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Soil Survey

of

Jackson County, Mississippi

By

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Bureau of Chemistry and Soils

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SOIL SURVEY OF JACKSON COUNTY, MISSISSIPPI

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COUNTY SURVEYED

Jackson County is in the extreme southeastern corner of Mississippi. (Fig. 1.) It is bordered on the south by the Gulf of Mexico and on the east by Mobile County, Ala. It is approximately 28 miles square and comprises an area of 724 square miles, or 463,360 acres.

The county is included within the physiographic province known as the Gulf coastal plain. The southern part is low and level, comprising the flatwoods section. Drainage here is slow, and during wet seasons the lower and flatter areas are largely covered with water. The drainage condition is indicated in most places by the character of the tree growth. On very wet lands cypress and gum predominate, the cypress growing in clusters in wet depressions and singly along sluggish streams. The large poorly drained flat areas chiefly support longleaf, loblolly, and slash pines. A ridge locally known as Big Ridge, is a rather conspicuous topographic feature of the flatwoods of Pascagoula River. This ridge is practically continuous between section 26, T. 6 S., R. 9 W., and section 26, T. 7 S., R. 7 W., its axis extending a little north of west and south of east. Over the more nearly level parts of the county comparatively small strips of land which border the drainage ways and parts of the coast have an undulating, ridged relief and good drainage.

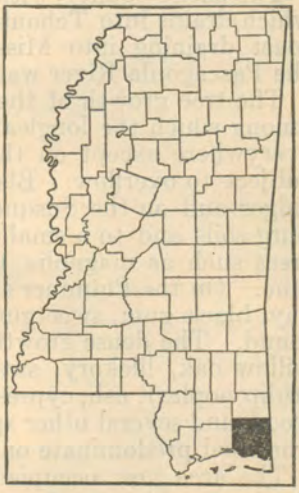

FIGURE 1.—Sketch map showing location of Jackson County, Miss.

Toward the north the elevation gradually increases, culminating in a series of ridges extending in a more or less north-and-south direction. Farther north is a level or slightly undulating plain modified by poorly drained swales and by depressed strips of land along drainage ways. The highland section differs distinctly from the flatwoods country in the southern part of the county and has much better average drainage. The relief is rolling or undulating, and the larger streams have developed definite valleys. A line roughly separating the highlands on the north and the flatwoods on the south can be drawn from a point a short distance south of Bigpoint westward past Vancleave. The northwestern part of the county has fairly rolling relief and widely branching drainage systems, not found in the northeastern part, except in the extreme northern part and in narrow strips along the Pascagoula and Escatawpa River Valleys.

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Pascagoula and Escatawpa Rivers, the largest two streams in the county, enter from the north, flow southward, and unite in the southern part near Moss Point. Pascagoula River continues south and empties into the Gulf of Mexico. Both rivers are navigable and are used to a considerable extent for the transportation of logs and pulp wood. Small freighters and sailing craft come to the sawmills near Pascagoula. Flat, poorly drained lowland belts about 4 miles wide, which consist mostly of marsh and swamp, extend along both Pascagoula and Escatawpa Rivers. In the northern part of the county a few steep upland escarpments reach to the rivers. Terraces or second bottoms are not extensive and have been considerably modified by transverse stream channels. The sides of the terraces, adjacent to the upland escarpments, are for the most part poorly drained, owing to their low position and to seepage.

The entire county, with the exception of the extreme western part, which drains into Tchoutacabouffa River and those parts along the coast draining into Mississippi Sound through bayous, lies within the Pascagoula River watershed.

The tree growth of the county includes a large number of species, among which the longleaf yellow pine is the most common, growing everywhere except on the treeless tidal marshes and first bottoms subject to overflow. Blackjack and turkey oak grow on the sandy ridges and on the Susquehanna soils. On the Ruston and Orangeburg soils and to a smaller extent on the well-drained Norfolk soils trees such as magnolia, blackjack oak, and live oak grow with the pine. On the Plummer and Portsmouth soils, chiefly the last, sweetbay, black gum, sweetgum, cypress, and pine, chiefly slash pine, are found. The dense growth of the stream bottoms includes water oak, willow oak, hickory, sweetgum, tupelo gum, black gum, tuliptree (tulip poplar), ash, cypress, bay, magnolia, swamp maple, holly, ironwood, and several other species. The cypress, bay, gums, maple, and ironwood predominate on the wetter areas.

The area now occupied by Jackson County was included among the lands which Spain and France attempted to acquire along the south coast of the new continent. A few descendants of the Latin races live in the county to-day. The Old Spanish Trail, a few buildings, and a fort of Spanish design remain as about the only historical evidence of these settlements in Jackson County.

Timber, the greatest natural resource of the county, attracted people of various nationalities, who came to work in the lumber and turpentine industries rather than to acquire land. English, Italians, Russians, Bohemians, and some Germans and Swedes migrated to this region after the United States acquired possession and spread out into broadly scattered settlements over the county. A few large plantations were established by slave owners.

After the Civil War timber was the principal source of income. About 20 years ago lumbering is said to have been the most important industry in the county. According to local information, Moss Point and Pascagoula were the largest shipping points for lumber in the South. At that time between 15 and 20 sawmills were in operation along Pascagoula and Escatawpa Rivers, and timber was cut in a wasteful manner. At present large tracts of cut-over land are scattered throughout the county, and only sufficient timber remains to keep two sawmills in operation.

Some farming has developed on the more favorable soils, and some has been undertaken on the less favorable types of land. Farmers from the North have come into the county in recent years. The growing of pecans and Satsuma oranges has received considerable attention, and some large pecan orchards have been established. These, for the most part, have been operated through resident managers. Many of the small landowners have set out small groves of pecans and Satsuma oranges and have met with some success.

Ocean Springs, Pascagoula, Moss Point, and Escatawpa are the largest towns of the county and owe their size to the lumber industry and their location on a water front. Orange Grove, Pecan, Kreole, Harleston, Hurley, Helena, Wade, and Vancleave are small trading centers for the neighboring rural districts. The Louisville & Nashville Railroad crosses the southern part of the county and gives direct access to several large markets, including New Orleans, Mobile, Montgomery, and Birmingham. The Mississippi Export Railroad crosses the north county line and extends as far as Moss Point. It handles freight for the local stations and for a large paper mill at Moss Point.

Two large sawmills are located near Pascagoula. Other small industries, most of them connected with the lumber industry, are located near Pascagoula and Moss Point. Fish and oysters are handled on a commercial scale.

A large proportion of the population resides in the towns of the county. The rural districts are rather thinly settled, except the better-drained areas. According to the poll-tax returns of 1926 there were 3,950 white voters and 1,063 negro voters in the county. According to the preliminary census figures for 1930 there are 15,973 people living in Jackson County.

The main public roads are graded and kept in fairly good condition. A hard-surfaced road, United States Highway No. 90, which crosses the southern part of the county provides a national thoroughfare along the Gulf coast and is designated the Old Spanish Trail. It follows approximately the route of the ancient highway of the same name.

Consolidated rural schools serve practically all the rural sections, and rural mail routes reach all except the most sparsely settled areas.

CLIMATE

Jackson County lies between parallels 30° and 31° N., and the climate is that of the warmer part of the North Temperate Zone. The temperature is moderated considerably by the Gulf of Mexico. In summer, the cool Gulf breezes prevalent along the coast attract large numbers of summer visitors to this region.

The mean winter temperature is 52.9° F., and that of the summer is 80.7°. The highest temperature recorded at Pascagoula is 101°, and the lowest, 16°. Low temperatures have at times damaged, and even killed, Satsuma orange groves and some early vegetables. The average date of the last killing frost is February 25 and of the earliest is December 1. This gives an average frost-free season of 279 days which is ample for maturing two crops in one year. The latest recorded killing frost occurred on March 23 and the earliest on November 13.

The rainfall has varied from 34.96 inches during the driest year to 68.95 inches in the wettest year. The rainfall is fairly evenly distributed throughout the year, and injury to crops from dry weather is seldom serious. Summer is usually the wettest season. Snow rarely falls.

Table 1 gives the normal monthly, seasonal, and annual temperature and precipitation as recorded by the United States Weather Bureau station at Pascagoula, which is in the extreme southern part of the county on the coast, but these figures may be taken as approximately representative of the climate of the county.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Pascagoula, Miss.*

[Elevation, 15 feet]

Month	Temperature			Precipitation		
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1917)	Total amount for the wettest year (1912)
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*
December	52.1	76	17	4.59	2.17	6.75
January	52.1	74	16	3.87	3.02	5.17
February	54.6	78	19	4.24	2.01	6.73
Winter	52.9	78	16	12.70	7.20	18.65
March	60.1	85	25	4.08	2.08	7.01
April	66.4	88	33	5.29	3.27	8.19
May	73.6	94	46	3.52	.74	3.90
Spring	66.7	94	25	12.89	6.09	19.10
June	80.0	100	56	4.32	.57	4.33
July	81.0	99	63	5.81	3.19	5.12
August	81.0	101	62	7.40	8.28	6.68
Summer	80.7	101	56	17.53	12.04	16.13
September	78.2	97	48	6.99	8.07	4.24
October	70.3	93	33	4.73	.35	7.61
November	59.7	84	27	2.77	1.21	3.22
Fall	69.4	97	27	14.49	9.63	15.07
Year	67.4	101	16	57.61	34.96	68.95

AGRICULTURE

The present agriculture of Jackson County marks a transition from large-scale lumbering operations to farming. The timber was largely removed about a decade ago. In the report on the soil survey of the Scranton area made in 1909 [1] it is stated that about 25 lumber mills were in operation at that time within the area surveyed, which comprised 470 of the 724 square miles of Jackson County. The storm of 1906 destroyed an enormous number of pine trees and hastened the removal of the principal tracts of merchantable timber. The turpentine industry was of considerable importance before the wholesale leveling of the forests by this storm, but after that time became comparatively unimportant. Small scattered tracts, principally of second-growth pine, are being cut by small-scale operations for boards and piling. The cutting of second-growth pine for pulp wood promises to become more important with the increasing interest in the

[1] LEE, O., JR., ALLEN, R. T., and WINSTON, R. A. SOIL SURVEY OF THE SCRANTON AREA, MISSISSIPPI. U. S. Dept. Agr., Bur. Soils, Field. Oper. (1909) Rpt. 11: 887-920, illus. 1912.

protection of young pineries from fire. Turpentining will probably continue to be of some importance in various parts of the county, but the resin is being extracted from very much smaller trees than formerly. A few tracts of original timber remain, chief among which is the strip of hardwood on the alluvial swamp lands along Pascagoula River.

Between 1879 and 1919 the area of land in farms, as reported by the Federal census reports, increased from 3.7 to 21.4 per cent. Of the land in farms, 15 per cent is estimated as improved. These figures show that the agricultural development of the county is still in a more or less pioneer stage. The comparatively large area of flat wet lands in the southern part of the county, some of which is of very restricted crop adaptation, probably accounts for the small percentage of improved farm land.

Open range conditions have probably encouraged many farmers to depend largely on the livestock they have been able to raise on unfenced lands as a source of income. The county has too recently emerged from large-scale lumbering operations to have developed a high state of agriculture.

In 1879 only 226 acres were reported by the census as being in crops. The leading crop was corn, which occupied 138 acres and gave a total yield of 1,826 bushels. In 1889 the acreage in crops was reported as 3,755 acres. Corn still led with 2,498 acres and a production of 38,752 bushels. The total crop acreage reported for 1899 was 5,194 acres. Again corn was the leading crop, occupying nearly half the cultivated land. In 1919, 7,212 acres were in crops (not including the acreage in pecans, fruit trees, and grapes), of which 3,527 acres were occupied by corn, and only 367 acres by cotton. Nut trees numbered 21,429, practically all of which were pecans. The value of fruits and nuts was $131,069; of poultry and eggs, $67,931; and of wool and mohair, $17,557. The value of animals sold and slaughtered was not reported, but the value of all domestic animals was $477,761.

In 1924 there were 6,238 acres reported by the census as being in crops, exclusive of land occupied by fruit trees, pecans, and grapes. Corn occupied 3,187 acres, and cotton only 238 acres. The number of pecan trees had increased to 108,796, of which 52,822 were of bearing age. Of a total of 21,470 orange trees, 19,198 were reported as of bearing age. The value of all livestock in the county was reported as $219,855.

The number of farms increased from 688 in 1920 to 724 in 1925, but the preliminary census returns for 1930 report a decrease to 556 farms in 1930, which represents a loss of 132 farms, or a loss of 19.2 per cent from 1920 to 1930.

