SOIL SURVEY OF CONECUH COUNTY, ALABAMA.

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DESCRIPTION OF THE AREA.

Conecuh County is situated in the southern part of the State of Alabama, in the second tier of counties from the Florida line. The county is bounded on the north by Monroe and Butler Counties, on the east by Butler and Covington Counties, on the south by Escambia County, and on the west by Monroe County.

The length of the county, which is nearly a triangle in shape, from the north to south is about 40 miles, while the width along the southern boundary is about 43 miles. It contains 849 square miles, or 543,360 acres.

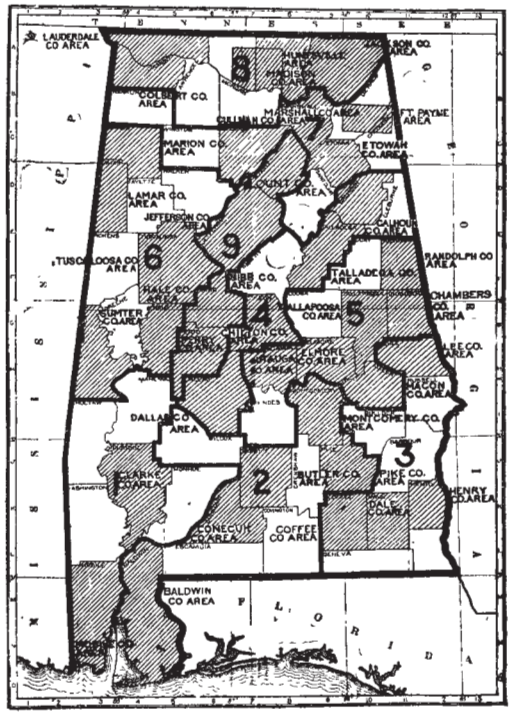

FIG. 17.—Sketch map showing areas surveyed in Alabama.

Roughly, the area is a plain, with a general slope toward the south. It is dissected by a drainage system, the streams of which have cut channels to depths varying from a few feet to something like 100 feet or more below the surrounding crests. The stream bottoms and second bottoms are approximately level, but the uplands vary from undulating to rolling and hilly. There are no high hills, but in the vicinity of streams there are considerable areas of a rolling to low hilly character. Areas of such uneven topography are more pronounced in the southern part of the county along the Conecuh River. The topography of the northern part of the county, particularly that north of the Sepulga River, is rougher than the main portion of the central and southern parts. Practically none of the land is topographically unsuited to cultivation. The Conecuh and Sepulga Rivers, with their principal tributaries in the southern and south-

eastern parts of the county, are bordered by well-developed, flat, nearly level terraces. Terraces of like character, but of less extent, exist along the Escambia and Little Escambia Rivers, in the southwestern part of the county, and in places along other streams.

Most of the upland of the county is well drained and can be cultivated without ditching or terracing. Very little of the upland, except that which lies immediately around the heads of streams, is subject to serious erosion. A considerable proportion of the second bottoms is very much in need of tiling or ditching to remove excess water, while the first bottoms need not only ditching but diking to prevent overflows.

The tributaries of the Conecuh River drain something like four-fifths of the county, while the other one-fifth is drained by the Escambia and Little Escambia Rivers and their tributaries. At times of heavy rainfall overflows cover considerable areas of the bottoms and even parts of the lower terraces along these streams.

The first permanent settlement is said to have been made in the latter part of 1815, about 12 miles west of Evergreen, on what is now known as Hawthorns Mill Creek, and about 1½ miles west of the present site of Belleville. These settlements were soon followed by others along Burnt Corn and Murder Creeks and Sepulga River by immigrants from Georgia, the Carolinas, Virginia, and Tennessee.[1] Hampton Ridge was among these early settlements, and this place became the county seat in 1817. Later the county seat was removed to Old Sparta and then to Evergreen, where it now is.

There were comparatively few farms in the county before the war, and until within the last 15 years extensive areas of virgin pine, including many square miles of the best agricultural lands, were untouched. There still remain many sections of unbroken forest. The river and creek bottoms and the more favorable uplands along the main public highway and immediately around Evergreen and other railroad points are more thickly settled and more highly developed agriculturally than any other portions of the county. No section of the county is as yet completely settled, and none except the more desirable areas are being utilized. The county could easily support several times its present population without utilizing the soil resources to the utmost. A steady though gradual increase in population is taking place.

According to the census, the population of the county was 17,514 in 1900 and 21,433 in 1910. Evergreen, situated on the main line of the Louisville & Nashville Railroad, near the center of the county, is a thriving business community of 1,582 inhabitants, and the only town of much importance in the county. It is the principal shipping point, as well as the site of some important industrial enterprises.

[1] See History of Conecuh County, by Rev. B. F. Riley.

The county is well supplied with railroads. The Louisville & Nashville Railroad operates three lines through the county. There are also two lumber roads which enter the county and afford freight and passenger service.

Most of the public roads of the county are unsurfaced, but the highways leading out of Evergreen have been straightened, graded, and surfaced with sand and clay to distances varying from 12 to 26 miles. These roads are kept in a fairly good state of repair. Improvement of other roads through the county will do much to aid the development of agriculture.

The drinking water of the county is obtained from surface wells and flowing springs. The quality is good and the supply seems to be unlimited.

Though the county is distinctly agricultural in pursuits, there are other natural resources that contribute materially to its welfare. Large tracts of valuable forest supply timber to a number of sawmills. Turpentine and resin are important products. Clays for the manufacture of brick, tile, and earthenware are obtained in various places through the county.

The school system of Conecuh County is reasonably extensive and efficient. The rural schoolhouses within the last few years have either been remodeled or rebuilt, with a view to comfort and convenience. The district agricultural school, a coeducational institution, is situated at Evergreen and offers excellent opportunities to the people of the county. The county high school is located at Castleberry.

CLIMATE.

The climate of the county is temperate and free from extremes. The winters are short and mild. Snow seldom falls and ice forms only occasionally, in midwinter. The summers, while long, are not oppressive, the greater part of the summer season being agreeably tempered by breezes from the Gulf. December, January, and February show a mean temperature of 50° F., with extremes during the season ranging from zero to 81° F. Zero weather is exceedingly rare and of very short duration. June, July, and August have an average temperature of 80° F., with an occasional extreme of very short duration reaching as high as 105°. The climatic conditions over the county are very uniform, there being no elevations of sufficient importance to effect noticeable differences.

The climate of the county is especially favorable to a broadly diversified system of agriculture. Besides the staple crops, many special crops, such as fruits, melons, and early and late truck crops, can be matured. A number of vegetables can be grown generally during the winter in the open or with moderate protection with straw or other covering. Farming operations can be carried on throughout the year, with the exception of short rainy periods during midwinter.

Stock can be grazed all the year on native and cultivated grasses and forage crops. Green feed can be supplied throughout the year. Stock need but little protection from the weather.

The mean annual precipitation of 51 inches is fairly well distributed. The heaviest rainfall occurs during the winter and spring months. Spring planting is sometimes delayed for a short time on account of late spring rains. Crops occasionally suffer from short periods of drought during the growing season, but this can be avoided or reduced to negligible proportions by deep preparation of the seed bed and frequent shallow cultivation to conserve the moisture.

Below is given a table compiled from the records of the Weather Bureau office at Evergreen, showing the normal monthly, seasonal, and annual temperature and precipitation and the actual and average dates of first and last killing frosts in the fall and spring in Conecuh County. The late spring frosts following a very warm season may damage fruit. Orchards located on the higher elevations, however, often escape, and in selecting orchard sites this should be kept in mind.

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

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*	*Inches.*
December	50	77	13	3.4	4.9	3.0	Trace.
January	48	74	13	3.1	4.1	4.7	0.4
February	51	80	0	6.6	3.6	8.2	1.0
Winter	50	.....	.....	13.1	12.6	15.9	1.4
March	58	85	23	5.6	3.0	5.9	.....
April	65	92	30	2.7	Trace.	3.2	.....
May	72	96	42	2.7	.6	4.0	.....
Spring	65	.....	.....	11.0	3.6	13.1	.....
June	78	100	54	6.4	4.2	8.5	.....
July	81	105	59	6.4	10.5	8.8	.....
August	80	100	59	5.2	1.5	3.4	.....
Summer	80	.....	.....	18.0	16.2	20.7	.....
September	76	100	40	3.0	.1	1.4	.....
October	65	90	30	2.2	2.4	3.4	.....
November	56	85	22	3.7	4.0	2.8	.....
Fall	66	.....	.....	8.9	6.5	7.6	.....
Annual	65	105	0	51.0	38.9	57.3	1.4

Average date of first killing frost in autumn, Nov. 12; of last in spring, Mar. 13. Date of first killing frost in autumn, Oct. 24; of last in spring, Apr. 5.

AGRICULTURE.

The coming of the first white settlers to the vicinity of Burnt Corn Creek about the year 1815 marks the beginning of the agricultural development of Conecuh County. While the chief occupation of these early settlers was the growing of food crops, such as corn, wheat, oats, potatoes, and vegetables, some attention was given to lumbering, the logs being rafted down the Sepulga and Conecuh Rivers to Pensacola, Fla. A few head of live stock were owned by the planters, and these were pastured upon the open range of luxuriant grasses during the summer season, and through the winter upon the matured grasses and the cane which at that time lined the streams and branches. As a consequence of a gradual inflow of pioneer home seekers from the more thickly populated districts of the neighboring States it was but a short time until there was established a fair sprinkling of homesteads over the more desirable portions of the county. A little later the United States Government opened up the sale of public lands in the county at such low prices and on such easy terms as to hasten settlement. Large holdings were secured by many of the planters. On these large plantations most of the necessities as well as many of the comforts of life were produced. This condition continued practically unchanged until the Civil War. The loss of slave labor and the consequent impossibility of owners to cultivate large areas, coupled with the rapid growth of population and the imperative demand for more homes, resulted in a gradual division of the larger plantations until at present only a few of them remain intact. The present tendency is to farm smaller tracts upon a more intensive plan of cultivation.

The settlement on the site of the present town of Brooklyn, on the Sepulga River, became for the people in the eastern and southeastern parts of the county the first distributing point, by way of the Sepulga and Conecuh Rivers to Pensacola, for the crops grown and the supplies brought in, while on the western side the exchange of such commodities was made at Claiborne, a landing on the Alabama River, from which point transportation was performed by steamboat to Mobile. Conditions remained about the same for a number of years until the Louisville & Nashville Railroad (Mobile & Montgomery Railroad) was put through, about 1860, when marked improvement in agriculture and its dependent industries began. Horsepower machinery was replaced by machinery operated by steam, and the community began to show signs of increasing prosperity. The Civil War had a devastating effect upon all industries, and the subsequent recovery was slow.

The building of the Alabama & Florida Railroad across the eastern corner of the county and the Southern Alabama through the western

part (branch lines of the Louisville & Nashville Railroad) has done much toward the development of the county and the promotion of its agriculture. The construction of these roads and of their spurs (lumber roads) caused a substantial increase in the area of lands farmed and in the valuation of the territory through which they passed.

The growing of cotton as a money crop and corn as the chief crop for stock feed constitutes the principal type of farming at present. Hay is cut and oats and peanuts grown for necessary feed and forage but not for market, the peanuts being fed in the ground to hogs. Sweet potatoes, melons, and garden vegetables are grown in barely sufficient quantities to meet the local demand, except for a short period during the summer, when some are sold. Enough sugar cane is grown to supply sirup for domestic use. Strawberries, tomatoes, and peaches are largely grown for shipment to other markets. Pecans for commercial purposes are being given considerable attention by a few farmers. Not enough meat is produced to supply the home requirements of all farmers, although some have a surplus of bacon or pork for sale. Enough milk and butter are produced for home use on many farms, but the supply not infrequently falls short of this.

