

perhaps no part of the state which ranks higher in the production of cotton than the blue-marl lands of adjacent parts of Russell, Barbour, and Bullock counties, whose prevailing soils are light sandy loams, easily worked, possessing a comparatively high percentage of lime, by which they are rendered extraordinarily thrifty.

ABSTRACT OF THE REPORTS OF JUDGE H. D. CLAYTON, OF CLAYTON, AND DR. H. HAWKINS, OF HAWKINSVILLE.

(The region reported upon lies at the headwaters of Choctawhatchie river, and includes both uplands and lowlands; also, the Cowikee lands are described.)

No local causes influence the growth of cotton in the former region, but in the Cowikee lands the heavy dews are thought to be favorable to the growth. The upland soils are gray to red in color, and mostly sandy and porous. The gray lands are about three-fourths and the red about one-fourth of the area. The growth upon the gray land is a mixture of long-leaf pine, red, white, and post oaks, and hickory, and that on the red land the same, with the addition of walnut, persimmon, grape-vines, chincapin, buckeye, etc. The red soil is usually much stiffer than the gray, and has a subsoil of sometimes very hard clay and sand, underlaid frequently with a hard-pan at a depth of several feet.

These soils are of easy tillage at all times, and produce the usual crops, being, however, best adapted to grain, potatoes, and pease, although cotton forms at least half of the cultivated crops. The most productive height of stalk is about 3 feet. In wet seasons, and on fresh land, the plant sometimes runs to weed, but this may be checked by the free use of commercial fertilizers and by topping. The seed-cotton product of the fresh land is given at 1,000 pounds (one-third lint), this average yield of lint being estimated from the observation and experience of thirty years. The staple rates high in the market (exact grade not given). Cultivating 3 to 4 years without manure will bring down the yield to 500 pounds with a little shorter staple. Coffee-weeds are more troublesome than any other, but none will give trouble where the crop is properly worked. About a fourth of this kind of land lies turned out, chiefly because since the war the negro laborers cannot be induced to care for the land and keep the ditches cleared out either on hillsides or in the bottoms unless especially hired for the purpose, and this takes too much money from the owner of the land to justify him in so doing. On some farms, where the negroes have become attached to the place, they can by a little coaxing be induced to keep up the land.

When turned out for 10 or 15 years and grown up in old-field pine lands will produce nearly as well as the fresh lands when reclaimed. A great deal of injury is done both to the hills and the valleys by washings and gullies. When the hillsides are turned out and grow up in the pines, the valleys are improved, there being no washings from above.

The soil of the Cowikee lands is a fine sandy loam, alternating with a heavier, clayey, sometimes prairie-like loam, both more or less strong in lime. The color is usually gray or yellowish, and the subsoil is also of light color. The common growth is oak, hickory, and long-leaf pine. The three branches of Cowikee creek flow together before reaching the river. On the north side of each the land is comparatively level, and the principal growth pine; the soil, light-gray, chincapin, and hog-wallow. On these the cotton is small but very prolific, though most subject to rust after the land has been cultivated for a few years. On the south side of these streams the land is much stronger, with more lime, and produces a large cotton weed; it is also better for corn.

In wet seasons the land is rather difficult to till, but yields fine crops. Cotton occupies four-fifths of the cultivated land, and the height of stalk at which it is most prolific is from 3 to 4 feet. In wet weather the plant inclines to run to weed, but the application of commercial fertilizers will usually check this. The seed-cotton product of the fresh land is from 1,000 to 1,200 pounds, one-third lint, and the staple rates high in the markets. Six years' cultivation will bring down the yield to between 400 and 600 pounds. When properly cultivated, weeds give no trouble. About 10 per cent. of the land lies out, but it does well when reclaimed. The soil washes badly on slopes, and the valleys are injured, often to the extent of 10 per cent., by the washings from the uplands. Some slight efforts have been made to check the damage by horizontalizing, hillside ditching, etc., and with good success.

Shipments of the cotton crop are made throughout the season, usually by railroad, to the eastern markets. From Clayton the rate to Eufaula is \$1 per bale; distance, 20 miles.

#### THE FLATWOODS BELT.

This comprises a narrow strip running through the counties of Sumter,\* Marengo,\* and Wilcox.\*

##### SUMTER.

(See "Central prairie region".)

##### MARENGO.

(See "Central prairie region".)

##### WILCOX.

(See "Oak and hickory uplands, with long-leaf pine".)

#### OAK AND HICKORY UPLANDS, WITH LONG-LEAF PINE.

This region comprises wholly or in part the following counties: Sumter,\* Choctaw, Clarke, Monroe, Wilcox, Butler, Conecuh, Covington,\* Crenshaw, Montgomery,\* Bullock,\* Barbour,\* Pike, Coffee, Dale, and Henry.

##### SUMTER.

(See "Central prairie region".)

## CHOCTAW.

*Population:* 15,731.—White, 7,390; colored, 8,341.

*Area:* 930 square miles.—Oak and hickory and long-leaf pine uplands, 830 square miles; lime-hills, 100 square miles. Of the former, 475 square miles are long-leaf pine uplands and 355 square miles brown-loam uplands.

*Tilled land:* 77,182 acres.—Area planted in cotton, 31,086 acres; in corn, 25,613 acres; in oats, 3,338 acres; in rice, 38 acres; in sugar-cane, 101 acres; in tobacco, 23 acres; in sweet potatoes, 748 acres.

*Cotton production:* 9,054 bales; average cotton product per acre, 0.29 bale, 414 pounds seed-cotton, or 138 pounds cotton lint.

In Choctaw county the rocky substratum is made by the various beds of the Tertiary formation, and while these underlying older rocks have been covered with deposits of sand, pebbles, and loam of a later period, yet they are in many places sufficiently near the surface to modify the soils, and in some instances to form them outright. On account of the slight southward dip of the Tertiary beds, we find the lowest and oldest of these in the northern part of the county, while the later beds appear at the surface in succession as we go southward.

Throughout the county the higher levels of the table-lands have the brown loam to gray sandy soils of the drift deposits before named; but where these have been removed, as upon the slopes and on the borders of the lowlands, then the Tertiary rocks come to light and produce many decided soil varieties. The lowest Tertiary beds occurring in Choctaw county consist of laminated clays, usually of grayish colors, which are interstratified with sandy strata containing great numbers of marine shells, constituting marl beds. These beds occur as far south as the latitude of Butler, and, where they take part in the formation of the soils, give rise to heavy clayey soils on the one hand and to stiff calcareous loams on the other. About Butler may be seen lime-hills of this character. The growth on these hills consists chiefly of post oak, hickory, and short-leaf pine, with a few oaks of other species. Most of these trees are draped with long moss. Where the overlying sandy loams are thick the long-leaf pine becomes abundant, and on most of the sandy plateaus it is the prevailing tree.

The next division of the Tertiary, which makes its appearance south of Butler in a belt extending to Bladen Springs, is made up of aluminous sandstones and claystones, which overlie beds of dark-colored clays, interstratified with beds of greensand marl. Where the sandstones are prominent the topography is quite varied, and consists of high, steep hills, with deep, narrow ravines. The soils which depend upon this material are naturally poor, and the timber is mostly of long-leaf pine, black-jack, and high-ground willow oaks; but the calcareous deposits previously mentioned give rise to very good limy soils, where sufficiently large tracts of land level enough for cultivation can be found. In all this section between Butler and Bladen Springs the creek bottoms appear to be very productive and to contain a considerable proportion of lime, as may be inferred from the luxuriance of the vegetation and the prevalence of the spruce pine, which seems to be a lime-loving tree. The uplands between these streams have the usual sandy loam soils, and in some places the sandstones themselves form the soils, which are then almost worthless for cultivation.

South of Bladen Springs (the waters of which, like those of Tallahatta Springs, on the other side of the river, come from the Tertiary rocks just described) the country is formed of the strata of the Jackson and Vicksburg groups of the Tertiary, and are either calcareous clays, marine shell deposits, or white limestone. In places, particularly along the usually very steep slopes bordering the streams, the calcareous beds, and especially those of slight coherence, mingle with the materials of the overlying deposits, and produce the peculiar soils of the lime-hills. These vary from a stiff, limy red loam to a black soil very much like some of the soils of the central prairie belt. Unlike these, however, the lime-hill soils appear in this county only in comparatively limited patches, and the region of their occurrence has the prevailing characters of the pine uplands, the calcareous soils forming only a small proportion of the total area.

From Mr. James Hamrick, of Isney, I learn that the belt of what is called in this county "shell prairie" is about 5 miles wide, and enters the county in township 11, range 5 west, and passes southeast, leaving the county in township 9, range 3 west. These and the creek bottoms form the very best lands in the county.

All the divides and high lands of the southern part of the county have rather thick beds of drift and loam overlying the Tertiary, and the agricultural features are hence mostly independent of the latter, except along the drainage slopes.

It will be seen from what has been said that while the prevailing character of Choctaw county is that of the long-leaf pine uplands with oak and hickory, yet the most productive lands, and those which are of most importance to the cotton-planter, are the shell prairie and creek bottoms. In the adjoining counties of Clarke and Wayne, in Mississippi, the shell prairies are of the same nature, though, if anything, rather more widely distributed, and in larger bodies.

The Tombigbee river on one side of the county, and the Mobile and Ohio railroad, in Mississippi, on the other, furnish the only means of transportation for the products of the county to the distant markets.

## CLARKE.

*Population:* 17,806.—White, 7,718; colored, 10,088.

*Area:* 1,160 square miles.—Woodland, all. Lime-hills, 560 square miles; oak and hickory and long-leaf pine uplands, 340 square miles, of which 100 are brown-loam uplands and 240 long-leaf pine uplands; rolling and open pine woods, 260 square miles.

*Tilled land:* 77,186 acres.—Area planted in cotton, 33,477 acres; in corn, 28,220 acres; in oats, 5,065 acres; in tobacco, 19 acres; in sugar-cane, 200 acres; in rice, 22 acres; in sweet potatoes, 1,256 acres.

*Cotton production:* 11,097 bales; average cotton product per acre, 0.33 bale, 471 pounds seed-cotton, or 157 pounds cotton lint.

The position of Clarke county, in the angle of the Alabama and the Tombigbee rivers, is favorable to the production of a diversified topography and to the exposure of its rock structure; hence the study of its natural features is of the greatest interest. The Tombigbee receives by far the greater part of its surface drainage, for the

divide between the two rivers runs within 10 miles of the Alabama river the whole length of the county. It thus follows that its principal creeks—Bashi, Tallahatta, Satilpa, Jackson's, and Bassett's—flow west or southwest diagonally across the county. The rock strata have a gentle dip southward, and to this relation between the directions of the streams and the dip of the rocks is due one of the striking topographical features of the county, viz: that escarpments or abrupt hills are found on the southern or southeastern borders of these streams, while to the north and northwest the slopes are very gradual, often almost imperceptible.

The Tertiary strata which form the substratum of Clarke county have been covered with beds of sand, pebbles, and red loam, and the altitude of the main water-sheds, which are, in general, plateaus covered with these drifted materials, is about 500 feet above tide. The greater part of the original surface has been irregularly worn away by erosion, and especially is this the case in the lower part of the county, where the two rivers are not more than 6 or 10 miles apart. Both the Tertiary strata and the drift beds overlying them have contributed to the formation of the soils of the county, but in very unequal proportions, since the drift occupies the greater part of the surface.

The high hills which overlook and form the southern border of the drainage area of Tallahatta creek are caused by hard sandstones and claystones perhaps 200 feet in thickness. These rest upon dark-colored laminated clays and sands, which form their lower parts, and underlie also the whole region north of them to the line of Marengo and beyond. The Tallahatta hills, as they may be called, are rough and rocky, and have in general poor, sandy soils, upon which long-leaf pine and black-jack and high-ground willow oaks form the principal timber. Where the streams have cut down through these sandstones into the underlying strata the soils are often of much better character, for reasons which will appear hereafter. Usually in the region of these hills there are no good soils, and the country is very sparsely settled. Cattle, however, find very good pasturage.

North of the Tallahatta hills the lignitic clays and sands form a much more level country, whose soils, while in a great measure derived from the overlying drift beds, are nevertheless in places greatly modified by intermixtures with these older rocks. Interstratified with the clays and sands are one or two beds of shell marl containing a notable amount of greensand, and where these come to the surface a great improvement in the soil may be noticed. This improvement is most strikingly seen in the lime-hills, a belt of which crosses the county nearly east and west through Choctaw corner. The limy tracts are not always continuous for long distances, but are rather in detached bodies, except eastward near the Wilcox line, where they become characteristic. The hills are usually very steep, and the soil, in consequence, washes badly, and when left out of cultivation soon becomes disfigured by unsightly gullies. The timber is chiefly beech, but with it are many other trees, such as hickory, white oak, sweet gum, short-leaf pine, spruce pine, etc.

Southward from the Tallahatta hills (leaving out of account the superficial drift beds) the whole county is formed of beds of white limestone of varying degrees of purity, which are interstratified with thinner beds of loose shell marl. These rocks and marl beds, with one principal exception, do not play any very important part in the formation of the soils. This exception is found in the lowermost of the limestone beds, which is impure and clayey, and in places is almost a calcareous clay. Wherever this rock occurs as the surface formation, or where the surface materials are affected by it, it gives rise to a series of peculiar soils which characterize the lime-hills and shell prairies. The varieties of soil depending on this rock alone are of two kinds: a loose, black material, and a gray, waxy clay, which becomes black on the addition of vegetable matter. A mixture of this gray clay with the red-drift loam produces a stiff yellowish or mahogany soil, difficult of cultivation, but very fertile. These soils and their characteristic vegetation have been somewhat fully described in the general part (page 52).

It would be a mistake to suppose that the prairie or lime soils form the majority of the tillable lands, even where they give character to the country. The great proportion of all the soils is derived from the surface loam previously spoken of, and the limy soils are seen usually in small detached bodies, mostly at lower levels, where the superficial beds have been removed by denudation. This limestone is the matrix of the huge bones which have been found from time to time in Clarke county. Associated with it are also beds of gypsum, which is found occasionally in crystallized form in great quantities imbedded in clay. This gypsum might be profitably employed upon the lands of the sections, where it abounds. The lime-hills occur from the latitude of Coffeenville southward as far as the vicinity of Barlow bend, or over three-fourths of the county. In many places the bare white rock is exposed in great bodies, as about Clarksville, Suggsville, Cedar creek, etc.

The other limestone beds which overlie the one just described play an important part in the topography, but are not so generally concerned in the production of a peculiar soil as is the former. It is seen in a great bluff at old Saint Stephens. Portions of it, when freshly quarried, are quite soft, and are easily cut into blocks, which are used in the construction of chimneys. The thin beds of shell marl which are associated with these rocks have a local effect upon the soils. Some of them could be profitably employed on the lands which lie contiguous, but they are not generally rich enough to be shipped to distant points. An exception might be made in the case of the marl bed which occurs at the Claiborne landing, in Monroe county, and which is seen at several points on the Clarke county side. This is a shell marl, which in places contains very little else than shells, and might pay to ship. Some of the more level areas, where the limestone lies beneath the surface, are marked with shallow depressions, or lime-sinks; but this feature is not a common one in Clarke.

Of the soils produced by the surface beds of the drift it does not seem necessary to speak at this place, since they have been fully treated of in the general part of this report. All the table-lands and many other areas in Clarke have the loam soils, many of which are of excellent quality. The pebbles which so commonly underlie the surface loams usually make their appearance along the hillsides, where the table-lands break off toward the water-courses. They may be seen, for instance, about the towns of Jackson and Grove Hill, and in many similar positions.

