U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE STATE OF ALABAMA, CHARLES HENDERSON, GOVENOR; J. A. WADE, COMMISSIONER OF AGRICULTURE AND INDUSTRIES; EUGENE A. SMITH, STATE GEOLOGIST.

SOIL SURVEY OF SHELBY COUNTY. ALABAMA.

BY

J. F. STROUD, OF THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES, IN CHARGE, AND HOWARD C. SMITH AND J. H. AGEE, OF THE U. S. DEPARTMENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1917.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1920.

BUREAU OF SOILS.

MILTON WHITNEY *Chief of Bureau.*
ALBERT G. RICE, *Chief Clerk.*

SOIL SURVEY.

CURTIS F. MARBUT, *In Charge.*
G. W. BAUMANN, *Executive Assistant.*

COMMITTEE ON THE CORRELATION AND CLASSIFICATION OF SOILS.

CURTIS F. MARBUT, *Chairman.*

HUGH H. BENNETT, Inspector, Southern Division.
W. EDWARD HEARN, Inspector, Southern Division.
THOMAS D. RICE, Inspector, Northern Division.
W. E. MCLENDON, Inspector, Northern Division.
MACY H. LAPHAM, Inspector, Western Division.
M. W. PATTERSON, *Secretary.*

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE STATE OF ALABAMA, CHARLES HENDERSON, GOVENOR; J. A. WADE, COMMISSIONER OF AGRICULTURE AND INDUSTRIES; EUGENE A. SMITH, STATE GEOLOGIST.

SOIL SURVEY OF SHELBY COUNTY. ALABAMA.

BY

J. F. STROUD, OF THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES, IN CHARGE, AND HOWARD C. SMITH AND J. H. AGEE, OF THE U. S. DEPARTMENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1917.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1920.

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., June 5, 1919.

SIR: Under the cooperative agreement with the State of Alabama a soil survey of Shelby County was undertaken and carried to completion during the field season of 1917.

I have the honor to transmit herewith the manuscript report and map covering this survey and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1917, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

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

CONTENTS.

ILLUSTRATIONS.

FIGURE.

MAP.

SOIL SURVEY OF SHELBY COUNTY, ALABAMA.

By J. F. STROUD, of the Alabama Department of Agriculture and Industries, In Charge, and HOWARD C. SMITH and J. H. AGEE, of the U. S. Department of Agriculture.—Area Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Shelby County, Alabama, is situated 35 miles north of the geographical center of the State. Its greatest distance north and south is about 37 miles and east and west about 34 miles. The county comprises 803 square miles, or 513,920 acres. It is bounded by the Coosa River on the east and by Waxahatchee Creek on the southeast. With the exception of 120 square miles on the eastern side of the county, for which a planetable traverse map was made, the base map consists of United States Geological Survey sheets, correction being made to include changes since the original survey.

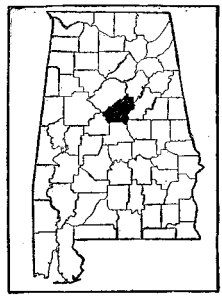


FIG. 1.—Sketch map showing location of the Shelby County area, Alabama.

Shelby County comprises a mountainous region, a section of the Coastal Plain, and a series of limestone valleys. The topography is, therefore, varied. Parallel mountain ranges occupy the northern and western parts of the county, their main axes running northeast and southwest. In the southwestern part, from Glen Carbon south, the surface has much lower relief, although it has been dissected until it resembles a mountainous region in miniature. There are within the county 20 to 25 important mountains, comprising the southern extension of the Appalachian system, some of which are less than 5 miles long and occupy as little as 7 square miles, as Columbiana Mountain near Columbiana; while others, as for example Double Mountain, extending northwest from Newala and Siluria to Sterrett, are 25 miles long, with an area of approximately 50 square miles.

The character of the mountain slopes varies greatly with the elevation. The higher mountains are capped by a grayish sandstone which erodes unevenly and thus forms cliffs, bold, retreating escarpments, and steep-sided valleys. The lower parts of the mountain regions are usually composed of interbedded sandstone and soft, crumbly shales in which have been cut V-shaped valleys whose

slopes range from 30° to 45°, or the angle of repose. In the Coastal Plain division the topographic forms are gently rounded, lacking the angular ruggedness of the mountains and hills.

The topography of the limestone valleys is thoroughly characteristic of that of a well-weathered limestone region. The valleys when viewed from a distance have all the appearance of true stream valleys, although they are the stubs of former mountains which have been weathered away until a plane surface has resulted. Lime sinks are numerous, and are of two classes, either broad, more or less circular depressions ranging from one to several acres in size, usually capable of tillage after being given slight drainage, and small (covering only a fraction of an acre), nearly circular, funnel-shaped depressions usually partly filled with water. There are numerous springs in the county, some of which give rise to perennial streams of considerable size, as Blue Spring at Siluria and another near Montevallo.

The maximum elevation, 1,500 feet above sea level, is reached in the northeastern part of the county. The average elevation of the rougher uplands is about 800 feet, and of the limestone valleys approximately 500 feet.

Shelby County is drained through the Coosa and Cahaba Rivers and their numerous tributaries. The Coosa forms the eastern boundary of the county for 40 miles. Six tributaries drain the eastern and southeastern portions. The drainage of the western part is through the Cahaba River and its tributaries. Throughout the limestone valleys the stream drainage is supplemented by numerous subterranean channels. The fall of the streams ranges from a few inches per mile in the case of the Coosa River or a few feet in the intermediate streams, to 50 to 100 feet in the smaller branches. The streams in general are still deepening their channels, although some of the larger ones, as the Coosa River,[1] have nearly reached a condition of equilibrium.

There are a number of combination saw, feed, and gin mills run by water power throughout the county, and a hydro-electric plant on Shoal Creek 1 mile northwest of Wilton, generates power for local use. Several falls and other sites present good opportunities for power development. A power line erected to supply Calera and Montevallo will make light and power available for farm use over a considerable part of the county.

[1] In the case of the Coosa River the construction of a large impounding dam for hydro-electric power has stopped all erosion of the channel and covered many square miles of first-bottom soils, so that, as shown by the map, there are no first-bottom soils in the southeastern part of the county. The operation of lock gates at Lock 12 serves to keep the water level within very narrow limits as far up as Chancellors Ferry.

Shelby County was formed by act of the Territorial Legislature on February 7, 1818. The first settlers were from the earlier developed Southern States. They were attracted by the productive character of the limestone-valley soils. Agriculture was also begun at an early date on the level soils in the extreme northeastern part of the county and the farming population was largely confined to these regions until about 40 years ago. The mineral development and the topographic roughness of the western third of the county are in large part responsible for the scattered agricultural development of that region. About one-half the area of the county is owned by various coal and iron companies, on whose lands only a comparatively small number of farmers, mostly migratory renters, live. The limestone valleys are the most thickly settled agricultural regions. The farmers of the other agricultural sections are as a rule dependent on other employment for part of the year.

The population shows a steady increase from 12,218 in 1870 to 20,886 in 1890 and 26,949 in 1910. The increase has in large part been due to industrial development. Considerable new land has been cleared, but not enough to make up for the numerous abandoned farms. The entire population is classed as rural by the census, and averages 33.4 persons per square mile. Since only about 200 square miles of the county is adapted to reasonable returns from tillage it is estimated that the population per square mile of productive soils is about 143.[1]

Columbiana, the county seat, had a population in 1910 of 1,079, Montevallo 923, Wilsonville 933, Calera 754, and Vincent 995. Montevallo is the site of the Alabama Girls' Technical Institute. Public high schools are located at Columbiana and Montevallo and graded schools are maintained throughout the county, compulsory attendance being enforced of both races.

The county roads are either unimproved or only fairly good. A macadamized road extending from Montgomery to Birmingham traverses the central part of the county and a similar road connects Calera and Montevallo. There is an abundance of chert and limestone, which has been found of the highest quality for road construction. Telephone service extends to all the towns of the county, and gradual extensions are being made in the rural regions. Nearly all the county is covered by rural mail routes.

Shelby County has good transportation facilities. Main lines of four railroads penetrate all parts of it, and over 95 per cent of its

[1] This statement is based on census returns for 1910, supplemented by careful estimates from topographic land maps. The area of agricultural land may seem low, but it is believed that the figure stated is more rather than less than the true area.

area lies within easy hauling distance of at least one or more stations.

In spite of the smallness of the nonagricultural population there is a good local demand, at high prices, for all farm products. A cotton mill at Siluria has sufficient capacity to absorb the local cotton. The other farm produce is almost entirely consumed within the county, and there is imported annually many thousands of dollars worth of feed and foodstuffs.

Large amounts of coal are mined throughout the western third of the county, charcoal iron is produced at Shelby, and charcoal production and the sawing of lumber are supplementary farm industries. None of the limestone from the 26 kilns in the county is used agriculturally. The industrial products of the county are shipped to Mobile for export, or to Birmingham, a few miles north, or Montgomery, 64 miles to the south.

CLIMATE.

Shelby County lies about 150 miles north of the Gulf of Mexico, partly within the northern extension of the Gulf Coastal Plain, but largely in the Appalachian province. The climate therefore partakes markedly of the characteristics of both north and south Alabama. It is mild and temperate, unmarked by unusual extremes of temperature. The coldest weather ever recorded was 10 degrees below zero in February, and this has not even been approached in January. A maximum temperature of 104° has been reached in July. Sudden temperature changes in the winter are not unusual, although for 8 months in the year conditions are agreeably uniform. The temperature falls below freezing on an average 30 to 45 nights during the year, but the ground seldom remains frozen during an entire day. Freezing of the soil is welcomed, since it tends to diminish the subsequent attacks of insects upon crops.

The average dates of the last killing frost in the spring and of the first in the fall, based on a 15-year record at Birmingham, are March 19 and November 5, respectively, giving an average growing season of 231 days. There are considerable variations from these averages, but the season is usually long enough to permit the ripening of all of the staple crops, and even of two of the more quickly maturing sorts. The range in elevation, from 400 to nearly 1,500 feet, causes considerable local differences in average temperature and frost occurrence. The bulk of the crops are produced at elevations between 500 and 700 feet, but even here the unusual topographic diversity affects the air drainage to such a degree that there may be differences of as much as 3 weeks in the length of growing season

on parts of the same farm. The climate of the mountain regions is at all times perceptibly cooler than that of the valleys, and makes extreme care necessary in selecting orchard sites, for early blossoming is sometimes followed by destructive frosts. The northern slopes are often to be preferred to lower valley regions.

Hardy garden vegetables, such as collards and turnips, remain in the gardens the entire winter with little or no protection. Winter pasturage and cover crops, such as bur clover, rye, wheat, oats, rape, and crimson clover, can be easily grown if sown early enough to attain sufficient size to avoid undue damage from freezing, or from high winds when frozen.

The normal yearly rainfall is 49.48 inches, which is sufficient for all the needs of crops. The month of greatest rainfall is March, with an average of 5.76 inches. Whatever be the excess in winter, the late spring is normally dry, and May, next to October, is the driest month. The soil is normally dry enough to permit seasonable seeding even after very wet winters. Rain falls on 100 to 125 days in the year. The precipitation is normally well distributed, although there may be dry periods during the growing season. Unless careful, frequent tillage is given, the heavier soils form a crust after hard, beating rains, and a reduction of yields follows. However, total crop failures are unknown. The dry fall weather permits the harvesting of cotton, hay, or fruits with minimum loss. Some of the summer rainfalls may be very heavy, and the necessity for preventing erosion is imperative.[1]

The domestic water supply is of average quality and abundant. In the limestone regions nearly every farm has one or more springs, near which the farm buildings are often arranged. Some of the springs, such as those supplying Siluria, Montevallo, and Columbiana, are very large. In the sandstone and shale regions recourse is had largely to dug or drilled wells ranging in depth from 20 to 60 feet.

High winds are rare and do little damage. The proportion of sunshine is 59 per cent, and is especially high in the winter. Comparatively dry air and general absence of damp, foggy days result in a healthful climate.

The table below shows the normal monthly seasonal, and annual temperature and precipitation as recorded at the Weather Bureau station at Birmingham, situated some 25 miles north of the area, in Jefferson County. The data are believed to represent fairly the climatic conditions of the agricultural sections of Shelby County.

[1] On July 6–7, 1916, 8.84 inches of rain fell in 24 hours, and on September 27–28, 1906, 7.59 inches fell.

Normal monthly, seasonal, and annual temperature and precipitation, at Birmingham, Jefferson County.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year. (1900).
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	47.3	76	5	4.60	5.05	4.01
January	45.3	77	7	5.32	3.84	5.20
February	48.3	81	−10	4.75	2.14	6.17
Winter	47.0	81	−10	14.67	11.03	15.38
March	56.3	90	12	5.76	3.33	6.75
April	63.5	90	28	3.67	2.02	13.06
May	71.6	99	40	3.09	2.19	2.29
Spring	63.8	99	12	12.52	7.54	22.10
June	77.9	101	49	3.88	3.53	12.09
July	79.8	104	58	4.70	5.22	7.88
August	78.7	101	55	4.48	2.78	1.99
Summer	78.8	104	49	13.06	11.53	21.96
September	74.0	100	42	3.50	.44	3.75
October	64.4	93	27	2.34	.24	7.18
November	54.1	84	14	3.39	3.54	5.84
Fall	64.2	100	14	9.23	4.22	16.77
Year	63.4	104	−10	49.48	34.32	76.21

AGRICULTURE.

The agricultural history of Shelby County antedates the organization of the county, which took place in 1818. The farm products at that time consisted of subsistence crops, among which sweet potatoes, corn, and wheat were important, and meats, chiefly beef and pork. Products for export were either rafted down the Coosa River to Wetumpka or carried there by wagon and shipped thence by boat to Mobile. About 1840, when cotton became the leading crop, extensive settlement of the limestone valleys began, those soils near the river being cleared first. Until 1865 the agriculture was of the self-sustaining type, but with the financial, agricultural, and social reorganization which began at that date there followed a division of the large plantations into smaller units, and the large substitution of a cash crop, cotton, for subsistence crops. This was the beginning of the present type of farming in which cotton and corn are dominant crops, though, owing to the heavier soils and to difference in

climate the exclusive growing of corn and cotton has never prevailed to the extent it has in the sandy land counties to the south.

The following table, giving the acreage, yield, and yield per acre of the principal crops, as returned by the last four censuses, will give an idea of the general character of the agriculture and the changes that have taken place during a period of 30 years:

Acreage, yield, and production of the principal crops, Shelby County, Ala., 1880 to 1910.

Crop.	1880			1890		
	Number of acres.	Yield.	Yield per acre.	Number of acres.	Yield.	Yield per acre.
		Bales.	*Pounds*		*Bales.*	*Pounds.*
Cotton	17,919	6,643	129	17,499	7,308	205
		Bushels.	*Bushels.*		*Bushels.*	*Bushels.*
Corn	26,159	312,839	11.9	24,418	329,672	17.0
Oats	4,764	39,348	8.0	5,955	58,804	9.0
Wheat	6,294	34,324	5.0	536	2,853	5.0
Sweet potatoes	346	30,654	88.0	530	41,152	77.0

Crop.	1900			1910		
	Number of acres.	Yield.	Yield per acre.	Number of acres.	Yield.	Yield per acre.
		Bales.	*Pounds*		*Bales.*	*Pounds.*
Cotton	25,036	10,193	203	25,611	8,989	175
		Bushels.	*Bushels.*		*Bushels.*	*Bushels.*
Corn	32,039	381,570	11.9	28,312	324,827	15.0
Oats	4,937	49,290	9.0	5,120	70,160	11.0
Wheat	3,704	21,080	5.0	116	988	8.0
Sweet potatoes	545	36,080	67.0	873	70,288	80.0

The salient features brought out by this table are the stability of corn acreage, the increase in cotton acreage, amounting to 43 per cent, and the practical abandonment of wheat.