Some of the better farmers are growing soy beans, velvet beans, and bur clover as soil improvers and for forage and are producing enough potatoes and certain other vegetables for the needs of the home throughout all or a good part of the year.

Cotton.—Cotton is grown mostly on ridges thrown up usually over the centers of the old rows without previous breaking. The crop is cultivated mostly according to the old method, the working plan of which is to plow and hoe just enough to keep down weeds. The rows are barred off with plows running close to the plants to turn away a large part of the bed on both sides, leaving the young cotton on a narrow strip of ground; and then the plants are thinned ("chopped out") with hoes. Following this furrows are run at intervals alongside the plants with shovels or sweeps, dirt being thrown toward the plants, then away, and finally back in such a way as to leave them at the time of the last cultivation on beds separated by gutterlike "middles." Two or more hoeings suffice to remove weeds and grass from between the stalks. A better method of cultivation, which is being practiced to a large extent, is to run over or along the sides of the beds with side harrows or weeders, then chop out and subsequently cultivate shallow at intervals of about a week, under ordinary conditions of weather, hoeing as often as necessary to remove the interstalk grass and weeds. Where the land has not been previously broken to a considerable depth the first

plowing, except on deep, loose, sandy soil, should be comparatively deep.

Growing the crop on beds is a very good practice on flat lands of inadequate surface drainage, but a more nearly level cultivation would prove the better plan where the drainage is good, as it facilitates plowing and is more favorable to the conservation of moisture.

Yields range from one-fourth to about 1 bale per acre, according to the type of soil, the condition of the soil, thoroughness of seedbed preparation, and cultivation and degree of fertilization. The good cotton soils, including all the well-drained loams, sandy loams, and clay loams, with the possible exception of the Susquehanna type, should produce, with favorable seasons and under good management, including proper cultivation and moderately heavy fertilization, a bale of cotton or more per acre. More fertilization, of course, will be required for such results on the thinner soils—more on the Norfolk soils, for example, than on the Orangeburg and Greenville.

With the coming of the boll weevil early planting, frequent cultivation, and all-round intensive treatment will be more imperative, in order to get heavy yields, than at present.[1]

Corn.—The corn crop is ordinarily grown in nearly the same way as cotton; that is, on ridges. The planting is done in water furrows. In the latter case dirt is gradually worked toward the plants until, at laying-by time, they are left on medium beds. Preliminary breaking and more nearly level, more frequent, and shallower cultivation are essential to best results with this crop where grown on naturally well-drained land.

While the average yields are low, good farmers have repeatedly demonstrated the feasibility of getting much better results—60 bushels or more per acre—by good soil treatment. There is too great a tendency for farmers to neglect and to fail to manure adequately the corn crop; to grow it, in other words, with the least possible expenditure of effort. There is very little land in the county outside the overflowed bottoms and deep sandy uplands that can not be made to double, treble, or even quadruple the present average yield. Of course, some soils will need heavier manuring than others, but this does not controvert the fact that even those which need such better comparative treatment are good, or at least fairly good, corn soils. Stream-bottom land, when not overflowed or when protected from overflows, as can be done along some streams, are even better corn producers than the lighter textured upland types.

Oats and rye.—Oats and, to a less extent, rye are grown in a rather patchy way for feed. Good yields of both crops can be grown on the

[1] See Farmers' Bulletins No. 333, U. S. Dept. of Agr., Cotton Wilt, and No. 512, The Boll Weevil Problem, with Special Reference to Means of Reducing Damage.

Greenville and Orangeburg soils, where the clay comes near the surface, with rather light applications of fertilizer or manure, provided the land be thoroughly prepared. The Norfolk, Ruston, Kalmia, and Susquehanna soils, excepting the sands, also give good returns with these crops, though heavier fertilization is necessary, and on the poorly drained areas, such as portions of the Kalmia, artificial drainage is also a requisite. Best average results may be expected from seeding in the fall. In most cases probably the crop is seeded broadcast. Drilling in or seeding in rows wide enough apart to admit of intertillage is the best method. These are valuable feed crops. They can be grazed in the winter and spring or grazed in the winter and subsequently harvested, or they can be plowed under as a source of vegetable matter.

Legumes.—Notwithstanding the fact that numerous members of the legume family thrive on the better soils of Conecuh County, or on nearly all the types except the deep sands and wet lands, comparatively few, with the exception of cowpeas and velvet beans, are grown in an important way. These crops, aside from their value as gatherers and storers of nitrogen from the atmosphere, add valuable organic material to the soil, tend to open up the subsurface and subsoil to better aeration, and afford good green forage and hay. They can, and by all means should be, grown in rotation or along with other crops.

Cowpeas are being grown somewhat extensively by a good many farmers, but the acreage devoted to them alone or conjointly with other crops falls far short of what it should be. From 1 to 2 tons or more of good hay can be harvested from an acre when seeded broadcast, sown after oats, early tomatoes, or any other early crop is harvested. Seeded between corn at the time of the last cultivation they can be used to advantage either as a field forage subsequent to the harvesting of the corn or as a source of organic matter.

Vetch and bur clover are good winter legumes for this region—good for pasturage or as soil improvers and as a source of vegetable matter. Crimson clover probably could be utilized also as a winter crop, although inoculation may be found necessary for best results. All of these winter legumes can be profitably used to prevent excessive leaching of the soil and on slopes to check erosion.

Soy beans are coming into favor among some farmers, both for their feeding value and their good effect upon the land. The velvet bean makes a prodigious growth of vine, affording excellent field forage, adding much vegetable matter to the soil, and storing up nitrogen in the nodules on the roots. An instance of a crop of velvet beans having been profitably grazed by cattle and having in addition improved the soil to the extent of showing good effects on subsequent

crops for several years is reported. Velvet beans may be grown alone or with corn. The crop requires some cultivation.

Lespedeza, which grows scatteringly in the wild state, if seeded would make excellent hay and at the same time improve the soil. It can be sown to advantage with oats, as can also vetch and bur clover. Lespedeza also is a fine grazing crop.

Alfalfa can be grown on the Greenville soils and probably the shallower phases of the Orangeburg sandy loam and fine sandy loam—those areas in which the clay comes near enough to the surface to be reached by the plow and turned up and mixed with the surface material. Liming and inoculation may be necessary. All areas seeded to this crop should be scrupulously cleared of grass and weeds by preliminary clean cultivation to crops like cotton, corn, and potatoes.

Grasses, sorghum, etc.—Probably the most valuable grass for this section is Bermuda grass, for the reason that it is relished by stock, thrives through the summer, protects the soil from erosion and leaching, and makes good hay. It takes hold, spreads rapidly, and persists with such obstinacy that some farmers look upon it as a noxious plant. It can be eradicated by growing rank, smothering crops, such as cowpeas, and by fall and winter plowing and harrowing. Bermuda grass will grow on every soil in the county.

Johnson grass could be successfully grown for hay and grazing, especially in the bottoms. It also is a nutritious plant; but, like the Bermuda, it is not popular with some, owing to its tenacity of growth after becoming once established.

Of the wild grasses, broom sedge, water grass, and carpet grass are probably the most valuable, being widely spread and thrifty.

Sorghum can be grown to good advantage for green pasturage for hogs and as a fodder crop, seeded in connection with cowpeas. It does well on bottom lands and uplands.

Peanuts.—The peanut grows splendidly on the well-drained sandy loams and loams. Its most valuable purpose locally is as a field forage crop for hogs. The crop can be grown in rows between corn rows with but little extra cultivation. The vines supply valuable organic matter to the soil, the roots add nitrogen, and the hogs in rooting for the nuts give the land a beneficial stirring.

Sugar cane for sirup.—Sirup of excellent quality is produced from sugar cane grown on the lighter colored sandy loams. The heaviest yields are secured from damp soils (not excessively wet), such as occur in swales and in places along streams, and from the Orangeburg and Greenville types. Very rich lands and the Orangeburg and Greenville soils, however, may not be expected to give a product of as good flavor and bright color as the lighter colored types

like the Norfolk, Ruston, and Kalmia. Fertilizers or manures are necessary for best results. Sirup is produced mostly in a small way for home use. There is no reason why it should not be manufactured for the market, as there are large areas of land especially suited to its production.

Potatoes.—Sweet potatoes are produced on nearly every farm for home use. The crop gives splendid results on all the well-drained sandy lands, heavy yields being secured readily with light to moderately heavy applications of fertilizer or manure, according to the soil. The potatoes are grown in beds somewhat as cotton and other intertilled crops. Most varieties will succeed. Early crops could probably be profitably grown for market, and possibly late crops also.

Irish potatoes also do well, but are little grown outside of garden patches. They do well with fertilization on the well-drained and even on fairly moist soils.

Melons and vegetables.—Watermelons, cantaloupes, cucumbers, cabbage, onions, squash, peppers, lettuce, radishes, English peas, snap beans, beets, carrots, collards, turnips, asparagus, eggplant, cauliflower, tomatoes, celery, okra, and parsley are among the crops that can be successfully grown on the well-drained loams, sandy loams, and sands with liberal fertilization.

The sands will give the earliest crops, but the heavy manurial treatment required in some degree offsets the advantage of early maturity, except, of course, when the purpose is to reach the earliest market.

The tomato is practically the only crop of the above list which is being grown for market on an important scale, not because of any shortcomings in the adaptation of the soils to the others, but rather that trucking on a commercial scale has simply been neglected.

Some farmers in the vicinity of Evergreen are engaged in the culture of tomatoes, but not on quite as extensive a scale as in the case of the strawberry. About 100 acres, principally the Orangeburg soils, were used for this crop in 1912. The average yield is about 300 crates per acre. They are put upon the market generally between May 1 and early in July, at an average price of 75 cents a crate, or about $225 an acre. Early shipments have netted the growers from $400 to $500 per acre. About 30,000 crates of tomatoes are shipped each season. No attempt is made to grow late or fall crops, except for local demand.

Fruits.—Of the tree fruits the peach has the most important place as a market fruit, while strawberries hold the corresponding place among the small fruits. Pears would do well but for the blight, by which the orchards are almost sure to be attacked. Possibly by

cutting the diseased limbs with disinfected tools and by taking out the most severely infected trees and burning the wood this disease could be controlled sufficiently to make this a paying fruit.

Figs thrive on the well-drained soils without any care whatever, but the fruit is not grown for commercial purposes.

The only commercial peach orchard is the one at Owassa. This is a well-tended orchard, from which 10 to 20 cars of Elberta peaches are shipped annually. So far the shipments have turned out profitably. There are scattered trees over the county, mostly seedlings.

In recent years the culture of strawberries on a commercial scale has been successfully undertaken by several growers. Farms of 20 to 75 acres or more are now devoted to this crop. These are chiefly in the vicinity of Castleberry, though some strawberry farms of smaller size are found in the vicinity of Evergreen. During the picking season trainloads of strawberry pickers come in from outside. The berries are packed in crates holding 24 baskets (quart size) each, and shipped to northern markets. The average annual shipment is about 150 cars. The price received varies from $1 to $3.50 a crate.

Pecans.—Considerable attention has been given to pecan culture in recent years. The trees, when properly looked after, are thrifty. The most important orchard has not yet come into bearing, but is about ready to bear. The improved paper-shell varieties are the ones that are being looked to for profitable returns. The Norfolk, Orangeburg, and Ruston soils of the well-drained uplands seem best adapted to pecans, according to results in Georgia, Florida, and elsewhere.