The soil survey reveals the fact that the county includes a large area of well-drained soils of good physical characteristics represented principally by the Norfolk, Ruston, and Orangeburg soils, on which a high type of agriculture could be developed. There is also possibility of profitable production of special crops, such as strawberries, on some of the more poorly drained lands, provided they are efficiently ditched. The crops which have been most commonly grown on the better-drained soils are corn, cotton, oats, legumes, sugarcane for sirup, rice, pecans, and many fruits and vegetables. All varieties of vegetables grown in the important trucking sections of southeastern

United States can be grown in Jackson County. At one time there was a large number of Satsuma orange groves, but the freeze of 1924 killed many of the trees. This crop appears worthy of further serious consideration, particularly if provision be made for heating the orchards during the occasional extremely cold spells or if hardier varieties are introduced or developed.

Several of the standard varieties of papershelled pecans originated in Jackson County, and there are a large number of small groves of these trees and some large ones. Success with the pecan has varied, not because of a lack of suitability of the better-drained soils, but because a number of growers have selected their sites unwisely. Some groves have not succeeded because of neglect; others have failed because the trees were set on infertile soil having an unfavorable, impervious heavy clay subsoil not in the least suited to them. When planted on the Norfolk, Ruston, and Orangeburg soils and continuously fertilized and cultivated, the pecan seems to grow as well in this county as elsewhere, although certain varieties appear highly susceptible to disease.[2] Some other types of soil, such as the better-drained phases of the Scranton and Kalmia soils, can be successfully used for pecans, provided the land is ditched in order to insure good underdrainage to a depth of at least 3 feet. Unditched soils of the Plummer, Coxville, Portsmouth, and Myatt series are not suitable to pecans, but by thorough ditching and by throwing the soil up into broad beds called "lands" there is probably some promise for pecans planted on the high centers of these "lands," provided they are thoroughly cultivated and adequately fertilized. The best pecan groves are those which are given sufficient cultivation to keep down weeds and grass. In some groves corn and other crops are grown.

Corn is cultivated with considerable efficiency. Where grown on properly drained soils, such as the Norfolk, Ruston, and Orangeburg, fair yields are commonly obtained, depending on fertilization. Oats succeed on most of the well-drained soils when properly fertilized, but under certain unfavorable seasonal conditions considerable damage is caused by rust. Cotton also succeeds on the better-drained soils if liberally fertilized. Vegetables can readily be grown on well-drained rather heavily fertilized land, if the diseases are controlled, and protracted droughts or unseasonable frosts do not cut down the yield. Early spring vegetables apparently bring the best financial returns. With provision for overhead irrigation damage by drought could be very materially reduced.

Peaches are being grown very successfully in Georgia and other parts of the coastal-plain region on the Orangeburg and Ruston soils and in the Carolinas on the Norfolk soils. The successful production of peaches, grown on a commercial scale in the Gulf-coast section of Mississippi, suggests possibilities with this crop in Jackson County. Pears are subject to blight, although certain varieties, particularly the sand pear, produce fairly good crops, as a rule.

Sweetpotatoes and early potatoes produce well, and when prices are good many farmers obtain favorable net returns from these crops.

Strawberries are not grown to a great extent, but there seems to be no reason, inherent in soil or climate, why their growth should

[2] McMURRAN, S. M., and DEMAREE, J. B. DISEASES OF SOUTHERN PECANS. U. S. Dept. Agr. Farmers' Bul. 1129, 22 p., illus. 1920.

not become an important industry. The strawberry is tolerant of a wide range of soil conditions and can be grown even on the Portsmouth and Plummer soils if the necessary drainage is provided.

Conditions also seem favorable on the better-drained soils for successful culture of flower bulbs, including narcissus, gladiolus, and others.

Figs for canning are grown to considerable extent. The crop never fails to produce abundantly and is very easily grown on the Norfolk, Ruston, and Orangeburg soils.

Wild dewberries, which frequently begin to ripen by the first of April, are well suited to the well-drained sandy soils, and could be produced on a commercial scale.

The sandy soils, which predominate in the county, are exceedingly easy to till and keep in a good state of cultivation. Some tractors are used, but, in general, satisfactory tillage can be economically effected with mule-drawn plows. It is not very difficult to control weeds, except during protracted rainy weather when the ground remains saturated, allowing crabgrass to get ahead of cultivation.

All crops require rather liberal fertilization, usually with complete mixtures on all types of soils. With applications ranging from 400 to 600 pounds of a 3–8–3 mixture[3] to the acre, corn yields from 35 to 50 bushels on the Norfolk and Ruston fine sandy loams. Orangeburg fine sandy loam, with the same fertilization, commonly gives somewhat better yields. With the same treatment on the same soils cotton is reported as averaging more than one-half bale to the acre and 1 bale in years when the boll weevil is not particularly troublesome. More concentrated mixtures such as 4–10–4 can probably be used with even better results. Side applications of sodium nitrate are commonly made to both corn and cotton with very good results throughout the coastal-plains region of southeastern United States. These applications usually run about 75 pounds to the acre and are made when the plants are about three weeks old. About 300 or 400 pounds to the acre of a 3–8–3 or 4–10–4 fertilizer has proved very beneficial for oats, as has also a top-dressing of 50 or 75 pounds of sodium nitrate. Two hundred pounds of superphosphate (acid phosphate) and 100 pounds of sodium nitrate is said to be a good application for oats or rye.

One of the largest potato growers reports yields of 100 bushels or more an acre when from 600 to 800 pounds of a 4–10–4 fertilizer was used. In general, potatoes have been thought to require considerable potash, but some growers on Norfolk fine sandy loam report that fair yields were made without potash applications during the World War, when this form of fertilizer was scarce and high priced. These same growers, however, have used potash in their potato mixtures since the return of better supplies and cheaper prices. Probably from 300 to 400 pounds of a 3–8–3 or 4–10–4 fertilizer to the acre will, in general, give very good yields of sweetpotatoes. Somewhat heavier applications of the same mixtures will probably be advisable for watermelons, string beans, and other vegetables, as such applications are reported on similar soils in other localities with satisfactory returns.

[3] Percentages, respectively, of nitrogen, phosphoric acid, and potash.

Some pecan growers assert that a heavy application of fertilizer for corn grown in the groves will be sufficient for both the corn and the pecan trees, using the same mixtures as are commonly used for corn and cotton. Some growers prefer to add about 50 or 75 pounds of bone meal to the acre.

Velvetbeans, beggarweed, Lespedeza, and cowpeas grow especially well and supply the soil with nitrogen and needed organic matter, even where they are cut for hay or grazed. Following these crops especially good yields are obtained by the use of fertilizers, but too many farmers fail to take advantage of this easy way of adding to their crop yields. The running variety of speckled velvetbeans produces a very large amount of forage on which cattle can graze far into the winter. Winter cover crops, such as oats and Abruzzi rye, can be winter pastured and utilized as spring feed crops.

On many farms practically the only products sold are a few head of cattle, some sheep, and a little wool. Cattle, sheep, and hogs for home use have been raised on the open range for many decades. Careless breeding methods have resulted in much inferior livestock, and during severe winters cattle sometimes perish when not given supplementary feed. Some farmers make considerable profit on sheep. The principal obstacles to successful sheep raising are inferior breeds and destruction by dogs. With better breeds and more watchful care sheep could probably be made a source of considerable income, especially on fenced areas. Hog raising should prove profitable particularly on the Norfolk, Orangeburg, and Ruston fine sandy loams where special feed crops, such as sweetpotatoes and peanuts, can be easily grown.

The production of dairy and poultry products seems to promise the most immediate profit. Honey production is a rather profitable side line.

The common grasses that follow frequent burning over of the land afford good spring grazing, but later in the season they become woody and of low nutritive value. Carpet grass and Lespedeza afford excellent grazing in open areas where broom sedge is not allowed to crowd them out. Better and more abundant grass would come up on cut-over pineland if fires were kept under control.

One of the most valuable crops that can be grown in this part of the coastal-plain region, is the pine tree. Landowners have recently come to realize its value wherever it is given protection against fire and hogs. Longleaf and slash pines will grow rapidly on practically every soil in the county except the very wet swamp lands. The trees make a remarkable growth on all the Norfolk, Orangeburg, Ruston, Scranton, Coxville, Kalmia, and Cahaba soils and do fairly well on the Susquehanna soils. Any appraisal of the possibilities of the county that leaves pine forestry out of consideration overlooks an opportunity for profitable utilization of the land.[4] Some farmers are struggling along with small, indifferently cultivated fields of various crops and a few head of range-fed cattle without realizing that the practice of burning over their lands every spring destroys countless numbers of pine trees which, if protected from burning, give promise of ultimately returning more profit than cultivated crops and livestock.

[4] MATTOON, W. R. SLASH PINE. U. S. Dept. Agr. Farmers' Bul. 1256. 41 p., illus. 1922.
——— LONGLEAF PINE PRIMER. U. S. Dept. Agr. Farmers' Bul. 1486, 33 p., illus. 1926.
——— LOBLOLLY PINE PRIMER. U. S. Dept. Agr. Farmers' Bul. 1517, 38 p., illus. 1926.

A system of farming which would combine forestry, the raising of livestock, and the growing of the aforementioned crops, may be made profitable on the better lands of Jackson County, provided these crops are grown in accordance with their special soil and fertilizer requirements and soil-improving legumes are used.

SOILS

The soils of Jackson County may be grouped in two major divisions, well-drained soils and imperfectly drained soils. The well-drained soils in which the weathering agencies, chiefly leaching and oxidation, have been most active have the most nearly mature or fully developed soil profile. Soils of the Ruston, Orangeburg, Cahaba, Kalmia, and Norfolk series are well-drained soils whose maturely weathered or typical profiles show the following characteristic soil layers: (1) A surface layer, 3 inches or less in thickness, of gray loamy fine sand or fine sandy loam; (2) friable heavy fine sandy loam to a depth of about 12 inches; (3) friable heavier-textured material, usually fine sandy clay, extending to depths ranging from 30 to 48 inches; (4) a slightly coarser-textured subsoil which is slightly more compact in place and essentially of the same degree of plasticity as the layer above, but which with increasing depth becomes more variegated, containing splotches of yellow, red, and in many places brownish-red aggregates of ferruginous rock; and (5) alternating unconsolidated beds of sand, sandy clay, and clay of the less weathered geologic substratum, which is free from appreciable amounts of lime carbonate, being acid in reaction.

In this profile the gray surface layer shows a lack of or a very slight content of dark-colored organic matter, and the second and third layers show a clay content increasing with depth. The presence of a fourth underlying layer of slightly less clay content indicates that clay has accumulated in the third layer.

The soils of the county are in a region where the more soluble chemical constituents, such as lime carbonate, have been removed from the soil materials. Of the chemical constituents present, compounds of iron show the most visible evidence of accumulation in the subsoil. In the subsoil of the Orangeburg soil and to less degree in the Ruston and Cahaba soils, the red color is imparted by iron in a high state of oxidation, probably, whereas in the yellow subsoils of the Kalmia and Norfolk soils the iron appears to be in a more hydrated form. The Ruston, Cahaba, and Orangeburg soils occur only in well-drained areas, whereas the Norfolk soils occur in flatter, less thoroughly drained areas. In general, the poorer the drainage the less typical are the profiles as compared with the mature regional profiles. Therefore, the soils exhibit mature profiles over a comparatively small part of the county. A considerable proportion of the Norfolk soils, for instance, shows in the deeper part of the subsoil a layer similar to the upper part of the subsoil of the Caddo soils.

The soils most typical of the poorly drained soil group are the Portsmouth, Johnston, Okenee, Plummer, and Bibb soils. Tidal marsh and muck are also poorly drained. The poorly drained or saturated condition of these soils has retarded or prevented the activities of aeration, oxidation, and leaching. The chief change wrought is the incorporation of black organic matter in the surface layer and continuing to variable depths below. Muck, with its great thickness of dark

decomposed organic matter, represents the extreme example of such accumulation in the county. The Portsmouth, Johnston, and Okenee soils are characterized by dark-colored surface soils and gray subsoils mottled with yellow, bluish gray, and rust brown. The Plummer and Bibb soils are gray. The Plummer soils have peculiar drainage in that they are intermittently wet and dry, becoming spongy during wet seasons and hardened during dry seasons. The Myatt soils are much like the Plummer soils.

The Caddo and Scranton soils are not so poorly drained as the Plummer or Portsmouth yet they have a higher average water table than the Orangeburg, Ruston, and Norfolk soils. The soil profile of the Scranton soils is intermediate in character between the Portsmouth and Norfolk, and that of the Caddo is intermediate between the Plummer and Norfolk soils. As areas of these soils approach either the well-drained or poorly drained condition, the profile characteristics also change. In general, the profile of these soils shows a dark-gray or black surface soil, a pale-yellow upper subsoil layer, and a mottled, compact lower subsoil layer. In the Scranton soils alone of this group has the surface soil been darkened to any marked extent by incorporation of organic matter.

