,480.

Area: 320 square miles.—Woodland, all; oak, hickory, and pine uplands, 30 square miles; sand hills, 290 square miles.

Tilled lands: 36,626 acres.—Area planted in cotton, 7,871 acres; in corn, 11,793 acres; in wheat, 1,549 acres; in oats, 4,209 acres; in rye, 12 acres.

Cotton production: 2,742 bales; average cotton product per acre, 0.35 bale, 495 pounds seed-cotton, or 165 pounds cotton lint.

Richmond county is situated on the line between the metamorphic and pine-hills regions, and its area is divided between these, though by far the largest part is covered by the sands of the latter. The shoals in the Savannah river 3 miles north of Augusta, formed by metamorphic rocks, mark the head of navigation on that river. A canal 150 feet wide, 11 feet deep, and 9 miles in length has been constructed from the city northward, by which small boats bearing cotton and other products are enabled to reach the market from the up counties.

In the beds of the streams north of Augusta the rocks of the metamorphic are exposed, and are covered on the uplands by the sands and other material of the pine hills. Still northward are high and broken hills with red clay soils and a growth of oaks and short-leaf pine. The lands are rocky, and are known as "the Red Hills". South from Augusta the sandy pine lands are more level until the red hills of the central cotton belt are reached. Over the western part of the county, southward from a mile or two north of the railroad, are the pine hills, with their sandy soils and white clay subsoils and growth of long- and short-leaf pine and stunted black-jack oak. Ferruginous sandstone is found on these hills.

From Augusta west to Belair the county rises to 205 feet above the river, or 177 feet above the city. Berzelia, 11 miles westward on the county-line, is 193 feet higher than Belair, and is located on a ridge which on the south forms the divide between the tributaries of the Savannah river and Brier creek.

A small area covered by the red hills of the central cotton region is found in the extreme southern section of the county. They rise 135 feet above McBean's creek, and pass southward into Burke county. The extensive valley lands of the river south from Augusta are largely under cultivation in cotton. But a small percentage (17.9) of the county area is under tillage, and of these lands 21.5 per cent. is in cotton. Corn, however, is the chief crop. Cotton has an average of 24.6 acres per square mile; but 5 per cent. of the county area is said to be irreclaimable swamp. There are in Augusta four large cotton factories, two fertilizer manufactories, one cottonseed-oil mill, besides mills of other kinds. Much of the cotton of the surrounding counties is used here.

ABSTRACT FROM THE REPORT OF A. H. M'LAWS, OF AUGUSTA.

The farming lands may be classed as follows: Overflowed lands of the river, level pine lands, with pipe-clay subsoil, and rolling uplands.

The *river lands*, comprising 20 per cent. of the area of the county, are considered the best for cotton. The soil is a fine, silty loam, 2 to 3 feet deep; the subsoil is a red, micaceous, putty-like clay; and the growth is beech, white and water oaks, hickory, ash, holly, bay, birch, walnut, mulberry, sycamore, and cottonwood. These lands are hard, and break up in clods. Cotton comprises one-half the crops, and grows 5 or 6 feet high, or 3½ to 4 feet in rows 4 or 5 feet apart, running to weed if the latter are too narrow or the land is thin and sandy. These valleys are improved by the washings of the uplands, and very little land now lies out. Cockleburs, butter-weed, and joint-grass (a coarse, bluish-gray grass with two or three seed spikes) are most troublesome. The yield in cotton is an average of 1,500 pounds of seed-cotton per acre on fresh land. After three years' cultivation, without manure, the yield is one-third less, and the staple becomes shorter and less silky.

The *red lands* comprise one-fifth of the area of the county on the north and south. The soil has a depth of 10 inches, with a sand and clay mixture, and contains "Georgia pills", a small "lenticular clay ironstone". Ferruginous sandstone and buhr-stone are found in the southern red belt. These lands are early, warm, well drained, easy to till, and best adapted to cotton, corn, grain and potatoes, and fruit of all kinds. One-fifth is planted in cotton, and the yield is from 500 to 600 pounds of seed-cotton per acre when fresh and from 300 to 500 pounds after five years' cultivation. Crab-grass is most troublesome. The soil washes readily, doing some damage to the uplands, but none to the valleys. Horizontalizing checks it very easily. One-fourth of these lands now lies out, being much improved by rest and the assimilation of vegetable matter.

The *flat gray lands*, with a depth of 6 inches, have a growth of long- and short-leaf pine, oak, bay, gum, and some hickory. They comprise only one-tenth of the lands of the county, over a territory 6 miles long and 3 miles wide south of Augusta. The subsoil is a hard-pan or pipe-clay, impervious to water. This land is best adapted to corn, melons, potatoes, and small grain. Richmond is the great "watermelon-producing county". Cotton is subject to black or humid rust, but, when well manured on the surface, yields well. Even on fresh land, when unmanured, the yield is only one bale of lint (500 pounds) to five acres. One-fifth of the crops is of cotton.

The climate in this county is not subject to the long dry spells of the more southern counties, and the seasons are generally regular. Cotton is sold in Augusta.

BURKE.

Population: 27,128.—White, 6,089; colored, 21,039.

Area: 1,030 square miles.—Woodland, all; lime-sink (wire-grass) region, 100 square miles; pine barrens (wire-grass), 106 square miles; sand hills, 64 square miles; oak, hickory, and pine uplands, 760 square miles.

Tilled lands: 228,886 acres.—Area planted in cotton, 87,359 acres; in corn, 68,131 acres; in wheat, 406 acres; in oats, 4,457 acres; in rye, 29 acres.

Cotton production: 29,172 bales; average cotton product per acre, 0.33 bale, 477 pounds seed-cotton, or 159 pounds cotton lint.

The surface of Burke county is rolling and broken on the north, but becomes more and more level to the south, gradually falling in elevation. Four agricultural divisions are represented in this county, viz: sandy pine hills on the northwest corner; red lands or hills just south of them; yellow loam in the middle; and the pine and wire-grass on the southwest.

White marls and limestones, exposed at many places, underlie almost the entire county, and are easily accessible, and when used as stimulants on the lands yield valuable results after the first year or two.

Shell bluff, the most noted exposure of these marls, is composed of alternating beds of shell marl and clays. (See page 14.)

Buhr-stone or siliceous shell-rock occurs in abundance, overlying these beds or in fragments on the surface. By their decomposition a fine powder is produced, in which are found the siliceous sponge spicules alluded to in the description of this part of the central cotton belt (page 44) as forming in some of the dry ponds a fine dust pernicious to the lungs. The soil of the dry ponds is very black from decayed vegetation, is about 10 inches deep, and overlies a white pipe-clay. The growth is chiefly pine. The buhr-stone or shell-rock at Stone bluff, on the Savannah river, is 10 feet thick. Lime-sinks and ponds are found in the southwestern part of the county. The oak, hickory, and pine uplands occupy the largest area. Their soils are sandy, several inches deep, and are underlaid by a yellow-clay subsoil. The growth is red, hickory, and black-jack oak, dogwood, and long-leaf pine. Yellow and brown ferruginous pebbles or gravel are abundant everywhere. Along the Savannah river uplands long-leaf pine is most prominent, with an undergrowth of black-jack and black oak. This river belt extends southward through Screven into Effingham county. Short-leaf pine is found north of Waynesboro' to McBean's station, while some wire-grass appears just south of Alexander and in patches over this part of the county.

The surface of the country on the north is high and broken, 135 feet above McBean's creek. The red lands cover the broken country on the west from Waynesboro' and McBean's, but between these two points and eastward to the river the lands are a yellow sandy loam. At the foot of this high land, at Boggy Gut creek, the soft white marls outcrop 6 feet thick, and beds of iron ore are found in these clay lands 4 miles northwest of Waynesboro'.

Altogether, these red lands cover about one-third of the area of the county, not only on the hills of the north, but along the slopes of the uplands near the streams. They have the general character of the entire region (see description, page 39).

The wire-grass region of the southwestern part of the county is of the better class, having clay subsoils, underlaid by the limestones and marls, with numerous lime-sinks on the west, and extending into Jefferson are the "flatwoods", a very level country with yellow loam lands.

Tilled lands comprise 34.7 per cent. of the county area, and of these 38.2 are in cotton, the chief crop, which averages 84.8 acres per square mile. In the total acreage and bales Burke county, because of its large area, ranks as first in the state.

Sixty-two per cent. of the lands of the county are said to have been cleared, and 5 per cent. is too swampy for cultivation, being subject to overflows.

The pine hills of the northwestern corner are covered with sands and variegated clays and a growth of pine and black-jack. The lands are poor, and are soon exhausted unless highly fertilized.

ABSTRACTS FROM THE REPORTS OF W. B. AND J. B. JONES, OF HERNDON.

The lands of the county may be placed in three classes, viz: (1) Gray, light, and sandy soils, with clay subsoils; (2) reddish or brown soils, resembling the clay subsoils on which they rest; (3) a dark gray, sometimes nearly black, found in hummocks and flat bay lands bordering the rivers, creeks, and branches. The subsoil is a sand or white pipe-clay. Cotton cannot be safely grown on these hummocks and flat lands for more than three or four years after they are first brought into cultivation, as they are then liable to rust.

The *gray sandy lands*, with red or yellow subsoils, cover two-thirds or more of the county, and have a growth of oak, hickory, and pine. The soils are from 3 to 9 inches deep, sometimes contain black gravel, and are underlaid by shell-rock at from 1 foot to 5 feet. The crops of the county are cotton, corn, oats, wheat, rye, potatoes, pease, sugar-cane, rice, and varieties of millet. Cotton comprises one-half or more of the crops, grows from 2 to 4 feet high, and runs to weed with too much rain, or when there is a deficiency of potash in the soil. On fresh lands the yield is from 800 to 1,200 pounds of seed-cotton per acre, the lint rating as middling. Cultivation of eight years reduces the yield to 600 pounds, and 1,545 pounds make 475 pounds of lint, which is shorter and inferior in every respect to that of fresh land, and rates as ordinary. Crab- and crowfoot grasses and hog-weeds are most troublesome. About two-fifths of these lands now lie turned out, but when reclaimed they yield about two-thirds of the original crop. They wash readily, and sometimes do serious damage to the slopes; but slight injury is done the valleys, which horizontalizing and hillside ditching are quite successful in checking.

The *red clay lands* of the upper part of the county comprise one-third of the entire area. The soil is usually sandy for 3 inches, but the subsoil is a tough, tenacious, and impervious clay, overlying limestone at from 1 foot to 40 feet. The land is best adapted to cotton, corn, and wheat. Two-thirds of the land under cultivation is devoted to cotton, which grows to a height of from 3 to 5 feet. From 1,000 to 1,400 pounds of seed-cotton are produced on this soil when fresh, but after seven years' cultivation it yields only 800 pounds, 1,544 pounds from old land making 475 pounds of lint. In the latter case the fiber is shorter and lighter in color. Hog-weeds are most troublesome. One-third of this land now lies turned out; when taken into cultivation again, after ten or twelve years' rest, it produces from one-half to three-fourths as well as when fresh. It washes readily and rapidly on slopes, doing serious damage also to the valleys; but little or no effort has been made to check it.

Hummock lands.—These comprise about one-tenth of the lands of the county bordering the streams, the sandy subsoil being underlaid by a tough pipe-clay and sand and gravel at from 5 to 10 feet. These lands are best adapted to corn and oats, and very little cotton is planted on them. For the first year or two cotton does well, growing to a height of from 3 to 5 feet, and yielding about 1,000 pounds of seed-cotton per acre; but after three years this yield is only from 300 to 500 pounds. Over half of these cultivated lands now lies out, and when taken in again only produce half as well as at first. The seasons in this county are not extreme as to drought and rain. The atmosphere is humid, and the nights in the latter part of summer are attended with heavy dews, which favor cotton and all fall crops, compensating in a measure for occasional droughts. The growing season is long, extending from March 15 to October 15.

Cotton is shipped from September to March, by railroad, to Savannah (mostly) at 35 cents per 100 pounds.

SCREVEN.

(See "Lime-sink and wire-grass region".)

JEFFERSON.

Population: 15,671.—White, 5,581; colored, 10,090.

Area: 620 square miles.—Woodland, all; oak, hickory, and pine uplands, 328 square miles; pine barrens (wire-grass), 141 square miles; sand hills, 151 square miles.

Tilled lands: 123,924 acres.—Area planted in cotton, 41,367 acres; in corn, 42,335 acres; in wheat, 5,783 acres; in oats, 6,146 acres; in rye, 307 acres.

Cotton production: 13,377 bales; average cotton product per acre, 0.32 bale, 462 pounds seed-cotton, or 154 pounds cotton lint.

Four divisions of lands, as in Burke, are represented in Jefferson county. Pine and sand hills lie north of Brushy creek, yellow loam with red lands southward across the creek from Louisville, and long-leaf pine and wire-grass over the southern portion of the county.

Ogeechee river flows southeast through the county, Williamson's Swamp and Rocky creeks uniting with it on the south. Brier creek forms a part of the northern boundary. The surface of the country is rolling on the west and north, but on the east there are very level oak, hickory, and pine lands, forming the greater part of the lands of the county.

The pine and sandy hills extend to within 11 miles of Louisville on the north, and resemble the same belt in Glascock county. The underlying limestone and marl outcrop in a number of points, and on the river south of Louisville the exposure in the bluffs is 15 feet thick and extends for several miles, fossiliferous sandstone overlying it in places. Silicious shell-rock is found north of Louisville in abundance, and also at the head of Spring creek, 9 miles southeast, where a quarry was at one time established.

Red lands occur on some of the hills in the county north and east of Louisville, the belt crossing in an easterly course. (See analysis, page 40.) In the northwestern corner, at Fenn's bridge, these clays have a thickness of 15 to 25 feet, and contain fossil shells (*Ostrea*).

The pine and wire-grass lands cover but a small area in the southern part of the county. Their upper limit is found 1 mile south of Williamson's swamp, near Bartow station. The country is very open and level, pine being almost the exclusive timber.

Lands under cultivation comprise 31.2 per cent. of the county area, and are chiefly devoted to corn. Six per cent. of the area is said to be too swampy for tillage. Cotton has an average of 66.7 acres per square mile, and embraces 33.4 per cent. of tilled land.

ABSTRACT FROM THE REPORT OF A. E. TARVER, OF BARTOW.

The *red and gray lands* of the county have a growth of pine, oak, and hickory. The crops are cotton, corn, wheat, rye, oats, pease, potatoes, and sugar-cane, and all do well when well manured and worked. Cotton grows 3 feet high, but runs to weed on fresh land without manure, a good fertilizer being all that is needed to restrain it. From 500 to 1,000 pounds of seed-cotton per acre are obtained from fresh

lands, 1,545 pounds being needed for 475 pounds of lint. After five years' cultivation the yield is reduced to 300 pounds of seed-cotton, 1,575 pounds being necessary for 475 pounds of lint. The staple from fresh land is good and long; that from old is short. No weeds trouble much, but grass is troublesome. About one-tenth of the lands lies turned out, and when again taken into cultivation they yield well for four or five years. They wash readily on slopes, doing serious damage, the valleys also being injured 10 per cent. Some little effort has been made to check this damage by horizontalizing, hillside ditching, and underdraining, and with pretty good success.

Shipments of cotton are made to Savannah at 40 cents per 100 pounds.

GLASCOCK.

Population: 3,577.—White, 2,506; colored, 1,071.

Area: 100 square miles.—Woodland, all; sand hills, nearly all.

Tilled lands: 25,124 acres.—Area planted in cotton, 8,175 acres; in corn, 10,742 acres; in wheat, 4,257 acres; in oats, 1,076 acres; in rye, 54 acres.

Cotton production: 2,635 bales; average cotton product per acre, 0.32 bale, 459 pounds seed-cotton, or 153 pounds cotton lint.

The small county of Glascock is almost entirely within the pine-hills region. The surface of the county is generally hilly, with mostly a poor sandy upland soil.

There is a little red oak and hickory land, with also some river and creek bottoms, which are rich and productive; but some of the latter are irreclaimable, owing to their liability to overflow.

A number of large ponds in the county, having a growth of oak, hickory, and ash, were reclaimed before the late civil war, and now produce well.

Granite is found at Ogeechee shoals and near the county-line north of Gibson, but southward in the river are the clay slates with quartz veins that occur so frequently along the lower limit of the metamorphic. They are, however, here covered on the uplands by sands of the pine hills. Two miles east of Gibson there is quite an area covered with siliceous claystones, highly fossiliferous, but the lands are sandy.

The county is drained almost entirely into the Ogeechee river, the western boundary.

Lands under tillage embrace 39.3 per cent. of the county area, and are chiefly in corn. The acreage of cotton is 32.5 per cent. of the tilled land, and averages 81.8 acres per square mile.

ABSTRACT FROM THE REPORT OF JAMES L. NEAL, OF WARRENTON.

Every kind of soil except the low, wet bottoms is devoted to cotton, but the *stiff clay lands* are considered best. These latter comprise but 10 per cent. of the lands of the county.

The growth of the county is principally long-leaf pine, but is moderately interspersed with oak, hickory, etc. The soil is a sand, 3 inches deep; the subsoil is generally a yellow or variegated-colored sand, the best varieties having a red or yellow clay. The crops are cotton, corn, wheat, and oats. The lands are best adapted to pease, though cotton comprises one-half of the crops. The plant grows to a height of from 1 foot to 3 feet, but the best yield is obtained from a height of from 15 to 20 inches. The height depends on shallow or deep tillage, the former producing fruit and little weed (small growth), the latter but little fruit and tall weed. Running to weed is prevented by early and careful topping, preceded by very shallow culture. The yield is 500 pounds of seed-cotton per acre when fresh, and from 300 to 400 pounds after five years' cultivation, unmanured. Ten years' cultivation still further reduces this product to 100 or 200 pounds per acre. From fresh land 1,845 pounds of seed cotton make 475 pounds of lint; but 1,600 pounds are required from old land, and the staple is inferior. Crab-grass only is troublesome.

About 25 per cent. of the originally cultivated lands now lie out. Five per cent. annually is turned out, but is replaced by freshly cleared land. If allowed to rest twenty or thirty years, and then taken in, the yield for five years is better than when fresh.

Much damage is done by washing, and valleys also are injured to the extent of from 5 to 10 per cent. annually. Some little effort has been made to check it by hillside ditching, with good success if attended to after all the heavy rains.

Shipments of cotton are made to Warrenton and Augusta.

McDUFFIE.

(See "Metamorphic or middle Georgia region".)

WARREN.

(See "Metamorphic or middle Georgia region".)

HANCOCK.

(See "Metamorphic or middle Georgia region".)

WASHINGTON.

Population: 21,964.—White, 9,449; colored, 12,515.

Area: 680 square miles.—Woodland, all; sand hills, 127 square miles; oak, hickory, and pine uplands, 521 square miles; pine barrens (wire-grass), 32 square miles.

Tilled lands: 152,887 acres.—Area planted in cotton, 66,900 acres; in corn, 58,653 acres; in wheat, 7,464 acres; in oats, 7,566 acres; in rye, 1,966 acres.

Cotton production: 23,058 bales; average cotton product per acre, 0.34 bale, 492 pounds seed-cotton, or 164 pounds cotton lint.

Washington county between the Ogeechee and Oconee rivers has within its area the lands of four of the general divisions or regions, viz: the sandy pine hills on the north, red lands and yellow-loam lands in the center, and long-leaf pine and wire-grass lands on the extreme south.

The entire surface of the county is hilly and rolling, with broad and level areas, especially on the south. The sandy pine lands of the north have deep sandy soils, and the subsoils are underlaid by pipe-clay of variegated colors. They are timbered with pine (both long- and short-leaf) and black-jack oak.

Gneisses and granitic rocks appear in the beds of some of the streams, as at Long's bridge, on Buffalo creek (on the county-line), but on the immediate uplands are the sands and clays. Clay-slate is exposed in the bed of Tiger creek, 2 miles southwest of Long's bridge. This sandy pine-hills region lies north of a line from Warthen's store to Long's bridge, and thence southwest to the mouth of Gum creek.

The yellow-loam lands extend from these pine hills to the Johnson county-line, on the southwest, and 5 miles south of Sun Hill, on Williamson's Swamp creek. The lands north of Tennille are rolling and sandy, with clay subsoils, and have a growth of oak, hickory, and pine. South from Tennille they are more level, and long-leaf pine is more prominent.

Beds of white marl and limestone, with very many clypeasters and other fossils, underlie the entire region, being exposed at a number of points. Analyses of this marl made by the state geological survey show it to contain of carbonate of lime, 89.08 per cent.; phosphoric acid, 0.78 per cent; sand, 5.32 per cent. The sample was taken from a large outcrop near Tennille, in which are many fossil bones.

North of Sandersville at several points are other beds of a soft white marl differing in character from this but having a high percentage of lime, and well adapted for fertilizing purposes. Siliceous rocks containing much opal (both common and fine varieties) occur seven miles north of Sandersville in the red clay lands and in other localities in the county.

Red lands of the Red Hills belt cover large areas in this yellow-loam region, and perhaps are most prominent along Buffalo and Keg creeks and the Oconee river on the west. The surface of the country is there rolling, with high hills rising abruptly from the edge of the swamps 150 or 200 feet and heavily timbered on the slopes. The red clays capping the hills are 10 or 15 feet deep, and frequently contain silicified shells. Away from the bluffs the lands are more level and sandy. These clay lands predominate around Sandersville and for 3 miles southwest, and have a growth of post and white oaks and hickory.

The wire-grass section comprises but a small and open area on the southeast, the growth being almost exclusively long-leaf pine and wire-grass, with some black-jack. The soil and subsoil are sandy, and not very productive.

Of the area of the county, 3½ per cent. is said to be irreclaimable swamp. A little more than 35 per cent. of the county area is under tillage, chiefly in cotton and corn. The former is the chief crop, and has an average of 98.4 acres per square mile, embracing 43.8 per cent. of the tilled lands. Burke is the only county in the state having a greater total number of bales, but in its average acres per square mile Washington is surpasssed by twenty-one counties, and in bales per square mile by ten counties.

ABSTRACT FROM THE REPORT OF H. N. HOLLIFIELD, OF SANDERSVILLE.

The lands of the northern and western parts of the county are stiff red clays, while on the south and east they are thin and sandy. The uplands are preferred for cotton, as it matures earlier and is not injured by the early frosts.

The *stiff red clay lands*, comprising 30 per cent. of the area of the county, are the best for cotton. They are found all over the western, middle, and upper parts of the county, and have a growth of long-leaf pine, oak, and hickory, a depth of 18 inches, and are underlaid by a deeper red clay. These lands are impervious to water unless well plowed, are too hard to plow in dry seasons, though early, warm, and well drained, and are best adapted to cotton. Cotton comprises 60 per cent. of the crops, and grows from 2 to 6 feet high, but is most productive at 3 or 4, and runs to weed when the ground is very rich and highly stimulated unless restrained by topping. Fresh lands yield 700 pounds of seed-cotton per acre the first year and 500 to 600 pounds the second; 1,485 pounds make 475 pounds of lint the second year, which rates as middling. May-pop vines, Bermuda grass, and hog-weeds are most troublesome. None of the land lies turned out, and with a little care it is always productive. The lands wash readily on slopes, but no very serious damage is done.

The *brown light clays* or chocolate loams comprise 25 per cent. of the county area, and have a growth in which long-leaf pine predominates. The soil is 6 inches deep, and the subsoil is an impervious clay, heavy and putty-like. The soil is easily tilled in all seasons, is early, warm, well drained, and is best adapted to corn and wheat. Cotton comprises two-thirds of the crop, the plant growing from 18 to 36 inches high, and yielding from 400 to 500 pounds of seed-cotton per acre on fresh land and at three years' cultivation. After three years the yield decreases. Hog-weeds and nettles are most troublesome. One-third of the land now lies out, but after ten or twelve years' rest it yields very well. The lands wash readily, and are sometimes seriously damaged. The valleys also suffer injury. The various methods of horizontalizing, hillside ditching, and underdraining are tried with success in checking the damage.

The *light sandy and gravelly land* of the lowlands comprises about 20 per cent. of the area of the county. It has a growth of pine, black-jack, gum, and sassafras. Its color varies from brown to black, and its depth is from 4 to 12 inches. Its subsoil is either a yellow clay or a fine sand, containing hard gravel and pebbles. The soil is late, cold, and ill drained, easy to till, and best adapted to grain, although cotton comprises one-third of the crops. Cotton grows to a height of from 6 to 18 inches, yielding from 300 to 400 pounds of seed-cotton, but after five years almost nothing, or 200 pounds at most. One-half of this land now lies out, and with manure will produce tolerably well. It washes readily, but no damage is done.

Cotton is shipped, as soon as ginned, to Savannah by railroad at 50 cents per 100 pounds.

JOHNSON.

(See "Pine barrens and wire-grass region".)

LAURENS.

Population: 10,053.—White, 5,702; colored, 4,351.

Area: 740 square miles.—Woodland, all; oak, hickory, and pine uplands, 259 square miles; lime-sink (wire-grass) region, 74 square miles; pine barrens (wire-grass), 407 square miles.

Tilled lands: 89,834 acres.—Area planted in cotton, 20,689 acres; in corn, 25,563 acres; in wheat, 478 acres; in oats, 4,745 acres; in rye, 498 acres.

Cotton production: 6,863 bales; average cotton product per acre, 0.33 bale, 474 pounds seed-cotton, or 158 pounds cotton lint.

The county of Laurens is divided by the Oconee river, to which nearly all the streams in the county are tributary. The surface of the country is undulating, the northern portion being covered with the lands and growth of the oak, hickory, and pine region, and the southern by wire-grass and long-leaf pine, occupying the largest part of the county.

The oak, hickory, and pine region has its lower limit one mile north of Dublin. The sandy soil and yellow sandy clay subsoil are underlaid in places by a whitish joint-clay having leaf impressions and seams of lignite. The growth of this section is pine, oak, and hickory. Red clay lands are found in some parts of the region. Some siliceous shell-rock is found on Turkey creek, on the northwest, and white limestone underlies the entire region.

The wire-grass and open long-leaf pine region comprises in this county both of its subdivisions. A narrow belt of the lime-sink (represented here by its accompanying siliceous shell-rock) occupies a narrow belt on its northern border, in which Dublin is situated. On the river at this place masses of buhr-stone are underlaid by a stiff brownish variegated clay.

The surface of the country is slightly rolling. South of this belt the region is underlaid by an argillaceous sandstone, inclosing ferruginous spots. The country is but slightly rolling or undulating and very open. The soil is dark sandy; the subsoil a yellow sand.

Two and a half per cent. of the county surface is said to be too swampy for tillage. But 19 per cent. of the county area is under cultivation, though probably 25 per cent. has been cleared. Corn has the greatest acreage; that of cotton is next, and averages 28 acres per square mile, or 23 per cent. of tilled land. Its average product per acre is above that of the region. Cotton is chiefly raised in the northern and middle portions of the county. Lumbering is a prominent pursuit of the southern part, the river affording a means of transportation in rafts to the coast.

ABSTRACT FROM THE REPORT OF ROBERT WAYNE, OF DUBLIN.

The lands of the county vary greatly. The northwest is rolling, with forests of oak and hickory, and is well watered by large creeks, and the south and southeast is level, with a fine growth of yellow pine. There is also a large extent of swamp lands in the county.

The *light gray soils*, with clay subsoils (yellow loam), are the chief cotton lands, and comprise a large part of the county area. The growth is oak and hickory. The soil is 6 inches deep; the subsoil bakes after hard rains, and requires a harrow to pulverize the soils for thorough cultivation. The lands are easy to till at all times, and are best adapted to cotton, which comprises one-half of the crops. The yield on fresh land is from 450 to 800 pounds of seed-cotton per acre; after twenty years' cultivation it is from 200 to 300 pounds. From 1,425 to 1,545 pounds of the former make 475 pounds of lint. The seeds of the first picking are heavier, and a greater weight is required for a bale than later in the season. The later the cotton the better is the yield of lint. The staple rates as middling. From 1,545 to 1,665 pounds are required for 475 pounds of lint when the lands are old, and the staple is shorter. Cotton grows 4 feet high, and is troubled most with crab-grass and crowfoot grass. About one-tenth of these lands lies turned out, and yield very well when again taken in. They wash only in places, and but little damage is done.

ABSTRACT FROM THE REPORT OF J. T. CHAPPELL, M. D., OF LAURENS HILL.

The lands are of three classes: (1) red clays on the hillsides bordering creeks and rivers; (2) gray sandy lands bordering small branches and creeks; (3) high uplands.