Crop adaptation.—Nearly every farmer knows of differences in adaptation of soils to crops, and some of them are guided in a measure by such knowledge. The deeper sandy soils are frequently given preference in the selection of watermelon and sweet potato patches, moist ground for sugar cane and corn, and red land (Orangeburg soils) for cotton. But, in general practice, little attention is given this matter, certainly as regards varieties of crops, and many different grades of land are indiscriminately used for all crops. The fact that cotton can be grown, and is grown with varying degrees of success, upon nearly every soil in the county has contributed much to the fostering of this widespread tendency to disregard soil individuality. Very few farmers have looked searchingly into the adaptation of their soils to particular varieties of crops, although it is a generally accepted fact that certain varieties of crops do better on certain soils than do other varieties. A va-

riety of cotton, for example, which has been fitted to special soils or soil conditions through years of continued growth can be counted upon, usually, to give better results on the same or related lands than when removed to totally different lands. A wet-land or clay-land cotton is not likely to succeed as well on well-drained sandy soils. Under boll-weevil conditions early varieties will be needed in order to mature a crop. In seeking early varieties it would be well for the farmer to inquire into the history of such a cotton—the kind of land it has been accustomed to—for an early variety of sandy-land cotton might mature too slowly on the relatively late bottom-land soils.

In subsequent pages describing soil types the individual adaptations of the several types are given, so far as they can be ascertained from the knowledge at hand.

Crop rotation.—Systematic crop rotation is not practiced in this county to any considerable extent. In some measure, at least, this is the result of the possibility of growing cotton successfully in the same field year after year by using commercial fertilizers. This does not mean that such a plan is the most successful way of growing cotton, for it is neither the most successful nor the most profitable, but that the crop "makes light draft upon the land" and can be grown for many successive years when fertilizers are used. The preponderance of the cotton acreage over other crops has of necessity held down the practice of rotations. Diversification will encourage rotation.

The most intelligent and profitable use of the lands of this general region can be made only by including crops which supply organic matter, particularly the legumes, in rotation with other crops. The best yields can be obtained on all the sandy soils by keeping the land supplied with enough vegetable matter to impart a noticeable degree of loaminess. It is good practice to follow oats with cowpeas or velvet beans; to grow cowpeas or velvet beans with corn; to follow corn, cotton, and vegetables with winter crops of bur clover; and to seed legumes or rye in pecan and peach orchards. Oats or nearly any other crop will do better after a heavy crop of velvet beans than after cotton or corn grown on impoverished soil.

Numerous rotations can be planned and followed that will build up the land, increase yields, provide needed stock feed, and increase the chance of producing each year a successful crop.

Certain plant diseases, such as cotton wilt, watermelon wilt, and tomato wilt, can be handled to best advantage by changing to other crops or wilt-resistant crops. It often happens that watermelons can not be profitably grown twice in succession on the same land and

that cotton can not be grown after wilt-diseased cowpeas, and vice versa, except where seed of wilt-resistant varieties is used.[1]

Cultivation of the land.—Too little early plowing is done by the average farmer, who often does not prepare his land until about planting time. Fields too frequently are left bare and untouched during the winter. Fall plowing is generally beneficial to the soils of this section, especially those having clay near the surface. The sandy loams, loams, and clay loams would be benefited by plowing broadcast in the fall to a depth of 7 to 10 inches. Deep, loose sands are not so likely to be improved by fall plowing, except where there is vegetable matter to be plowed under, in which case fall plowing is imperative in order to secure the best results from the vegetable matter. Such deep plowing does not interfere with immediate seeding to winter crops; in fact, it is generally conducive to better results.

For all crops, especially those that have tender seedlings, such as clover, vetch, and small grass, the land should be thoroughly pulverized by harrowing just before planting. With the intertilled crops, shallow and frequent cultivation should be practiced, particularly in dry seasons.

The lands of the county are prevalently well suited to the use of improved labor-saving farm machinery, including harrows, weeders, drills, mowing machines, harvesters, disk plows, walking and riding cultivators, and so on. Some of these are already being used by many farmers and will no doubt be introduced upon every farm sooner or later.

The soils are dominantly sandy and very easily put into a good condition of tilth. Heavier tools and teams, of course, are needed on the heavier soils, such as the Greenville clay loam, and on the shallow Susquehanna soils. The sandy types can be cultivated safely soon after rains, but the heavy soils should not be disturbed by stock or plow until dry enough not to ball.[2]

Fertilizers.—Fertilizers are in general use through this section for nearly all crops. Applications of either barnyard or commercial fertilizer are necessary to secure the maximum yields, but the quantities required can be reduced by keeping the soils properly supplied with organic matter by growing and occasionally plowing under green manuring crops, such as the legumes and rye.

An acreage application of about 200 pounds of a mixture analyzing 10–1.65–2[3] is the common practice of fertilizing. Most of this is used on cotton. A few are using high-grade mixtures analyzing 10–3–3, 9–3–3, and 8–3–3 and are making heavier applications, and in addition using side dressings of nitrate of soda at or before the fruit-

[1] See Farmers' Bulletin No. 245, Renovation of Worn-Out Soils.

[2] See Farmers' Bulletin No. 266, Management of Soils to Conserve Moisture.

[3] Ten per cent phosphoric acid, 1.65 per cent nitrogen, and 2 per cent potash.

ing stage. Simple mixtures of phosphoric acid and potash of the formula 8—4 [1] are also being used by some farmers. Commercial fertilizers have been found generally profitable on the upland and terrace soils.

Strawberries are given heavier applications of fertilizers than the general farm crops. Some growers use the lower grades, but others apply with good effect the better grades, such as 8–4–3 and 7–3–7 mixtures. The necessary applications will, of course, vary with the condition of the soil. The Ruston soils do not generally need quite so much as the Kalmia, Norfolk, and Susquehanna, but need more than the Orangeburg, while the Greenville soils require less than any of the other series mentioned.

The mixing of fertilizers on the farm offers better opportunities for meeting the requirements of the different soils, as the farmer can make mixtures of varied analyses readily, and in this way more easily vary the treatment in his different fields. Home mixing of fertilizers, aside from being the cheaper plan, will tend to build up greater interest on the part of the farmer in the matter of the proper use of fertilizers. Various ingredients, such as cottonseed meal, acid phosphate, fish scrap, kainit, sulphate of potash, etc., can be bought and worked easily into mixtures of any desired analysis.

Stock raising.—With so much good forage-crop land in Conecuh County stock raising should be carried on successfully. Grazing for cattle and hogs can be obtained throughout the year. Cowpeas, bur clover, lespedeza, vetch, soy beans, velvet beans, rye, oats, Bermuda grass, corn, peanuts, sorghum, and sweet potatoes are valuable crops for feeding stock that do well on most of the soils.

Hogs, especially, can be raised on a large scale, and it is claimed at a cost of about 3 cents per pound. By feeding them on peanuts, sorghum, grass, clover, etc., and finishing up for the market on corn, there is no reason why the raising of hogs should not be made an important industry.

Farm tenure.—The tenant system of farming is dominant in the county. Land is rented either on a cash or share basis. Cash rent ranges from about $2 to $6 an acre, while usually one-third of the corn and one-fourth of the cotton is given the landlord under the share agreements, the tenant furnishing his own stock and tools and all of the fertilizer, except one-third what is used for corn and one-fourth what is used for cotton. When the landlord furnishes the stock and tools the crops are equally divided.

Probably not much more than one-third of the total area of the county is under actual cultivation. The last census placed the aver-

[1] Eight per cent phosphoric acid and 4 per cent potash.

age size of farms at 76.5 acres, including each tenancy as a separate farm along with those operated by owners and overseers. The value of land and improvements of farm buildings, implements, machinery, and live stock amounted to $5,278,417. The value of all farm property more than doubled during the decade ending 1910, and there has been considerable increase since.

Good farm lands at some distance from shipping points, but still located on fair to good dirt roads, can be bought as low as $10 an acre, and more inaccessible lands at even less. From these figures the price ranges up to $50 or $75 an acre, or more, according to location, character of soil, and improvements. There is much good land that can be bought at very low prices.

Labor.—Most of the farm labor is colored, and while unskilled is generally efficient under proper supervision. Employment is usually by the month, at an average of $12 to $20 with board. During the rush season of chopping and picking cotton day labor is employed at prices ranging from 75 cents to $1.25. Sufficient day laborers can not be secured at all times, as they usually get better wages working for the industrial concerns that are located throughout the county than the farmer can afford to pay. The use of improved labor-saving machinery and heavier teams may be counted upon to offset to a considerable extent the scarcity of labor.

SOILS.

Conecuh County comprises a very large area of highly valuable farming soils, topographically and texturally suited to easy cultivation, and possessing good surface drainage and underdrainage. There are considerable areas of deep sandy soils in the uplands which do not conserve moisture very well, but the greatest part of the uplands is occupied by sandy loams and fine sandy loams, which, with proper treatment, retain sufficient moisture for the continued growth of crops during dry seasons. There are areas of hilly or rolling land and steep slopes which are not so easily cultivated and which are locally susceptible to erosion, but most of the land can be cultivated with a relatively light equipment of tools and stock. In addition, the surface favors the use of labor-saving machinery.

The soils vary from sands through sandy loams, fine sandy loams, and loams to clay loams and clays, and from excessively drained lands through lands of favorable drainage to wet, overflowed stream-bottom soils. There is sufficient variation in the soils, in texture, drainage, and individual characteristics to admit, even to encourage, a diversified agriculture. These soils have been divided into types as determined by texture—that is, the relative content of sand, silt, and clay—and these types have been grouped into series, the

members of which have a common origin and essentially the same characteristics of color and structure, the important difference being in texture.

The upland soils have been derived, through processes of weathering, from Coastal Plains material, consisting of beds of sand, sandy clay, and heavy clay, locally carrying considerable quartz gravel and ferruginous pebbles. Relatively small areas of soil are derived from or influenced by consolidated material consisting of limestone.[1] These Coastal Plain materials were originally laid down in water (marine or lacustrine), having been transported by streams from higher lands. Such water-moved particles were, of course, altered in varying degrees by attrition resulting from running water, waves, and probably tides, and also more or less assorted by moving water. These sedimentary deposits were finally lifted above water and subjected to the modifying influences of weather, vegetation, and running water. Oxidation of certain components has undoubtedly caused much change in the material since emergence. Vegetation has influenced the color and temporarily the structure of the material, and running water has altered the texture variously, washing out the fine particles, in places leaving the coarser ones, and washing upon lower lying areas soil from above. Also erosion has considerably changed the original configuration of the surface by cutting stream valleys and gullies and otherwise influencing the topography by carrying off material from the surface.

There were differences in the character of the soil-forming materials at the time of emergence. For example, there is no question that the clay giving rise to the Susquehanna soils was originally different from that giving the Orangeburg soils—higher in content of clay and more plastic and resistant to weathering. The limestone, of course, was originally unlike any of the unconsolidated materials—the beds of sands, clays, etc.

The bottom-land soils, including first bottoms subject to overflow and second bottoms no longer overflowed, except in part by unusually high water, are composed of alluvial material representing particles washed from the uplands and deposited over the flood plains from overflow water.

The upland soils are prevailingly well drained. Of these the Norfolk soils are characterized by the grayish color of the surface material and by the yellow color and friable structure of the sandy clay subsoils (except in case of the sand types, which do not have clay within the 3-foot section). On the other hand, the Orangeburg series includes grayish soils having red, friable, sandy clay subsoils, while the Ruston series includes those having grayish soils and reddish-

[1] Tertiary limestone, probably in the main St. Stephens limestone. See geological report on Coastal Plains published by the Alabama geological survey.

yellow or yellowish-red, friable, sandy clay subsoils; that is, subsoil material not so red as that of the Orangeburg, but redder than that of the Norfolk. The Greenville soils have red or reddish-brown material in the surface portion and also in the subsoil, the latter consisting of moderately friable clay. The material of the Tifton series is very similar in color to the Norfolk soils both in the soil and subsoil, but there are noticeable differences. Ferruginous pebbles are abundant on the surface and through the soil body of the Tifton, while they are wanting in the typical Norfolk material.