As an exception to the soils described in a general way there are in the county heavy clay beds and deep sand deposits, the former having surface drainage conditions ranging from poor to good or even erosive. These heavy mottled clay soils are separated into three series, the Susquehanna on the uplands, the Coxville on the flatwoods, and the Leaf on the stream terraces. The internal drainage of these heavy mottled clay soils allows only slow aeration and weathering, but the surface drainage seems to have had little influence on the character of the soil except in the Coxville soils on which poor surface drainage has resulted in a darkened color of the surface soil owing to the incorporation of organic matter. Few profiles of these soils in the county show, within the depth to which it is probable that weathering has taken place, any intermediate section of higher clay content than the material above or below. A higher content of sand or stratified or bedded layers of more sandy clay is more common in the substratum of the Leaf and Coxville soils than in the substratum of the Susquehanna soils. The subsoil of the Cuthbert soils is intermediate in character between the plastic, waxy Susquehanna subsoils and the friable Ruston subsoils, but the Cuthbert profile more closely resembles that of the Ruston soils. The deep sand deposits referred to show profiles in which the soil materials are unretentive of soluble chemical constituents.

The geologic substratum of the region in which the soils of Jackson County occur consists of bedded clays and sands low in lime carbonate and soluble soil constituents. In some places a direct relation exists between the soil and the geologic substratum. For instance, the Susquehanna, Leaf, and Coxville soils have poorly weathered subsoils closely resembling the unaltered substratum. Again, the subsoils of the flatwoods and alluvial stream-bottom soil areas exhibit a less apparent resemblance to their substrata. In the well-drained soils less resemblance between the weathered soil and the substratum remains.

Other agencies which have a disturbing effect on the normal processes of soil weathering are responsible for certain features exhibited by the soils in various places throughout the county. Wind action is

still affecting the dune sands on the islands off the coast and has been responsible for the formation of many of the deep sandy deposits of Norfolk and Ruston soils, but at present no shifting of such areas is in progress. In many places the profiles of these deeper sand areas show 2-inch indurated layers of ferruginous sandstone, representing extreme examples of accumulation and hardening of the iron constituents.

Wave action is responsible for beach sand deposits and for undermining erosion. Tidewaters limit the extension of low coastal lands over wide areas and they are also responsible for the peaty, sandy, and mucky character of the areas mapped as tidal marsh.

Erosion is annually exposing new materials to the action of surface weathering in the areas of rolling country, where some gullying is taking place.

For the purpose of classification the soils of a county or area are grouped into soil series according to common characteristics of color, structure, and origin, and these series are separated into soil types on the basis of differences in the texture of the surface soil. In Jackson County 18 soil series, represented by 30 soil types and 1 phase, have been separated and, in addition, 4 miscellaneous soil materials.

The Orangeburg soils have gray or light-brown surface soils and deep-red friable heavier-textured subsoils. The Norfolk soils have gray surface soils and yellow friable subsoils. The Caddo soils have gray surface soils, pale-yellow subsurface soils, and mottled compact friable lower subsoils. They are related to the Norfolk soils, essentially representing a poorly drained phase of the Norfolk. Intermediate between the Orangeburg and Norfolk soils are the Ruston soils, with their grayish-brown surface soils, reddish-yellow upper subsoil layers, and yellowish-red lower subsoil layers. The Susquehanna soils have gray surface soils with plastic heavy mottled clay subsoils. The Cuthbert soils have gray surface soils, yellow or yellowish-red upper subsoil layers, and mottled compact friable lower subsoil layers. Their characteristics are intermediate between those of the Ruston and Susquehanna soils. The Plummer soils have light-gray surface soils with dingy-gray subsoils, in many places mottled in the lower part with yellow and brown. The Portsmouth and Scranton soils occur in the flatwoods parts of the county and have dark-colored surface soils.

On the stream terraces soils of the following series are mapped: Cahaba, Kalmia, Leaf, Myatt, and Okenee. The Cahaba soils have brown surface soils and dull-red or yellowish-red friable subsoils which are in most places a little stiffer than in the closely related Ruston soils of the upland. The Kalmia soils have grayish-brown surface soils and pale-yellow friable subsoils, the more poorly drained areas showing some gray mottling in the lower part of the subsoil. The Leaf soils have gray surface soils, mottled gray and yellow upper subsoil layers, and mottled red, yellow, and gray lower subsoil layers. The subsoils are plastic and heavy. The Myatt soils have light-gray surface soils and mottled yellow and gray subsoils, compact in the lower part. The Okenee soils differ from the Myatt essentially in having black or dark-colored surface soils.

Soils of three series are mapped on the stream bottoms. The Johnston soils have dark-colored surface soils similar to soils of the Portsmouth and Okenee series. The Bibb soils are gray and have subsoils like the Plummer and Myatt soils. The Ochlockonee soils

are brown, with light-brown upper subsoil layers and mottled yellowish-brown and gray lower subsoil layers.

In subsequent pages of this report the soils of Jackson County are described in detail; their distribution is shown on the accompanying soil map; and their acreage and proportionate extent are given in Table 2.

TABLE 2.—*Acreage and proportionate extent of the soils mapped in Jackson County, Miss.*

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Orangeburg fine sandy loam	1,472	0.3	Coxville very fine sandy loam	9,280	2.0
Ruston fine sandy loam	23,744	5.1	Coxville silt loam	5,888	1.3
Ruston sandy loam	1,024	.2	Cahaba fine sandy loam	512	.1
Ruston loamy fine sand	2,944	.6	Kalmia fine sandy loam	13,568	2.9
Norfolk fine sandy loam	60,352	18.6	Kalmia loamy sand	4,800	1.0
Flatwoods phase	26,048		Okenee very fine sandy loam	5,248	1.1
Norfolk fine sand	8,576	1.9	Myatt fine sandy loam	5,376	1.2
Norfolk loamy sand	16,064	3.5	Leaf very fine sandy loam	5,504	1.2
Cuthbert fine sandy loam	10,176	2.2	Leaf silt loam	576	.1
Caddo fine sandy loam	15,296	3.3	Johnston loam	9,344	2.0
Susquehanna very fine sandy loam	1,920	.4	Ochlockonee clay	40,128	8.7
Susquehanna fine sandy loam	12,160	2.6	Bibb very fine sandy loam	8,192	1.8
Susquehanna clay	5,568	1.2	Muck	11,520	2.5
Scranton very fine sandy loam	30,912	6.7	Tidal marsh	40,576	8.7
Portsmouth very fine sandy loam	14,912	3.2	Dune sand	2,560	.6
Portsmouth silt loam	7,872	1.7	Beach sand	2,112	.5
Plummer fine sandy loam	52,096	11.2			
Plummer fine sand	1,664	.4	Total	463,360	
Plummer very fine sandy loam	5,376	1.2			

ORANGEBURG FINE SANDY LOAM

The grayish-brown fine sandy loam surface layer of Orangeburg fine sandy loam grades at a depth of 5 or 6 inches into buff fine sandy loam, which in turn grades at a depth ranging from 8 to 12 inches into buff or light reddish-brown fine sandy loam. Between 14 and 18 inches below the surface red friable fine sandy clay is reached. This extends to depths ranging from 3 to 5 feet without much change, thence grades into red fine sandy clay loam or fine sandy clay. Some small areas having a sandy loam surface soil are included with this soil in mapping. In many places buff-gray or whitish-gray fine sand or loamy fine sand occurs at a depth ranging from 8 to 15 feet. In many places this material includes thin seams of reddish-gray fine sandy loam in the upper part. In small areas, chiefly in the extreme northeastern part of the county, the surface soil is deep brown and directly overlies red soil below. Cultivated areas closely resemble the Greenville soils.

The natural vegetation consists chiefly of longleaf pine, with some shortleaf pine, dogwood, and a few oaks. Along colluvial slopes cucumbertree, magnolia, dogwood, and oaks are abundant. Wire grass is everywhere plentiful.

This is the strongest upland soil in the county. Throughout the coastal-plain region Orangeburg fine sandy loam is rated as an excellent agricultural soil. It requires fertilization but usually not quite so much as Norfolk fine sandy loam. It is well suited to the production of cotton, corn, oats, peanuts, velvetbeans, Lespedeza, vegetables, pears, peaches, figs, muscadine varieties of grapes, and other crops.

In Jackson County this soil occurs on scattered flats and sloping areas. On the sloping areas gullies form easily, and when they have cut down to the sandy substratum (pl. 1, A) they eat back rapidly into the adjacent areas and undermine the timber. To stop this erosion dams must be made and vines and trees must be planted in the gullies. The flat areas do not erode so badly, but all slopes should be carefully terraced. The soil is easily tilled. With an application of 400 pounds of a 3–10–3 fertilizer, yields of 40 bushels or more to the acre of corn and three-quarters or a bale of cotton are often obtained, especially following velvetbeans, Lespedeza, or other legumes. Vegetables do well, and pecans, pears, figs, and peaches do especially well. Satsuma orange trees grow rapidly on the soil. Owing to the easily penetrable subsoils (pl. 1, B), the long taproots of trees such as the pine and pecan readily pass through this soil, penetrating even into the sand beds beneath.

RUSTON FINE SANDY LOAM

The surface soil of typical Ruston fine sandy loam in wooded areas consists of a 2 or 3 inch surface layer of gray loamy fine sand or light fine sandy loam overlying yellowish-brown loamy fine sand or fine sandy loam, which passes at a depth of about 5 or 6 inches into similar material of yellow color. This grades at a depth of 10 or 12 inches into yellow or buff heavier fine sandy loam, which grades, in turn, at a depth ranging from 14 to 20 inches into reddish-yellow friable fine sandy clay. The color of the subsoil is more red than that of the Norfolk soils and less red than that of the Orangeburg soils.

In some places the texture becomes coarser at a depth of 36 or 40 inches, being fine sandy clay loam or heavy fine sandy loam, and the color is a little lighter shade of red. In many places the heavier clay extends downward to a depth of about 4 feet, and there is commonly some splotching of brighter red and also of yellow. Red ferruginous concretions are of common occurrence in this lower layer. In some areas a rather stiff clay is present at a depth ranging from 3 to 4 feet, resembling the subsoil of the Cuthbert soils in some places and of the Susquehanna in other places. In some places the surface soil is more brown than typical and the subsoil is a trifle sandier. Many such areas are more level than the typical soil, as the area near Hurley.

The largest development of Ruston fine sandy loam is north of Vancleave, where it occurs in well-drained undulating or gently rolling areas. The soil holds moisture well, and crops respond readily to fertilization. It is adapted to the same crops as Norfolk fine sandy loam and requires the same kind of treatment. It is an excellent pecan soil, and Satsuma oranges, pears, peaches, figs, muscadine grapes, peanuts, sweetpotatoes, and potatoes do very well. The soil produces even better yields of corn and oats than Norfolk fine sandy loam, and the longleaf and slash pine on it are of a high grade. Wire grass is abundant, and some gall-berry bushes are scattered throughout the forested areas. Areas not in cultivation or in carpet-grass pasture can be forested with pine by keeping out fires and seeding where necessary. Fairly good grazing will be afforded by the forested areas after a few years of fire prevention.

The natural growth consists principally of slash and longleaf pines, dogwood, scattered blackjack, turkey, and other oaks, winter huckleberry, and wire grass.

The results of mechanical analyses of samples of the surface soil, subsurface soil, and subsoil of Ruston fine sandy loam are shown in Table 3.

TABLE 3.—*Mechanical analyses of Ruston fine sandy loam*[1]

No.	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*
425244	Surface soil, 0 to 2¾ inches	4.0	9.0	19.0	30.2	16.1	18.3	3.5
425245	Subsurface soil, 2¾ to 5½ inches	1.9	7.4	18.1	30.4	16.4	20.8	5.0
425246	Subsoil, 5½ to 10¾ inches	2.3	7.2	17.7	28.5	13.5	21.6	9.3
425247	Subsoil, 10¾ to 21 inches	2.4	6.5	15.2	26.0	13.3	21.4	15.3
425248	Subsoil, 21 to 35 inches	2.0	6.0	14.4	26.0	12.8	21.6	17.1
425249	Subsoil, 35 to 50 inches	2.9	6.3	14.9	28.9	15.7	18.1	13.2
425250	Subsoil, 50 to 70 inches	.5	1.8	4.6	29.1	20.3	14.3	29.4

[1] After treatment with hydrogen peroxide.

RUSTON SANDY LOAM

Ruston sandy loam differs from Ruston fine sandy loam only in having a coarser texture and a higher content of medium sand in the friable sandy clay subsoil. It has essentially the same general surface features and moisture relations, is adapted to the same crops, requires the same treatment, and gives the same crop yields. It is especially well suited to cotton, corn, peanuts, pecans, peaches, and sweetpotatoes. It does not become quite so firm as the Ruston fine sandy loam and possibly for this reason is not quite so well suited to potatoes.