The *red clays* comprise one-eighth of the lands, and have a growth of oak and hickory. It is a noteworthy fact that on the southwest sides of the streams the land is red and hilly, and on the opposite less broken and sandy for from one-half to one mile. The surface soil is a brownish, sandy, gritty loam, 6 inches in depth, with a heavier subsoil of a lighter red color, underlaid at 1 foot or 2 feet by a fine red clay. The crops of the county are cotton, corn, and oats. These red lands are early, warm, well drained, and easily tilled in all seasons, and are best adapted to cotton and oats. Cotton comprises one-half of the crops, and yields 1,000 pounds in the seed on fresh land and from 500 to 750 pounds after eight years' cultivation. The staple from old land is shorter and more brittle than from fresh, but this is obviated by manuring the lands. Cotton grows to a height of from 4 to 6 feet, produces and matures best at 3 feet, and runs to weed when crowded and in wet seasons, the remedy being to give good distances and use ammoniated phosphates. Cockleburs and hog-weeds are most troublesome. One-fourth of the land lies turned out; but if allowed to rest twenty years its product for two years after being taken in again is about 75 per cent. of that of the virgin soil. Very little of it washes, and no damage is done.

The *gray land*, with its light-yellow clay subsoil and growth of pine, some oak, and dogwood, comprises about one-fourth of the lands. The soil is coarse, sandy, and gravelly in character, 4 inches deep, underlaid by clay at 2 feet, and is best adapted to corn and oats. Cotton yields on fresh lands from 400 to 500 pounds per acre in the seed, or from 300 to 400 pounds after eight years' cultivation. It grows to a height of from 2 to 3 feet. The land washes readily and covers the bottoms with sand at the end of each gully. No efforts are made to check the damage.

The *gravelly lands* of the pine woods cover five-eighths of the county, and extend from 10 to 15 miles southward. The soil is 3 inches deep, and contains black gravel; the subsoil is somewhat heavier, clay underlying it at 1 foot. Cotton comprises one-half the crops, grows 3 feet high, and yields 500 pounds per acre on fresh land and 300 pounds after eight years' cultivation. The lands are too level to wash much. The river and creek swamps have not been put into cultivation, as cotton is there more subject to rust. Fresh lands produce more weed but less fruit (in proportion to the weed) than old land.

Cotton is hauled in wagons either to the Macon and Brunswick railroad, at Eastman and Cochran, or to the Central railroad, at Toombsboro' and Tennille, for shipment.

WILKINSON.

Population: 12,061.—White, 6,550; colored, 5,511.

Area: 440 square miles.—Woodland, all; sand hills, 101 square miles; oak, hickory, and pine uplands, 339 square miles.

Tilled lands: 101,049 acres.—Area planted in cotton, 25,423 acres; in corn, 32,394 acres; in wheat, 4,872 acres; in oats, 4,957 acres; in rye, 1,404 acres.

Cotton production: 7,966 bales; average cotton product per acre, 0.31 bale, 447 pounds seed-cotton, or 149 pounds cotton lint.

Wilkinson county is separated from Washington on the east by the Oconee river, into which all the streams of the county flow. A belt of red hills passes centrally through it, presenting a rough and broken section. The ridges between the creeks are very narrow and high, and are capped with red clays and sands. The usual features of the red hills are found here, viz: red clays 25 to 50 feet thick, and siliceous fossiliferous rocks with underlying white limestone.

The southern and eastern slopes of the hills are usually abrupt and high, with red loam and a growth of oak, hickory, etc., while the northern and western slopes are more gentle, and have a sandy pine land. The northern limit of this belt is 5 miles north of Toombsboro', thence southwest to 3 or 4 miles north of Jeffersonville, in Twiggs county. The belt is narrow, and southward to Cedar creek the country becomes more sandy and level and the red lands appear less frequently. Pine forms a more prominent growth. On the south of the creek the country is again hilly and broken, with some red loam on the hills, associated with siliceous fossils and shell-rock. Outcropping in the hills are marls and clays, the former with beds of greensand, and the whole underlaid by white limestone. Along the bank of the creek the rock is also found. The growth of the hills is oak, hickory, beach, dogwood, elm, black and sweet gum, maple, etc. On the southwest, near Cool Spring, is a small "flatwoods" area of yellow clayey soil.

In the red hills section or belt small bodies of black prairie land occur occasionally, but are hardly worthy of further mention. The county north of the red belt is level and sandy, with a pine and scrub-oak growth, and belongs to the pine-hills belt of the central region, with its underlying white pipe-clays.

The lowlands and flats along the river are extensive, and in the area include Black lake, on the northeast. The width of the swamp lands is 3 miles or more in many places.

Tilled lands embrace 35.9 per cent. of the county area, while 2.5 per cent. is of irreclaimable swamp. Corn has the largest acreage, that of cotton being next, with an average of 57.8 acres per square mile, or 25.2 per cent. of tilled lands.

ABSTRACT FROM THE REPORT OF T. N. BEALL, OF IRWINTON.

The lands of the county are *light sandy and red clayey*, slightly mixed with sand, and extend across the county from east to west. The soil has a depth of from 12 to 18 inches, with a subsoil of red clay under red soils and yellow sand under gray lands. The red clays are impervious to water. The lands are early, warm, and well drained, and easy to till in all seasons. The chief crops are cotton, corn, wheat, oats, rye, potatoes, and field-pease. Cotton comprises one-third the crops, grows from 2 to 3½ feet high, and runs to weed with too much rain, to prevent which topping and fertilizers are resorted to. The yield on fresh lands is 600 pounds of seed-cotton per acre, the lint rating as middling staple. Land ten years in cultivation yields from 300 to 400 pounds per acre, and 1,545 pounds are then required for a bale of lint, the staple of which is shorter. Crab-grass alone is troublesome. One-fourth of the lands once under cultivation now lies out, but produce very well for a few years when again taken in. The lands wash readily, doing serious damage to the uplands and slightly injuring the valleys. Hillside ditching alone is depended on to check the damage, and with but little success; consequently very little effort is made in that direction.

In October and November cotton is sold and shipped, by railroad, to Savannah at $2 per bale.

BALDWIN.

(See "Metamorphic or middle Georgia region".)

BIBB.

(See "Metamorphic or middle Georgia region".)

TWIGGS.

Population: 8,918.—White, 2,844; colored, 6,074.

Area: 330 square miles.—Woodland, nearly all; sand hills, 103 square miles; oak, hickory, and pine uplands, 227 square miles.

Tilled lands: 67,050 acres.—Area planted in cotton, 29,671 acres; in corn, 23,732 acres; in wheat, 374 acres; in oats, 1,176 acres; in rye, 502 acres.

Cotton production: 8,217 bales; average cotton product per acre, 0.28 bale, 396 pounds seed-cotton, or 132 pounds cotton lint.

The county of Twiggs embraces a somewhat rolling country, bordered on the west by the Ocmulgee river, which receives a portion of the drainage waters, those on the east flowing into the Oconee.

The sand and pine hills region on the north extends from the county-line to within 3 miles of Jeffersonville, its extensive sandy lands being diversified with red clay lands, which occupy some of the ridges. The road leading from Jeffersonville to Macon lies along one of these, and the underlying red and yellow clays often come to the surface.

At Brown's mount, on the northwest, a siliceous flinty shell-rock occurs, forming a stratum 20 feet thick, overlying a white coral limestone, which is quarried in the neighborhood.

The siliceous shell-rock occurs at a number of points in this section of the county, and is accompanied by red clay hills. On the east of the "ridge road" the lands are usually very sandy, and are covered with a growth of long-leaf pine, scrub oak, and black-jack.

The red hills occupy a belt extending across the central portion of the county. This belt is widest on the southwest, narrowing northeastward into Wilkinson county. The red clays cap the hills and ridges of this rough and broken area and have a depth of 15 or 20 feet, with usually a thin sandy soil on the surface. The ridges are frequently very narrow, and siliceous shell-rock is associated with these clays. Underneath are white joint-clays with leaf impressions, and finally the soft white limestone (Claiborne) with fossil clypeasters. On the slopes of these hills there occasionally occur small prairies of a black clayey soil, but so shallow and so closely underlaid by white joint-clays as to be unproductive.

The country becomes less broken on the southeast, the soils more sandy, the subsoils a yellowish clay; the growth is pine, oak, and hickory, the former apparently predominating. A small area of "flatwoods" with a yellow clay soil occupies the ridge from 2 miles north of Twiggsville southward into Pulaski county. The growth is post oak, red oak, black-jack, and hickory, and the lands are productive.

On the southwest, between Tarversville and the river, the country is very hilly and broken, the hills being high and covered with red clays and a growth of oak, hickory, walnut, elm, etc. The white limestone mentioned above is found here in abundant outcrops. Ferruginous sandstone also occurs in large fragments near the river.

There is in the county about 5 per cent. of irreclaimable swamp lands, and it is said that but about 20 per cent. of the original forest growth still remains. Tilled lands comprise 31.7 per cent. of the county area, the largest part being in cotton, whose average is 89.9 acres per square mile.

ABSTRACT FROM THE REPORT OF F. D. WIMBERLY, JR., OF TWIGGSVILLE.

The uplands of the county are preferred for cotton because of the liability on the lowlands to damage by both frost and rust. These lands may be classed as the red upland, the sandy gray land lying in both the oak and the pine woods, and the black prairie lying on slopes in patches.

The *red land* comprises about one-tenth the area of the county, and extends 3 miles, varying in width from 100 yards to 2 miles. The growth is principally oak and hickory. The soil has a depth of only 2½ inches. The subsoil is a stiff red clay, very hard to break, and very sticky; no plow yet made will turn it, unless under most favorable circumstances. It is impervious to rain, drying off not so readily as gray lands; is gummy in wet seasons, and rather hard to till in dry, but early and well drained. The crops of the county are cotton, corn, oats, sweet potatoes, and ground-pease (to fatten hogs on). The soil is best adapted to cotton and potatoes. Cotton yields on fresh lands 800 pounds of seed-cotton per acre. On lands fifty years under cultivation the yield is 300 pounds, and 1,665 pounds are required for 475 pounds of lint, the staple being longer and better from fresh land. Cotton grows 2 feet high, and runs to weed when seasons are favorable unless restrained by phosphate manures, and topping is early resorted to. Coffee-weed is most troublesome, but hog-weed and "poor Joe" flourish. About one-half the lands now lies turned out, but the amount is being continuously reduced by taking in. They then yield well for a few years. The uplands are badly injured by washing, and also by the efforts made years ago to check the damage by hillside ditching. The valleys are injured only where pipe-clay is washed over them. Some farmers are now beginning to grade the hillsides for protection.

The *gray lands* are generally of a coarse, sandy character, some underlaid by a red-clay subsoil at a depth of 5 or 6 inches. These are the best. The others, underlaid by a mulatto clay at a depth of 12 inches, are very poor, but with guano pay as well as any.

The *black prairie lands* are shallow, and are underlaid by pipe-clay and more or less shell-rock. At places beds of coral crop out, which are very rich in lime, but contain but little phosphoric acid. These lands rust cotton badly, and have been almost wholly abandoned for cotton.

As fast as cotton is baled it is shipped, by wagon or railroad, to Macon at 20 cents per 100 pounds.

PULASKI.

Population: 14,058.—White, 5,824; colored, 8,234.

Area: 470 square miles.—Woodland, all; oak, hickory, and pine uplands, 313 square miles; lime-sink (wire-grass) region, 157 square miles.

Tilled lands: 83,762 acres.—Area planted in cotton, 32,074 acres; in corn, 28,505 acres; in wheat, 208 acres; in oats, 3,370 acres; in rye, 120 acres.

Cotton production: 9,805 bales; average cotton product per acre, 0.31 bale, 435 pounds seed-cotton, or 145 pounds cotton lint.

Pulaski county lies on each side of the Ocmulgee river, and is partly in the oak, hickory, and pine region, with red lands on the north, and partly in the lime-sink division of the wire-grass region.

The surface of the country, varying with each of these regions, is hilly on the northwest, rolling in the central, east, and west belt, and merely undulating or level from Hawkinsville southward.

The red hills cover but a small area, and are about 100 feet above the streams. They are covered with sands and clays, and have a growth of red oak, hickory, and pine. Buhr-stone and white limestone underlie these clays, as shown in outcrops in the gullies and sides of the hills.

The oak, hickory, and pine region covers the greater part of the county, and has a rolling surface, sandy soils, clay subsoils, and a long leaf-pine, post oak, and hickory growth. Lime-sinks occur frequently, and marls and white limestone outcrop in many places. At Hawkinsville one of these exposures occurs and is overlaid by siliceous shell and flint rocks, fragments of which are also found scattered along the banks of the river and over the surface of the country. The limestone is very similar in composition to that of Houston county, and would produce excellent results on the lands.

The wire-grass region begins 2 miles south of Hawkinsville, its limit extending east and west from here and southward over the rest of the county. The country is very open, and the growth almost exclusively long-leaf pine and wire-grass; the soil a fine sandy loam, with a yellow clayey subsoil, underlying clays, and some limestone.

The lands of the county are all considered as tillable with the exception of 4 per cent. of irreclaimable swamp. Lands under cultivation comprise 27.8 per cent. of the county area, though 45 per cent. is thought to have been cleared of its timber growth. Cotton is the chief crop (38.3 per cent. of tilled land), and has an average of 68.2 acres per square mile.

Lumber-mills are very numerous, and it is estimated that two-thirds of the timber consists of pine of superior quality. Ocmulgee river, which flows through the county, affords a convenient means of transportation for rafts of lumber to the coast. The railroad from Hawkinsville connecting with the Macon and Brunswick railroad also furnishes easy transportation of all products to the various markets.

HOUSTON.

Population: 22,414.—White, 6,024; colored, 16,390.

Area: 560 square miles.—Woodland, all; sand hills, 94 square miles; oak, hickory, and pine uplands, 466 square miles.

Tilled lands: 169,827 acres.—Area planted in cotton, 72,611 acres; in corn, 48,785 acres; in wheat, 3,289 acres; in oats, 10,570 acres; in rye, 223 acres.

Cotton production: 19,099 bales; average cotton product per acre, 0.26 bale, 375 pounds seed-cotton, or 125 pounds cotton lint.

Houston county is bounded east by the Ocmulgee river, into which all the streams of the county flow, with the exception of Hog Crawl creek, on the extreme southwest, which is separated from the rest by the Atlantic and Gulf water-divide and empties into the Flint river.

The county is within the central cotton region, and the three divisions or belts, viz, sand and pine hills, oak, hickory, and pine lands, and red hills, are all here represented.

From Echaconnee creek (the north boundary) southward to near Sandy Run creek and Bushyville the pine-hills country is quite level and sandy (see analysis, page 42), the wells showing underlying clays for 20 feet over coarse, micaceous sands and pebbles, and finally white clays. Ferruginous sandstones and gravel and sand conglomerates are scattered over the face of the country. The growth is long-leaf pine and scrub-oak undergrowth. South of this is the oak, hickory, and pine region, with its sandy soils and yellow-clay subsoils, which extends to Big Indian creek. The surface of the country is somewhat rolling, the ridges are broad and flat or gently undulating, and the approaches to the streams are abrupt and broken. Variegated pipe-clay underlies very nearly all of these lands, and ferruginous sandstone is abundant on the surface, frequently producing red sandy lands.

On the east of this region are found white coral limestones, with associated clypeasters or "petrified Indian biscuits"; but these chiefly underlie the red hills of the southern part of the county. Siliceous shell-rock fragments are also found near by. Fort Valley, on the west, is located on the high level plateau of the water-divide. The lands in this section are interspersed with spots of red clay loams, but all are underlaid by the white or variegated pipe-clay.

The red hills comprise that part of the county lying south of Big Indian creek and across from east to west. These hills are over 200 feet above the streams, are usually broad and level, and have sandy soils in the interior and red clay loams on the borders and on the slopes. Siliceous shell-rock or buhr-stone underlies or is contained in these red clays, while still below are soft friable white limestones, or, as on the south of Perry, greensand clays and marls, and then the limestone.

The following section of Ross hill, 3 miles south of Perry, is a fair representation of the underlying strata:

Reddish loam, 15 feet.
Stiff white clay, with silicified shells, etc., 30 feet.
Greensand clay, with shell impressions, 2 feet.
White pipe-clay, with beds of clayey limestone, 40 feet.
Semi-crystalline limestone, hard and compact (Montezuma), 10 feet.
White marl or limestone, 12 feet.
Yellow joint-clay, with white spots, 50 feet.

The greensand clay of this bluff is shown by analysis to contain nearly 3 per cent. of potash. (For analysis of white marl, see page 46.) A few spots of black prairie are found on the slopes of these hills. Tilled lands embrace 47.4 per cent., or nearly half of the area of the county, though 64 per cent. is said to have been cleared, and 2 per cent. is of irreclaimable swamp. Cotton is the chief crop, and has an acreage of 129.7 acres per square mile; a number surpassed only by that of Troup and Pike, comprising 42.8 per cent. of the lands under cultivation; its acreage is above 20 per cent. of the county area. In its total acreage it is surpassed only by Burke county, and in bales by Burke and Washington. Its average product per acre is very low, there being 109 counties whose rank is above it.

The general character of soils and methods of culture are the same as in the adjoining counties of Twiggs and Macon.

Shipments of cotton are made from Perry by railroad to Fort Valley, and thence to Savannah.

CRAWFORD.

(See "Metamorphic or middle Georgia region".)

TAYLOR.

Population: 8,597.—White, 4,770; colored, 3,827.

Area: 400 square miles.—Woodland, all; sand hills, 368 square miles; oak, hickory, and pine uplands, 7 square miles; metamorphic, 25 square miles.

Tilled lands: 44,770 acres.—Area planted in cotton, 18,064 acres; in corn, 16,426 acres; in wheat, 3,079 acres; in oats, 2,108 acres; in rye, 246 acres.

Cotton production: 4,854 bales; average cotton product per acre, 0.27 bale, 384 pounds seed-cotton, or 128 pounds cotton lint.

The chief feature in the topography of Taylor county is the high ridge covered with deep white sand that lies east and west just south of the metamorphic region and between Butler and Patsaliga creek, which rises abrupt and high above the metamorphic on its northern side, but gradually falls southward to the county-line, and is covered with a growth of long-leaf pine. It is about 175 feet above the creek. North of the ridge the sands continue a few miles, but under them are found the metamorphic rocks; and before Daviston and Carsonville are reached the surface of the country is covered with the gray sandy and red-clay lands of the latter, with their oak and hickory growth. Clay-slates form a bed of from 50 to 60 feet in this part of the county, resting on biotite gneisses, as seen in the river bluffs. Serpentine is exposed in the beds of streams with an apparent thickness of several hundred feet.

Lying parallel with Flint river, in the upper part of the county, north of Carsonville, are a number of prominent and rounded clay hills, standing isolated 125 feet above the surrounding level country and covered with large rounded quartz-rocks, some a foot in diameter, and lying mostly on the river side. This metamorphic region is hilly and broken, especially on the east around Grab All and Gray's ferry.

The pine-hills region, with its deep sandy lands and growth of pine and scrubby black-jack, covers most of the county. Its surface is undulating southward from the pine ridge mentioned. Variegated clays underlie the land, and ferruginous sandstone is found in scattered fragments on the surface. The small streams have usually a low, flat sandy bottom, which is covered with a growth of bays and gallberry bushes. Along the river the banks are low as far north as the agency, and the bottoms wide and partly irreclaimable.

But 17.5 per cent. of the county area is under tillage, and that chiefly in cotton, whose acreage comprises 40.4 per cent. of the tilled land, and averages 45.2 acres per square mile.

ABSTRACT FROM THE REPORT OF JAMES A. ADAMS, OF REYNOLDS.

The chief cotton lands of the county have a *sandy loam upland soil* 5 inches deep, with clay subsoil, underlaid by a brown gravelly clay, or, in some places, a variegated pipe-clay. They extend 8 miles north and 20 miles south of Reynolds, and have a growth of yellow long-leaf pine, hickory, red oak, round-leaf black-jack, and some dogwood. The crops of the county are cotton, oats, wheat, and potatoes. Cotton comprises one-third of these, and yields 500 pounds of seed-cotton per acre on fresh land, or 250 pounds after ten years' cultivation; 1,485 pounds make 475 pounds of lint, rating as upland middling. Crab-grass, and what is known as poverty-weed, are most troublesome. These lands have so few steep slopes that they wash but little, and limited damage is done.

The *light sandy lands*, having the same growth as that mentioned, and with a yellow sandy clay subsoil, yield only 400 pounds of seed-cotton per acre when fresh and 200 pounds when old and without manure. In other respects there is no difference from the other.

On the *lowlands* cotton is subject to overflows and premature frosts.

Shipments are made by railroad to Columbus or to Macon.

TALBOT.

(See "Metamorphic or middle Georgia region".)

MARION.

Population: 8,598.—White, 4,294; colored, 4,304.

Area: 360 square miles.—Woodland, all; sand hills, 174 square miles; oak, hickory, and pine uplands, 186 square miles.

Tilled lands: 77,951 acres.—Area planted in cotton, 21,579 acres; in corn, 21,053 acres; in wheat, 3,481 acres; in oats, 1,889 acres; in rye, 1,121 acres.

Cotton production: 6,169 bales; average cotton product per acre, 0.29 bale, 408 pounds seed-cotton, or 136 pounds cotton lint.

Through the middle of Marion county there is a dividing ridge separating the tributaries of the Flint and Chattahoochee rivers. That portion of the county north of Buena Vista and Glen Alta is rolling and covered with the white sands and pine growth of the sandy pine-hills region, and is but slightly under cultivation, the lands being poor and unproductive. Blue micaceous and shell clays are found underlying these hills a short distance north of Tazewell, and also on Richland creek, north of Buena Vista. They contain scarcely any lime, and are not a profitable fertilizing element.

Ferruginous concretions inclosing sand exist in abundance on the hills. The hill on which the county-seat is located has a thick covering of ferruginous pebbles.

Between Buena Vista and Kinchafoona creek (on the west) there are deep white-sand beds, which extend southward along the creek; but on the west of the stream there are red clay lands, and these are also found over the southern part of the county.

The entire surface of the country is rolling and somewhat hilly, but has broad areas of level lands; 5 per cent. is too hilly for cultivation. In the banks of the creek at Pineville, in the southwestern corner of the county, there are beds of yellow and blue fossiliferous Cretaceous marl, containing more lime than those mentioned above.

There is 1 per cent. of irreclaimable swamp land in the county.

The lands under tillage embrace 33.8 per cent. of the county area, though 75 per cent. are said to have been cleared of their original timber growth. Of these lands, 27.7 per cent. is in cotton, one of the chief crops (corn having nearly the same acreage), its average being 59.9 acres per square mile.

ABSTRACT FROM THE REPORT OF G. W. C. MUNRO, OF BUENA VISTA.

Some of the uplands are rolling and sandy, but very productive; others are level, with a good clay subsoil, but of poorer quality. Upland cotton can be planted earlier than that on the lowlands, but without fertilizers does not grow off so rapidly as on the latter or produce as much. The proportion of lowlands is very inconsiderable when compared to the uplands; but as a general thing they are level and last well, but have to be rotated and rested in order to retain their fertility.

The soils devoted to cotton culture may be classed as clay lands, or those having a good clay subsoil; sandy lands, or those whose subsoil is loose and several feet deep; and hummock lands.

The *clay lands* are the best, and comprise about one-half of the county, covering areas sometimes 8 or 10 miles long and 2 or 3 wide. The growth is pine, with an undergrowth of black-jack, and some hickory and post oak. The soil is a clay mixed with sand and decayed vegetable matter, pale yellow and brown in places, and in others almost white, 6 inches deep, with a tolerably stiff subsoil, red in color, and containing more or less sand; a hard-pan, quite impervious in places, and should be broken with the plow or crops will suffer if the seasons are unfavorable. The lands are easily tilled in all seasons when well broken up in the spring. The crops of the county are cotton, corn, oats, wheat, rye, potatoes, sugar-cane, ground-pease, chufas, millet, and Hungarian grass, and there is seldom a failure to make a good crop when well fertilized. Cotton yields from 700 to 1,000 pounds per acre in the seed on fresh lands, the lint rating high. Ten years' cultivation reduces the yield to about 300 pounds. The quantity and the quality of the staple are affected principally by the seasons. The plant grows 2½ feet high on an average, but from 3 to 4 feet is best. It seldom runs to weed, and superphosphates favor fruiting. Crab-grass generally and hog-weeds frequently give much trouble, and on badly worn soils poverty-weed grows abundantly. About one-twentieth of the lands now lies turned out, caused by washing and gullying. When not too badly washed they yield pretty well for a few years after resting. The valleys are injured to such an extent that the small streams that flow through and drain them are filled up and have to be ditched. Horizontalizing and hillside ditching yield satisfactory results when rightly done.

The *sandy lands* of the north and east of the county cover about one-half of its area, and have a growth of pine principally and an undergrowth of black-jack. The soil is a fine or coarse sandy loam with a depth of 1 foot and a subsoil of sand, with a little clay in places and coarse sand in others. It is late and cold, easily tilled, and can be plowed in wet as well as in any season, but cannot be planted as early as the clay lands. The soil is best adapted to cotton and corn when fresh, but when old and worn cotton rusts on it badly. Cotton grows 2 feet high, and yields on fresh lands from 600 to 1,000 pounds per acre in the seed. Ten years' cultivation reduces this to 300 pounds. When the lands are fresh, rag-weeds, but when old, poverty-weeds, are the most troublesome. The lands wash readily, and serious damage is done. One-twelfth of the land now lies out.

The *hummocks* comprise only a few hundred yards in the county, and have a growth of white oak, beech, maple, walnut, hickory, ash, etc. The soil is a fine sandy loam, blackish in places, 10 inches or more in depth, with a yellow clay or coarse sandy clayish subsoil, quite leachy generally. Fine crops of sugar-cane, corn, and cotton are produced on these lands, cotton growing 4 feet high and yielding about 1,000 pounds per acre on fresh land, or 400 pounds on land ten years in cultivation if rolling and never ditched. Hog-weeds alone are troublesome.

From the 15th of September to the 25th of December cotton is shipped by wagon to Americus, Sumter county, at 50 cents per 100 pounds.

MUSCOGEE.

(See "Metamorphic or middle Georgia region".)

CHATTAHOOCHEE.

Population: 5,670.—White, 2,130; colored, 3,540.

Area: 220 square miles.—Woodland, all; sand hills, 76 square miles; oak, hickory, and pine uplands, 144 square miles.

Tilled lands: 38,457 acres.—Area planted in cotton, 15,442 acres; in corn, 11,618 acres; in wheat, 740 acres; in oats, 1,774 acres; in rye, 396 acres.

Cotton production: 4,460 bales; average cotton product per acre, 0.29 bale, 411 pounds seed-cotton, or 137 pounds cotton lint.

Chattahoochee is a rather hilly county, and is separated from Alabama by the Chattahoochee river and from Muscogee county by Upatoi creek. The greater part of the northern portion of this county is covered with white micaceous sands and ferruginous sandstones of the sand-hills region, underlaid by variegated clays. In some places on the northwest heavy beds of white water-worn pebbles and ferruginous sand and pebble conglomerates are exposed in bluffs or hillsides. In the southern part of the county the red clays approach nearer the surface, and often, by the washing away of the sands, are exposed on the hillsides and tops and are more or less intermixed with the sands. These hills are embraced in the yellow-loam region south of Glen Alta and Cusseta. They are often 100 or 150 feet above the streams, and their lands wash readily, forming great gullies.

The lands along the river on the northwest are generally quite level, but become hilly and broken northward. They are 25 feet above low water, and in their bluffs there is exposed under the sands and clays 18 feet of blue micaceous and gypseous clay, with a small percentage of lime, and containing a few Cretaceous fossils. A white sand underlies the bed. These marls outcrop along Upatoi creek for some distance, and southward along the river become more fossiliferous and valuable. An analysis of a specimen taken from near Cusseta shows only about 10 per cent. of carbonate of lime and a small amount of potash and phosphoric acid. For fertilizing uses the marl is almost worthless.

The growth of the county is largely pine on the hills, with oak, hickory, etc., on the lower and better lands. The gray oak and hickory lands are considered the best, and will yield from 10 to 15 bushels of corn, 8 to 10 bushels of wheat, or about 600 pounds of seed-cotton per acre. Their growth is red and post oaks, hickory, and poplar.