Very marked changes have taken place, however, since the returns of the 1910 census. These have been due to the cotton boll weevil which has caused a reduction of about 60 per cent in the acreage of cotton, the annual production of the county now being about one-fourth the normal crop in the years immediately preceding the infestation. The yield per acre has fallen about one-half. With methods designed to combat the weevil it is probable that the present low average yields will not continue. In growing cotton in weevil infested areas it is essential to mature the crops as early as possible. This is in part accomplished by careful selection of varieties but is in large part a soil problem. Success will be aided by choosing warm, well-drained soils in preference to wet or low types; by care-

ful preliminary preparation of the seed bed and early planting; by fertilization designed to produce rapid growth; and by frequent tillage to conserve a dust mulch and kill the weevils in infested squares that have dropped to the ground. In older infested parts of Alabama and other States it has been found that somewhat less damage is done on deep sands and sandy loams than on the heavier soils such as prevail over Shelby County. On any soil, however, success depends largely on the ability to ripen a crop early in September before the weevil has multiplied to such numbers that every square is ruined immediately after opening.[1] Kings Improved, Cooke, and Simpkins Ninety Day are among the leading strains of cotton.

Corn has always been the most extensively grown crop, and during the last three years the acreage has increased about one-third. According to census reports, the average yields for the county range from 12 to 15 bushels per acre. The average yield reported by 44 farmers questioned during the survey was 17 bushels per acre. Were the average over the county raised to 17 bushels, Shelby County would now be selling corn instead of importing large amounts annually. The present production is only about 60 per cent of the actual requirements. Tennessee Red Cob, Mosby, and Hastings Prolific are the varieties chiefly grown. Pure seed of improved strains is often purchased, but little effort is made to maintain purity, the result being that the strains soon deteriorate. The good yields obtained by some farmers who follow modern methods and by members of various boys' corn clubs show that the yields could easily be increased. At present, owing largely to the natural productiveness of the soil, they are larger than in many counties of the State.

Oats, which until recently have been the crop of third importance, at the time of the survey had assumed second place in acreage. The average yield reported by the census of 1910 was about 14 bushels per acre. The average reported during the course of the soil survey by 35 farmers pursuing improved methods of culture was 21 bushels. The production is still insufficient to supply the local demand, many bushels being shipped to the county annually. As a rule winter oats are grown. Texas Rustproof is the leading variety, followed by the Appler, Fulghum, and Hastings One Hundred Bushels. For spring planting the Burt is a popular variety. A fair proportion of the oats crop is cut when in the dough stage and fed in the straw, although thrashing is more common than in the counties to the south. The crop commonly follows corn, which is harvested in time to allow sufficient growth before winter sets in, a very important factor

[1] Recent experiments by the Department of Agriculture have indicated that it is practicable to poison the weevil.

in the yield. The average yield of oats would be higher were it not for the universal custom of pasturing throughout the winter, although where the fields are not grazed too closely the damage is not great. The yield of spring-sown oats is usually less than that of winter oats.

Wheat, which was for many years the crop fourth in acreage, gradually declined in importance after about 1900, only 116 acres being planted in 1910, but the acreage has increased since 1915. The Purple Straw, or Bluestem, is grown to the exclusion of other varieties. The average yield in 1909 was only 8 bushels per acre, but the average reported by 26 farmers of the better class during the survey was 11½ bushels, a yield comparing very favorably with that of some of the great wheat-producing States of the West. A considerable acreage of the heavier, well-drained soils of the county is fairly well suited to wheat production. The crop fits readily into a number of rotations, and might be more generally grown to advantage.

The production of hay has greatly increased during the last three years, and at least three-fourths of the county's requirements is now produced at home. Johnson grass, crab grass, "hurrah" grass, and a little Bermuda grass, in addition to sorghum, millet, and crowfoot grass, are the main hay crops. Among the legumes are lespedeza (Japan clover), cowpeas, alfalfa, velvet beans, peanuts, and some bur clover, red clover and white clover. Lespedeza, broom sedge, other sedges, rushes, a little switch cane, and Bermuda and wild grasses comprise the main native pasture plants.

Velvet beans easily yield 1 ton of beans in the pod per acre, and in addition furnish considerable pasturage. The climate makes it possible to pasture hogs or cattle in the bean fields till the time of spring plowing. The Osceola and early speckled varieties are grown. A considerable proportion of the crop ripens even with early frosts. Johnson grass is usually cut 2 or 3 times annually, and yields about 1 ton per acre at the first two cuttings and slightly less at the last. Crab grass and other wild grasses normally yield three-fourths to 1 ton per acre. German millet yields about 1 ton of hay, of good quality if cut early. Cat-tail millet (*Pencillaria spicata*) is cut several times each year. Sorghum is usually cut but once. No effort is made to extend the growing of lespedeza, although it is an excellent pasture crop, especially on wet, acid soils, and when mixed with Johnson grass the hay is considered of better quality than when either is produced singly. In addition to the hay and forage crops already named a considerable amount of corn fodder is obtained. An increasing amount of fodder is cut and shocked for winter feeding, although a majority of the farmers still follow the old method of stripping and later burning the stalks.

Cowpeas sown after June-cut oats can be depended upon to yield 1 to 1½ tons of very good hay per acre. Soy beans have been grown by a few farmers, with excellent results, but their merit is not widely known. In the adjoining county of Jefferson the Mammoth Yellow soy bean has proved a good crop, especially for hog pastures.

There are numerous Bermuda-grass pastures in the county. Bermuda grass mixed with bur clover makes the best obtainable year-round pastures, as the clover grows during the fall, keeps green during the winter, and does not seed till May, by which time the grass has begun to grow. Melilotus does not grow well, except on the soils high in lime, where it is an excellent soil renovator.

The production of peanuts has not developed beyond the growing of small quantities for home use. The Spanish is the favorite variety, but the Virginia Goober and running peanut are also grown. Peanuts have given very satisfactory results as hog pasture, and the acreage is increasing. When cut for hay yields of one-half ton per acre are common. Twenty farmers questioned during the soil survey reported an average yield of 28 bushels of nuts per acre. The culture of peanuts for sale to oil mills and as a fall-pasture crop for hogs has proved very profitable in counties farther south in Alabama. Peanut hay brought from $16 to $20 a ton, and peanuts $125 a ton, at the time of the survey. In other regions to the south, as in Bullock County, the use of power picking and hay-baling outfits has made commercial production more profitable.

The census of 1910 reports a production of 70,288 bushels of sweet potatoes, or 2.6 bushels per capita, and large quantities of potatoes are shipped into the county annually to satisfy the local demand. A few farmers near Montevallo and in the northeastern part of the county have successfully produced sweet potatoes for canning and for the Birmingham markets. The sweet potato acreage was largely increased in 1916. From 75 to 100 bushels per acre is easily produced on the sandier soils. The Dooley and Pumpkin yam are the favorite varieties. Irish potatoes are grown in small fields for home use and for sale on the local markets. Seed potatoes are brought from the North. The yield per acre of Irish potatoes is ordinarily from 60 to 75 bushels.

There are a few apple trees on nearly every farm, but no commercial orchards. The peach is the principal fruit produced. Such established varieties as the Chinese Cling, Belle of Georgia, Elberta, and Mayflower do well, considering the lack of care. A total of 44,784 peach trees or an average of 16 per farm, is reported in 1910. Spraying for brown rot, the San Jose scale, and other insect pests is necessary to insure satisfactory yields.

Minor crops of the county are grown in varying quantities. Some pears, grapes, quinces, strawberries, pomegranates, and figs are also produced. The Scuppernong grape is grown generally, and there are also a few vineyards of Concord grapes that bear very well. Many different vegetables are grown in the gardens. The establishing of canning plants and the increase of industrial population have caused a recent marked increase in the variety and amount of truck produced.

The proximity of Shelby County to Montgomery and Birmingham, the latter having a packing plant, and the greatly increased demand for pork and beef at home have resulted in a remarkable increase in the live-stock industry. The value of animals sold or slaughtered increased from $91,703 in 1900 to $163,593 in 1910, and the value of dairy products sold, from $12,111 to $132,745. Similar advancement has taken place since 1910. There are several large commercial dairies in operation. The good shipping facilities to Birmingham, the abundance of good pastures (only one-fifth of the county being under the plow), and the ease of producing cheap feedstuffs have made possible the expansion of the live-stock industries.

The census of 1910 reports a total of 12,637 hogs in the county. In 1909 there were 7,305 hogs sold or slaughtered. This is only one to every 3.6 people and large quantities of pork products are necessarily shipped into the county. The number of hogs has easily doubled since 1909, and in view of the abundance of soils suited to the growing of pasturage crops and concentrated feeds, the county is in a way to become self-supporting with respect to pork.

In 1910 there was a total of 11,640 head of cattle in Shelby County, of which 5,158 were dairy cows. Each year there is a large deficiency of butter, cheese, beef, and beef products, made up by purchase outside the county. This could be much more cheaply produced at home, with the abundant range and pasture, and cheaply produced forage and feeds. Only 2,840 head of cattle are reported sold or slaughtered in 1909.

There were 2,668 mules and 1,396 horses in the county in 1909, an average of 1.47 head of work stock for each of the 2,763 farms. Considering the heavy character of the soils as a whole, the horsepower is totally inadequate to give the deep tillage needed. The work stock is almost entirely brought in from States to the north.

At the last census 54 per cent of the county was in farms and of this area 36 per cent was under tillage. The tilled area comprises only one-fifth of the county. About 205 square miles, or one-fourth of the county, can be tilled to good advantage.

The well-drained, heavier soils of the Clarksville, Hanceville, Hagerstown, Waynesboro, and Decatur series, are widely recognized

as being superior for corn, winter oats, rye, and wheat. It is realized that certain of the gravelly loams and sandy loams produce cotton to better advantage than the flatter, heavier, less well-drained soils, which however are the better adapted to corn, sorghum, hay, and pasture crops. The farmers know that the sandy loams and loams, such as Hagerstown, Frederick, and Christian loams, also the Hagerstown, Clarksville, Hanceville, Orangeburg, Ruston, and Pope fine sandy loams, produce excellent yields of sweet potatoes, and garden vegetables, in addition to general farm crops. They also recognize that the lighter sandy and gravelly soils of the uplands produce a better fiber of cotton than do the heavy red soils.

In recent years there has been considerable improvement in the character of farm implements. Disk plows and wheeled cultivators are in general use on the heavier soils, though owing to the general lack of sufficient horse power the machinery is often too light for best results.

The farmhouses range from 1 and 2 room, unpainted tenement houses or log cabins, the latter occupied mainly by negroes, to substantial frame structures occupied mostly by well-to-do landowners. The barns are usually large enough to afford protection for part of the stock and to store the concentrated feedstuffs, the coarser fodder and hay usually being stacked outside. The use of gasoline engines for grinding, wood cutting, and water pumping is becoming more general. Rail fences are common, especially in the wooded portions, but are being displaced by barbed-wire and hog-proof fences. The cultivated fields are for the most part fenced.

In 1899 a total of $25,150 was spent for fertilizers, practically the same as in 1869. By 1909 the amount had more than doubled, reaching $53,006. Only 66.2 per cent of the farms used fertilizer in the latter year, however, and the average expenditure for these was only $19.18 per farm. Fertilizer is not generally used on the heavy, limestone-valley lands. With the exception of some home mixtures of cottonseed meal and phosphate, the common low grade 10–2–2 [1] goods has been generally used. Since the recent shortage of fertilizer, recourse has been had to green manuring, the growing of leguminous crops, and the adoption of rotations, and the results have been so beneficial that it seems probable the practices will continue.

Contrary to the general opinion, the soils of Shelby County, even where derived from limestone, do not contain a large amount of lime, and some of these show a very low percentage. Lime has been used in the past with profitable results, but with the general use of commercial fertilizers liming was discontinued. There are 26 lime-kilns in the county whose product is shipped outside for commercial

[1] Figures represent respective percentages of phosphoric acid, nitrogen, and potash.

and agricultural purposes. These are located on railroads, and very cheap supplies are available to all parts of the county. The cooperative grinding of limestone and the burning of lime on the farm could be done as easily and cheaply as in many other places where the same formations of lime are found. It is known that all the upland soils would be benefited by acreage applications of 2,000 pounds of finely ground limestone or about 1,000 pounds of burnt lime every four or five years, or at least once in the rotation, where a rotation is practiced.

In 1910 there were 2,157 white farmers in Shelby County and 602 colored. The chief dependence is placed on white labor. The numerous coal mines and other industries have drawn on the supply of both colored and white labor, until dependable farm hands are scarce. The bulk of the farm labor is performed by the farmer and his family and increasingly less reliance is placed on hired labor. There is some exchange of labor between farmers. The daily wage varies greatly with the season and the nearness to public works. Ordinary farm laborers receive $1 to $1.50 a day, or $20 to $25 a month, with board. Numbers of laborers are employed partly in industry and partly on the farm, and many have small patch farms which add materially to the agricultural products of the county. In 1909 a total of 764 farms reported the use of hired labor, at a cost of $51,882.

The following table gives statistics of the size and value of farms, compiled from reports of the last four censuses.

Number and size of farms and value of all farm property for census years 1880 to 1910.

	1880	1890	1900	1910
Number of farms	1,676	1,645	2,476	2,763
Per cent of land in farms	44.2	41.7	42.7	54.1
Average size of farms—acres	135.9	130.7	88.9	101.0
Average value of all farm property	$773	$886	$891	$1,561

The increase in the average size of farms from 88.9 acres in 1900 to 101 acres in 1910 shows the recent increasing trend toward consolidation and the abandonment of many farms which are fit only for pasturage or forestry. Many of these areas should never have been cleared, since cultivation could only be temporary, erosion sooner or later ruining the fields.

In 1900 59.4 per cent of the farms were operated by owners and 40.3 per cent by tenants. By 1910 this had changed to 52.9 per cent operated by owners and 46.7 per cent by tenants. At present the tendency seems to be toward land ownership, although the increas-

ing price of lands makes ownership more difficult. In 1910 there were 672 share tenants and 595 cash tenants. Where a landowner rents a portion of an adjoining farm it is usually on a cash basis. Cash rent ranges from $2 to $3 an acre. In share tenancy where the landowner furnishes the implements and stock he receives one-half the crops, and where the tenant furnishes tools and stock the landlord receives one-third of the corn and one-fourth of the cotton. The last arrangement is the usual one. In nearly all cases the cost of the fertilizer is shared equally by owner and tenant. Landowners usually give close supervision to share tenants. Clothing, food, medical attendance, and other necessities are often advanced by the landowner, supply merchant, or bank, and a crop lien taken as security, although this plan of financing tenants is becoming less common, owing to increasing diversification of crops.

The price of farm lands ranges from $12 to $75 an acre, with a tendency upward. Rolling to hilly or mountainous lands are valued largely on a basis of their standing timber. Cut-over rough lands sell for $2 to $5 an acre.

SOILS.

Shelby County occupies a region of wide geological diversity. The soils fall naturally into four broad natural divisions or soil provinces. The most extensive is the Appalachian Mountain province, the southwestern extension of which terminates a few miles to the south, in Chilton County. The soils of this division, occupying the western and northern third of the county, have weathered from the underlying shales and sandstones belonging to the upper Coal Measures. The second division in point of area and the first in agricultural importance is the Limestone Valleys and Uplands province, occupying the long, narrow, irregular valleys which comprise approximately one-half the area of the county. The third division in area and importance, the River Flood Plains province, includes the flood plains and the second bottoms or terraces of the numerous streams. These alluvial areas make up in the aggregate somewhat less than one-fourth the area of the county. The fourth division includes the northernmost extension of the Coastal Plains province in this region. The extent of this division is only a few square miles. It lies along the Chilton-Shelby County line.