Only a very small acreage is mapped in the county, most of the soil occurring with the fine sandy loam member in areas too small to separate.

RUSTON LOAMY FINE SAND

The surface soil of Ruston loamy fine sand consists of light-brown or grayish-brown fine sand or loamy fine sand which grades at a depth of 5 or 6 inches into yellow loamy fine sand. At a depth ranging from about 15 to 20 inches this material grades into buff or reddish-yellow loamy fine sand, continuing downward without much change except that in most places the material below a depth of 2 or 3 feet is more red and loamy.

This soil occurs in small scattered areas on knolls and ridges in the northern part of the county. It is thoroughly drained. Most of it is forested with pine and blackjack and turkey oaks, but there is some dogwood, winter huckleberry, and in places saw palmetto. This is a good soil for melons, sweetpotatoes, cucumbers, pecans, Satsuma oranges, and pears, and it would produce good asparagus. Because of its small extent and scattered occurrence it is of slight agricultural importance.

NORFOLK FINE SANDY LOAM

The surface soil of Norfolk fine sandy loam consists of a surface layer of light-brown or grayish-brown fine sandy loam which grades at a depth ranging from 1 to 3 inches into yellowish-brown fine sandy loam, gradually becoming more yellow with increasing depth until at a depth of 6 or 8 inches yellow fine sandy loam is reached. At a depth ranging from 10 to 16 inches yellow fine sandy clay loam occurs and within about 5 inches this material grades into yellow friable fine sandy clay which either continues downward to a depth of 3 or more

feet without much change or passes at a depth ranging from 30 to 40 inches into yellow slightly compact fine sandy clay loam or fine sandy loam. Mottled or splotched yellow, gray, and reddish-yellow rather compact material, ranging from fine sandy loam to fine sandy clay, appears at various depths, from 4 to 7 feet below the surface, and it usually contains some yellow or red concretions. The soil is acid in reaction. The shallow surface layer of light-brown material occurs only in uncultivated or virgin areas. Locally, especially in the flatter areas, this layer is dark gray. In many places the topsoil to a depth of 8 or 10 inches is no heavier than loamy fine sand.

As mapped the soil includes some areas of Norfolk very fine sandy loam and patches of Cuthbert, Caddo, and Ruston fine sandy loams and of Norfolk fine sand or sand.

The relief is flat, undulating, or gently rolling, and underdrainage is excellent. The soil is easy to cultivate and when properly mulched through cultivation holds moisture well. All crops common to the region respond to fertilizer treatment, and the growing of legumes increases the productivity. This is one of the best soils of the coastal-plain uplands. It has an extremely wide adaptation to crops, is a splendid producer of slash and longleaf pines (pl. 1, C), and is very resistant to erosion where the slope is less than 15 per cent.

Corn, cotton, oats, potatoes, sweetpotatoes, watermelons, cucumbers, and nearly all varieties of vegetables are grown, as well as some sugarcane for sirup, pecans, pears, and a few Satsuma oranges. Corn, sweetpotatoes, oats, and pecans are the leading crops. A few farmers grow small patches of potatoes for market. Probably not more than about 15 per cent of the soil is in cultivation, the remainder constituting cut-over land with or without second-growth pine. Fertilizers are in general use, otherwise crop yields are low.

This is one of the best upland pecan soils of the pecan belt. (Pl. 2, A.) Wherever the trees are properly cultivated and fertilized they grow very satisfactorily and produce well when not injured by disease. Farmers having this soil should give it preference over inferior wet lands and soils with heavy clay subsoils. All untilled areas should be started in pine as soon as possible, except open-pasture areas where Lespedeza and carpet grass are desired. Considerable grazing is afforded, carpet grass doing well in open places. (Pl. 2, B.) Crops that would give especially good results are asparagus, narcissus and other flower bulbs, figs, and muscadine varieties of grapes.

Norfolk fine sandy loam, flatwoods phase.—Norfolk fine sandy loam, flatwoods phase, includes areas of Norfolk fine sandy loam occurring through the flatwoods section in the southern part of the county. The principal difference from the typical soil, aside from the flat surface, is the presence of a surface layer of dark-gray fine sandy loam or loamy fine sand, ranging from about one-half to 3 inches in thickness. The subsoil averages paler yellow in the upper part, and the coarser substratum occurs at a slighter depth. Pale-yellow somewhat compact fine sandy loam commonly occurs about 30 inches below the surface, and light-gray fine sand is not uncommon at a depth of 3 or 4 feet. In new ditches the sandy material of the deep subsoil tends to flow out from beneath the heavier overlying material during rains, causing the banks to cave in. (Pl. 2, C.) This condition, however, eventually stabilizes itself and the caving practically stops, probably because of the binding of plant roots.

In association with the Coxville soils, many areas of Norfolk fine sandy loam, flatwoods phase, have a surface soil ranging to very fine sandy loam, and a deep subsoil of yellow splotched with rust-red and gray heavier-textured somewhat plastic fine sandy clay. This soil is not so plastic or heavy as the Coxville, and not so mottled as the Dunbar soils. The deeper substratum, however, in many places is typical of the Coxville or Dunbar subsoils.

Small areas on the bluffs along bayous and coastal tidal marsh are of fine sand texture to a depth of about 4 feet and are underlain by fine sandy clay.

This soil has the same crop adaptation and value as the typical Norfolk fine sandy loam and requires the same treatment. It is used rather more extensively for vegetables and pecans, partly because of its location.

NORFOLK FINE SAND

The surface soil of Norfolk fine sand consists of light-gray or grayish-brown fine sand, underlain at a depth ranging from 2 to 5 inches by pale-yellow fine sand. At a depth ranging from 10 to 18 inches this material passes into yellow loose fine sand which extends to a depth of 3 or more feet without important change. Light-gray or almost white very loose fine sand commonly occurs at a depth ranging from about 40 to 50 inches beneath the surface. Locally it contains irregular thin roughly horizontal seams of reddish-yellow loamy fine sand usually not more than one-half or three-quarters of an inch thick. In places, especially on the crests of knolls, the topsoil is almost white to a depth of 3 or 4 inches, possibly more, and beneath this the thin sand layer in most places is more orange than is general in this soil. In other places the surface soil and subsurface soil are brown rather than the usual light gray or grayish brown.

This soil occurs in scattered small excellently drained areas, such as ridges, slopes near streams, and hillocks, in the northern part of the county. The largest development is between the Louisville & Nashville Railroad and the shore of Mississippi Sound in the southern part.

The soil is composed largely of quartz sand and therefore is of low natural productivity and should be devoted chiefly to pine.

NORFOLK LOAMY SAND

Norfolk loamy sand is not very extensive but has distinct characteristics. It consists of a surface layer of light-brown loamy sand underlain at a depth of about 4 or 5 inches by brownish-yellow sand which passes at a depth of about 10 inches into yellow loamy sand in most places extending to a depth of 40 or more inches without much change. Locally the topsoil is loose and the subsoil approaches sandy loam in texture. The relief is gently rolling, and drainage is good.

As mapped many patches of Norfolk loamy fine sand and of Ruston loamy sand and loamy fine sand are included. Very prominent areas of these included soils are the one bordering the swamp west of Hurley and the one east of Three Rivers.

Most of this soil represents cut-over pineland, with a considerable amount of second growth, and variable amounts of oaks, some palmetto, and much wire grass. The soil is more productive than the

looser Norfolk fine sand, producing early vegetables, sweetpotatoes, melons, and pecans with liberal applications of fertilizer. Some good extra-early vegetables and watermelons were seen.

CUTHBERT FINE SANDY LOAM

The surface soil of Cuthbert fine sandy loam consists of grayish-brown or light-brown loamy fine sand or fine sandy loam, which grades at a depth of 2 or 3 inches into yellowish-brown loamy fine sand or fine sandy loam, passing at a depth of about 6 inches into yellow fine sandy loam. This grades at a depth ranging from 10 to 15 inches into buff or reddish-yellow friable fine sandy clay which is underlain at variable depths, usually less than 30 inches, by compact yellowish-red fine sandy clay splotched with yellow, red, purplish red, and gray. In most places the compact lower subsoil layer contains an abundance of red and yellow concretions of high iron content.

This soil as mapped ranges in surface soil texture from fine sandy loam to sandy loam and includes patches of Susquehanna, Bowie, Hoffman, Norfolk, and Ruston fine sandy loams. It occurs in scattered areas on slopes and knolls, chiefly in the northern part of the county. It has essentially the same crop adaptation as Ruston fine sandy loam, but dries out more quickly in the summer and therefore requires frequent shallow cultivation in order to conserve moisture. It is much in need of organic matter, such as could be supplied by growing velvetbeans and Lespedeza. Some eroded areas should be devoted to pine trees and pasture.

CADDO FINE SANDY LOAM

The surface soil of Caddo fine sandy loam consists of dark-gray fine sandy loam which passes at a depth ranging from about one-half inch to 3 inches into pale-yellow fine sandy loam. At a depth ranging from 10 to 15 inches this material grades into pale-yellow friable fine sandy clay, which is underlain at depths ranging from 18 to 30 inches by mottled pale-yellow and light-gray or bluish-gray somewhat compact fine sandy clay loam or fine sandy clay. Coarser material, which is still more mottled and compact, having considerable resistance to the movement of moisture, is reached at a depth ranging from 28 to 40 inches in many places. The lower part of the subsoil is mottled pale yellow and bluish gray with some reddish yellow or even red splotches in many places. Where the subsoil is deeper yellow the drainage is better, the mottled compact layer lies deeper, and the productivity of the soil is greater.

Considerable areas having a very fine sandy loam surface texture are included with Caddo fine sandy loam in mapping. In many places these areas occur in association with the Susquehanna soils, and the lower part of the subsoil is heavier textured and more plastic than typical.

Caddo fine sandy loam has much the same characteristics as the Scranton soil, except that it is lighter in color. It occupies flat areas and gentle slopes. Drainage is imperfect and, in general, cultivation should not be attempted except where the areas are ditched. Areas in the northern part of the county can be ditched more easily than areas in the flatwoods because they are more accessible to outlets.

The soil when properly drained is especially suited to the production of potatoes, oats, and corn, but it requires liberal fertilization for good yields. As the land is sour, it will require a ton or more of burnt lime to the acre to give good results with most of the legumes although Lespedeza does fairly well without liming. Slash and longleaf pines, when given proper fire protection, grow rapidly on this soil and should be planted more extensively. The pastures are fairly good, but could be much improved by seeding with Lespedeza.

The natural growth consists largely of longleaf and slash pines, wire grass, gall berry, myrtle, and various wild flowers.

SUSQUEHANNA VERY FINE SANDY LOAM

The surface soil of Susquehanna very fine sandy loam consists of gray very fine sandy loam which passes at a depth ranging from 1 to 3 inches into pale-yellow very fine sandy loam, and this layer, in turn, at a depth ranging from 5 to 10 inches passes into light-red fine sandy clay loam which is underlain between depths of 8 and 14 inches by red or mottled red and yellow heavy plastic clay. The heavy clay in many places extends downward without textural change to a depth of 10 feet and even to 40 or more feet in some places. With increasing depth the color of the subsoil becomes mottled red, yellow, and gray. In most places the red color disappears at a depth of 3 feet or less, and extremely dense and plastic bluish-gray and yellow clay occurs. At a still greater depth the yellow color largely disappears, and dove-colored laminated clay is present.

In numerous places the surface soil is very thin, and many patches of Susquehanna clay are included with the soil in mapping. Under cultivation the slopes erode rapidly, quickly losing the surface soil and leaving the raw intractable clay exposed. On a few flat areas in the southern part of the county the soil in places passes at a depth of less than 4 or 5 feet into more sandy beds, and the subsoil has a little greater sand content and is less plastic than in the typical soil.