On the water-shed between Bassett's creek and the Alabama river there are places where the gullies have encroached on each side upon the hills until only a narrow ridge now remains of the dividing plateau. From this ridge the view is unobstructed on each side, and embraces the whole width of the drainage areas of the two streams.

With reference to its prevailing timber growth, this county may be divided into several distinct belts. The northern belt is a region of oak uplands, with long- and short-leaf pine. Interspersed with these uplands are the lime-hills, with beech timber and the peculiar growth which generally characterizes bottom lands. South of this come the Tallahatta hills, occupying a belt 10 miles in width, timbered with long-leaf pine and black-jack; thence

southward, to the lower limit of the county, are alternations of oak and hickory uplands and long-leaf pine forests, the latter increasing in extent in the same proportion that the former decrease, till below Grove Hill the country has the characters of the pine uplands and rolling pine lands. Within this region are the lime-hills and shell prairies of the white limestone.

The cotton lands of Clarke county are the second bottoms or hummocks of the two rivers, and are often several miles in width, with sandy loam soils, in many cases strengthened by the washings from the calcareous uplands. The creek lands are not so generally desirable, for on the north side the soils are nearly always too sandy. On the southern side, where by reason of the marly beds the soils are often of a very superior character, the surface is usually very broken, and it is possible to cultivate only small patches; such, at least, is the case with the principal streams. The small creeks which flow into the Alabama river have generally very little bottom lands, and often steep, rocky banks. The lime-hills, both north and south of the Tallahatta hills, produce fine crops, especially the loose, black-shell prairie of the latter. The upland soils of the red loam have the same character in this county as elsewhere, and are some of the best and safest of the cotton lands.

Clarke county depends upon the two rivers for shipping its cotton to market, and the most of it goes naturally to Mobile. The freight to that point is from \$1 25 to \$1 50 per bale.

MONROE.

*Population:* 17,091—White, 7,780; colored, 9,311.

*Area:* 1,030 square miles.—Woodland, all. Undulating pine lands, 380 square miles; pine uplands, 250 square miles; brown loam or oak and hickory uplands, 130 square miles; lime-hills, 270 square miles.

*Tilled land:* 77,317 acres.—Area planted in cotton, 33,463 acres; in corn, 24,135 acres; in oats, 4,597 acres; in rice, 78 acres; in sugar-cane, 329 acres; in tobacco, 11 acres; in sweet potatoes, 920 acres.

*Cotton production:* 10,421 bales; average cotton product per acre, 0.31 bale, 441 pounds seed-cotton, or 147 pounds cotton lint.

In its geological structure Monroe county closely resembles Clarke, which adjoins it on the west. The underlying rocks throughout the county are those of the Tertiary formation, the aluminous and siliceous sandstones of the buhr-stone group occurring in the northern part of the county, while the white limestone underlies all the southern part. But the beds of sand, pebbles, and loam belonging to the stratified drift formation are spread over all these older rocks, and are concerned in the formation of the greater part of the soils.

The sandstones above mentioned form a hilly and much broken country, with poor sandy soils, on the uplands; but as the sandstones are underlaid with a dark-colored laminated clay interstratified with beds of greensand marl the valleys lying at the foot of these hills are often very productive. The whole of this region is characterized by rough, precipitous hills with long-leaf pine growth, alternating with fertile limy valleys. Notwithstanding the broken character of the country, some of the most prosperous farmers are located in this section.

In the central and southern parts of the county the topography is comparatively little influenced by the underlying rocks, and the uplands have the prevailing characters of the pine hills or rolling pine lands, and similarly with the soils, which are for the most part the sandy loams derived from the drift, present no peculiarities. Where, however, these surface materials have been partially removed, as within the drainage areas of Flat and Limestone creeks, the case is different; for the marls or limestones of the Tertiary formation are uncovered and brought in contact with the overlying loams, and thus are produced those fertile soils of the lime-hills and creek bottoms for which these localities are noted. The uplands bordering these creek lands are the usual sandy pine hills, and as these break off toward the creeks the lime-hills occur, which are usually very steep, and have comparatively little level land on top. The soils are of various colors, from gray and reddish to nearly black, usually pretty stiff, and sometimes contain shells. The bottom lands adjacent to the lime-hills are more sandy, but are usually more or less influenced by the lime of the hills, and make the best cotton lands in the county.

Below the latitude of Monroeville the county is a level or gently rolling pine woods, with occasional lime-sinks, which reveal the presence of the limestone beneath, but this rock seldom appears at the surface except along the banks of the streams. In all this region very little cotton is planted except in the lowlands adjacent to the Alabama river.

The cotton lands of Monroe county are the lowlands of Flat and Limestone creeks and the Alabama river. The uplands are generally sandy and not very productive, especially in the southern half of the county. There are some good bodies of table-land with brown-loam soil and red-clay subsoil, but these are similar to the brown-loam soils of the other counties. The marls from Flat creek, where they occur in large enough beds, might be used with advantage on the poorer upland soils, which are within convenient distance.

The agricultural characters of the Flat Creek region are shown in the following abstract.

ABSTRACT OF THE REPORT OF DR. J. M. HARRINGTON, OF NEWTOWN ACADEMY.

The lowlands of the region described are the first and second bottoms of Flat creek, a tributary of the Alabama river; the uplands are the rolling or level table-lands bordering upon the same. In the lowlands the cotton is generally later than on the surrounding uplands, on account of the cold nature of the soil in the former.

The soils described are: First, the stiff creek bottoms with adjoining sandy lands; second, the rolling lime-hills and their adjoining bottom lands; and third, the sandy uplands.

In the region under consideration about one-half of the cultivated lands are of the first kind, or creek lands. The prevailing timber is poplar, white oak, ash, beech, and sweet gum. The light soils are fine to coarse sandy, and the heavier, clayey loams sometimes quite stiff. The colors are varied, ranging from whitish to gray, brown, blackish, and black. A change of color to that of the subsoil is usually noticed at a depth of 6 inches. The subsoil is generally yellow or red, though sometimes it is of a bluish pipe-clay color, and when of the nature of a pipe-clay it is sometimes almost impervious to water. The underlying material is sand, gravel, or limestone, according to the locality. In tilling qualities the soil is difficult both in wet and in dry seasons, and is late, cold, and generally ill-drained. The crops produced upon it are corn, cotton, sweet potatoes, pease, oats, and rice. The soil is apparently best adapted to cotton, which makes about two-thirds of the cultivated crops. The lime lands occupy about one-fourth of the described area, and their natural growth is post oak, hickory, and maple. The soil is usually a heavy clay loam of a whitish, gray, buff, brown, or mahogany color, with an average thickness

to color change of 3 or 4 inches. The subsoil is generally heavier, and is underlaid with rock from 1 to 4 feet in depth. The soil is difficult of tillage in all seasons, but is early and warm, and is better suited to corn than to the other crops. Cotton makes only about one-fourth of the crop planted.

The sandy uplands form about one-fourth of the region herein embraced. The natural timber is long-leaf pine and black and red oaks. It is uniformly a fine sandy loam of whitish, gray, and other light colors, with a thickness of 2 to 4 inches down to the change of color. The subsoil is usually heavier, and contains sometimes rounded or water-worn pebbles of quartz, and is underlaid with sand or gravel. This soil is easily tilled under all circumstances, and is early, warm, and well-drained; is best adapted to corn, the cotton forming only one-fourth of the crops. The height of stalk varies from 2 to 3 feet on the pine lands to 5 or 6 on the lime-lands and in the bottoms, the most productive height being the medium.

The fresh pine lands will yield from 400 to 700 pounds of seed-cotton to the acre; the lime-hills and bottoms, from 1,000 to 1,200 pounds, and 1,545 to 1,660 pounds are needed for a 475-pound bale. The staple is low middling to good middling. By ten years' cultivation, without manure, the yield is brought down at least one-half, and the quality of the staple is slightly deteriorated. Crab-grass, cocklebur, hog-weed, and rag-weed are most troublesome. From one-third to one-fourth of the pine and bottom lands have been turned out, and at least two-thirds of the lime-hills; but the latter is hardly ever reclaimed, because it washes so badly that it is about ruined before it is turned out. The other lands, when reclaimed, produce better than when turned out, but not so well as when new. Very little effort has been made to prevent washes.

The cotton crop is shipped, as fast as baled, by boat to Mobile, the freight per bale being \$1.

#### WILCOX.

*Population:* 31,828.—White, 6,711; colored, 25,117.

*Area:* 960 square miles.—Woodland, all. Oak and hickory uplands, with long-leaf pine, 600 square miles; central prairie region, 300 square miles (of which 200 square miles are of the hills prairie character and 100 of the rotten limestone); flatwoods, 60 square miles.

*Tilled land:* 161,228 acres.—Area planted in cotton, 77,076 acres; in corn, 40,053 acres; in oats, 7,011 acres; in sugar-cane, 251 acres; in rice, 14 acres; in tobacco, 15 acres; in sweet potatoes, 1,597 acres.

*Cotton production:* 26,745 bales; average cotton product per acre, 0.35 bale, 498 pounds seed-cotton, or 166 pounds cotton lint.

Wilcox county has for its underlying rocks the strata of the lowest or lignitic subdivision of the Tertiary formation, except along the northern edge on the eastern side of the river and the northwestern corner, west of the river, where the Cretaceous rocks are found. Where the calcareous beds mingle with the overlying strata of sand and loam a stiff, sticky soil of considerable fertility is produced, the growth on which is a mixture of short-leaf pines, post oaks, etc.

In the direction of Portland the uplands are covered with the strata of the drift, but as a descent is made toward Pine Barren creek the hard limestones and other calcareous rocks are encountered, and heavy, tenacious clays make the soil. Of the quality of these clays one can best judge after passing over them with a vehicle after rains, when the mud in certain stages of drying sticks to the wheels with a tenacity that is wonderful; it is difficult even to cut it off with a knife. A belt of country similar to this is passed between Dayton and Linden, in Marengo county, as there described.

The belt of flatwoods which, in Marengo county, has been mentioned as occurring immediately south of the sandy ridge of Linden, is seen in this county also in a similar position. The underlying rocks of the flatwoods are the laminated clays that lie at the base of the Tertiary formation. These flatwoods, in Wilcox, are known only on the western side of the river, southwest of Prairie Bluff.

In the lower part of the county the other Tertiary beds come to the surface. These consist of gray and dark colored clays and sands, with which is associated a marl bed containing the mineral greensand. As a consequence, whenever these calcareous beds are near enough to affect the soil a very marked improvement is observed. The lime-hills which characterize that part of the county west of the river and above Lower Peach Tree owe their existence to these beds. The surface in this region is very broken, and the lands suffer from washes; the soils are stiff, clayey, calcareous loams of gray, reddish, and darker colors, and the timber is mostly beech, with white oak, holly, hickory, ash, poplar, short-leaf and spruce pine. This lime-hill region is bounded on the south by a line of rocky hills, which are capped with sand and clay stones and timbered with long-leaf pine and black-jack oak; but these hills in most cases lie south of the county-line, in Clarke and Monroe. The characters of all these Tertiary strata and of the country formed of them have been described in some detail under Choctaw county, and need not be repeated here.

The river-hummock or second-bottom soils of Wilcox county are probably fairly well represented by an analysis of soil from 5 miles east of Lower Peach Tree (see page 44). The uplands of Wilcox are, therefore, mostly the sandy loams of the stratified drift and loam, and many of the lowlands, not bottom lands, are rendered highly fertile by the calcareous materials of the Lower Cretaceous and Upper Tertiary formations.

The drainage is altogether by means of numerous tributaries into the Alabama river, and the surface in general is broken, with a good deal of level bottom land in the large bends and in the flatwoods and prairies of the northwest.

A large proportion of the cotton crop of Wilcox county is produced in the numerous bends of the Alabama river. Perhaps the largest of these is Black's bend, in the southwestern part of the county, long celebrated for the great quantity of cotton annually produced there. The river has almost everywhere fine first- and second-bottom lands. The limy soils in the northeastern part of the county also bring fine cotton crops.

#### ABSTRACT OF THE REPORT OF HENRY C. BROWN, OF CAMDEN.

(The region described embraces the first and second bottoms of Pursley creek, a tributary of the Alabama river, and the hilly, partly limy, partly sandy uplands of the same drainage area.)

On the lowlands, when the spring season is wet, planting is late, and the cotton does not fully mature before it is seriously damaged by the caterpillar. The uplands, on the other hand, are earlier and more easily worked, but the yield is less than in the bottoms. When the caterpillar is late in coming the yield in the bottoms will double that in the uplands. The soils described are: 1, the stiff clayey and limy lands of Pursley creek; 2, the stiff clay lands with gravel, lying upon slopes, in patches of 15 to 20 acres; and 3, the sandy uplands with red-clay subsoil.

The bottom lands are about a fourth of the cultivated lands of the vicinity, and have a growth of white oak, hickory, elm, ash, beech, magnolia, sycamore, mulberry, and walnut. The soil varies from a light sandy to a heavy clay or often prairie-like loam, with gray to nearly black color. The average thickness to a change of color is 6 inches, and the subsoil is generally of a heavier nature. The soil will sometimes bake very hard after a rain and in hot sunshine, but by proper cultivation will yield a loose soft material. The subsoil often contains limy pebbles, and is underlaid with a marl or soft limestone at varying depths. In dry seasons the soil is easy of tillage, but in wet seasons it is very sticky. It is early and warm when well-drained, and produces well all the usual crops, being best adapted to cotton, sugar-cane, and rice.

The uplands, or hummocks, form about a third of the area in the region described, and their natural growth is pine, mulberry, black-jack, etc. The soil has the usual characters of the yellow loam, and rests upon beds of sand and gravel, with clay below in many cases. It is easy of tillage under all circumstances, and is early and warm and usually well-drained. The soil is apparently best adapted to oats, pease, potatoes, and corn, only about a fourth of the area being put in cotton.

The third variety of soil is that of the sandy lands, which have a growth of long-leaf pine, and which are the typical piny woods. The soil is of whitish to gray color, with sandy subsoil, sometimes containing pebbles. Only the poorer classes cultivate this land, which, with proper manuring, may be made to yield a support. It is best suited to sugar-cane, tobacco, rice, etc., and only about a third of the crop is cotton. The height of the cotton-stalk upon these soil varieties varies from 1 to 5 feet, according to quality and to the amount of manure used. Heavy manuring and wet weather sometimes cause the plant to run to weed, when topping and close cultivation are practiced to check the tendency.

The seed-cotton product on the fresh lands varies from 800 to 1,200 pounds, and about 1,545 pounds are needed to make a 475-pound bale. The staple rates as low middling. Five years' cultivation, without manure, will reduce the yield at least one-half, probably more, but without very materially affecting the quality of the staple. The troublesome weeds are hog- and blood-weeds, cocklebur, and purslane. Very little of the best land is abandoned, but probably a third of the poorer qualities are not now under cultivation. They all improve by resting; but the piny woods are hardly thought to be worth the trouble of reclaiming after having once been turned out. There is a good deal of injury from washes, and very little effort has been made to check it. The valleys are sometimes ruined by the sands washed down upon them.