The mulatto and red lands have also a red and post-oak growth, and will yield from 8 to 10 bushels of corn or of wheat or 600 pounds of seed-cotton per acre. Lands under tillage embrace 27.3 per cent. of the county area, though it is thought that 60 per cent. has been cleared. Of these 40.2 per cent. is in cotton, the chief crop, its average being 70.2 acres per square mile.

ABSTRACT FROM THE REPORT OF J. H. WOOLDRIDGE, OF JAMESTOWN.

The uplands of the county on the river are partly black prairie and partly hog-wallow. The soils devoted to cotton are the black uplands, lying mostly on hills and branches, alluvial bottoms adjacent to branches and small streams that overflow occasionally, and light sandy bottoms on various branches of creeks and rivers.

The chief land is that of the *alluvial bottoms*, comprising one-fourth or one-fifth of the lands of the region, which are from 4 to 6 miles in extent. Its growth is pine, oak, hickory, sweet gum, chestnut, elm, dogwood, chincapin, willow, and persimmon. The soil is a fine sandy clay loam, from yellow to red in color, with a red clay or yellow sandy subsoil. The crops of the county are corn, pease, oats, wheat, rye, potatoes, pinders (ground-pease), chufas, and cotton. All do well under favorable seasons and good culture. Cotton comprises one-half of the crops, and yields from 400 to 800 pounds of seed-cotton per acre, 1,545 pounds of which make 475 pounds of lint, rating as middling. The plant grows from 1 foot to 10 feet high, running to weed by late planting and with too much rain. Morning-glory vines, cocklebur, crab-grass, and crowfoot are the most troublesome weeds. One-half the lands originally cultivated now lies turned out, and produces moderately well for a few years when again cultivated. Considerable damage is done to slopes and valleys by the ready washing of the land. Hillside ditching and horizontalizing are successful in checking the injury.

Cotton is shipped to Columbus by river boats at 50 cents per bale.

STEWART.

Population: 13,998.—White, 4,376; colored, 9,622.

Area: 440 square miles.—Woodland, all; oak, hickory, and pine uplands, 440 square miles.

Tilled lands: 107,251 acres.—Area planted in cotton, 44,449 acres; in corn, 31,979 acres; in wheat, 2,652 acres; in oats, 5,284 acres; in rye, 206 acres.

Cotton production: 12,653 bales; average cotton product per acre, 0.28 bale, 405 pounds seed-cotton, or 135 pounds cotton lint.

Stewart county, separated from Alabama by the Chattahoochee river, is included in the oak, hickory, and long-leaf pine region. Its general surface in the interior is hilly and broken, but there are broad, level valley lands along the river a mile or two wide and level uplands on the east around Richland, and also south of Lumpkin, the county-seat. The banks of the Chattahoochee river are high, and along their bluffs are exposed blue-shell marls, and also greensand marls rich in potash. The lime percentage is not great.

These Cretaceous marls are also exposed in the beds of Hitchetee, Hannahatchie, and other creeks of the county, except on the southeast, where the country is higher and of a different character.

The southeastern limit of the blue-marl region is found 5 miles north and 8 miles west of Lumpkin. At the former locality the blue marl is overlaid by yellow fossiliferous clays, the hills being capped with red clays and white sands. These hills wash readily, and immense gullies and ravines have been formed on the sides, showing heavy beds of clays variegated in color, and known as "calico clay". The same is true of the hills for 8 miles on the west of Lumpkin. They are covered in many instances with a hematite iron ore having a bright surface. Siliceous shell-rock, or buhr-stone (Tertiary), and ferruginous sandstone is also abundant in places. These hills are about 450 feet above the river, and, while very sandy, are often red, from the exposure of the red clays underlying the white sands or from the intermixture of the two. These red clays occur over the eastern side of the county and northward into Chattahoochee.

From Lumpkin southward the lands, while high, are more level and the sands not so deep. Red soils also cover large areas (see analysis, page 40), and fragments of buhr-stone are found on the surface. In these latter siliceous sponge spicules have been observed, and the rocks seem to be similar to those found in Burke county, on the east of the state.

The lands of the western part of the county are generally quite level, except along the small streams. From Florence and southward the valley extends eastward several miles, the soil being a sandy loam and the subsoil a clay. The lands are very productive and have been long in cultivation.

Of the county area 2½ per cent. is too hilly or broken for cultivation and 1 per cent. is irreclaimable swamp. Of the total area 38.1 per cent. is under tillage, chiefly in cotton and corn, the former having the largest acreage, and averaging 101 acres per square mile. The county ranks in this average as sixteenth in the state and in total acreage as eighth, in total number of bales as thirteenth, and in bales per square mile as twentieth.

ABSTRACT FROM THE REPORT OF W. H. TATUM, OF HANNAHATCHIE.

The lands of the county have an oak and pine growth, and are best adapted to cotton and cane. The crops are corn, cotton, pease, and sugar-cane. Cotton comprises two-thirds of the crops, grows from 2 to 6 feet high, runs to weed in wet summers and with excess of rain, and yields from 800 to 1,000 pounds of seed-cotton per acre, the lint rating as middling. After six years' cultivation the yield is from 500 to 800 pounds, and 1,665 pounds make 475 pounds of lint, the staple of which is not so good by 10 per cent. Hog-weeds are very troublesome. One-fourth of the lands originally cultivated now lies turned out, and when again taken in produce finely for three or four years. When not ditched the lands by washing are greatly damaged, and the valleys are also injured.

As fast as ginned cotton is shipped to Columbus at 40 cents per 100 pounds.

WEBSTER.

Population: 5,237.—White, 2,667; colored, 2,570.

Area: 230 square miles.—Woodland, all; oak, hickory, and pine uplands, all.

Tilled lands: 43,762 acres.—Area planted in cotton, 17,235 acres; in corn, 16,121 acres; in wheat, 2,236 acres; in oats, 2,809 acres; in rye, 463 acres.

Cotton production: 4,642 bales; average cotton product per acre, 0.27 bale, 384 pounds seed-cotton, or 128 pounds cotton lint.

The surface of Webster county is generally hilly and rolling, especially on the north, where the hills are covered with white sands and red clays over variegated clays and Cretaceous marls in places. Short-leaf pine forms a prominent growth.

The uplands on the west and south of Preston, the county-seat, are quite level, but the many small streams give the entire county a rolling character. Over this southern portion red-clay hills, more or less sandy, form a prominent feature, and ferruginous sandstone, often a hematite, is abundant. Siliceous shell-rock, or buhr-stone, is found in fragments over the country.

Tilled lands embrace 29.7 per cent. of the county area; irreclaimable swamp, 4 per cent. Sixty per cent. of the entire area is reported to be cleared of original timber growth. Cotton has a larger acreage than corn, comprising 39.4 per cent. of tilled land, and averaging 74.9 acres per square mile.

ABSTRACTS FROM THE REPORTS OF JAMES P. WALKER AND JUBILEE SMITH, OF PRESTON.

The lands vary materially in fertility and quality of soil. The hills are mostly coarse sand; the level lands usually have a clay subsoil from 3 to 10 inches under the surface. About three-fourths of the uplands are hilly and sandy, with sandy subsoils; the rest have a clay soil or a clay subsoil under 3 inches of sand. The natural growth of the sandy hills is pine; that of the sandy level lands black-jack and scrub pine. Those lands having a clay subsoil have a growth of pine, oak, and hickory. The clay subsoil hardens somewhat by exposure, but readily intermixes with the surface soil by cultivation, readily absorbing moisture and quite readily yielding it to the influence of the sun. The lands areunder laid by sand and rather soft lime-rock at 4 feet. Tillage is easy and pleasant in any weather, requiring but little exertion.

The chief crops are cotton, corn, wheat, oats, rye, pease, potatoes, sugar-cane, sorghum, and rice. Cotton succeeds best, though all are remunerative with proper cultivation. Cotton usually comprises about three-fourths of the crops, and yields from 600 to 800 pounds per acre in the seed on fresh land; from 1,425 to 1,545 pounds of this make 475 pounds of lint. On land four years under cultivation the yield is from 300 to 500 pounds, the lint being shorter and the fiber not so strong. The plant grows from 2½ to 6 feet high, yields best at 3 feet, and runs to weed on new ground and with continuous rains in the spring. This is prevented and bolling favored by an extensive use of home-made and commercial fertilizers. Hog- and poverty-weeds, crab- and crowfoot-grasses are most troublesome. From one-eighth to one-fourth of the land once under cultivation now lies out, and produces about three-fourths of a crop after a rest of three years. The uplands are much damaged by the washing and gullying of the lands. Before the late civil war efforts were made to check this, but very little since. When horizontalizing was properly executed the damage was successfully checked. The valleys are injured only in localities.

The swamp lands are from 200 to 600 yards wide, and run diagonally through the county. By proper drainage they could be made far more valuable than the uplands.

Cotton to succeed well on sandy land must be planted late, its cold nature in spring tending greatly to kill out the plants. The level or clay subsoil lands may be planted twenty days earlier, with a better prospect of a perfect stand and certainty of a more remunerative yield. Sandy soils usually produce more fruit than clay soils in proportion to size of weed and contingencies of seasons.

As soon as baled cotton is hauled by wagon to Americus.

SCHLEY.

Population: 5,302.—White, 2,229; colored, 3,073.

Area: 180 square miles.—Woodland, all; sand hills, 8 square miles; oak, hickory, and pine uplands, 172 square miles.

Tilled lands: 38,931 acres.—Area planted in cotton, 19,143 acres; in corn, 15,845 acres; in wheat, 1,944 acres; in oats, 1,447 acres; in rye, 444 acres.

Cotton production: 4,945 bales; average cotton product per acre, 0.26 bale, 369 pounds seed-cotton, or 123 pounds cotton lint.

The county of Schley is included almost entirely within the oak, hickory, and pine region. The northern part of the county is hilly and broken, the ridges being covered with deep white sands and red and yellow clays and a heavy growth of long-leaf pine and scrub oak. These extend to within 5 miles of Ellaville. The county then becomes level, with a dark clay loam soil and a hard red ferruginous clay subsoil. This belt, 2 miles wide, crosses the county southeastward into Sumter county. Its growth is red and post oak, short-leaf pine, and hickory. Blue Cretaceous clay marls are found at 50 and 60 feet in wells in this section, and come nearer the surface 5 miles northwest of Ellaville. The country south of Ellaville is slightly rolling, with a dark sandy loam soil and a red and yellow clay subsoil. The growth is long-leaf pine, interspersed with oak and black-jack.

Limestone and siliceous rocks or buhr-stone are found at Quebec on the southwest and under the clays of the hills.

Eastward from Ellaville, the county-seat, the country is rather broken for 7 miles, then becomes rolling, with much red land and ferruginous pebbles. In some places the beds of red sand and pebbles are several feet thick, and are underlaid by a white plastic clay. Long-leaf pine is a prominent growth, and the undergrowth is rather open. Ferruginous sandstone often occurs in fragments on the surface.

A small percentage of the lands of the county are too hilly or swampy for tillage, and 72 per cent. is said to have been cleared. Tilled lands comprise 33.8 per cent. of the county area, and are chiefly in cotton and corn, the acreage of the former being greater and comprising 49.2 per cent. of tilled land, Troup and Putnam counties alone having a greater proportion. Its average per square mile is 106.4 acres, the county thus ranking as thirteenth in the state.

ABSTRACT FROM THE REPORT OF THOMAS F. RAINEY, SR., OF ELLAVILLE.

There are but two extensive varieties of land in the county, viz, dark and red sandy loams. There is very little lowland, some of which has been cleared and produces well, but cotton is subject to rust in excessively wet seasons.

The *red sandy lands* comprise about 75 per cent. of the lands of the county, and have a growth principally of pine, with every description of oak. The soil is a sandy loam 6 inches deep, with a red or yellow sandy clay subsoil, underlaid by coarse gravel of various colors. The land is easy to till in all seasons, is early, warm, and well drained, and is best adapted to cotton, though corn, wheat, oats,

rye, sweet potatoes, and sugar-cane do well. Cotton comprises about half of the crops, yielding from 600 to 1,000 pounds in the seed per acre on fresh land, 1,485 pounds of which make 475 pounds of lint, rating as good middling. On land five years under cultivation the yield is 400 pounds. Cotton grows from 2 to 4 feet high, and runs to weed if shaded or in extreme wet weather. The most troublesome weeds are cockleburs, Spanish needles, and crab-grass. About one-fourth of the land now lies turned out, and when again taken into cultivation produces very well, and if fertilized continues to do so. The uplands are much damaged by the readily washing soils, and the valleys are injured to some extent. Hillside ditching and horizontalizing are practiced with success in checking the damage.

Cotton is hauled to Americus on wagons.

MACON.

Population: 11,675.—White, 4,288; colored, 7,387.

Area: 360 square miles.—Woodland, all; sand hills, 103 square miles; oak, hickory, and pine uplands, 257 square miles.

Tilled lands: 67,593 acres; area planted in cotton, 31,687 acres; in corn, 23,910 acres; in wheat, 2,702 acres; in oats, 4,313 acres; in rye, 284 acres.

Cotton production: 8,334 bales; average cotton product per acre, 0.26 bale, 375 pounds seed-cotton, or 125 pounds cotton lint.

Macon county is divided by Flint river, on whose banks at Montezuma are exposed hard fossiliferous limestones (Tertiary) 5 feet thick, with associated beds of fossil ostreas, underlying a light yellow marl and a bluish clay with concretions. This limestone is also found west of Oglethorpe in the beds of the creeks. On the east of the river there is a high table-land lying parallel with and 200 feet above the river on the north, with a gradual descent southward to Montezuma.

The lands of this table-land have a reddish or mulatto soil, a reddish clay subsoil, and a growth of pine, oak, and hickory.

From the river westward the county is not so high, and the lands are quite level for the most part, becoming undulating on the extreme west, with sandstone on some of the uplands near the Schley county-line.

The soil is usually a white sand, more or less dark, and in places several feet deep, over a red clay. Ferruginous pebble and gravel are plentiful in the soil in many places.

Of the lands of the county 10 per cent. is irreclaimable swamp; 52 per cent. of the remainder is reported to have been cleared. The county is well timbered, especially on the west, long-leaf pine entering largely into the growth.

Tilled lands embrace 29.3 per cent. of the county area, and of these 46.9 per cent. are in cotton, the chief crop, whose average is 88 acres per square mile.

ABSTRACT FROM THE REPORT OF A. J. CHEVES, OF MONTEZUMA.

The lands may be classed as gray land, gray sandy loam, and red stiff clay.

The *red lands* are considered the best for cotton, because in the latter part of July or August a dry spell is apt to put a stop to the bearing of cotton on the gray lands. The latter are, however, much quicker in maturing as well as in fruiting.

The *sandy loam* comprises about 75 per cent. of the lands of the county, and extend east 3 miles, south 18 or 25 miles, the same west, and 3 or 4 miles north. Its depth is 4 inches, and it is underlaid by sand at 1 foot. It is early, cold, and well drained, and is best adapted to cotton. The crops of the county are cotton, corn, pease, potatoes, ground-pease, oats, and chufas. Cotton comprises 65 per cent. of the crops, grows from 2½ to 4 feet high, and runs to weed on fresh land in warm, damp weather unless restrained by fertilizers. The yield on fresh land is 800 pounds of seed-cotton per acre, of which 1,665 pounds make 475 pounds of lint. On land five years in cultivation the yield is 200 pounds, and 1,545 pounds make 475 pounds of lint. Crab-grass is most troublesome.

About 5 per cent. of the lands once cultivated now lies out; when again taken in these lands are as productive as ever, but are exhausted sooner. But little damage is done by the washing of the lands.

As soon as baled, cotton is shipped by railroad to Savannah at $3 50 per bale.

DOOLY.

(See "Lime-sink and wire-grass region".)

SUMTER.

Population: 18,239.—White, 6,050; colored, 12,189.

Area: 520 square miles.—Woodland, all; lime-sink (wire-grass) region, 62 square miles; oak and hickory uplands, 458 square miles.

Tilled lands: 104,664 acres.—Area planted in cotton, 44,190 acres; in corn, 37,495 acres; in wheat, 1,984 acres; in oats, 8,742 acres; in rye, 443 acres.

Cotton production: 11,451 bales; average cotton product per acre, 0.26 bale, 369 pounds seed-cotton, or 123 pounds cotton lint.

Sumter county lies on the west side of Flint river, to which all the streams of the county are tributary. The surface of the country is rolling and broken, especially on the north and west, where the uplands are covered with white sands and underlaid by red clays.

The lands of the county vary greatly in character. In the northeast corner, and extending to Mountain creek, the clayey subsoils are covered with white sand, underlaid by variegated clays. Long-leaf pine and scrub oak is the growth of this section. Southward buhr stone is found, and becomes more and more abundant.

South of the area described, and extending across the county east and west, the gray sandy lands become interspersed with red hills and large areas of red clay lands. The country is high and rolling, underlaid by variegated and plastic clays, and has a growth of pine, with oak and hickory. Open pine lands occasionally occur.

On the west, at the Plains of Dura, the country is very level over a large area. Around Americus, and eastward nearly to Danville, buhr-stone or siliceous shell-rock occurs in quantities, and the fragments are frequently studded with fine quartz crystals. The sands that cover the northern portion of the county are here not so deep, and red clays prevail over this and the southwestern part. Ferruginous gravel and pebbles are abundant.

Five or more miles southeast from Americus changes again occur, and open long-leaf pine growth, wire-grass, and cypress ponds cover an area 5 miles wide, extending into Lee county on the southwest. The surface is flat, the soils sandy and poor, and but little under cultivation. Still to the southeast, and covering the rest of the county, are oak and hickory lands, quite level, underlaid by a very white and soft friable coral limestone, which frequently comes to the surface. (See analysis of soil, page 40.)

At Danville, on the river (east from Americus), there is a bed of white shell marl, with greensand beds 15 or 20 feet thick under 20 feet of red clay. It extends up the river a number of miles, but seems to become more clayey.

The limestone is the same as that at Albany, which shows about 74 per cent. of carbonate of lime. It has been used, pulverized, on a number of farms, and with marked and beneficial results, especially after the first year. The growth on streams where this limestone outcrops is poplar, magnolia, black and sweet gum, white oak, swamp dogwood, cypress, water oak, sweet bay, ironwood, wahoo, ash, sugar-maple, alder, and saw-palmetto.

Tilled lands embrace 31.4 per cent. of the county area; irreclaimable swamp lands 3 per cent; and of the entire county it is thought that 46 per cent. has been cleared. Cotton is the principal crop of the county, averaging 85 acres per square mile, and embracing 42.2 per cent. of tilled land. The county ranks as ninth, or next to Stewart, in its total cotton acreage.

ABSTRACTS FROM THE REPORTS OF S. S. BIRD, M. D., AND C. C. SHEPHARD, OF AMERICUS.

The lands of the county are about equally divided between the red mulatto and the gray soils. The growth of the gray lands is pine; of the red, pine and oak. The soils are from 5 to 10 inches deep; the subsoils usually hard and tough clays. The chief crops are corn, cotton, oats, pease, sweet and Irish potatoes, chufas, ground-pease, rye, and wheat. On good land, and with good culture, all flourish in seasonable years. On the gray lands in wet seasons cotton suffers from rust. Cotton comprises about half the crops, and on fresh lands yields from 400 to 700 or even as much as 1,000 pounds of seed-cotton per acre. On lands ten years under cultivation the yield is about one-half that of fresh lands, and over 1,600 pounds are required for 475 pounds of lint. Cotton grows from 3 to 4 feet high on red land and from 1½ to 2½ feet on gray. The plant runs to weed, when the fly stings the squares and they fall off. Crab-grass is by far the most common and most injurious weed. May-pop vines and coffee-weeds are also troublesome.

From one-tenth to one-fifth of these lands now lies turned out. If allowed to lie out long enough to produce a second growth of pines it yields, on cultivation, almost as well for a few years as when new. Washing and gullying are the most fruitful source of injury to the uplands; the valleys are generally improved by the deposit of fresh soil, and marshes and swamps are frequently so filled up with the soil from adjoining hillsides as to become the very best lands of the county. But little effort is made to check this washing.

As soon as cotton is ginned and baled it is shipped by railroad to Savannah.

LEE.

Population: 10,577.—White, 1,739; colored, 8,838.

Area: 360 square miles.—Woodland, all; lime-sink (wire-grass) region, 101 square miles; oak, hickory, and pine uplands, 259 square miles.

Tilled lands: 99,449 acres.—Area planted in cotton, 35,694 acres; in corn, 24,045 acres; in wheat, 367 acres; in oats, 6,721 acres; in rye, 149 acres.

Cotton production: 9,143 bales; average cotton product per acre, 0.26 bale, 366 pounds seed-cotton, or 122 pounds cotton lint.

The surface of Lee county is for the most part level or undulating, and is timbered with pine, oak, and hickory, with a more or less dense undergrowth. The county is mostly included in the oak, hickory, and pine region, and is drained into Flint river, its eastern boundary.

White limestone and marl (Eocene) underlies the entire county, outcropping along the streams, and often associated with siliceous shell-rock or buhr-stone, whose fragments are also found lying loose on the surface, especially on the northwest.

A cross-section of the county from northwest to the southeast would show first a rather open and level country, in which long-leaf pine predominates, with some undergrowth, and the lands sandy and interspersed with a few red areas—a continuation of the belt south of Americus, in Sumter county. Large cypress swamps and deep beds of white sands occasionally occur. The soil contains ferruginous pebble and gravel. On the south of Adams station, or 5 miles from Starksville, is a belt of open long-leaf pine and wire-grass very level, and having a width of about 2 miles, a continuation also of that of southeast Sumter. Oak and hickory lands then appear, forming a somewhat rolling northeast and southwest belt across the county, with an average width of 3 miles. (See analysis of soil, page 42.) The lands are red sandy clays several feet deep, the underlying limestone coming near the surface and by dissolution from underground streams producing many lime-sinks. When burnt it makes an excellent quality of lime. It is associated with marls, and their application to the lands has proved highly beneficial wherever tried. J. Shep. Green, on Chocky creek, in the northeastern part of the county, reports a great improvement in the soil and a better yield of seed-cotton. The marl or soft limestone contains about 80 per cent. of carbonate of lime (see analyses of similar marls, page 46). Buhr-stone and flint overlie this limestone, and their relative position is well seen at Palmyra, on the southwest. The rest of the county in the southeast of this oak and hickory belt is flat and open, with a tall growth of long-leaf pine, and is interspersed with many ponds. It has a sandy soil, clay subsoils, and limestone at 30 feet. Wire-grass covers the region, and the country is but sparsely settled. The lands of the county are almost entirely tillable, and one-half has been cleared.

The lands of the county under tillage embrace 43.2 per cent. of the area, and are largely planted in cotton, that crop having an average of 99.2 acres and 25.4 bales per square mile, its acreage being 35.9 per cent. of the tilled lands.

Shipments of cotton are made by railroad to Albany, and thence to Savannah or northward to other markets.

TERRELL.

Population: 10,451.—White, 4,268; colored, 6,183.

Area: 320 square miles.—Woodland, all; oak, hickory, and pine lands, all.

Tilled lands: 58,844 acres; area planted in cotton, 25,740 acres; in corn, 21,719 acres; in wheat, 1,928 acres; in oats, 6,210 acres; in rye, 246 acres.

Cotton production: 6,944 bales; average cotton product per acre, 0.27 bale, 384 pounds seed-cotton, or 128 pounds cotton lint.

Terrell county is included entirely in the oak, hickory, and pine region. Its surface is undulating, or rather rolling; its growth, oak, hickory, and long-leaf pine, the latter being very prominent, and in places almost exclusive, with little undergrowth, and giving to the country a very open appearance.

Soft white limestone underlies the county and outcrops in some of the streams, furnishing a valuable stimulant for these lands when properly applied. Buhr-stone or siliceous shell-rock, very flinty in character, occurs in fragments on the surface.

The lands of the county, part clayey and part sandy, are underlaid by red and yellow clays, and contain more or less ferruginous gravel.

The surface is drained southward by numerous streams, also by Kinchafoona creek, the eastern boundary to Flint river. Cypress swamps are abundant in the county.

Tilled lands embrace 28.7 per cent. of the county area, and are chiefly devoted to cotton and corn, the acreage of the former being 43.7 per cent. of the tilled lands, and averaging 80.4 acres per square mile.

Shipments of cotton are by railroad to either Columbus or Macon, though most of the crop is sold from the wagon at Dawson.

RANDOLPH.

Population: 13,341.—White, 5,545; colored, 7,796.

Area: 400 square miles.—Woodland, all; oak, hickory, and pine uplands, all.

Tilled lands: 91,249 acres; area planted in cotton, 34,204 acres; in corn, 27,484 acres; in wheat, 2,790 acres; in oats, 6,770 acres; in rye, 637 acres.

Cotton production: 8,467 bales; average cotton product per acre, 0.25 bale, 354 pounds seed-cotton, or 118 pounds cotton lint.

The surface of Randolph county is generally rolling, and is broken on the north, but more level on the south. The lands of the northern half are partly gray sandy and partly red clayey; the subsoil of each almost entirely a red or yellow clay. Some of the uplands have large level areas, and are largely under cultivation, yielding fair crops of corn and cotton.

A white fossiliferous limestone (Eocene), having occasionally calcite crystals, underlies the section, and several large caves exist on the northwest. Siliceous shell-rock and ferruginous sandstone are abundant on the surface, some of the former being quite large.

The lands near Cuthbert and southward, as well as west for some miles, are much more level. Along some of the creeks on the south there are a better class of red clay soils and subsoils, with a growth of oak, hickory, and pine; but the rest of the uplands are generally sandy, with a prominent growth of long-leaf pine, interspersed with oak and hickory. The lands contain ferruginous pebbles or gravel, and siliceous shell-rocks are found everywhere. A bed of this several feet thick, and containing quite a variety of well-preserved fossils, is found 4 miles south of Cuthbert.

Sixty per cent. of the county area is said to have been cleared of its original timber growth, but only 35.6 per cent. is under cultivation. Eight per cent. is of irreclaimable swamps. The chief crop is cotton, its average being 85.5 acres per square mile, or 37.5 per cent. of tilled lands.

ABSTRACT FROM THE REPORT OF M. A. M'NULTY, OF CUTHBERT.

The lands on the Nochway (on the southeast) are red calcareous clays, with some undulating sandy ridges; on the Pachitta (south) generally red clay, and on the Pataula sandy ridges prevail.

The *red clay lands* of the county, in some places strongly impregnated with lime, are the best cotton lands. They cover about one-half the county area, and have a growth of oak, hickory, and pine. The soil is often a gray sand, 4 inches deep; the subsoil a red clay, impervious when dry, and becoming hard when not disturbed, but good cultivation assimilates it to the surface soil. The land contains ferruginous pebbles, is easily tilled in wet seasons, is early, warm, and well drained, and well adapted, when fresh, to cotton, corn, wheat, oats, sugar-cane, and sweet and Irish potatoes. Cotton comprises one-half the crops, grows 2 feet high, and is prevented from running to weed by the use of marl, which is abundant. Fresh lands produce 800 pounds of seed-cotton per acre; the lint is a fair upland staple. Lands under cultivation five years yield 250 pounds of seed-cotton per acre, of which 1,545 pounds make 475 pounds of lint of inferior quality. Crab-grass and hog-weed are most troublesome. One-half of the lands once cultivated now lies turned out, and when these lands are again taken in they produce well for two or three years. The valleys are ruined and uplands seriously damaged by the washing and gullying of these lands, and no efforts have been made to check it.

The *sandy lands*, comprising one-third of the area, extend diagonally across the county, and have a growth of pines. The soil is of a dark gray and fine sandy character, 10 inches deep, with an impervious red clay or sandy subsoil. The lands are late, cold, well drained, and are best adapted to cotton, which comprises two-thirds of the crops. Fresh lands yield 800 pounds of seed-cotton per acre; lands cultivated five years yield only 200 pounds, and 1,665 pounds are required for 475 pounds of lint. These lands also wash as readily as the clay soils, and as much damage is done.

There is a class of putty-like land occurring in spots on worn-out hillsides that is utterly unproductive, and which ruins bottom lands by washing.

As soon as cotton is ginned and baled it is shipped by railroad to Savannah at $3 50 per bale.

QUITMAN.

Population: 4,392.—White, 1,773; colored, 2,619.

Area: 160 square miles.—Woodland, all; oak, hickory, and pine uplands, all.

Tilled lands: 25,584 acres.—Area planted in cotton, 11,815 acres; in corn, 7,596 acres; in wheat, 560 acres; in oats, 2,202 acres; in rye, 29 acres.

