

SOIL SURVEY OF BLOUNT COUNTY, ALABAMA.

By WILLIAM G. SMITH and F. N. MEEKER.

LOCATION AND BOUNDARIES OF THE AREA.

Blount County lies in the northeastern part of Alabama, in what is popularly known as the mineral section of the State. It is quite irregular in outline and is surrounded by Walker, Cullman, Marshall,

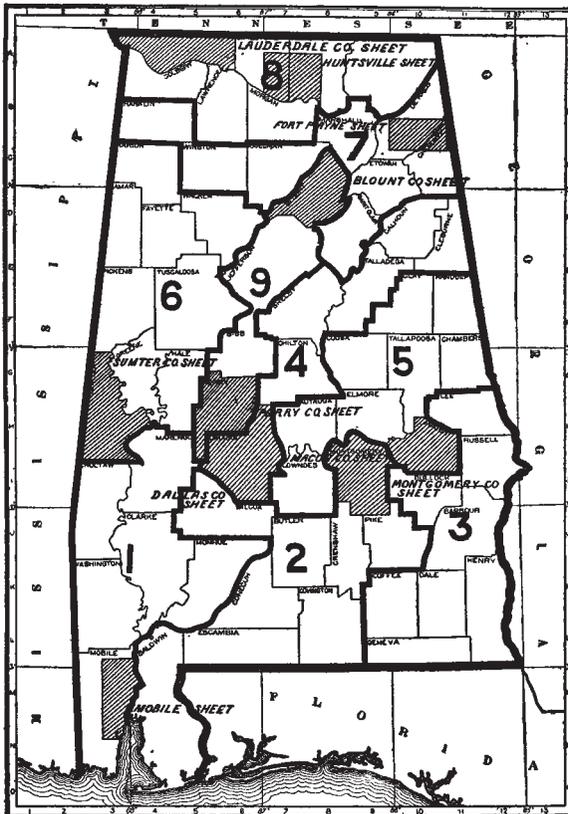


FIG. 16.—Sketch map showing location of the Blount County area, Alabama.

Etowah, St. Clair, and Jefferson counties, the latter including the city of Birmingham, which is distant about 40 miles from the center of Blount County.

The base map used in this survey was made with the plane-table by the soil survey party. A township and section plat of the county, on file at Oneonto, the county seat, was used as a check in making up the final base.

HISTORY OF SETTLEMENT AND AGRICULTURAL DEVELOPMENT.

Alabama was organized as a Territory in 1817 and as a State in 1819. Blount County was established February 7, 1818, and at that time included a large part of northeastern Alabama. By subsequent acts of the State legislature several of the adjacent counties now existing were formed out of what was originally Blount County, until at the present time its extent barely exceeds the requisite constitutional size of 600 square miles, the actual size, by the most recent act affecting its boundary, being about 626 square miles. By local election held April 23, 1901 (authorized by act of the State legislature approved March 5, 1901), the Mulberry Fork of the Black Warrior River was fixed as the boundary line between Blount and Cullman counties, giving to the latter lands previously included in the former.

The people now living in Blount County are descendants mainly of English stock who came from Georgia, Tennessee, the Carolinas, and Virginia, beginning in 1816. The early settlers followed closely upon the land concessions obtained from the Indians by treaty from time to time with the United States Government, the last of these being with the Cherokees in 1835. The lands were usually surveyed into townships and sections by the National Government (under the act of 1795) as soon as the concessions were obtained and were sold to the white settlers. Such surveys in Blount County were made mainly from about 1816 to 1837.

The early agriculture of the whites followed quite closely that of the Indians, namely, the growing of such crops as corn, vegetables, etc., for home consumption. During the forepart of the nineteenth century some plantations having slave labor were opened up in the county, and considerable corn, wheat, oats, and cotton were grown and hauled to Gunter'sville, on the Tennessee River, also to Decatur and Tuscaloosa, and shipped to distant markets. In 1874 railways began to be used for the shipping of products, the Louisville and Nashville being built through the county in that year.