#### ABSTRACT OF THE REPORT OF FELIX TAIT, OF CAMDEN.

The lands reported lie along the Alabama river. The lowlands are the first and second bottoms of the Alabama river and the cypress swamps, which, when well drained, make the richest farming lands. The uplands are one-fifth limy, the rest sandy, and the pine woods have a very light soil. There are, so far as known, no local causes which influence the growth of the cotton-plant. The only soil described is the sandy soil, which constitutes four-fifths of the land. Upon this land the timber consists of the various species of pine and oak, with hickory, ash, elm, poplar, cedar, etc., according to the position and quality of the soil. In its physical properties it embraces many variations, from heavy to light sandy loams. The subsoil on the red lands and prairies is heavier than the soil, but on the gray or yellow pine lands it is lighter, and white rounded pebbles of quartz are by no means uncommon throughout. The soil is usually of easy tillage, except where there is much lime or clay present. Corn, cotton, oaks, potatoes, and pease are the chief crops, but the soil seems best adapted to corn and cotton.

About a third of the area is in cotton, which grows to a height of 2 to 4 feet, the largest stalks being the most productive. When there is too much rain, or when the land is put in cotton the first year after clearing, there is a tendency of the plant to run to weed, which is checked by topping and by cutting off the suckers. From 600 to 1,200 pounds is the average yield of seed-cotton of the fresh land (1,545 pounds to a 475-pound bale). The staple rates as low middling. Long cultivation reduces materially the yield, but does not change much, if at all, the quality of the staple. Hog-weeds and coffee-weeds are the most troublesome to the farmer. About an eighth of the land lies turned out. Some qualities are improved by resting; others apparently very little, if at all. The soil washes badly, and much injury is often experienced from this cause; but the valleys are not as a general thing much hurt, and only insignificant efforts have been made to stop the washings.

Shipments of cotton are made from September to January, by steamboat, to Selma or Mobile, the rates of freight varying from \$1 to \$1 50 per bale.

#### BUTLER.

*Population:* 19,649.—White, 10,684; colored, 8,965.

*Area:* 800 square miles.—Woodland, all. Oak and hickory or brown-loam uplands, 330 square miles; pine uplands, 400 square miles; hill-prairie region, 30 square miles; lime-hills, 20 square miles.

*Tilled land:* 87,010 acres.—Area planted in cotton, 35,851 acres; in corn, 24,648 acres; in oats, 7,494 acres; in sugar-cane, 338 acres; in rice, 17 acres; in sweet potatoes, 679 acres.

*Cotton production:* 11,895 bales; average cotton product per acre, 0.33 bale, 471 pounds seed-cotton, or 157 pounds cotton lint.

The underlying rocks of Butler county, except a narrow strip in the northern part of the county, which is underlaid with the Cretaceous rocks, belong to the Tertiary formation. As is the case in all the southern part of the state, this substratum of the older rocks is covered more or less completely with beds of drift, consisting of sand, occasional pebbles, and, uppermost of all, a red or brown loam, which is concerned in the formation of far the greater part at least of the upland soils. It is only at the lower levels that these underlying rocks are sufficiently near the surface to exercise any influence upon the soils, with the exception of the aluminous sandstones of the buhr-stone group, which crop out in some of the highest and most rugged hills in the lower part of the county. These sandstones give rise to very poor sandy soils, on which prevails a growth of long-leaf pine; but underneath the sandstones are gray clays with thin beds of a calcareous nature, often containing the mineral greensand; so that even in this hilly and generally poor country the slopes and creek bottoms are quite productive from the washings from these limy beds.

Below Greenville the county is generally of the pine-hills character, especially the uplands. Around Greenville there is a considerable area of red lands (often containing pebbles and fragments of brown iron ore in quantity), timbered with Spanish and post oaks, hickory, and short-leaf pine, sweet and sour gum, and some chestnut and chinquapin. The top soil is a brown loam, passing into the deep-red loam at a few inches depth. In favorable seasons this land will yield, when fresh, 1,000 pounds of seed-cotton or from 25 to 30 bushels of corn to the acre.

In the northern part of the county the beds of the Cretaceous formation are encountered, and they give rise to several very characteristic soil varieties. The rocks of this formation in Butler county are hard limestones of a yellowish color, interbedded with softer materials, which are easily removed by the action of the weather. The limestones thus undermined break off in ledges, which crop out along the slopes of numerous very steep limy hills. The soils of these hills are stiff calcareous clays, which, by intermixture with the overlying loams, produce a number of soil varieties. Within this area are small detached bodies of somewhat level land, timbered with post oaks chiefly, to which the name of post-oak-beeswax prairies has been applied. Other lands of a flatwoods character exist which are timbered chiefly with pines, and these are called beeswax-pine lands but none of them are of the same character or origin as the post-oak flatwoods of Sumter and Marengo counties, which are based upon a Lower Tertiary clay. In the northwestern corner of the county there is a small area of prairie land noted for its productiveness and fine cedar timber. This is of the same kind as the calcareous lands of that part of Wilcox county which immediately adjoins it.

In its agricultural features Butler is similar to the adjoining counties. In the lower part of the county the pine lands are generally cultivated with the use of commercial fertilizers, and the red-loam subsoil of most of these lands is well calculated to retain the manures.

The Mobile and Montgomery railroad traverses this county, and affords a means of transportation to market for the products of the county. Planters usually sell their cotton crop to the merchants at the nearest railroad station, and, for some parts of the county, it is sent to Troy, in Pike county.

#### CONECUH.

*Population:* 12,605.—White, 6,224; colored, 6,381.

*Area:* 840 square miles.—Woodland, all. Lime-hills and red lime-lands, 470 square miles; pine uplands, 120 square miles; rolling pine lands, 250 square miles.

*Tilled land:* 46,965 acres.—Area planted in cotton, 16,523 acres; in corn, 20,118 acres; in oats, 3,173 acres; in rye, 32 acres; in sugar-cane, 267 acres; in rice, 121 acres; in sweet potatoes, 652 acres.

*Cotton production:* 4,633 bales; average cotton product per acre, 0.28 bale, 399 pounds seed-cotton, or 133 pounds cotton lint.

The rocky substratum of Conecuh county is made by beds of the Tertiary formation, and over all is spread a mantle of irregularly stratified sands, clays, pebbles, and loams, constituting the southern or stratified drift. The beds of the buhr-stone group underlie the northern part of the county, and the white limestone of the Vicksburg age makes its appearance in the southern part, whence to the Florida line it is the country rock. The buhr-stone rocks consist for the most part of a series of hard aluminous and siliceous sandstones, which yield with difficulty to the leveling action of water, and hence within the region of their occurrence high rugged hills are the characteristic features, and in so far as the soils are derived from these rocks they are in general poor. These hilly areas are usually covered with a growth of long-leaf pines, with some oaks. Below the buhr-stone is a black laminated clay, interstratified with beds of a greensand marl, and the lands which lie under the hills containing this mineral are always of most excellent quality.

South of this rugged country the land is comparatively level to within 3 miles of Evergreen, where a calcareous sandstone, holding beds of fossiliferous greensand containing a large percentage of lime, outcrops from the hillsides. South of this the county is underlaid with the white limestone, which, as a rule, is so covered with the sands and other beds of the drift as to be of very little importance in the formation of the soils, except where, by a partial removal of these beds by denudation, it is brought near enough the surface to influence the loam soils overlying it. This is the case along the drainage slopes of a belt of land extending from the vicinity of Bellville southeastward toward Brooklyn. These lands lie contiguous to Murder, Beaver, and Bottle creeks, and form an interrupted strip of about 6 miles in width. Throughout this section are knolls of rather hard lime-rock of a yellow color, which make an excellent lime when burned, and which are generally quite fossiliferous. The lands below such outcroppings of lime-rock are the best in the county, and have a red-loam soil with a stiff-clay subsoil, and a natural growth consisting of sweet gum, water oak, white oak, magnolia, cedar, short-leaf pine, and spruce pine. In this area are also outcroppings of the soft white limestone which is so universally used as material for building chimneys, since when freshly quarried it can be easily cut with an ax or a saw. Lime-sinks are a characteristic feature not only of this area, but also of all the country underlaid with the limestone. The rocky knolls spoken of are not much in cultivation because of the rock fragments, but the soil is very rich and of a black color, and as the hills break off toward the lowlands there are many tracts of black limy soil. These red and black lime-lands are considered the best farming lands in Conecuh. The highlands lying between the patches of lime land are sandy, and of the usual pine-hills character.

Southward of the lime-lands the county is gently undulating piny woods, with lime-sinks, and occasionally lakes or ponds which reveal the existence of the limestone beneath the sands. This rock makes its appearance along the banks of some of the streams. As a general rule, the surface materials which overlie the white limestone are sandy, with very little clay. From the porous nature of these beds the water which falls upon them is rapidly absorbed and drained away by the underground channels with which the limestone is traversed, and thus causes very little erosion. The resulting face of the country is hence nearly level, sloping off very gently toward the southward into Florida.

From the above general account, it will be seen that, while Conecuh county has a large proportion of sandy loam soils with a growth of long-leaf pine, there are two or three belts across the county in which the calcareous matter of the underlying rocks brings about very desirable modifications of the prevailing soils, especially in the lower-lying areas. Where this marling of the soils has been effected by natural causes its good effects are apparent, and there is no reason why the greensand marls, which are to be found in several parts of the county, should not be used with profit by the farmers on their poorer lands.

The choice farming lands of this county, as may be inferred, are the red lime-lands of Murder, Beaver, and Bottle creeks, most of which have long been in cultivation, and before the war were held at high prices—\$15 to \$20

an acre. Since the war many of them appear to have been somewhat neglected, though they are still fine lands. The cultivation of cotton on the other lands in the county needs no special notice. The use of commercial fertilizers is becoming general upon such lands, not only in this but in the other counties of the state.

ABSTRACT OF THE REPORT OF REV. ANDREW JAY, OF JAYVILLA.

(This report refers to the region drained by Murder creek and the Escambia river.)

The soil varieties are: 1, the red upland soil lying on Beaver and Murder creeks, but above overflow; 2, the hummock or sandy bottoms reaching from the creeks to the table-lands, sometimes overflowed; and 3, pine lands, sandy, with clay foundation, and hilly.

Of these soils the most important to the farmer are the red uplands, though constituting only one-fourth of the area. These lands are to be found in detached bodies, interspersed with the pine lands. The usual growth is white oak, beech, ash, hickory, elm, and red oak. Most of the land of this kind has been cleared up. The soil is a light loam of reddish to blackish-red colors, 3 to 6 inches deep to a change of color, but which mixes so gradually with the subsoil that the exact depth is difficult to determine. The subsoil is of a heavier nature than the soil, is tough, but when exposed to the air it becomes pulverized and mixes readily with the surface soil, to which it seems to impart some fertility. It often contains pebbles, and rests upon rock at varying depths. This soil is easy of tillage, early, warm, and well drained, and yields good crops of cotton, corn, oats, potatoes, and pease. Since the land has become worn it seems to be best adapted to corn, oats, and pease, as the cotton rusts. As it is, however, cotton makes about half the cultivated crop. Upon freshly-cleared land the stalk attains a height of 5 to 7 feet; upon the worn land, 3 to 5 feet.

The sandy bottom lands are not described in detail. The pine hills occupy half or more of the area, and are interspersed with the creek lands, their usual growth being chiefly long-leaf pine, with dogwood and red and black-jack oaks. The soil is a light-colored fine sandy loam, 1 to 2 inches deep to a change of color; the subsoil is heavier, being a clayey loam, which is stiffer the deeper it is taken. The soil is easily tilled at all times, and is rather late and cold, but well drained. Most crops do well upon it, but cotton occupies the greater portion. The height attained depends upon the quality and quantity of the fertilizers used. When there is too much rain, there is a tendency of the plant to run to weed, which may be checked by topping or by running a furrow close to the roots.

The seed-cotton product of the fresh land is 1,200 pounds for the red lands, and from 300 to 400 pounds for the other. The staple is middling to good middling, and 1,545 pounds are needed for a 475-pound bale. The red land, after 50 years' cultivation, will bring 300 to 500 pounds, but after 5 years' cultivation of the pine land it is practically exhausted unless manure is used. With manure the yield may be brought up to a bale to the acre. The staple from the worn land is a little shorter than that from the new, but there seems to be very little difference in the proportion of seed to lint. Crab-grass is the most troublesome weed, and on the red lands cocklebur, hog-weed, and coffee-weed also give trouble. About half of the red lands lie turned out, but after a long rest of 20 or 30 years they will produce nearly as well as when new. The slopes are long and gentle, and the injury from washes comparatively slight, the valleys being often rather benefited by the settlings. The pine lands have been more generally kept up than the preceding, and only a small proportion of them has been turned out. The injury from washes is much greater with these than with the other lands. Horizontalizing and hillside ditching have been tried to a small extent, with good results where properly done.

ABSTRACT OF THE REPORT OF P. D. BOWLES, OF EVERGREEN.

The lowlands are the first and second bottoms of Beaver creek, and also the alluvial plains of Murder creek and white-oak flats with water oaks and magnolias. The uplands are the rolling and level lands with gray, limy soil, partly sandy, bordering on the bottom lands of Murder creek and Conecuh river. The greater part of this section has a red-clay subsoil. Early planting in the lowlands is frequently injured by late frosts, and cold days give the cotton "sore-shin" and otherwise retard its growth. Want of rain in June, July, and August causes more damage than anything else, except the cotton-worm. On the other hand, too much rain will produce the same effect by causing the forms and young fruit to drop off. Early frost is never feared in this locality. The soils described are: 1, gray sandy uplands, with red-clay subsoil very near the surface; 2, level lime prairie, with lime-sinks and shell mounds; 3, thin pine lands, with gray sandy loam soil.

The gray uplands in the neighborhood of Evergreen constitute perhaps three-fourths of the arable lands. When well worn the soil becomes red-colored, and the growth on such soils is of white, Spanish, and water oaks, sweet-bay, magnolia, poplar, and beech. The light soils are fine sandy loams of gray and red colors; the heavy soils, clay loams, of depths of color varying according to the length of time they have been under cultivation. The average thickness of the soil to a change of color is about 10 inches. The subsoil, as a general thing heavier than the soil, is of a deep-red color, except in the more limy spots, where the color is yellow, and frequently contains fragments of soft lime-rock, underlaid with the same at a depth of from 3 to 20 feet. About half this land is in cotton, which grows to a height of 5 or 6 feet.

The level lime prairies are found in a belt 6 miles wide extending across the county, principally in township 5. Oaks, walnut, hickory, and birch are the principal trees. The light soils are gray, limy loams; the heavier are clay loams, of gray, brown, and blackish to black colors. The subsoil is heavier than the surface soil, being a very soft yellow limestone, continuing some 3 feet to the hard limestone rock. It contains fragments of the soft lime-rock above mentioned. Tillage is rather difficult, both when too wet and when too dry; and when ill-drained the soil is late and cold. It seems to be best suited to corn, though cotton is planted upon about half of the uplands, but on very little of the lowlands. The plant grows to a height of from 4 to 7 feet, being most productive at 5 feet.

At least one-half of the county is composed of the sandy pine lands, especially the southern, northwestern, and southeastern portions. Long-leaf pine is the characteristic tree, but with it, in places, are also oaks of several species and some hickory. The soil is a fine sandy loam, with clay in places, with whitish, gray, to blackish colors, according to length of time under cultivation. The thickness is 6 to 8 inches to a change of color; subsoil rather heavier, being almost without exception yellow or red clay, containing rounded pebbles of quartz, especially along the branches. The underlying substance is either sand and gravel, or sometimes hard limestone rock at 10 to 20 feet. Tillage is easy at all times, and the soils are early and warm when well drained, which is commonly the case. This land is best suited to sugar-cane and sweet potatoes, and only about one-fourth of the area is put in cotton, which grows from 2 to 4 feet in height, being most productive at 3 feet. On new land, and when shaded or planted too close, the plant sometimes runs to weed, for which topping in July, application of fertilizers, and giving more room are the usual remedies. From 1,000 to 1,800 pounds of seed-cotton may be obtained from fresh land, and 1,660 pounds are needed for a standard 475-pound bale. The staple rates as middling. Ten years' cultivation, without manure, will bring down the yield on these lands at least one-half, and the staple will be slightly inferior, rating as low middling or good ordinary. The cocklebur on limy land, the butter-weed on new land, and the Florida clover on all, are troublesome to the farmer. From 10 to 25 per cent. of the formerly cultivated lands are turned out (less of the lime-lands than of the others), and when reclaimed these lands will often yield nearly as well as when new. Where the land is hilly the uplands are often ruined by the washing away of the soil, but the valleys are seldom injured, but, on the contrary, often improved, by receiving the washings from the higher lands. Very little systematic effort has ever been made to check this evil, except in the very best of the lands.