The rock formations of the county are all sedimentary, composed of materials deposited for the most part in the quiet shallow waters of an ancient sea, and probably in horizontal layers. At subsequent periods these rocks were elevated, subjected to faulting and folding, and finally brought to their present condition by being subjected during ages to the agencies of weathering. The uppermost terrace soils along the larger streams were deposited by running waters

when the streams were at higher levels than at present. The present bottom lands are still in process of formation, and are subject to considerable annual modifications by overflows. They are the youngest soils in the area. The Coastal Plain soils were deposited during the ancient marine submergence which reached its northernmost extension, in this portion of Alabama, in Shelby County. All of the limestone valleys and the lower areas of the Appalachian soils were submerged at that time and covered with a thin veneer of sandy material. This has nearly all been removed with the exception of the present areas of Coastal Plain soils and some sandy remnants capping some of the soils of limestone origin. Throughout the limestone soils there are many rounded stones, suggestive of Coastal Plain origin, but these are the lowered remains of an ancient overlying conglomerate formation of the Carboniferous.

The limestone valleys were originally covered with Carboniferous strata several thousand feet in thickness. The extensive folding to which the region was subjected resulted in a fault of 15,000 feet, elevating the rocks to a height 2 or more miles above the present level. The weathering of this great mountain has exposed the older rocks of the region to form the limestone soils.

The oldest formation in the county is the Montevallo, consisting of variegated shales and sandstones. The Montevallo stony loam, shale loam, gravelly loam, and silt loam are derived from this formation, and also in lesser degree from the younger rocks of the contiguous subcarboniferous formation, which so closely resemble the Montevallo as to give rise to identical soils.

About 30 square miles of soil in the extreme southeastern corner of the county is derived from the Talladega formation. It is classed as the Talladega slate loam. The geological formation is a feebly metamorphosed, soft, micaceous, fissile slate, locally termed "soapstone rock" because of its greasy feel. It contains interbedded lenses of quartz or conglomerate quartzite. This formation occurs but a few miles west of the metamorphic rocks of the Piedmont region in Talladega County. In most places the bedrock comes within 2 or 3 feet of the surface, and it frequently outcrops on the knolls, escarpments, and gentle slopes.

In the limestone valleys the soils have been derived from the weathering of the underlying formations, consisting principally of the Knox, Trenton, and Pelham limestones. The soil material is composed of the insoluble or less readily soluble portions left when the calcium and magnesium were dissolved from the parent rock. The soils are seldom very deep, except in the case of some areas of the Decatur clay loam, where the bedrock may lie more than 100 feet below the surface. It is estimated that from 75 to 100 feet of limestone must have been dissolved to make one foot of soil, although

in the case of the less pure rocks, in the eastern part of the county, the high percentage of chert would make a smaller thickness sufficient. The purer limestones of the Trenton and Pelham formations give rise to most of the area of the Decatur, Hagerstown, and Colbert series. The Knox dolomite and cherty limestones have weathered into the Frederick and Clarksville soils.

There are isolated beds of interbedded limestone, shale, and sandstone at Columbiana and extending northeastward for several miles. This formation, the Oxmoor, gives rise to soils that in places resemble the Hagerstown and Hanceville, having some characteristics common to both. The soils are included with the Christian series. The Locust series is largely colluvial from sandstone and shales.

The Decatur series has reddish-brown to reddish soils, and deep-red, rather heavy clay or silty clay subsoils. It is derived from the purer, nearly chert-free limestones.

The Hagerstown series is characterized by brown surface soils and reddish brown, friable clay loam subsoils. The series is derived from nearly chert-free limestones, and is closely associated with the Decatur.

The Clarksville soils are gray in the surface portion, with yellow, friable silty clay loam subsoils. They are derived from the Knox dolomite or cherty limestone. These soils occupy hilly to rolling areas and are well drained.

The Frederick series occurs in close association with the Clarksville. It differs in usually containing less chert, in having a reddish-yellow subsurface layer, and in its red or yellowish-red, friable lower subsoil.

The Colbert series has a gray surface soil and a dominantly yellow subsoil of heavy, plastic structure. The Colbert soils occur in flat or depressed areas, usually surrounded by Hagerstown, Clarksville, or Frederick soils. They are derived from pure limestone, or from limestone with a slight interbedding of sandstone or shale.

The Locust series is characterized by gray surface soils and yellow, friable subsoils. It largely represents outwash material from the shales, with a slight admixture from limestone. In Shelby County the Locust soils are confined to the heads of drainage ways and to the stream courses for a short distance from their source.

The Hanceville series is distinguished by its gray to reddish-gray surface soil, and the reddish-yellow to red, friable clay subsoil. It is derived from shales and sandstones of Carboniferous age.

The Dekalb soils are very intimately related to the Hanceville, differing mainly in having a gray soil and a yellow, friable subsoil. They have the same origin in all cases.

The Montevallo series is characterized by gray to brown soils and reddish-yellow to dull-red, or mottled yellow and light-red, heavy, silty clay subsoils, which usually grade into disintegrated, variegated shales within the 3-foot section. The subsoil may be of any color from dull yellow to reddish brown. The Montevallo and Coosa shales are the parent formations.

Members of the Christian series have gray to red surface soils and yellowish-red to red, compact but moderately friable, clay subsoils. They are developed in the limestone valleys and have originated from interbedded shales, sandstones, and limestones.

The Talladega series occurs in the southeastern portion of the county. The soil is a grayish slate loam and the subsoil a reddish-yellow silt loam. The texture is entirely masked by the presence of 75 to 85 per cent of slaty fragments, representing the incompletely weathered parent rock.

The Orangeburg series has gray to light-brown soils and bright-red sandy clay subsoils. The closely related Ruston series differs from the Orangeburg in having yellowish-red to yellowish-brown, friable sandy clay subsoils. These two series of soils are derived from unconsolidated Coastal Plain material, which is believed to represent reworked and redeposited material from the near-by limestone and Appalachian soils.

In addition to the above well-established upland types there are two very extensive and important classifications, which represent conditions rather than definite soil types. These are Rough broken land and Rough stony land, which aggregate in extent about 150 square miles. In areas of this character the processes of erosion have equaled or exceeded the rate of soil formation and accumulation of tillable soil has not taken place.

The remaining soils are of the second bottom, or terrace, and first bottom groups. The terrace soils are classed in the Waynesboro and Holston series. The former series is characterized by gray to reddish soils and reddish-yellow to red, friable clay, or sandy clay subsoils. The latter series differs from the Waynesboro in that the surface soil is gray and the subsoil yellow. It also occupies a slightly lower position than the Waynesboro.

The first bottom soils are classed in the Pope, Atkins, and Abernathy series. The types included in the Pope series have gray to light brownish-gray soils and prevailingly yellow to light-brown, friable subsoils. They are formed of material washed from sandstone and shale areas. The Atkins soils are closely allied with the Pope in origin and occupy poorly drained or slightly depressed areas in the first bottoms. They have gray to whitish surface soils and mottled yellow and gray, or brownish-yellow to almost white, silty

clay subsoils. The Abernathy series is characterized by a red surface soil and a gray to blue subsoil. It is composed of wash from the Decatur and Hagerstown soils and occurs in the first bottoms or in the lime sinks.

In following pages of this report the various soils of Shelby County are described in detail and discussed in their relation to agriculture. The distribution of the soils is shown on the accompanying map. In the following table are given the name and the actual and relative extent of each type:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Rough broken land	91,264	17.8	Montevalio silt loam	4,672	0.9
Montevallo gravelly loam	59,264	11.5	Hagerstown gravelly loam	4,160	.8
Rough stony land	58,816	11.5	Hanceville clay loam	3,968	.8
Hanceville gravelly loam	33,536	6.5	Holston silt loam	3,456	.7
Montevallo stony loam	31,552	6.1	Dekalb fine sandy loam	3,392	.7
Montevallo shale loam	31,488	6.1	Hagerstown fine sandy loam	3,008	.6
Frederick gravelly loam	24,064	4.7	Clarksville fine sandy loam	2,496	.5
Hagerstown loam	19,456	3.8	Frederick loam	2,240	.4
Pope silt loam	15,616	3.0	Waynesboro gravelly loam	2,112	.4
Hanceville fine sandy loam	14,720	2.9	Christian gravelly loam	2,048	.4
Decatur clay loam	14,528	2.8	Orangeburg fine sandy loam	1,856	.4
Clarksville gravelly loam	14,208	2.8	Abernathy silty clay loam	1,856	.4
Talladega slate loam	13,504	2.6	Clarksville silt loam	1,728	.3
Colbert silt loam	10,368	2.0	Ruston fine sandy loam	1,536	.3
Hanceville stony loam	9,152	1.8	Dekalb silt loam	1,536	.3
Pope fine sandy loam	8,448	1.6	Waynesboro fine sandy loam	1,216	.2
Hanceville silt loam	5,632	1.1	Waynesboro clay loam	1,024	.2
Locust silt loam	5,632	1.1	Mine pit and mine dump	576	.1
Christian loam	5,120	1.0			
Atkins silt loam	4,672	.9	Total	513,920	

DECATUR CLAY LOAM.

The surface soil of the Decatur clay loam consists of a brown to dark-brown or brownish-red, friable clay loam, about 6 inches deep, which in virgin areas may be overlain with a thin veneer of fine sand. The subsoil is a brownish-red or deep-red clay loam to clay, plastic when wet and moderately brittle and crumbly when dry. The subsoil may extend to a depth of several feet with no perceptible change except in color, which gradually becomes lighter, until at depths of 5 to 6 feet light shades of yellow or reddish yellow prevail. Bedrock lies at any depth between 6 and 30 feet or more, its position depending on the topography and degree of erosion.

There is more or less variation in the soil from place to place, This is due in part to differences in the rock strata from which the material has been derived, and in part to alterations taking place during submergence in the ancient sea, as well as to other local in-

fluences. On the gentle slopes, where washed material has accumulated, the soil is a dark reddish-brown heavy loam to light-textured clay loam, with a depth of 10 to 15 inches. In areas near the mountains or ridges the type may contain some sandstone and shale fragments from the Appalachian soils, or some chert fragments from the Clarksville areas. Eroded areas of Decatur clay and silty clay are included in places. The southernmost parts of the type are lower than adjacent areas of the Coastal Plain soils. Much of the sandier veneer mentioned as occurring in uncultivated areas is Coastal Plain material. Rounded quartz pebbles are common in soil and subsoil, which gives the type a marked resemblance to the Greenville soils, mapped farther south in the State. Oxidation has proceeded to an advanced stage, and this, together with the large amount of iron in the original rock, causes the deep-red color. Numerous small, black iron concretions and fragments of very pure, fibrous iron ore are scattered over the surface in places.[1]

The Decatur clay loam has a general distribution through the limestone valleys, especially in the southern portion of the county. A large typical body extends northeastward from Montevallo, while a second extends 3 miles southwest from Wilsonville. The surface is nearly level to gently rolling, with a few gently rounded hills and conspicuous knolls. Drainage is everywhere thorough, and erosion is so difficult to prevent, even on moderate slopes, that many fields have been reduced in value and some irreparably damaged. There are some small sinks in which artificial drainage is needed and in which the drainage is partly effected by subterranean channels.

The Decatur clay loam is the heaviest textured soil in the county. It has a tendency to bake, especially when plowed too wet, and to break into clods if plowed when too dry. It is known as "hard red land." The unfavorable characteristics are increased by the lack of organic matter, which makes crops more liable to damage from any extreme moisture. The already deficient moisture-holding capacity is lowered by the formation of a hard crust and deep cracks after rains.

The original forest growth on this soil consisted of red oak, black oak, white oak, hickory, poplar, walnut, and some pine. Reforested areas are covered with old-field pine, sassafras, persimmon, scrubby oak, wild plum, and shrubs. About 75 per cent of the type is under cultivation, and considerable improved farm machinery is used. In order to break the crust formed during the winter it is a common practice to go over the fields with a disk harrow before plowing them. Fall plowing where practiced has resulted in greatly improving the soil structure.

[1] The Shelby Iron Works, at Shelby, have obtained ore for 50 years from the residual clay from which this type has been developed. It has been mined to a depth of 80 feet.

The Decatur clay loam is a naturally productive soil, though difficulty in cultivation makes it better adapted to sown crops than to intertilled crops. It is too heavy to be a typical trucking soil, but the extensive truck garden of the Alabama Girls' Technical Institute at Montevallo proves that vegetables can be produced satisfactorily where liberal applications of stable manure are given. The general farm crops consist of cotton, corn, oats, wheat, cowpeas, velvet beans, sorghum, Irish potatoes, sweet potatoes, cowpea hay, lespedeza, and crab grass—the latter a volunteer growth after early corn. Some vegetables are grown for the canning plant at Montevallo. Apples, peaches, plums, strawberries, and blackberries do well. Two home vineyards of Concord grapes were seen that had been bearing successfully for nearly 20 years, and scuppernong and other muscadines give good results.

Corn yields 15 to 30 bushels per acre, oats 25 to 40 bushels, and wheat 12 to 18 bushels. Fertilizers of the usual low grades are commonly applied, and the results are normally satisfactory. Barnyard manure never fails to give good results.

The selling price of this land ranges from $25 to $75 an acre and is the highest of any type in the county.

The productiveness of this soil could be readily increased by several means whose efficacy has been proved, such as deeper plowing, to give a better zone for the development of plant roots; the addition of more vegetable matter, to improve the soil structure, stabilize the moisture content, and release stored plant food; the adoption of rotations, to supply organic matter; liming, to overcome acidity, increase flocculation, and render available more plant food; and terracing, to prevent destructive erosion and aid in conserving moisture.

The following rotation has been tried successfully in a small way: First year, corn, followed by fall-sown wheat or oats; second year, cowpeas after June-cut oats or wheat, followed by fall-sown rye or oats as a winter cover crop; third year, cotton or peanuts and corn, or corn and velvet beans. This rotation gives all the benefits from growing crops that have a diverse root system, enables the production of a large amount of organic matter and nitrogen from legumes, includes the production of foodstuffs for man and stock, and keeps the soil occupied 12 months in the year.

HAGERSTOWN GRAVELLY LOAM.

The Hagerstown gravelly loam consists of a soil of brown, dark-brown, or yellowish-brown mellow silt loam, 6 to 8 inches deep, underlain by a reddish-brown or brownish-red, moderately friable clay subsoil. On the surface and to a less extent throughout the 3-foot section occurs from 20 to 40 per cent of angular chert gravel.

At the base of the steeper slopes patches of Hagerstown stony loam are included.

The Hagerstown gravelly loam occurs in small areas scattered throughout the limestone valleys. It occupies knolls lying somewhat higher than the surrounding soils of the same series, or forms a narrow strip at the base of some of the steeper slopes associated with the Frederick soils. Drainage is thorough and in places excessive, and the surface soil has been removed in many places on the steeper slopes. The soil has a rather loose open structure, and does not bake or clod, as do the Hagerstown loam and the Decatur clay loam.

Uncultivated areas support a growth of scrub oak and blackjack oak, with some black and white oak, hickory, and shortleaf pine. The part under cultivation is used for general farming. Cotton, corn, velvet beans, wheat, oats, and grasses give fair yields. Fruits and truck crops do well, though as yet they are only produced for home use.

Land of this type is usually sold in connection with associated mountain and valley soils. It ordinarily brings from $10 to $20 an acre.

HAGERSTOWN FINE SANDY LOAM.

The Hagerstown fine sandy loam consists of a grayish-brown to reddish-brown fine sandy loam with an average depth of 6 inches, underlain by a reddish-yellow, reddish-brown, or dull-red friable clay or fine sandy clay which usually extends to depths of several feet without change except a gradual lightening of color and the appearance of mottlings of dingy gray and yellow.

Throughout the soil mass occur small black, shiny iron concretions, and conspicuous amounts of chert gravel and water-worn gravel of quartz and other crystalline rocks appear in places, especially where erosion has been most active. At the foot of gentle slopes and in lime sinks having good subterranean drainage the soil may be 15 to 20 inches deep, and darker colored than typical.