Apple growing was among the early industries, and up to the period of the civil war had assumed quite large proportions. The war, however, seriously checked all industries in Blount County for many years. The apple most extensively grown and marketed prior to the civil war was known as the "Pennsylvania" or "Fowler" apple. It was introduced from North Carolina, by John Fowler, during the early settlement of the county. It was a winter type of apple, quite large,

and with an attractive red skin, with flesh of fine flavor and texture. Owing to an attack of "scab" it has almost gone out of existence, only a few trees being now found growing in the county. Of the winter apples now grown, the Winesap, Reese Seedling, Arkansas Black, and Ben Davis are favorably mentioned. The Hackworth is a favorite summer apple. Of the peaches, the Elberta is mentioned as the best for marketing, there being, however, several other varieties desirable for local use. The value of the agricultural products of the county at present is relatively small, but the interest that seems to be manifested in fruit growing, stock raising, and the growing of crops suited for stock foods bids fair to see the county rank considerably higher in the value of these products in the future.

CLIMATE.

The winter temperature of Blount County averages about 43° F., with a range of from about 5° to 70° F. The summer temperature averages about 78° F., with a range from about 55° to 105° F. The average temperature for the year is about 62° F.

The average date of the last killing frost in spring is April 6, and of the first killing frost in the fall October 22. The actual dates of killing frosts may vary from these averages a week or ten days either way from year to year. Based on the average dates, the period during which crops may be grown without danger of killing frosts is about six and a half months.

The winters are, as a rule, mild, as the temperature readings given would suggest. There are exceptional winters, however, when temperature near to and below zero occurs. The winter of 1904-5 is said to have been the most severe in twenty-five years. The soil, as a rule, is seldom frozen to a depth of more than an inch or two, and then only for a very few days. Snow falls to a depth of one-half inch to 10 inches, but rarely remains on the ground more than two or three days. In all, the climatic conditions admit of a wide latitude in the growing of summer crops, while certain so-called winter crops, suitable for stock range, may be relied upon through the winter. For the comfort and safety of stock, however, good shelter should be provided to tide over the few severe frosty and cold wet days that occur more or less regularly every winter.

The average annual precipitation is about 52 inches, which is usually quite well distributed throughout the year, ranging from 2 to 4 inches during the fall months and from 4 to 6 inches during the other months. This is ample for the growing of crops. The lower precipitation during the usual harvest season of the staple crops also favors the farmer. During the summer months the precipitation is usually in the form of light showers, while in late fall and winter it occurs more often as heavy rains in periods of one to three days' duration. This

would suggest the advisability of growing winter crops as a cover on exposed hillsides and slopes to prevent washing and gulying.

Thunder storms and wind storms of some severity are shown in the records, but as a rule these do not do much damage. The valleys are sheltered by ridges and mountains which lie almost exactly transverse to the prevailing northwest winds. Tornadoses have occurred in Alabama, but recently at least none seem to have touched Blount County.

The following table, compiled from the Weather Bureau records, shows the normal monthly and annual temperature and precipitation for Blount County:

Normal monthly and annual temperature and precipitation.

Month.	Oneonto.		Ashville.		Month.	Oneonto.		Ashville.	
	Temper- ature.	Precipi- tation.	Temper- ature.	Precipi- tation.		Temper- ature.	Precipi- tation.	Temper- ature.	Precipi- tation.
	° F.	In.	° F.	In.		° F.	In.	° F.	In.
January	42.8	5.46	42.6	2.82	August.....	78.0	4.08	79.7	3.75
February	42.7	5.57	43.5	5.16	September ..	73.0	2.21	73.7	2.82
March	53.2	6.66	53.0	6.41	October	61.2	3.27	62.0	2.92
April	60.7	4.82	61.2	5.54	November ..	50.6	4.69	51.2	2.80
May	70.3	4.34	69.8	2.89	December...	42.2	4.50	43.6	5.80
June	76.7	4.80	78.5	3.70	Year...	60.8	55.26	61.7	48.53
July	78.0	4.86	81.8	3.92					

PHYSIOGRAPHY AND GEOLOGY.^a

The surface of Blount County consists mainly of parallel valleys, ridges, and mountains having nearly northeast-southwest trend, and cut by minor transverse valleys or gaps. The ridges and mountains range in elevation from about 600 to 1,400 feet above sea level, while the valleys, as a rule, lie 50 to 400 feet lower. The so-called "valley" lands of Murphrees and Browns valleys range in width from about 1 to 2½ miles, the surface varying from moderately flat to fairly hilly, where secondary ridges occur within the valley proper, some of the hills being as high or higher than the mountain lands on each side. The tops of the so-called mountains vary in width from about 4 to 12 miles, the surface being sometimes flat and at others consisting of gently rolling slopes.