The cotton is shipped as fast as baled, by railroad, to Mobile, at the rate of \$2 per bale.

## COVINGTON.

(See "Long-leaf pine region".)

## CRENSHAW.

*Population:* 11,726.—White, 9,118; colored, 2,608.*Area:* 660 square miles.—Woodland, all. Long-leaf pine uplands, 435 square miles; oak and hickory or brown-loam uplands, 125 square miles; hill prairies, containing about 10 square miles of red lands, 60 square miles; red lime-lands, in lower part of county, 30 square miles.*Tilled land:* 67,770 acres.—Area planted in cotton, 26,962 acres; in corn, 23,099 acres; in oats, 5,208 acres; in tobacco, 33 acres; in rice, 25 acres; in sugar-cane, 294 acres; in sweet potatoes, 558 acres.*Cotton production:* 8,173 bales; average cotton product per acre, 0.30 bale, 429 pounds seed-cotton, or 143 pounds cotton lint.

Crenshaw county, lying between Butler and Pike, has many points of resemblance to each. It has already been remarked that as we go east the sands and loams of the post-Tertiary appear to increase in thickness to the extent often of covering almost entirely the underlying rocks. For this reason the eastern counties depend for their soils and physical features generally to a very great degree upon these surface beds.

Crenshaw county has for its underlying strata the Lower Tertiary beds, and, in the northern tier of townships, the uppermost beds of the Cretaceous formation. These Cretaceous rocks consist of alternations of hard crystalline limestones and softer strata of calcareous clays. As a rule, these beds are covered with the drift deposits, and exercise little influence upon the soils. A red soil, with small rounded lumps of brown iron ore, occurs in the northern part of the county, overlying a limestone ridge of the Cretaceous formation. The influence of the underlying lime-rocks is frequently felt in the soil, giving rise to highly productive calcareous soils, and the washings of these lands improve very greatly the bottom lands of the streams contiguous to them. In the latitude of Rutledge a white limestone of considerable purity is to be found in the banks of the streams, and occasionally at higher levels. This has been burned, and makes an excellent lime for building purposes, and could be profitably employed on the lands.

The lower half of the county is, in general, piny woods, with areas of very good oak and hickory lands alternating with the prevailing pine lands. In a few localities in the extreme south of Crenshaw county occurs a kind of red lime-land, which results from the reaction of the white limestone upon the overlying red loam. These lands occur usually where the greater part of the overlying beds has been washed away and the limestone is thus brought near the surface, and lie in the vicinities of Leon and of Bullock, along tributaries of the Patsaliga, Conecuh, and Yellow rivers. They are of comparatively limited extent, and resemble both in quality and origin the lime-lands of Murder creek and other localities in Conecuh county.

A large proportion of the lands of Crenshaw are pine lands, and as a rule are deficient in lime. The occurrence of limestone over a considerable area through the center of the county might be turned to good account in improving these lands. Commercial fertilizers are now pretty generally used throughout the county in the culture of cotton, and where the subsoil is a red clay, as is the case over a large part of the county, these fertilizers do well.

## ABSTRACT OF THE REPORT OF GEORGE W. THAGARD, OF RUTLEDGE.

The lowlands described are the first and second bottoms of Patsaliga river, together with cypress swamps and gallberry flats, and the uplands are the rolling and level lands contiguous to the same stream. In general, the uplands are preferred for cotton, for the reason that the lowlands are late, and the cotton, therefore, much more likely to be injured by frost.

The three most important soils described are: First, the high mulatto lands and gray oak and pine lands; second, the dark loam of Patsaliga river bottom above overflow; and third, the sandy bottom lands of the same stream. Of these soils the most widely distributed are the gray sandy uplands, making at least three-fourths of the county. The natural growth is long-leaf pine, oaks, hickory, gum, and cypress. In its physical characters the soil presents the usual varieties of texture and color so often described for similar soils. The average thickness to a change of color to that of the subsoil is from 2 to 6 inches. The subsoil is either red clay or yellowish sand, or some intermediate grade between the two, and when undisturbed becomes quite impervious. It frequently contains rounded white pebbles of quartz, and is underlaid at greater or less depths by lime-rock in this vicinity. The soil is always easily tilled, and is cultivated in cotton, corn, oats, and sweet potatoes, but is best suited to cotton, which makes about one-half of the cultivated crop. The most productive height of stalk is 3 or 4 feet, but the height varies from 2 to 6 feet. A tendency to run to weed is sometimes seen in cotton growing upon fresh land, especially in wet seasons, and the best remedy is a stimulation of the growth by the liberal application of barnyard or commercial manures.

The average seed-cotton product of the fresh land is 900 pounds (1,425 pounds to a 475-pound bale); staple excellent (grade No. 1 given). Five years' cultivation will bring down the yield to 500 pounds, with little or no difference in staple and in proportion of lint. The Florida clover or "poor man's trouble" is the greatest pest in the way of a weed. Perhaps a sixth of the originally cultivated land now lies turned out, but such land, when again taken into cultivation, produces very well if fertilized. In some localities there is much injury from washings, but no serious efforts have been made to check it.

There is no railroad or navigable stream in Crenshaw, and the cotton crop is usually hauled in wagons to Troy, Greenville, or Montgomery, at an average cost of \$2 per bale.

## MONTGOMERY.

(See "Central prairie region".)

## BULLOCK.

(See "Central prairie region".)

## BARBOUR.

(See "Central prairie region".)

## PIKE.

*Population:* 20,640.—White, 14,368; colored, 6,272.

*Area:* 740 square miles.—Woodland, all. Oak and hickory uplands, with long-leaf pine, 590 square miles; pine hills, 150 square miles.

*Tilled land:* 114,850 acres.—Area planted in cotton, 47,107 acres; in corn, 42,207 acres; in oats, 5,424 acres; in wheat, 72 acres; in rye, 23 acres; in sugar-cane, 400 acres; in sweet potatoes, 883 acres.

*Cotton production:* 15,136 bales; average cotton product per acre, 0.32 bale, 466 pounds seed-cotton, or 152 pounds cotton lint.

Sandy ridge, with a substratum of marl and sometimes limestone of the Upper Cretaceous age, passes through the northern townships of Pike county. Further east it is known generally as Chunnenuzza ridge, and it is a notable feature of the landscape, as well as characteristic from an agricultural standpoint. Upon the level portions of this ridge the soil is sandy and comparatively poor, but where the drainage has removed these surface beds the calcareous strata are brought to the surface and produce lasting and productive soils. The bottom lands, which receive the washings from these calcareous beds, are of the best character. Southward of this ridge there is a strip of calcareous clayey land, varying in width from 3 to 5 miles, and running east and west through the county. The southern limit of the Cretaceous formation is seen a few miles north of the town of Troy, where its strata are exposed in the banks of the Conecuh river. This limit of the two formations is, however, concealed, except along the banks of streams, by thick beds of sand and loam, which form the soils generally thence southward.

East of Troy, according to Thornton, in the Pocoson settlement, the valleys, which have the luxuriant growth and appearance of swamps, are surrounded on three sides by ridges of snow-white sand, on which grows only a scrubby oak, covered with long moss. In the latitude of Troy, and a few miles below, calcareous beds of the Lower Tertiary formation outcrop in places, producing a stiff limy and clayey soil of considerable fertility, but 7 or 8 miles south of Troy the siliceous and argillaceous sandstones of the buhr-stone group come to the surface, and, as usual where this is the case, the soils are poor and the prevailing growth long-leaf pine.

The county below Troy is generally pine woods, with alternations and admixtures of oak and hickory lands. As is so often the case, the pine lands are upon the level dividing plains between the water-courses, while the oaks and other trees occupy more generally the slopes and lower levels. In the vicinity of Brundidge there is a rather stiff clayey soil of much fertility, and this is considered one of the best farming areas of the county.

In Pike county the upland soils are, as a rule, poor in lime; the lowlands in places are better in this respect. A bed of tolerably pure limestone, which outcrops occasionally in the central and western parts of the county, might be profitably used to remedy this deficiency. There are also some beds of a greensand marl within the county limits. The clayey nature of most of the upland subsoils allows commercial fertilizers to be profitably used.

The great cotton mart for this and also for the adjoining counties is Troy, and the crop is hauled to this place from great distances, most of the wagons which carry cotton to the market returning with bags of guano and other commercial fertilizers.

## COFFEE.

*Population:* 8,119.—White, 6,831; colored, 1,288.

*Area:* 700 square miles.—Woodland, all. Pine uplands, 340 square miles; rolling or undulating pine lands, 360 square miles.

*Tilled land:* 42,126 acres.—Area planted in cotton, 16,431 acres; in corn, 18,668 acres; in oats, 2,370 acres; in rye, 31 acres; in wheat, 22 acres; in rice, 21 acres; in sugar-cane, 254 acres; in sweet potatoes, 474 acres.

*Cotton production:* 4,788 bales; average cotton product per acre, 0.29 bale, 414 pounds seed-cotton, or 138 pounds cotton lint.

The northern part of Coffee county, where the Claiborne beds are the underlying rocks, is in general much more broken and hilly than the southern, which is underlaid with the Vicksburg or white limestone. Above Elba there is a good deal of what are usually called "red-clay hills", alternating with sandy bottoms. The growth upon such land consists of long-leaf pine, with the species of upland oaks, sour gum, etc., and the soil is fairly productive. As representing the average composition of this class of upland soils we may take the analysis of an oak upland soil from near Lawrenceville, Henry county (No. 84, page 43).

Below Elba, along the water-sheds at least, the country is nearly level or gently undulating, with here and there a basin-shaped depression (sometimes filled with water, forming a pond or lake, sometimes dry)—evidences of the existence of the limestone below. This rock, however, rarely comes to the surface, except along the water-courses, but is covered with thick beds of the stratified drift materials. These materials upon the higher level areas are prevalently sandy; while along the drainage slopes the more clayey materials are to be found, and it is only in these latter places that the soil is cultivated. The sandy level areas away from the water-courses are covered with long-leaf pine forests, which are used as pastures for cattle and sheep. Some very good farming tracts are to be met with in the vicinity of the creeks and branches. It is perhaps needless to say that human habitations are rarely met with upon these pine barren plateaus.

Coffee is a fair representative of the lower counties of the state. It is well drained by Pea river, Double Branches creek, and their numerous tributaries.

## ABSTRACT OF THE REPORT OF M. G. STODENMEIER, OF ELBA.

The soil varies from fine to coarse sandy or gravelly loam, with a growth of long-leaf pine, intermixed with various species of oak and hickory, and undergrowth. The color varies from light-gray to reddish and other dark colors; thickness, about 4 inches before its color is merged into that of the subsoil. The latter contains usually more or less of yellowish clay, which bakes hard upon exposure, and is often very impervious. It frequently holds white quartz pebbles. It is easily tilled under all circumstances, and is warm and well drained.

The chief crops cultivated are cotton and corn, the former occupying about 50 per cent. of the cultivated area. The stalk attains usually a height of 3½ feet, but is more productive when at least 4 feet in height. With deep plowing, and in wet seasons, the plant

sometimes inclines to run to weed, which tendency may be checked by shallow or surface tillage. The fresh land will produce 600 pounds of seed-cotton to the acre, 1,425 pounds of which go to make a 475-pound bale. The staple rates in the market as low middling. After five years' cultivation (unmanured) the yield is 400 pounds, having about the same proportion of lint to seed-cotton, the staple of which usually rates one grade lower. The most troublesome weed (exclusive of grasses) is the Florida clover. About one-half of the land originally cultivated now lies turned out, but some of it is being reclaimed, and for two or three years it produces nearly as well as when fresh. From the nature of the soil there is considerable injury from washings, the valleys being often damaged to the extent of 10 per cent. by the washings from the uplands. As yet no efforts have been made to check the evil.

The cotton is hauled in wagons to Troy, in Pike county, at an average cost of \$2 50 per bale, and there sold. The shipping begins usually in October.

#### DALE.

*Population:* 12,677.—White, 10,553; colored, 2,124.

*Area:* 650 square miles.—Woodland, all. Pine uplands, 420 square miles; undulating pine lands, 230 square miles.

*Filled land:* 68,413 acres.—Area planted in cotton, 27,076 acres; in corn, 31,867 acres; in oats, 5,114 acres; in wheat, 59 acres; in rye, 24 acres; in rice, 49 acres; in sugar-cane, 373 acres; in sweet potatoes, 872 acres.

*Cotton production:* 6,224 bales; average cotton product per acre, 0.23 bale, 327 pounds seed-cotton, or 109 pounds cotton lint.

Dale county in its geological structure and in its surface features bears a close resemblance to Coffee county, on the west. The strata of the Claiborne and Vicksburg groups of the Tertiary are the underlying rocks, and these are covered by heavy beds of sands, loam, and pebbles to the extent of concealing almost entirely the underlying country rocks. These two groups of the Tertiary formation underlie each about half of the county, the Claiborne in the north and the Vicksburg in the south. Neither is largely concerned in the formation of arable soils, since they are derived almost exclusively from superficial beds. Upon the topography, however, these lower rocks exert a decided and easily-recognized influence. To appreciate this one has only to consider the difference between the broken and hilly aspect of northern Dale with the level, or at most gently rolling, pine forests of the southern part. For several miles around the county-seat (Ozark) deep beds of sand are a notable feature.

In the northern part of the county, where the drainage has cut through the overlying deposits, the country rock, which is generally an aluminous sandstone, full of shells or casts of shells, is exposed. Some varieties of this rock are, when freshly quarried, easily cut with a saw or other implement, and blocks of it are extensively used in the construction of chimneys and pillars to the houses. In this northern part there is usually a red loam substratum to the soils, while in the southern part the loam, though not entirely absent, is comparatively unimportant. At Newton it is present in great thickness. Below Newton the irregularities of surface are very slight, 10 or 15 feet being often the difference in elevation between the water-courses and the dividing land. The surface soil is mostly sandy, and the country rock is seldom seen until near the Geneva county-line, where there are several large limestone springs and outcrops of a white fossiliferous limestone. This rock appears to have generally very little influence upon the overlying soil; but there are spots where the soil is a calcareous clayey loam, formed by the reaction of lime-rock upon the overlying loam. The rich lime-lands of Murder creek, in Conecuh county, are of a similar nature.

#### ABSTRACT OF THE REPORT OF J. C. MATTHEWS, OF CRITTENDEN'S MILLS.

The soils enumerated are red clayey loam, gray bottom soil, and the sandy soils. The most important in an agricultural sense are red loams, which make perhaps a tenth of the cultivated area. This soil, which is so prevalent in the counties further north, is seen in this county only in spots. Its natural growth is oak, hickory, and gum, with short- and long-leaf pines added, in accordance with the variations in the quality of the soil. It is a clayey loam of buff to brown colors of an average thickness of 6 inches before the color changes to that of the subsoil, which is heavier than the surface soil, being a joint clay and white marl, and often contains rounded pebbles of white quartz, and is itself underlaid by a black rock at 15 feet depth. It is considered difficult of tillage, since it gets dry and hard. It is, however, early, and produces well the usual crops, to all of which it seems to be well adapted.