The Hagerstown fine sandy loam occupies rather small, isolated bodies in the limestone valleys. A typical area occurs 1 mile southwest of Harpersville, with others farther south in the region of the Coastal Plain soils. The topography is undulating to very gently rolling. The type lies at elevations between 450 and 550 feet, which is slightly higher than the adjacent areas of Colbert silt loam and lower than the Decatur clay loam. It is bordered by ranges of high hills or mountains. It is well drained.

About three-fourths of the Hagerstown fine sandy loam is under cultivation, and at least 95 per cent of the type can be safely tilled. The virgin forest consisted of oak, poplar, other hardwoods, and pine. The type is adapted to the general farm crops of the region. It is

a warm, quick soil, and cotton and other crops can be planted several days earlier than on many of the surrounding soils. The yields of cotton under weevil conditions are satisfactory, largely because the crop matures early. Apples, pears, and peaches do well, but commercial production has never been attempted. Corn yields 15 to 25 bushels, oats 15 to 30 bushels, wheat 10 to 16 bushels, and cowpea hay 1 to 2 tons, per acre. The usual tillage practices are followed. The continual alternation of cotton with corn, both intertilled crops, with resultant loss of organic matter, is responsible for the present low yields. On one dairy farm near Harpersville the use of stable manure doubled the yield of crops in less than five years.

Land of the Hagerstown fine sandy loam is valued at $15 to $30 an acre, the price depending on the nearness to town, the character of adjoining soils, and the general improvements.

For the improvement of this soil the general plan suggested for the Hagerstown loam should be followed. Success with early vegetables in the home gardens suggests that an extension of trucking would be profitable. Much of the type is readily accessible to shipping points, and but a few hours from Birmingham.

HAGERSTOWN LOAM.

The Hagerstown loam, to a depth of 4 to 8 inches, is a light-brown to brown or reddish-brown, mellow loam. The subsoil is a reddish-brown to dull-red, moderately friable clay, which usually becomes lighter in color and heavier in texture at 24 to 36 inches. The type shows considerable diversity of color and texture over small areas, owing to differences in topography and in the character of the underlying rock formation. Freshly tilled fields have a broadly spotted or mottled reddish and gray appearance, due to erosion and deposition. Varying quantities of black iron concretions occur throughout the soil mass.

In many of the lower lying areas, notably in the Cahaba Valley, there are numerous outcrops of the nearly vertically tilted parent limestone rock. Where of importance these are shown on the map by symbol. The soil in these areas of outcrop is usually heavier, aproaching a clay. Included with the Hagerstown loam as mapped are numerous small areas of Colbert silt loam and Abernathy silty clay loam, which usually occur in shallow, saucer-shaped depressions or sinks, less than 1 acre in extent.

The topography ranges from undulating to very gently rolling, with here and there the hummocky areas characteristic of limestone regions. The type lies a few feet higher than the associated Colbert silt loam, and 10 to 50 feet lower than the adjoining Decatur clay loam. Most of it ranges in elevation from 400 to 500 feet. With the

exception of a few flattish areas adjacent to the Colbert silt loam, the drainage of both soil and subsoil is good. The soil is rather porous and friable and does not gully badly, although there is usually enough washing to cause reddish spots on hills and slopes. The type is derived mainly from chert-free limestone, with some admixture of the Coosa shales.

The Hagerstown loam was originally forested with a dense growth of shortleaf pine and oak, and some chestnut, walnut, poplar, and persimmon. Throughout the county the type is largely under cultivation, the percentage of waste land and forest being very low. For general farming this is the most valuable soil of large extent in the county. It is easily worked, responds readily to fertilization, deeper plowing, and the use of lime, is earlier than the heavier textured types, and therefore well suited to the production of cotton under present boll-weevil conditions.

Corn yields 15 to 30 bushels per acre, oats 20 to 35 bushels, wheat 10 to 15 bushels, pea-vine hay 1½ to 2 tons, "hurrah" grass 1 to 1½ tons, sweet potatoes 75 to 100 bushels, Irish potatoes 60 to 75 bushels, peanuts 30 to 45 bushels, and velvet beans about 1 ton (in the pod) per acre. There are a few Bermuda grass pastures, but most of the pastures consist of Johnson grass, crab grass, crowfoot grass, "hurrah" grass, other wild grasses, and sedges, all of which enter more or less into the composition of the hay. A small amount of volunteer lespedeza and a very little white clover and melilotus comprise the leguminous growth. A single field of red clover and an experimental patch of alfalfa observed during the soil survey were well established and growing well. Winter cover crops are not generally grown, except as needed for crops of wheat or oats in the spring. The mistaken impression prevails that it does not pay to seed to a cover crop unless it is to be harvested for grain.

The selling price of land of the Hagerstown loam ranges from $20 to $40 an acre. The price, which has been steadily increasing during recent years, depends largely upon such factors as nearness to markets and improved pike roads, and upon the farm improvements.

Yields on the Hagerstown loam when brought to a high degree of cultivation are much larger than the averages stated above. On several dairy farms the use of barnyard manure alone has doubled the yield. The use of burnt lime in liberal quantities has proved very profitable, especially in reducing the number of "pops" in peanuts. The excellent drainage has favored the leaching away of the lime naturally in the soil, and liming will aid the growth of all the legumes with the exception of lespedeza. The low percentage of organic matter can best be increased by growing velvet beans, winter cover crops, and peanuts. In Bullock County, to the south,

these crops have been grown in connection with the hog and cattle industry, and the prosperity has been much greater than under the system of cotton and corn farming prevailing before the advent of the cotton boll weevil. The construction of several silos on this soil has demonstrated their value in this section in feeding dairy and beef cattle. The cattle fed silage have come through the winter at least 75 to 100 pounds heavier than when kept on the scanty winter pasturage.

CLARKSVILLE GRAVELLY LOAM.

The interstitial material of the Clarksville gravelly loam to a depth of 6 to 8 inches is a whitish-gray to pale yellowish gray silty loam to loam, powdery or floury in consistency when dry and very friable when wet. The subsoil is a yellow silt loam to silty clay loam, of a loose open structure. On the surface and to a less extent throughout the soil and subsoil there occur sharp-edged, cherty fragments stained with shades of yellow, rusty brown, or red. The amount of chert increases with depth, and boring below 2 feet is usually impossible. The lower subsoil grades from disintegrated rock at 3 feet to a mass of solidified, siliceous material at depths of several feet. The amount of chert, which bears a constant relation to erosion and topography, ranges from 75 or even 90 per cent of the soil mass in the roughest places, where it acts as a mulch to conserve moisture and prevent erosion, to 25 per cent or more in the rolling areas. In oak forests the chert is bleached white through the action of decaying vegetation, and where excessively accumulated resembles banks of snow.

Included with the type are numerous patches of Frederick gravelly loam, too small and unimportant to warrant separation. These areas often cap the highest parts of ridges.

The Clarksville gravelly loam is developed in the limestone valleys of the county, and is most extensive in the Cahaba Valley southeast of Siluria. It occurs mainly on long, narrow, somewhat broken ridges extending in a northeast and southwest direction and lying at an elevation ranging from 600 to 700 feet. The broader areas are choppy and hilly, but not deeply cut by gullies, the topography being characteristic of a lime-sink country. Near Varnons and Dargin the surface is undulating, varied by many hollows and typical lime sinks which are occasionally occupied by permanent ponds, although for the most part they have good subterranean drainage. Drainage is good in the more nearly level areas and is prevented from being excessive in the hillier areas by the mulch of cherty fragments.

The type is readily tilled under the widest range of moisture conditions without injury. Because of its open structure, low absorp-

tive capacity, and great lack of humus it is more or less droughty, and crops on it are the first to suffer during dry periods.

The Clarksville gravelly loam originally supported a fair growth of longleaf pine, some oak, hickory, and poplar, most of which has been removed and succeeded by an inferior growth of low scrub oaks, hickory, and shortleaf and old-field pine. The greater part of the type is held by industrial corporations, which use it for the production of mine ties and props and also charcoal. A small percentage is cleared and under cultivation. The general-farm crops produce fair yields under the present methods in favorable seasons. Cotton matures early and does better under great extremes of moisture than on most other soils of the county. Corn is a minor crop, and yields at present are low.

In other counties in Alabama, apples and peaches of good quality are produced on this type of soil, and where the orchards are given proper care the type will produce excellent yields of fruit of high quality. A large percentage of the type is situated within 6 miles of a shipping point, and the nearness to markets should facilitate development.

Land of the Clarksville gravelly loam sells for $5 to $15 an acre, the price depending on the location and improvements.

CLARKSVILLE FINE SANDY LOAM.

The soil of the Clarksville fine sandy loam, to an average depth of 6 inches, is a light-gray fine sandy loam, with a pale-yellow tinge. This is underlain by a yellow, friable fine sandy clay, mottled below 24 inches with pale yellow or gray. In low situations the texture may be slightly heavier, more plastic, and more compact than in the remainder of the areas.

The type varies to some extent with differences in the parent rock, topography, and character of surrounding soils. Small angular bits of chert, flattish shale chips, or fine-grained sandstone fragments are common in the soil, but less plentiful in the subsoil. There are occasional cobbles of chert or sandstone, especially on the eroded slopes. A gravelly area east of Shelby is indicated on the map by gravel symbols. Eroded slopes have a dull-reddish tinge, due to exposure of the subsoil.

The Clarksville fine sandy loam is a type of small extent. It occurs mainly east and south of Shelby. The topography is undulating to rolling and hilly, being intermediate between the topography of the rougher soils and the smoother valley soils. The type lies at an elevation of about 500 feet. The topography is roughest in the zone of contact with the Frederick and Montevallo gravelly loams. The drainage is everywhere excellent, except in a few places where seepage occurs.

The Clarksville fine sandy loam is known as a warm, quick, early soil. About 60 per cent of it is under cultivation, principally to corn and cotton, with oats, wheat, sorghum, cowpeas, peanuts, and velvet beans as minor crops. Corn, cotton, cowpeas, and velvet beans succeed very well, but the type is considered too light for the best yields of oats and wheat. The farm orchards and gardens do well. Apples give best results on the higher slopes. Early Irish potatoes give good results, and sweet potatoes are well adapted to the soil. Yields of late sown crops are likely to be diminished by drought.

Land values on the Clarksville fine sandy loam range from $10 to $20 an acre, depending on the nearness to town and the improvements.

The tendency of the soil to droughtiness may be lessened by increasing the supply of organic matter, of which the soil stands in great need. The growing of velvet beans with corn, using the fields as fall and winter pasture after the corn has been harvested, has been found a good way to add vegetable matter. This practice should not take the place of a regular rotation, but should supplement it.

CLARKSVILLE SILT LOAM.

The surface soil of the Clarksville silt loam is a light-gray to pale yellowish gray silt loam of a mellow, friable structure. It is underlain by a pale-yellowish silt loam or friable silty clay loam which usually becomes compact at about 2 feet, and sometimes shows gray mottlings in the lower part, especially in the flatter and less well-drained areas. The type for the most part is free from stones, but in places chert fragments occur in both soil and subsoil.

The Clarksville silt loam is of very small extent in Shelby County, occupying only 2.7 square miles. It occurs chiefly in the Cahaba Valley, the largest area lying around Pasqua. The topography varies from nearly level and undulating to gently rolling, and with the exception of a few flat depressions the type is fairy well drained. The forest growth consists of white oak, red oak, post oak, black oak, hickory, black gum, sweet gum, persimmon, and shortleaf pine.

Only a small part of the type is under cultivation. It is used principally for the production of corn, oats, wheat, sorghum, cowpeas, and millet. Only fair yields are obtained. Fruits and vegetables do well, but are produced solely for home consumption.

The price of land of this type ranges from $10 to $20 an acre.

The productiveness of this soil may be increased by applying stable manure or growing and turning under green-manuring crops. The soil is usually slightly acid, and should benefit from applications of lime.

FREDERICK GRAVELLY LOAM.

The Frederick gravelly loam is a light-gray or brownish-gray to pale-yellow fine sandy loam to silty loam, grading into a heavier, yellow or dull reddish yellow loam at 6 to 8 inches. This passes at 15 to 20 inches into a reddish-yellow or yellowish-red, friable silty clay or clay which extends to a depth of 3 feet or more without apparent change. On the surface and throughout the soil and subsoil are abundant small, grayish-yellow and white, angular chert and sandstone fragments, comprising from 25 to 75 per cent of the soil mass. The gravel content increases with depth, and it is often impossible to bore deeper than 15 to 20 inches. The type includes areas of the Clarksville gravelly loam, which are often difficult to separate.

The Frederick gravelly loam has a general distribution throughout the limestone valleys of the county. It is derived from a limestone bearing a considerable percentage of chert. The principal areas occur between Longview and Dogwood west of Vernons, and northwest of Siluria. There is also a large area west of Harpersville and other important areas in the extreme northeastern part of the county. The topography is hilly to rolling, with some gently rolling areas. Numerous lime sinks occur in the areas of gently rolling surface. Surface and subsurface drainage are good and on the steeper slopes excessive.

A very small percentage of this soil has been cleared for farming. It is generally owned in large forested tracts and is valued principally for its fuel wood, much of which is used for burning lime in the numerous adjacent kilns. The timber growth consists principally of low scrub oak, with some hickory and longleaf, shortleaf, and old-field pine. Broom sedge is the principal pasture growth in wooded areas.

The Frederick gravelly loam is a soil of medium agricultural value, but it is generally considered superior to the Clarksville gravelly loam. The soil is open and the subsoil porous, making the land droughty. The content of organic matter is extremely low. Some cotton is produced, but corn is the principal crop, with velvet beans, wheat, oats, sorghum, and cowpeas of secondary importance. Corn yields 8 to 15 bushels, wheat 6 to 10 bushels, oats 15 to 20 bushels, and cowpea hay 1 to 1½ tons per acre. Native grasses make good hay and fair pasturage. Peaches and apples do well. Less gravelly areas of the type are well suited to early vegetables, but they and the fruit are grown only for home use. This land is valued at $10 to $20 an acre. The same methods that are suggested for the Clarksville gravelly loam can be used to improve the productiveness of this soil.

FREDERICK LOAM.

The Frederick loam, to a depth of 4 to 6 inches, is a pale-yellowish, friable loam. This surface layer is underlain by a yellow or dull reddish yellow, heavier loam, which grades at 15 to 20 inches into a reddish-yellow, yellowish-red, or dull-red, compact but friable clay. Small quantities of sandstone gravel and chert fragments are scattered over the surface and through the soil mass. Some patches of Clarksville silt loam, lying at the base of slopes or in depressions, have been included with the type.

The Frederick loam is of small extent, and is confined to the limestone valleys. Typical areas are mapped at Arkwright and between Calera and Montevallo. They occupy low ridges and hillocks and well-drained slopes, but are retentive of moisture. Oak and other hardwood and some pine comprised the original forest growth. The type is considered a good soil, but it is not generally as productive as the soils of the Hagerstown series.

Cotton and corn are the principal crops, followed by wheat, oats, velvet beans, cowpeas, and sorghum. Under the best management and on the best areas the yields approximate those obtained on the Hagerstown soils. "Hurrah" grass, crab grass, and other native grasses give good yields of hay. The soil is well suited to fruits and vegetables.

Like all the limestone-valley soils, the Frederick loam is deficient in organic matter. One result of this is to cause the surface to bake in dry seasons. To improve this condition green manure crops should be grown and all available barnyard manure carefully saved and applied to the fields.

The following table gives the results of mechanical analyses of samples of the soil, subsoil, and lower subsoil of the Frederick loam:

Mechanical analyses of Frederick loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416149	Soil	0.4	6.4	11.8	24.6	14.8	37.3	4.6
416150	Subsoil	.1	4.8	8.9	19.2	13.0	36.0	17.8
416151	Lower subsoil	.1	7.3	10.1	17.3	12.5	34.4	18.3

COLBERT SILT LOAM.

The Colbert silt loam consists of three zones of material. To a depth of 4 to 6 inches it ranges from a yellowish-gray to light-gray or whitish silt loam, from 6 to 15 inches, of yellow, heavy clay mottled with gray and bright yellow, and, from 15 to 36 inches, of

sticky, heavy, plastic silty clay, with a gray basic color, mottled with bright yellow, the mottling being especially marked in the lower depths.