The steep and rugged slopes are confined mainly to areas where the upward tips or edges of synclinal folds of rock strata outcrop. The more pronounced of these flank Murphrees and Browns valleys, while the southeastern boundary of the county lies next to one of these steep slopes.

There are a great many minor hills and slopes, some due to faults in and secondary movements of the underlying rock strata, and others to the subsequent erosive action of streams. As a whole, the southern

^a Matters pertaining to the geology of the area are based mainly on different reports by the State geologist, Dr. Eugene A. Smith.

half of the county is rather more hilly and broken than the northern part, the central and northern parts being characterized by wider valleys and wider flat-topped mountains.

The county is drained almost entirely by the Locust and Mulberry forks of the Black Warrior River and their several branches, Blount County embracing much of the headwaters of this drainage system. The direction of the drainage is mainly southwest. The portion of the north part of Blount County embraced in the old Cherokee Indian Reservation is drained by Browns and Big Spring creeks, which flow northeasterly, emptying into the Tennessee River 12 or 15 miles to the north.

The rock strata of Blount County consist of limestone, sandstone, shale, and chert, all belonging to the Cambrian, Lower Silurian, Devonian, or Carboniferous periods, during which the area intermittently formed the floor of an interior sea that covered most of the Mississippi Valley.

The sediments carried in from the erosion of the height of land said to have existed along the Atlantic border were variously distributed on the floor of this sea, being eventually consolidated into the sandstones, shales, and other rocks now found. At the close of the Carboniferous period the area was permanently elevated and by folding and subsequent erosion assumed the main features of topography already described.

In the constituent strata of Blount County are found conveniently placed almost side by side iron, coal, and limestone, a combination necessary for the cheap and successful production of iron.

The drinking water is obtained from wells and springs, some of the latter carrying sulphur and iron. Blount Springs is perhaps the most noted of the sulphur springs.

SOILS.

The soils of Blount County are derived from the weathering of consolidated rocks which themselves are of sedimentary origin. These rocks varying much in the texture of their constituent particles give rise to sandy loams, fine sandy loams, loams, and clay. Eight distinct types are shown in the soil map. All of the soils are more or less clayey and, except where rough and mountainous, are naturally fairly productive. The following table shows the area of each type of soil:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Dekalb sandy loam.....	168,512	42.1	Meadow	9,216	2.3
Dekalb fine sandy loam.....	93,504	23.4	Upshur sandy loam.....	8,320	2.1
Dekalb clay	54,144	13.5	Hagerstown stony clay	6,848	1.7
Fort Payne stony loam.....	44,992	11.2	Total.....	400,256
Upshur loam	14,720	3.7			

DEKALB SANDY LOAM.

The Dekalb sandy loam consists of about 10 inches of gray to slightly brown, medium to fine textured sandy loam, underlain by a yellowish-brown light sandy clay subsoil to a depth of 36 inches or more. As a whole the type is only moderately stony, much of it consisting of flat mountain tops and easy slopes comparatively free from stone fragments, while on the steeper slopes bordering the valleys the surface may be quite stony, huge fragments and extensive exposures of sandstone marking the line of outcrop of the underlying rock strata.

A stony loam phase and a rock outcrop phase of the type are indicated on the soil map by different symbols. The stony phase usually includes areas having sandstone fragments 3 to 20 inches broad and 2 to 10 inches thick and varying in quantity from about 10 to 40 per cent of the soil mass. The rock outcrop phase is considerably more stony and includes the areas of rock outcrop already mentioned. The typical soil may contain small rock fragments varying from a mere trace to possibly 10 per cent.