The bottom lands of the Choctawhatchee river are next in importance. Their natural timber is a mixture of oaks, hickory, poplar, gum, etc. The lighter soils are sandy loams; the heavier are clayey loams. The colors are whitish, gray, buff, brown, mahogany, blackish to black, and the average thickness to a change of color is 2 or 3 inches. The subsoil is a joint clay, underlaid with a black rock at 10 feet depth. This soil is early, but rather difficult of tillage, and is considered best suited to the cotton crop. Between these two extremes of soil there are all intermediate grades.

About two-thirds of the red or brown-loam lands and a fourth of the Choctawhatchee bottoms are in cotton, which is most productive at a height of 3 feet. Too much rain in July sometimes causes the plant to go to-weed, for which no remedy is usually tried. The seed-cotton product per acre (fresh land) is from 600 to 1,000 pounds, and the staple rates as middling or strict middling. Cultivation five or six years without manure will reduce the yield a third or more without making any observable difference either in the quality of the staple or in the proportion of the lint to seed. Crab-grass, hog-weed, and Florida clover are the most troublesome weeds. About one-fourth or one-fifth of these lands once in cultivation now lie turned out, and when taken again into cultivation do not produce very well. The land suffers to some extent from washings, but no well-directed efforts have been made to check the evil.

The cotton crop is usually hauled in wagons, as fast as baled, to Eufaula, Troy, or Columbus, Georgia, at the rate of 38 to 40 cents per hundred pounds.

#### HENRY.

*Population:* 18,761.—White, 11,994; colored, 6,767.

*Area:* 1,000 square miles.—Woodland, all. Oak, hickory, or brown-loam uplands, 100 square miles; pine uplands, 550 square miles; undulating pine lands, 340 square miles; red lime-lands, 10 square miles.

*Tilled land:* 137,348 square miles.—Area planted in cotton, 54,305 acres; in corn, 48,661 acres; in oats, 7,902 acres; in rye, 263 acres; in wheat, 193 acres; in tobacco, 24 acres; in rice, 25 acres; in sugar-cane, 671 acres; in sweet potatoes, 1,266 acres.

*Cotton production:* 12,573 bales; average cotton product per acre, 0.23 bale, 327 pounds seed-cotton, or 109 pounds cotton lint.

The upper half of Henry county is underlaid with the strata of the Claiborne group, and the lower by those of the Vicksburg, and a coating of drifted materials of considerable thickness covers these throughout the county. These superficial beds present notable differences in different sections. In the northern part of the county they are characterized by the generally red or orange color of the subsoil, which contains a large proportion of clay, and which lies upon reddish or yellow sands, frequently containing gravel. The soils in this section vary in the proportions of sand and loam in different localities. Upon the water-sheds the sandy soils are, as a rule, predominant, while upon the slopes the more loamy soils prevail. General reasons for this distribution have been mentioned before.

The topography in the upper part of the county is, like the soil, much more varied than in the lower. In the lower half the sandy soils prevail, and comparatively level pine woods constitute the landscape very generally. The drainage is principally into the Chattahoochee river, but a small area in the northwestern part is drained by the Choctawhatchee. The better class of upland yellow-loam soils, which are prevalent in the upper part of the county, are in chemical composition represented by the analysis of the soil from near Lawrenceville, given on page 43.

In the southwestern corner of the county, in the drainage basin of Big creek, there are a few miles of red lands of calcareous nature, similar to the red lands of Jackson county, Florida, and of the adjacent part of Geneva county. This land, which has its counterpart in the lime-lands of Murder creek, in Conecuh county, is produced by the action of the limestone upon the loam soil overlying it. The agricultural peculiarities of the first-mentioned soils are given in the following abstract.

Henry county shows agriculturally no peculiarity. Cotton is cultivated on upland and bottom soils of the usual character afforded by the drift and loam which overspread so great a proportion of the southern part of the state. The river lands here, as elsewhere along the Chattahoochee, have a large proportion of fragments of mica or isinglass mingled with the other ingredients of the soil.

ABSTRACT OF THE REPORT OF A. M'ALLISTER, OF SHORTERVILLE.

The most important soils in the vicinity of Shorterville are the river bottom soils, and of these the "isinglass" soils are considered best, because most certain. The usual bottom growth of hickory, oak, ash, walnut, sweet gum, bay, etc., is found. Both soil and subsoil are sandy loams of various colors; whitish and gray most abundant. Tilling qualities easy under all circumstances. The soil is early, warm, and well drained as a rule, and is well suited to the production of cotton, corn, oats, rye, potatoes, sugar-cane, field pease, etc. The upland soils of the northern part of the county are fine to coarse sandy loams, heavy, clayey loams in places, resting upon a sandy, sometimes gravelly, clay; thickness of the soil to a change of color, variable—12 to 15 inches. They are all easily tilled, and are warm, early, and well drained. These usual crops are all cultivated with success.

The pine lands in the upper part of the county are not characteristic, but in the middle and southern sections pine forms almost the exclusive growth, except along the streams. The surface soil is generally a dark-gray or brown sandy loam, the subsoil a sandy clay, with occasionally pebbles. The soil is early, well drained, easy of tillage, and suited to the usual crops: cotton, corn, sugar-cane, etc.

About half the cultivated land of each of these soil varieties is planted in cotton, which grows to a height of from 3 to 5 feet, being most productive at about 4 feet. Late planting and wet seasons sometimes cause the plant to run to weed, which may be checked by early planting, heavy manuring, deep preparation, and rapid and light cultivation early in the season, these being the most effective remedies.

The seed-cotton product on fresh land varies from 300 to 500 pounds on the pine lands to from 600 to 1,200 pounds on the river lands (1,425 to 1,545 pounds to the standard 475-pound bale). The staple rates from middling to good middling, from fresh land, to low middling from the worn land. By five or ten years' cultivation, without manure, the yield is reduced at least one-third and perhaps more. The most troublesome weed is crab-grass. The hog-weed is very abundant, but is more easily subdued. Only a small proportion of the river lands are turned out (from 5 to 10 per cent. of the other varieties), and they all improve by resting, producing for a few seasons after being reclaimed nearly as well as when fresh. The uplands are injured by washings, and the valleys are sometimes injured 25 per cent. from this cause. Horizontalizing and hillside ditching, when properly done, are efficient remedies.

Shipments of the cotton crop are made by river and by railroad to Columbus and Savannah, Georgia. The freight to Columbus or to Eufaula is 50 cents per bale; to Savannah, three-fourths of a cent per pound. The shipments are made from and after October 1.

LOWER PRAIRIE REGION, OR LIME-HILLS.

In this region are included parts of the following counties: Choctaw,\* Washington,\* Clark,\* Monroe,\* Conecuh,\* Covington,\* Crenshaw,\* Geneva,\* and Henry.\*

CHOCTAW.

(See "Oak and hickory uplands, with long-leaf pine".)

WASHINGTON.

(See "Long-leaf pine region".)

CLARKE.

(See "Oak and hickory uplands, with long-leaf pine".)

## COTTON PRODUCTION IN ALABAMA.

## MONROE.

(See "Oak and hickory uplands, with long-leaf pine".)

## CONECUH.

(See "Oak and hickory uplands, with long-leaf pine".)

## COVINGTON.

(See "Long-leaf pine region".)

## CRENSHAW.

(See "Oak and hickory uplands, with long-leaf pine".)

## GENEVA.

(See "Long-leaf pine region".)

## HENRY.

(See "Oak and hickory uplands, with long-leaf pine".)

## LONG-LEAF PINE REGION.

In this region are included parts of the following counties: Washington, Mobile, Clarke,\* Baldwin, Monroe,\* Conecuh,\* Escambia, Covington, Geneva, Coffee,\* Dale,\* and Henry.\*

## WASHINGTON.

*Population:* 4,538.—White, 2,807; colored, 1,731.

*Area:* 1,050 square miles.—Woodland, all. Undulating pine lands, 800 square miles; lime-hills and shell-prairie lands, 150 square miles; pine hills, 100 square miles.

*Tilled land:* 8,936 acres.—Area planted in cotton, 3,280 acres; in corn, 4,259 acres; in oats, 464 acres; in rice, 67 acres; in sugar-cane, 90 acres; in sweet potatoes, 448 acres.

*Cotton production:* 1,246 bales; average cotton product per acre, 0.38 bale, 543 pounds seed-cotton, or 181 pounds cotton lint.

In the northern part of Washington county there is a belt, varying in width from 2 to 10 miles, in which lime-hills and prairies are the characteristic feature. The material upon which these soils depend for their origin is an impure whitish-gray limestone, having sometimes a greenish cast. This rock resembles to some extent the rotten limestone of the central prairie region, and like it, in disintegrating under the action of the weather, yields a grayish, waxy clay, which, mixed with vegetable matter, acquires a black color, like some of the central prairie soils.

This stiff black soil is difficult to till, but very fertile. Some parts of the rock crumble down into a fine, loose, black material called shell-prairie soil, in which are small pieces of the crumbling rock, sometimes filled with shells. This is one of the best of the lime-hills soils, rarely failing to bring good crops either of cotton or of corn. It is timbered with dogwood, black and white oaks, sweet gum, ash, short-leaf pine, and buckeye.

An intermixture of stiff calcareous clay with the red loam which forms the surface over the greater part of the northern portion of the county gives a stiff, mahogany-colored or yellowish soil, like the post-oak soil of the central region, and, like that, is timbered with post oaks and a few short-leaf pines, with occasionally a sweet gum and a hickory, all draped with the long moss. This soil, like the first named, is rather difficult to cultivate, but is highly productive. The prairie belt is very variable in width, and in places the piny woods extend entirely across it, while, on the other hand, narrow strips of prairie extend for miles out into the piny woods along some of the streams; and everywhere the prairie soils are interspersed with the sandy and loamy soil of the drift, which spreads over all the older rocks of this county and forms the great majority of the soils.

The topography of the lime-hills is quite characteristic. The hills are very steep, and have usually very little level land on top; but near the western border of the county it is not unusual to find as much as 100 acres in a body of tolerably level prairie land. As we go eastward these level tracts diminish in size and frequency, and the prairie belt consists of the genuine lime-hills. While under continuous cultivation the soil of the lime-hills does not wash so badly as might be expected from the steepness of the slopes, but when abandoned the bare rock very soon makes its appearance at the surface on the bald hill-tops.

Another variety of white limestone, geologically below that just described, underlies a very large part of Washington county, probably down to the Mobile county-line, but as a rule it does not take any prominent part in the formation of the soils, nor does it materially influence the topography. (a) Most of the territory underlain by it is rolling or undulating piny woods with sandy soils and with subsoils of two kinds. The soils with yellow, sandy subsoil are very poor, the growth long-leaf pine, black-jack, turkey, and high-ground willow oaks; but where the subsoil is a little stiffer and of a reddish color the lands are very fair, and are timbered with Spanish and other upland oaks in addition to the long-leaf pine.

<sup>a</sup> The historically, as well as geologically, well-known Saint Stephen's bluff is in its upper portion formed of this rock, while the other variety of limestone lies at the base of the bluff.

Near the state line, southwest of the prairie region, the land is a little more broken, passing westward in Mississippi into pine hills.

North of the lime-hills belt, in the extreme upper part of the county, there are other hilly pine lands, very poor, the surface of which is generally covered with fragments of sandstone and claystone (the latter usually called chalk). These chalk hills are best displayed in the lower part of Choctaw county, as only a very small part of Washington is of this character.

The creek-bottom lands throughout the lime-hills belt are good farming lands, as are also sometimes those of the chalk hills north of the prairies. This in the latter case is caused by the presence of marly beds, which are sometimes brought to the surface in the drainage valleys of the stream. In the rolling piny woods of the lower part of the county the bottoms are, as a rule, sandy, though generally productive for a time. The lowlands of the river, chiefly the second bottom, are good farming lands, the soil being a sandy loam, easy to till and productive. In certain localities it is improved by the calcareous washings of the uplands. The lower part of the county, while of little value for farming, affords a splendid pasturage for cattle.

The high yield per acre (0.38 bale) is due to the fact that most of the cotton is produced either upon the highly fertile river lands or the equally rich lime lands in the northern part of the county.

In the piny woods which forms so large a proportion of the area of the county the cultivation of cotton is not so profitable as stock-raising, timber-cutting, and the production of turpentine.

ABSTRACT OF THE REPORT OF R. M. CAMPBELL, SAINT STEPHENS, AIDED BY E. A. GLOVER, JOHN STARKE, AND OLIVER PRINCE.

There are three principal varieties of soil: First, upland sandy soil of gray to yellowish colors, covering over two-thirds of the county; second, river bottom, occupying a large portion of the townships on the eastern border of the county; and third, lime-lands (black prairie, shell prairie), occupying a large part of the northern tier of townships in the county.

The sandy uplands are timbered chiefly with long-leaf pine and black-jack, to which, in spots, the other varieties of oak and dogwood and hickory are added. Its soil is from 3 to 12 inches deep before its color changes to that of the subsoil, which is more clayey, easily permeable by water, but bakes hard when exposed to the sun where not cultivated, and contains, in places, concretions of ferruginous sandstone. This soil is easily tilled under all circumstances, and is always well drained.

The river bottom soil consists of a fine sandy loam on the river front, a heavy clay loam on stiff lands, and a putty-like loam on back land. The colors are brown, blackish to black, and thickness from 18 to 20 feet, below which sand has sometimes been noticed. White oak, ash, cottonwood, hickory, sweet gum, etc., are the prevailing trees. The land is easily tilled in wet or dry weather.

The lime-lands occupy a large part of the northern tier of townships in the county from the river westward. The natural growth is cedar, ash, hickory, oak, chestnut, etc. The soil is a heavy clay loam and a mellow shell prairie, putty-like in places, of gray, brown, and blackish colors, alternating or mixed; thickness, about 2 feet to the subsoil, which, where the lime-rock is not near the surface, is a tough yellow clay, turning black where cultivated (not otherwise), very impervious if not disturbed, and containing lumps of the lime-rock filled with seashells. Beneath the subsoil there is, at depths varying from 2 to 10 feet, the lime-rock of the country. Tilling qualities easy after being once broken up, especially in dry seasons. The shell land is mellow, as is also the stiff land after being plowed in the spring. The soil is early and warm when well drained, which is effected only by ditching.

The soils of Washington county are well suited to cotton, to corn and other grains, and sweet potatoes, the former being cultivated upon two-thirds to three-fourths of the cultivated lands. On the uplands the average height of stalk is 3 feet; on the bottom and lime-lands 5 to 6 feet, and it is more productive the higher the stalk. Wet weather often causes the stalk to run to weed, especially on the shell prairies and lime-lands. Topping in July is the usual remedy, but some farmers think their mode of plowing avails. The average seed-cotton product of fresh land is from 300 to 600 pounds per acre on the uplands, 1,000 to 1,200 pounds on the lime-lands, and 1,300 pounds on the river lands, 1,545 pounds being needed to make a standard 475-pound bale, the staple of which rates from low middling to middling. After ten to twenty years' cultivation, without manure, the yield is reduced at least one-half on sloping or hilly lands, but not so much on the level bottoms, and about 1,600 pounds are needed to make a bale. There is no material deterioration of the fiber, except that it is thought to be a little shorter from worn land. Information on this point, however, is not definite. The troublesome weeds are crab-grass, Florida clover, morning-glory, and coffee-weeds, and cocklebur, tie-vine, and Indian potato or hog-root on the richer lands. From one-third to three-fourths of formerly cultivated lands are turned out (a less proportion of the lime-lands than of the others), and when again taken into cultivation they produce much better than when last tilled, but not quite so well as when fresh. The uplands and the lime-lands are injured by washes, especially the hill-tops, the valleys being usually rather benefited by the washings. The river lands are injured by water only by overflows. Little effort has been made to check this evil.