Cotton production: 3,163 bales; average cotton product per acre, 0.27 bale, 381 pounds seed-cotton, or 127 pounds cotton lint.

The small county of Quitman lies on the Chattahoochee river, to which all of its streams are tributary. The surface of the country is hilly and broken, and its hills are covered with red clays and white sands. The former, occurring principally in the eastern and southern part of the county, are the continuation of those of the adjoining counties of Stewart and Randolph. Along the river at a number of points are level valley lands, a mile or more wide, having a dark sandy loam soil. The bluffs of the river are from 25 to 50 feet high, and in them, under a heavy bed of clay, is exposed the blue micaceous clay marls full of very well-preserved Cretaceous fossils (Ripley group). These marls are found also in the beds of the small streams that empty into the river. The most easterly outcrop is in a railroad cut on the upland at Hatchie station. A fossiliferous limestone forms thin layers in these river bluffs.

The sandy hills cover the largest part of the county, and have a prominent growth of pine. The red lands have a timber growth of oak and hickory; the bottoms, oak, hickory, and cottonwood. Ferruginous sandstone and pebbles are abundant on many of the hills.

Sixty-four per cent. of the lands of the county are said to have been cleared, but only 25 per cent. are under tillage. Cotton, the chief crop, has an average of 73.8 acres per square mile, or 46.2 per cent. of the lands are under cultivation.

The marls of the county are not very rich. An analysis of a sample from Hatchie station shows the presence of not more than 14 per cent. of carbonate of lime, the rest being chiefly sand and clay.

ABSTRACT FROM THE REPORT OF A. OGLETREE, OF GEORGETOWN.

The lands of the county may be classed as gray, red or stiff, and alluvial.

The *coarse gray sandy soils* comprise two-thirds of the lands of the county. They are from 4 to 8 inches deep, with a subsoil of similar character, and are best adapted to cotton and oats. Cotton grows 2½ feet high, the larger the better, and yields from 500 to 600 pounds in the seed per acre on fresh lands, 1,485 pounds making 475 pounds of lint. After a few years' cultivation the yield is about 300 pounds, and the same amount is needed for a bale of lint. Weeds are not troublesome, but crab-grass is a constant trouble. Of the lands once under cultivation about 10 per cent. now lies turned out. The productiveness when again taken in depends upon the length of time it has rested; if long enough, it yields as well as new. These lands are injured by washing and gullying, and the valleys are somewhat damaged. But little effort is made to check it.

The *red and stiff lands* have also a stiff clay subsoil and a growth of oak and hickory.

From September to January cotton is shipped by railroad to Savannah.

CLAY.

Population: 6,650.—White, 2,798; colored, 3,852.

Area: 200 square miles.—Woodland, all; oak, hickory, and pine uplands, all.

Tilled lands: 53,952 acres.—Area planted in cotton, 21,539 acres; in corn, 14,898 acres; in wheat, 156 acres; in oats, 2,844 acres; in rye 29 acres.

Cotton production: 4,576 bales; average cotton product per acre, 0.21 bale, 303 pounds seed-cotton, or 101 pounds cotton lint.

The small county of Clay is separated from Alabama by the Chattahoochee river, which is here very wide, and is lined with high bluffs along nearly the whole length. The county is included in the oak, hickory, and pine and red hills regions. Its surface is hilly and broken along the river, but more level on the east.

On the extreme north the hills are covered with dark sands, underlaid by yellow or variegated clays. Ferruginous sandstone and iron ores are abundant on some of the hills, giving their soils a yellow or red color. The river valley here is wide, level, and some 25 or 30 feet above the river, and is generally under cultivation.

In the bluffs of this section of the river north of Pataula creek, and in those of the creek itself for a short distance, are blue micaceous fossiliferous clay marls (Cretaceous) with ledges of limestone. These are well exposed at the "Narrows", a beautiful waterfall over one of these rocky ledges into the soft marl bed below. These blue marls a short distance below the mouth of the creek disappear below the water's surface, and are replaced or covered in the bluffs by white marls and limestones (Tertiary). An analysis made of the Pataula creek marl shows but about 8 per cent. of carbonate of lime, the rest of the ingredients being chiefly sand and clay. (See page 45.)

Southward from the creek the country is slightly rolling, and a few lime-sinks occasionally occur. The limestone underlying the land shows in the river an outcrop of at least 20 feet, and is hard and massive. It also dips under the water, and is covered in turn by a white friable marl (Claiborne), which still southward forms high bluffs, extending into the Early county section of the river.

Fort Gaines is situated on a bluff about 125 feet above the river. (See page 14.) The white marl here rises 15 feet above the water, and is covered by about 60 feet of alternate strata of blue fossiliferous clays and blue marls, and on top of this 50 feet of a reddish clay loam. These blue shelly clays have been used with advantage on the sandy lands of the Alabama side of the river, but are not as rich as the white friable marls and limestone below them, which contain over 80 per cent. of carbonate of lime.

On the bluffs large fragments of silicified wood are frequently found, and silicified shells and shell-rock occur in the southern red hills of the county.

The growth of the river uplands is pine, red oak, hickory, and black-jack.

The eastern part of the county is rather open and undulating, and has a growth chiefly of pine and a sandy soil, with ferruginous pebbles and fragments of silicified shell-rock. (See analysis of soil, page 40.)

All of the lands of the county are considered tillable, and 42.2 per cent. are under cultivation, chiefly in cotton and corn. The former embraces 39.9 per cent., and averages 107.7 acres per square mile, the county in this regard ranking as eleventh in the state. The average product per acre is very low, there being but eight counties having a less average. Negroes are here, as elsewhere in the region, the chief cotton producers.

ABSTRACT FROM THE REPORT OF F. K. FREEMAN, OF FORT GAINES.

The lowlands are not preferred for cotton, though they seem to produce more fruit to the plant. The uplands vary from gray and light to dark-gray sandy soils, with red clays in an easterly direction. The *gray sandy lands* prevail, with clay on the ridges and eastern slopes, after going half a mile east from the river. They comprise five-sixths of the county area; have a growth of yellow pine, cedar, and black-jack, a sandy, gravelly loam soil, 6 inches deep, and a red or light-yellow clay subsoil.

The crops of the county are corn, oats, sweet potatoes, and cotton. Cotton on fresh land yields 1,000 pounds per acre, and after six years' cultivation 800 pounds of seed-cotton, 1,485 pounds of which in each case make 475 pounds of lint. The plant grows 3 feet high, and runs to weed on bottom lands unless restrained by fertilizers. The most troublesome weeds are coffee-weed, cocklebur, and crab-grass. Very little land once cultivated now lies out, for, by the application of manures, they produce finely. Serious damage is done by the washing of the soils, and the valleys are injured very materially. Only feeble attempts are made to check the damage, but the results are satisfactory.

In October, November, and December cotton is shipped, by railroad and by river, to Savannah, Columbus, and New York, the rates being 50 cents per bale to Columbus and 50 cents per 100 pounds to Savannah.

CALHOUN.

Population: 7,024.—White, 2,354; colored, 4,670.

Area: 280 square miles.—Woodland, all; lime-sink (wire-grass) region, 3 square miles; oak, hickory, and pine uplands, 277 square miles.

Tilled lands: 57,804 acres.—Area planted in cotton, 24,429 acres; in corn, 19,642 acres; in wheat, 198 acres; in oats, 5,526 acres; in rye, 12 acres.

Cotton production: 4,670 bales; average cotton product per acre, 0.19 bale, 273 pounds seed-cotton, or 91 pounds cotton lint.

Calhoun county is well timbered, and is watered by the Chickasawhatchie and Ichawaynochaway creeks and their tributaries. The surface of the country is undulating or slightly rolling, and the lands are varied. On the north are the "oak and hickory lands", or yellow loam and red clay lands, with long-leaf pine. Southward the latter growth becomes more and more abundant, the country more open, and lime-sinks occur frequently.

On the extreme south wire grass and very open long-leaf pine areas extend into the county from the south.

A white and soft limestone underlies the entire county, through which underground streams have cut their passage, appearing frequently for short distances and as suddenly disappearing.

Buhr-stone or siliceous shell-rock and flint are found in fragments all over the county. Swamps are numerous, and those considered as irreclaimable comprise 5 per cent. of the area of the county.

The crops embrace corn, cotton, oats, sugar-cane, rice, peanuts, and chufas. Lands under tillage comprise 32.3 per cent. of the total area, and of these 42.3 per cent. are in cotton, the chief crop. The average of cotton acreage is 87.2 acres per square mile. In product per acre the county is very low, ranking only above Baker, Mitchell, and Glynn counties. The negro population here is about double that of the whites, while as laborers the proportion is far greater.

ABSTRACT FROM THE REPORT OF W. A. BECKCOM, OF ARLINGTON.

But a small quantity of lowland is cultivated in this county. The cotton lands may be classed as gray sandy uplands, red stiff uplands, and black sandy loam or hummock, the last being considered the best for cotton.

The *gray sandy lands* comprise two-thirds of the area of the county, and have a growth chiefly of pine, with some few oaks. The soil is about 5 inches deep, with a yellow, then red clay subsoil. It contains much soft, rounded, black ferruginous gravel. The land is best adapted to cotton and oats, but corn, sugar-cane, rice, ground-pease, and chufas are produced. Cotton comprises about one-half the crops, grows to a height of 4 feet, and yields about 1,000 pounds of seed-cotton per acre when fresh. The stalk runs to weed on fresh and rich land and when planted too close. To prevent this it is thinned when young and fertilizers are applied. After a few years' cultivation the yield is diminished to 300 or 500 pounds of seed-cotton per acre; 1,545 pounds make 475 pounds of lint from both fresh and old lands, but the staple on the latter is not as long as from the other. Coffee-weeds and cocklebur are most troublesome. One-third of the lands once under cultivation now lies out. When again taken into cultivation and fertilized it makes better cotton than any other land. But little damage is done to uplands or valleys by the washing of the soils. The lowlands, when well drained, are the best.

Shipments of cotton are made by railroad to Savannah at 80 cents, and to New York at $1 45 per bale.

DOUGHERTY.

Population: 12,622.—White, 1,952; colored, 10,670.

Area: 340 square miles.—Woodland, all; lime-sink (wire-grass) region, 194 square miles; oak, hickory, and pine uplands, 146 square miles.

Tilled lands: 85,885 acres.—Area planted in cotton, 40,996 acres; in corn, 23,263 acres; in wheat, 116 acres; in oats, 6,052 acres; in rye, 19 acres.

Cotton production: 9,736 bales; average cotton product per acre, 0.24 bale, 339 pounds seed-cotton, or 113 pounds cotton lint.

Dougherty county is divided into two equal portions by Flint river, and is bounded on the west by Chickasawhatchie creek. It is a rolling country, lying partly in the wire-grass and partly in the oak and hickory region, and is entirely underlaid by white limestone, outcrops of which occur in the streams and also furnish large springs. Blue spring, south of Albany, the largest of these, has a depth of 25 or 30 feet, and the water is very clear, allowing small objects to be distinctly seen at the bottom. The limestone forms the walls of the spring.

Buhrstone is also abundant, occurring often in large masses. Its position is above the limestone, as shown at the mouth of Fowltown creek north of Albany, where it shows a thickness of 10 feet. Lime-sinks occur frequently in various parts of the county.

The wire-grass region, or its lime-sink division, covers all of the country from the north county-line westward 2 miles beyond Albany, and thence southward to about the corner of the county. Long-leaf pine is almost the only growth on the uplands, the surface of the county being very open, and covered with wire-grass, interspersed with cypress ponds. The lands are sandy, with clayey subsoils, and are rather sparsely settled away from the river and from Albany. The rest of the county on the west of this region is of the yellow loam and red clay uplands character. The region begins 2 miles west of Albany, has a growth of oak and hickory, with much long-leaf pine, and a better character of lands than on the east; red clay lands predominate, though they have often a thin covering of sand.

The irreclaimable swamps of the county comprise 10 per cent. of its area; of the rest, 75 per cent. has probably been cleared.

Tilled lands embrace 39.5 per cent. of the total area, and of these 47.7 per cent. are in cotton. Dougherty is one of the chief cotton counties of the state in the average acreage of that crop (120.6 acres) per square mile, the county ranking as fifth. Its low product per acre, however, brings the number of bales per square mile (28.6) also very low.

ABSTRACT FROM THE REPORT OF MESSRS. WELCH AND BACON, OF ALBANY.

The lands of the county are classed as light sandy loam and red mulatto.

The *light sandy soil* comprises three-fourths of the county, and extends from 15 to 50 miles east and only a few miles west of Albany. The growth is pine. The soil has a depth of 7 inches, with mostly a sandy hard clay subsoil. Limestone underlies it at from 15 to 20 feet. The soil is easily tilled at all seasons, and is early, warm, and well drained by underground lime-sinks and streams. The crops of the county are cotton, corn, oats, sugar-cane, sweet potatoes, pease, and upland rice. Cotton, to which the lands are best adapted, comprises five-eighths of the crops, and grows 3 feet high, runs to weed in wet seasons unless topped, is troubled most with grass, and yields on fresh land about 800 pounds of seed-cotton per acre, 1,600 pounds making 475 pounds of lint rating as low middling. On land five years in cultivation the yield is 500 pounds, the lint rating as strict ordinary. About 25 per cent. of these lands now lie turned out, and improve by two or three years rest. The lands do not wash.

The *red mulatto clay lands*, comprising one-fourth of the county area, extend 15 or 20 miles west of Albany, and have a growth of oak and hickory. The soil is 8 inches deep, with a heavy impervious red-clay subsoil; it is early, warm, but ill drained, and easy to till, and is best adapted to cotton and corn. Cotton comprises five-eighths of the crops, grows 3 feet high, and yields 1,000 pounds of seed-cotton per acre on fresh land; it rates as low middling. On land ten years in cultivation the yield is 700 pounds, and the staple is strict good ordinary. About 10 per cent. of this land lies turned out. It produces better by rest and washes but little. Gullying is easily prevented by horizontalizing.

Between the months of September and February cotton is shipped by rail to Savannah at about $3 per bale.

BAKER.

(See "Lime-sink and wire-grass region".)

EARLY.

Population: 7,611.—White, 3,015; colored, 4,596.

Area: 510 square miles.—Woodland, all; oak, hickory, and pine uplands, 307 square miles; lime-sink (wire-grass) region, 203 square miles.

Tilled lands: 42,276 acres; area planted in cotton, 20,552 acres; in corn, 17,624 acres; in wheat, 39 acres; in oats, 4,750 acres.

Cotton production: 4,270 bales; average cotton product per acre, 0.21 bale, 297 pounds seed-cotton, or 99 pounds cotton lint.

Early county is separated from Alabama on the west by the Chattahoochee river. The surface of the country is rolling on the north, but becomes more level southward to the wire-grass region. The county is underlaid by limestone, and lime-sinks occur frequently. The rock outcrops in the banks of the river as far south as Columbia, and also in the various streams west of Blakely. Large masses of flint and siliceous shell-rocks are scattered over the entire county, but are most abundant in the southern portion.

The red clay lands extend for a mile or two into Early, on the northwest, near the river. South to Blakely, and 4 miles beyond, the yellow-loam lands prevail. The soil is sandy, with a yellowish clayey subsoil; growth, chiefly pine, with some oak and hickory. Cypress ponds are interspersed throughout. The limit of this yellow-loam region extends from 5 miles south of Arlington to 4 miles south of Blakely, and on to a few miles south of Columbia, on the Alabama side of the river. The growth of the entire country is very open.

The lower part of the county is covered with wire-grass and long-leaf pine, interspersed with a "blue-jack" undergrowth, the surface level, and the roads hard.

The swamps and lowlands of the county comprise a large proportion of the area, those irreclaimable being 5 per cent. of the surface.

The country is sparsely settled (15 persons per square mile) and well timbered. Thirteen per cent. only of its area is under cultivation, and but 20 per cent. in all is said to have been cleared, thus leaving 80 per cent. of the original growth still standing. Cotton and corn are the chief crops, the former embracing 48.6 per cent of the tilled lands, placing the county as fifth in the state in this regard.

The cotton average is 40.3 acres per square mile, and its product per acre is the same as that of Clay, Miller, and Morgan, and only above five other counties of the state.

ABSTRACTS FROM THE REPORTS OF J. B. MULLIGAN AND DENNIS M. WADE, OF BLAKELY.

The lands of the county are generally level, but sometimes rolling, and are classed as gray, red or stiff, and lowland.

The *gray sandy lands* comprise fully two-thirds of the lands of the county, and the soil is 5 inches deep, with a subsoil of red stiff or soft yellow clay. These lands are easy to cultivate in all seasons, are early and well drained, and have a growth mostly of pine and wire-grass. The crops of the county are corn, cotton, oats, sweet potatoes, ground-pease, chufas, rice, and sugar-cane. Cotton comprises one-half the crops, grows 2½ feet high, and runs to weed on fresh land in wet seasons unless restrained by a liberal use of fertilizers. Fresh lands yield 500 pounds of seed-cotton per acre. After cultivation of fifteen years the yield is 300 pounds, and the lint is generally shorter. Crab-grass is most troublesome. One-third of the land now lies turned out, and after resting it produces better than originally. It washes readily, but no damage is done.

The *red or stiff lands*, comprising two-ninths of the county area, have a growth of beech, hickory, oaks of all kinds, magnolia, cedar, poplar, etc. The soil is 6 inches deep, with a subsoil more or less hard, as indicated by the growth. It is early and well drained, and is best adapted to corn and wheat. Cotton comprises one-third of the crops, grows 3 feet high, and yields 600 pounds of seed-cotton on fresh land and 300 on land fifteen years under cultivation. Crab-grass is most troublesome. One-fourth of the land lies turned out, which produces as well when again cultivated.

The *swamp and river bottoms* comprise one-ninth of the lands of the county. These have a gum and cypress growth, a fine sandy soil from 18 to 36 inches deep, and when ditched are best adapted to corn. One-fourth is planted in cotton. The plant grows from 4 to 6 feet high, and yields 1,000 pounds of seed-cotton per acre when fresh and after fifteen years' cultivation. One-fourth of the land now lies turned out, which produces as well as ever when again taken in.

Cotton is shipped, as soon as ready, by railroad and by river to Columbus and to Savannah.

SOUTHERN OAK, HICKORY, AND PINE UPLANDS.

(Embraces parts of the counties of Decatur, Thomas, and Brooks.)

DECATUR.

Population: 19,072.—White, 8,889; colored, 10,183.

Area: 1,160 square miles.—Woodland, all; lime-sink (wire-grass) region, 833 square miles; southern oak uplands, 327 square miles.

Tilled lands: 79,219 acres; area planted in cotton, 29,509 acres; in corn, 30,847 acres; in wheat, 22 acres; in oats, 9,282 acres; in rye, 6 acres.

Cotton production: 6,396 bales; average cotton product per acre, 0.22 bale, 309 pounds seed-cotton, or 103 pounds cotton lint.

Decatur is the most southwesterly county of the state and also one of the largest. Chattahoochee river separates it from Florida on the west, while Flint river, after flowing in a southeasterly course across the county, unites with the former river, the point of junction being the western terminus of the southern boundary-line of the state.

The county is well timbered, mostly with a tall growth of long-leaf pine. Limestone underlies the entire country, outcropping in many places, and showing its presence in others by lime-sinks. The most noted of the latter is on the northeast. It has a depth of 105 feet, with a diameter of about 50 yards, the soft white limestone being exposed all the way down. A stream of water falls into it from the surface and disappears. A large cave has also been formed in the side of this sink, and a number of what are termed "blowing caves" occur in this section. Spring creek, on the western side of the county, derives its name from the large number of springs that supply the water. These springs come up through the limestone, frequently cover large areas, and are very deep.

The agricultural regions represented in this county are the wire-grass (lime-sink division) and southern oak, hickory, and pine uplands. The former covers the northern part of the county, extends 7 miles south of Bainbridge, and includes two classes of lands, designated, by the character of their subsoils, as clay lands and sandy lands. The clay lands cover the eastern half of that portion of the county lying between the Flint river and the Thomas county-line, and extend southward to the railroad. Another area is on the west of Spring creek, reaching half way to the Chattahoochee river. Clay underlies it at depths of 4 to 24 inches. The soil is sandy, and covered with wire-grass in abundance, and the country is very open and undulating. The sandy lands of this upper section lie on each side of Flint river for many miles, and also along the Chattahoochee on the northwest. They are very level and open, and are interspersed with a few lime-sinks and cypress ponds. The hummock lands are extensive and productive, though not durable. (See analysis, page 43.)

Siliceous shell-rock is found in abundance along the river banks and in fragments on the upland. The rock, on decomposition, forms a light white or reddish powder. Limestone (Vicksburg) underlies it at Bainbridge.

Live-oak trees form the chief growth around this town, and southward 7 miles to the hills there is much oak undergrowth.

The oak, hickory, and pine uplands occupy a high ridge across the county from near Fowltown, on the Chattahoochee river, southward to the mouth of Spring creek, thence up Flint river to 7 miles south of Bainbridge, and turning east and northeastward to and beyond Climax, 9 miles east of Bainbridge, into Thomas county. The elevation of this ridge is 315 feet above the sea, 130 above the river, or 75 above the pine lands, and is rather abrupt on the north.

In the northern part of this southern region red clays form a portion of the lands. To the south the country becomes more sandy and broken, and long-leaf pine forms a very prominent growth. The soil is rather thin, over a red or yellow clay subsoil and a pipe-clay. Limestone containing some calc-spar also underlies this, outcropping in the banks of the streams. At the foot of the ridge, and apparently underlying this limestone, is found the siliceous shell-rock of the wire-grass counties.

The following abstracts give the features and productiveness of these various lands. Outside of the town of Bainbridge, the county is but thinly settled.

One per cent. of the lands is irreclaimable swamp; 10.7 per cent. is under cultivation. Of these tilled lands 37.3 per cent. is in cotton, which has an average of 25.4 acres per square mile. The average product per acre is very low, the county ranking above but nine counties of the state in this regard.

ABSTRACT FROM THE REPORT OF JOHN E. DICKENSON, OF BAINBRIDGE.

The cotton lands of the county are the pine lands, river lands, creek hummock lands, and what are generally known as *clay lands*. Beginning on the northern portion of the eastern side of the county, these lands extend westward some 12 or 14 miles, running entirely across the county north and south. About half way down this line, 18 miles from the northeast corner, the lands widen rapidly until they reach the river, and extend down its banks to the lower edge of the county. Inside of this boundary-line there are spots here and there that are sandy, with clay from 4 to 12 inches under the surface. West of Spring creek, between Flint and Chattahoochee rivers, there is a strip from 5 to 8 miles wide across the county. Here the subsoil of clay is from 12 to 24 inches below the surface. Much the larger portion of these clay lands has a pine growth.

The *pine lands*, with their fine sandy soils from 3 to 5 inches deep, cover four-fifths or nine-tenths of the county, and have a long-leaf pine growth. The subsoil is generally lighter than the soil. The crops of the county are cotton, corn, oats, pease, potatoes, and sugar-cane. These lands are easy to till, early, warm, well drained, and best adapted to oats, though one-half of the plowed or hoed crops is of cotton. The yield in seed-cotton on land four years under cultivation is from 600 to 800 pounds per acre, 1,665 pounds of which make 475 pounds of lint. Cotton grows from 2½ to 4 feet high, and runs to weed on fresh land in very wet seasons. Crab-grass is most troublesome.

The *creek and hummock lands* have a growth of oak, hickory, ash, magnolia, poplar, and various undergrowth. The soil is a fine sandy loam from white to yellow and mahogany in color, and has a depth of 6 inches, with a clay subsoil. These lands are not as durable as the bottoms. The fresh lands are good for tobacco and afterward for any other crop. This land is easy to till, late, cold, and ill drained. Cotton comprises one-half the crops, and grows to a height of 5 or 6 feet, producing from 1,000 to 1,200 pounds of seed-cotton per acre. Very little of this land lies out. It is injured in some places by washing, which can be prevented by horizontalizing and hillside ditching.

The *river bottoms* cover but a small proportion of the county in a narrow strip bordering the rivers. The timber is oak, hickory, walnut, magnolia, dogwood, and a great variety of smaller growth. The soil is a dark and fine loam, 1 foot or 2 feet in depth, underlaid by a clay. It is early, cold, and ill drained, and good for any crop. Cotton comprises one-half the crops, and grows from 6 to 7 feet high, producing from 1,200 to 1,800 pounds in the seed for a number of years; 1,545 pounds are required for 475 pounds of lint. Cockleburs and morning-glory vines are most troublesome. None of the land lies turned out.

Cotton on all wet lands is late and subject to rust, and is apt to shed its leaves and fruit.

Planters sell their cotton to local merchants, and it is then shipped to Savannah by railroad at 75 cents per 100 pounds.

THOMAS.

Population: 20,597.—White, 8,384; colored, 12,213.

Area: 780 square miles.—Woodland, all; lime-sink (wire-grass) region, 312 square miles; southern oak, hickory, and pine uplands, 468 square miles.

Tilled lands: 89,760 acres.—Area planted in cotton, 35,895 acres; in corn, 35,839 acres; in wheat, 34 acres; in oats, 18,281 acres; in rye, 19 acres.

Cotton production: 8,773 bales; average cotton product per acre, 0.24 bale, 348 pounds seed-cotton, or 116 pounds cotton lint.

Thomas county is well timbered with a tall growth of long-leaf pine on the uplands and magnolia, bay, oak, and hickory along the creeks and Ocklockony river. Limestone underlies the entire county, outcropping in numerous places, and producing lime-sinks over the northern portion.

Along the Florida line the country is rolling, and the ridges are covered with ferruginous gravel. The soil is a red sandy clay from 4 to 5 feet deep, with underlying light or variegated-colored joint-clay. The growth is chiefly pine, with gum and white oak and a small undergrowth of gum. The siliceous shell-rocks peculiar to the lime-sink region are found in wells 40 feet from the surface.

Northward to Thomasville the pine becomes more exclusive and larger, and black-jack becomes a prominent feature to within 3 miles of town, the lands being sandy and filled with ferruginous gravel or bog ore. (See analysis, page 43.)

North from Thomasville, and also eastward, are the comparatively level lands of the wire-grass region, with its clay subsoils, long-leaf pine growth, "lime-sink" depressions, and buhr-stone or siliceous shell-rock fragments. The position of the latter with regard to the limestone is there shown. On the river 4 miles north of Thomasville limestone, 12 feet thick, is exposed in the banks, while on the surface the flinty shell-rocks form a solid stratum some 4 feet thick. Of the county area 2 per cent. is irreclaimable swamp; 18 per cent. is under cultivation in cotton and corn, with a slight difference in acreage in favor of the former crop. Cotton has an average of 46 acres per square mile. The product per acre is low. It is thought that 33 per cent. of the lands suitable for tillage have, from time to time, been cleared of their original timber growth.

ABSTRACTS FROM THE REPORTS OF R. H. HARDAWAY, OF THOMASVILLE, AND JAMES H. HAYES, OF CAIRO.

Good uplands are much preferred for cotton, because of the certainty of making a crop. On the lowlands cotton matures later, and is liable to overflow and also to the boll-worm. The lands may be classed as gray loam, black loam, and chocolate lands, all with impervious red-clay subsoils.

The *gray sandy and gravelly lands* comprise two-thirds of the county, and have a growth of yellow pine, with hickory, oak, ash, cherry, maple, magnolia, cedar, and red bay. The soil has a depth of from 12 to 15 inches, is easy to till in wet or dry seasons, and early, warm, and well drained (being a hilly country). The crops are cotton, corn, rice, sugar-cane, potatoes, oats, wheat, fruits, and melons. The gray lands are best adapted to small grain and cotton. The latter comprises one-half the crops, and yields on fresh land 600 pounds in the seed per acre, the lint rating as middling. After five years' cultivation the yield is from 300 to 400 pounds, and the lint is not so soft, silky, or long. Cotton grows from 2 to 7 feet high, but is most productive at 3 or 4 feet, and runs to weed with too heavy manuring and too much rain. Light manuring, early planting, and topping prevent this tendency and favor bolling. Cockleburs, coffee-weeds, crab-grass, or crowfoot are most troublesome. One-third of the land now lies out, and when again taken is almost equal to the virgin soil. It washes readily, but does no serious damage if properly ditched. On the west of the county the damage is serious, and the valleys are also much injured, though some effort has been made to check it.

Cotton is shipped from Thomasville by railroad to Savannah at $3 50 per bale.