The Dekalb sandy loam occurs mainly along the crests and slopes of East Red Mountain and West Red Mountain. The surface in places is quite hilly and rough, but the flat tops and easy slopes of the mountains vary from rather level to gently rolling in character. The type is well drained naturally, but as a rule is not droughty except where the underlying rock approaches near the surface.

The Dekalb sandy loam owes its origin to the weathering of a gray to brown sandstone, composed mainly of medium-sized quartz grains, and forming a member of the Coal Measures.

The higher lying areas of the type, such as those bordering the larger valleys, by reason of their greater immunity from late killing frosts in the spring, have been found well adapted to peaches, apples, plums, and cherries. Such areas are often the more stony parts of the type and are therefore not so well suited to the staple crops. Often the less stony areas are also well suited to peach growing.

The staple crops and vegetables do well on most of the type. Cotton yields from one-fourth to one-half bale per acre and corn from 5 to 20 bushels under the cultural methods ordinarily followed. Manuring and rotation of crops would increase these yields very much. Sorghum and forage crops give fairly good yields. As a whole the Dekalb sandy loam is not naturally productive, but it is capable of improvement by proper methods of cultivation. The land has a value of about \$2 to \$7 an acre.

The table following shows the average mechanical analyses of the fine earth of the Dekalb sandy loam.

Mechanical analyses of Dekalb sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12121, 12509.	Soil	0.5	6.0	17.2	41.3	11.5	15.3	8.3
12122, 12510.	Subsoil.....	.2	5.0	14.4	32.0	8.4	13.8	26.0

DEKALB FINE SANDY LOAM.

The Dekalb fine sandy loam consists of 8 inches of gray fine sandy to silty loam, underlain by a yellowish, rather heavy fine sandy loam to clay loam. Some phases of the type bordering the larger streams are rather more sandy than the typical soil; and here, too, a stony loam phase occurs, but rock fragments are not common, and the type as a whole comes well within the limits of the opening description.

The main body of the type occurs mostly in the central part of the county, occupying the flat top of the mountain on which are located Hendrick, Clarence, Snead, McLarty, and Nectar.

The surface of the Dekalb fine sandy loam varies from flat to gently rolling, a few steep slopes being found near some of the larger streams. The type is quite well drained naturally, though in a few places artificial drainage is desirable, and may be easily secured by running open ditches to some near-by natural drainage channel.

The Dekalb fine sandy loam owes its origin to the weathering of a fine-grained grayish to brownish sandstone, a member of the Coal Measures.

The Dekalb fine sandy loam is well adapted to the production of the staples, including forage crops, as also to small fruits, orchard fruits, and vegetables. Cotton yields from one-fourth to three-fourths bale, corn 10 to 30 bushels, and wheat 10 to 20 bushels per acre, and forage crops are reported as producing well. The larger part of the type is under cultivation. That portion still in forest supports a growth largely of oak, hickory, and shortleaf pine. Land of this type can be purchased for \$5 to \$20 an acre.

The following table gives the average results of mechanical analyses of samples of Dekalb fine sandy loam:

Mechanical analyses of Dekalb fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12513, 12515.	Soil	0.3	0.8	2.4	18.3	19.8	37.1	20.3
12514, 12516.	Subsoil.....	.2	.7	1.8	15.4	17.0	32.3	32.3

UPSHUR SANDY LOAM.

The Upshur sandy loam consists of about 10 inches of gray to reddish-gray fine sandy loam, underlain by a deep-brown to red sandy clay subsoil. As a rule the type is quite free from rock fragments, though on some of the steeper slopes these and massive outcrops similar in character to those noted in the Dekalb sandy loam occur, and are shown on the map as far as possible by different symbols. The main distinction between the two types is that one has a yellowish-brown and the other has a reddish sandy clay subsoil.

The Upshur sandy loam is associated with the Dekalb sandy loam, bordering Murphrees Valley. It occurs also in Browns Valley. The surface varies from gently rolling to hilly and rugged. On the broad, easy mountain slopes the surface is flat to gently rolling, while on the crests and steep slopes it is more rough. The natural drainage is good, and under the climatic conditions here existing the type is not subject to drought.