The material of all the above soils seems to be derived from beds of unconsolidated sand and sandy clay, with some intermingled pebbles. The Greenville possibly has been influenced in some places, as, for instance, to the south of Evergreen, by limestone.

The Susquehanna soils are characterized by the grayish to reddish color of the surface material, and by the plastic, sticky nature of the heavy clay subsoil, which is typically red in the upper portion and mottled red, gray, and yellow below. These soils are derived, it appears, from heavy clay beds. Locally there is some influence from limestone, as in the northern part of the county. The exact origin of the Susquehanna, where so intimately associated with limestone as in the northern part of the county, has not been definitely determined.

The Sumter stony loam has a brown surface soil and yellow subsoil of friable, partially decomposed limestone. In this case the material is clearly residual from limestone.

To the south of Evergreen there are some small patches of a poorly drained grayish or brownish soil, underlain by mottled yellow, gray, and reddish subsoil, which occurs in flat-bottomed sink-hole depressions. These sink holes were caused by a sinking of the land or carrying off of the surface soil through subterranean passages in the underlying limestone, the opening below having been caused by dissolution of the limestone. The material seems to be residual from limestone. These areas, consisting of Grady clay loam, were not mapped, on account of their small size.

In the frequently overflowed first bottoms of streams only three separations were made on the map—Swamp, Ocklocknee fine sandy loam, and Thompson fine sandy loam. Considerable variation of material and color is included in all of these divisions. Further separation was not carried out on account of the intricate association of the different types.

The Thompson fine sandy loam is a grayish soil with yellow or mottled yellow and gray subsoil, while the Ocklocknee fine sandy loam is characteristically a brown soil with light-brown subsoil. Swamp is a classification which includes much variation in the texture of the soil, and which remains almost permanently saturated

or covered with water, in addition to being subject to deep overflows. Reclamation of these bottom lands would entail much expense in connection with the clearing, straightening, and deepening of stream channels. Absolute protection against overflow along some of the creeks would probably necessitate diking.

The only second-bottom soil mapped is the Kalmia fine sandy loam. This has a grayish soil and yellow, moderately friable sandy clay subsoil. This occupies a stream terrace which is no longer subject to overflow, except in places during extreme flood stages. The material was laid down at a time when the stream channel had not been cut to its present level and when flood waters attained higher stages.

The soil map of the county was made on a base constructed with the plane table while the soils were being mapped. The boundaries between the soils in some places could not be drawn very sharply, owing to the fact that the soils frequently grade into one another in such a way that exact boundaries could not be determined. Many of the types as mapped include patches of other types which were considered by the field man as being either too small or too irregular to map on the scale used (1 inch to the mile), or of too little importance to warrant the additional expenditure of time necessary for their accurate separation. In using the soil map one should carefully read the descriptions of the various soils, so that nonconformities in the mapping may not cause confusion.

In subsequent pages the several soil types are described in full and their agricultural values and crop adaptations are brought out, along with suggestions in regard to their management.

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Orangeburg fine sandy loam	180,224	33.2	Orangeburg sand	10,496	1.9
Ruston sandy loam	85,760	15.8	Norfolk sand	8,384	1.5
Norfolk sandy loam	34,816	6.4	Norfolk fine sandy loam	7,808	1.4
Susquehanna fine sandy loam	29,888	5.5	Greenville clay loam	4,736	.9
Ruston sand	29,440	5.4	Greenville loam	3,648	.7
Greenville fine sandy loam	26,880	5.0	Susquehanna clay	3,456	.6
Ruston fine sandy loam	26,624	4.9	Ruston gravelly sandy loam	3,328	.6
Swamp	25,280	4.7	Tifton fine sandy loam	1,664	.3
Orangeburg sandy loam	23,296	4.3	Sumter stony loam	320	.1
Kalmia fine sandy loam	13,312	2.4			
Ocklocknee fine sandy loam	13,312	2.4	Total	543,360	
Thompson fine sandy loam	10,688	2.0			

GREENVILLE FINE SANDY LOAM.

The soil of the Greenville fine sandy loam consists of 6 to 10 inches of fine sandy loam, loose and friable near the surface, but more coherent a few inches below. The sand grains, instead of being

angular and sharp, are rounded or subangular, and the fine material consists largely of silt, imparting to the soil a decidedly loamy character, even where there is very little organic matter present. In some places a comparatively high content of organic matter gives the soil a dark reddish brown color and more nearly the characteristics of a loam. The surface color of cultivated areas ranges from reddish brown to brownish red.

The subsoil is a deep-red clay, which carries enough sand to make it moderately friable. To a depth of 3 feet or more the subsoil is quite uniform. The material, though sticky when wet, normally possesses a structure that favors the retention of moisture. Underdrainage is assisted in places, at least, by beds or pockets of gravel which exist at depths varying from 3 to 10 feet below the surface. Some rounded quartz gravel and iron pebbles (concretions or accretions, or both) are present in places in both the soil and subsoil.

The line of demarcation between the soil and subsoil is usually well defined, and in many old fields the distinction is emphasized by a "hardpan" just below the plow line. This is certainly the result of long-continued shallow plowing and the impacting of the soil by the pressure of the plow.

The soil is easily cultivated, and may be handled under a rather wide range of moisture conditions, even though it is inclined to be sticky when wet. It is not so loose as to be subject to drought, when handled with any degree of care. It is easy to keep in an excellent state of tilth.

The Greenville fine sandy loam is closely associated with the loam member of this series, and occurs most extensively in the vicinity of Evergreen and northwest of Evergreen. The surface is predominantly undulating to very gently rolling, and drainage is generally well established. Along stream slopes a good many areas have a moderately steep gradient, but not too steep for safe cultivation. By reason of the open character of the material, little damage is done through erosion, as the soil permits a ready absorption of rain water and the excess surface water runs off slowly.

The type passes gradually into the members of the Orangeburg series, and differs from the Orangeburg fine sandy loam chiefly in its uniformly reddish surface appearance and the more loamy nature of the surface material. It is reasonable to believe that the two types are derived from the same material, the Orangeburg fine sandy loam, with its rolling topography and the characteristic gray color of its surface material, apparently representing a much more advanced process or condition of weathering, wherein the soil particles have become bleached of the iron oxide coloring.

This is one of the most desirable farming soils of the county. It is well adapted to many crops, and is also capable of being made

highly productive. Cotton, corn, oats, rye, potatoes, sugar cane, peanuts, onions, fruits, berries, medium to late truck crops, and grasses may be grown. The culture of Cuban tobacco as a filler has been tried at Evergreen on a limited scale, with successful results. Yields of an excellent quality of 600 to 1,000 pounds of leaf have been secured, and with the proper management, including intelligent methods of fertilizing, cultivating, and handling, there is no reason why this should not become an important staple crop of Conecuh County, particularly over the lighter or sandier phases of the type.

At present cotton and corn are the chief crops, usually giving satisfactory yields, cotton averaging about one-half bale, and corn about 25 bushels to the acre. Liberal use of commercial fertilizers invariably increases the yields, especially when the mixtures are high in nitrogen. Clovers, vetches, cowpeas, peanuts, velvet beans, and soy beans give excellent yields, and it is probable that alfalfa could be successfully grown by first clearing out grasses and weeds by clean cultivation. Liming and inoculation may also be necessary.[1]

To increase the yields on this soil and at the same time improve it for future crops certain things are necessary. It should be plowed to a depth of 8 or 10 inches during the fall months and seeded to some winter cover crop; liberal applications of barnyard manure should be made where practicable; a crop rotation, including leguminous crops to be incorporated with the soil every two or three years, should be maintained, and commercial fertilizers should be used. The use of nitrogenous fertilizers gives good results with all crops and the practice of top dressing with nitrate of soda during the growing season tends to increase the yields materially

Practically all of this soil is under cultivation and is held at prices ranging from $50 to $125 an acre.

GREENVILLE LOAM.

The Greenville loam consists of 4 to 10 inches of a dark-brown to reddish-brown loam, or heavy sandy loam, underlain by a dark-red, friable sandy clay, extending to a depth of 36 inches or more. The sand usually grades from medium to fine and the content is occasionally large enough to impart a rather light character to the soil, particularly on the slightly elevated knolls and ridges. Small undulating or low areas were included in which silt and clay originally present in the more rolling areas of adjacent soils have been washed in, giving rise to a silty phase of the type. The soil material of this variation has a more decided brownish color when dry than is the case with more typical areas, while the subsoil, by reason of its fine texture, normally is more plastic and is of a less brilliant

[1] For further discussion of alfalfa production, see Farmers' Bulletin No. 339.

red color. These silty areas are also sticky when wet and slightly difficult to cultivate.

The depth of the surface soil is variable. Along the gentle slopes local spots appear which in reality are clay loam resulting from the exposure of the red, sandy clay subsoil by erosion and a slight admixture of some surface material. The level elevated areas are more nearly typical. Here the soil averages about 8 inches in depth and is underlain by a reddish-brown clay loam, passing gradually into a heavier and more plastic-natured material until a rather heavy brick-red sandy clay is encountered at lower depths. Iron concretions are frequently present in the soil, and sometimes a sprinkling of well-rounded quartz pebbles is found. When plowed under proper moisture conditions the soil works up into excellent tilth. Owing to its inclination to stick and clod when wet, it should not be tilled at such times.

The most extensive development of the Greenville loam is in the vicinity of Evergreen, where the surface features are level to undulating. Smaller and more level areas are found closely associated with the Orangeburg soils. Almost invariably the topography is level to gently rolling, and, though drainage is well established, no serious effects from erosion are noticeable. In addition to its surface features, which favor a gentle run-off, the structure of the soil and subsoil permit ready percolation of rain waters. The type is generally underlain at a depth of 4 to 15 feet by a bed of gravel, which materially assists the underdrainage.

Longleaf pine is the characteristic tree on this type, but several varieties of oak, as well as other deciduous trees, apparently find it a congenial soil. Occasionally in old settled places exceptionally fine specimens of water oak are seen.

Like the Greenville fine sandy loam, the Greenville loam is better adapted to cotton, corn, oats, and forage crops than to truck crops, although it is a good soil for the culture of strawberries. Its location along the railroad is one factor favoring its use for truck growing. It responds readily to fertilizers, especially those containing relatively large proportions of nitrogen. The treatment outlined for the Greenville fine sandy loam applies to this type equally as well.

As a rule, the crops on this type are affected by drought sooner than on some of the lighter soils. This is caused in part by the greater capillary power of the heavier material and the greater loss through evaporation. It is also due in part to the fact that fine-textured material does not deliver water to plants as its moisture content becomes low as well as the coarser-textured soils. In order to retain the moisture in the soil, the surface should be well pulverized to prevent the loss of water that occurs if the soil is compact.

The type is practically all under cultivation and is generally recognized as a good farming soil. It is held at about the same price as the Greenville fine sandy loam.

GREENVILLE CLAY LOAM.

The soil of the Greenville clay loam to a depth of about 3 to 6 inches is a dark brownish red loam or silt loam, lighter in texture on the higher ridges and heavier in the depressions. It is underlain by a rather stiff red clay. Below 36 inches the material usually becomes more or less mottled with yellow. While the subsoil is decidedly heavy and rather dense in structure, it is by no means impervious. Considerable quantities of small iron concretions are present in the subsoil of some areas. In addition to the favorable surface relief, the character of the soil favors drainage.

The Greenville clay loam has a limited development in this county. It occurs for the most part in comparatively small areas, closely associated with other soils of the Greenville series in the vicinity of Evergreen.

The Greenville clay loam appears to be derived in part from or influenced by limestone, which is often but little below the surface and in spots outcrops in small stony ridges and knolls. This limestone is geologically classed as the St. Stephens limestone, of Tertiary age. It occurs in various parts of the county.