BROOKS.

Population: 11,727.—White, 5,670; colored, 6,057.

Area: 530 square miles.—Woodland, all; lime-sink (wire-grass) region, 293 square miles; southern oak, hickory, and pine uplands, 237 square miles.

Tilled lands: 75,962 acres.—Area planted in cotton, 21,255 acres; in corn, 23,027 acres; in wheat, 46 acres; in oats, 14,087 acres; in rye, 161 acres.

Cotton production: 6,288 bales; average cotton product per acre, 0.30 bale, 423 pounds seed-cotton, or 141 pounds cotton lint.

Brooks county lies on the Florida line, is well timbered with long-leaf pine, oak, and hickory, and is, with the exception of the northeastern corner and a strip of land on the north, included in the oak, hickory, and pine region of the southwest and Florida. Little and Withlacoochee rivers and Ocopilco creek are the chief streams, all uniting on the east.

The oak and hickory region comprises the best lands of the county. Along Mule creek, some 15 or 20 miles north of Quitman, the country is broken, the hills being some 50 feet or more above the streams and covered with a hard light-red clay soil containing ferruginous gravel. The growth of these hills is red, white, and post oak, hickory, and a scrub-oak undergrowth. The subsoil is a yellowish clay, with some 30 feet of a "calico" or spotted underclay. (See analysis of soil from Ocopilco, page 43.)

These hills give way to pine and level lands 8 miles north of Quitman, which extend southward for some distance. Three miles north of Quitman there is a fall of some 50 feet to a flat, on which cypress ponds are very abundant; but southward to the Florida line the county again becomes rolling, with open long-leaf pine growth, some oak and hickory, and a little wire-grass. Cypress ponds are also numerous, and their white sand beds are covered with a muck deposit of several inches. Ferns grow luxuriantly on these lowlands. The lands of this section have a sandy soil with a yellow-clay subsoil. Limestone (Vicksburg) underlies the region, appearing only on the east of Quitman, at Blue or Mineral spring. Here, through a lime-sink, the clear water from an underground stream has found its way upward through the rock, and flows off in a regular channel into the river, affording 6,000 gallons per minute.

The wire-grass region of the northern part of the county is of the better class, or lime-sink division. The soil is sandy, with a clay subsoil, the country somewhat rolling, especially near the oak and hickory region, and the growth is almost exclusively long-leaf pine. Cypress ponds occur occasionally. The sand flats and lowlands are covered with a dense growth of saw-palmetto. Of the county area 10 per cent. is probably irreclaimable swamp land; 22.4 per cent. is under cultivation, though 37 per cent. is thought to have been cleared of its original growth. Corn is here the chief crop, its average being 43.4 acres, and that of cotton 40.1 acres per square mile.

ABSTRACT FROM THE REPORT OF R. I. DENMARK, OF QUITMAN.

The soils cultivated in cotton are the red clay, gray and sandy hummock, and pine soils.

The chief soil, commonly designated as *red clay soil*, is a gray soil with a red clay subsoil, and covers about 30 per cent. of the county, extending about 15 miles north, 30 south, 10 east, and 150 miles west. Its natural timber is red, white, and post oaks, hickory, and other hard-wood trees. This soil varies from a fine sandy to a gravelly loam, and in color from gray to yellow, orange, red, and blackish, and is 18 inches thick. The subsoil is a red clay, heavier than the surface soil, and contains soft "black gravel" and rounded pebbles, underlaid by gravel, and sometimes rock, at from 5 to 20 feet. Tillage is easy in dry seasons; the soil is early and warm, but only a portion is well drained. It is apparently best adapted to cotton and oats, but corn is also raised. About one-third of the cultivated area of this soil is planted in cotton. The plant attains a height of from 3 to 7 feet, but is most productive at from 3½ to 4 feet; it inclines to run to weed in wet seasons, and is best restrained by shallow cultivation and topping. The seed-cotton product per acre of this soil, when fresh, is from 1,000 to 1,500 pounds, the lint rating in market as middling. After six or eight years' cultivation (unmanured) the product is from 500 to 600 pounds of seed-cotton, of which about 1,545 pounds make a 475-pound bale of lint, which rates one or two grades below that from fresh land. The most troublesome weeds are beggar-weed, crab-grass, and in localities cockleburs. Very little of this land now lies turned out. It washes badly in some localities, but no serious damage is done, except to the valleys, which are injured 5 per cent. Hillside ditching and horizontalizing are very successful in checking this.

The second quality of soil bears yellow pine, and is designated as *pine land.* It extends from 50 to 100 miles to the north, northeast, and northwest. The soil is a fine sandy loam, varying in color from whitish-gray to yellow and brown, and is from 3 to 6 inches thick. The

subsoil is heavier than the surface soil, and contains soft "black gravel" and rounded pebbles, underlaid by clay at from 1 foot to 3 feet. This pine land is easily tilled in any season, and the soil is early and warm, but ill drained. It is best adapted to oats, sweet potatoes, and vegetables; but one-fourth of its cleared area is planted in cotton. The plant attains a height of from 3 to 4 feet, and the seed-cotton product per acre of fresh land is from 500 to 800 pounds, of which 1,365 to 1,425 pounds are needed to make a 475-pound bale of lint, which rates as good middling. After five years' cultivation the product is from 300 to 500 pounds, and 1,425 to 1,545 pounds are required for a 475-pound bale of lint, the staple rating one or two grades below that from fresh land. The most troublesome weed is crab-grass. Very little of such land once cultivated now lies turned out. The soil does not readily wash or gully on slopes. Washing is successfully checked by horizontalizing and hillside ditching. This pine land is now attracting attention, and will ultimately be brought into cultivation.

Cotton is shipped, as soon as ready, by rail to Savannah at $3 50 to $4 per bale.

LONG-LEAF PINE AND WIRE-GRASS REGION (LIME-SINK DIVISION).

(Counties of Screven, Bulloch,* Dodge, Dooly, Wilcox,* Worth, Lee,* Dougherty,* Baker, Early,* Miller, Decatur,* Thomas,* Mitchell, Colquitt, Brooks,* and Lowndes.)

SCREVEN.

Population: 12,786.—White, 6,173; colored, 6,613.

Area: 720 square miles.—Woodland, all; oak, hickory, and pine uplands, 97 square miles; pine barrens (wire-grass), 5 square miles; lime-sink (wire-grass) region, 618 square miles.

Tilled lands: 77,143 acres.—Area planted in cotton, 21,716 acres; in corn, 24,154 acres; in wheat, 69 acres; in oats, 3,502 acres; in rye, 7 acres.

Cotton production: 8,166 bales; average cotton product per acre, 0.38 bale, 537 pounds seed-cotton, or 179 pounds cotton lint.

Screven county, lying between the Savannah and Ogeechee rivers, has a surface generally rolling or undulating, though somewhat hilly in places, and all well timbered. The sandy lands, clay subsoil, and long-leaf pine growth of the wire-grass region covers nearly the entire county. Oak, hickory, and pine lands occur on the northeast corner and in a narrow offshoot from the main belt on the northwest, as well as along the borders of the creeks and rivers southward, where their width is from half a mile to one mile. The growth is chiefly long-leaf pine, with some oak and hickory. White marls and limestone underlie the entire county, and over this northern section siliceous shell-rock, buhr-stone, and flint are abundant in fragments on the surface or in beds several feet thick.

Lime-sinks are found in a narrow section of country extending from Millen in a northeast course to Mill Haven, some of them being quite large and deep.

The uplands in the vicinity of the rivers and Brier creek are better than those in the interior; the growth is also better, the long-leaf pine not being so prominent. The underlying marls outcrop in the high bluffs along the streams with a thickness of many feet, and are easily reached for purposes of fertilization of the land or conversion into slack lime. The beds of red and yellow clays that overlie these marls are in many places uncovered by the gradual slope of the uplands, and afford, by their admixture with the sand of the hills, areas of good farming land. These yellow-loam uplands extend southward in broken areas along the Savannah river into Effingham county, the growth changing somewhat.

The lands of the greater portion of the county are of the better class of pine and wire-grass lands, with usually yellow clay at depths of from 6 to 18 inches, though quite a proportion has yellow sandy subsoils. Long-leaf pine is almost the exclusive upland timber, and "turpentine farms" have largely utilized this pitchy growth. The trees stand at distances of from 50 to 100 or 200 feet apart, have little undergrowth, and the "turpentine boxes" cut into the sides of the tall bare trunks can be seen over large areas.

On the west, near the Ogeechee river, is a prominent point (Parramore's hill) 144 feet above the river, composed of sandstone (presumably equivalent to the Grand Gulf of Mississippi). The rock also outcrops in the bank of the river, but is too soft for building purposes. The sample of soil from these wire-grass lands taken for analysis (see page 48) does not represent the best class.

There are in various parts of the county hills of deep white sand, very unproductive, and fortunately covering but small areas. Sylvania, the county-seat, is situated on one of these sand-hills, which also is part of the ridge separating the tributaries of the two rivers. Of the area of the county 3½ per cent. is irreclaimable swamp. The bottom lands of the Savannah and Ogeechee rivers are wide and very rich, but more or less subject to overflow. The soil is a dark sandy loam, covered with a dense bottom growth.

Brier creek, in its lower and eastern course, has also rich valley lands, containing a very large amount of decayed vegetation (see analysis, page 49). These lands are largely under cultivation, though rather subject to overflow. The water of the creek is dark and blackish, as is also that of the smaller streams and flats.

A number of the ponds of the northeastern corner of the county were drained and cleared and put under cultivation before the war. Mobley's pond, the most noted of these, is 7 miles in circumference, and was put in cultivation at a cost of about $10,000. Large crops were produced for a number of years, but it was abandoned finally because of the great injury done to the lungs of laborers by the fine dust of the soil, apparently formed from siliceous sponge spicules, as explained on page 44 of the general part.

In the lower half of the county there are abundant small flats or cypress and bay ponds having other low swamp trees and gallberry bushes along the margins. The noted "Georgia bark", or *Pinckneya pubens*, is a prominent growth of the smaller streams.

Screven county is sparsely settled with an average of eighteen persons per square mile. Lands under cultivation embrace 16.7 per cent. of the total county area. Corn is the chief crop, its average being 33.5 acres, while that of cotton is 30.2 acres per square mile, or 28.2 per cent. of the tilled land. The average product per acre is quite high, far above the counties of the central belt and the majority of those of the metamorphic region, the county ranking thirtieth in the state.

ABSTRACT FROM THE REPORT OF HON. GEORGE R. BLACK, OF SYLVANIA.

The surface of the country is partly level, partly hilly, partly rolling, the soil varying from sandy to stiff pebbly, with clay subsoil, and, along the rivers, stiff clay soil.

The bay bottom lands produce cotton finely for three or four years after clearing and first cultivation, but afterward the cotton, growing off finely in the spring, is almost certain to be affected with rust before maturity. The sandy lands do not produce well, but the more generally prevailing stiffer sandy soils with clay subsoils produce cotton finely, especially when fertilized. All are, however, at times subject to rust, but never so badly as to prevent the production of a fair crop. The cotton lands of the county may be classed as (1) clay lands on the margin of the rivers and clay and sand mixed; (2) stiff sandy lands with clay subsoil; (3) sandy lands and reclaimed pond bottoms. The good and poor lands are intermixed throughout the county in bodies of from 10 to 100 acres, though some soils, in general aspect and growth of timber, extend for many miles.

The *stiff sandy lands* comprise one-tenth of the lands of the county. The soil, a brownish clay loam, is 1 foot deep; the subsoil is a clay without intermixture of sand, as is the surface soil, and is underlaid by clay. The lands contain hard, rounded black gravel. The growth is red oak, hickory, and dogwood. These lands are easily tilled in all seasons, are early, warm, and well drained, and produce crops of corn, cotton, sweet potatoes, sugar-cane, chufas, oats, rye, pease, and rice. Wheat is successfully raised here, but is subject to rust. Cotton comprises one-half the crops, grows from 2 to 6 feet high (the higher the better), and runs to weed on newly cleared land and in wet seasons. Bolling is facilitated by the use of fertilizers. Fresh lands produce from 500 to 750 pounds of seed-cotton per acre, the lint rating as low middling. Cultivation of eight years reduces the yield to 400 pounds, and the lint is not quite so good. The staple depends upon the seasons and the variety of the cotton. Crab-grass is the most troublesome weed. One-third of the land once under cultivation now lies turned out, and is generally thereby recuperated. These clay loam lands are generally so level that they do not wash.

The sandy, and in some places gravelly, *pine and wire-grass lands*, having clayey and leachy subsoils at from 1 foot to 2 feet, comprise about 75 per cent. of the lands of the county. They contain much black ferruginous gravel, are underlaid by clay indefinitely, and are best adapted to corn, cotton, potatoes, pease, etc. Cotton grows 4 feet high, yields 500 pounds of seed-cotton per acre on fresh land and 350 pounds after eight years' cultivation, the lint rating as low middling in each case. With 200 or 400 pounds of guano per acre the yield with good management is 1 or 2 bales per acre. Ten per cent. of the lands now lie turned out, and are much improved. They wash readily, but no damage is done. Hillside ditching is practiced successfully to a limited extent.

The *white sandy uplands*, from 5 to 10 feet deep and underlaid by clay, comprise but 10 per cent. of the county lands, and are found in spots of not more than a mile in each direction. The growth is black-jack oak and pine. The soils are best adapted to pease, corn, chufas, and potatoes, though 10 per cent. of the crops is cotton, which grows only 1 foot or 2 feet high. The yield on fresh land is only 100 pounds of seed-cotton per acre, or 300 pounds after eight years' cultivation, the lint from each rating as good ordinary.

The *black mucky lands* of Brier creek are similar to the bay lands already mentioned as regards cotton. For corn they are famous, producing very fine crops for a long series of continuous years without fertilization. They are from 1 foot to 3 feet deep, underlaid by sand or pipe-clay; growth, cypress and black gum chiefly.

ABSTRACT FROM THE REPORT OF R. D. SHARPE, OF PARRAMORE'S HILL.

The lands of the county may be classed as sandy or loamy, with stiff or clay bottoms and red gravel land, oaky ridges and flats, river bottoms, and drained ponds.

The *clay subsoil lands* comprise 60 per cent. of the county area, with a growth of long-leaf pine, post oak, and round- and pronged-leaf black-jack. Red gravel is abundant in the soil. The land is best adapted to cotton and corn. Cotton grows 4 feet high, and is most productive at 5½ feet, but runs to weed in wet seasons and when planted late unless topped in full moon in July and August, and yields 300 pounds of seed-cotton per acre the first and 400 pounds the second year, 1,365 pounds of the second year's growth making 475 pounds of lint, the staple then rating one grade higher, viz, low middling. One-third of this land now lies out. It washes readily on slopes, injuring the valleys 40 per cent., and is successfully checked by horizontal plowing, though only a few farmers attempt it.

The *sandy lands*, with a growth of pine, black-jack, sweet gum, and wire-grass, comprise 50 per cent of the lands, and yield 300 pounds of seed-cotton per acre the first and 350 pounds the second year, 1,395 pounds from the latter making 475 pounds of lint. Hog-weeds are most troublesome. Twenty per cent. of the lands originally cultivated now lie turned out, and are improved 25 per cent. over original soil.

The *river bottoms*, comprising 10 per cent. of the lands of the county, have a growth of pine, water oak, hickory, black gum, maple, ash, poplar, and cypress. Cotton on this land comprises 20 per cent. of the crops, grows 5 feet high, is most productive at 4 feet, and yields 500 pounds of seed-cotton per acre the first and 600 pounds the second year, 1,544 pounds of the first and 1,485 pounds of the second making 475 pounds of lint, rating respectively as good ordinary and low middling. Crab-grass, butter-weed, and crowfoot-grass are most troublesome. Ten per cent. of the lands originally cultivated now lie out and are much improved.

Shipments of cotton are made to Savannah, as fast as ginned, either by Savannah river boats or by railroad, as most convenient. Freight by boat is 75 cents per bale; by railroad, 25 cents per 100 pounds.

BULLOCH.

(See "Wire-grass and pine barrens region".)

DODGE.

Population: 5,358.—White, 3,506; colored, 1,852.

Area: 580 square miles.—Woodland, all; oak, hickory, and pine uplands, 30 square miles; lime-sink (wire-grass) region, 417 square miles; pine barrens (wire-grass), 133 square miles.

Tilled lands: 23,471 acres.—Area planted in cotton, 6,002 acres; in corn, 9,132 acres; in wheat, 23 acres; in oats, 2,054 acres.

Cotton production: 1,916 bales; average cotton product per acre, 0.32 bale, 456 pounds seed-cotton, or 152 pounds cotton lint.

The surface of Dodge county is quite level, and is covered entirely with long-leaf pine and wire-grass, the growth being very open and the timber tall, furnishing excellent lumber. The drainage of the county is to the Ocmulgee river, the western boundary; but the streams of the eastern part of the county do not unite with it until near its junction with the Oconee, in Telfair county.

Both divisions of the wire-grass region are represented in this county. The "lime-sink" and siliceous shell-rock division comprise the lands north of a line extending from near the southwest corner to 4 miles northwest of Eastman, and thence to the northeast corner. Hard, white limestone underlies this area, and is exposed in the banks of the various streams and as far south as Abbeville, on the river, though not continuously. Siliceous shell-rock also occurs frequently. The surface of this section is undulating, and the soils sandy and gray, with clayey subsoils. Much ferruginous gravel or pebbles is intermingled with the land.

On the southeast of this area the soils are of the poorer class of wire-grass lands, and are underlaid by sandy subsoils and an argillaceous sandstone a foot or two in thickness. This latter is exposed in the excavations along the railroad.

The county is very sparsely settled, the average being but 9 persons per square mile. It is thought that about 15 per cent. of the county area has been cleared, but only 6.3 per cent. is now under cultivation, and is chiefly devoted to corn. Cotton embraces 25.6 per cent. of tilled land, and averages but 10.3 acres and 3.3 bales per square mile. It is produced more generally in the northern part of the county, and fertilizers are used extensively to increase the yield. Five per cent. of the county is irreclaimable swamp. Lumber and turpentine industries largely occupy the attention of the people.

The Macon and Brunswick railroad and the Ocmulgee and Altamaha rivers afford easy transportation to the coast at Brunswick and Darien.

ABSTRACT FROM THE REPORT OF DAVID SAPP, OF DUBOIS.

The lands of the county are all *gray and sandy,* and the growth pine and wire-grass. The crops are corn, cotton, sweet potatoes, and cane. The sandy lands are best for potatoes and cane, the gravelly for cotton and corn. Cotton grows from 2 to 4 feet high, and when planted without fertilizers it grows taller but yields less. The yield on fresh lands is from 500 to 800 pounds of seed-cotton per acre, and that from land three years in cultivation is from 200 to 500 pounds, the staple of which rates as low middling. That from fresh land rates as middling, and in both cases 1,425 pounds make 475 pounds of lint. Crab-grass gives the only trouble. None of these lands now lie turned out; they wash readily on slopes, but are too level to be much injured, but the valleys are benefited.

Cotton is shipped by railroad, from October to January, to Macon and to Savannah at 50 cents per 100 pounds.

DOOLY.

Population: 12,420.—White, 6,592; colored, 5,828.

Area: 780 square miles.—Woodland, all; oak, hickory, and pine uplands, 128 square miles; lime-sink (wire-grass) region, 652 square miles.

Tilled lands: 117,113 acres.—Area planted in cotton, 38,495 acres; in corn, 40,334 acres; in wheat, 1,569 acres; in oats, 9,522 acres; in rye, 122 acres.

Cotton production: 9,666 bales; average cotton product per acre, 0.25 bale, 357 pounds seed-cotton, or 119 pounds cotton lint.

Dooly county is somewhat rolling, especially on the west, and is well timbered throughout. The water-shed between the Atlantic and the Gulf passes through the county in a southeasterly course. With the exception of the northwest corner, the county is included in the lime-sink division of the wire-grass region. This region extends north to within 2 miles of Henderson and 10 miles west of Vienna.

Lumpkin's creek, flowing from Henderson, in the south of Houston county, southwest to Flint river below Drayton, very nearly marks the limit of the region in this section. The lands of the yellow-loam region cover the country northwest of the creek from Houston to Sumter with a thin growth of oak, hickory, and pine.

Along the river outcrops of white limestone and marls occur, and the same rock underlies the entire county. It is overlaid by the siliceous shell-rocks, whose scattered fragments are found on the surface throughout the county. The lands of this western yellow-loam region are the best in the county, and the country is more thickly settled than on the east.

The wire-grass region is very open, its growth of long-leaf pine having but little undergrowth, with only scattered patches of oak and hickory. Its sandy soils and clay subsoils have usually the brown ferruginous pebble or gravel which occurs frequently over the southern part of the state, and which is indicative of a better class of land.

Cypress swamps, with thin, sandy, and mucky soils, and gallberry flats are abundant. Irreclaimable swamps comprise 2½ per cent. of the area of the county, and only 28 per cent. of tillable lands have been cleared. Lumber interests are important. Lands under tillage embrace 23.5 per cent. of the county area, corn and cotton being the chief crops, with averages respectively of 51.7 and 49.4 acres per square mile.

ABSTRACT FROM THE REPORT OF JOHN H. WHITSETT, OF VIENNA.

The lands of this county have a sandy loam soil on a clay subsoil, with "cast-iron" pebbles interspersed through both soil and subsoil. They may be classed as dark pebbly or pimply soil, having a red clay subsoil; gray land, having a yellow sandy clay subsoil; and hummocks on Gum creek with gallberry flats.

The *dark pebbly lands* comprise about half of the county, and have a growth of pine, oak, and hickory. The soil is a fine sandy loam from 6 to 9 inches deep, and the red subsoil is underlaid at several feet by pipe-clay and sand. The land is easy to till at all times, is early, warm, and well drained, and is best adapted to cotton. The crops of the county are cotton, corn, wheat, oats, and rice; also sugar-cane and potatoes. Cotton comprises one-third of these crops, and yields from 600 to 750 pounds per acre on fresh land, or from 400 to 600 pounds on land cultivated ten years, 1,425 pounds of seed-cotton making 475 pounds of lint, rating about the same from old and fresh land, only the former "motes" worse in ginning. The cotton grows from 3 to 6 feet high, and runs to weed during wet seasons in the earlier stages of its growth. Deeper cultivation and the application of phosphatic manures prevent this tendency and favor bolling. The troublesome weeds are crab-grass and burdock. The lands "turned out" comprise but a small proportion, and lie only on the long slopes. When again taken in they do not produce remunerative crops unless precautions are taken against washing.

The *gray sandy uplands* cover about one-fourth of the county and have only a pine growth. The soil is a whitish-gray, fine sandy loam, from 4 to 6 inches deep, and has a yellow sandy clay subsoil. These lands are easy to till in all seasons, are late, cold, and ill drained, and best adapted to oats, though one-third of the crops is of cotton. Two feet is the usual height of cotton, which produces 500 pounds of seed-cotton per acre on fresh land, or 300 pounds on lands cultivated ten years. The lint of this latter is not as long as from fresh land, and is "nappy" and productive of motes. Crab-grass is most troublesome. One-fourth of this land now lies out. It washes readily, doing serious damage, and injures the valleys by its sand floods to the extent of 20 per cent. Horizontalizing and hillside ditching meet with moderate success in checking the damage.

The *creek bottoms*, or hummock lands, have a small area in this county. They have a growth of oak, hickory, ash, and cypress. The soil is a fine sandy loam, 10 inches deep, over a yellowish clay and sand; is easy to till, late and cold and ill drained, and is best adapted to corn. Very little cotton is planted on these lands, as they do not last long, though producing well at first. Cotton grows to a height of from 5 to 7 feet, yielding 1,000 pounds of seed-cotton per acre when fresh, but after three years' cultivation from 300 to 500 pounds. The land seems to sink or lose its friability. The staple also is shorter, and the seed does not mature well on old lands. Crab-grass is the chief enemy to crops on this land. The lands gully readily on slopes, and the valleys are very much injured by the washing, the product being often decreased 10 per cent.

Cotton is shipped by wagon to Hawkinsville, and thence to Savannah by railroad at $1 80 per bale.

WILCOX.

(See "Wire-grass and pine barrens region".)

WORTH.

Population: 5,892.—White, 4,068; colored, 1,824.

Area: 710 square miles.—Woodland, all; pine barrens (wire-grass), 40 square miles; lime-sink (wire-grass) region, 670 square miles.

Tilled lands: 37,526 acres.—Area planted in cotton, 12,157 acres; in corn, 13,671 acres; in wheat, 101 acres; in oats, 4,687 acres; in rye, 7 acres.

Cotton production: 2,893 bales; average cotton product per acre, 0.24 bale, 339 pounds seed-cotton, or 113 pounds cotton lint.

Worth is a well timbered and open county, included almost entirely in the lime-sink division of the wire-grass region, and having its characteristic lands and growth. The surface is quite level on the east and rather rolling or undulating on the west, and is drained chiefly by the headwaters of the Withlacoochee river. White limestone outcrops on Flint river, on the northwest; buhr-stone in fragments and in masses is found chiefly on the western half; while on the east there are occasional beds of white quartz pebbles.

Cypress ponds and flats, with their mucky sands, are also frequent in the various sections, but chiefly on the south and east. The irreclaimable bottoms and swamps comprise over 1 per cent. of the county area.

But about one-fifth of the county has been cleared, the remainder being still covered with a forest growth. The county is sparsely settled, there being but eight persons to the square mile. Lumber interests largely absorb the attention of the people, and but 8.3 per cent. of the county is under tillage, or but little over 6 acres per inhabitant. Corn has the largest acreage, that of cotton averaging but 17.1 acres per square mile, or 32.4 per cent. of tilled land.

ABSTRACT FROM THE REPORT OF W. A. HARRIS, OF ISABELLA.

The county is covered with a *light gray sandy soil*, 8 inches deep, with a subsoil of red clay and a growth of long-leaf pine. The soil is covered with black ferruginous gravel, and salamander hills are seen everywhere over the surface.

The crops of the county are cotton, corn, oats, sugar-cane, rice, potatoes, and tobacco. Cotton comprises one-half the crops, grows 3 feet high, and runs to weed during wet spells in July and August, to prevent which it is topped about the first of August. Fresh lands yield 550 pounds of seed-cotton per acre, 1,545 pounds of which make 475 pounds of lint, the staple rating as middling. Cultivation of six years reduces the yield to 350 pounds, 1,425 pounds of which, if ginned clean, make 475 pounds of lint, the staple being one grade lower. Hog- or rag-weeds are most troublesome. One-fourth of the land now lies turned out, and when taken in again it yields 20 per cent. less than when fresh. The bottom lands are much injured by the sands from the hills, and very little effort is made to check the damage.

As fast as ginned cotton is shipped by railroad to Albany.

LEE.

(See "Central cotton belt".)

DOUGHERTY.

(See "Central cotton belt".)

BAKER.

Population: 7,307.—White, 1,742; colored, 5,565.

Area: 340 square miles.—Woodland, all; oak, hickory, and pine uplands, 32 square miles; lime-sink (wire-grass) region, 308 square miles.

Tilled lands: 66,767 acres.—Area planted in cotton, 28,670 acres; in corn, 20,606 acres; in wheat, 68 acres; in oats, 5,614 acres; in rye, 54 acres.

Cotton production: 4,870 bales; average cotton product per acre, 0.17 bale, 243 pounds seed-cotton, or 81 pounds cotton lint.

Baker county is well timbered, and drains into Flint river, its eastern border, and is almost entirely covered with wire-grass. The entire county is underlaid by a white limestone (Tertiary), which outcrops in a number of places. Buhr-stone or siliceous shell-rock overlies it, and is found in fragments on the surface. The surface of the country is very open and level, though undulating in places, and is interspersed with cypress ponds and small open lakes.

On the north, along Kiokee and Ichawaynochaway creeks, the yellow-loam region extends a short distance into the county; but the county is generally covered by the sandy soils and clayey subsoils of the lime-sink division of the wire-grass region, with much ferruginous brown gravel.

Of the area of the county 7 per cent. is irreclaimable swamps, 49 per cent. is said to have been cleared, and 30.7 per cent is under tillage, chiefly in cotton, which averages 84.3 acres per square mile, a number exceeded by but thirty-seven counties of the state. Its average product per acre is, on the contrary, extremely low, and is, with that of Glynn county, the lowest in the state.

Cotton is shipped either by boat to Albany, Columbus, or Bainbridge, or hauled to Camilla and shipped by rail to market.