The cotton crop is shipped principally, by boat, to Mobile; rate of freight, \$1 25 per bale. Shipping begins October 1, and usually lasts till January.

MOBILE.

*Population:* 48,653.—White, 27,187; colored, 21,466.

*Area:* 1,290 square miles.—Woodland, all except coast marshes. Rolling pine lands, 820 square miles; pine flats, 470 square miles.

*Tilled land:* 8,998 acres.—Area planted in cotton, 1 acre only returned; in corn, 1,639 acres; in oats, 139 acres; in rice, 191 acres; in sugar-cane, 151 acres; in sweet potatoes, 776 acres.

*Cotton production:* One bale returned.

The statistics above given show that Mobile county has a comparatively small area of cultivated land. With respect to its geological structure there is some uncertainty, though it seems probable that the white limestone underlies the greater part of the county, or at least the upper part as far south as Beaver Meadow and Chickasabogue, where lime-sinks show the presence of a limestone below the surface. The surface beds throughout, except in the extreme south, are the stratified drift and loam.

The county is gently undulating, though the water-sheds have considerable elevation above the sea. The Citronelle plateau, where crossed by the railroad, is 317 feet and the summit 333 feet above tide. All the drainage is into the Mobile river and bay on one side, and into the Escatawpa river on the other. The prevailing timber growth in the county is the long-leaf pine, which has been extensively cut for timber in all places where accessible to streams deep enough to float out the logs. The open pine woods afford most excellent pastures.

The characters of the principal soil varieties may be seen from the following abstract of the carefully written report of Professor J. P. Stelle, of Citronelle, which refers to the lands in the northern part of the county, the lowlands along the Mobile river and bay, and the uplands on the Citronelle plateau.

The river, the bay, and the railroads furnish ample facilities of transportation for the various products of Mobile county.

Cotton is not cultivated, except in small patches for home use, and the attention of the farmers is generally turned to the production of early vegetables and southern fruits for the market.

ABSTRACT OF THE REPORT OF PROFESSOR J. P. STELLE, OF CITRONELLE.

The soils are: First, the red sandy loam with clay subsoil, peculiar to all the upland plains; second, the dark loamy soil along the bottoms of Mobile and Tombigbee rivers; and third, the yellowish sandy loam along the western shore of the bay.

The chief soil is the first named, which is the soil of the uplands throughout the county. Its natural timber is predominately the long-leaf pine, but other trees, especially oaks, are not uncommon. The top soil is the usual sandy loam of whitish to gray, buff, orange, and blackish colors; thickness, 10 inches. The subsoil on the uplands is a red tenacious clay with a small proportion of sand, and makes good bricks. It contains in some places a few white rounded pebbles of quartz. Below the subsoil is sand, capped by a ferruginous sandstone at the depth of 10 to 20 feet. Vegetables for the northern market form the chief product of the soil.

The black bottom lands make one-eighth of the cultivated area in the region described. Its timber consists of oaks, hickory, elm, magnolia, bay, cypress, sweet and sour gums. The top soil is usually a clay loam with a good deal of vegetable matter, of dark to nearly black colors, and many inches in thickness.

The flat pine lands make an eighth of the cultivated area in question. Its timber consists mainly of long-leaf pine, with magnolia, bay, cypress, etc. The top soil is a sandy to clayey loam of a yellowish color 10 inches in thickness, with a yellowish clay loam as subsoil. It seems to be best adapted to the production of vegetables and fruits, oranges, etc. These three soils represent pretty nearly the different varieties occurring in the county.

CLARKE.

(See "Oak and hickory uplands, with long-leaf pine".)

BALDWIN.

*Population:* 8,603.—White, 4,890; colored, 3,713.

*Area:* 1,620 square miles.—Woodland, all except coast marshes; rolling pine lands, 900 square miles; pine flats, 720 square miles.

*Tilled land:* 7,698 acres.—Area planted in cotton, 1,384 acres; in corn, 2,041 acres; in oats, 350 acres; in rice, 121 acres; in sugar-cane, 81 acres; in sweet potatoes, 484 acres.

*Cotton production:* 638 bales; average cotton product per acre, 0.46 bale, 657 pounds seed-cotton, or 219 pounds cotton lint.

In physical and geological features Baldwin county resembles Mobile, which it adjoins on the east. The northern half of the county is more or less undulating, and is covered with a growth chiefly of long-leaf pine; the southern half is more level, and is timbered with the same tree and the Cuban pine. This general statement, however, is to be taken with some allowance, for between Mobile bay and the Perdido river, at Montrose, the water-shed is 200 feet above the bay, and it is the highest land on the coast between the Rio Grande and Navesink (*Haines*). The waters flow into the Perdido river on the east and into the Alabama and Mobile rivers and Mobile bay on the west. In the western part of the county, above the bay, is a considerable tract of marshy land in the delta of the river.

From the statistics, it will be seen that the county is rather thinly settled, and that a comparatively small proportion of the area is under cultivation. Much of the county is a natural pasture, and large herds of cattle and sheep are sustained, and, where accessible to streams, lumbering is an important industry.

All the cotton, or by far the greater proportion of it, is produced in the northern part of the county, and, as the high yield per acre shows, with the aid of fertilizers. Where cultivated, the cotton is shipped to Mobile by boat or by rail.

MONROE.

(See "Oak and hickory uplands, with long-leaf pine".)

CONECUH.

(See "Oak and hickory uplands, with long-leaf pine".)

ESCAMBIA.

*Population:* 5,719.—White, 4,106; colored, 1,613.

*Area:* 1,000 square miles.—Woodland, all. All rolling pine lands.

*Tilled land:* 6,934 acres.—Area planted in cotton, 278 acres; in corn, 3,699 acres; in oats, 869 acres; in sugar-cane, 83 acres; in rice, 405 acres; in sweet potatoes, 494 acres.

*Cotton production:* 94 bales; average cotton product per acre, 0.34 bale, 486 pounds seed-cotton, or 162 pounds cotton lint.

Escambia lies wholly within the long-leaf pine region. Geologically, its structure is simple. The white limestone of Vicksburg age underlies certainly the northern part and probably the whole of the county, though coming to the surface but rarely. Upon this are spread the materials of the stratified drift, which here, as in

so many other places, form the soils. The Conecuh and Escambia rivers, with their tributaries, drain the entire county, except a small portion of the northwest corner, which is drained by Little river, flowing into the Alabama, and another small portion in the southeast, drained by a tributary of Yellow river.

The county is, in general, a level pine woods, gently undulating and unbroken, save by the small valleys of the creeks and branches, and by occasional ponds and lime-sinks. The soil is uniformly a light sandy loam of prevailing light colors, and is comparatively poor. Along the Conecuh river especially there are bodies of good bottom or swamp land. The pine woods make here, as elsewhere, a fine natural pasture, and cattle-raising is an important industry. The magnificent pine timber is also a source of profit to many of the inhabitants. The high yield of the few acres planted in cotton shows that this staple is cultivated only in favored spots or with fertilizers.

ABSTRACT OF THE REPORT OF JOHN W. STEPHENSON, OF DOUGLASVILLE.

The upland soil is very thin, extending widely in vast unbroken tracts, and is not well suited to cotton unless manured. The lowlands are quite productive, but are sometimes liable to overflow, and the crop is thus lost. For this reason the uplands are preferred, and with manure they give very fair returns. Since the war comparatively little cotton has been cultivated; it is planted upon most of the varieties of soil.

The most fertile soil is found in bodies of 5 to 10 acres along the Conecuh river bottom. The natural growth is spruce pine, oaks, hickory, chestnut, birch, etc. The soil is of the usual swamp or bottom-land character, with subsoil often containing pebbles, sometimes underlaid with the ferruginous sandstone so common in the stratified drift. In dry seasons this soil is easily tilled, but it is sometimes tilled with difficulty in wet weather. Corn, pease, and sweet potatoes are the most abundant crops, but cotton does well wherever tried. Very little is raised for the market, and no information is at hand concerning the quality of staple, etc. On account of its position, this kind of land seldom suffers from washing. Rag-weed is one of the most troublesome weeds.

Cotton is shipped by rail to Mobile or Montgomery.

COVINGTON.

*Population:* 5,639.—White, 4,968; colored, 671.

*Area:* 1,030 square miles.—Woodland, all. Undulating or rolling pine lands, 720 square miles; lime-hills, 50 square miles; pine uplands, 260 square miles.

*Tilled land:* 19,326 acres.—Area planted in cotton, 4,176 acres; in corn, 10,558 acres; in oats, 2,114 acres; in rice, 47 acres; in sugar-cane, 147 acres; in sweet potatoes, 466 acres.

*Cotton production:* 1,158 bales; average cotton product per acre, 0.28 bale, 399 pounds seed-cotton, or 133 pounds cotton lint.

The rocky substratum of Covington county is made up of the strata of two of the groups of the Tertiary formation, viz, the Jackson and the Vicksburg. The white limestone of the latter group is exposed where the overlying drift materials have been removed by denudation throughout the whole county, except, perhaps, the extreme southern portion. As a rule, this rock is too deeply covered with the drift sands and loam to have much influence upon the soils, except in a few areas of limited extent, where red lime-lands similar to those of the adjoining county of Conecuh are found in the upper part of the county. Otherwise, the upland soils are of the usual varieties afforded by the stratified drift. The soils, therefore, are upland sandy loams of varying degrees of fertility, but usually light, forming the great bulk of the lands. These have a growth of long-leaf pine, alternating with the various species of upland oaks. The pines occupy, in general terms, the higher areas, while the oaks and hickories are found more frequently along the drainage slopes of the streams; positions determined in great measure probably by the varying proportions of sand in the soils from which these trees derive their sustenance. Upon the higher lands, where by the long-continued action of the rains the specifically lighter materials constituting the clay have been carried down from the surface, the sandier portions are left to form the soil. Upon slopes, however, where running water has been active, both the lighter and heavier materials are removed together, and the original loamy character of the drift deposits has been preserved more or less unchanged.

Upon the nearly level gently undulating areas in the lower part of the county vast forests of long-leaf pine prevail, with an undergrowth of grass and leguminous plants, which afford pasturage for great numbers of cattle, sheep, and swine. The forests themselves, where accessible, are heavily drawn upon for timber.

The bottom lands are of the usual character, and are generally fertile. From their liability to overflow, however, they are often less desirable than the uplands, where, with a moderate outlay for fertilizers, good crops of cotton are almost certain to be made. The chemical nature of the pine upland soils is very well seen in the analysis given on page 55 of a soil from 13 miles east of Andalusia. These soils, like the sandy, rather infertile soils of the Coal Measures and parts of the older formations of the state, while intrinsically poor, are yet rapidly coming into use with fertilizers.

Agriculturally, Covington county is like Conecuh, with the exception that the lime-lands here are of very limited extent, and nearly the whole county has the character of the long-leaf pine lands.

The cotton from this county is usually shipped from Troy, Greenville, or Evergreen, to which markets it must be hauled great distances in wagons.

GENEVA.

*Population:* 4,342.—White, 3,829; colored, 513.

*Area:* 590 square miles.—Woodland, all. Undulating pine lands, 560 square miles; red lime-lands, 30 square miles.

*Tilled land:* 17,664 acres.—Area planted in cotton, 4,947 acres; in corn, 9,476 acres; in oats, 1,705 acres; in sugar-cane, 118 acres; in rice, 54 acres; in sweet potatoes, 350 acres.

*Cotton production:* 1,112 bales; average cotton product per acre, 0.23 bale, 327 pounds seed-cotton, or 109 pounds cotton lint.

Geneva county is underlaid throughout its entire extent with the white Vicksburg limestone, which, as usual, exerts comparatively little influence on the cultivable soils. Exception to this is noticed in the eastern part of

the county, in the drainage area of the Chipola river, where a fine lime-land is well known for its fertile character. This sort of calcareous soil is much more prevalent in the adjoining county in Florida, whose red lime-lands have a wide reputation.

The arable soils are in great measure derived from stratified drift and loam, and exhibit the usual varieties. The proportion of red or yellow loam in the soil and subsoil seems to decrease, in general, as we go south, and the proportion of sand to increase in the same direction. Between Millville and Geneva the various species of oaks are associated with the long-leaf pines, showing a very fair quality of soil. Northwest of Geneva, along the divide between Double Bridges creek and Pea river, pine woods, with scarcely any admixture of other trees, prevail; but occasionally upland willow and small post and black-jack oaks are associated with the pines, constituting a regular pine-barren growth. Coarse tufts of wire grass form the undergrowth almost universally, except in the numerous boggy places, where a rich and peculiar flora is commonly seen.

Until a few years past the cultivation of cotton in this county has received very little attention, the inhabitants being chiefly engaged in the lumber business and in cattle and sheep raising. With the use of guano these pine lands bring very fair crops, often a bale to 2 acres.

With the exception above noted of a small area of lime-lands in the southeastern part of the county, the pine woods form all the uplands of Geneva. The composition of the soil is similar to that of the Covington county soil (analysis given on page 55), which is, however, a better soil than that of the average pine woods.

The white orbitoidal limestone of the Vicksburg age is to be seen in many localities in Geneva where the drainage has removed the overlying sands, as along the banks of the Choctawhatchee river and other large streams. This river is navigable to the town of Geneva, and was formerly one of the principal outlets for the products of the county. Most of the timber still finds its way to market by this stream, though the cotton is now hauled in wagons to Troy, at a cost of \$2 50 per bale.

#### ABSTRACT OF THE REPORT OF W. N. BRANDON, OF GENEVA.

The lowlands are the dark-gray bottom lands, sand hummocks, and gallberry flats. The uplands vary from light gray to red, according to the proportion of loam which is mixed with the sand, and are preferred, as the cotton can be planted earlier, with consequently less liability to damage from early frosts and worms. The river lands are nearly all subject to overflow, and are not so certain.

The gray upland soils have a yellowish subsoil down to the clay (reached at 18 inches), and the mahogany and red soils have a red subsoil. The timber is long-leaf pine, with post oak, hickory, broad-leaf black-jack, red oak, etc. These soils are early, warm, and well drained, and are well suited to cotton, corn, sugar-cane, rice, potatoes, etc.

About half the cultivated area about Geneva is in cotton, which usually grows to a height of 3 feet. When planted late, and in wet seasons, there is a tendency to go to weed, which is restrained by planting early, using fertilizers, and by working fast and early. The average yield of seed-cotton on fresh land is from 600 to 700 pounds to the acre, which is brought down to 400 pounds after five years' cultivation without manure. To make a 475-pound bale 1,485 pounds of seed-cotton are needed. The staple rates as middling from the fresh to low middling from the worn land, though there is usually very little difference in the quality. Hog-weeds are (exclusive of grasses) most troublesome to the farmer. One-fourth of the land originally cultivated lies turned out, but after a rest of some years, especially if cattle have been kept off, if taken again into cultivation, it produces well. The damage from washings is not very great and no efforts have been made to check it, except in a few instances, where horizontalizing and hillside ditching have been practiced with good results.

The sandy hummocks are found along the Choctawhatchee river, and are considered best for corn, only about a fifth of the lands being in cotton.