Areas of the Greenville clay loam have a nearly level to gently rolling surface. Where it forms ridges they are low and rounded or flat topped and have gentle slopes. There are included some depressed flat-bottomed areas which hold water in wet seasons and which remain wet for most of the year. These are formed by sinks caused by solution of the underlying limestone formations. The soil in there is largely residual, and if the areas were large enough to be shown on a map of the scale used in the survey they would be classed with the Grady clay loam. The areas are forested with water-loving trees.

The Greenville clay loam is essentially the strongest and most valuable of the upland soils in the county. It is a very desirable soil for cotton and corn, and is well adapted to other general farm crops. Under the usual methods of farming cotton yields from one-half to three-fourths bale and corn from 40 to 75 bushels per acre. With the selection of sound seed of good varieties and with proper cropping systems, including the growing of the legumes, the turning under of vegetable matter, the careful preparation of the seed bed, frequent shallow cultivation, and the liberal use of fertilizers, the yields of both the staple crops could be easily doubled. Oats, which are as a rule fed in the straw, give excellent yields. Oats, rye, vetches,

and clovers make very desirable winter crops, and cowpeas, velvet beans, and soy beans are excellent summer crops for forage and soil improvement. Potatoes, beans, tomatoes, vegetables, and small fruits do well. Bur clover thrives, and it is believed that with careful methods alfalfa could be grown with profit.

This soil is not so quick to warm up in the spring as the sandy types, but is much more productive and likewise more easily maintained in a productive condition. Its capacity for retaining moisture is good and it is fairly well drained. No serious damage from erosion is noticeable.

Owing to its productiveness and situation near Evergreen, the Greenville clay loam commands a high price, ranging from $125 to $150 an acre.

ORANGEBURG SAND.

The Orangeburg sand in its typical development consists of a grayish to light-brown sand, becoming redder and slightly heavier with increase in depth, until at about 15 to 24 inches a reddish or red loamy sand is reached. Occasionally large fragments of ferruginous sandstone are found scattered over the surface, but not in sufficient quantity to interfere with cultivation. Rounded quartz pebbles are of common occurrence, especially in the subsoil of stream-slope areas. As mapped, the type includes patches of Orangeburg sandy loam, usually the deep phase, Orangeburg gravelly sandy loam, and some of the corresponding types of the Ruston series. These were not shown on account of their patchy and irregular occurrence. Small areas were encountered where the fine sand was in large enough proportion to give it a typical fine sand texture, but the difference between the two types agriculturally and the small extent of the latter did not warrant their separation.

The Orangeburg sand occurs mostly on broken slopes in the western and southern parts of the county, and to a less extent in association with the sandy loam types. There are a good many strips along stream slopes. In surface features the type varies from hilly to rolling, and this, with its very open and loose structure, gives thorough to excessive drainage. Most of the type is still uncleared, and supports a forest growth consisting mainly of blackjack, sandjack, red and post oak, and longleaf and shortleaf pine.

For production of ordinary crops this type is not very desirable, although it is more productive than the Norfolk sand. Successful results are dependent upon liberal fertilization. Incorporation of vegetable matter is decidedly helpful. On new land corn does fairly well, yielding from 15 to 20 bushels to the acre. Cotton can be grown profitably with the liberal use of fertilizers. For peaches, berries,

and early truck crops the Orangeburg sand is ideal, and where situated near shipping points it should be used for these products.

Land of the Orangeburg sand type is valued at $5 to $20 an acre, the price being governed largely by the character of forest it supports.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam consists of 6 to 15 inches of gray to slightly brownish gray sand, loamy sand, or light sandy loam. The subsoil is a red, friable sandy clay. The areas of deeper soil carry a higher content of sand and have a lighter color at the surface. There are a good many areas of this kind, consisting of gray sand which passes through a subsurface layer of yellow sandy loam or loamy sand into the red sandy clay subsoil proper, reached anywhere from about 15 to 30 inches. The surface material of areas of shallow soil is often a reddish color, owing to admixture of reddish clay like that of the subsoil. In places the type resembles the Greenville in its surface characteristics. The surface soil of the forested areas is, by reason of the presence of more organic matter, slightly darker than that of the cultivated areas. After being under cultivation for a few years, however, the humus content is diminished and the soil becomes gray.

Usually a small percentage of small quartz gravel, and in places chertlike pebbles, is present in both the soil and subsoil. Ferruginous pebbles are common to many areas.

This is a light, open soil, easy to handle under a wide range of moisture conditions. Owing to its open structure and coarse texture, it is somewhat leachy. The type responds readily to fertilizer treatment, the growing of legumes, and the addition of vegetable matter. It is more productive and easier to maintain in a productive state than the Orangeburg sand.

The Orangeburg sandy loam occurs in small and broken areas throughout the southwestern, western, and northwestern parts of the county. In surface features it is generally rolling and hilly, and drainage is thoroughly established. Owing to its loose, open structure and broken topography, this soil washes readily, and a good many patches are encountered where the subsoil is exposed, and other places which have been gullied. In areas having deep sandy soil and lying on the higher elevations the drainage is excessive, and crops are likely to suffer from drought.

Probably over half of the type is in forest, consisting principally of longleaf pine, with a scattering of oak, hickory, and dogwood. Much of this has been cut over and where the trees are not too thick a fair growth of native grasses affords some pasturage. Cotton and corn are the chief crops grown. Yields of one-half to three-fourths bale of cotton and 10 to 25 bushels of corn to the acre are

obtained under ordinary conditions. Oats, rye, cowpeas, velvet beans, soy beans, peanuts, watermelons, cantaloupes, potatoes, cabbage, onions, tomatoes, eggplant, cucumbers, sugar cane, peaches, grapes, and berries do well.

About 200 pounds of commercial fertilizer analyzing 10–1.65–2 are used per acre for both cotton and corn. Better grades and heavier applications are recommended. Mixtures analyzing 8–3–4 are being profitably used on the same soil in other parts of the cotton belt. Generally yields could be materially increased by the use of nitrate of soda as a top dressing just before the fruiting season. Moderate to heavy applications of cottonseed meal and acid phosphate or cottonseed meal, kainit, and acid phosphate can be substituted for commercial mixtures. Organic matter in the shape of green crops plowed under or stable manure is needed to build up the soil, as this constituent is soon depleted under the prevailing system of continuous production of clean-cultured crops.

The Orangeburg sandy loam is a very desirable soil for diversified farming and may be kept in a reasonably high state of productiveness by the ordinary methods of good farming. At present it is worth from $15 to $40 an acre.

ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam consists of 6 to 15 inches of grayish to reddish loamy fine sand to fine sandy loam, underlain by friable red sandy clay, which extends to a depth of 36 inches or more. The first 3 or 4 inches of the surface soil is rather loose, but tends to compact under the influence of rains.

Occasionally a considerable quantity of small iron concretions and fragments of ferruginous rock occur in the top layer, but such material is rarely, if ever, so plentiful as to interfere with cultivation. These pebbles are more numerous in the shallow areas than in areas where the soil is deeper. Much of the soil north of Evergreen, where the surface soil is frequently not more than 6 or 7 inches deep, shows large quantities of concretions. The shallow areas are naturally better than those having a greater depth to clay. The Orangeburg fine sandy loam is quite retentive of moisture and is easy to cultivate.

This is the most extensive and widely distributed soil of the county. The largest areas lie in the vicinity of Evergreen, Belleville, China, and Skinnerton. The prevailing topography is undulating to gently rolling. There are considerable almost level bodies on the broader divides. In many places the stream slopes are fairly steep and rolling. By far the greater part of the type can be cultivated without danger of erosion, but the steeper slopes should be terraced or used only for soil-binding crops, such as Bermuda grass. Both surface

and underdrainage are everywhere well established, and in the case of some of the more rolling areas the drainage is excessive.

The soil is easily handled under a wide range of moisture conditions. A light equipment of tools and stock is sufficient for the maintenance of good tilth. The land responds readily to treatment with fertilizers and is especially desirable for general farm crops, vegetables, strawberries, potatoes, melons, peaches, and pecans. While a considerable total area is forested mainly with longleaf pine, oak, and dogwood, probably more than 50 per cent is under cultivation. Cotton is the chief crop. Yields of one-half to three-fourths of a bale per acre are obtained with the prevailing methods. With better methods, including good tillage and a liberal use of commercial fertilizers, yields of 1 to 1½ bales per acre have been secured. Under ordinary methods corn yields 15 to 25 bushels per acre. With applications of 300 to 500 pounds per acre of a good grade of fertilizer where the soil is well supplied with vegetable matter from 60 to 75 bushels of corn to the acre can be grown.

Peaches do especially well, though as yet there are only two orchards of commercial importance on this soil in the county. Experiments indicate the possibility of making, under careful supervision, a success with Cuban filler tobacco. Probably alfalfa could also be successfully grown with liming, inoculation, and careful preparation of the seed bed.

The addition of organic matter at frequent intervals and in sufficient amounts to maintain the soil in a fairly loamy condition is essential to the best results on this type. Stable manure is the best form in which to supply this constituent, but the supply is inadequate. Plowing under green crops must therefore be resorted to. For this purpose the legumes are most valuable.

The type varies in price with location and improvements. Arable lands conveniently located on the main highways and in the vicinity of Evergreen or other shipping points are valued at $40 to $75 an acre.

NORFOLK SAND.

The soil of the Norfolk sand to a depth of about 5 or 6 inches is a loose, grayish sand, consisting mostly of quartz and usually containing very little humus. The subsoil is composed of similar material, differing only in color, being pale yellow or yellowish gray. It reaches to a depth of 3 feet or more. As mapped in the present survey the texture varies in places to fine sand and occasionally to rather coarse sand, such variations representing areas of Norfolk fine sand and coarse sand of too little importance to warrant separation. Quartz pebbles, varying in size from about one-eighth to three-eighths of an inch in diameter are of rather common occurrence

in both soil and subsoil. On forested areas the soil is usually darker in color and more loamy, owing to the presence of more organic matter. Under the usual methods of cultivation this organic matter disappears within two or three years, and the surface soil soon becomes loose and leachy.

The Norfolk sand occurs in small, irregular areas throughout the southern half of the county. The largest bodies, however, are found about 4 miles southeast of Brooklyn, along the slopes of Conecuh River. Other bodies lie near Hichburg, Providence Church. and east and northeast of Evergreen.

The topography is varied. The soil generally occurs as gently sloping strips along the valley walls, although some areas are found in swales about the heads of drainage ways. The sloping areas are subject to erosion, and gullies several feet in depth are not uncommon.

By reason of its loose, incoherent structure, and sloping topography, the natural drainage is excessive. Large additions of vegetable matter, such as cowpeas and rye plowed under green, are necessary to improve the moisture-holding capacity of the land.

The original forest growth consists chiefly of longleaf pine, with a sprinkling of oak, principally scrubby varieties of blackjack and sandjack. Several wild grasses grow in this soil, but they are mostly not very nutritious, although affording fair grazing in the spring while young and tender.

Inasmuch as the soil does not retain moisture well, it is not adapted to general farm crops, neither is it naturally a very desirable soil for any crop. Little of it is at present under cultivation. However, with liberal fertilization with high-grade, complete mixtures a great variety of early garden vegetables, as well as watermelons and potatoes, could be grown.

The land warms up early and tends to force crops to rapid maturity. Owing to its loose and open structure, the soil is easy to handle. It parts readily, through leaching and oxidation with plant food and organic matter. It is necessary for best results to grow frequent crops of the leguminous plants, such as peanuts, vetch, cowpeas, soy beans, and velvet beans.

Land of this character has a low value, except where it supports valuable forests. Cut-over areas can be bought at $2 to $3 an acre.

NORFOLK SANDY LOAM.