ABSTRACT FROM THE REPORT OF J. H. HAND, M. D., OF LEARY, CALHOUN COUNTY.

The lowlands of the county comprise first bottoms of the creeks and Flint river, hummocks, and cypress swamps, interspersed with lagoons. The uplands are principally pine, mixed with oak lands, with generally a gray sandy soil having a clay subsoil, red or yellow in color and mixed with sand; some of it is porous, light, and loose.

The summers of this section are long, and if the crop is planted the last of March or before the 20th of April and well cultivated a good crop may be matured by the 20th of August.

The *reddish clay lands* are best for cotton, though they comprise not more than one-tenth of the lands. The growth is oak, hickory, gum, ash, and short-leaf pine. The soil is a tenacious clay loam, 10 inches in depth, with a crawfishy subsoil, varying from red to yellow or whitish. It contains soft black gravel and rounded and angular pebbles, and is underlaid by limestone at from 10 to 40 feet. The land is early, warm, and well drained. The crops of the county are cotton, corn, oats, cane, potatoes, pease, and rice. Cotton yields on fresh lands from 400 to 800 pounds of seed-cotton per acre, or from 300 to 600 pounds after ten years' cultivation. In the latter case the lint is lighter, softer, and not so long. Cotton grows from 24 to 60 inches, is most productive at 36, and runs to weed on new land in wet summers, which tendency is restrained by deep culture, but bolling is not thereby favored. Crab-grass is most troublesome; other weeds are coffee-weed, beggar-weed, and cockleburs. One-tenth of these red lands now lies turned out.

The *gray sandy pine lands* cover three-fourths of the county. The soil is 10 inches deep, with a heavier clay subsoil, and is underlaid at from 10 to 40 feet by limestone. The land contains ferruginous gravel, is easy to till, early and late, and colder than the red land. It is best adapted to oats, corn, pease, and potatoes, though one-third is planted in cotton. The latter grows from 2 to 4 feet high, and yields from 500 to 700 pounds of seed-cotton per acre when the lands are fresh, or from 250 to 500 pounds after ten years' cultivation. About one-fourth of this land now lies turned out, and produces nearly as well as when fresh.

EARLY.

(See "Central cotton belt".)

MILLER.

Population: 3,720.—White, 2,327; colored, 1,393.

Area: 240 square miles.—Woodland, all; lime-sink (wire-grass) region, all.

Tilled lands: 23,527 acres.—Area planted in cotton, 8,980 acres; in corn, 9,229 acres; in oats, 4,188 acres; in rye, 10 acres.

Cotton production: 1,905 bales; average cotton product per acre, 0.21 bale, 303 pounds seed-cotton, or 101 pounds cotton lint.

Spring creek, flowing through the center of Miller county southward, is the principal stream. The surface of the country is very level, open, and well timbered, with an almost exclusive growth of long-leaf pine and wire-grass.

Limestone (Tertiary) underlies the county, as shown by the lime-sinks which occur frequently, and by the siliceous shell-rocks which are found in fragments and in masses over the surface. These latter rocks have less of the flinty character that belongs to those of counties northward. They disintegrate more readily, forming a fine, gritty powder, varying from white to red. But few fossil shells are found in them, their former presence being usually indicated by the cavities they have occupied, which show the surface outlines of the fossil. Large masses of these light siliceous rocks occur at Colquitt, the county-seat, both on the ridge in an old excavation for a

proposed railway and on the banks and in the bed of Spring creek. The lands of the county have generally fine sandy soils and clayey subsoils, and the roads are hard and firm. Cypress swamps are abundant, and patches of "blue-jack" oak occur frequently on the north. Of the area of the county 5 per cent. is of irreclaimable swamp and 15.3 per cent. is under cultivation, chiefly in corn and cotton, the average of the latter being 37.4 acres per square mile, about the same as in Lowndes county. The character of the lands and methods of culture are similar to that of the adjoining counties.

Cotton is hauled in wagons to Bainbridge, in Decatur county.

DECATUR.

(See "Southern oak and pine uplands".)

THOMAS.

(See "Southern oak and pine uplands".)

MITCHELL.

Population: 9,392.—White, 4,189; colored, 5,203.

Area: 500 square miles.—Woodland, all; lime-sink (wire-grass) region, all.

Tilled lands: 72,367 acres.—Area planted in cotton, 30,265 acres; in corn, 23,806 acres; in wheat, 51 acres; in oats, 8,721 acres; in rye, 17 acres.

Cotton production: 5,559 bales; average cotton product per acre, 0.18 bale 261 pounds seed-cotton, or 87 pounds cotton lint.

Mitchell county is well timbered, and is very generally level and open, its surface being interspersed with lime-sinks, cypress, and other ponds. Limestone (Tertiary) is found outcropping in a number of places. Good lime is made of this rock at a kiln 7 miles south of Camilla. Buhr-stone fragments also abound, though not as plentiful as in counties north of this.

The drainage is partly to the Flint river, the western boundary, and partly southward with the headwaters of Ocklockony river.

Eight miles east of Camilla the country becomes rolling, with a yellow ferruginous gravel in the soil. The ridges between the streams are rather abrupt on the west side, but gradually fall to the east. The marshes or low grounds have here a poor sandy land, as indicated by the dense growth of the pitcher-plant.

The county is sparsely settled. Of its area 3 per cent. is of irreclaimable swamp; but about one-third has been cleared, and 22.6 per cent. is under cultivation, chiefly in cotton. The average of this crop is 60.5 acres per square mile, and it embraces 41.8 per cent. of the tilled lands. In average product per acre the county ranks very low, and only above two counties of the state.

ABSTRACT FROM THE REPORT OF W. W. SPENCE, OF CAMILLA.

The lands of the county are much the same throughout, and comprise *level pine land*, with light sandy soil and a clay subsoil. There is some bottom land, the nature of which varies but slightly from the above. The soil of the uplands is 6 inches deep, with a red sandy clay subsoil and very little gravel; is easy to till in all seasons, and early, warm, and well drained. The crops of the county are cotton, corn, sweet potatoes, and oats. Cotton comprises half of these crops, and yields on fresh land 600 pounds in the seed per acre. On land ten years under cultivation the yield is 300 pounds. Cotton grows 3 feet high, and runs to weed in wet seasons, to avoid which it is best to select prolific seed and manure highly. Crab-grass interferes most with growing crops. None of the land lies turned out, and no washings occur on these level lands.

The Savannah, Florida, and Western railroad affords means of transportation of cotton to Savannah at about $2 50 per bale.

COLQUITT.

Population: 2,527.—White, 2,422; colored, 105.

Area: 550 square miles—Woodland, all; pine barrens (wire-grass), 8 square miles; lime-sink (wire-grass) region, 542 square miles.

Tilled lands: 13,006 acres.—Area planted in cotton, 2,958 acres; in corn, 4,375 acres; in wheat, 8 acres; in oats, 2,198 acres; in rye, 12 acres.

Cotton production: 736 bales; average cotton product per acre, 0.25 bale, 354 pounds seed-cotton, or 118 pounds cotton lint.

Colquitt county is entirely within the wire-grass region. The surface is undulating, the ridges lying usually north and south. On the lowlands and between the ridges saw-palmetto is often more abundant than wire-grass.

Moultrie, the county-seat, is located on a low sandy ridge which forms the divide between Ocklockony and Little rivers. This ridge extends 3 miles north of the village, and has an undergrowth of black-jack. On the west of Moultrie ferruginous sandstone and gravel occurs on the ridges, giving to some of the lands a reddish character. The pitcher-plant grows luxuriantly on the lowlands of this section.

The irreclaimable swamps of the county comprise 1 per cent. of its area. The country is very sparsely settled, and has an average of but 5 persons per square mile. Its tilled lands average but a little more than 25 acres per square mile, or 4 per cent. of the county area, and of these 21.3 per cent. is in cotton, whose average is 5.4 acres per square mile, or a little more than 1 acre per inhabitant. Corn has a larger acreage, its average being 8 acres per square mile.

ABSTRACT FROM THE REPORT OF J. B. NORMAN, OF MOULTRIE.

The lands of the county have *fine sandy soils*, 18 inches deep, and yellow or red subsoils. The growth of the county is pine, white oak, chincapin, sweet gum, sumac, and grape-vines. The soil contains brown pebbles, and is underlaid by clay at from 3 to 6 feet. The crops are cotton, corn, rice, sweet potatoes, field-pease, oats, chufas, etc. Cotton grows from 2 to 5 feet high, and is most productive at 3½ or 4 feet. It runs to weed on rich lands in wet seasons, and is restrained by the use of fertilizers. Fresh land yields 500 pounds of seed-cotton per acre, 1,425 pounds of which make 475 pounds of lint, rating from ordinary to middling fair. After five years' cultivation the yield is from 300 to 400 pounds. Crab-grass and cocklebur are most troublesome. Not much of the land now lies turned out, neither does it wash much.

As fast as ginned cotton is shipped to Thomasville at $2 per bale.

BROOKS.

(See "Southern oak and pine uplands".)

LOWNDES.

Population: 11,049.—White, 5,412; colored, 5,637.

Area: 470 square miles.—Woodland, all; pine barrens (wire-grass), 261 square miles; lime-sink (wire-grass) region, 209 square miles.

Tilled lands: 53,373 acres.—Area planted in cotton, 17,664 acres; in corn, 20,016 acres; in wheat, 64 acres; in oats, 9,945 acres; in rye, 32 acres.

Cotton production: 4,981 bales; average cotton product per acre, 0.28 bale, 402 pounds seed-cotton, or 134 pounds cotton lint.

The surface of Lowndes county is level, or in places undulating, and is drained by the Withlacoochee and the Allapaha rivers, respectively the west and east boundaries, and which unite with the Suwanee in Florida. The county is well timbered, and the view for great distances between the pine trees is uninterrupted by undergrowth. The country north of Valdosta, and reaching a few miles south, is interspersed with many cypress swamps and palmetto flats, while in the southern part of the county an interesting feature is a limestone region, interspersed with large lakes (filling probably huge lime-sinks) upon the uplands. Of these lakes Ocean pond and Long pond are the largest. This region, which reaches into Florida on the south, is uneven in its surface, due probably more to the lime-sink and lake depressions than to erosion, for its altitude is apparently not above that of the country northward.

The fresh and clear waters of the lakes maintain a constant level, though not the same in all, that of Ocean pond being 60 feet above that of Lake pond. In two or three instances they seem to be connected by underground passages. Moss and aquatic plants abound in great profusion, often making it difficult to propel a light boat through the water. There is very little swamp land around the lakes, the sandy uplands extending nearly or quite to the water's edge, in this respect resembling the lime-sinks. A few of what were once shallow lakes have gradually become dry, their dense growth of water moss, etc., becoming changed by decay into muck. One of these dry muck ponds covers about 200 acres with a depth of from 2 to 4 feet, with a number of large logs buried in the mass. The growth of this lake region embraces a very large variety, occurring, however, only in spots on the uplands, viz, long-leaf pine (everywhere and in greatest abundance), red oak, hickory, dogwood, beech, water and white oaks, magnolia, short-leaf pine, sweet and black gum, some poplar, red bay, scrub live oak, small post oak, narrow-leaf and round-leaf white oak, persimmon, cherry, white and scrub hickory, black-jack, sassafras, black haw, "granny graybeard," "queen's delight", sumac, sweet myrtle, wild mulberry, wild plum, wahoo, and very large chincapins. From the lake region the country gradually falls eastward to the river.

On the Withlacoochee river the outcropping limestone is covered by 10 feet of siliceous claystone, with quantities of chalcedony of every form and color. Over this are 40 feet of clay and soils. The siliceous rocks are found also at Troupville, and at the water's edge are of a peculiar and apparently semi-siliceous character, easily cut, and hard on drying. The rocks on the bluff are flinty in character, with interior white concretions (siliceous Vicksburg).

The lands of the southern part of the county are of the better class of the wire-grass region, viz, the "lime-sink" division. The soils are sandy, the subsoils a yellow clay. The water of the streams, dark or often nearly black from decayed vegetation, is in strong contrast to that of the ponds or lakes.

The lands of the northern part of the county are less fertile, the soils and subsoils sandy, and belong to the wire-grass region proper. Brown or yellow ferruginous pebbles are in abundance in this section of the county, and especially on the low water-divide between the two rivers.

The bottom lands along the rivers are very wide, and are covered with a luxuriant growth of saw-palmetto. The soils are sandy and dark on the surface. Of the county area 1 per cent. is irreclaimable swamp, and 17.7 per cent. tilled land, chiefly in corn. Cotton comprises 33.1 per cent. of the tilled land, and averages 37.6 acres per square mile.

ABSTRACT FROM THE REPORT OF N. B. OUSLEY, FORMERLY OF THIS COUNTY, BUT NOW OF FORT VALLEY, HOUSTON COUNTY.

The seasons in this section are sufficiently long to insure a crop. The lands are level in some parts of the county, in others rolling. The lands are classed as follows: (1) Sandy soils and clay subsoils at from 6 to 12 inches; (2) sandy soils and clay at from 6 to 10 feet from the surface; (3) flat lowlands, not swamps. The first of these is most important, and is called "*clay land*"; comprises 55 per cent. of the area of the county, and has a growth of long-leaf pine. The subsoil is sometimes of a yellowish, sometimes reddish color. When turned up it bakes hard and is impervious to water. The land contains much black gravel, and is inclined to bog in wet and becomes hard in dry seasons, but is early and warm. The crops are cotton, corn, oats, sugar-cane, and sweet potatoes. These lands are best for oats.

Fresh land yields from 500 to 800 pounds of seed-cotton per acre, and from 25 to 40 per cent. less after six years' cultivation. The amount required for 475 pounds of lint varies with the kind of seed. The lint is finest from fresh lands, but no difference in price is made. Only crab-grass is troublesome. Very little land now lies turned out. Old lands lying out for a year or two are covered with dog-fennel, and are as good as when first cleared. The lands do not wash readily, and if a little care is taken, by hillside ditching or other means, no damage results. The valleys are usually benefited by the washings of the uplands.

The *gray, fine sandy and gravelly lands*, from 6 to 10 feet in depth to a clay stratum, comprise about 30 per cent. of the area of the county. Cotton occupies 60 per cent. of these lands, grows from 2½ to 5 feet high, and yields from 400 to 800 pounds of seed-cotton per acre on fresh lands, and from 30 to 50 per cent. less after six years' cultivation.

The *lowlands of the flats* have a pine timber growth, a dark sandy soil from 6 to 10 feet deep, with an underlying clay. From 600 to 1,200 pounds of seed-cotton per acre is the product on fresh lands, and from 500 to 1,000 pounds after six years' cultivation. These lands are on a dead level, and no washing occurs.

As soon as cotton is ginned and baled it is shipped by railroad to Savannah at 85 cents per 100 pounds.

WIRE-GRASS AND PINE BARRENS DIVISION.

(Embraces the counties of Johnson, Jefferson,* Washington,* Laurens,* Montgomery, Emanuel, Bulloch, Effingham, Tattnall, Bryan,* Liberty,* McIntosh,* Wayne, Appling, Coffee, Telfair, Dodge,* Wilcox, Irwin, Berrien, Lowndes,* Ware,* and Pierce.)

JOHNSON.

Population: 4,800.—White, 3,455; colored, 1,345.

Area: 260 square miles.—Woodland, all; oak, hickory, and pine uplands, 50 square miles; pine barrens (wire-grass), 210 square miles.

Tilled land: 39,762 acres.—Area planted in cotton, 11,705 acres; in corn, 14,288 acres; in wheat, 404 acres; in oats, 1,826 acres; in rye, 107 acres.

Cotton production: 3,323 bales; average cotton product per acre, 0.28 bale, 405 pounds seed-cotton, or 135 pounds cotton lint.

Johnson county lies partly in the oak, hickory, and pine upland and partly in the wire-grass and long-leaf pine region, the latter covering fully three-fourths of its area. Oconee river, the western boundary, and other streams which flow southward to the Altamaha, drain the surface.

The northern and western portions of the county are hilly and rolling, and belong to the oak, hickory, and pine region (see description, page 41), and comprise the best lands of the county. White marl is found some miles west of Wrightsville, the county-seat, and in other places. At present it is not utilized.

The wire-grass region covers all that portion of the county lying east and south of Wrightsville, and extends 5 miles northward toward Sandersville and several miles west. The surface is underlaid by sandstone, exposed 2 feet or more in thickness near Wrightsville. The soils are of the usual dark sandy character, rather stiff, and with sandy subsoils.

The swamps subject to overflow and irreclaimable comprise 5 per cent. of the county.

Lands under tillage comprise 23.9 per cent. of the total area, and are chiefly in corn. Cotton embraces 29.4 per cent. of the tilled lands, and has an average of 45 acres per square mile.

ABSTRACT FROM THE REPORT OF JAMES H. HICKS, OF WRIGHTSVILLE.

The uplands in the upper part of the county, partly of gray oak and pine land and partly inclined to red clay, are all productive. The middle and lower portions (piny woods) have a light gray soil, which produces well when fertilized. Cotton on lowlands is subject to rust, in fact hardly ever escapes it, and is also liable to be killed by early frosts before maturity. The light gray sandy piny-woods soils and the red clay, freely intermingled with sand, are the chief cotton lands, the former extending east, south, and southwest to the county limits.

The soil, a *fine sandy loam*, is 20 inches in depth. The subsoil is of rather red clay, sometimes mixed with gravel, and contains brownish, hard, rounded pebbles underlaid by joint clay, then rock, at 50 feet. The land is easily tilled, unless in very dry seasons, and produces corn, cotton, and sweet potatoes. Oats are coming into prominence, but the land is best adapted to oats, potatoes, and corn. Cotton comprises two-fifths of the crops, grows 2½ feet high, and yields 300 pounds of seed-cotton per acre, the lint rating as middling to fair on fresh and good ordinary to middling on old lands. Crab-grass is most troublesome. One-fourth of these lands now lies out, and produces pretty well for two or three years when again cultivated. These lands wash readily, suffering serious damage, and very little effort has been made to check the injury, though hillside ditching is moderately successful.

The *red clay soils* of the northern part of the county comprise one-third of the lands, and have a growth of oak, hickory, and pine.

The *brownish clay loam soil* has a thickness of 2 feet and a heavier mahogany clay subsoil, and contains hard white gravel and rounded pebbles. It is early when well drained, and rather difficult to till in wet weather. Cotton grows to a height of 2 feet, runs to weed with too much rain and manure, and yields from 400 to 600 pounds of seed-cotton per acre, the lint rating as strict middling. Cultivation of six years reduces this yield to 400 pounds, and the staple is somewhat shorter. Crab-grass and cocklebur are the chief enemies to the crop. One-tenth of this land now lies out, but after a rest of several years it produces very well, especially if fertilized. It is seriously damaged by washing and gullying, and the valleys are also slightly injured. Hillside ditching meets with only partial success.

Cotton is carried, as fast as ginned, to Tennille, on the Central railroad, by wagons, and is thence sent to Savannah at 40 cents per 100 pounds.

JEFFERSON.

(See "Central cotton belt".)

WASHINGTON.

(See "Central cotton belt".)

LAURENS.

(See "Central cotton belt".)

MONTGOMERY.

Population: 5,381.—White, 3,510; colored, 1,871.

Area: 720 square miles.—Woodland, all; pine barrens (wire-grass), all.

Tilled lands: 29,211 acres.—Area planted in cotton, 2,356 acres; in corn, 10,231 acres; in wheat, 142 acres; in oats, 4,904 acres; in rye, 9 acres.

Cotton production: 852 bales; average cotton product per acre, 0.36 bale, 516 pounds seed-cotton, or 172 pounds cotton lint.

Montgomery county is divided by the Oconee river, which flows southward and unites with the Ocmulgee on the boundary-line, forming the Altamaha river. The surface of the country is rolling on the north and more level southward.

Along the eastern side of some of the streams are low banks or ridges of white sand deposits from one-half to a mile wide, having a low growth of scrub oak and little or no grass, entirely unproductive. They have an elevation of about 50 feet above the streams. Over a large portion of the county the lands are a dark sand loam with yellow sandy subsoil, quite compact. Saw-palmetto is prominent on the lowlands. In some places the subsoil is a clay, but this is rather an exception.

The uplands, covered with the yellow ferruginous gravel or pebbles peculiar to southern Georgia, are said to be the most productive. Two per cent. of the upland area is too broken for successful cultivation.

The bottom lands on the Oconee river are wide and densely covered with a growth of hickory, maple, poplar, cypress, etc. The trees are draped with the long, hanging moss (*Tillandsia usneoids*). These lands are subject to overflow, and are not much under cultivation. The soil is a deep black sandy loam, rather marshy. From these bottoms there is a rise of 15 or 20 feet to the uplands. The irreclaimable swamp lands comprise 4 per cent. of the county area.

The country is sparsely settled (an average of seven persons per square mile), and the country people devote their attention largely to the cutting and shipment of pine lumber down the Oconee and Altamaha rivers to Darien, where it is sold for European markets. The turpentine industry is also largely followed.

Lands under tillage embrace 6.3 per cent. of the county area, and are very largely devoted to corn. Cotton acreage forms but 8.1 per cent. of the whole, and averages 3.3 acres per square mile.

ABSTRACT FROM THE REPORT OF E. M'RAE, OF MOUNT VERNON.

The most productive lands of the county are the stiff river swamps, but the larger portion of them is subject to overflow. Cotton grows very well on the *pebbly uplands*, but not on the light sandy and pine lands. The growth of the level uplands is invariably long-leaf pine. The crops are corn, cotton, sugar-cane, sweet potatoes, oats, and a little wheat and rye. The uplands are best adapted to oats, corn, pease, and potatoes. Cotton comprises only one-eighth of the crops planted. The most productive height of the cotton stalk is 2½ and 3 feet. It runs to weed in excessively wet weather unless topped in the month of August. The yield is generally from 700 to 800 pounds per acre on fresh lands and 200 after ten years' cultivation. From old lands 1,545 pounds are required for a bale of 475 pounds, the staple becoming inferior. One-tenth of the land now lies turned out, and the greater portion is growing up in old-field pine. When again taken in, this land produces well for several years. The lands do not gully or wash much. Crab-grass is most troublesome. Cotton has not been cultivated in this county to any extent heretofore because of other industries, such as stock-raising and lumbering. It is now on the increase, and under the present system of culture, with favorable seasons, is found to be profitable.

Shipments are made, from December to March, generally to Savannah, at $2 per bale.

EMANUEL.

Population: 9,759.—White, 6,660; colored, 3,099.

Area: 1,040 square miles.—Woodland, all; pine barrens (wire-grass), all.

Tilled lands: 46,439 acres.—Area planted in cotton, 10,749 acres; in corn, 24,300 acres; in wheat, 950 acres; in oats, 3,957 acres; in rye, 33 acres.

Cotton production: 3,669 bales; average cotton product per acre, 0.34 bale, 486 pounds seed-cotton, or 162 pounds cotton lint.

Emanuel, one of the large counties of the wire-grass region, is rolling and open, the growth of the uplands being almost exclusively long-leaf pine. Swainsboro', the county-seat of Emanuel county, is on a low divide between the tributaries of the Ogeechee and Ohoopee rivers. In the western and southern portions of the county the lands are underlaid by a sandstone outcropping from 5 to 8 miles west of Swainsboro' in a bluff from 18 to 25 feet, and continuous for some distance. There is a large deposit of pebbles near this place. A few miles south of this town there is an area of one-quarter of a square mile covered by a non-fossiliferous siliceous rock, which, by decomposition, yields a soft white porous mass. The siliceous rocks are also found in other places in the northern part of the county.

The soils are sandy and dark from decayed vegetation; the subsoil is usually a yellow sand. Four per cent. of the county area is irreclaimable swamp, and but little of the lowlands is under cultivation. The county is thinly settled (nine persons per square mile), and but 7 per cent. of the area is under tillage. The lumber and turpentine industry receives largely the attention of the people. By the introduction of commercial fertilizers into the county the acreage, as well as the yield of cotton, has been largely increased in the last few years.

The acreage of corn is more than double that of cotton, the latter having an average of but 10.3 acres per square mile.

ABSTRACT FROM THE REPORT OF E. H. EDENFIELD, OF SWAINSBORO'.

The *uplands* only are devoted to cotton, 40 per cent. being planted in that crop. The land is rolling enough to be well drained, the climate is mild, and the summers are long, allowing the crop to mature before frost. The growth of the uplands is only pine, the soil a dark gray, coarse, sandy loam from 6 to 10 inches deep, and the subsoil a yellow sand from 6 inches to 3 feet deep, underlaid by clay, then sand-rock at from 10 to 40 feet. The lands are early, warm, and well drained, and easy to till in all seasons, producing corn, cotton, and oats; in fact, all crops, but are best adapted to those mentioned. Cotton grows from 2½ to 3 feet high, and yields on fresh lands 500 pounds of seed-cotton per acre. Cultivation of five years reduces the yield to 300 pounds, and 1,485 pounds are then required for 475 pounds of lint. The staple is inferior on old fields. May-apple and poverty-weeds are most troublesome. Not more than one acre in twenty now lies turned out. The land produces well, and even better than at first when again cultivated. No damage is done by washing.

Shipments are made, from September to January, by the Central railroad to Savannah, at 40 cents per 100 pounds.

BULLOCH.

Population: 8,053.—White, 5,797; colored, 2,256.

Area: 900 square miles.—Woodland, all; lime-sink (wire-grass) region, 21 square miles; pine barrens (wire-grass), 879 square miles.

Tilled lands: 35,626 acres.—Area planted in cotton, 9,140 acres; in corn, 15,394 acres; in wheat, 15 acres; in oats, 7,661 acres; in rice, 852 acres.

Cotton production: 3,724 bales; average cotton product per acre, 0.41 bale, 582 pounds seed-cotton, or 194 pounds cotton lint.

Bulloch county, lying between the Ogeechee and Canoochee rivers, has an undulating surface, broken and rolling in places, and lying wholly in the wire-grass and long-leaf pine region. The northern portion of the county is embraced in the "lime-sink" subdivision, the underlying limestone making the lands superior to those in the southern part. Lime-sinks are of frequent occurrence in this section. One known as the "watering hole", 5 miles northwest of Statesboro', the county-seat, is full of water to within 5 feet of the top and "has no bottom". Limestone and white marl occurs on the Emanuel county-line, and might be profitably used on these sandy lands. Siliceous shell-rock, or buhr-stone, is found in many places.

In this lime-sink section the prevailing growth of long-leaf pine is interspersed in places with oak and hickory.

The soils of the county are very generally dark and sandy, with some clay subsoils in the northern sections. The clays are, however, generally several feet below the surface. The lands of the lower portion of the county are very level, and the growth of long-leaf pine very open.

The bottom lands, where not subject to overflow, afford excellent farming lands. Gallberry bushes, cypress, and a low swamp growth occurs on the smaller streams. Six per cent. of the area of the county is irreclaimable swamp. Of land suitable for tillage, 21 per cent. is said to have been cleared.

The county is sparsely settled, with an average of 9 persons per square mile, while 6.2 per cent. only of the area is under tillage. Corn has by far the greatest acreage, that of cotton averaging 10.2 acres per square mile. Its product per acre is far above that of the other counties of the southern part of the state.

ABSTRACT FROM THE REPORT OF J. F. BROWN, OF OGEECHEE.

Most of the lands of the county are level, but occasionally in some sections they are hilly and broken.

The *dark or black alluvial soils* comprise one-fourth of the lands of the county, and have a depth of 12 inches and a heavier yellow subsoil. The land is easily tilled in all seasons, is early, warm, and well drained, and produces cotton, corn, rice, potatoes, and oats. Cotton comprises one-third of the crops planted, grows 3 feet high, runs to weed on new land, bolling being favored by high fertilization. The yield in seed-cotton on unfertilized fresh land is 400 pounds per acre; on land four years under cultivation, 250 pounds. In both cases 1,544 pounds are required for a 475-pound bale of lint, and the staple rates as good middling. Crab-grass is most troublesome during cultivation. One-fourth of the land now lies turned out, but it produces well when again taken in. It does not wash or gully.

The *sandy second bottom lands*, comprising but a small proportion of the area, extend up and down the Ogeechee river, and have a growth of oak, hickory, and cypress. The soil is fine, sandy, and gray, and is 2 feet deep; the subsoil is lighter, underlaid by sand and gravel at several feet. The land is early, warm, and well drained, easy to till in all seasons, and best adapted to corn and grain, only one-tenth being planted in cotton. Cotton grows from 4 to 5 feet high, but yields only 200 pounds of seed-cotton per acre when fresh, or 250 pounds after four years' cultivation. In the latter case the staple is inferior. The greater part of these lands once in cultivation now lies out, but produces well when again taken in.