The Upshur sandy loam is derived from the weathering of a brown to red stratified sandstone, which forms a part of the Coal Measures. This sandstone is composed mainly of medium-sized quartz particles, cemented together by clay and iron compounds. Small rounded quartz pebbles the size of peas are sometimes embedded in the rock, and these also appear in places in the soil and subsoil of this type.

The Upshur sandy loam is found by experience to be naturally more productive than the sandy loams having yellow or light-brown subsoils. This is in line with observations made by the Bureau in other surveys. It is quite well adapted to the production of staple crops, as well as to vegetables, small fruits, and orchard fruits. The higher lying areas are best suited to peaches, because of greater immunity from late killing frosts in spring.

Much of the Upshur sandy loam is in cultivation. The yield of cotton ranges from one-fourth to three-fourths bale, corn 10 to 25 bushels, and wheat 8 to 25 bushels per acre, and vegetables and small fruits are reported to do well. With improved methods of culture the type could readily be made more productive, as it has the essentials of a fertile soil. It has an estimated value of \$5 to \$15 an acre. That portion still in forest supports a growth of oak, hickory, and pine.

The following table gives the average results of mechanical analyses of samples of the Upshur sandy loam:

Mechanical analyses of Upshur sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12127, 12533.....	Soil	0.7	2.6	9.3	45.0	16.7	13.8	11.5
12128, 12534.....	Subsoil.....	.1	3.8	13.7	30.4	7.3	20.1	24.6

UPSHUR LOAM.

The Upshur loam consists of about 8 inches of loam or silty loam, varying from brown to dark Indian red in color. The subsoil consists of a silty clay to a heavy clay, usually red brown to a deep Indian red in color. Rock fragments are present to some extent in places, but as a rule they are not very noticeable. Some of the heavier phases of the type are locally called "red clay land." The type as a whole, however, is more typically a loam.

The Upshur loam occurs mainly in Murphrees and Browns valleys, lying adjacent to the Fort Payne stony loam, or, as locally known, the "gray gravelly land ridges." It occurs mainly as a low-lying, flat upland, with the surface varying from flat to gently rolling or occasionally hilly where it extends up the steep slopes of the ridges or adjacent sandstone mountains. The type is quite well drained naturally, some of the flatter portions occasionally needing artificial drainage, which is easily secured by open ditches leading into some near-by natural drainage channel.

The Upshur loam is derived from the weathering of a fine-grained red shaly sandstone which is in places of a calcareous nature. This rock probably belongs to the Rockwood formation of Silurian age, but the close proximity of the cherty and fossiliferous limestones belonging to the Fort Payne chert, Knox dolomite, and Trenton or Bangor limestone often gives character to the soil.

The Upshur loam is a very productive soil, well adapted to the production of the staple crops—cotton, corn, and forage crops. It is probably the best of the upland soil types. Small fruits, vegetables, and orchard fruits also do very well on the lighter, higher, and well-drained areas. This soil is said to respond very readily to fertilizers and good cultural methods. The yield of cotton varies from about one-half to 1 bale per acre, and of corn from 20 to 40 bushels, while large yields of the forage crops are reported. Practically all of the type is under cultivation, some of it having been in use for nearly three-quarters of a century.

The value of the Upshur loam ranges from about \$10 to \$30 an acre, and little, if any, seems to be for sale. In early days some of the most prosperous plantations in the county were located on this type, and to-day many good farms are found upon it.

The following table gives the average results of mechanical analyses of samples of the Upshur loam:

Mechanical analyses of Upshur loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12115, 12527.....	Soil.....	1.2	4.6	5.6	15.4	14.4	33.1	25.2
12116, 12528.....	Subsoil.....	1.0	3.8	2.6	8.6	11.5	35.0	37.3

DEKALB CLAY.

The Dekalb clay consists of about 8 inches of grayish-brown loam, or clay loam often containing much silt, underlain to a depth of 36 inches or more with a yellowish-brown to reddish-yellow clay. Both soil and subsoil contain usually from 10 to 40 per cent of small shale fragments. It is locally known as "slate land."

The type is found mainly in the southeastern and southern parts of the county. The surface is usually hilly, often in the form of long ridges, with occasional gentle slopes that are easy of cultivation. The drainage is naturally good, but under the conditions of rainfall the soil maintains a water supply sufficient to sustain the crops in time of ordinary drought.