#### COFFEE.

(See "Oak and hickory uplands, with long-leaf pine".)

#### DALE.

(See "Oak and hickory uplands, with long-leaf pine".)

#### HENRY.

(See "Oak and hickory uplands, with long-leaf pine".)

#### ALLUVIAL REGION.

This region includes parts of Washington,\* Clarke,\* Mobile,\* and Baldwin\* counties.

#### WASHINGTON.

(See "Oak and hickory uplands, with long-leaf pine".)

#### CLARKE.

(See "Oak and hickory uplands, with long-leaf pine".)

#### MOBILE.

(See "Long-leaf pine region".)

#### BALDWIN.

(See "Long-leaf pine region".)

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PART III.

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CULTURAL AND ECONOMIC DETAILS

OF

COTTON PRODUCTION.

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REFERENCE TABLE  
OF  
REPORTS RECEIVED FROM ALABAMA COUNTIES.

I.—METAMORPHIC REGION.

1. *Cleburne*.—JOHN R. MOTIS, Edwardsville, March, 1880. Location, township 14, range 11, section 34. Describes first and second-bottom lands of Cane creek.
2. *Cleburne*.—JAMES H. BELL and DAVID V. CRIDER, Arbacoochee, April, 1880. Location, township 16, range 10, section 11. Describe bottom lands on creeks and on the Tallapoosa river.
1. *Randolph*.—JAMES H. RADNEY, Roanoke, April, 1880. Location, township 21, range 12. Describes first and second bottoms on Highpine and Cornhouse creeks.
1. *Lee*.—JOHN T. HARRIS, Opelika, August, 1880. Describes lands on Hallawaka creek and Chattahoochee river.
2. *Lee*.—C. H. McCULLOH, Beulah, May, 1880. Location, township 20, range 29, section 20. Describes first bottom of Hallawaka creek and Chattahoochee river.
1. *Tallapoosa*.—D. A. G. ROSS, Camp Hill, April, 1880. Location, township 21, range 24, sections 27 and 34. Describes bottom lands on Sandy creek.
2. *Tallapoosa*.—DANIEL TAYLOR, New Site, March, 1880. Location, township 24, range 23. Describes bottoms and uplands on Emuckfaw creek and Tallapoosa river.
3. *Tallapoosa*.—JAMES M. PEARSON, Dadeville, May, 1880. Location, township 22, range 23, section 36. Describes lands on Sandy creek.
1. *Clay*.—WILLIAM W. JENKINS, Hillabee, January, 1882. Location, township 20, range 7. Describes lands on Talladega, Buzzard, Hillabee, Hatchet, and other creeks.
1. *Coosa*.—J. C. McDIARMID, Good Water, April, 1880. Location, township 20, range 22, sections 24 and 25. Describes bottoms and uplands on Hatchet creek and Coosa river.
2. *Coosa*.—JOHN S. BENTLEY, Rockford. Describes bottoms and uplands on Socopatoy, Jacko, and Big and Little Hatchet creeks, all tributaries of the Coosa river.

II.—COOSA VALLEY REGION.

- Cherokee*.—Dr. JOHN LAWRENCE, Cedar Bluff, January, 1882. Describes lowlands on Coosa, Chattooga, and Little rivers, and Terrapin and other creeks, and uplands adjacent.
1. *Calhoun*.—Dr. S. C. WILLIAMS, Oxford, August, 1880. Location, townships 14, 15, 16, 17, ranges 7, 8, 9, section 19. Describes bottom lands on Choccolocco creek and Coosa river and neighboring uplands.
  2. *Calhoun*.—T. W. FRANCIS, Cane Creek, June, 1880. Location, township 15, range 6. Describes lowlands and uplands on Cane creek and Coosa river.
  1. *Etowah*.—W. B. BEESON, Greenwood, May, 1880. Describes uplands on Wills' Creek.
  1. *Saint Clair*.—JOHN W. INZER, Ashville, July, 1880. Location, township 14, range 4, section 7. Describes second bottoms and hill lands on Big Canoe creek and Coosa river.
  1. *Talladega*.—H. M. BURT, Talladega.
  2. *Talladega*.—S. M. JEMISON and A. W. DUNCAN, Talladega, July, 1880. Describe bottoms and uplands on Choccolocco, Talladega, Cheahhah, Wewoka, and Tallasahatchie creeks.
  - Shelby*.—T. A. HUSTON, Wilsonville. Describes land on several small creeks flowing into the Coosa river.

III.—COAL-MEASURES REGION.

- Cullman*.—WILLIAM J. DUNN, Cullman, April, 1880. Location, township 10, range 3 west, section 15. Describes bottoms and uplands on the Warrior river.
- Blount*.—GEORGE D. SHELTON, Brooksville, June, 1880. Location, township 10, range 2 east, section 18. Describes bottoms and uplands on Big Spring and Slab creeks and Warrior river.
- Winston*.—F. C. BURDICK, Houston, March, 1880. Location, townships 9, 10, 11, 12, ranges 6 to 10 west. Describes bottoms on Yellow creek and Sipsy river, and uplands on Bushy and Clear creeks and Sipsy river.

## IV.—TENNESSEE VALLEY REGION.

- Jackson*.—W. F. HURT, Bellefonte, July, 1880. Location, township 3, range 6, section 21. Describes bottoms and table-lands on Mud creek and Tennessee river.
1. *Madison*.—THOMAS B. KELLY, Cluttsville, May, 1880. Location, townships 1, 2, 3, 4, 5, ranges 1, 2, 3 west. Describes first bottoms on Tennessee river and hilly and mountainous uplands.
  2. *Madison*.—WILLIAM C. IRWIN, Huntsville, May, 1880. Describes bottoms and uplands on Indian and Spring creeks and Tennessee river.
  3. *Madison*.—GEORGE D. NORRIS, New Market, March, 1880. Location, township 1, range 2 east, section 32. Describes lowlands and uplands on Mountain Fork and Flint rivers and alluvial plains on Hester's creek and Flint river.
  1. *Limestone*.—F. H. PEBBLES, Mooresville, November, 1881. Location, township 4, range 3 west, sections 5, 6, 7, 8. Describes uplands and lowlands on Piney, Limestone, and Beaver Dam creeks.
  1. *Lauderdale*.—JAMES WILLIAM MORGAN, Florence, June, 1880. Location, township 3, range 13. Describes bottoms on Tennessee river.
  2. *Lawrence*.—JAMES E. SAUNDERS and F. W. SYKES, M. D., Town Creek, April, 1880. Location, township 4, range 8, sections 21, 22. Describe level mulatto lands on Town creek and Tennessee river.
  1. *Colbert*.—L. B. THORNTON, Tuscumbia, January, 1880. Describes lowlands in Tennessee valley and table-lands on Big Bear creek.
  2. *Colbert*.—T. B. BICKLEY, Spring Valley, March, 1880. Location, township 4, ranges 10, 11, sections 19, 25. Describes uplands on Spring creek.
- Franklin*.—Dr. DANIEL N. SEVIER, Russellville, July, 1880. Describes bottoms and uplands of Cedar creek.

## V.—OAK AND PINE UPLANDS.

(Including: 1. Oak and hickory uplands, with short-leaf pine. 2. Gravelly hills, with long-leaf pine.)

- Marion*.—MARTIN NESMITH, Pikeville, June, 1880. Location, township 12, range 13, section 32. Describes bottoms and uplands on Beaver and Buttahatchie creeks.
- Lamar*.—GEORGE E. BROWN, Carslen, December, 1880. Location, townships 12, 13, ranges 14 and 5. Describes lands on Beaver and Buttahatchie creeks.
1. *Pickens*.—M. F. COOK, Pickensville, March, 1880. Location, townships 20, 21, ranges 15, 16, 17. Describes bottoms and uplands on Coalfire creek and Bigbee river.
  2. *Pickens*.—R. F. HENRY, Columbus, Mississippi, January, 1880. Location, township 18, range 16. Describes lowlands and uplands on McBee creek and Tombigbee river.
  1. *Tuscaloosa*.—A. C. HARGROVE, Tuscaloosa, June, 1880. Location, township 21, ranges 10, 11, sections 7, 18, 19, 30, 25, 13. Describes lowlands on Warrior river and adjacent uplands.
  2. *Tuscaloosa*.—JAMES R. MAXWELL, Tuscaloosa, July, 1880. Location, township 24, range 5 east, section 3. Describes rolling bottom lands between Big creek and Warrior river and uplands on Little Sandy river.
- Bibb*.—J. S. HANSBERGER, Tionus, March, 1880. Location, township 24, range 10 east.
- Autauga*.—C. M. HOWARD, Mulberry, August, 1881. Location, township 17, range 13. Describes bottoms and uplands on Beaver and Ivy creeks.

## VI.—CENTRAL PRAIRIE REGION, INCLUDING FLATWOODS.

- Sumter*.—Dr. R. D. WEBB, Livingston, March 9, 1880. Describes the black prairie, the upland sandy, and the post-oak flatwood soils occurring in the drainage area of Sucarnatchie creek, a tributary of the Tombigbee river.
- Greene*.—THOMAS J. PATTON, Knoxville, July, 1880. Location, township 23, range 3 east. Describes uplands and lowlands on Sims and Buck creeks and the Warrior river.
1. *Hale*.—Professor TUTWILER, Greene Springs, May, 1880. Location, township 22, range 4 east. Describes lands on Five-mile creek and Warrior river.
  2. *Hale*.—NORFLEET HARRIS, Laneville, March, 1880. Location, township 18, range 5 east. Lands are for most part black and chocolate prairie.
- Marengo*.—W. A. STICKNEY, Faunsdale, June, 1880. Location, township 17, range 5 east, sections 8, 17, 20. Describes rolling and flat, loose black prairie uplands, and mulatto or post-oak lands on and near Cottonwood and Powell creeks.
- Perry*.—H. A. STOLLENWERCK, Uniontown. Location, township 18, range 6, sections 18, 20. Describes first bottoms and rolling and level prairie lands on Dry creek.
- Dallas*.—J. F. CALHOUN, Minter, February, 1882. Location, township 13, ranges 10, 11, sections 11, 14, etc. Describes uplands between Cedar and Pine Barren creeks.
1. *Lowndes*.—WILLIAM M. GARRETT, Mount Willing, March, 1880. Location, township 13, ranges 13, 14. Describes bottoms and black prairie and sandy uplands on Cedar creek.
  2. *Lowndes*.—P. T. GRAVES, Burkville, September, 1880. Location, township 16, range 15, section 36. Describes uplands on Tallawassee and Pintlala creeks.
  1. *Montgomery*.—THOMAS W. OLIVER, Montgomery, April, 1880. Location, township 16, range 18, sections 8, 18, 17. Describes bottoms on Small creek and uplands on Catoma creek.
  2. *Montgomery*.—J. A. CALLAWAY, Snowdon, March, 1880. Location, township 15, range 18. Describes bottoms and uplands on Ramer and Catoma creeks.
  1. *Bullock*.—W. M. STAKELY, Union Springs, March, 1880. Location, township 14, range 23, section 4. Describes uplands and hog-wallow prairies on Cupiahatchee and Town creeks.
  2. *Bullock*.—J. F. CULVER, Union Springs, January, 1880. Location, township 13, ranges 23, 24. Describes sandy and black prairie bottoms on the headwaters of Conecuh river.
  3. *Bullock*.—J. L. MOULTRIE, Union Springs, March, 1880. Location, township 14, range 23, sections 23-26. Describes timbered prairie or post-oak lands on the Cupiahatchee creek.
  4. *Bullock*.—M. L. STINSON, Union Springs, March, 1880. Location, townships 11, 12, 13, ranges 23, 24. Describes bottoms and uplands on Conecuh and Pea rivers.

*Macon*.—JOHN L. COLLINS, Tuskegee, December, 1881. Refers to entire county.

1. *Barbour*.—Hon. H. D. CLAYTON, Clayton, September, 1880. Location, township 10, range 26, sections 4, 5, 8, 9. Describes first and second bottoms and rolling uplands on Choctawhatchee creek and river.
2. *Barbour*.—Dr. H. HAWKINS, Hawkinsville, March, 1880. Describes bottoms and uplands on Cowikee and other creeks, and on the Chattahoochee river.

#### VII.—LONG-LEAF PINE REGION.

(Including: 1. Oak and hickory uplands, with long-leaf pine. 2. Lime-hills or lower prairie. 3. Open pine woods and lime-sink region.)

1. *Washington*.—R. M. CAMPBELL, Saint Stephens, June, 1880. Location, townships 3, 4, 5, 6, 7, 8, range 1 east, and ranges 1, 2 west. Describes bottoms and alluvial lands on the Tombigbee river, and rolling and level uplands on Lewis and Sinta Bogue creeks.
1. *Monroe*.—J. M. HARRINGTON, Newtown Academy, July, 1880. Location, township 9, range 9, section 16. Describes bottoms and uplands on Flat creek.
1. *Wilcox*.—HENRY C. BROWN, Camden, January, 1880. Location, township 12, range 8, section 33. Describes bottoms and uplands on Pursley creek.
2. *Wilcox*.—FELIX TAIT, Camden, April, 1880. Location, township 11, range 7. Describes lands on the Alabama river.
1. *Conecuh*.—ANDREW JAY, sr., Jayvilla, February, 1880. Location, township 5, range 12, section 30. Describes lands on Murder creek and Escambia river.
2. *Conecuh*.—P. D. BOWLES, Evergreen, February, 1880. Location, township 5, range 11, section 11. Describes bottoms and uplands on Beaver creek and Conecuh river and alluvial plains on Murder creek.
- Crenshaw*.—GEORGE W. THAGARD, Rutledge, January, 1880. Location, townships 9, 10, range 17. Describes bottoms and uplands on Patsaliga river.
- Coffee*.—M. G. STODENMEIER, Elba, July, 1880. Describes rolling and level lands on Boles creek and Pea river.
- Dale*.—J. C. MATTHEWS.—Crittenden's Mills, January, 1880. Location, townships 3 to 8, ranges 23 to 28. Describes bottoms and uplands on Choctawhatchee river and several tributary creeks.
- Henry*.—A. McALLISTER, Shorterville, March, 1880. Location, township 7, range 29. Describes bottoms on Choctawhatchee and uplands on numerous creeks.
- Mobile*.—J. P. STELLE, Citronelle, June, 1880. Describes lowlands and uplands on Mobile and Tombigbee rivers.
- Escambia*.—JOHN W. STEPHENSON, Douglasville, April, 1880. Location, townships 1, 2, ranges 11, 12. Describes lands on Conecuh river.
- Geneva*.—W. N. BRANDON, Geneva, August, 1880. Location, townships 2, 3, ranges 22, 23. Describes bottoms and uplands on Wilkinson creek.

## ANSWERS TO SCHEDULE QUESTIONS.

[The Roman numerals used in the following answers refer to the regions as numbered in the reference table.]

These regions are—

- I.—Metamorphic.
- II.—Coosa and outlying valleys.
- III.—Coal-fields.
- IV.—Tennessee valley.
- V.—Oak and pine uplands, including—
  1. Oak and hickory uplands, with short-leaf pine.
  2. Gravelly hills, with long-leaf pine.
- VI.—Central prairie region, including—  
Flatwoods.
- VII.—Long-leaf pine region, including—
  1. Oak and hickory uplands, with long-leaf pine.
  2. Lime-hills or lower prairie.
  3. Open rolling pine woods and lime-sink region.

### TILLAGE, IMPROVEMENTS, ETC.

1. Usual depth of tillage (measured on land side of furrow).

The average depth in all the regions is 3 to 4 inches.

2. What draft is employed in breaking up?

Generally one horse or mule.