The *gray sandy land*, covering one-third of the county, has a growth of pine and post oak, is a fine sandy, gravelly soil 6 inches deep, and has a lighter subsoil. It contains red gravel, is easy to till, early, warm, and well drained, and adapted to the general crops. One-third is planted in cotton, which grows 3 feet high and yields 300 pounds of seed-cotton per acre both on fresh land and after four years' cultivation.

Cotton, as fast as it is ginned and packed, is shipped by the Central railroad to Savannah, at 30 cents per 100 pounds.

EFFINGHAM.

Population: 5,979.—White, 3,228; colored, 2,751.

Area: 420 square miles.—Woodland, all; savanna, 76 square miles; pine barrens (wire-grass), 292 square miles; lime-sink (wire-grass) region, 52 square miles.

Tilled lands: 22,747 acres.—Area planted in cotton, 1,767 acres; in corn, 9,337 acres; in rice, 1,970 acres; in oats, 2,096 acres; in rye, 11 acres.

Cotton production: 686 bales; average cotton product per acre, 0.39 bale, 552 pounds seed-cotton, or 184 pounds cotton lint.

Effingham county lies between the Savannah and the Ogeechee rivers, the dividing ridge being very near the latter, and is well timbered with long-leaf pine, the surface of the country being quite level and open. Along the Savannah river, in the upper part of the county, there is a low ridge, the soil of which is dark gray with a clay subsoil, on which the pine is associated with a black-jack undergrowth. This belt extends to Sister's Ferry, from which place northward along the river white limestone and marls outcrop similar in many respects to that of the counties on the north. From the ferry southward along the river, and southwest to the corner of the county, are the pine flats of the coast region, with bay and cypress swamps interspersed through the open level lands.

The sandy wire-grass lands extend from Springfield west to the Ogeechee and east to within 1 mile of the Savannah, the growth of which is very open, the country quite level, and the soil sandy, with a yellow sandy subsoil. On the northwest are the better class of wire-grass lands, with thin clay subsoils and underlying limestone.

Ten per cent. of the area of the county is irreclaimable swamp, and but 8.5 per cent. is under tillage, chiefly in corn. Cotton has an average of but 4.2 acres per square mile. The marls of the upper part of the county show the following composition: Carbonate of lime, 28.4; phosphoric acid, 0.075 per cent.

Lumbering is a prominent industry, as the rivers furnish easy transportation to the coast by rafts or by steamboats.

ABSTRACT FROM THE REPORT OF O. E. SMITH, OF EGYPT.

The lands of the county are classed as sandy and hummocks. The latter are found near the rivers, and have a growth of red oak, hickory, and walnut.

The *sandy lands*, interspersed with gallberry flats and gum ponds, cover nine-tenths of the county, and have a growth of long-leaf pine and black-jack. The soil is coarse sandy, 4 inches deep, with a yellowish sandy subsoil, somewhat clayey. It is easy to cultivate, early, warm, but ill drained, and is best adapted to corn, oats, and potatoes. The crops of the county are, in addition to these, cotton, upland rice, and West India sugar-cane. Cotton comprises one-tenth of the crops, grows 3½ feet high, runs to weed in very wet seasons, which is prevented by better drainage, and yields 600 pounds of seed-cotton per acre on fresh land, 1,485 pounds of which make 475 pounds of lint and rates as middling. Land ten years under cultivation yields 300 pounds of seed-cotton per acre. The lint is then not so good, and 1,840 pounds of seed-cotton are required for 475 pounds of lint. Crab-grass is most troublesome. One-eighth of the land now lies turned out, and after a rest produces well for a few years. The lands wash readily, but no damage is done.

Shipments of cotton are made every week during the picking season by steamboat to Savannah at 75 cents per bale.

TATTNALL.

Population: 6,988.—White, 5,014; colored, 1,974.

Area: 1,100 square miles.—Woodland, all; pine barrens (wire-grass), all.

Tilled lands: 23,166 acres.—Area planted in cotton, 2,618 acres; in corn, 10,991 acres; in wheat, 8 acres; in oats, 4,802 acres; in rice, 376 acres; in rye, 19 acres.

Cotton production: 964 bales; average cotton product per acre, 0.37 bale, 525 pounds seed cotton, or 175 pounds cotton lint.

Tattnall county, lying between the Canoochee and Altamaha rivers, is divided diagonally by the Great Ohoopee river, flowing south into the latter river. The county is entirely within the long-leaf pine and wire-grass region, and the surface of the country is quite level on the south, but rolling on the north and middle, Reidsville, the county-seat, being situated on a high sandy hill.

The county is rather sparsely settled (6 persons per square mile), and the people are not apparently much devoted to agriculture, as only 3.3 per cent. of its area is under tillage, averaging 3.3 acres per person. Corn and oats are the chief crops, the acreage of cotton being 11.3 per cent. of the tilled lands, and averaging but 2.4 acres per square mile.

Lumber and turpentine industries chiefly occupy the attention of the people, the rivers affording transportation to the Atlantic coast markets by rafts and by steamboats.

The bottom lands have sandy soils of a deep black color on the surface, from decayed vegetation. In many places this muck is quite thick.

B. H. Clifton, of Perry's Mills, says of these uplands:

Fresh wire-grass land will yield about 200 pounds of seed-cotton per acre without fertilizers, and after a few years' cultivation will average 10 bushels of corn per acre and about 200 bushels of potatoes.

John Hughey, of Reidsville:

This is a pine woods county. The land is sandy and dark, with yellow sand subsoil, and is best adapted to sea-island cotton. Cotton comprises one-third of the crops, and yields 600 pounds of seed-cotton the first and second years after clearing. Shipments are made by wagon to the nearest railroad station, or by boat down the Altamaha river.

BRYAN.

(See "Coast region".)

LIBERTY.

(See "Coast region".)

McINTOSH.

(See "Coast region".)

WAYNE.

Population: 5,980.—White, 4,060; colored, 1,920.

Area: 740 square miles.—Woodland, all; pine barrens (wire-grass), 239 square miles; pine flats, 501 square miles.

Tilled lands: 8,766 acres.—Area planted in cotton, 331 acres; in corn, 4,243 acres; in oats, 2,188 acres.

Cotton production: 119 bales; average cotton product per acre, 0.36 bale, 513 pounds seed-cotton, or 171 pounds cotton lint.

The county of Wayne, lying between the Altamaha and Little Satilla rivers, is mostly within the savanna and pine-flat region, which extends as far north as the Savannah and Gulf railroad. The country is flat and interspersed with many bay and cypress swamps (saw-palmetto flats), the better part having sandy lands and an open long-leaf pine growth. North of the railroad the country is higher and more rolling and the lands are better, having a sandy clay subsoil. The county is sparsely settled, with an average of 8 persons per square mile.

Ten per cent. of the area of the county is too swampy for successful tillage. But 1.9 per cent. of the area is under tillage, chiefly in corn, oats, and wheat. The acreage of cotton is small, averaging but 0.4 acres per square mile. Lumbering is one of the chief industries.

G. W. Stansell, of Jessup, thus describes the county:

The lands of the northern part are rolling and sandy, with clay subsoils, and produce good crops. Cotton is raised almost entirely along Big and Little Goose creeks, and fertilizers are largely used. The short upland staple alone is cultivated in this section. Other crops along these creeks and Satilla river do equally well under good management, 8½ barrels of sugar being the reported product from half an acre, the work of one man. Fruits do well on these uplands. The flat country south of the railroad is suitable only for rice, sugar-cane, and sea-island cotton, of which little is raised.

ABSTRACT FROM THE REPORT OF JAMES W. HARPER, OF GARDI.

The *light sandy lands* of this part of the county have a growth of yellow pine, oak, hickory, and cypress. The soil is 8 or 10 inches deep, with a yellow clay subsoil, which becomes like the surface soil when cultivated, and contains soft gravel and sometimes large pebbles. The crops are corn, oats, sweet potatoes, sugar-cane, and cotton. The land is early when well drained, and produces 800 pounds of seed-cotton per acre when fresh and 400 pounds after four years' cultivation. Cotton comprises one-fourth of the crops, grows from 3 to 4 feet high, and is troubled most with "red-top" weeds. Fifteen hundred and forty-five pounds of seed-cotton make 475 pounds of lint. On rolling lands the soil washes readily, but no serious damage is done.

Cotton is shipped by railroad in November to Savannah at $1 50 per bale.

APPLING.

Population: 5,276.—White, 4,084; colored, 1,192.

Area: 1,080 square miles.—Woodland, all; pine barrens (wire-grass), all.

Tilled lands: 13,172 acres.—Area planted in cotton, 1,069 acres; in corn, 6,816 acres; in oats, 4,097 acres; in rye, 8 acres.

Cotton production: 379 bales; average cotton product per acre, 0.35 bale, 501 pounds seed-cotton, or 167 pounds cotton lint.

A low ridge or water-divide, entering Appling county from the west, separates the tributaries of the Altamaha on the north from those of the Satilla river on the south.

Appling is included in the long-leaf pine and wire-grass region proper, with its characteristic poor sandy lands, soil and subsoil. Clay sometimes is found comprising the latter, and yellow or brown ferruginous pebbles are also abundant on the surface in some localities.

The surface of the country is rather rolling and very open, the undergrowth being chiefly along the low marshy places and on streams. The county is but sparsely settled (5 persons per square mile), and the people give their attention largely to the cutting and shipment of lumber down the Altamaha river and to the production of turpentine and resin from the yellow pine timber.

But 1.9 per cent. of the county area is under cultivation, mostly in corn and oats. Six per cent. is said to be too swampy for tillage. The average of cotton is but one acre per square mile, or 8.1 per cent. of the tilled area.

J. J. Carter reports that cotton is produced chiefly in the southern portion of the county, where the land is rolling and somewhat clayey.

ABSTRACT FROM THE REPORT OF BENJAMIN MILIKIN, OF HOLMESVILLE.

The only lands devoted to cotton in this county are the *gray sandy uplands*, which are light, friable, early, warm, well drained, and easily worked, and cover the entire county, except in creeks and branches. Yellow long-leaf pine is the exclusive growth. The soil is from 4 to 6 inches deep, has a yellow sandy subsoil, slightly mixed with clay, and contains sometimes red and rough clay-like pebbles.

The crops of the county are cotton, corn, oats, sweet potatoes, sugar-cane, pease, rice, melons, and all kinds of vegetables and fruits. The sea-island or black-seed variety of cotton, which sells for two or three times as much as the short staple green-seed or upland variety, succeeds admirably. The sea breezes and salt dews are supposed to aid in its growth. The short staple does well also, producing about 600 pounds of seed-cotton per acre on fresh land and 400 pounds after three years' cultivation, the lint rating as middling and good middling. The short staple grows 3½ feet high, the sea-island 4½ feet. The stalk runs to weed in wet seasons and when too highly fertilized. This is prevented by applying a moderate amount of manure, and also by topping. The staple from either new or old lands rates equally well. The most troublesome weeds are crab-grass and a small sprangled poor-land weed.

One-tenth of the land originally under cultivation now lies out, and when again taken in does as well for the first three years as when new. The slopes of the uplands are damaged by washing, and the valleys are also sometimes injured by the deposit of sand, though in most cases the fresh material adds to the fertility of the valley lands. No effort is made to check the damage.

Shipments are made by railroad in February and March to Savannah, the freight being 40 cents per 100 pounds.

COFFEE.

Population: 5,070.—White, 4,028; colored, 1,042.

Area: 980 square miles.—Woodland, all; pine barrens (wire-grass), all.

Tilled lands: 17,618 acres.—Area planted in cotton, 1,825 acres; in corn, 6,925 acres; in oats, 5,450 acres; in rye, 5 acres; in rice, 525 acres.

Cotton production: 591 bales; average cotton product per acre, 0.32 bale, 462 pounds seed-cotton, or 154 pounds cotton lint.

Coffee county lies within the southern wire-grass region. Its surface is undulating, slightly rolling in places, on the north of the Brunswick and Albany railroad, while in general long-leaf pine is the exclusive timber, without undergrowth, the country presenting an open character.

The soil is a gray sandy loam with much ferruginous gravel, not easily washed away, and forms firm and level roads. The lowlands have a dense undergrowth of cypress and small undergrowth, are usually marshy and almost impenetrable, and the water black and mucky. The soil is covered often with a good muck, but otherwise it is white, sandy, and worthless.

On the south of the railroad the country is very level and more marshy, and saw-palmetto is abundant, mixed with sedge-grass in places. A blue clay is found at 9 feet, but above this there is little else than sand.

Sandstone seems to underlie the upper portion of the county, an outcrop 4 feet in thickness being exposed on the river bank near the railroad crossing of the Satilla river. Twenty-five per cent. of the county area is said to be irreclaimable swamp.

The county is sparsely settled, and has an average of only 5 persons per square mile. The tilled lands comprise but 2.8 per cent. of the area, and are devoted mostly to corn and oats. Cotton acreage is small, averaging but 1.9 acres per square mile. The people devote much attention to lumbering and turpentine making. The Ocmulgee and the Altamaha rivers on the north furnish easy passage for large rafts to Darien, while the Albany and Brunswick railroad carries large amounts of sawed pine lumber from the many mills along its route.

A. M. Fraser, of Hazlehurst, writes:

Most of the cotton of the county is produced in the southwest portion, where the lands are naturally more productive. In the upper part, bordering on the Ocmulgee river, the land is hilly and poor, and is best adapted to orchards and vineyards and to cattle and sheep raising. In the swamps of the river, where alluvial deposits are made to a considerable depth, corn yields from 30 to 40 bushels per acre.

ABSTRACT FROM THE REPORT OF TIMOTHY FUSSELL, OF KIRKLAND.

The upland soil does not vary much from one ridge to another, being in ridges and hills of from 1 acre to 100 acres each. On the lowlands cotton is liable to go too much to weed, and the climate being warm, it is also apt to shed badly; hence the uplands are preferred when the land is fair.

The best soils are the *clay lands* of the hills, which lie in patches and large bodies, but comprise a very small per cent. of the lands of the county. The growth is oak and yellow long-leaf pine. The depth of the soil is 2 feet, with a heavy buff subsoil, sometimes hard and rocky and quite impervious. Red sandstone underlies this at from 10 to 20 feet. The soil is easily tilled, producing corn and cotton. The lowlands are best for corn and the uplands for cotton. Cotton comprises one-third of the crops, and grows to a height of 3 feet, producing with fertilizers from 800 to 1,000 pounds of seed-cotton per acre, but after seven years' cultivation only 700 pounds under good circumstances, rating as good ordinary. Cotton from fresh land rates as middling; 1,544 pounds from old lands make 475 pounds of lint. Crab-grass gives the most trouble. One-half of these lands formerly under cultivation now lies out only because of lack of laborers. Rest improves it very much. These clay lands wash readily, doing serious damage in wet seasons, but improving the valleys.

The *open pine woods* have a sandy soil about 9 inches deep, and but little in cultivation, cotton comprising one-tenth of the crops, and producing from 400 to 500 pounds of seed-cotton per acre when fresh, but only 400 pounds the second year. One-half of these cultivated lands now lies out. The staple from old land is not as good as from fresh. Crab-grass is the most troublesome.

Cotton shipment is governed by the market. Transportation is by the Albany and Brunswick railroad to Savannah at $4 per bale.

TELFAIR.

Population: 4,828.—White, 2,666; colored, 2,162.

Area: 420 square miles.—Woodland, all; lime-sink (wire-grass) region, 12 square miles; pine barrens (wire-grass), 408 square miles.

Tilled lands: 14,124 acres.—Area planted in cotton, 2,228 acres; in corn, 6,302 acres; in oats, 2,032 acres.

Cotton production: 740 bales; average cotton product per acre, 0.33 bale, 474 pounds seed-cotton, or 158 pounds cotton lint.

Telfair county, lying between the Little Ocmulgee and Ocmulgee rivers, the latter forming the southern boundary, has a somewhat rolling surface, and is covered with an open and exclusive growth of long-leaf pine and wire-grass, except in some localities, where oak and hickory occurs. A large proportion of the uplands has a stiff, sandy soil with an abundance of rounded ferruginous pebbles, forming a better class than the sandy lands with their thin sandy subsoils. Hills of white sand frequently occur, covered only with an undergrowth of scrubby black-jack, devoid of wire-grass and unproductive.

Specimens of soil and subsoil were selected from this county for analysis as typical of the lands of the wire-grass region proper (see page 50). The yield from fresh lands is given by many practical farmers in the county at 500 pounds of seed-cotton per acre; others claim more. The lands, however, are not durable.

The irreclaimable swamp lands, with their heavy growth of timber, comprise 8 per cent. of the county area, and their soils, a black and mucky sand or loam, are deep. The waters of the small streams are also very dark from decayed vegetation.

Only about 17 per cent. of the lands of the county have been cleared, the country being rather sparsely settled (11 persons per square mile), and the lumber industry occupying a large share of the attention of the people, as in other counties of this region. The Ocmulgee and Altamaha rivers furnish easy transportation to the Atlantic coast for rafts, while river steamboats and the Macon and Brunswick railroad carry sawed lumber and other products to Macon, Brunswick, and other markets.

But 5.3 per cent. of its area is under tillage, chiefly in corn, cotton, and oats. Cotton averages 5.3 acres per square mile.

ABSTRACT FROM THE REPORT OF I. F. M'RAE, OF LUMBER CITY.

The *sandy lands* occupy two-thirds of the county and have a growth of pine timber. The soil is 3 inches deep, with a subsoil varying from stiff to rocky and sandy. The crops of the county are corn, sugar-cane, sweet potatoes, cotton, and oats. Cotton comprises one-fourth of the crops, grows 3 feet high, and runs to weed on fresh, moist land and with heavy fertilizing unless prevented by topping. The yield on fresh land is 900 pounds of seed-cotton per acre, or 500 pounds after five years' cultivation, 1,544 pounds from old lands making 475 pounds of lint rating from low to good middling. Hog-weeds are most troublesome. One-half of the land lies turned out. These lands yield as well as when fresh when again taken into cultivation, and wash readily, but no serious damage is done.

The *pine, oak, and hickory lands* yield about 1,200 pounds of seed-cotton, making 400 pounds of lint, and rating as low middling in market. Cotton comprises one-third of the crops planted on these lands. Hog-weeds are most troublesome. One-half the lands now lies out, increasing in productiveness in proportion to the length of time lying out.

Cotton is shipped, between October and January, by railroad to Savannah at 31 cents per 100 pounds.

DODGE.

(See "Wire-grass and lime-sink region".)

WILCOX.

Population: 3,109.—White, 2,411; colored, 698.

Area: 500 square miles.—Woodland, all; pine barrens (wire-grass), 110 square miles; lime-sink (wire-grass) region, 390 square miles.

Tilled lands: 18,229 acres.—Area planted in cotton, 5,278 acres; in corn, 7,804 acres; in wheat, 6 acres; in oats, 3,086 acres.

Cotton production: 1,331 bales; average cotton product per acre, 0.25 bale, 360 pounds seed-cotton, or 120 pounds cotton lint.

Wilcox county, lying along the west side of the Ocmulgee river, is situated on the Atlantic and Gulf water-divide, the low ridge entering from Dooly on the northwest and passing southward into Irwin county. The Gulf tributaries (the headwaters of the Allapaha river) flow in a southerly course, while the small streams emptying into the Ocmulgee flow eastward. The surface of the country is on the north and middle rather rolling, but quite level on the south.

The best lands are found along the streams and on their immediately adjoining uplands, their subsoil being generally a clay under sandy soils of varying depths. Shell marls, with siliceous strata overlying, are found outcropping in the river bluff 4 miles southeast of Abbeville, the county-seat, and a few lime-sinks occur on the southwest of the village on the lowlands. The growth is largely interspersed with post oak and black-jack. All the uplands away from the streams are sandy, with ferruginous gravel, and have a yellowish sandy subsoil, though underlaid by clays. Their growth is long-leaf pine and wire-grass, with some scrubby black-jack. These lands cover the largest part of the area of the county.

Two and one-half per cent. of the county is said to be too broken for cultivation, and 8 per cent. to be of irreclaimable swamp. The county is thinly settled (6 persons per square mile), and but about 5.7 per cent. of its area is under tillage. The lumber industry occupies a large share of the attention of the population, the Ocmulgee river affording easy transportation for rafts.

Corn and cotton are the chief crops, the latter having an average of 10.6 acres per square mile and a lower product per acre than other county of the region.

ABSTRACT FROM THE REPORT OF S. D. FULLER, OF HOUSE CREEK.

The lands of the county may be classed as ash-colored hummocks, lying mostly on rivers and creeks, and having a clay subsoil; dark gray soils on creeks, and having red-clay subsoils; light sandy soils with iron-ore pebbles on the inland uplands.

The *hummocks* comprise one-tenth of the lands, and occur along very nearly the whole length of all the rivers and creeks. The growth is pine, with some oak. In the swamps themselves oak, hickory, ash, and other valuable timber are found. The soil of these hummocks is a dark fine sandy loam, or what might be termed a mixed soil, 12 inches deep, with a subsoil of stiff red or yellow clay with pebbles, becoming soft after being plowed up and mixed with the top soil. The lands are early and warm when well drained, and well adapted to cotton, corn, cane, and potatoes. Cotton comprises one-third of the crops, grows to a height of 4 feet, and yields about 800 pounds of seed-cotton per acre on fresh land. It also runs to weed on fresh lands, but the use of superphosphates checks it. This land yields from 300 to 500 pounds per acre after ten years' cultivation, and is troubled mostly with hog-weeds. Lint from fresh lands rates as middling; that from old, low middling; in each case 1,425 pounds of seed-cotton are required for 475 pounds of lint. Very little of this land now lies out, as it produces as well after resting as at first. Very little damage is done by washing.

The *dark gray gravelly and sandy soils* along the creeks cover one-fourth of the area of the county, and have a growth of pine, with some oak and black-jack. The soil has a depth of 15 inches, contains pebbles, and has an impervious yellow-clay subsoil that becomes soft after being plowed up. This land is early and warm when well drained, and well adapted to all the crops. One-third is planted in cotton, which grows to a height of 4 feet, yielding 600 pounds of seed-cotton per acre on fresh land and 500 after ten years' cultivation.

The *light sandy, pebbly soil* covers a large proportion of the county, has a growth of pine and scrub black-jack, and lies mostly off from the rivers and creeks. Its depth is 5 inches, with a light yellow sandy and pebbly clay subsoil underneath. It is also early and warm, and well adapted to all crops. Cotton grows to a height of 2 feet, yielding 400 pounds of seed-cotton per acre on fresh land; also after ten years if the land has been rested, 1,900 pounds being required for 475 pounds of lint. The land produces well after a rest, and does not wash.

Cotton is shipped, from September to January, by steamboat to Savannah at $2 per bale.

IRWIN.

Population: 2,696.—White, 2,161; colored, 535.

Area: 680 square miles.—Woodland, all; lime-sink (wire-grass) region, 71 square miles; pine barrens (wire-grass), 609 square miles.

Tilled lands: 11,658 acres.—Area planted in cotton, 1,800 acres; in corn, 4,049 acres; in oats, 3,319 acres.

Cotton production: 595 bales; average cotton product per acre, 0.33 bale, 471 pounds seed-cotton, or 157 pounds cotton lint.

Irwin county is included in the wire-grass region. The surface is broken or slightly rolling on the north and east, but falls and is more level southward. Long-leaf pine is the almost exclusive growth, between whose tall and bare trunks long views may be obtained, broken only by the undergrowth of cypress ponds or small streams.

On the east, along the Ocmulgee river, there are some good lands, but over the county generally the soils and subsoils are sandy and unproductive after a few years' cultivation.

Sandstone underlies the lands near Irwinville, and ferruginous gravel is abundant in many places, giving rise to a better class of soil.

About 15 per cent. of the area is irreclaimable swamp. The county is sparsely populated (4 persons per square mile). Much attention is given to cattle and sheep.

Only about 2.7 per cent. of the area of the county is under cultivation, and of that 15.4 is devoted to cotton, commercial fertilizers being advantageously used in its culture.

The lands are similar in character, and the methods of culture the same as in Coffee and Telfair and other adjoining counties. The Brunswick and Albany railroad affords transportation facilities to the southern part of the county, while on the east boats ply between Macon and Darien on the Ocmulgee, which also bears down rafts of lumber to the coast.

BERRIEN.

Population: 6,619.—White, 5,783; colored, 836.

Area: 760 square miles.—Woodland, all; lime-sink (wire-grass) region, 96 square miles; pine barrens (wire-grass), 664 square miles.

Tilled lands: 26,214 acres.—Area planted in cotton, 5,583 acres; in corn, 8,429 acres; in wheat, 15 acres; in oats, 8,199 acres; in rice, 398 acres.

Cotton production: 2,008 bales; average cotton product per acre, 0.36 bale, 513 pounds seed-cotton, or 171 pounds cotton lint.

Berrien county, lying between the Allapaha and Little rivers, is covered by an open growth of long-leaf pine and wire-grass. The surface of the county on the north of Nashville is rolling, the soils containing a black or brown ferruginous gravel. On the south the country is quite level, its flatness being broken only by the streams and the cypress marshes and ponds. A feature of this low land is the number of large areas of tall "pitcher-plants".

The waters of the small streams are slow and sluggish in motion, and, with those of the ponds, are colored black from decayed vegetation. The soil of these swamps and marshes is but little else than a white sand filled with rootlets and decayed vegetation, and sometimes covered for an inch or two with muck. These lands are considered worthless, though the muck might be profitably used on the farms. Fifteen per cent. of the area of the county is reported as being of these irreclaimable swamp lands. The growth is poplar, cypress, gum, titi, and pine, with occasionally a little oak and hickory.

But 5.4 per cent. of the county area is under tillage, and mostly in corn and oats, cotton being third, with an average of 7.3 acres per square mile. The county has a population averaging but nine persons per square mile.

ABSTRACT FROM THE REPORT OF HENRY T. PEEPLES, OF NASHVILLE.

The rolling as well as the flat lands of the county are well adapted to the culture of cotton, but are all thin. The lands are all sandy and dry very rapidly, and in some seasons there is a failure to get a stand at the proper time. They are very easily cultivated, and produce remunerative crops. Manuring and fertilizing add greatly to the production. The lands may be classed as chocolate, gravelly, or pimply, with a shallow subsoil shelving to the south; flat sooty, sandy soil, with a deep subsoil; high sandy lands, which in wet weather produce finely.

The *chocolate or pimply gravelly* lands are the best cotton lands, but they do not exceed one-twentieth of the area of the county. They occur in all the piny woods of the state. The soil is a fine sandy gray loam from 6 to 10 inches deep, underlaid by a hard, variegated clay, red, brown, chalk-like, and sticky. It contains red ferruginous gravel or concretions, and is early, warm, ill drained, and difficult to till in wet but easy in dry weather. The chief productions are cotton, corn, oats, pease, rice, potatoes, chufas, peanuts, and turnips. Cotton grows to a height of from 2 to 6 feet, is most productive at 3 or 4 feet, and runs to weed on fresh land. It produces on fresh land only from 300 to 400 pounds of seed-cotton per acre, but from 500 to 600 pounds after two years. The lint rates as low middling from fresh land, and one grade better from the second year's crop. "Dog-fennel" and "chicken-weed" are most troublesome. These lands wash but slightly.

The *sandy "sooty" land*, with its growth of long-leaf pine and wire-grass, is the second-grade cotton soil of the county, covering two-fifths of its area and extending over the southern portion of the state. It has a depth of 6 or 8 inches and a subsoil of compact clay, hard and variegated, with gravel at 2 feet. Its growth is mostly pine. It is easily cultivated, is early, warm, and ill drained, producing from 400 to 600 pounds of seed-cotton per acre when fresh and from 500 to 800 pounds after two years' cultivation. One-tenth of these lands now lies out, but they are very thrifty when again cultivated. They wash but little.

White sandy soil occurs in localities comprising one-tenth of the lands of the county, having a growth of pine, scrub oak, and black-jack. Its depth is only from 2 to 4 inches, and is underlaid by a stiff clay and gravel at from 2 to 4 feet. It produces from 200 to 400 pounds of seed-cotton per acre when fresh and from 300 to 500 pounds after four years' cultivation. One-tenth of this land lies out, and it recuperates very slowly. It washes readily, doing serious damage sometimes.