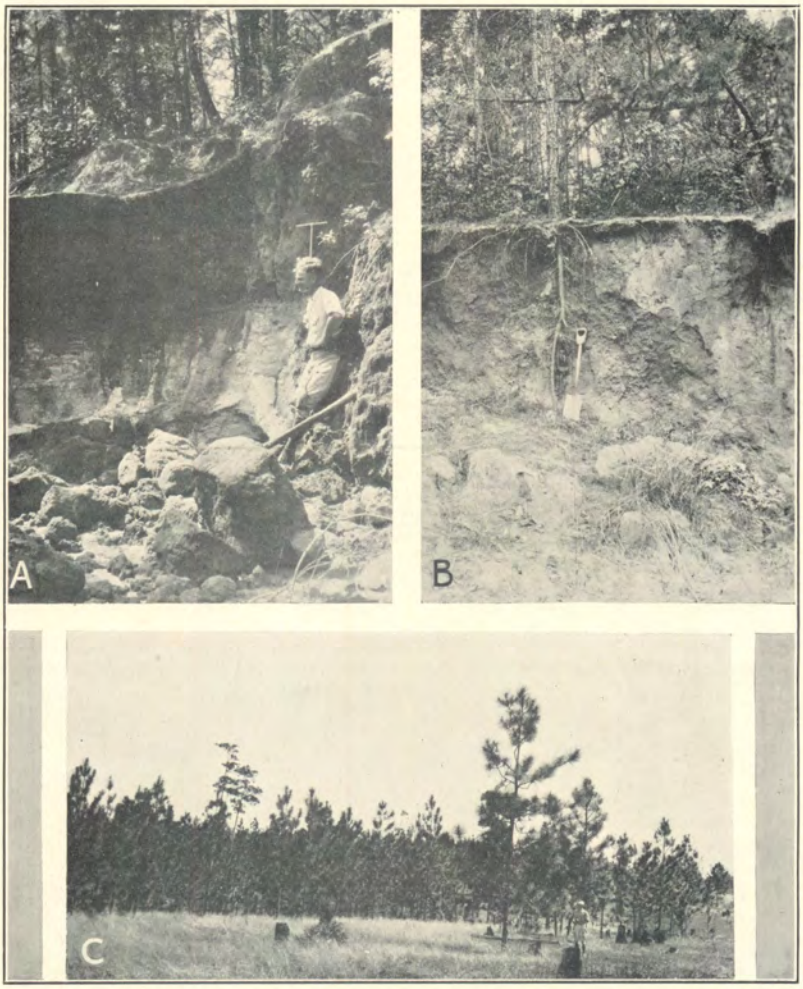
This soil occurs in small scattered areas. The areas in the northern part of the county are rolling and consist chiefly of cut-over longleaf pine lands. Second-growth pine is becoming established in some places, and the areas would all rapidly restock with pine if it were not for fires. The soil on the smoother areas can be cultivated with some degree of safety from erosion. The land dries out and bakes in dry spells and crops suffer from lack of moisture. The soil is best suited to forestry and grazing.

SUSQUEHANNA FINE SANDY LOAM

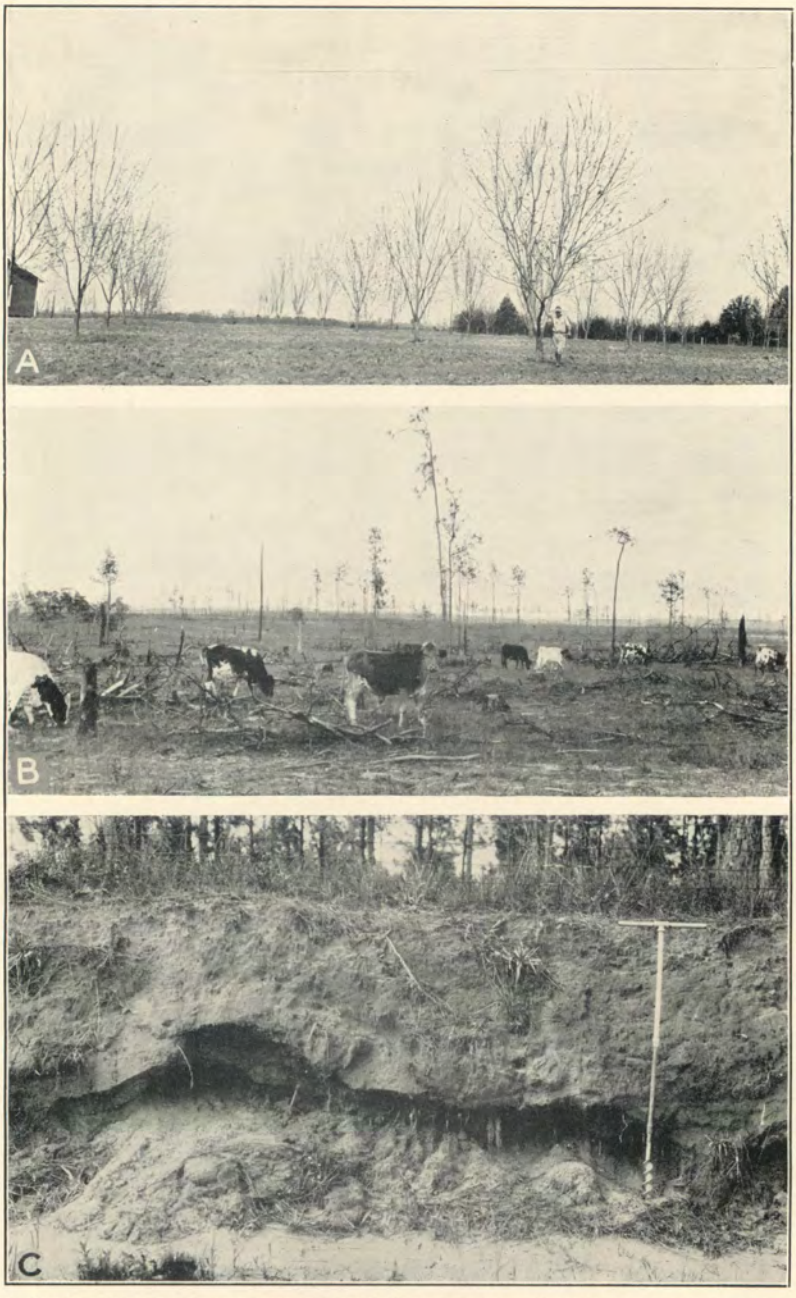
Susquehanna fine sandy loam differs from Susquehanna very fine sandy loam only in having a coarser texture and slightly greater depth to stiff clay. It is probably a little better suited to cotton, but the rolling areas should be used only for forestry and grazing.

SUSQUEHANNA CLAY

The surface soil of Susquehanna clay consists of stiff plastic clay corresponding to the subsoil of Susquehanna very fine sandy loam. This layer grades abruptly into mottled red, yellow, and gray plastic heavy clay, becoming dove colored at a depth of less than 4 feet.



A, Profile of Orangeburg fine sandy loam showing white loose sand substratum; B, profile of Orangeburg fine sandy loam showing deep taproot of a 5-inch pine tree; C, good stand of longleaf pine, which has been protected from fire, on Norfolk fine sandy loam



A, Vigorous 10-year-old pecan trees on Norfolk fine sandy loam; B, cattle grazing in early spring on cut-over Norfolk fine sandy loam; C, profile of Norfolk fine sandy loam, flatwoods phase, showing sandy layer flowing out from beneath sandy clay upper subsoil

The surface is rolling, and the soil dries to a hard intractable condition in summer. In winter unsurfaced roads cut up deeply, as on other Susquehanna soils. Susquehanna clay occupies more rolling areas than the other Susquehanna soils. Patches of Susquehanna very fine sandy loam and Susquehanna silt loam are included in mapping. If these were cultivated, the surface soil would quickly wash off leaving only raw infertile clay.

The larger areas are near Daisy south of Red Creek, where much of the land is severely eroded.

The soil, under present conditions, is suitable only for pine production, and all of it should be reforested.

SCRANTON VERY FINE SANDY LOAM

The surface soil of Scranton very fine sandy loam on better-drained areas typically consists of dark-gray or black loamy very fine sand or fine sandy loam, underlain rather abruptly at a depth ranging from 6 to 10 inches by a layer of pale-yellow very fine sandy loam about 6 or 8 inches thick. The surface soil grades into yellow or pale-yellow friable fine sandy clay or very fine sandy clay, rather closely approximating the character of the Norfolk fine sandy loam subsoil. The lower part of the subsoil, however, in practically all areas, differs from that of the corresponding section of Norfolk fine sandy loam in that it consists of pale-yellow, mottled pale-yellow and gray, or mottled pale-yellow, yellow, reddish-yellow, and gray somewhat compact fine sandy loam. This coarser-textured lower subsoil layer usually begins at a depth ranging from 24 to 32 inches beneath the surface. In places it may consist of loamy fine sand, and in such places the material seems even more compact than that having the fine sandy clay texture.

In the flatwoods region about half of this soil is not so well drained as the soil described in the foregoing paragraph. This wetter soil lies a little lower than the typical soil, and its subsoil is paler yellow, even in the upper part, and usually shows some gray mottling. The lower part of the subsoil shows as much gray as pale yellow, and reddish-yellow or red splotches are of common occurrence. In many places this lower subsoil layer resembles the plastic clay of the Coxville soils in color, but it is much more sandy and though compact is not especially plastic.

In some places the black surface soil is directly underlain by yellow or pale-yellow loamy fine sand or fine sand which closely resembles quicksand, as when saturated it flows out into ditches and causes caving. The sandy upper subsoil layer of such areas is usually underlain by mottled yellowish-gray and bluish-gray fine sandy loam or fine sandy clay.

As mapped the soil characteristics range toward those of the Portsmouth soils in the wetter positions and toward those of Norfolk fine sandy loam in the higher better-drained positions.

The better-drained areas of this soil promise fair returns from cultivated crops, including pecans. Most areas, however, should be ditched before cultivation is undertaken. The lower, wetter areas should generally be left in grass or pine, if efficient outlets for ditches 3 or 4 feet deep can not be economically obtained. The most promising crops are strawberries, string beans, potatoes, tomatoes, lettuce,

and eggplant, and corn does fairly well. Liberal applications of fertilizers are needed for all crops, as the soil is naturally low in fertility. Lespedeza could probably be grown for pasture and even for hay. Velvetbeans will succeed on the better-drained areas. Pecans can be grown on those areas having the more yellow subsoils, but do better on Norfolk or Ruston fine sandy loams.

The natural vegetation consists principally of pine trees, gall-berry bushes, myrtle, and wire grass.

Scranton very fine sandy loam is an excellent soil for pine trees. Both the slash and longleaf varieties make excellent growth where fires and hogs are kept out. All untilled cut-over areas of this soil should be allowed to reforest without delay by protecting them from fire. The land can be used for cattle and sheep pasture while the trees are growing.

PORTSMOUTH VERY FINE SANDY LOAM

Portsmouth very fine sandy loam is an extensive soil in Jackson County, especially in the southern, or flatwoods, section. It has a very dark-gray or black surface layer of very fine sandy loam from about 6 to 15 inches thick. This overlies gray, light-gray, dingy-gray, or mottled pale-yellow and gray material ranging in texture from very fine sandy loam to fine sandy clay loam and grading between depths of 18 and 26 inches into mottled gray or bluish-gray and pale-yellow fine sandy clay loam or fine sandy clay which either extends to a depth of 3 or more feet or passes at a depth ranging from 30 to 40 inches into a compact light-gray and pale-yellow layer which is decidedly coarser textured than the material directly above, in most places consisting of loamy fine sand, fine sandy loam, or very fine sandy loam. Where exposed in ditch cuts this compact layer tends to flow out from beneath the overlying heavier-textured material.

Numerous minor variations, especially in color, occur throughout mapped areas of this soil. Some of the more conspicuous are as follows: (1) The presence of light-gray fine sand, very fine sand, loamy fine sand, or loamy very fine sand directly beneath the dark surface soil; (2) the presence of dark-brown rather heavy very fine sandy loam or silt loam at a depth of about 8 or 10 inches, especially in depressions where water stands for long periods; and (3) the presence of reddish-yellow splotches in the lower part of the subsoil. In areas having the lighter-colored and more sandy subsurface layers the whole subsoil averages lighter in texture than in other areas, whereas those areas having the dark-brown heavier subsurface layers are heavier textured and darker colored to a depth of 3 or 4 feet. Along the border of tidal marsh in the southeastern part of the county, Portsmouth very fine sandy loam, as mapped, has a shallower surface layer than typical and is intimately associated with patches of Plummer fine sandy loam and includes some patches of Bladen soil. Most areas of this soil include small patches of Portsmouth silt loam, in depressions, and Scranton fine sandy loam and very fine sandy loam on the slightly higher positions. Some patches of Coxville very fine sandy loam are also included.

Areas of this soil are characteristically flat, and drainage is generally poor. In dry summers much of the flatland dries out to a depth of several inches.

The dominant tree growth is slash pine which is rather more scattered than on Scranton fine sandy loam. Scattered cypress usually marks the lower, more poorly drained, somewhat heavier-textured areas. Gall berry and myrtle are common shrubs, and there are a few baybushes. Pitcherplants and a large variety of flowering plants abound. Old fields support considerable broom sedge.

The soil is acid, and, although high in content of organic matter, it is not particularly productive. With improved drainage, strawberries, potatoes, string beans, and a variety of vegetables can be grown with rather liberal additions of complete fertilizers. Corn does fairly well on drained lands, when the rainfall is favorable. Pines are a crop of outstanding value if protected from fire. The land also has value for spring grazing. On farms including the better-drained soils, such as the Norfolk, Ruston, and Scranton, it will probably be best to use the Portsmouth very fine sandy loam areas for the production of pine trees and for pasture.