The soil of the Norfolk sandy loam to a depth of about 6 to 8 inches is a gray or light yellowish gray sand to loamy sand. The subsurface is a pale-yellow loamy sand or sandy loam, which becomes heavier with increase in depth, and passes at about 12 to 18 inches

into the subsoil proper, which is a yellow, friable sandy clay. The depth of the surface soil is rather variable, and in some spots is deep enough to warrant classification as the Norfolk sand. These were not separated on account of their small size and difficulty of establishing definite boundaries.

The surface material of the forested land is somewhat darker than the cultivated portion, on account of the presence of more organic matter. Under the usual methods of farming the humus is soon exhausted and the productivity of the land diminished. Productiveness of the soil can best be maintained by frequent incorporation of vegetable matter. By reason of its light, friable nature, this is an easy soil to handle. It drains rapidly and can be tilled almost as soon as the rains cease.

The surface of the Norfolk sandy loam is ordinarily gently rolling and sloping. Occasional level areas occur. There is little danger of erosion in any of the areas. The typical soil, i. e., those areas having the clay within 18 inches of the surface, holds moisture well, particularly when the organic content of the surface soil is normal. The deeper phase is more leachy and more thoroughly drained, but with proper cultivation can be made to carry enough moisture for the ordinary demands of crops.

The most important developments of the Norfolk sandy loam are along the Sepulga River, and in the vicinity of Georgiaville school, west and northwest of Brooklyn, and around Range and Nymph. Occasional small areas of the Norfolk sand and Norfolk fine sandy loam, found lying adjacent to the Norfolk sandy loam, were included with it, as they were of such small extent and of such little agricultural differences as not to be of much importance.

The Norfolk sandy loam is farmed chiefly to cotton, with the yields varying usually from one-fourth to one-half bale per acre. Corn does only fairly well, 12 to 25 bushels being the normal range in yield. Oats, rye, cowpeas, clovers, vetches, peanuts, soy beans, velvet beans, watermelons, cantaloupes, cucumbers, potatoes, and sugar cane do well. The quality of the sirup from cane grown on the Norfolk sandy loam is better and the color brighter than that secured from more productive types, such as the Greenville fine sandy loam and Orangeburg sandy loam soils. This soil is very well suited to the production of medium to early truck crops.

Liberal applications of commercial fertilizers or barnyard manure are necessary for good yields of any crops. With about 500 pounds per acre of a mixture analyzing 8–4–6 cotton should readily yield a bale or more and corn from 40 to 60 bushels or more per acre, while many other crops would be markedly benefited. Of course, best results can be had only by maintaining the organic supply in the soil.

At present the type ranges in price from about $10 to $35 an acre, depending for the most part upon the character of forest growth, the condition of the soil, the topography, and the location.

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam consists of a gray to pale yellowish gray loamy fine sand to fine sandy loam, underlain at about 5 to 10 inches by a yellow fine sandy clay loam or fine sandy loam, which in turn grades into a yellow, friable fine sandy clay at about 16 to 20 inches. In places the clay may lie as far as 30 inches from the surface. Occasional areas show more of a brownish shade or deeper gray, the variation being due to variation in the organic content. Some slight mottlings with gray and shades of yellow may be seen in the lower subsoil of the flat and lower slope areas where the drainage is less perfect.

The Norfolk fine sandy loam is found principally in the western and southwestern parts of the county, occurring in small and irregular bodies of a few acres to as much as 1 or even more square miles in extent, principally near the stream courses.

The topography is gently rolling to level, and drainage is usually well established, though occasionally, in level and sloping situations, seepage water from the higher lying areas affects the drainage conditions. Though the percolation of rain water through the soil is rapid, the character of the subsoil is such as to favor the retention of moisture, and under good methods of cultivation and with a good supply of organic matter sufficient moisture can be conserved in the soil to carry crops safely through ordinary dry spells.

This type is used largely for cotton and corn. The former yields ordinarily from one-fourth to two-thirds bale per acre, with an average of about one-third bale, and the latter from 12 to 25 bushels. with an average of about 18 bushels per acre.

Peanuts do well on the type and this crop should be grown more extensively, both as a forage crop for hogs and as a means of improving the soil. Garden vegetables, sweet potatoes, watermelons, cantaloupes, and cucumbers can be successfully grown. Sugar cane also does well.

With injudicious cropping this soil soon deteriorates, but it improves readily under good management. With the rotation of crops, including some of the legumes, and with the use of commercial fertilizers, good yields can be maintained.

The forested areas support a growth largely of longleaf pine. In the cut-over areas mainly shortleaf pine, scrub oak, and some dogwood occur. Probably over half of the type is still in forest.

The Norfolk fine sandy loam is at present valued at about $10 to $35 an acre, depending upon the timber, improvements, location, and topography.

RUSTON SAND.

The Ruston sand typically consists of a gray loose sand, which grades below, usually at about 20 inches, into reddish-yellow to yellowish-red or dull-red loamy sand. The subsoil frequently becomes heavier with depth, changing at about 30 to 36 inches into sticky or loamy sand. As mapped there are many included variations, such as areas of Ruston sandy loam, especially along the slopes, and patches of Norfolk sand and sandy loam, Orangeburg sand and sandy loam, and Ruston gravelly sandy loam. These soils were not separated, on account of the small size and irregularity of distribution of the areas. In addition to these variations, there are local areas where erosion has exposed the clay subsoil.

The type has a large development in the southwestern and western parts of the county, especially along Burnt Corn Creek and its tributaries. The surface features vary from hilly and ridgy to rolling, gently rolling, and sloping. Both surface and underdrainage are well established. The soil is inclined to be droughty, although it is less so than naturally would be expected, as the loose surface soil acts to some extent as a mulch.

Owing to its low productiveness and uneven topography, this soil has not been brought largely under cultivation. Where cultivated it is used mainly in the production of cotton, corn, cowpeas, and peanuts. On newly cleared land the yields are moderate, but under the usual practice of growing clean-cultured crops without rotation the organic matter in the soil is depleted and the yields decrease markedly. Cotton averages about one-fourth bale and corn from 8 to 15 bushels to the acre.

The usual light applications of 10–1.65–2 fertilizer are made. Heavier applications of better grades should be used, and top dressings of nitrate of soda given just before fruiting. Mixtures of cottonseed meal, kainit, and phosphate have given satisfactory results upon this soil.

The Ruston sand is very open and leachy and the effect of fertilizer treatment is not lasting. Under the present system of farming the original content of organic matter is soon exhausted and the addition of stable or barnyard manures or the incorporation of green manuring crops into the soil is absolutely essential to the maintenance of the yields. Systematic crop rotation should also be practiced as a means of soil improvement.

The Ruston sand is not a good general farming soil, being better suited to the production of early to medium vegetables, including potatoes, and to peanuts, melons, cantaloupes, and cucumbers. At present the production of such crops is not attempted, owing to

distance from shipping points. On the whole the type is somewhat stronger than the Norfolk sand.

The location prevents the use of this soil for special crops, and the price is based largely upon the forest growth, which consists principally of longleaf pine and oak. Many of the merchantable trees have been cut.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a gray to brownish-gray loamy sand to light sandy loam, 8 to 12 inches deep, and the subsoil is a reddish-yellow to yellowish-red or dull-red, moderately friable sandy clay, sometimes mottled with gray. While the depth of the soil is usually as stated above, it varies somewhat, and in places the clay subsoil may lie 30 inches or more below the surface. The subsoil is slightly more plastic than that of the Orangeburg soils, though it is friable and retentive of moisture. Quartz pebbles are of common occurrence in a good many areas. As mapped the type includes patches of Ruston sand, Ruston fine sandy loam, Orangeburg sandy loam, and Norfolk sandy loam too small to be separated. The boundaries between this type and the Ruston fine sandy loam are not always very definite.

The Ruston sandy loam occurs mostly in the southwestern corner of the county, although there are many large and small bodies in the southern, southeastern, and northeastern parts.

In topography the Ruston sandy loam varies from rolling to gently rolling. Both the surface drainage and underdrainage are naturally good. Occasional spots could be improved by ditching, but such areas are few in number and small in extent. The type is in many respects similar to the Orangeburg sandy loam, differing chiefly in point of color. The adaptation of the two soils is about the same, but the Orangeburg is the more productive. Both types require about the same treatment. The soil is easy to handle under a wide range of moisture conditions, working into a good tilth with a fairly light equipment of tools and stock. It is easy to improve and responds readily to fertilizer treatment.

The Ruston sandy loam is fairly productive. Cotton yields from one-third to one-half bale and corn from about 15 to 25 bushels to the acre, while oats yield 30 to 35 bushels under ordinary treatment. Cowpeas, peanuts, soy beans, velvet beans, sugar cane, melons, potatoes, small fruits, and garden vegetables can be grown profitably.

The methods outlined for the handling and improvement of the Orangeburg sandy loam will apply to this type. Owing to its coarse texture and more open structure, the type does not retain moisture quite as well as the Ruston fine sandy loam, but with the use of barnyard manure and the plowing under of cowpeas, velvet beans,

soy beans, winter vetch, lespedeza, bur clover, or oats and rye, this difference can be largely eliminated. Forested areas support a growth of longleaf pine, oak, hickory, and dogwood, with a fair growth of native grasses, which afford fairly good pasturage in the spring season.

RUSTON FINE SANDY LOAM.

The soil of the Ruston fine sandy loam consists of a gray to grayish-brown loamy fine sand to light fine sandy loam, 10 to 15 inches deep, the subsurface material being yellowish in color. This is underlain to 36 inches or more by a yellowish-red, reddish-yellow, or dull-red, friable fine sandy clay, the lower portion of which is mottled in some areas with gray and rusty brown or dull brown. There are included areas in which the subsoil may not be reached above 30 inches. There are a number of other variations and patches of other types of soil too small or irregular to show on the map. In the more rolling areas, where conditions have favored more complete weathering, the subsoil averages slightly redder than in typical areas. In the smoother areas, usually occurring on the lower slopes near streams, the percentage of silt is greater and the soil is consequently heavier than in the case of the typical soil, while the subsoil is yellower. Usually in such areas drainage and aeration are imperfect, and the subsoil is inclined to be mottled with gray. Occasional local spots occurring along the steeper slopes were encountered where erosion has been rather active, and as a consequence the clay subsoil is exposed. Over such areas it is not uncommon to see a sprinkling of gravel and ferruginous pebbles, though where they were found in sufficient quantity and extent they were mapped as a gravelly type of the same series. By reason of the larger quantity of organic matter present, forested and newly cleared areas are slightly darker in the surface than those fields which have been cultivated for some time. Generally after a few years of clean cultivation the surface material bleaches into a characteristic light-gray color, most of the organic matter having disappeared.

The subsoil of the Ruston fine sandy loam is slightly more plastic than that of the Orangeburg fine sandy loam, being more nearly like the subsoil of the Norfolk fine sandy loam. Occasionally the lower subsoil resembles slightly the subsoil of the lighter phase of the Susquehanna fine sandy loam. The question of differentiation from the Orangeburg fine sandy loam and the Norfolk fine sandy loam was in places difficult, and the boundary lines had to be rather arbitrarily placed.

The type is comparatively easy to cultivate. It responds readily to fertilizer treatment and incorporation of vegetable matter. In a

light, porous soil such as this an abundance of vegetable matter tends to increase its capacity for holding moisture. Winter cover crops of rye, oats, bur clover, or vetch should be seeded as a protection against washing and leaching and as a source of humus. These and also cowpeas, soy beans, and velvet beans plowed under are especially beneficial, as they add nitrogen as well as humus-forming material to the soil. Peanuts also benefit the land in the same ways.

Heavier applications of fertilizers are necessary for this type than for the Orangeburg fine sandy loam, although the same kind of mixtures are suited to both soils. About the same treatment in general as is required for the Orangeburg sandy loam and fine sandy loam fits the needs of this type.