Cotton is shipped, as fast as ginned, by the Albany and Brunswick and other railroads to Savannah.

LOWNDES.

(See "Wire-grass and lime-sink region".)

WARE.

(See "Pine flats and coast region".)

PIERCE.

Population: 4,538.—White, 3,065; colored, 1,473.

Area: 540 square miles.—Woodland, all; pine barrens (wire-grass), 200 square miles; pine flats, 340 square miles.

Tilled lands: 9,496 acres.—Area planted in cotton, 994 acres; in corn, 4,105 acres; in oats, 2,209 acres.

Cotton production: 369 bales; average cotton product per acre, 0.37 bale, 528 pounds seed-cotton, or 176 pounds cotton lint.

Pierce county resembles Wayne very greatly in its topographical features as well as in the character of its lands. On the southeast the country is level and covered with cypress ponds and palmetto and gallberry flats; on the northwest it is slightly rolling or undulating, and the lands are better. The soils are sandy, contain ferruginous gravel, and have a yellowish subsoil more or less clayey. The growth of long-leaf pine is very open, with but little undergrowth, and wire-grass prevails everywhere.

Satilla, Little Satilla, and Hurricane rivers flow through the county in an east and southeast course, and lumber and turpentine industries absorb largely the attention of the people. The country is sparsely settled (8 persons per square mile), and but 2.7 per cent. of the lands are under tillage, chiefly in corn and oats. The average of cotton is 1.8 acres per square mile.

Irreclaimable swamps cover about 7½ per cent. of the county. Muck is very abundant on all the lowlands or swamps, and rests usually on a white sandy soil.

ABSTRACT FROM THE REPORT OF HENRY J SMITH, M. D., OF BLACKSHEAR.

The lands of the county are very much the same everywhere, with the exception of the ponds and branch bottoms. The soil is universally thin and sandy, but capable of any amount of improvement. Very little lowland is in cultivation, and the little that has been cleared has been abandoned as being very uncertain for cotton, making too much foliage and causing the bolls to rot. Even for corn and rice the same uncertainty exists because of a worm that attacks them. Both varieties, upland and sea-island cotton, do well in the uplands, except when attacked by rust and the caterpillar.

The lands suitable for cotton hardly exceed one-fifth of the lands of the county, and do not occur in very large bodies. The *fine sandy loam soil* is from 10 to 20 inches deep, has a yellowish sandy subsoil, often filled with brown pebbles (sand held by iron), and underlaid by an impervious clay stratum at from 1 foot to 3 feet. The crops of the county are corn, cotton, sugar-cane, pease, potatoes, oats, rice, ground-pease, and chufas. With fertilizers corn yields about 40 bushels per acre. Cotton comprises but one-fourth of the crops, yielding on fresh land possibly 300 pounds per acre in the seed, 1,665 pounds being required for 475 pounds of lint, which rates as middling. After four or five years' cultivation the yield would be almost nothing unless fertilizers were used.

Cotton grows tall and weedy on natural lands, but does not fruit well without manures. Fertilizers restrain the tendency to run to weed on new land and also favor bolling. Crab-grass alone is troublesome. Old lands are generally improved by rest after being worn out, and farmers prefer improving them than to taking in new. The lands are too level to suffer by washing and gullying. Oats are the favored of all crops on this land, the soil being too light and friable for such a tender plant as cotton, unless it could be filled with humus to absorb the sun's rays in summer and prevent its scorching reflection upon a growing and luxuriant cotton-plant. The effect of a few such days is sufficient to cause to fall every bloom and form from the plant.

The lumber and turpentine industries are much more remunerative, and the higher prices offered to laborers by those engaged in these industries make it almost impossible to secure farm hands at fair prices.

The railroads furnish means of transportation of cotton to Savannah, and shipments are made, as fast as ginned, at 40 cents per 100 pounds.

PINE FLATS AND COAST REGION.

(Embraces all or parts of the counties of Ware, Clinch, Echols, Charlton, Camden, Pierce,* Wayne,* Glynn, McIntosh, Liberty, Bryan, and Chatham.)

WARE.

Population: 4,159.—White, 3,015; colored, 1,144.

Area: 620 square miles.—Woodland, all; pine barrens (wire-grass), 151 square miles; pine flats, 469 square miles.

Tilled lands: 8,332 acres.—Area planted in cotton, 524 acres; in corn, 3,388 acres; in rice, 565 acres; in oats, 1,953 acres; in rye, 8 acres.

Cotton production: 158 bales; average cotton product per acre, 0.30 bale, 429 pounds seed-cotton, or 143 pounds cotton lint.

All of the southern portion of Ware county is included in the Okefenokee swamp (see page 51), and is almost uninhabitable. The upper portion of the county has a slightly rolling surface, a tall open growth of long-leaf pine, and a carpet of wire-grass. These approach to within a short distance of the swamp, when broad and flat areas of saw-palmetto appear, largely replacing the grass. The lands of the wire-grass region are stiff and sandy, with ferruginous gravel and sandy subsoils. Cypress swamps are interspersed throughout the area. The creeks which flow into the swamp on the north unite and form Suwanee river, which passes out on the west and turns southward.

The county is sparsely settled (7 persons per square mile), and but 2.1 per cent. of its area is under tillage, corn and oats being the chief crops. Cotton has an average of eight-tenths of an acre per square mile.

Two railroads cross at Waycross and furnish the means of transportation direct either to Savannah or to Brunswick.

CLINCH.

Population: 4,138.—White, 3,300; colored, 838.

Area: 900 square miles.—Woodland, all; pine barrens (wire-grass), 141 square miles; pine flats, 759 square miles.

Tilled lands: 14,346 acres.—Area planted in cotton, 1,622 acres; in corn, 5,524 acres; in rice, 1,268 acres; in oats, 3,359 acres.

Cotton production: 511 bales; average cotton product per acre, 0.32 bale, 450 pounds seed-cotton, or 150 pounds cotton lint.

The surface of Clinch county is very level and flat, and is covered with an open growth of long-leaf pine, saw-palmetto, and some wire-grass, interspersed with cypress ponds, gallberry flats, and small swamps of cassino, maple, titi, water oak, tupelo and black gums, and short-leaf pine. Eighteen per cent. of the area is irreclaimable swamp. The streams are black and very sluggish. Muck is abundant on the lowlands, and is several inches deep over a white sand bottom. The soils and subsoils of the county are sandy, and but 15 per cent. of the lands have been cleared.

The yellow long-leaf pine timber affords lumber of fine quality. The county has an average population of but 5 persons per square mile, and but 2.5 per cent. of its area is under tillage. Corn and oats are chief crops, the average of cotton being 1.8 acres per square mile. J. Tomlinson, of Homerville, reports that the greater part of the sea-island cotton is produced on the Allapaha river and Suwanoocha creek.

ABSTRACT FROM THE REPORT OF P. STOTESBURY, OF STOCKTON.

The surface of the country is very flat and level, and is not strictly uplands, neither is it what is known as lowlands. It is drained by creeks emptying into the Suwanee and Allapaha rivers. The higher lands are preferable for short staple and the lowlands for long staple, "black-seed" or sea-island. The lands are interspersed with ponds and gallberry flats. The growth is long-leaf pine, scrub oaks, saw-palmetto, and wire-grass. The soil is from 2 to 3 inches deep; the subsoil sandy, leachy, and yellow. The higher lands contain reddish-brown pebbles. The crops are long and short staple cotton, sugar-cane, pease, sweet and Irish potatoes, corn, oats, some wheat, rye, turnips, etc. This is the best oat-growing section, the lands being especially adapted to that crop. Cotton comprises one-fourth of the crops, grows from 3 to 5 feet high, and yields from 600 to 800 pounds of seed-cotton per acre on fresh lands. After five years' cultivation the yield is from 300 to 400 pounds. Crab-grass alone is troublesome. The lands do not wash, and but little now lies turned out.

Sea-island cotton is produced chiefly on the rivers and creeks. The average weight is 350 pounds to the bale.

Cotton is shipped by railroad to Savannah from October to January.

ECHOLS.

Population: 2,553.—White, 2,053; colored, 500.

Area: 400 square miles.—Woodland, all; pine barrens (wire-grass), 81 square miles; pine flats, 319 square miles.

Tilled lands: 15,785 acres.—Area planted in cotton, 3,578 acres; in corn, 5,159 acres; in oats, 1,650 acres; in rice, 106 acres.

Cotton production: 731 bales; average cotton product per acre, 0.20 bale, 291 pounds seed-cotton, or 97 pounds cotton lint.

Echols county is drained by the Suwanoochee and Allapaha rivers, both flowing southward. The lands along this latter river and in this section of the county belonging to the better class of the wire-grass region are underlaid by limestone, and have a growth of long-leaf pine, with some red oak and hickory. The surface of the country is very level.

On the east cypress ponds and palmetto flats become abundant, and wire-grass ceases almost entirely as Okefenokee swamp is approached. The surface is covered with a tall growth of long-leaf pine. The lands are not as fertile as on the west.

Of the area of the county, one-third is irreclaimable swamp. The population averages but six persons per square mile, and 6.2 per cent. of the county is under cultivation. These are chiefly in the western part, and are devoted to corn, cotton, and oats. Cotton has an average of 8.9 acres per square mile.

Sea-island cotton is chiefly cultivated, the bales being about 350 pounds weight. This variety is not as prolific as the short staple, and hence perhaps the low productiveness that returns show.

ABSTRACT FROM THE REPORT OF JOHN HERNDON, OF STATENVILLE.

The *gray and sandy lands* are the best in the county. The growth is pine, with some red oak and hickory. The soil is 15 inches deep, and produces corn, cotton, oats, sweet and Irish potatoes, and ground and field-pease. One-half the crops is of cotton, and chiefly of the sea-island or long-staple variety. The yield is from 800 to 1,000 pounds per acre on fresh land and from 600 to 700 pounds after three years' cultivation. The lint rates as middling upland. Short-staple upland cotton grows from 2 to 3 feet high; sea-island from 4 to 6 feet. The latter should be topped on the first of July to favor bolling. The weed most troublesome is "dog-fennel". None of this land lies out for more than one year, as even that short time greatly improves it. No damage is done by the small amount of washing to which this soil is liable.

Cotton is shipped as early as the first of November, by railroad, to Savannah at $3 per bale.

CHARLTON.

Population: 2,154.—White, 1,794; colored, 360.

Area: 1,060 square miles.—Woodland, all; all in pine flats region and Okefenokee swamp.

Tilled lands: 5,077 acres.—Area planted in cotton, 258 acres; in corn, 1,980 acres; in oats, 684 acres; in sweet potatoes, 179 acres; in rice, 47 acres.

Cotton production: 62 bales; average product per acre, 0.24 bale, 342 pounds seed-cotton, or 114 pounds lint.

A large part of Charlton county, embracing the western half, is included in Okefenokee swamp. From the eastern edge of the swamp the surface of the county rises to a low sandy ridge, about 20 feet above the swamp and about 118 above tide-water at Trader's Hill. This ridge, the Atlantic and Gulf water-divide, slopes rapidly to eastward and passes on the south into Florida. The lands are sandy, often a deep whitish sand bed, and is timbered with an open growth of long-leaf pine. The two rivers, Saint Mary's and Satilla, flowing respectively from the south and north, approaching each other to within a few miles, and, suddenly and abruptly turning to the coast, flow between high banks for the most part, Trader's Hill being located some 74 feet above tide-water. A bed of white marl is exposed in the banks of the Satilla at Burnt Fort. (For further description of the region, see page 50.) Corn and oats are the chief crops; cotton is but little planted. Lumbering, and especially turpentine-making, are the chief industries.

Shipments are made by schooner along the rivers to seaport cities.

CAMDEN.

Population: 6,183.—White, 2,091; colored, 4,092.

Area: 620 square miles.—Woodland, all; all pine flats, savannas, and live-oak and coast lands.

Tilled lands: 9,106 acres.—Area planted in cotton, 206 acres; in corn, 3,195 acres; in oats, 138 acres; in sweet potatoes, 370 acres; in rice, 2,463 acres.

Cotton production: 68 bales; average product per acre, 0.33 bale, 471 pounds seed-cotton, or 157 pounds lint.

Camden county embraces a belt of high sandy islands covered with live-oak timber, low coast marsh lands along the immediate border of the mainland, and a belt of live-oak and higher lands reaching inland to the level savannas region, the growth also fringing the streams to the foot of the Atlantic and Gulf water-shed in Charlton county. The savannas, with their level lands, interspersed with palmetto and swampy flats, cover the greater part of the county. A narrow strip of the county surface along its western border rests upon a terrace some 15 or 20 feet above the savannas. (See further description of the county in general part, page 51.) Corn, rice, and vegetables are the chief crops, cotton having an average of but three-tenths of an acre per square mile.

ABSTRACTS FROM THE REPORTS OF E. A. M'WHORTER AND JOSEPH SHEPARD, OF SAINT MARY'S.

All of the lands are level and sandy. Cotton is usually planted on the dry sandy upland, though a little is grown on reclaimed marshes. Being near the sea-coast and under the influence of the salt atmosphere, the sea-island variety alone is planted. The largest part of the county is covered with pine timber, the swamps having oak, hickory, beech, gum, cypress, etc.

The *fine silty soil* of the lowlands is devoted almost exclusively to rice; the *sandy uplands* produce cotton, potatoes, and sugar-cane. The subsoil is generally a sand, though red and yellow clays are found in places. The crops of the county are corn, rice, cotton, sweet potatoes, sugar-cane, and vegetables of all kinds. The lands produce from 10 to 15 bushels of corn per acre, and from 400 to 500 pounds of sea-island seed-cotton, or 300 pounds after four years' cultivation. Cotton grows from 4 to 10 feet high, but is most productive at from 4 to 8 feet. Running to weed is prevented by planting on rich natural land or by moderate manuring. The troublesome weeds are tea- and bitter-weed, cocklebur, Jerusalem oak, dog-fennel, and crab-grass. At least one-third of the lands now lies turned out, but produce well when again brought into cultivation. They are all too level to wash or gully.

Shipments are made in the winter by coast steamboats to Savannah.

PIERCE.

(See "Wire-grass and pine barrens region".)

WAYNE.

(See "Wire-grass and pine barrens region".)

GLYNN.

Population: 6,497.—White, 2,195; colored, 4,302.

Area: 430 square miles.—Woodland, all; all coast lands, live-oak lands, and savannas.

Tilled lands: 5,615 acres.—Area planted in cotton, 58 acres; in corn, 1,565 acres; in oats, 241 acres; in rice, 2,749 acres.

Cotton production: 10 bales; average product per acre, 0.17 bale, 246 pounds seed-cotton, or 82 pounds cotton lint.

Glynn county resembles the adjoining counties in all of its topographical and agricultural features, and their repetition is unnecessary. The county, outside of the city of Brunswick, is very sparsely populated. Corn, oats, rice, and sweet potatoes are the chief crops. There is less cotton planted here than in any other county of the state excepting the mountain counties of the extreme north. Sea-island cotton is chiefly raised, its product per acre being low.

Shipments of every kind are mostly made by ship from the city of Brunswick, which is also connected by railroad with Savannah and the interior cities.

McINTOSH.

Population: 6,241.—White, 1,546; colored, 4,695.

Area: 530 square miles.—Woodland, all; pine barrens (wire-grass), 153 square miles; pine flats, 12 square miles; savanna, 170 square miles; live-oak, marsh, and islands, 195 square miles.

Tilled lands: 8,898 acres.—Area planted in cotton, 339 acres; in corn, 2,825 acres; in rice, 4,035 acres; in oats, 354 acres.

Cotton production: 104 bales; average cotton product per acre, 0.31 bale, 438 pounds seed-cotton, or 146 pounds cotton lint.

McIntosh county in its general features resembles the adjoining county of Liberty. Along the coast the marsh and live-oak lands extend inland for several miles, while up the Altamaha river tide-water reaches 16 miles from the marshes. The tide swamp lands produce a great abundance of rice and sugar-cane.

The savanna and pine flat region covers the county westward from these marshes to the pine hills, and includes the largest part of its area. The growth of long-leaf pine is very open, as in other counties, and palmetto flats and cypress or gum ponds are also scattered throughout its area. The slightly rolling pine and wire-grass lands are found in the northwest, where the soil contains much ferruginous gravel.

Irreclaimable swamps comprise 15 per cent. of the area of the county. The soils are dark or white sands, covered with several inches of muck. The Altamaha river furnishes the means of transportation for immense quantities of timber each year from this and the counties above to Darien.

It is thought that 30 per cent. of the area of the county has been cleared, though but 2.6 per cent. is now under cultivation. Corn and oats are the chief crops. The cotton acreage is small, averaging but six-tenths of an acre per square mile. The lands are best suited to sea-island cotton. Lumbering is one of the chief industries of the county.

Darien, the county-seat, is situated 4 miles from the mouth of the Altamaha river in a large grove of live oaks. It is the chief lumber port of the South Atlantic coast, receiving its supplies by rafts floated down the river. It is not properly a cotton port, as its only means of communication with the cotton-producing counties is by the river steamboats.

William C. Wylly, of Darien, says:

There is not enough cotton made in this district to justify a report. Previous to 1865 this county had a productive interest in the sea-island cotton crop, but this has not as yet been revived, although of late there has been a growing interest and belief in the re-establishment of the old industry.

LIBERTY.

Population: 10,649.—White, 3,581; colored, 7,068.

Area: 720 square miles.—Woodland, all; pine barrens (wire-grass), 420 square miles; savanna, 166 square miles; live oak, marsh, and islands, 134 square miles.

Tilled lands: 23,047 acres.—Area planted in cotton, 2,084 acres; in corn, 8,565 acres; in rice, 4,211 acres; in oats, 3,597 acres.

Cotton production: 679 bales; average cotton product per acre, 0.33 bale, 465 pounds seed-cotton, or 155 pounds cotton lint.

Liberty county includes in its area Saint Catherine and smaller islands. Four agricultural regions are represented in the county, viz: coast marsh, live-oak lands, savannas or pine flats, and the sandy wire-grass lands.

The lands are generally level, and two of the three large divisions occupy what might be termed terraces. The marsh lands are low and but little above tide-water. The first terrace, 15 feet above these, is a level plain 15 miles wide, covered by the savannas, with their open growth of long-leaf pine and "carpet of flowers" and saw-palmetto. The live-oak lands border these savannas along the marsh and the various streams. (For description of these lands by Mr. King, and for analysis, see page 52.) Another terrace, rising quite abruptly 10 or 15 feet above this, forms a north and south line across the county, Hinesville being situated on and Walthourville below the plain. This also marks the southern limit of the wire-grass region. Its surface is more or less undulating, and the growth of long-leaf pine is very open, with very little undergrowth. Near Hinesville the terrace is covered with deep heavy sands and gravel, and is called "the gravel hills". The pine and wire-grass lands, comprising the sandy soils peculiar to the entire region, have a coarse, brown gravel, and frequently pebbles one or two ounces in weight. It is reported that the wire-grass in some places is being displaced and crowded out by a dog-fennel weed.

Of the county area 5 per cent. is under cultivation, chiefly in corn, oats, and cotton, the latter embracing 9 per cent. of the tilled lands and averaging 2.9 acres per square mile.

A report gives the sea-island cotton production in 1879 as 5 per cent. of the entire number of bales raised in the county.

ABSTRACT FROM THE REPORT OF JAMES A. M. KING, OF DORCHESTER.

The *yellow sandy soils*, from 4 to 8 inches deep, with white or yellowish sandy subsoils, are the best for cotton, being surest against rust. They comprise 1 per cent. of the lands, and extend from the Savannah to the Altamaha river and adjoining tide-water, and have a growth of live and water oaks, chincapin, hickory, pine, and cedar. The soil is compact and leachy, and is underlaid by sand for 20 feet. It is early, warm, and well drained, and is best adapted to corn as a remunerative crop. Corn, highland rice, and potatoes are the crops of the county. Cotton is planted only in small patches. Fresh lands yield 600 pounds of sea-island cotton, in the seed, per acre, and 400 pounds after six years' cultivation, the rule being to rest the land one year in three. From fresh land 1,425 pounds if ordinary and 1,780 pounds, if fine, make 475 pounds of lint, and the lint is longer and more silky than that from old, which is harsh. Sea-island cotton grows from 4 to 10 feet high, and is most productive at 6 feet, but runs to weed in wet seasons or with deep cultivation, the remedy being "wholesome neglect" or leaving it alone until as large as desired, when it must be cleaned. Weeds generally termed herbaceous plants are not troublesome. The grasses, crab, Bermuda, and nut-grass, are hard to manage in wet weather. The sea-island cotton lands are not as good as when they were abandoned at the breaking out of the war in 1861. They are too level to wash any.

The *gray, fine and coarse sandy lands*, with clay subsoils, are the second best in quality, but with too much rain, while growing, the crops suffer from rust. They are the savannas or pine flats, and comprise 50 per cent. of the area of the county. The growth is pine, water oak, cypress, gum, etc. The lands are best adapted to corn, oats, rice, and in some places to upland cotton. The cotton area is very small.

The *swamp lands above tide-water*, with their growth of cypress, water oak, gum, some ash, maple, and beech, comprise 10 per cent. of the area, have a depth of from 1 foot to 4 feet, and are best adapted to rice, and when safe from floods yield large crops of upland cotton. But little of the latter crop is planted.

The choice sea-island cotton lands are not suited to upland or short-staple cotton; therefore but little is planted. Labor is also too unreliable. I am manuring our cotton lands on the sea-coast with marsh mud, and hope to make upland cotton of the most productive kind a success in small and then in larger areas.

ABSTRACT FROM THE REPORT OF L. B. NORMAN, OF M'INTOSH.

The *fine sandy loam lands* cover two-thirds of the county, and have a growth of long-leaf pine, oak, and hickory. The soil is from 3 to 9 inches deep, with a yellow subsoil near the surface and a red clay below at from 2 to 5 feet. The crops of the county are rice, corn, potatoes, cotton, sugar-cane, pease, and oats. Cotton grows from 3 to 5 feet high, and yields on fresh lands 900 pounds of seed-cotton per acre, which makes "middling" lint. Ten years' cultivation reduces this to 200 pounds, and 1,485 pounds making 475 pounds of lint. Red-weed or horse-sorrel, brown-sedge, and crab-grass are most troublesome. The lands are much improved by lying out.

The *black swamp or hummock lands* are found in occasional strips from a quarter of a mile to 2 miles wide along the streams. They are best adapted to sea-island cotton, but very little is planted. The yield on fresh land is 1,500 pounds of seed-cotton per acre, 1,900 pounds making 475 pounds of lint. Crab-grass gives the most trouble. After five years' cultivation the yield is 1,900 pounds of seed-cotton, and the staple is better.

The railroad furnishes convenient transportation to Savannah.

BRYAN.

Population: 4,929.—White, 2,368; colored, 2,561.

Area: 400 square miles.—Woodland, all; pine barrens (wire-grass), 228 square miles; savanna, 102 square miles; live oak, marsh, and islands, 70 square miles.

Tilled lands: 15,588 acres.—Area planted in cotton, 764 acres; in corn, 5,000 acres; in rice, 4,999 acres; in oats, 1,786 acres.

Cotton production: 304 bales; average cotton product per acre, 0.40 bale, 567 pounds seed-cotton, or 189 pounds cotton lint.

In Bryan county, on the coast, the marsh and live-oak lands cover the islands and extend inland for several miles. The savannas or pine flats form the largest part of the county, and extend inland to near the north corner, the northwestern part of the county being in the pine and wire-grass country. This region widens out as it passes northeastward into the adjoining counties and into South Carolina, its limit forming a line almost north from Hinesville, in Liberty county, through Bryan.

The slightly rolling pine and wire-grass lands on the northwest occupy the terrace that passes southward from Jenks' bridge, on the Ogeechee river, into Liberty county. This terrace is 50 feet above the savannas on the north, but only about 20 feet above where it enters Liberty county. It does not present a regular front, but is merely a low and broken upland, contrasting strongly with the low and flat lands of the savannas.

The lands of the open wire-grass and pine regions are sandy, and contain much ferruginous gravel. The county has about 15 per cent. of irreclaimable swamp; the lowland growth is pine, magnolia, red bay, live oak, cedar, and cabbage palmetto. But 6.1 per cent. of the county area is under cultivation, and that mostly in corn and oats. The acreage of cotton is small, averaging but 1.9 acres per square mile. The lands are well adapted to sea-island cotton, but its culture, since 1861, has largely ceased, and turpentine making and lumbering are now the chief industries.

Tide-water extends about 10 miles above the coast marshes on the Ogeechee river, and the tide swamps are largely devoted to rice culture.

Transportation is furnished by means of the railroad to Savannah, or by boats down the rivers to the coast.

ABSTRACT FROM THE REPORT OF A. G. SMITH, OF MALDEN BRANCH.

All the land of this region may be called lowland. With the exception of the bottoms, the lands are higher along the water-courses than elsewhere. Even the pine lands are low and level, and much is sandy and poorly drained. The cotton-plant, though very fine, is often scantily fruited. Summer rains, followed by hot weather, cause shedding of bolls.

The chief cotton lands are the hummocks along rivers and creeks and the higher bottom lands. They are commonly designated *pine and wire-grass lands*, and bear a natural growth of pine and scrubby oaks. One-fourth of the region is of this kind. The soil is a fine and coarse sandy loam of a brown color, and is 8 inches thick. The subsoil is like the surface soil, except that it has a greater proportion of yellow sand. The soil is warm but ill drained, and is easily cultivated if not too wet. The chief crops of the region are corn, cotton, and rice. The soil is apparently best adapted to rice, which occupies one-fourth of the tilled area. The cotton-plant grows from 3 to 4 feet high, and is generally most productive at 4 feet. Too much rain causes it to run to weed, the remedy consisting in drainage. From 600 to 800 pounds is the product of seed-cotton per acre of fresh land. Old land produces from 400 to 600 pounds per acre, and the amount needed for a 475-pound bale varies from 1,425 to 1,545 pounds. There is no observable difference in the quality of staples from fresh and from old lands. Crab-grass in great abundance is the only troublesome weed. One-tenth of such land originally cultivated lies "turned out", and when again cultivated produces very well for two or three years.

Cotton is shipped, when ginned, mostly by wagons to Savannah.

CHATHAM.

Population: 45,023.—White, 17,494; colored, 27,529.

Area: 400 square miles.—Woodland, all; about 200 square miles of savannas and 200 square miles of live-oak and coast lands.

Tilled lands: 23,496 acres.—Area planted in cotton, 289 acres; in corn, 2,224 acres; in oats, 619 acres; in sweet potatoes, 758 acres; in rice, 8,069 acres.

Cotton production: 65 bales; average cotton product per acre, 0.22 bale, 321 pounds seed-cotton, or 107 pounds cotton lint.

Chatham county lies between the Savannah and Ogeechee rivers, and reaches the immediate coast. It is included entirely in the savanna and live-oak regions, the latter including in its limits the city of Savannah, whose parks are well shaded with the magnificent live-oak growth. The county resembles in its features the other counties of the coast belt, and a repetition is not necessary. (See general description and analysis of soil, page 52.)

The city of Savannah has several cottonseed-oil mills and cotton compresses, and probably receives, for shipment to foreign markets, the greater part of the cotton production of the state.

ABSTRACT FROM THE REPORT OF GEORGE P. HARRISON, OF SAVANNAH.

The fresh-water overflowed lands of this county are very fertile; the sea islands and uplands are devoted to cotton culture. This soil is a *gray, fine sandy loam,* 6 inches thick, and covers about one-fourth of this region, extending 100 miles north and south and 20 miles east and west. Its natural growth is live and other oaks, magnolia, sweet gum, and pine. The subsoil is an impervious, brownish clay in some places, in others it is a leachy, yellowish sand; in either case the same kind of material continues to greater depths. Tillage is easy at any time, and the soil is early, warm, and for the greater part well drained. The chief crops are rice and garden produce for the northern markets. The lowlands are apparently best adapted to rice, the sandy lands to garden produce. The most productive and usual height of the cotton-plant is 5 feet. The tendency to run to weed, whatever the cause may be, is a peculiarity of the coast region, but it prevails to a greater degree in wet seasons. The remedy consists in topping. Fresh land produces 475 pounds of seed-cotton per acre. The production of old land varies with cultivation and manuring. There is little or no difference between old and fresh land so far as the quality of staple and ratio of seed to lint are concerned. About seven-tenths of such land originally cultivated now lies "turned out", but with a little manure produces very well when again cultivated. Crab and Bermuda grasses are the most troublesome weeds.