PORTSMOUTH SILT LOAM

The surface soil of Portsmouth silt loam consists of black silt loam. It is underlain at a depth ranging from about 15 to 30 inches by dark-gray, bluish-gray, or mottled gray and yellow fine sandy loam, fine sandy clay loam, fine sandy clay, or rather plastic clay. Many of the flatter areas are dark brown or dingy brown below the topmost few inches. The soil closely resembles Johnston loam, but it carries more sand and is less fluffy when dry. It occurs in depressions surrounded, in many places, by lighter soils. Some areas of this soil, as mapped, include patches of Portsmouth very fine sandy loam, Johnston loam, Coxville silt loam, and muck. Although some of the material has probably washed into the depressions, the soil is not wholly comprised of alluvium, as is Johnston loam. It seldom dries out, and therefore would be even more difficult to bring into use for crop production than Portsmouth very fine sandy loam.

Smilax vines, ferns, moss, and a large variety of flowers are characteristic growths on this soil, and scattered pines and black gum grow. There is more and larger cypress and a much thicker growth of bay. A greater variety of better pasture grasses than grow on the lighter-textured Portsmouth soils abound. Land of this kind should be used for forestry and for pasture.

PLUMMER FINE SANDY LOAM

Plummer fine sandy loam occupies positions similiar to those on which the Portsmouth soils occur. As shown in excavations this soil is more generally underlain by a layer of impervious clay than the Portsmouth soils. In many places the clay is reached at a depth ranging from about 4 to 6 feet beneath the surface.

In general, the character of the soil from the surface down to the loamy clay is much like that of the Portsmouth soils, with the following three exceptions: (1) The surface soil varies from gray to dark gray rather than from dark gray to black; (2) there is more gray and less yellow in the subsoil; and (3) the compact coarser-textured lower subsoil layer is not so prevailingly present. Although some variations in color occur throughout the areas, the common characteristics of Plummer fine sandy loam are as follows: (1) Gray

loamy fine sand or fine sandy loam grading at a depth ranging from about 12 to 30 inches into (2) light-gray, dingy-gray, or slightly brownish-gray fine sandy loam, which at a depth of 2 or 3 feet passes gradually into (3) heavier material consisting of light-gray, bluish-gray, or mottled gray and pale-yellow fine sandy clay loam or fine sandy clay. The typical soil is less yellow and more gray throughout. In places a compact gray or gray and yellow sandy lower subsoil layer, like that beneath Portsmouth very fine sandy loam, occurs at a depth ranging from 30 to 40 inches which makes it difficult to keep ditches open as the sandy material flows out from beneath the heavier overlying layer much like quicksand.

In the more rolling northern part of the county the surface soil is more distinctly gray or light gray, and the plastic clay substratum, consisting of mottled bluish-gray, red, and yellow impervious clay like the subsoil of the Susquehanna soil, commonly occurs at depths between 40 and 70 inches, especially on those areas that extend up the slopes toward areas of Norfolk fine sandy loam. In this part of the county more of the soil lies along the streams and occurs in strips adjoining Johnston loam in the very narrow lowest depressions through which drainage water flows or seeps. In some of these strips the soil differs but slightly from Bibb very fine sandy loam. Most of the prevailingly sloping areas of this soil in the northern part of the county are separated from areas of the Norfolk and Scranton soils by an abrupt escarpment from about 6 to 14 inches in height.

Most areas of Plummer fine sandy loam support a much poorer stand of pine and other trees, less wire grass, and more pitcherplants, than the Portsmouth soils. Many broad flats support only widely scattered cypress and pine trees, and some areas, known as meadows, have no tree growth but support a variety of grasses which in the springtime afford good grazing. As on Portsmouth very fine sandy loam various flowers blossom from early spring to late autumn. In dry summers the soil becomes very hard, and many or most of the grasses and weeds succumb to the drought.

As trees do not give good results on this soil, its best use under present conditions is for pasturing livestock. Hogs find considerable food in the form of crawfish and succulent roots in the spring, and sheep and cattle graze rather extensively over the meadows. No data were obtained as to the possibilities of cutting hay on this land after it has dried out and hardened enough to support the necessary machinery.

Pecans have recently been planted in a number of places, but they are not likely to grow so rapidly on this as on soils with deep, well-drained friable subsoils such as the Norfolk and Ruston fine sandy loams. Strawberries seem the most promising cultivated crop for well-ditched soil of this kind.

PLUMMER FINE SAND

Plummer fine sand is similar to Plummer fine sandy loam except that it lacks the compactness and slightly heavier texture present in the subsoil of the fine sandy loam. From the surface downward it has somewhat the character of quicksand. In places it is loamier than the fine sandy loam member, but, as a rule, it is loose and porous, becoming quickly saturated in wet weather and as rapidly dried out, and baked in dry weather.

On the interior flats of Round, Horn, and Petit Bois Islands the texture is coarser. Here the soil consists of dark-gray or black fine sand underlain at a depth ranging from about 1 to 3 inches by white or almost white water-soaked fine sand. In places there is some yellowish sand in the subsoil. This soil is extremely infertile and has little value except for forestry. It supports some scattered grass on Horn Island which affords scant grazing for cattle. On Round Island some included areas approach the character of Scranton sand and there is more grass in addition to a stand of pine trees. Much of the land is subject to alteration by sand which is wind blown or has washed over from the beaches. One of the best areas of this soil, which really represents an inclusion of Scranton sand, is that on Round Island.

PLUMMER VERY FINE SANDY LOAM

Plummer very fine sandy loam differs from Plummer fine sandy loam only in its finer texture. In the marginal areas along tidal marsh in the southeastern part of the county the soil is somewhat darker than Plummer fine sandy loam and consists of a mixture of dark-gray and light-gray fine sand or loamy fine sand. The subsoil consists of gray plastic clay mottled somewhat with yellow. A considerable part of the soil is of this character and includes some bodies of Coxville and Portsmouth soils. Such an area is in the southwest corner of T. 6 S., R. 8 W., and other areas are northeast of Wade. Where associated with the Portsmouth soils the boundaries between the two soils are very arbitrarily drawn.

This soil is poorly drained and is valuable only for pasturing livestock.

COXVILLE VERY FINE SANDY LOAM

The surface soil of Coxville very fine sandy loam consists of dark-gray or black very fine sandy loam which at a depth ranging from about 6 to 10 inches is underlain by pale-yellow heavier very fine sandy loam. In most places this layer grades at a depth of about 15 inches beneath the surface into yellow or pale-yellow friable fine sandy clay. With increasing depth the clay becomes less sandy, as a rule, and at a depth of about 18 or 22 inches yellow or pale-yellow moderately stiff clay occurs, below which, at a depth ranging from about 24 to 32 inches, is mottled yellow, bluish-gray, and red plastic clay. This layer resembles the lower subsoil layer of the Susquehanna soils, but it is usually a little higher in sand content and not quite so stiff. A more sandy layer commonly occurs at a depth ranging from 36 to 48 inches below the surface, being about the same color as the heavier clay above, but containing less red mottling, the gray and yellow mottles predominating. In some places the lower subsoil layer consists of fine sandy loam or fine sandy clay loam.

A lighter-colored soil, very commonly having a fine sandy loam surface texture, occurs in better-drained positions or on the slopes and slight ridges near streams. This soil is grayish brown or pale yellow, and the depth to yellow clay is in most places not greater than 10 inches. Mottled yellow and red plastic clay occurs at a depth ranging from 16 to 24 inches, and blue clay underlies this material. The common lower sandy layer occurs at about the same depth as in the typical soil. Locally, the subsoil clay is prevailingly

red, with comparatively little yellow, but it quickly grades into mottled red and yellow clay. Some better-drained areas resemble Dunbar very fine sandy loam.

Most of the soil occurs in the flatwoods section of the county east of Pascagoula River. The typical soil with dark-gray surface soil is far more extensive. Some broad flat areas are in the southern part of the county. As mapped, Coxville very fine sandy loam includes patches of Scranton, Portsmouth, and Plummer soils. Drainage is approximately the same as in the Scranton soils, ranging from fairly good to rather poor. Crawfish holes are numerous in the poorly drained areas.

After ditching, Coxville very fine sandy loam is a fairly good soil for the production of vegetables, especially potatoes and string beans. Corn and oats give fair results. All crops must be fertilized liberally, about as on Norfolk fine sandy loam. Pecans will succeed on the ditched, better-drained areas near streams, but on areas in which crawfish holes are numerous the growth is slow and fruiting is unsatisfactory. This is a good soil for pines and for grazing land.

The natural growth consists of longleaf and slash pines, gall berry, myrtle, and wire grass.

COXVILLE SILT LOAM

Coxville silt loam differs from Coxville very fine sandy loam in its finer-textured surface soil and stiffer upper subsoil layer. In most places a thin surface layer of nearly black silt loam is underlain at a depth ranging from 5 to 10 inches by yellow silt loam or silty clay loam, which grades at a depth of 12 or 15 inches into yellow moderately stiff clay. Plastic heavy clay mottled yellow, red, and bluish gray is present in most areas at a depth ranging from about 20 to 24 inches, continuing downward to a depth of 3 or more feet.

This soil occurs most extensively east of Pascagoula River. The largest area west of the river is near Hilda.

The soil occupies poorly-drained flats. With ditching it could very well be used for Lespedeza hay, strawberries, and, in the better-drained areas, for corn and oats. Pine trees do very well, and all areas not used for crops should be restocked with these trees. The slash pine thrives better than the longleaf.

CAHABA FINE SANDY LOAM

Cahaba fine sandy loam has a light-brown fine sandy loam surface soil which passes at a depth of about 5 or 6 inches into yellow fine sandy loam. This grades at a depth ranging from about 10 to 15 inches into reddish-yellow fine sandy clay loam which extends downward into yellowish-red moderately friable fine sandy clay. In most places some gray or yellow mottling is noticeable at a depth ranging from 30 to 40 inches. As mapped, the soil includes patches of Cahaba loamy fine sand and Kalmia fine sandy loam. In areas occurring in close association with the Leaf soils much of the subsoil is a little heavier textured and less friable than typical.

This is a productive well-drained stream-terrace soil, and although it is not very extensive, it is locally valuable. It produces excellent pines. Pecans, sweetpotatoes, potatoes, cotton, corn, and oats do well with moderate applications of fertilizer, and Lespedeza succeeds very well.

KALMIA FINE SANDY LOAM

The surface soil of Kalmia fine sandy loam consists of light-brown or grayish-brown loamy fine sand or fine sandy loam grading at an average depth of 3 or 4 inches into pale-yellow material of the same texture. This layer, in turn, grades at a depth ranging from 8 to 14 inches into pale-yellow or yellow fine sandy loam. In most places yellow or pale-yellow friable fine sandy clay or fine sandy clay loam is reached from 15 to 24 inches beneath the surface, and at a depth ranging from 28 to 36 inches pale-yellow moderately compact fine sandy loam, which shows some mottling of gray and in places of reddish-yellow, occurs. In many places there is a thin dark-gray surface covering, usually ranging from one-half inch to 2 inches in thickness. Many areas do not have the coarser-textured compact layer, but pass, in the lower subsoil layer, into mottled yellow and gray fine sandy clay or yellow, bluish-gray, and red rather stiff fine sandy clay or into plastic clay like the subsoil of the Leaf soils. The brighter-yellow color of the subsoil occurs in the higher better-drained areas, where, in some places, there is a reddish cast representing an approach toward Cahaba fine sandy loam.

The average soil is similar to Caddo fine sandy loam, but the better-drained areas closely approach the characteristics of the Norfolk soils. The subsoil in nearly all places is paler yellow than that of Norfolk fine sandy loam, and the gray mottling is reached at a slighter depth than in the Norfolk soil. The water table lies nearer the surface than in the Norfolk soil.

Kalmia fine sandy loam occurs on stream terraces, known as second bottom, and most of it is above normal overflow. Some depressions occupied by Myatt and Okenee fine sandy loams, very fine sandy loams, and silt loams, and patches of Leaf and Cahaba soils of corresponding textures, are included in mapping. There are also included small bodies of Kalmia very fine sandy loam, loamy fine sand, and fine sand which represent small areas that could not be satisfactorily indicated on a small-scale map.

This is, in general a well-drained soil and includes many cultivated fields. It is acid, highly quartzose, and naturally of low productivity, but its good physical structure makes it an easy soil to till. With good fertilization fair crops of corn are grown, as well as other crops common to the region. Pecans do especially well where underdrainage is good, that is, where the mottled compact sandy layer is not reached above a depth of 4 or more feet. Pine trees make particularly rapid growth on this soil. Some excellent second-growth forested areas of slash and longleaf pines were seen, the trees being exceptionally large for their age; in fact, the soil is one of the best pine soils of the coastal-plain region. Slash pine is probably more abundant than longleaf. A few sweetgum trees grow in places, and gall berry and myrtle are the most conspicuous shrubs.