Because of the unusual diversity of surrounding soils and of the differences in elevation the type as mapped includes considerable variations. These are generally associated with differences in drainage conditions. In the parts lying adjacent to the Clarksville soils, as northwest of Calera, considerable cherty material is found. In small depressed areas, such as those 2 miles south of Helena, in sec. 27, T. 20 S., R. 3 W., the soil is nearly black, owing to excess moisture and consequent accumulation of vegetable matter. There are also included small "glades" or flat areas of reddish-brown Hagerstown clay loam, marked by such numerous outcrops of upturned hard limestone as to be untillable; these where numerous, as at Siluria, are shown by rock-outcrop symbol. Where the type suffers from seepage from higher lying soils and is intermittently wet and dry, it has a lifeless, ashy-gray appearance, is acid, and is deficient in vegetable matter.

The Colbert silt loam has a general distribution throughout the lower parts of the limestone valleys. Large, typical areas are mapped between Montevallo and Calera and north of Varnons, and smaller scattered areas in the northeastern part of the county in T. 19 and 20 S., R. 2 E., near Arkwright. The topography is uniformly flat, with a slight gradient toward the streams. With the exception of the first-bottom soils this is the lowest lying type in the county, and the entire type is inadequately drained. After heavy spring rains water may remain on the surface for a considerable time until removed by evaporation and the slow movement through the soil and subsoil.

At present only about one-fourth of the type is under cultivation. An equal proportion is in pasturage and the remainder is forested with a mixed forest comprising many species of hardwoods.

The cultivated portions are used principally for corn and hay. Some oats, a little wheat, and some sorghum are produced. Corn yields depend on the season. In a medium-dry year yields of 15 to 25 bushels per acre are common. Oats yield 15 to 25 bushels per acre where not covered by standing water during winter or spring. Sorghum and millet do well. Some Bermuda grass has been sown and this crop does well except in the very lowest places. Crab grass, "hurrah" grass, and lespedeza grow exceedingly well and provide good grazing for eight months of the year, and yield 1 ton or more of hay per acre.

The selling price of this land ranges from $5 to $20 an acre.

The greatest need of the Colbert silt loam is drainage and in general this can readily be provided. The soil also needs liming. Deeper plowing, preferably in the fall, should prove beneficial.

LOCUST SILT LOAM.

The surface soil of the Locust silt loam is a gray to pale yellowish gray silt loam, with a depth of 4 to 8 inches. The soil is underlain by a yellow silt loam subsoil to 20 to 30 inches, where it grades into a lighter yellow, compact, brittle silty clay or clay, sparingly mottled with gray and bright yellow. Iron stains and scattered iron concretions are common. Small angular chert and sandstone fragments are distributed throughout the type. To the north of Nelson there are included some patches of Locust sandy loam, not sufficiently important to be mapped separately.

The Locust silt loam is not an extensive type. Its largest and most typical area is situated 5 miles northeast of Columbiana. The type represents material washed down from the higher lying sandstone and shale formations and in some places it has also been influenced by wash from limestone soils. The type occupies level to gently undulating country, in most places lying below the level of the Hagerstown and Christian areas. Its yellow color may be due to less well established drainage, although the soil appears well drained, except in a few areas where seepage water collects.

Probably 75 per cent of the Locust silt loam is under cultivation, the rest supporting a forest growth, mainly hardwoods, with some shortleaf and old-field pine. Corn, oats, wheat, grasses, and sorghum are the main crops. Corn yields 10 to 15 bushels per acre, wheat 10 to 12 bushels, oats 15 to 20 bushels, and sorghum 125 to 150 gallons of sirup per acre. Crab grass yields 1½ to 2 tons of hay per acre, and cowpea hay about 2 tons. Yields are considered more dependable on this type than on many of the limestone soils, especially in the case of grains and hay.

The selling price of this land ranges from $15 to $20 an acre.

Better drainage is needed in places, and lime should be applied to improve the soil structure and overcome the acidity. The type appears to be better supplied with organic matter than most of the valley soils, but there can be little doubt that the supply could be increased with good results.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Locust silt loam:

Mechanical analyses of Locust silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416105	Soil	1.4	2.7	2.0	11.4	19.4	57.0	6.1
416106	Subsoil	.2	1.6	1.1	7.6	15.2	55.7	18.6

HANCEVILLE STONY LOAM.

The Hanceville stony loam is typically a grayish-brown to reddish-brown loam to fine sandy loam, underlain at 6 to 10 inches by a yellowish-red friable fine sandy clay or clay loam. Sandstone fragments, the rock ranging in texture from very fine to coarse and conglomeritic, are scattered over the surface and throughout the soil profile. The depth of the soil section is dependent entirely upon the slope and may range from a few inches to 3 feet, the last in the places best protected from erosion. Rock outcrops are very numerous.

The Hanceville stony loam occurs in several large areas extending along the mountains northeast of East Saginaw and a long narrow strip extends for several miles along the north side of Double Mountain. The topography is characterized either by winding, irregular ridges with steep, broken sides, or by eroded lenticular hills flanked by covelike areas. The relief in most cases is striking, differences of 200 to 300 feet in elevation often occurring within less than one-half mile. The type is excessively drained. The areas lying between Chelsea and Westover are smoother than typical. About 15 per cent of the type can be safely tilled, provided constant care is taken to prevent erosion. The remainder is covered with longleaf, shortleaf and old-field pine, oak, poplar, gum, and other less important trees.

The type is sparsely settled, and the tillable areas are so scattered that patch farming only is feasible. Subsistence crops such as corn, sweet potatoes, peas, garden vegetables, velvet beans, and peanuts are grown. A small acreage is used for cotton. Dairying, stock raising, and pork production are almost neglected. Lespedeza, crab grass, and other native grasses do fairly well in cleared areas, but in general hay and pasturage grasses are only fairly productive. The thrifty conditions of several peach orchards would seem to indicate that this fruit might be grown successfully on selected areas. In general the crop yields are probably lower than on any other type of the Hanceville series.

This land is held in large tracts by corporations, and little effort is made toward agriculture. The type is largely rented on a cash basis to those who depend mainly on work other than farming.

The type is valued chiefly for the mineral rights and the timber growth. The surface rights usually sell for $2 to $8 an acre.

The productiveness of this soil where cultivated could be improved by following the general rotations and treatment outlined for the Hanceville gravelly loam.

HANCEVILLE GRAVELLY LOAM.

The interstitial material of the soil of the Hanceville gravelly loam is a pale yellowish gray, mellow loam to silt loam, underlain at depths of 2 to 4 inches by a yellow to dull reddish yellow clay loam.

The subsoil, which extends from 8 to 36 inches, is a yellowish-red to reddish-yellow, crumbly silty clay. The gravel, comprising from 75 to 90 per cent of the soil mass, varies in composition. Where the type has been influenced by colluvial additions from near-by mountains, sandstone fragments and gravel predominate over gravel from other siliceous rock and shale. In the extreme northeastern part of the county the sandstone is largely displaced by flattish bits of shale with smaller quantities of angular chert particles.

Owing to the constant erosion, the textural difference in the parent rock within short distances, and the numerous faults and foldings, the type is not uniform over any extended area. Where erosion is not active the soil is deeper, darker gray in color, and usually sandier than elsewhere. Erosion has kept the soil largely removed in most places, so that the crumbly shale rock often approaches the surface or outcrops on slopes. As mapped the type includes small patches of Hanceville silt loam, stony loam, and fine sandy loam, and Dekalb silt loam and gravelly sandy loam, all of which are of insufficient importance to warrant separation. The gravel content varies mainly with the topography but to a minor extent with the character of the rock. In level areas, where the weathering processes have not been disturbed by erosion, the soil is practically gravel free.

The Hanceville gravelly loam is developed almost entirely in the northeastern part of the county, where it occurs in narrow valleys formed by the folding of the parallel mountain ridges such as New Hope Mountain, Little Oak Ridge, and Oak, Double Oak, and Double Mountains. About one-fourth of the type in the region of Vandiver and Sterrett consists of broad, open, undulating country. This flatter part has adequate drainage, while the rest of the type has good to excessive drainage. The loose, open structure, while favoring the rapid absorption of rainfall, also makes the soil droughty during dry periods.

Erosion is active, and many fields after a few years' cultivation have been abandoned and are now gullied wastes. The deserted farms on this type, however, are not due entirely to the lack of sufficiently large tillable areas, but in part to the constant drift of the population toward the near-by industrial centers.

About one-half of the type can be tilled, provided steps be taken to prevent or control erosion. About 60 per cent is forested with oak, hickory, gum, persimmon, and pine. Fields formerly tilled have grown up to old-field pine and scrubby oak. One-fourth of the type is now in cultivation.

Corn is the chief crop, and cotton, peanuts, velvet beans, sorghum, sweet potatoes, wheat, and hay, secondary crops. Cotton gives the best results, especially on the gravelly, dry ridges and slopes, and yields, considering the presence of the weevil, are satisfactory. Corn

ordinarily yields 10 bushels per acre, and peanuts 25 to 30 bushels. Sorghum does well in the moister situations, both as a forage crop and for sirup. Velvet beans produced experimentally have yielded nearly three-fourths ton per acre, and even larger yields have been obtained on the flatter areas. Other hay crops do well in like situations.

The usual tillage and fertilizer practices are followed except on parts of the type most remote from shipping points, where only small amounts of commercial fertilizer are used. On the rest of the type from 250 to 400 pounds of the usual 10-2-2 mixture is used per acre. During the last few seasons the lack of complete fertilizers, especially of the higher grades, has caused especial reliance to be placed on acid phosphate. The results reported are not as favorable as would follow the use of a complete fertilizer, but an earlier crop of cotton has been obtained which is an advantage in view of the prevalence of the boll weevil.

Recently cut-over lands of this type sell for $5 an acre, while the better improved farms, centrally located, bring as much as $25 an acre.

The improvement of this soil depends largely upon the adoption of a different system of farming. The soil has an excellent adaptation for peanuts, especially if limed, and the crop can be grown either for home consumption, for hay as a cash crop, or to supply fall pasture for hogs. In all cases it is a soil builder. Velvet beans when planted with corn will produce more forage and food to the acre than any other legume, and the crop can be used for hog and cattle pasturage from the first fall frost till spring plowing begins. Cotton should be confined to the drier portions of the type and be grown in rotation with cowpeas, corn, and velvet beans. Since the type occurs near two railroads and within a few miles of Birmingham, the ready market should encourage the production of meats and dairy products as well as fruits and vegetables, especially sweet potatoes, for all of which there is a steady demand.

HANCEVILLE FINE SANDY LOAM.

The soil of the Hanceville fine sandy loam consists of 6 to 8 inches of gray to pale yellowish-gray fine sandy loam or loamy, fine sand. The subsoil is a yellowish-red, reddish-yellow, or red-friable fine sandy clay or clay, often mottled with shades of yellow and bright red below 20 inches. Over much of the type, as northwest of Montevallo, the surface is strewn with waterworn quartz gravel,[1] with

[1] The gravel was identified by Dr. E. A. Smith as representing the remains of an overlying Carboniferous conglomerate, most of which has been weathered away, leaving the resistant quartz to seek lower levels. The occurrence of these pebbles in the subsoil gives the type a very close resemblance to the neighboring Coastal Plain soils. It is known that a considerable portion of this type was covered by the Coastal Plain submergence; any deposits made at that time have long since been removed. The waterworn pebbles are larger and more weathered than the average Coastal Plain pebbles a few miles to the south.

which are mingled angular pieces of sandstone and flat fragments of shale. The depth to bedrock ranges from 3 to 6 feet on the level, uneroded mountain tops to a few inches on slopes. In some places the outcropping rocks form the surface. Small areas of Rough broken land and of other members of the Hanceville series are included with the type.

The Hanceville fine sandy loam is developed exclusively in the western part of the county from Wilton and Montevallo northward, where it occupies elevations ranging from about 400 feet (the lowest in this region) to the highest, 825 feet. The lower areas consist of minutely dissected, choppy hills, as in sec. 6, T. 24 N., R. 12 E., west of Montevallo. On Pea Ridge west of Dogwood, in secs. 1 and 2, T. 22 S., R. 4 W., and in secs. 33 to 36, inclusive, in the township to the north, the type occupies a narrow, winding plateau-like ridge comprising the highest elevations in this southern extension of the Appalachian system. The type is excessively drained by an intricate system of wet-weather branches.

Both the soil and the underlying rock are easily eroded, and many fields formerly tilled are now rock outcrop or gullied wastes sparsely forested with old-field pine and scrubby oak. Terracing and other protective measures are seldom practiced.

At least one-fourth of the type on Pea Ridge is under cultivation, the remainder being largely in forests of pine, oak, hickory, and gum. The soil is warm and early. The acreage of cotton is small, but the yields, considering the weevil infestation are satisfactory. Corn, the main crop, ordinarily yields 10 to 25 bushels per acre, with an average of about 14 bushels. Oats are usually cut in the green state for hay, and the yields are estimated at about 20 bushels per acre. Little wheat is produced. Peanuts are estimated to yield 25 to 45 bushels per acre in addition to one-half ton of hay, sweet potatoes 100 to 150 bushels per acre, and velvet beans 1 ton in the pod. Summer apples and peaches do well, and there are several thrifty orchards on the type. Injury to fruit by spring frost is not of frequent occurrence.

Over much of the Hanceville fine sandy loam the long haul and the difficult grades of the roads almost prohibit the use of fertilizers. Where they are used the ordinary 10–2–2 mixture is applied, at the rate of 200 to 400 pounds per acre.

Land values range from $2 an acre for the rougher, recently cut-over areas, to $15 for the level mountain-top areas. There are a few areas of higher value in the northeastern portions. Much of the type is held for timber and coal by mining companies, and the farms are rented for cash.

Large mining camps near the areas of this soil bring large amounts of foodstuffs into the county each year. There is opportunity to supply some of this trade with home-grown products. Trucking, fruit growing, and other intensive farming could be developed over much of the type. The prices obtained at the mines are equal to those of the best markets in the State.

HANCEVILLE SILT LOAM.

In its typical development the soil of the Hanceville silt loam is a yellowish-brown silt loam, containing an appreciable amount of fine sand and having a loamy feel. Its depth averages about 6 inches. The subsoil is a yellowish-red, compact, brittle fine sandy clay or clay mottled with bright yellow. In washed places, especially, the surface is strewn with bits of shale and platy fragments of sandstone. The above typical description applies to but a small part of the type as mapped. Erosion is general over the type, and wherever it has been more or less active the depth of soil covering has been decreased to a corresponding degree. The underlying rock is reached in most areas at depths of 20 to 30 inches. Rock outcrops are not uncommon, especially on the brows of hills. In forested areas the percentage of fine sand in the soil is greater than elsewhere, and the soil is also darker and more loamy. On fairly steep slopes the soil is kept constantly removed, and the subsoil is turned by the plow. Included with the type are numerous small patches of various other soils belonging to the Dekalb and Hanceville series.

The Hanceville silt loam occurs on long, narrow divides, occupying their crests, and extending part way down their slopes toward the limestone valleys. The surface on the crests is gently rolling to hilly, but on the slopes it is moderately dissected by drainageways and gullies. South of Columbiana the type occupies low hills or gently sloping areas. Drainage is good to excessive, and erosion is active on all but the very smoothest or wooded areas.

The Hanceville silt loam is well settled, and most of the tillable areas have been cleared. The usual farm crops are grown, and the same farm practices are followed as on the Hanceville clay loam. Yields are somewhat higher and more dependable.

Land of this type near Shelby sells for $20 to $40 an acre. Areas in the more remote northern sections, even though of equal productiveness, sell for about one-half this price.

The suggestions given for the improvement of the Hanceville clay loam can be followed with equal benefit on this type.

HANCEVILLE CLAY LOAM.