The Ruston fine sandy loam produces fairly well, and much of it is under cultivation. Cotton, corn, oats, cowpeas, and peanuts are the chief crops. Some areas near Castleberry are used in the growing of berries, giving fair yields of a fine quality. Under the usual methods of culture cotton produces about one-fourth to one-half bale and corn from 15 to 25 bushels per acre. Oats yield from 20 to 35 bushels per acre. Cowpeas, soy beans, velvet beans, bur clover, vetch, peanuts, sugar cane, and a number of vegetables do well.

Under proper management most of the type could be brought to and maintained in a reasonably high state of productiveness. Deep fall plowing, crop rotation, the addition of vegetable material, frequent and shallow cultivation during the summer months, and the judicious use of liberal amounts of commercial fertilizers are recommended for increasing the producing power of this soil.

Land of this type ranges in value from $10 to $40 an acre, depending upon the location, topography, and improvements.

RUSTON GRAVELLY SANDY LOAM.

The Ruston gravelly sandy loam consists of a gray sand which passes at about 6 to 10 inches into yellowish light sandy loam or loamy sand, and this in turn, at about 20 to 30 inches, into reddish-yellow to yellowish-red friable sandy loam to sandy clay. Small quartz pebbles are abundant over the surface and throughout the soil section. The substratum frequently represents mainly a mass of gravel embedded in a matrix of reddish sandy clay. Owing to its open structure, the soil is rather excessively drained and is subject to severe leaching, which, together with the prevailing rolling or hilly to sloping topography, renders it as a whole not so valuable for agricultural purposes as the smoother and denser soils like the Ruston sandy loam. Areas with a surface sufficiently smooth to admit of moderately easy cultivation are fairly productive, especially where terraces are built along the slopes to check surface erosion.

With proper management, cotton, corn, oats, cowpeas, sweet potatoes, and peanuts give profitable returns. Crops do not suffer from the effects of drought as much as the loose character of the soil would indicate, this being particularly true of cotton. One reason for this is the fact that the gravel present tends to act as a surface mulch in retaining moisture.

The native vegetation consists largely of longleaf pine, with considerable blackjack oak on the more sandy areas. Some of the more rolling areas are best suited to forestry or grazing, either on the native grasses or after seeding in Bermuda grass. Certain varieties of peaches and grapes would succeed on this soil.

The soil is noticeably deficient in vegetable matter and would be greatly improved by green manuring. For this purpose the various legumes will be found best adapted. Liberal additions of complete commercial fertilizers will also be found profitable. Mixtures of cottonseed meal, acid phosphate, and kainit in the ratio of about 3–1–2 would probably give good results for the staple crops—cotton, corn, and oats. Applications of 300 to 700 pounds to the acre should be made, depending upon the kind of crop grown and the condition of the soil, the heavier applications being necessary for vegetables.

The type occurs in small, isolated bodies closely associated with other members of the same series. At present but little of it is under cultivation, and this mainly to corn. The type is valued principally for its forest growth and ranges in price from about $5 to $15 an acre.

SUSQUEHANNA FINE SANDY LOAM.

The typical Susquehanna fine sandy loam is a grayish fine sand or fine sandy loam, which passes either directly, at about 6 to 12 inches, into the stiff clay subsoil, or first through a subsurface layer of yellowish loamy fine sand to fine sandy loam, extending anywhere from a few inches below the surface down to 24 inches or more, and then into stiff clay. The subsoil is a sticky, plastic, heavy clay, which characteristically is reddish in the upper part and mottled red and gray or red, gray, and yellow in the lower part.

The material seems to be derived from a bed of heavy clay, but there is some doubt as to the exact origin. The soil in the northern part of the county, where the important areas occur, is closely associated with limestone, fragments of which are scattered over the surface of many areas. It is possible, of course, that the main body of the clay is derived from clay beds which were interbedded with or superimposed upon the limestone. There is no question that the limestone has influenced the soil locally, especially the lower subsoil, which frequently has a yellowish color. There are some included patches of a yellow, sticky clay which unquestionably are derived

from the limestone, as fragments of the rocks are abundant on the surface and through the soil mass, and there is a gradual change from the yellow clay into partially decomposed yellowish limestone. Such areas really represent patches of Sumter or Henderson soils too small to map. The yellowish color of the undoubted residual limestone soil would suggest that the reddish Susquehanna clay material has a different origin. Also there are associated with the limestone some beds of a light-colored, soft, light rock resembling that so common in the Claiborne formation. This rock gives rise to some patches of a soil very much like the Lauderdale stony clay of Clarke County, Ala. The patches of these soils, along with some Norfolk and Ruston sands and sandy loams, were not separated, on account of their small size. The type is locally styled "lime land," on account of the association with limestone.

A variation of the Susquehanna fine sandy loam, as developed principally in small, broken areas in the southern part of the county, consists of a gray to yellowish fine sandy loam, underlain at about 8 to 15 inches by a heavy, plastic, red clay, mottled with gray and yellow in the lower portion. When exposed to the sun, as in gullies and road cuts, this heavy clay bakes and cracks considerably.

Small ferruginous sandstone fragments are of frequent occurrence on the hills, ridges, and steeper slopes of the type.

The surface features of the Susquehanna fine sandy loam are the most varied of any type in the survey. The depth of the surface material varies considerably with the topography, the clay lying nearest the surface on the steeper slopes and flat areas. Rugged, rolling areas occur principally along the stream slopes and narrow divides. The greater proportion of the type is nearly level or undulating to gently rolling.

As a rule the natural surface drainage is good, but the clay subsoil retards underdrainage, and the slow percolation of water after heavy rains makes it necessary to ditch the flatter areas for the best results with crops. In the rougher areas ditching is not important, since the surface water runs off readily. Much of the type is inclined to be droughty, owing to the slow internal movement of soil moisture, which prevents the capillary rise of water from below.

The Susquehanna fine sandy loam is not generally held in very high esteem, on account of its unfavorable subsoil. However, it is not by any means a useless soil. Fair to good yields are frequently obtained, especially on newly cleared land and where farmed under methods of soil management looking to a permanent improvement of the soil. Hard usage, shallow plowing, clean cultivation, and failure to rotate crops have been the cause of reduced yields and abandoned fields. The land is inclined to wash badly, except on the smoother portions. Such areas should be used for Bermuda grass, lespedeza,

or other soil-binding crops, or permitted to remain in or revert to forest.

Deeper plowing, preferably in the fall, the growing of winter cover crops, and summer legumes to be plowed under at intervals, and moderately heavy applications of complete mixtures of good fertilizers are essential to the production of best yields. If necessary terracing should be employed to prevent washing. Cotton, corn, oats, rye, cowpeas, velvet beans, and other forage crops can be successfully grown with good management. Strawberries and potatoes also will succeed. Much of the type is forested with pine, oak, hickory, maple, gum, and poplar. Land of this kind ranges in value from $5 to $10 an acre.

SUSQUEHANNA CLAY.

The Susquehanna clay consists generally of a few inches of a fine gray sand or fine sandy loam overlying stiff red clay, which becomes mottled with gray and yellow at lower depths. The sandy covering rarely exceeds 3 inches, and in some places is entirely absent. Owing to the plastic and impervious nature of the subsoil and its nearness to the surface, the type is difficult to cultivate, and consequently not a very desirable farming soil.

Only a few small areas of this type were mapped, the principal ones lying in the southern and western parts of the county and in the vicinity of Mount Zion Church in the northern part of the county.

Except in the southeastern part of the county, along Sepulga River, where the areas occupy level divides, the topography is generally rough and hilly. In hilly areas the surface drainage is good, but the level areas are usually too wet for cultivation for several days after heavy rains. Partly because of the difficulties of cultivating this type and partly on account of the heavy texture of the soil it is not adapted to such a wide range of crops as the fine sandy loam of the same series. Grasses should do well if proper care is exercised in the preparation of the seed bed. Cotton and corn are the chief crops grown.

Owing to the tenacious character of the soil, the land is difficult to plow, and ordinarily the preparation of a seed bed, as well as subsequent cultivation, is not as thorough as it should be. For this reason the yields are poor, a fact which has given rise to the popular belief that the soil is naturally unproductive.

With the exception of a few small bodies of land where the forest has been removed in lumbering, this type is at present covered with virgin longleaf pine. There is so much idle land in the county far more desirable for farming that it is not likely that the Susquehanna clay will be put into cultivation for some time to come. None of the

type is at present under cultivation. In value it ranges from $2 to $15 an acre, depending on location and the character of forest growth.

KALMIA FINE SANDY LOAM.

The soil of the Kalmia fine sandy loam, to a depth of about 6 to 18 inches, is a dark-gray to gray or brownish fine sandy loam or loamy fine sand. This is underlain by a pale-yellow fine sandy clay subsoil to a depth of about 24 inches, where the color changes to mottled gray and yellow, the mottling becoming more pronounced with increased depth. The subsoil when wet is slightly plastic, but under normal conditions it is quite friable.

In flat or poorly drained areas the surface soil is rather lighter in appearance and the yellowish color of the upper portion of the subsoil soon gives way to a mottling of gray and yellow. Some patches of fine sand and sandy loam were included with the type. There are also some patches of Cahaba fine sandy loam and strips of higher terraces and remnants of terraces which did not seem of sufficient importance to map.

The Kalmia fine sandy loam is found on terraces along the Sepulga and Conecuh Rivers. Most of the type abuts on the stream, with only an occasional narrow strip of first bottom intervening. It stands above overflow or, at least, normal overflow.

In surface features the type ranges from flat to gently undulating. There are frequent abandoned stream channels and occasional hummocks and swales of deeper sandy material.

The drainage of much of this land is inadequate, especially in low, flat areas. The pale-yellow and mottled colors of both soil and subsoil are indicative of sluggish drainage and incomplete oxidation, and much of the land is, for this reason, not considered good farming soil. Where artificially drained this soil, if handled properly, gives fair to good yields of corn, oats, hay, cowpeas, sugar cane, and grasses. Moderate yields of cotton can be obtained with the liberal use of commercial fertilizers relatively high in phosphoric acid and potash. In its natural condition the native grasses, especially where the forest is removed, afford excellent pasturage. The better drained areas would make good trucking land, but the type as a whole is not so well adapted to the production of vegetables as the warmer Norfolk soils of the uplands.

Most of the type is still uncleared. The land is valued at $5 to $15 an acre, according to location and improvements.

OCKLOCKNEE FINE SANDY LOAM.

The Ocklocknee fine sandy loam is an alluvial type which embraces bottom-land material of rather broad textural variation lying along the smaller streams of the county. The dominant soil consists of a

grayish-brown to brown fine sandy loam, grading below into lighter colored grayish to yellowish sandy loam, but in places the subsoil may be a loam, silt loam, or fine sandy loam, or alternating layers of these, and fine sandy loam or fine sandy clay. Frequent mottling of gray and shades of brown and yellow are noticeable. This mottling is more pronounced in the subsoil of the low-lying areas and depressions where drainage between overflows is poorest. There are also variations in the surface soil, the type including patches of silt loam, loam, sand, and fine sand. The material is coarsest near the stream channels and along the outer margins of the bottoms, where colluvial material from adjacent sandy uplands has accumulated. The color of the surface material is likewise variable, being determined largely by the character of the mineral constituents. In general it is of a brownish or grayish-brown color, but where the surface material is derived largely from the red Greenville or Orangeburg soils the soil often has a reddish cast. As a rule the more frequently overflowed areas have a darker gray or brown color than those flooded at rarer intervals. The materials, of whatever texture, have come from the upland soils of the region.

The Ocklocknee fine sandy loam is naturally a productive soil. It is easy to cultivate, responds freely to good cultural methods, and does not deteriorate so fast under constant cultivation as some of the upland soils. In most cases ditching is necessary in order to reduce the water table to a safe level. The land is more or less subject to overflow, and this is the chief hindrance to the full utilization of the type.