Among the crops that can be successfully grown with fertilizer are potatoes, sweetpatatoes, watermelons, onions and other vegetables, corn, cotton, oats, and dewberries, and about the same amount of fertilizer is required as on Norfolk fine sandy loam. The only requirement of pine trees is protection from fire, and the production of pine timber could become one of the most profitable crops on the soil. Crops seem to withstand drought somewhat better on this soil than

on the upland soils having similiar characteristics. Velvetbeans and other legumes could be used in building up the naturally low supply of organic matter.

KALMIA LOAMY SAND

The surface soil of Kalmia loamy sand consists of gray fine sand which at a depth of 3 or 4 inches is underlain by pale-yellow fine sand grading at a depth ranging from 8 to 15 inches into yellow loamy fine sand. In the lower-lying areas the subsoil is mottled with gray at a depth of 20 inches or less and the surface soil is black or dark gray, owing to an accumulation of vegetable matter. On small elevated knolls and ridges the fine sand texture extends to a greater depth than typical, and the surface soil in most places appears lighter gray or even white. This soil occupies stream terraces, and most of it is well drained. Some of it is in cultivation to corn and cotton. It has about the same agricultural value as Kalmia fine sandy loam, being suited to sweetpotatoes, melons, and pine trees.

OKENEE VERY FINE SANDY LOAM

Okenee very fine sandy loam is somewhat variable in its characteristics, especially in the depth of the black or very dark-gray surface layer and in the color of the upper subsoil layer. The typical surface soil consists of very dark-gray or black very fine sandy loam or heavy fine sandy loam. It is underlain at a depth ranging from 5 to 10 inches by either gray or mottled gray and pale-yellow very fine sandy loam or loamy very fine sand which grades at a depth ranging from 14 to 24 inches into mottled pale-yellow and light-gray fine sandy clay or fine sandy clay loam. In many places the upper part of the subsoil is pale yellow, with but little gray mottling, but this condition is exceptional and occurs in the better-drained, higher areas where the soil grades toward Kalmia very fine sandy loam. In many places also the subsoil below a depth of about 2 feet consists of mottled pale-yellow and bluish-gray fine sandy clay containing a few splotches of reddish yellow. Deep borings show that the heavier lower subsoil layer either extends downward to a depth of 40 or more inches or passes at a depth ranging from about 36 to 48 inches into a similar-colored more sandy layer.

Mapped areas of Okenee very fine sandy loam include small patches of Okenee clay loam, Okenee silt loam, and Kalmia, Leaf, and Myatt very fine sandy loams and silt loams.

The soil occupies low terraces, some of which grade into still lower or first-bottom soils in such a way that sharp boundaries could not be drawn. The areas along the headwaters of Black Creek, northwest of Hurley, are surrounded by somewhat lower areas of muck, and some patches of this material were necessarily included.

The soil from the surface down is wet most of the time, but it sometimes dries out in summer. It is acid in reaction. Its best use under present conditions is for pasturing livestock and for the production of pine. Some of the more favorably situated areas could be used for Lespedeza pastures with a moderate amount of ditching, but it will probably pay to expend all efforts on timber and to ditch the more favorable lands. At the present time pine, cypress, baybushes, and titi are scattered over most of the areas.

MYATT FINE SANDY LOAM

The surface soil of Myatt fine sandy loam consists of gray fine sandy loam. At a depth ranging from 10 to 18 inches it grades into mottled gray or bluish-gray and pale-yellow heavier fine sandy loam or fine sandy clay, which is underlain at a depth of about 30 inches by light-gray, bluish-gray, or whitish-gray compact fine sandy loam or fine sandy clay loam, showing some pale-yellow mottling in many places. This compact layer is rather impervious to moisture. Some areas have an impervious layer of plastic clay at a depth ranging from 40 to 50 inches. In many places the thin surface covering is dark gray or black. Over a considerable part of the soil the surface material ranges to very fine sandy loam in texture.

The soil occupies very poorly drained areas on stream terraces and is much like Plummer fine sandy loam. Some areas are sparsely forested. Crawfish holes are abundant. The soil usually dries out and becomes hard in summer. Its value lies chiefly in the spring grazing it affords and in the pine trees that grow on some of the areas.

LEAF VERY FINE SANDY LOAM

Leaf very fine sandy loam has a surface layer of dark-gray or dark-brown very fine sandy loam, underlain at a depth between 4 and 7 inches by pale-yellow very fine sandy loam which passes rather abruptly into stiff clay at a depth ranging from 15 to 24 inches. The clay is reddish yellow or mottled red, yellow, and bluish gray in the upper part, and the lower part is everywhere mottled, usually red, yellow, and bluish gray. In many places there is no red below a depth of 30 inches, and some areas show no red at all.

The soil occupies stream terraces of moderately good or rather poor drainage. Areas of Kalmia and Myatt very fine sand are included in mapping. With moderate ditching, potatoes, corn, and oats can be successfully grown on the better-drained terraces. Lespedeza also could be successfully grown for hay and pasture. Pine, especially slash pine, does well. The wetter areas should be used for forestry and grazing.

Terrace areas of this soil along the west side of the Escatawpa River Valley from Spring Creek south almost to Lions Creek represent the best-drained soil.

LEAF SILT LOAM

The surface soil of Leaf silt loam, in the better-drained areas, consists of dark-brown or brown silt loam which passes at a depth ranging from 6 to 10 inches into pale-yellow silty clay loam. This layer, in turn, grades at a depth of about 15 inches into yellow or buff silty clay. Mottled red, yellow, and bluish-gray clay, like that beneath the fine and very fine sandy loam members of the series, is reached at a depth ranging from about 18 to 24 inches below the surface.

Leaf silt loam occurs principally on low terraces adjacent to the first bottoms. A considerable part of the island hummocks of the Pascagoula River bottoms is of this soil, which includes small acreages of the Kalmia, Cahaba, and Bienville soils.

The better-drained areas of this soil can be used for Lespedeza pasture and hay. The wetter areas can best be used for pine trees and for Lespedeza and carpet-grass pastures. With efficient ditching the land could be used for potatoes, corn, and oats, but fertilizer would be necessary to produce good yields of all tilled crops.

JOHNSTON LOAM

The surface soil of Johnston loam consists of black loam, high in organic matter. The loam contains considerable silt and in most places some fine and very fine sand. The material is pasty when saturated, as it is most of the time. Owing to the presence of much well-decayed vegetable matter, a dry sample crushes easily to a rather fluffy condition. At a depth ranging from about 1 to 3 feet the material is bluish-gray, gray, or brownish-gray fine sandy loam or mottled dark-blue and yellow fine sandy clay or silty clay. In many places the texture ranges from fine sandy loam to muck. Some of the areas near tidal marsh are brown, resembling the Ochlockonee soils.

This soil occurs in numerous small strips along stream depressions. In many places marginal strips of Portsmouth very fine sandy loam, loam, and silt loam, and some Plummer very fine sandy loam and silt loam, have been included with this soil in mapping. The typical Johnston soil is densely covered with black gum, fetterbush (locally called sweetshrub), spoonwood, white and red bay, and smilax vines. In many places there are a few pond pine, maple, cassena (a water-loving species of holly resembling yaupon), ferns, moss, titi, and a variety of unidentified bushes. Good grazing grasses grow in most places.

The soil is largely alluvial material. It is partly covered with water most of the year and seldom dries out below a depth of a few inches. It would not be economical to drain the narrow strips of this soil. Its best use is for pasture and forestry.

OCHLOCKONEE CLAY

Mapped areas of Ochlockonee clay vary greatly, inasmuch as they are cut up by countless narrow sloughs and modified by thousands of depressions and hummocks. The soil variations are owing to the almost permanently wet condition of the lower areas and to the scattering of sand on hummocks and other areas by constantly recurring overflows.

The surface layer of the greater part of the soil probably consists of brown silty clay, in many places faintly mottled with rust brown, yellow, or dark gray. It ranges from about 2 to 14 inches in thickness, grading beneath into yellow silty clay in the higher better-drained areas. This layer grades at a depth ranging from about 15 to 24 inches into mottled yellow and light bluish-gray or gray silty clay. At a depth of about 30 inches the gray color predominates the yellow in many places, and in some places reddish-yellow mottling appears at this depth. In numerous depressions the brown surface layer is only a few inches deep, and in many low, wet places it is mottled grayish and brownish in the topmost part and bluish gray or light gray within a foot or less. This gray or mottled soil represents included areas of Bibb silty clay. On many hummocks there is a surface covering of fine or very fine sandy loam, and in many places Bibb very fine sandy loam and fine sandy loam occur in the lower positions. There are also many textural changes downward, representing interstratified layers of fine sandy loam or fine sandy clay loam, silt loam, and silty clay loam.

Some of the higher-lying areas, representing island areas of low second bottoms (hammock land), are occupied by Leaf, Kalmia, and Cahaba soils, including the fine sandy loam, very fine sandy loam, loamy fine sand, silty clay loam, and silt loam types. A large number of these hammock areas could not be satisfactorily separated from the Ochlockonee soil. One large hammock area, known locally as Taylor's hammock, lies northeast of Ward Bayou along the south side of Pascagoula River.

Ochlockonee clay occurs almost exclusively in the wooded bottoms of Pascagoula River. The deeper-brown areas most commonly lie near the banks and abandoned channels of the river. More of the included Bibb soil lies along the outer edges of the bottoms.

The bottoms are overflowed several times nearly every year, and, owing to the low position of the areas, the water drains off slowly. The soil really represents swamp. It is heavily forested with cypress, black gum, sweetgum, willow oak, water oak, ash, and ironwood, with some holly, overcup oak, bur oak, and an occasional pine. Pine is rather common on the included hammocks, together with bay, sweetgum, highbush and winter huckleberry, and some oak.

The bottom soil proper, the Ochlockonee clay and its various inclusions, is of value only for forestry and grazing. Some hogs are raised, and cattle find nutritious pasturage.

BIBB VERY FINE SANDY LOAM

Bibb very fine sandy loam is a first-bottom poorly drained alluvial soil. The surface soil is gray, or mottled gray and rust brown, and is underlain at a depth ranging from 6 to 10 inches by mottled bluish-gray and pale-yellow fine sandy clay. At a depth ranging from 24 to 30 inches an impervious compact layer of bluish-gray or light-gray fine sandy loam or fine sandy clay loam is commonly present. In some areas bluish-gray, mottled somewhat with pale-yellow, impervious plastic clay occurs at a depth ranging from 24 to 30 inches. This soil occupies narrow stream bottoms and numerous but comparatively small areas in the large bottoms along Pascagoula River. Most of it has been included with Ochlockonee clay owing to its inaccessibility. Several soils, chiefly Bibb clay, are included in mapping.

The soil is frequently overflowed and remains wet most of the time between overflows. It is best suited to forestry and pasture.

The natural growth consists of sweetgum, ash, ironwood, bay, and other water-loving plants.

MUCK

Muck consists of black or nearly black material composed of well-decomposed and partly decomposed vegetable matter mixed with a little sand and other mineral matter. It is estimated that the content of organic matter runs up to about 65 per cent and seldom below 20 or 25 per cent. Included areas consist of peat on the one hand (with a comparatively high organic-matter content) and of Johnston loam on the other hand (with comparatively high mineral-matter content). The basal material, which is reached at a depth ranging from about 8 to 36 inches beneath the surface, varies from almost white sand or fine sandy loam through mottled yellowish-gray

and dark bluish-gray fine sandy loam to blue clay or mottled yellowish-gray and bluish-gray clay. Some areas in the Black Creek swamp contain peat in the subsoil.

Muck occurs chiefly in the bottoms of streams, such as Black Creek, the larger bodies commonly occupying swampy drainage divides out of which the flow is in two or more directions. Such an area occurs on the road between Wade and Hurley. Another large area is mapped in the Escatawpa River bottom lands, extending from Orange Grove north to Bird Lake. This is a gradational area between the peaty tidal marsh near the coast and the alluvial mineral soil deposits lying well above the influence of tides. A similar transition occurs upstream over the Pascagoula River bottoms, but the separation of the transitional soil areas was impractical because of their inaccessibility and the difficulty of inspection. Some strips occur on slopes, such as many of those occupied by the Plummer soils in the northern part of the county.

This is strictly a swamp soil which is best adapted to forestry. Cypress and black gum are the principal trees. The shallower areas, such as those along the headwaters of Black Creek, are covered with an extremely dense growth of titi or a mixture of titi, bay, pine, and cypress.

TIDAL MARSH

Tidal marsh comprises several large areas in Jackson County, the most important two being the broad strips extending several miles up the lower Pascagoula River and its tributaries and that in the southeastern corner of the county.