As developed in Shelby County the soil of the Hanceville clay loam consists of 2 to 4 inches of brown to reddish-brown sandy loam

or loam, passing abruptly into a red, brittle, compact, smooth silty clay loam subsoil which grades into a bed of shale at depths varying from a few inches to 3 or 4 feet. The areas of deep soil lie on level divides, and of shallow soil on slopes, disintegrated shale often outcropping where the slope is steep. Scattered very generally over the surface are fine bits of shale, and small quantities of such material occur in the subsoil. Included with the type are some small patches of Hanceville gravelly clay loam, which are situated at the base of big hills, as at Columbiana Mountain, and are the result of long-continued colluvial action.

The Hanceville clay loam is developed in the southern and western parts of Shelby County. A typical area is mapped southward from Columbiana toward Shelby. As is the case with all the Hanceville and Dekalb soils, the topography is the result of the long-continued weathering of soft shales contorted and tilted at all angles, the result being numerous, low, rounded hills with sides sloping at angles of 30 degrees downward to narrow winding valleys 100 to 200 feet below.

Recently forested areas support a growth of oak, hickory, gum, and pine. Some of the most suitable areas are farmed. Cotton, corn, and oats are grown, and give a low average yield. The native grasses do well, and the pasturage is quite dependable.

Land of this type sells for $8 to $15 an acre, the price being influenced by the higher prices of surrounding types.

Much of this soil is rather rough for profitable agriculture. Pasture and forestry are its main adaptations. If seeded to Bermuda grass and bur clover it will provide good pasturage practically the year round. The prevention of erosion seems almost impossible over 75 per cent of its area.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Hanceville clay loam:

Mechanical analyses of Hanceville clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416165	Soil	2.4	2.5	0.8	8.2	30.4	30.5	25.1
416166	Subsoil	.2	.8	.5	3.6	9.5	22.2	63.7

DEKALB FINE SANDY LOAM.

The Dekalb fine sandy loam consists of a gray fine sandy loam passing at 2 to 4 inches into a pale-yellow fine sandy loam, which gives way quite abruptly to a yellow, brittle, crumbly clay loam. This extends to a depth of 36 inches or more without change except

for a slight mottling in the lower depths. Locally on the surface and in less abundance through the soil mass are flattish, chippy bits of grayish and dark-colored shale and larger fragments of sandstone from the underlying interbedded sandstone and shale.

The type is subject to considerable variation, due to topography. The soil may be 10 to 15 inches deep on gradual slopes and entirely lacking on the steeper slopes. Variations in texture from a silty loam to fine sandy loam are not uncommon, and on the crests of some of the ridges the soil is red enough to be classed with the Hanceville fine sandy loam. Rounded quartz gravel, residual from a bed of conglomerate overlying the Coal Measures, occurs in many places.

Typical areas of Dekalb fine sandy loam occur west of Helena and northwest of Glen Carbon. The surface is characterized by low, rounded hills, and drainage is good to excessive. Only a small proportion of the soil is tilled, the rest being held by corporate interests for the coal and timber.

This soil produces fine fruit and truck crops. It is easily worked and responds readily to manuring and the use of fertilizers. A ready market at good prices is available for all the farm products, and further extension of the market-gardening industry seems to be the most profitable use of the better areas of the type.

DEKALB SILT LOAM.

The Dekalb silt loam consists of a surface soil of yellowish-gray to gray silt loam, underlain at about 6 inches by a subsoil of yellow, friable silty clay loam which in protected areas extends to depths of 3 or more feet. Angular sandstone and chert fragments are found throughout the soil section. On slopes subject to erosion the depth to the disintegrated parent rock is much less than 3 feet, and outcropping ledges are not uncommon.

The Dekalb silt loam is confined to the regions adjacent to Helena. A typical area occurs in secs. 21 and 22, T. 20 S., R. 3 W., with other areas to the west. The topography is comparatively smooth, the type occupying the lower elevations, 500 to 600 feet above sea level. It has excellent drainage.

About three-fourths of the Dekalb silt loam has been cleared of the original forest growth, which resembled that on the other Dekalb soils. The usual farm crops are produced, and the yields are slightly higher than on the sandy loam. There are some good orchards on this soil, and areas located so as not to be affected by late spring frosts are known to be well adapted to peaches and apples. Pears ordinarily suffer from fire blight, although the Kieffer and Garber varieties when planted on eroded knolls in this soil make a slow, stocky growth and are more resistant to blight than are the more productive areas.

The suggestions made for improving the Dekalb sandy loam can be followed with nearly equal benefit on this soil.

MONTEVALLO STONY LOAM.

In its typical development the Montevallo stony loam consists of 2 to 4 inches of gray to yellowish-gray gravelly loam or sandy loam, of loose, open structure. The subsoil to an average depth of 24 inches is a dull-red brittle to tough silty clay loam, having a greasy feel and mottled with yellow, gray, and splotches of deep red in the lower section. Below 18 to 24 inches the subsoil passes abruptly into disintegrated shale, which in turn grades into a variegated, rather soft shale. On the steeper slopes the shale usually outcrops and forms small strips of Rough broken land and Rough stony land. The surface throughout the type, especially on the eroded slopes, is covered with flat and angular particles of shale and fragments of cherty rock and sandstone of varying sizes. In many places these are so numerous as to preclude cultivation.

The above description applies to the agricultural portions of the type, which are confined to a few ridges and flat areas not badly eroded. The main bodies lie to the northeast of Calera, north of Columbiana, and between Sterrett and Calcis, extending northeastward into St. Clair County. Here the type occupies the eroded watersheds of Yellowleaf Creek and Coosa River. The surface features consist of series of sharp-topped hills and narrow ridges, separated by narrow, steep-sided valleys, occupied by intermittent streams. The drainage is excessive. Erosion is so active that the accumulation of soil is prevented.

About 10 per cent or less of the type can be farmed safely, and only about 1 per cent is now tilled. Areas at one time farmed have been abandoned and are now grown up in old-field pine and scrubby oak, with hickory and sweet gum in less abundance. The type has some value for pasture, but is best suited for forestry. At present much of the volunteer tree growth is destroyed annually by fires.

The selling price of this land depends almost entirely on the stand of timber. Recently cut-over lands sell for $5 or less an acre. Large areas are owned by corporations, which draw their supplies of mine props, crossties, and charcoal from the forests. No effort is made to encourage the growth of valuable trees, and valueless scrub oak forms a considerable percentage of the second growth on cut-over areas.

MONTEVALLO SHALE LOAM.

The Montevallo shale loam consists of a gray to brown silt loam which at a depth of 4 inches changes abruptly into a reddish-yellow, brittle silty clay. The latter has a greasy soapy feel, due to the

presence of very finely divided mica flakes. At depths varying from 12 to 20 inches the subsoil passes somewhat suddenly into a disintegrated, varicolored shale, through which it is impossible to bore. Shale and sandstone fragments in most places form from 40 to 60 per cent of the soil mass, and interfere more or less with cultivation.

Considerable variations, such as exist in general throughout the Montevallo soils, resulting from differences in topography, exist in this type. In certain places, as at Wright School, east of Columbiana, in sec. 21, T. 21 S., R. 1 E., the type has all the characteristics of the Upshur shale loam, whose Indian-red color is suggestive of the color of brown iron ore. These areas, while a striking feature of the landscape, are too small and unimportant to warrant separation.

The type is minutely dissected by intermittent streams, and has good to excessive drainage. The surface is rolling to moderately hilly. There are numerous flat areas where the soil, and especially the topography, are strongly suggestive of limestone origin, but as no limestone is known to occur it is believed that the conditions are due to the horizontal weathering of the vertically tilted, homogeneous bedrock. The greater part of the type lies at elevations of 450 to 550 feet.

About 20 per cent of this soil is tilled, and from 30 to 35 per cent can safely be cultivated provided steps be taken to prevent erosion, which seems to be more active on the soils of this series than on many others of equal degree of slope. Most of the type is in forests of oak and pine. Broom sedge affords fair pasturage in the early summer months, and wild grasses furnish a fair growth till late fall.

Cotton and corn are the principal crops, with cowpeas, velvet beans and a little sorghum on the flatter areas and along incipient drainage ways. Corn yields as much as 10 bushels per acre in seasons of sufficient and seasonable rainfall. Cotton produces good average yields, maturing early, and thus escaping serious damage by the weevil. The type is rather too dry for corn.

Land values on this soil range from $5 to $10 an acre, depending largely on the timber stand, the cost of clearing, and the character of surface.

The great need of the type is the prevention of erosion, which is hastened by the loose nature of the thin mantle of soil and the shallow depth to bedrock. With the prevention of erosion and the restoration of organic matter, the yields could be materially increased. The very shallow soil should be plowed deeply enough to incorporate some of the heavier subsoil material, and thus afford a deeper zone for root development and increase the power of the soil to hold moisture.

A large proportion of the type should never be cleared. Many areas too steep for successful tillage have already been cleared, only

to be eventually eroded to a point where even their value for forestry is greatly diminished.

MONTEVALLO GRAVELLY LOAM.

The interstitial soil material of the Montevallo gravelly loam to a depth of 2 inches is a gray loam to a silt loam, having a friable structure and gritty feel. The subsurface stratum to a depth of 4 to 6 inches is a pale-yellow silt loam. The change from soil to subsoil is always sharp. The latter to depths of 10 to 24 inches is a bright yellowish red to reddish-yellow silt loam grading into a red to reddish-yellow, compact, brittle clay which contains some gritty sand. The subsoil becomes increasingly mottled with shades of rusty brown, gray, or yellow, and usually has a greasy feel, due to the presence of finely divided mica.

On the surface and in places, to a less extent, throughout the soil section are bits of soft shale, flattish fragments of hard sandstone, and angular fragments of chert ranging in size from coarse angular gravel to pieces several pounds in weight. The parent rock outcrops very frequently, and on the average it is covered with less than 1 foot of soil.

The Montevallo gravelly loam on account of its wide distribution and extreme diversity of topography is not a uniform type. Included with it, as mapped in Shelby County, are considerable areas, in the aggregate, of Montevallo stony loam, silt loam, and shale loam and small areas of Rough stony land and Rough broken land. These occur for the most part in small, irregular patches or narrow strips too unimportant to map separately. The included silt and shale loams and colluvial accumulations at the base of slopes and at the heads of the smaller drainageways, where the soil closely resembles the Dekalb shale loam, are more favorable to agriculture, being more nearly level than the typical Montevallo gravelly loam.

Areas of Montevallo gravelly loam are found from Calera northward to Pelham and northeastward to the extreme northeastern corner of the county. Large typical areas occur northwest of Columbiana. Most of the type lies at elevations between 500 and 600 feet above sea level. The surface is thoroughly dissected, ranging from rolling to hilly. Active erosion is responsible for the low percentage of tillable land, the soil being removed in many cases as rapidly as it is formed. Only about 5 per cent of the type is annually tilled, and on only about 20 per cent should farming be attempted, so serious is erosion where land is cleared and plowed.

The type is sparsely inhabited. Many farms have been abandoned and now afford inferior pastures or are in forests of scrub oak, old-field pine, and gum. At present large areas are held by

industrial corporations solely for their timber. Annual fires retard or prevent the growth of young trees.

The general farm crops of the county are produced. Yields are as a rule below the average for the county, but in very dry seasons cotton does better than on many of the more productive soils. A few small orchards of apples, pears, and peaches have made a good growth, and the yields are good considering the lack of pruning, fertilizing, and spraying. The clearing of additional areas for tillage would apparently not be advisable except in favored locations and even there the land must be handled carefully to prevent erosion.

This land sells for $5 to $10 an acre or more where the stand of timber warrants. The culture of tree fruits might be profitable, as much of the type is near shipping points.

MONTEVALLO SILT LOAM.

To depths ranging from 4 to 6 inches the Montevallo silt loam is a light-gray to brown, friable silt loam. This surface layer passes abruptly into a reddish-yellow or yellowish-red, compact, brittle silty clay or clay subsoil. At depths of 15 to 20 inches the color becomes lighter, and faint mottlings of yellow and red or bright red appear. A small quantity of shale and sandstone gravel is scattered throughout the soil section. On gentle slopes where there has been some colluvial accumulation the soil may be 15 inches deep. Disintegrated rock appears in most areas at depths less than 3 feet below the surface, although the parent rock may be covered to depths of 5 feet or more.

In many places oxidation and weathering of the Montevallo shale, which is the source of material of this soil, have proceeded to such a degree that only a careful tracing of the geological origin shows the difference between this type and the similar Christian and Hagerstown soils. In the southern part of the county the type resembles the Waynesboro soils. Small areas of Montevallo gravelly loam and shale loam are included with it as mapped.

The Montevallo silt loam is scattered in small areas, for the most part 150 acres or less, in a belt extending from Wilton to the northeastern corner of the county. One of the larger typical areas lies between Aldrich and Dogwood. The topography is rounded to undulating. Most of the type lies 20 to 50 feet above the first bottoms. It is, however, not a terrace but a residual soil. Drainage for the most part is good, except in some seepage areas.

This type is not extensive, but about one-third of it is under cultivation, and at least three-fourths can be cultivated. The remainder is in forests of oak and in less degree old-field and shortleaf pine and gum. Good farmers on this soil ordinarily obtain

yields of 1 ton of millet, 1½ tons of pea-vine hay, 2 tons of Johnson-grass hay, 8 bushels of wheat, and 15 to 20 bushels of corn or oats per acre. For growing cotton under weevil conditions this soil is held in high esteem, since it is early, fairly warm, and adequately drained. The usual methods of crop rotation and fertilization are followed.

The land is held at $15 to $20 an acre, which is somewhat higher than the prices asked for adjacent upland soils.

The Montevallo silt loam is adapted to the growing of early-maturing fruits and vegetables, as well as the staple crops of the region. Protection from seepage waters is needed in places. Liming would prove beneficial, and with the use of lime the growing of clovers on the better areas could be safely attempted.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Montevallo silt loam:

Mechanical analysis of Montevallo silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416131	Soil	7.4	9.6	3.6	12.4	14.0	40.3	12.5
416132	Subsoil	3.1	4.2	1.5	4.4	3.8	21.2	61.8

CHRISTIAN GRAVELLY LOAM.

The soil of the Christian gravelly loam ranges from a grayish-brown to brown loam to fine sandy loam. The subsoil is a reddish-yellow to red, friable clay loam, which becomes heavier at about 24 inches and is usually mottled with yellow. Angular sandstone and chert gravel occurs on the surface and throughout the 3-foot section. The gravel and the relatively high percentage of fine sand give the soil a looser and more porous structure than that of the loam type which has the same derivation. The topography of the Christian gravelly loam varies from undulating to rolling, and the drainage is always good. The type is inextensive, and occurs only in the eastern part of the county. A typical area is mapped in secs. 2 and 3, T. 20 S., R. 2 E., south of Harpersville.

Like the loam type this soil is well suited to the general farm crops. It is easy to cultivate and does not suffer from drought as quickly as the associated Montevallo gravelly loam. The same system of farming is practiced as on the Christian loam, and the yields are practically the same, possibly a little higher. The land has the same selling value as areas of the Christian loam. Deeper plowing, liming, the use of cover crops, and the growing of legumes are needed to restore this type to its full productiveness.

CHRISTIAN LOAM.

The surface 4 to 6 inches of the Christian loam ranges from a gray to light-brown, friable loam, containing a low percentage of very fine sand. The subsoil is a reddish-yellow to yellowish-red, moderately friable clay, usually becoming compact at 20 inches, below which depth mottlings of gray, yellow, and bright red occur. Angular chert and sandstone gravel occurs in small amounts throughout the soil section. The type as mapped includes small, unimportant areas of Hagerstown loam, which is a very similar soil.

The Christian loam is found throughout the limestone valleys. It is most extensive and occurs in its most typical development in Ts. 19 and 20 S., R. 2 E. The topography is undulating to gently rolling. The type lies slightly higher than the Locust silt loam and lower than the Decatur clay loam. It is well drained and does not wash as badly as the Decatur soil.