3. Is subsoiling practiced? If so, with what implements, and with what results?

To some extent, and usually with good results, in regions I, II, III, and IV; rarely, if at all, in the last three regions.

4. Is fall plowing practiced? With what results?

Practiced to a limited extent in I, II, III, and IV, and with good effect in certain parts of the Tennessee valley; rarely, if at all, used in VI and VII. Where cotton is the chief crop, all the labor is required in the fall for gathering. In VII the character of the soil is generally of such nature that fall plowing would not be remunerative.

5. Is fallowing practiced? Is the land tilled while lying fallow or only "turned out"? With what results in either case?

Fallowing is practiced but little, if at all, except in small areas in regions II and III. Throughout the state, however, it seems to be very common for land to be "turned out" to rest.

6. Is rotation of crops practiced? If so, of how many years' course, in what order of crops, and with what results?

Rotation of crops is practiced throughout the state, but not always in a systematic way. Where there is system, the usual order of crops is cotton from one to three or four years, then corn; followed by oats, or wheat, to be followed again by cotton. In regions V, VI, and VII cotton is generally the chief crop, and all the best and freshest land is devoted to its culture. In these regions it is no unusual thing for the same lands to be planted in cotton five, ten, or fifteen years in succession. In some parts of the Tennessee valley it is becoming quite common to sow clover with small grain, so that the order of crops is cotton, corn, oats, or wheat, with clover, followed by one or two years' of rest.

7. What fertilizers or other direct means of improving the soil are used by you or in your region? With what results? Is green-manuring practiced? With what results?

In I, II, VI, and VII guano, the superphosphates, and compost, with cotton-seed and stable manure, or with lime, vegetable matter, etc., are chief manures, and the results are always good, provided the crops are properly cultivated. In III, IV, and V there is less use of commercial fertilizers, but on the contrary, cotton-seed and cottonseed-meal are used over a large part of this area to a very considerable extent. In all cases where fertilizers are properly applied and the crops are thoroughly cultivated, it appears that farmers are fully repaid for the outlay made in their purchase. There is but little green-manuring; but in some localities cow-pease, weeds, grass, etc., are turned under with advantage. On lime-lands pease cannot be profitably or safely used.

8. How is cotton-seed disposed of? If sold, on what terms, or at what price? Where is the nearest cottonseed-oil factory? Is cottonseed-cake used for feed; for manure?

Cotton-seed is used throughout the state as a fertilizer, both in the green state and in the form of meal. It is also used in both forms as a feed for cattle; the cake or meal is, however, not yet much used for feeding. As an article of commerce seed is disposed of principally to the oil-mills, of which there are quite a number in this state. The negroes, as a rule, sell their cotton-seed to the mills, but the more thrifty and intelligent planters find it advantageous to return all surplus seed to the soil. The seed, both in its natural and manufactured forms, is especially valuable for corn and all small-grain crops. But, except some small areas, the cottonseed-cake is not much used either alone or mixed, for crops, probably because of its cost.

#### PLANTING AND CULTIVATING OF COTTON.

9. What preparation is usually given to cotton land before bedding up? Do you plant in ridges; how far apart? What is the usual time of planting? What variety of seed is preferred? How much is used per acre?

Throughout the state there is but little preparation given to land before bedding it for cotton, except the removal of the stalks of the old crop; but in exceptional cases the land is plowed broadcast in the winter or early spring. Cotton is uniformly planted in ridges, which are from 2½ to 4 feet apart, according to the strength of the soil. In regions I, II, III, and IV cotton is planted from the 10th of April to the 1st of May; in the other regions the time of planting is on the average from five to fifteen days earlier. There are numerous varieties of seed used. Among others may be mentioned Dixon, Boyd Prolific, Peeler, Zellner, Brown, Green, Petit Gulf, etc. According to some reports the cluster or short-limb varieties are best suited to deep soils, and long-limb varieties do best on light or thin soils. The average amount of seed required per acre is from two to three bushels, more being required for early than for late planting. It appears that in some cases the minimum may be as low as one bushel and the maximum as high as six bushels of seed per acre.

10. What implements do you use in planting? Are "cottonseed-planters" used in your region? What opinion is held of their efficacy or convenience?

As a rule, the bed or ridge is opened with a narrow plow (scooter or bull-tongue), and the seed is strewn in the furrow by hand, and covered with a board, block, or harrow. Planters are but little used, and yet their use secures a uniform distribution of seed in the drill, and hence economizes seed, and also makes the after-cultivation more easy.

11. How long usually before seed comes up? At what stage of growth is it thinned out to a stand, and how far apart? Is cotton liable to suffer from "sore-shin"? What after-cultivation is given, and with what implements?

Seed comes up in from five to twenty days, and is usually thinned out to a stand when three or four weeks old, or when the third and fourth leaves appear. The young plant is sometimes retarded in growth by the "sore-shin", which is specially the case in cold and wet weather. The injury seems to be caused in the first instance from carelessness or want of skill in the use of the hoe, by which the bark of the plant is either abraded or cut. The first after-cultivation consists in most cases, perhaps, in "running" round the cotton with a turning-plow, bar side to the drill, after which the cotton is chopped out and generally brought to a stand with one or two stalks in a hill, at distances varying from 12 to 18 or 20 inches in the drill, according to fertility of soil. After having been brought to a stand, cotton usually has simply surface culture with sweep, harrow, or cultivator.

12. What is the height usually attained by cotton before blooming? When are the first blooms seen? When do the bolls first open? When do you begin your first picking?

The height attained before blooming is from 1 to 3 feet, according to the character and preparation of the soil. The first blooms appear when the cotton is 8 or 9 weeks old, and hence from June 10 to July 4, the former date being generally true for V, VI, and VII regions and the latter for the remainder of the state. The interval from the bloom to the opening of the boll is from 40 to 50 days, the shorter interval being required later in the season. Hence, cotton begins to open from the last of July to the middle of August, and picking usually begins two or three weeks afterward.

13. How many pickings are generally made, and when? Do you usually pick all your cotton? At what date does picking usually close? At what time do you expect the first "black frost"? Do you pen your seed-cotton in the field, or gin as the picking progresses?

As a rule there are three pickings, by which all the crop is gathered. Picking generally closes by the last of November; but when the yield is heavy, or labor insufficient or inefficient, the picking may not be finished till Christmas. Black frost is said to occur from October 10 to the 1st of November, according to the nature of the locality and the character of the season. In some cases seed-cotton is penned in the field, which is generally quite hazardous. The usual practice is to have cotton ginned, if possible, as the picking progresses.

#### GINNING, BALING, AND SHIPPING.

14. What gin do you use? How many saws? What motive power—horse-power or steam-engine? If the latter, which mechanical power arrangement do you prefer?

There are many answers to the first question. Some of the many gins mentioned are Pratt's, Gullett's, Winship's, Orr's, Brown's, Carver's, Avery's, Loomis', Eagle, and Magnolia. In a few cases steam is the motive power, and still more rarely water is the agent. Generally horses or mules are used to drive the gin. The gearing consists usually of wooden cog-wheels or iron segments with pinion. The only thing in the way of a general use of steam is the cost of engine and fixtures. Its use is of course advantageous in many respects. The great majority of the gins in use have from 40 to 50 saws.

15. How much clean lint is made in a day's run? How much seed-cotton, on an average, is required for a 475-pound bale of lint?

In a day's run from 1,000 to 8,000 pounds of clear lint can be made. The amount depends upon the number of saws in the gin, and also upon the motive power. A 40-saw gin driven by a pair of mules or horses will clean from 1,000 to 1,500 pounds in a day. The highest results are, however, to be gotten only with steam or water. The average amount of seed-cotton required for a 475-pound bale is about 1,545 pounds.

16. What press do you use for baling, and what press is generally used in your region? What is its capacity? Do you use rope or iron ties for baling? If the latter, what fastening do you prefer? What kind of bagging is used in your region?

It appears that in large portions of regions IV and VII the wooden press still holds the place of honor; but in the other regions iron presses of various patents are very generally in use. They seem to be specially in vogue in region VI, where Golding's, Allum's, Wright's, Stuckie's Hydraulic, Janney's, Bullock's Segment, and perhaps others are enumerated. The number of bales pressed per day varies from 5 to 20 or 25, according to the character of the press and the number of men employed. Iron ties are universally used, with various fastenings, such as Buckle and Loop, Arrow, American, Kennedy, the corrugated tie, etc. Jute and Kentucky or Missouri hemp and India bagging are used.

17. What weight do you aim to give your bales? Have transportation companies imposed any conditions in this respect? At what time do you chiefly ship, and to what station or city and port? What is the usual rate of freight to such port per bale?

It is almost an invariable rule in Alabama to aim to make the bale weigh 500 pounds. Steamboats have imposed no limitation to the weight of a bale, but railroads usually charge by weight. Shipping begins as soon as cotton is ready for market, say, the middle of October, and continues throughout the fall and winter. The port to which cotton is shipped is determined by the locality. There are good cotton markets at Mobile, Montgomery, Selma, Memphis, Tennessee, Rome, Georgia, and at various small towns within the state; and it is generally made advantageous to the farmer to sell near home. The rate of freight is determined in all cases by distance and means of transportation.

#### DISEASES, INSECT ENEMIES, ETC.

18. By what accidents of weather, diseases, or insect pests is your cotton crop most liable to be injured? At what dates do these several pests usually make their appearance? To what cause is the trouble attributed by the farmers? What efforts have been made to obviate it? With what success?

Cotton is injured by lice, flea-bugs, boll-worms, caterpillars, shedding, and rust. Rust is caused on light sandy soils by excessive rains; on stronger lands it is caused by the continuous planting of cotton for many years. Shedding is produced specially by continued and excessive rains. A wet season causes the loss of all the bolls that should have ripened during that period. In regions I, II, III, and IV the caterpillar generally makes its appearance so late, if at all, that its ravages are rather advantageous to the cotton, by stripping off the dense foliage, and thus insuring the prompt opening of all matured bolls; but in the other portions of the state the caterpillar makes its appearance in multitudes, usually in August—early enough to be very hurtful to the crop. Lice, flea-bugs, and sore-shin generally appear (if at all) when the cotton is young, provided the weather is wet and cool. The boll-worm is not often very damaging, but may generally be found in the fields from the appearance of the first "squares" or "forms" till the first of September. Rust can be prevented by rotation or fertilizing. Shedding can be obviated to some extent by shallow plowing. In some localities, especially in some parts of regions V, VI, and VII, Paris green has been used to destroy the caterpillar, but, as it appears, with very little success in most cases.

19. Is rust or blight prevalent chiefly on heavy or ill-drained soils? Do they prevail chiefly in wet or dry, cool or hot seasons? On which soil described by you are they most common?

Rust sometimes appears on heavy, ill-drained soils, but is oftenest seen on sandy lands, whether uplands or bottoms, on gray lands, on light-yellow clay lands, and in some places, as in Madison and Jackson counties, it is found often on fresh, loose lime-lands.

#### LABOR AND SYSTEM OF FARMING.

20. What is the average size of farms or plantations in your region? Is the prevalent practice "mixed farming" or "planting"? Are supplies raised at home or imported; and if the latter, where from? Is the tendency toward the raising of home supplies increasing or decreasing?

In regions I, II, III, and V the farms are usually small, containing not more than 200 acres, but in some cases much larger. In the other regions farms vary in size from 40 or 50 to 1,000 or even 2,000 acres. In the regions of small farms supplies are largely raised at home, and there is a reported increase of production. In the regions of large farms, on the other hand, there is in some localities increased production, but meat is still largely imported. In the middle and southern portions of the state there is little or no wheat produced, and hence flour is almost universally imported into those sections.

21. Who are your laborers chiefly? How are their wages paid?

The laborers are negroes and native whites, the former largely predominating in the regions of large farms, the latter on small farms for most part. In the latter case the laborer is generally the owner of the farm. Wages are paid in many ways, and at various rates, from 40 to 75 cents per day and from \$8 to \$14 per month, to be paid at the end of the month.

22. Are cotton farms worked on shares? On what terms? Are any supplies furnished by the owners? Does your system give satisfaction? How does it affect the staple? Does it injure the land?

The large cotton farms or plantations are almost altogether worked on the share system, the smaller farms being usually worked by the owners with such hired help as may be needed on occasion. It is almost the universal practice on the large farms for the landlord to furnish everything but the laborers' board and receive one-half of all the crops; but when only the land is furnished by the owner, he receives usually one-fourth of the cotton and one-third of the corn produced by the laborer. It is almost invariably reported that this system of cotton culture damages the quality of the cotton and deteriorates the land.

23. Which system (wages or share) is the better for the laborer? Why? What is the condition of the laborers? What proportion of negro laborers owns land or the house in which they live?

There is a very decided difference of opinion as to which is the better system (wages or share). With the exception of regions IV, V, and VI, opinions are about equally divided; in these, however, there is almost entire concurrence in the opinion that wages are the best. The reasons assigned in favor of wages are, that the laborer is sure of reward and a comfortable living, and the employer is enabled to control labor, and is justified in making larger expenditures in fertilizers, etc., to increase the yield. It is urged in favor of the shares system that the laborer is encouraged to make effort, and that if he is industrious and energetic he will be rewarded with larger returns for his labor. On the whole, the condition of the laborers is good—better, perhaps, than that of the same class of persons in any other quarter of the globe. Very few negroes own houses or lands in the large farming regions.

24. What is the market value of land described in your region? What rent is paid for such land? How many acres or 400-pound bales per hand is your customary estimate?

Cotton lands, in the greater part of the state, are estimated in value at \$3 to \$10 and \$12, while in a few localities, such as Perry, Marengo, etc., in region VI, and the best lands in the Tennessee Valley region are estimated at \$15, \$20, \$30, and in some few cases even higher. Rent varies partly in proportion to the estimated value of the land, and hence the price of rent is from \$1 and less to \$2, \$3, and sometimes \$4 per acre. Rent is also paid in produce at the rate of one-fourth of the cotton and one-third of the corn grown on the land. According to quality of land, the estimate of product per hand will vary from 2 to 6 bales, but the average for good land is 3 to 4 bales per hand. In some cases the estimate is made at 6 to 10 bales per mule, *i. e.*, one mule and two hands.

25. To what extent does the system of credits or advances upon the growing crop prevail in your region? At what stage of its production is the cotton crop usually covered by insurance? Is such practice general?

In region I credits to the value of one-half the laborer's crop are often made by land-owner; in region II credits are given largely in a few localities, but not as much as formerly; in region III credits have only recently been asked and granted; in regions IV, V, VI, and VII credits are almost universal, and regularly consume the entire crop of the laborer. As a rule, the crop is not insured till shipped or placed in the warehouse for shipment. In a few cases cotton is insured when baled, and in some parts of Bullock county gin-houses and cotton are insured as soon as picking begins. Cotton is always insured when shipped, unless forbidden by the owner.

26. What are the merchants' commissions and charges for storing, handling, shipping, etc., to which your crop is subject? What is the total amount of these charges against the farmer per pound, or 400-pound bale? What is your estimate of the cost of production in your region, exclusive of such charges, and with fair soil and management?

When the producer pays all the expenses of shipping, handling, storing, and commissions for selling, his expense or loss is from \$4 to \$6 per bale, but when he sells to a home merchant he often pays only for the weighing; the buyer incurs the additional expense. It is quite general over large areas of this state for the farmer to sell his cotton at the nearest town, store, or depot. The report of cost of production is almost invariably 8 cents per pound. A few seem to think that cotton can be produced at a cost of 5 or 6 cents, while a very few estimate the cost of production at 10 to 12½ cents per pound.

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