The material along Pascagoula River for the most part is dark-gray or mottled grayish-brown and rust-brown silty clay having an oozy consistence owing to its permanent state of saturation. Much of it is underlain at a depth ranging from about 2 to 3 feet by very dark-brown or black peat composed chiefly of the partly decomposed stems, leaves, and roots of grasses. This tidal marsh is highly charged with hydrogen sulphide, and the freshly exposed subsoil material gives off a very strong odor of the gas. Grass roots are abundantly distributed through the material from the surface downward.

The other areas, which lie along the coast, do not have the substratum of peaty material in so many places as do those along Pascagoula River, indicating that recent deposition has gone on faster than formerly along the river. This may be the result of successive erosions caused by the increased cultivation of the land and by the removal of the original forest in the upper drainage basin of the stream.

Coastal areas of tidal marsh consist mostly of dark-gray silty clay or silty clay loam, in many places containing some fine sand and having a bluish-gray subsoil. Such areas have less hydrogen-sulphide gas than those underlain by peat.

Along the margin of the larger area in the southeastern part of the county a sandy variation occurs, in many places ranging to brown fine sandy loam in the surface layer and gray fine sandy loam or fine sandy clay below a depth of 1 or 2 feet. In one place soil much like Coxville very fine sandy loam was found one-half mile from the outer edge of the marsh. This area, which is usually beneath salt water, has a distinctly mottled yellow, red, and blue clay subsoil at a depth of less than 3 feet, and it represents a gradation from the bordering

areas of Portsmouth and Plummer very fine sandy loams and fine sandy loams, together with some included areas of Bladen soils (brown soils with some yellow mottling overlying mottled yellow and bluish-gray clay subsoils). A marginal strip of the same kind, approximately one-fourth mile wide, occurs around the marsh near the Alabama line. This strip is subject to occasional tidal inundation. Narrow strips of true tidal marsh extend into this area.

In the locality just referred to, the presence of soil like that resembling the Coxville soil, which occurs some distance from the outer edge of the marsh, and the dead trees are very suggestive of coastal subsidence, with the resultant encroachment of the marsh on the upland. The stumps of pine and cypress trees occur in places in the marsh several hundred yards out from the outer edge of the marginal strip. The land slopes very gradually from the margin of the marsh toward the sea, at an approximate rate of about 1 foot to the mile, as evidenced by the depth of water on the surface.

All the marshland is salty, except some of the upper areas along Pascagoula River. A dense growth of bulrushes is the common vegetation, and saltweed and a fine-leaved grass commonly occur near the margin. Along Pascagoula River tall grasses are intermingled with the bulrushes. Saw grass and cattails are abundant in places where conditions approximate those characterizing fresh-water marsh. In some of the last-mentioned areas fibrous brown peat occurs from the surface down, and some patches support scattered cypress and clumps of other plants such as myrtle. In the salt marshes along the coast there are few trees or bushes. Along Pascagoula River north of the Louisville & Nashville Railroad several islands of pine-covered sandy land apparently represent patches of upland that have resisted the cutting of the stream waters.

Small winding stream ways, or bayous, ramify the marshes, in places completely surrounding marsh areas. Isolated pools of water are also of common occurrence, especially near the bayous.

At the present time tidal marsh is without value, and no attempt is made to use it other than grazing the marginal areas where cattle can find safe footing.

DUNE SAND

Dune sand consists of hillocks of drifting and temporarily fixed white sand on Horn and Petit Bois Islands, together with a few patches on Round Island. The temporarily fixed areas are partly covered with grass. They are frequently broken up by storms, and the sand is redistributed. The drifting dunes are in places gradually sweeping over and destroying pine forests and other vegetation. The dune sand areas have no agricultural value.

BEACH SAND

This class of material comprises narrow strips of wave-swept beach sand. Some areas on Horn and Petit Bois Islands extend almost over the island and are above the normal height of the wave-swept border, but during storms they are overrun with water. Sand on the shore of Mississippi Sound, which is protected by the outlying islands, does not show such marked wave action, and most of the strips of beach sand are too narrow to show on a small-scale map. Beach sand has no agricultural value.

SUMMARY

Jackson County is in the extreme southeastern corner of Mississippi. It includes an area of 724 square miles. The relief of the southern half of the county is level or undulating, and surface drainage is inadequately developed. Northward the relief becomes mildly rolling and in a few places is very rolling. Drainage is southward to the Gulf of Mexico. Practically the entire county lies in the watershed of Pascagoula River.

Large bodies of cut-over lands suitable for tillage have, for some time past, been used only for grazing land. A considerable part of these cut-over lands offers opportunity for reforestation with profitable results, in some places more promising than for agricultural development. The Susquehanna, Portsmouth, and Plummer soils seem to be of this character, whereas the areas of well-drained Norfolk, Ruston, and Orangeburg soils are more promising for agricultural development.

The mild climate and long growing season favor the production of a large variety of crops.

The main crops now grown on the general type of farm are corn, sweetpotatoes, cotton, velvetbeans, sugarcane, and oats. The feed and grain crops are all used on the farm, and cotton and vegetables are the principal cash crops. Pecan growing is increasing in importance as a cash crop. Commercial-scale production of pecans is at present largely centered in the southwestern part of the county, but rapid expansion of the industry is taking place in all parts of the county. Satsuma oranges, pears, figs, and kumquats are grown on a small scale.

Livestock raising offers excellent opportunities for advancement. The present type of agriculture is transitional between lumbering and farming which is emerging from a side-line occupation to a full-time industry.

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U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
HENRY G. KNIGHT, CHIEF
A. G. McCALL, CHIEF, SOIL INVESTIGATIONS
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP

JACKSON COUNTY
MISSISSIPPI

MISSISSIPPI GEOLOGICAL SURVEY
E. N. LOWE, DIRECTOR

R. 9 W. | R. 8 W. | R. 7 W. | R. 6 W. | R. 5 W. | R. 4 W.
88°50' | 45' | 40' | 35' | 30' | 88°25'
T. 4 S. | T. 5 S. | T. 6 S. | T. 7 S. | T. 8 S.
30°40' | 35' | 30' | 25' | 20' | 30°20' | 15'

GEORGE CO. | JACKSON CO. | HARRISON CO. | STONE CO. | MOBILE CO.

MISSISSIPPI SOUND

LEGEND

Bibb very fine sandy loam — Bf	Myatt fine sandy loam — Mf	Portsmouth very fine sandy loam — Py
Caddo fine sandy loam — Cs	Norfolk loamy sand — Ns	Portsmouth silt loam — Ps
Cahaba fine sandy loam — Ca	Norfolk fine sand — Nd	Ruston loamy fine sand — Rf
Coxville very fine sandy loam — Cx	Norfolk fine sandy loam — Nf	Ruston sandy loam — Rs
Coxville silt loam — Cm	Nf Flatwoods phase	Ruston fine sandy loam — R
Cuthbert fine sandy loam — Cf	Ochlockonee clay — Oy	Scranton very fine sandy loam — Sm
Johnston loam — Jl	Okenee very fine sandy loam — Ov	Susquehanna fine sandy loam — Sf
Kalmia loamy sand — Kd	Orangeburg fine sandy loam — Of	Susquehanna very fine sandy loam — Sv
Kalmia fine sandy loam — Kf	Plummer fine sand — Pr	Susquehanna clay — Sc
Leaf very fine sandy loam — Lv	Plummer fine sandy loam — Pf	Muck — Mu
Leaf silt loam — Ls	Plummer very fine sandy loam — Pv	Tidal marsh — T
Beach sand — B	Dune sand — D	

CONVENTIONAIL SIGNS

CULTURE
(Printed in black)

City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort
Secondary roads and Trails
Railroads Steam and Electric
Bridges, Ferry
R.R crossings, Tunnel
Ford, Dam
School or Church Cemeteries
Stony and Gravelly areas
Soil boundaries
Boundary lines
Boundary lines
Boundary lines
U.S. township and section lines

DRAINAGE
(Printed in blue)

Streams
Lakes, Ponds, Intermittent lakes
Intermittent streams
Springs, Canals and Ditches, Flumes
Swamp Salt marshes
Submerged marsh Tidal flats

The above signs are in current use in the soil maps. Variation from this usage appears in some maps of earlier dates.

BASE MAP IN PART FROM
U. S. COAST AND GEODETIC SURVEY CHARTS

Scale 1 inch = 1 mile
1 ½ 0 1 2 3 4 Miles

WILLIAMS & HEITZ CO. WASH., D.C.

Hugh H. Bennett, Inspector, District 4.
Soils surveyed by J. Ambrose Elwell, in charge,
A. W. Goke and W. J. Moran, U. S. Department of Agriculture,
and E. Malcolm Jones and E. P. Lowe, Mississippi Geological Survey.

Field Operations
Bureau of Chemistry and Soils
1927

[PUBLIC RESOLUTION—No. 9]

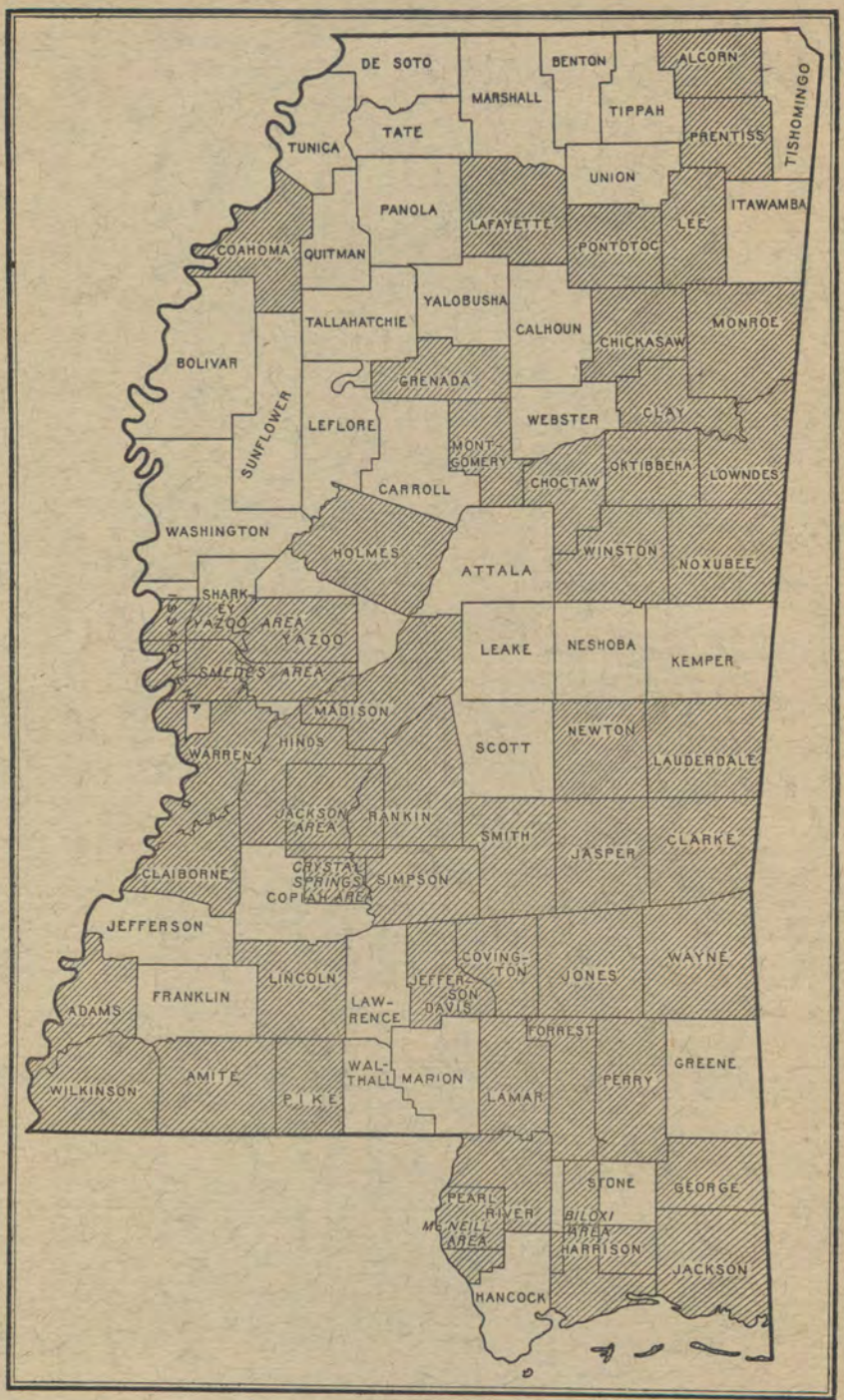
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils, and on July 1, 1927, the Bureau of Soils became a unit of the Bureau of Chemistry and Soils.]



Areas surveyed in Mississippi, shown by shading