The larger part of the type is under cultivation. It is generally considered equal to the Hagerstown loam in agricultural value. The original forest growth consisted of oak, hickory, walnut, poplar, black gum, and shortleaf pine. The percentage of waste land is low.

This soil is well adapted to farming. It is easily worked and responds readily to good treatment. The principal crop grown is cotton, with wheat, oats, velvet beans, cowpeas, peanuts, and sorghum of less importance. Good yields of cotton have been obtained. Corn yields 15 to 25 bushels, wheat 10 to 15 bushels, oats 20 to 25 bushels, and pea-vine hay 1½ to 1¾ tons per acre. Johnson grass, lespedeza, and other native grasses do well and furnish good hay and pasturage. Peaches and garden truck do well. Little attention is given to crop rotations, and the supply of humus is low.

The selling price of this land ranges from $15 to $25 an acre.

The suggestions made for the upbuilding of the Hagerstown loam can be followed with benefit on this type.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Christian loam:

Mechanical analyses of Christian loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416147	Soil	0.9	4.2	4.7	17.4	23.3	41.4	8.0
416148	Subsoil	.6	2.4	2.4	9.3	15.2	45.2	24.9

TALLADEGA SLATE LOAM.

The interstitial soil material of the Talladega slate loam consists of a very shallow mantle (usually less than 3 inches) of dark-gray

loam, having a characteristic soapy or greasy feel. The interstitial material of the subsoil to a depth of 12 to 20 inches is a reddish-yellow, loose, friable loam to silt loam.

The texture of both soil and subsoil is entirely subordinated by the presence of 70 or 80 per cent of slaty fragments which have a luster when rubbed with the fingers. The depth of the soil and subsoil mantle depends entirely on the topography. Over much of the type the surface consists of little more than partly disintegrated slate rock, and throughout the type the bed rock seldom lies at depths greater than 15 inches.

The Talladega slate loam is developed in the extreme southeastern part of the county, south of Shelby and extending eastward to the Coosa River. Most of the type lies at elevations of 450 to 500 feet above sea level, and has all the characteristics of mountains in miniature.

About 2 per cent of the type is tilled, and only a small proportion of it can be safely cropped. The production of railroad ties, and wood for making charcoal and for other purposes are the chief sources of income from this soil. Small patches of corn, sweet potatoes, and sorghum are grown on the bottoms. Oak, shortleaf pine, and some longleaf pine make up the principal second-growth timber. The type is largely held for industrial purposes and the value is dependent solely on the forest growth. Some deserted farms produce fair broom-sedge pasture early in the summer, but the utilization of the type seems almost entirely a problem of forestry.

ORANGEBURG FINE SANDY LOAM.

To a depth of 6 inches the Orangeburg fine sandy loam is a grayish-brown to brown, fine sandy loam, underlain by a red compact, but somewhat friable, heavy clay loam extending to depths of 3 to 6 feet with little change save in color, which becomes lighter in the lower part. Fragments of chert are rarely seen, but waterworn quartz or chert pebbles are scattered on the surface in places and in lesser amounts in the subsoil.

An eroded area mapped as this type on the Chilton county line, covering about one-fourth square mile, would, if of sufficient extent, be classed as the Greenville fine sandy loam.

The subsoil of the Orangeburg fine sandy loam resembles that of the compact phase of the type as mapped farther south in the State, and appears strikingly like the subsoil of portions of the Decatur fine sandy loam. There is no mistaking the soil as of Coastal Plain origin, although the subsoil may be of reworked material of local origin.

The Orangeburg fine sandy loam is limited to several areas south of Montevallo, on and near the Chilton County line, which repre-

sent extensions of large areas in Chilton County, in which the type occupies 12 per cent of the area. In Shelby County it represents the northwest extension of Coastal Plain soils in this region. Its elevation is about 550 feet. The topography ranges from undulating to hilly, the hills being low and well rounded, in striking contrast to the sharp topography of the country to the north. Except in a few lime sinks, the drainage is good.

About 80 per cent of the Orangeburg fine sandy loam is tilled, and at least 90 per cent is tillable. Corn yields 10 to 20 bushels per acre and oats 20 to 25 bushels. Sorghum and velvet beans give good results. Garden vegetables do especially well as do apples and peaches. In many other counties of Alabama the Orangeburg fine sandy loam has been found to produce good yields of the highest colored and finest flavored Elberta peaches, and there seems no reason why the commercial cultivation of this fruit would not be practicable on this type in Shelby County, provided late spring frosts do not prevent the setting of fruit. Apples also do well, especially summer and fall varieties.

Land of the Orangeburg fine sandy loam is held at $25 to $40 an acre, and the price is advancing.

This is one of the extensive dependable soils of the Southern Gulf States. With an increase in the organic content the type could be made one of the best trucking soils in Shelby County. Local canning factories would take part of the produce and there are excellent markets in nearby mining camps and cities.

RUSTON FINE SANDY LOAM.

The Ruston fine sandy loam is characterized by a gray fine sandy loam, underlain at 2 to 3 inches by a yellowish fine sandy loam which gives way at 10 inches to a reddish-yellow or yellowish-red fine sandy clay to clay subsoil, in its lower part sparingly mottled with shades of yellow and gray. In many respects the subsoil resembles that of the Frederick fine sandy loam, of limestone origin, although the Ruston fine sandy loam is a sedimentary soil derived from unconsolidated marine deposits. In this area, however, the deposits are believed to be composed largely of reworked material of presumably local origin, which may account in part for the similarity. Occasional waterworn quartz pebbles occur, but these doubtless come from the Carboniferous conglomerate of the adjacent Appalachian highlands. Like the associated Orangeburg fine sandy loam, this type is not typical of the soil as it occurs in more southern parts of the Coastal Plain.

The Ruston fine sandy loam in this area occurs near the northern boundary of the Coastal Plain in the southern part of the county.

The topography is undulating and gently rolling, with a few depressions representing lime sinks.

The type is about as productive as the Orangeburg fine sandy loam, although it is doubtful if it is as well fitted to the production of such special crops as tomatoes and peaches. Aside from this, it has about the same adaptations as the Orangeburg fine sandy loam, and can be improved by the same means.

WAYNESBORO GRAVELLY LOAM.

To a maximum of 6 inches the Waynesboro gravelly loam is a light-brown to reddish-brown, rather friable loam. This layer is underlain by a compact but moderately friable red clay which extends to a depth of several feet without apparent change. Scattered over the surface and mingled to less extent with the soil mass are bits of waterworn quartz and chert gravel, and in a few places, as in sec. 1, T. 24 N., R. 15 E., the surface is thickly covered with bowlders weighing from 5 to 10 pounds, composed of quartz, quartzite, and metamorphic rocks. In all important respects the type bears a close resemblance to the Orangeburg gravelly loam as mapped in the Coastal Plain counties to the south.

The Waynesboro gravelly loam occupies rolling to moderately hilly terraces along the Coosa River, though erosion has destroyed the original terrace configuration. The drainage is good to excessive.

About 75 per cent of the type is tilled. If cleared and freed from stone at least 95 per cent could be cultivated. Oak and pine are the principal trees. It is difficult to give accurate yields for this soil, but it seems safe to assume that they are slightly higher than on the other gravelly types of the county. The methods of fertilization and tillage and the farm practices do not differ materially from those on similar types. The soil is known to be well suited to cotton. In general it can be improved by the same means as the other gravelly soils.

WAYNESBORO FINE SANDY LOAM.

The surface soil of the Waynesboro fine sandy loam consists of a dark-gray to brown, mellow fine sandy loam, from 4 to 8 inches deep. The change from soil to subsoil is abrupt, the latter being a reddish-brown to yellowish-red, friable compact silty clay to clay, which continues without noticeable change to a depth of 3 feet. Soft, brown iron concretions and waterworn quartz gravel are present in most areas.

This soil is mapped in five areas on the second terraces of the Coosa River, the largest at Errata station on the Central of Georgia Railway, another at Mallory on the Southern Railway, two small areas between these two, and a small area east of Shelby. The topography varies from hummocky to gently undulating, and the

drainage is adequate. Over 95 per cent of this type is tillable and about one-half is now cultivated. The rest is covered with old-field pine, oak, and persimmon. Broom sedge makes a good growth, and much of the uncultivated area is used for pasture. It is a dependable and highly productive soil. The common farm crops are produced, and the yields are above the average.

For the upbuilding of the type, liming, the addition of vegetable matter, and deeper tillage are needed. Power-propelled machinery could be used advantageously. Located as it is on the main lines of railroads but a few miles from Birmingham, the opportunities for the marketing of all crops are unusually good. The soil is well adapted to sweet potatoes, watermelons, and market garden crops in general.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Waynesboro fine sandy loam:

Mechanical analyses of Waynesboro fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416135	Soil	2.0	4.5	3.0	27.0	32.9	25.0	5.3
416136	Subsoil	.3	1.1	.9	13.1	21.1	26.1	37.2

WAYNESBORO CLAY LOAM.

The surface of the Waynesboro clay loam is a reddish-brown to dull-red clay loam, 4 to 6 inches deep. This is underlain by a deep-red, rather compact clay. The lower subsoil in some places appears to be influenced by the underlying limestone. Locally the surface 1 to 3 inches is a heavy fine sandy loam.

This type is developed on the second bottoms and terraces along the Coosa River, in a few small areas from Buzzard Island south to the county line. Its surface is undulating to gently rolling, and drainage is well established.

Practically all of this soil is under cultivation, and good yields of wheat, corn, oats, and hay are obtained. It is one of the strong and productive soils of the county. It is not as easily tilled as the associated lighter textured soils, but when plowed deeply and thoroughly pulverized it works into good tilth. It responds readily to the addition of barnyard manure and other organic manures, which in addition to supplying fertilizing elements considerably improve the physical condition of the soil.

Owing to its small extent, this type is held in conjunction with the adjoining soils, and no definite value can be accurately placed upon it.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Waynesboro clay loam:

Mechanical analyses of Waynesboro clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416127	Soil	0.2	0.4	1.6	21.0	20.6	45.4	9.9
416128	Subsoil	.2	.7	1.0	11.9	16.2	42.1	27.6

HOLSTON SILT LOAM.

The soil of the Holston silt loam is a gray to light-brown silt loam, about 6 inches deep. The subsoil is a yellow, compact silt loam which passes abruptly into a silty clay loam, in many places showing mottlings of dull red or yellowish red in the lower part of the 3-foot section. In a few localities, especially around Mallory, the soil contains considerable gravel, mainly small angular chert particles. Included with this type are small areas of Holston fine sandy loam, which is a gray fine sandy loam underlain by a yellow fine sandy clay frequently mottled or streaked with gray or brown. In a few places the soil is a brown loam having a dull-red, friable subsoil.

The Holston silt loam is developed on the second bottoms and higher terraces of the Coosa River and the larger creeks. A typical area lies southwest of Montevallo on Shoal Creek, small areas on Yellowleaf Creek, and several areas along the Coosa River in the eastern side of the county. The topography is flat to gently sloping, but the surface drainage is good. The more sandy areas occupy slightly higher positions than the typical silt loam, and owing to their friable structure are perhaps a little better drained.

About 75 per cent of this type is under cultivation, while practically all of it lies favorably for agricultural use. Corn yields 15 to 30 bushels, oats 20 to 25 bushels, wheat 12 to 14 bushels, crab-grass hay about one-half to three-fourths ton, and cowpea hay 1 to $1\frac{3}{4}$ tons per acre. Yields on the sandy areas are slightly lower, but such areas are well suited to the production of sweet potatoes, peanuts, velvet beans, and vegetables. The type affords excellent pasturage.

For the improvement of this soil deeper plowing, more thorough preparation of the seed bed, and the incorporation of barnyard manures or green-manuring crops are recommended. The soil readily responds to good treatment.

POPE FINE SANDY LOAM.

The soil of the Pope fine sandy loam consists of 2 inches of gray fine sandy loam, underlain to a depth of 4 to 6 inches by a grayish-

yellow or brownish-yellow fine sandy loam. The subsoil is a yellow or brownish-yellow, friable fine sandy clay, extending to 36 inches or more without marked change in color or texture. Along the banks of the larger streams and elsewhere, where drainage permits, the soil is a brown to reddish-yellow fine sandy loam, underlain by a subsoil of reddish-yellow or yellow fine sandy clay, mottled with red.

Small sandstone fragments and bits of shale are numerous throughout the soil section in areas lying along the smaller streams, where some colluvial materials have been accumulated. Along the smaller branches also there is considerable textural variation in the fine soil material, due to the differences in texture of the adjacent upland soils. Along the larger streams the soil is heavier near the uplands and more sandy along the stream channels.

The Pope fine sandy loam is considered one of the best of the bottom soils, and probably 80 per cent of it is cleared and under cultivation. It is a warm, early soil, and can be tilled under a wider range of moisture content than most of the overflowed soils of the area. Corn is the principal crop, followed by sorghum, cowpeas, and peanuts. Oats and wheat have given good results, but they are seldom grown at present. Sweet potatoes, cantaloupes, and watermelons are known to yield well and are produced for home use. Hay crops, especially crab grass following an early intertillage crop, usually yield from one-half to three-fourths of a ton of hay per acre. Straightening the water courses and otherwise providing adequate drainage would make crops more certain.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Pope fine sandy loam:

Mechanical analyses of Pope fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416163	Soil	1.1	5.3	6.9	41.1	18.5	20.5	6.4
416164	Subsoil	.3	2.2	1.7	10.1	16.0	46.4	23.3

POPE SILT LOAM.

As developed in Shelby County the surface soil of the Pope silt loam consists of 6 to 8 inches of a yellowish-gray to brown, friable silt loam, containing a noticeable amount of very fine sand. The subsoil is a yellow to bright-yellow, compact silty clay loam, mottled at 30 inches with gray and rusty brown, the latter color being caused by iron stains from soft iron concretions.

The soil usually blends gradually in texture and color with the subsoil, and there may be considerable variation in the depth of

the soil, depending on the nearness to streams and the swiftness of the depositing current. In the better drained areas the subsoil is reddish brown and more friable than where the drainage is poor. The Pope silt loam as mapped includes small depressed areas of Atkins soils, which are less well drained and of a lower agricultural value, and also a considerable acreage of Huntington silt loam, which is better drained. The type occurs along many of the streams rising in sandstone and shale areas of the county, and is not markedly influenced by soils of limestone origin. Typical areas are found on Kelly Creek and Bear Creek in the northeastern part of the county, and on Waxahatchie Creek and Camp Branch to the southwest of Columbiana.

The surface is flat and the type normally is overflowed several times each year, but the overflows are of short duration, and the soil is fairly well drained for a first-bottom type. Because of its wide distribution and productiveness about 60 per cent of its area is tilled, the remainder being either in Bermuda-grass or broomsedge pasture or covered with a forest of sycamore, sweet gum, willow, ash, ironwood, and water oak.

Higher lying, well-drained areas of the Pope silt loam produce good yields of wheat and oats, which crops withstand short inundations, especially in the dormant season, without material injury. The heaving of the soil during severe winter freezes frequently diminishes grain yields. Corn does exceptionally well, as do also sugar cane, sorghum, and hay crops. Acreage yields of 20 to 50 bushels of corn, 20 to 40 bushels of oats, 12 to 20 bushels of wheat, and 100 to 200 gallons of sirup are reported, the average lying nearer the minimum stated.

The spring overflows normally subside in time to allow the seasonable planting of all crops early in April, and the June rains normally do little damage. Fertilizers are seldom used, although light applications of potash and phosphate have been made, with good results.

This land is sold in connection with less valuable soils, and no exact prices are obtainable.

Artificial drainage is needed in the lower areas lying adjacent to the upland, in which seepage waters collect. The straightening of the water courses would reduce the chance of overflow, and the construction of tile drains and open ditches would keep the soil in better condition in seasons of heavy rainfall. Liming would no doubt improve the type as a whole, and especially the lower parts that frequently are covered with stagnant water for some time.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Pope silt loam:

Mechanical analyses of Pope silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416107	Soil	0.1	1.2	1.9	15.3	19.2	47.5	14.6
416108	Subsoil	.2	1.2	1.9	13.2	15.5	47.0	21.0

ATKINS SILT LOAM.