Corn and cotton are the principal crops, with an occasional small patch of sugar cane, oats, and grasses for pasturage and hay. The type is better adapted to corn than to cotton and is for this reason almost universally used for the former crop year after year. The yields range from 15 to 40 bushels per acre. Some cotton is grown with fair success, especially in dry years. This is a soil well suited to the production of sugar cane, though the heavy yield is offset to some extent by the somewhat inferior quality as compared with the product of some other of the soils.

Native grasses and lespedeza do well upon this soil, furnishing a good quality of hay and excellent pasturage.

Only a small percentage of this type is under cultivation. Practically no attention is given to its improvement. At present this soil ranges in value from $15 to $25 an acre.

TIFTON FINE SANDY LOAM.

The soil of the Tifton fine sandy loam is a gray to pale yellowish gray fine sandy loam, ranging in depth from about 5 to 10 inches, with an average of about 7 inches. The subsoil is a bright-yellow,

friable, fine sandy clay. The color of both soil and subsoil is practically identical with that of the Norfolk fine sandy loam. Iron pebbles (concretions and accretions) are abundant over the surface and throughout both the soil and subsoil. These pebbles commonly vary from about one-eighth to one-half inch in diameter. The quantity is greater on the surface than through the soil mass, but, owing to their size, they do not interfere with cultivation. There are occasional distinct spots or streaks of red in the lower part of the subsoil, apparently ferruginous material or material stained with iron salts.

In topography the type is rolling, with rounded to flat-topped ridges and gentle slopes. Most of it is topographically well suited to cultivation.

By reason of its rolling topography and friable structure, this soil naturally is well drained, though some small patches having a level surface in the interior of the divides have imperfect subdrainage, and as a consequence a sprinkling of gallberry and other water-loving plants occurs.

The Tifton fine sandy loam is closely associated with the Norfolk soils, principally in the south-central and southwestern parts of the county. Only a small extent of the type is found, one of the largest areas lying adjacent to "L Pond," about 5½ miles southeast of Castleberry.

Only one small area was found under cultivation, and it was devoted to cotton. The yields from this field have averaged about one-half bale to the acre. A bale of cotton could easily be grown with fertilization and proper cultivation.

Corn, cowpeas, soy beans, velvet beans, and peanuts should do well. Wild grasses thrive upon this type, especially in the cut-over woodlands, and should afford excellent pasturage for grazing cattle.

The following table shows the results of analyses of samples of the soil and subsoil of the Tifton fine sandy loam:

Mechanical analyses of Tifton fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414105	Soil	0.8	2.9	6.2	27.6	28.4	28.4	5.6
414106	Subsoil	.4	2.1	4.6	23.6	24.8	28.2	16.0

SUMTER STONY LOAM.

The Sumter stony loam is a dark-brown, mellow loam, underlain at 5 or 6 inches by pale-yellow to almost white, soft, partially decomposed limestone. Bedrock, also partially weathered, is reached any-

where from about 6 to 15 inches. The soil is rich in organic matter and very loamy. Fragments of limestone are sufficiently abundant to interfere with cultivation unless they are picked off.

The type occurs in small areas closely associated with the Greenville soils. It is found in several patches about 3 or 3½ miles south of Evergreen, on the Evergreen and Castleberry road. The soil is residual from the St. Stephens limestone.

At present none of this type is under cultivation. It is not a desirable soil for farming and should be kept in forest or else seeded to Bermuda grass for permanent pasturage. The type occupies low, but conspicuous elevations. It is covered with cedar, oak, pine, sumac, vines, and other trees and shrubs.

The following table shows the results of mechanical analyses of fine-earth samples of the soil and subsoil of the Sumter stony loam:

Mechanical analyses of Sumter stony loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
414153	Soil	3.1	6.4	4.5	25.4	29.0	25.6	6.1
414154	Subsoil	3.0	4.7	4.1	18.2	27.2	33.3	9.7

The following samples contained more than one-half of 1 per cent of calcium carbonate ($CaCO_3$): No. 414153, 76.36 per cent; No. 414154, 83.86 per cent.

THOMPSON FINE SANDY LOAM.

The Thompson fine sandy loam characteristically consists of a grayish loamy fine sand to fine sandy loam which quickly passes into yellow, heavier fine sandy loam, and this, in turn, into yellow or mottled yellow and gray, moderately friable fine sandy clay. On account of their small size, a good many patches of Thompson fine sand and some of the Thompson sandy loam and sand were included with the fine sandy loam. In the poorer drained swales and lower flat areas the color of the surface soil varies from dark gray to light gray and the subsoil is more intensely mottled with gray and yellow.

The type occurs in the first bottoms of streams and is subject to overflow. Much of it was under water to a depth of 10 feet in the spring floods of 1912 and a considerable proportion is poorly drained between overflows. The surface is flat, although cut by abandoned channels, swales, and hummocks, or swells, the soil on the latter being frequently a fine sand or sand.

Most of the type is forested with a growth like that on the Kalmia fine sandy loam. Although subject to overflow, there are many areas constituting rather high bottoms lying above normal overflow that are not inundated every year. These areas can be used to advantage

for cotton, corn, oats, cowpeas, velvet beans, peanuts, and sugar cane. Some fertilizer will be found necessary for good yields after a few years of cultivation. Applications of lime probably would benefit the poorer drained portions, which, with ditching, could be farmed. A number of native grasses and lespedeza afford fairly good grazing.

The principal areas of the type occur along Bottle, Pigeon, and Murder Creeks, and Escambia River.

SWAMP.

Swamp comprises first-bottom alluvium of variable texture. It is subject to overflows and much of it is permanently wet and soggy. The soil of the greater part of the Swamp consists of loam, silt loam, fine sandy loam, sand, and fine sand. Aside from variation over the surface, the material is decidedly variable in the vertical section. The subsoil material is generally slightly lighter in color than the soil and is usually mottled with gray or yellow in the lower portion. No satisfactory separation of the material into types seemed practicable. The material forming the Swamp has been deposited from flood waters of the streams. It originally came from the upland soils.

By straightening and deepening the streams and running lateral ditches along the foot of the uplands and emptying them into the main channels some of this land could be reclaimed and used for grasses for hay, sugar cane, millet, corn, and oats. Cotton and forage crops also probably could be grown. Most of it is too deeply flooded to admit reclamation.

The type is covered with a mixed growth of water-loving trees, shrubs, and vines. Magnolia, beech, spruce pine, slash pine, water oak, birch, ironwood, maple, bay, ash, and sweet gum constitute the principal tree growth.

SUMMARY.

Conecuh County is situated in the southern part of Alabama, in the second tier of counties from the Florida line. It has an area of 849 square miles, or 543,360 acres.

Roughly, the surface of the county is a rolling plain with a general inclination toward the south. The surface of the northern part is in general more hilly than that of the southern. There are no high hills. The divides are generally broad and well drained.

Much of the county is still forested with virgin longleaf pine, but this is being drawn on very rapidly by the lumbermen. On most of the cut-over lands loblolly pines and some hardwoods are taking hold, while along the streams and other lowlands a mixed growth abounds.

The county is only sparsely settled. In the western and southeastern parts there are several old settlements and a few plantations. The population consists mainly of the descendants of the early settlers, who came from Georgia, the Carolinas, Virginia, and Tennessee.

The Louisville & Nashville Railroad operates three lines in the county. There are also two logging roads that furnish passenger and freight service.

The climate is mild and free from sudden extremes. It is especially favorable to a diversified agriculture. The growing season for tender vegetation has an average length of 244 days, affording ample time in which to mature at least two principal crops in a single season.

The industries are chiefly agricultural, although lumbering is quite extensively carried on. Cotton, corn, oats, sugar cane, potatoes, and peanuts are the principal crops. Little attention is given forage crops.

Some attention is being given by the farmers of the southern and south-central parts of the county to the culture of small fruits and truck crops. Strawberries, peaches, and tomatoes are produced on a commercial scale. Other fruits are grown for home consumption only.

The same crops are planted year after year, without regard to crop rotation, commercial fertilizers being depended on to keep up the yields.

In order to maintain and increase the fertility of the soil, rotation of the staples with forage crops, particularly the legumes, for pasturage or green manure is advised.

More live stock should be raised both to meet local demand for meats and dairy products and to improve the soil.

The census of 1910 shows that there were 269,779 acres of farm lands in the county, of which 104,645 acres were improved. The value of all farm property, including land, buildings, implements and machinery, and live stock amounted to $5,278,417.

The soils of this county fall into two well-defined divisions—soils of the uplands, or Coastal Plains, which here include a few small outcrops of limestone, and the soils of the bottom lands and terraces. The former division, which comprises over 99 per cent of the county, includes the Orangeburg, Norfolk, and Ruston soils, besides some miscellaneous types. In the latter group are the Kalmia, Thompson, and Swamp.

The Orangeburg, Norfolk, and Ruston series are extensively developed and are good general purpose soils, with a wide range of crop adaptation. The comparatively low yields secured at present are largely due to shallow plowing and insufficient humus. In addi-

tion to staple crops, certain of these soils are well adapted to sweet potatoes, strawberries, tomatoes, small fruits, and peaches.

The Orangeburg sand is fairly well adapted to cotton, sweet potatoes, and early truck.

The Greenville fine sandy loam and the Orangeburg fine sandy loam and sandy loam are well adapted to general farming. They are better adapted to the Cuban filler tobacco than to the Sumatra, although the latter yields well, especially on the lighter phases of these types.

The Greenville loam and the Greenville clay loam, owing to their heavy, close structure, are best suited to cotton, corn, and small grains, although the former type, when kept in a high state of cultivation, makes an exceedingy good medium to late trucking soil.

The Norfolk sand is not so extensively developed and is confined mainly to the southeastern part of the county. Most of it is too light to be of value for any crops, except early truck and some kinds of fruit.

The Norfolk fine sandy loam and sandy loam are comparatively heavy soils, considerably more drought resistant than the Norfolk sand. They are easily handled and improved and fairly productive.

The Ruston sand has an extensive development in the county. Like the Norfolk sand, much of this type is rather light and open. It is best suited to early truck and small fruits. Where the underlying clay is not more than 4 or 5 feet below the surface and the content of fine sand is comparatively high, fair yields of cotton, potatoes, sugar cane, and vegetables are secured.

The Ruston sandy loam and fine sandy loam are best suited to general farming, including cotton, corn, the legumes, fruits, and vegetables.

The Ruston gravelly sandy loam has a small development over the uplands bordering the stream basins. The type is rather open and loose. Where comparatively level areas exist, peaches, grapes, and strawberries do exceptionally well.

The Susquehanna fine sandy loam is well distributed over the northern part of the county. It is rather heavy and compact. When handled under a system including crop rotation and the turning under of legumes as green manure it gives fair yields.

The Susquehanna clay is a nonagricultural type, covering an area of 5.4 square miles.

The Tifton fine sandy loam is a good general purpose soil, equal in agricultural value and similar in character to the Norfolk fine sandy loam and differing from it only in the presence of a comparatively large quantity of iron concretions throughout the soil mass. This type has a limited development in the southern and southwestern parts of the county.

The Sumter stony loam is an inextensive soil derived from St. Stephens limestone. Its only agricultural value is for grazing.

The Kalmia fine sandy loam is an alluvial type derived from the washed materials of the uplands and deposited as bottoms along the streams. It is well suited to corn, oats, sweet potatoes, sugar cane, cowpeas, and watermelons. Cotton also does well in the better drained areas.

The Ocklocknee fine sandy loam consists of mixed material deposited annually by overflowing streams. In its natural state it is fairly well drained and is one of the most fertile soils in the county. Large yields of corn, oats, peanuts, cowpeas, and sugar cane are secured from it when properly handled.

Swamp is extensively developed along the streams throughout the county. In its natural state it is practically unfit for agriculture, but where cleared and artificially drained excellent yields of corn, sorghum, sugar cane, and cowpeas are secured.

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