The soil of the Atkins silt loam is a gray to dingy-gray silt loam mottled with pale yellow, 7 inches deep. The subsoil is a mottled gray and yellow, compact silt loam to silty clay loam, with a bluish tinge. Around the heads of small streams the soil is 10 to 15 inches deep, owing to colluvial accumulation, and contains some soft shale and sandstone gravel. Soft iron concretions the size of buckshot are numerous in the soil and subsoil. Included with the Atkins silt loam are about 600 acres of Holly silt loam, which bears a close resemblance, differing in being derived from materials washed from the limestone valleys and in having slightly poorer drainage.

The Atkins silt loam is an inextensive soil. Its greatest development is along Yellowleaf Creek in T. 20 S., R. 2 E. Numerous scattered areas occur along incipient drainageways throughout the sandstone and shale regions.

The surface is flat and subject to frequent overflow as well as to seepage. The drainage is poor and the soil wet and clammy, with a lifeless appearance, due in large part to conditions of alternate extreme wetness and dryness.

The type for the most part is in pasture and forest. The tree growth consists of white oak, sweet gum, water oak, birch, beech, swamp maple, bay, and holly. Sedges, rushes, broom sedge, lespedeza, and other wild grasses are important plants of smaller growth. Grazing is good for nearly eight months in the year.

Few areas have been cleared. On these sorghum and corn are grown to good advantage. With artificial drainage, liming, deep fall plowing, and protection from overflow, the type could be made a fairly dependable soil.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Atkins silt loam:

Mechanical analyses of Atkins silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
416137	Soil	0.7	0.6	3.3	4.5	12.4	64.4	16.7
416138	Subsoil	.2	.2	3.3	4.7	13.5	59.5	21.6

ABERNATHY SILTY CLAY LOAM.

The surface 8 to 15 inches of the Abernathy silty clay loam ranges in color from red to reddish brown, the red areas being a silty clay loam and the brown portions a clay loam. The subsoil is a gray to steel-gray, sticky, plastic silty clay, often having a bluish cast in the lower part, especially below 30 inches. Part of the type bordering the upland is of colluvial origin from the Decatur and Hagerstown soils. Soft iron concretions are common in this soil.

The type is confined mainly to the headwaters of small streams originating in areas of Hagerstown and Decatur soils, and to limesinks having good subterranean drainage. Although subject to several overflows annually, it has better surface drainage than most of the first-bottom types, but the drainage of the subsoil is markedly inferior.

The Abernathy silty clay loam is one of the strongest bottom soils in Shelby County. Corn, oats, wheat, sorghum, and millet do exceptionally well, as do also pasture and hay crops. Corn may yield as much as 50 bushels per acre, and 25 bushels is a fair average. Oats yield 20 to 40 bushels, and wheat 10 to 15 bushels, the yields depending largely upon the seasonal conditions and the duration of overflow.

Yields could be easily increased by artificial drainage supplemented by liming and deep fall plowing, which would reduce the tendency to bake in dry seasons and conserve moisture by making the structure more pulverulent.

ROUGH BROKEN LAND.

Under the classification of Rough broken land are included extensive areas whose topography is such as to make cultivation impracticable. The soil is derived largely from the carboniferous shales and sandstones. These rocks are tilted at all angles, and being of a soft, shaly nature, interspersed with layers of harder, more resistant sandstone and conglomerate, have resulted in a rather unusual diversity of erosional forms, in addition to the larger synclinal forms resulting from crustal movements.

The lower lying areas in the mining regions to the north of Aldrich, for example, are mainly the result of long-continued erosion which has carved an interminable succession of narrow, broken ridges, knobs, and peaks, all separated by narrow, steep-sided valleys whose streams are dry for almost the entire year, but become torrents during the occasional deluges. The elevations range from 500 to over 800 feet above sea level.

The synclinal mountains, whose names are given on the soil map, while equally nonagricultural, have a different system of topography and are on the whole rougher. These mountains consist of an elongated axis extending in a northeast-southwest direction. The length may be from 3 to many miles and the width at the base

from 1 to 3 or more miles. The sides are precipitous, and the apex rarely wide or continuous enough for a wagon road. Very often there are two or more parallel ridges separated by steep, deep, narrow valleys traversed by swift streams. These may be bordered by areas of tillable soil too small to map, usually of the Pope series. The elevation of these mountains formed by transverse foldings of the rocks ranges from 750 to 1,400 feet above sea level.

There are some stones on the surface of the Rough broken land, but they are in the main confined to elongated outcrops skirting the face of a valley or the rim of a retreating escapment. Included with this classification are minor areas of Rough stony land.

The tillable area does not usually exceed 10 to 25 acres to the square mile, and the arable soils usually occur in small isolated patches and are of low agricultural value. In the coal-mining regions the miners usually have small gardens on lands furnished and fenced by the coal corporations. The pasturage is very scanty. On the better areas cows can do fairly well for 7 months or less in the year, but where the land is covered with pine forests there is no pasturage. The best areas were once covered with a fine stand of timber. The occurrence of fires and the lack of effort in encouraging the growth of the more valuable species of trees are responsible for the present growth of the less valuable species. Judging from the wide range of species still prevailing, the size attained by full-grown trees, and the rapidity with which areas are reforested with trees of value even with no care and in spite of destruction by fire, it is probable that the Rough broken land will find its best utilization in forest culture. The species of trees are practically the same as on the Rough stony land.

ROUGH STONY LAND.

Rough stony land includes those parts of the county of which at least 95 per cent, and in some cases the entire area, is unfit for cultivation owing to the extreme roughness of surface, the prevalence of stones and bowlders, and the many extensive rock outcrops. The small patches of soil, usually comprising an acre or less, represent the Hanceville, Dekalb, Clarksville, Frederick, Hagerstown, and Montevallo series and one or more bottom-land types.

Rough stony land is confined to the northern and eastern parts of the county, and largely represents mountains having considerable rock outcrop and lower lying areas of complete dissection. Only a small part of the type is unconnected with the synclinal mountains whose character is given in the description of the Rough broken land. In addition to the general topographic ruggedness, all the steep surfaces are covered with stones and rocks which are often so rough as to make walking difficult, and whose profusion adds to the

general wildness and picturesqueness of the region. Elevations range from 750 to about 1,400 feet above sea level.

The Rough stony land is held largely by industrial corporations and is valued for the mineral rights and timber resources. There has been a general rise in values during the last decade. The virgin stand of timber has everywhere been removed, as well as a less valuable second growth. Longleaf pine, shortleaf pine, old-field pine, and cedar are most common in dry areas. The longleaf pine does not thrive on limy soils, and the cedar is confined to glades and limestone escarpments. There are numerous hillside springs and wet places even at rather high altitudes, and these as well as the bottom lands support a growth of willow, ironwood, birch, mulberry, bay, holly, sycamore, swamp maple, black gum, and sweet gum, with sedges, rushes, wild grasses, and some broom sedge. Among the more common trees of the moderately dry uplands may be mentioned hickory, beech, a few chestnut and chinquapin, poplar, maple, dogwood, persimmon, gum, oaks, haw, wild plum, and wild cherry. Oak and pine comprise over one-half of the tree growth. The longleaf pine is gradually disappearing, to be followed by less valuable species of pine and scrub oak, the latter of very little value.

The better areas of Rough stony land furnish some goat pasture, but the opportunities for cattle grazing are very limited. Yields of the staple crops, where they can be grown, are low, although some peach and apple trees were seen, on what might have been mapped as Frederick stony loam, that were very promising. The production of square timber, mine ties and props, and charcoal has been the leading industry. Timber culture according to the most approved methods of forest management is the best means of using the Rough stony land.

SUMMARY.

Shelby County is situated slightly to the north of the geographical center of the State, 60 miles north of Montgomery, the State capital, and 20 miles south of Birmingham, the largest city. It comprises an area of 803 square miles, or 513,920 acres.

The topography ranges from mountainous and rough to rolling and flat. There is the widest diversity in topographic forms. The rate of fall of the streams varies from a few inches to the mile in the case of the larger streams to 60 to 100 feet in the smaller branches. Nearly all of the county lies well above the 500-foot level, and the average elevation of the farming lands is probably between 500 and 650 feet.

The industries of the county in addition to agriculture, which is the most important, are the mining of coal and iron and the manufacture of cotton goods, lumber, charcoal, and lime.

The county has good railroad facilities, no farm being more than 10 miles from one or more shipping points to first-class markets. Good highways are few, but there is an abundance of chert and limestone suitable for road building, and annual improvements are being made.

The climate and rainfall are equable. The mean annual temperature is 63.4° F., and the mean annual precipitation 49.48 inches. In 1904, the driest year of record, 34.32 inches of rain fell, and in 1900, the wettest year, 76.21 inches. The climate favors the development of a diversified system of intensive agriculture. High prices are readily obtained for all farm produce, and good markets are within a few hours' reach by express or one day by freight.

The principal towns are Wilsonville, Calera, Siluria, Vincent, Columbiana, and Montevallo, the latter an educational center. No place has a population of 2,500 and the entire population of the county, numbering 26,949 in 1910, is classed as rural. The population has shown a gradual increase for the last 40 years and now averages 33 people to the square mile or about 143 for each square mile of tillable soil.

About two-fifths of the area of the county is tillable, the remainder being fitted for forestry or pasturage. Owing to erosion, considerable areas that were once tilled have been abandoned. The extensive corporate ownership of land tends toward tenant farming, and tenancy is on the increase, nearly one-half the farmers at present being tenants. The forests consist of old-field pine, shortleaf pine, and some longleaf pine, with several species of oak, poplar, and gum.

The staple crops are corn, cotton, wheat, and oats, with some sorghum, peanuts, velvet beans, sweet potatoes, Irish potatoes, watermelons, and other vegetables. Industrial development has stimulated trucking and general produce farming to some extent.

Systematic, well-devised rotations are not in general use, but are beginning to be followed since the advent of the cotton weevil. A considerable expenditure is made for commercial fertilizers. Some improved tillage implements are in use, but in general the work stock is too light to till the heavy soil properly.

Average land values range from $2 to $35 an acre. Values have nearly doubled in the last 10 years.

The soils of Shelby County are divided into 13 upland series, including 27 types, and 5 alluvial series, comprising 8 types, in addition to the miscellaneous classifications Rough stony land and Rough broken land.

The upland soils are derived from the weathering in place of limestone, chert, shale, and sandstone, and the terrace soils by the deposition of sediments when the streams flowed at higher levels

with respect to the uplands than at present. The first-bottom soils are still in active process of deposition and are subject to annual change.

The residual limestone soils are classed in the Decatur, Hagerstown, Frederick, Clarksville, and Colbert series. The Decatur clay loam is the reddest soil of the area, next in strength of color being the Frederick, followed by the yellow Clarksville. These are all well-drained, productive soils. The Colbert silt loam occupies flat valley bottoms and has imperfect drainage. The Clarksville and Colbert soils are derived from less pure limestones than the Decatur and Frederick. The Locust silt loam is derived from a mixture of materials from interbedded limestone, sandstone, and shale, some areas being in part colluvial. The Christian soils are also derived from shale, sandstone, and limestone, but have reddish to red subsoils.

The Dekalb series is distinguished by a yellowish-red to yellow subsoil, whereas the related Hanceville has a red subsoil. Both series are derived from shale and sandstone of the Coal Measures. The Talladega slate loam is derived from a feebly metamorphosed shale or slate, and somewhat resembles the soils of the Piedmont found a few miles to the east. The Coastal Plain soils, the Orangeburg and Ruston fine sandy loams, are of small extent, but they have a wide range of crop adaptation. They are especially suited to peaches.

The terrace soils are classed in the Waynesboro and Holston series. They are of small extent, but valuable farming soils. The alluvial first-bottom soils, consisting of the Pope fine sandy loam and silt loam, the Abernathy silty clay loam, and the Atkins silt loam, are not of wide extent, but they are important soils, as nearly every farm contains a larger or smaller area on which corn, sorghum, or hay is grown.

Rough broken land and Rough stony land are the most extensive types mapped. These areas are topographically unfit for farming, but they are suited to forestry and to a small extent for pasture.

All the upland soils are in need of liming, deeper plowing, and the adding of vegetable matter. Occasionally drainage is needed. Steps to prevent erosion are highly necessary.

○

[PUBLIC RESOLUTION—No. 9.]

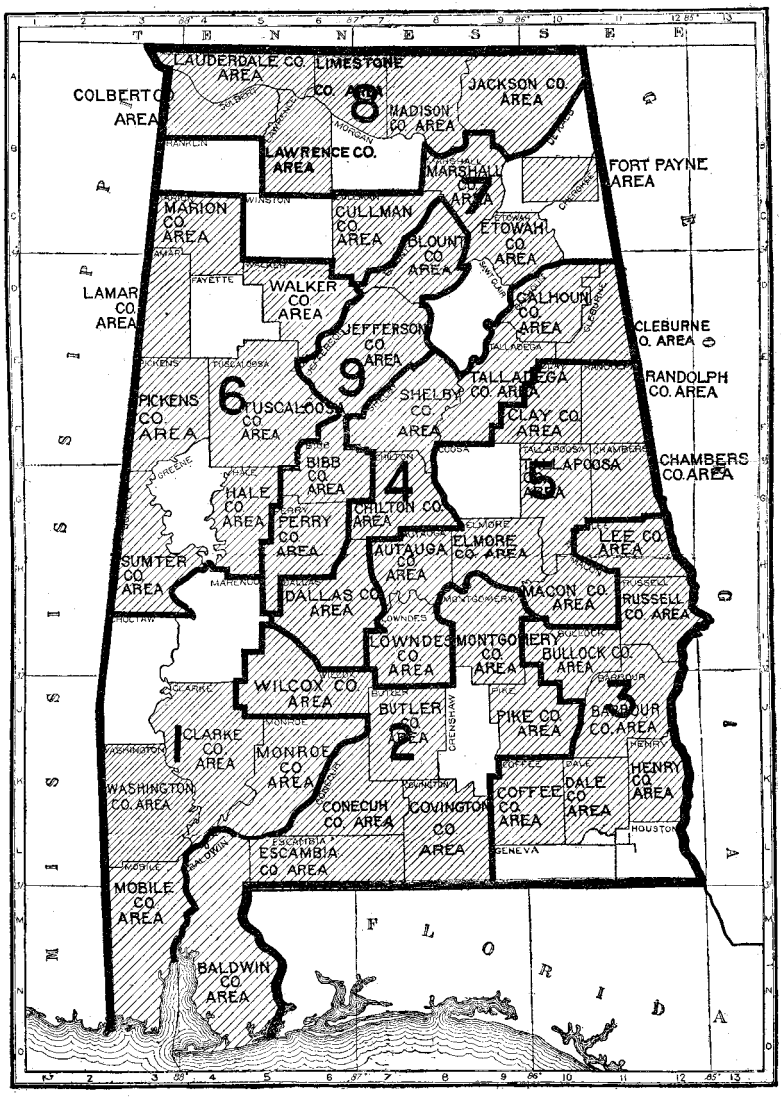
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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

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

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]



Areas surveyed in Alabama.

Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at (800) 457–3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers. If you believe you experienced discrimination when obtaining services from USDA, participating in a USDA program, or participating in a program that receives financial assistance from USDA, you may file a complaint with USDA. Information about how to file a discrimination complaint is available from the Office of the Assistant Secretary for Civil Rights. USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex (including gender identity and expression), marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.)

To file a complaint of discrimination, complete, sign, and mail a program discrimination complaint form, available at any USDA office location or online at www.ascr.usda.gov, or write to:

USDA
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, S.W.
Washington, DC 20250-9410

Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender.

Persons with disabilities who require alternative means for communication of program information (e.g., Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).