The Dekalb clay is derived from the weathering of shales belonging to the Coal Measures. This shale is usually fine grained, but occasionally a coarser-textured rock occurs which tends to give a lighter texture to the soil. The color of the shale varies from gray to brown, the gray color predominating.

As a whole, Dekalb clay seems productive. It is fairly well adapted to the production of staple crops, and the higher ridges are well suited to peaches and other orchard fruits. Not much of the type is as yet under cultivation, being forested mostly with oak, hickory, some beech, and pine. It is valued at from \$2 to \$15 an acre. It responds very well to fertilizers and other manures, and to crop rotation, the subsoil carrying enough clay to be retentive. Under the common method of cropping 10 to 20 bushels of corn and one-fourth to one-half bale of cotton per acre, and fair yields of vegetables, sorghum, and forage crops, are secured.

The following table gives the average results of mechanical analyses of the fine earth of samples of the Dekalb clay:

Mechanical analyses of Dekalb clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12125, 12523.....	Soil.....	9.2	8.4	2.1	8.8	12.0	26.5	33.0
12126, 12524.....	Subsoil.....	1.7	3.8	1.3	2.7	2.3	20.8	67.1

FORT PAYNE STONY LOAM.

The Fort Payne stony loam consists of about 8 inches of gray very fine sandy to silty loam, carrying 10 to 40 per cent of cherty rock fragments, underlain to a depth of 36 inches or more with a reddish-yellow clay loam, with about the same rock content as the soil. In both soil and subsoil the fragments range from 1 to 10 inches in diameter, and are roughly cubical and angular in shape. The more stony areas are

indicated by symbol. The type is locally called "gray gravelly land" or "flint-rock land."

The Fort Payne stony loam occurs exclusively in Murphrees and Browns valleys. The surface is very hilly, forming long narrow cherty ridges, with usually steep sides. The type is well drained naturally, but owing to the abundance of rainfall the lack of moisture in the soil is unusual. On the steeper slopes washing and gullying were noted, but the rock fragments tend to retain the soil, and when assisted by contour ditches or grass cover prevent gullying almost entirely.

The Fort Payne stony loam owes its origin to the weathering of dolomitic limestone and chert, from which the peculiar rock fragments present in both soil and subsoil are derived. These rock strata, which underlie the Coal Measures, have been brought to the surface by the folding and faulting incident to the formation of the Appalachian Mountain system. The area of these exposures is along the axis of the anticlinal folds. The overlying Coal Measure strata became broken apart by the severe tension, forming a break into which streams began to work, eventually removing much of the material and exposing the dolomitic limestone and chert. As a result three distinct soil types peculiar to the Murphrees and Browns valleys were formed, the Fort Payne stony loam being the prevailing type. Much of this type lies as high or higher than the so-called mountain tops on each side.

Of the Fort Payne stony loam only some of the less stony areas are cultivated. It produces the staple crops, though as a whole it is not well adapted to crops requiring much cultivation, owing to the quantity of stones on the surface. At present a large part of it is forested with a natural growth of oak, hickory, walnut, and other hardwood trees, together with some pine. For forestry purposes the type serves very well, the timber furnishing lumber, fuel, fence material, etc. The forests also afford a fair range for cattle, especially where Bermuda grass or Japan clover is seeded in the openings. The higher ridges, by reason of their greater immunity from late killing frosts in spring, are well suited to peaches and other orchard fruits, the difficulty of surface cultivation of the land being not of so much importance as with the field crops.

The staple crops where grown produce well, corn yielding 10 to 30 bushels, cotton one-fourth to three-fourths bale, sorghum 200 to 250 gallons of sirup per acre. Forage plants also yield good returns. The land values range from \$2 to \$5 an acre.

The following table gives the average results of mechanical analyses of samples of the fine earth of the Fort Payne stony loam:

Mechanical analyses of Fort Payne stony loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12119, 12519.....	Soil	3.7	4.0	2.1	9.6	6.8	52.0	21.5
12120, 12520.....	Subsoil.....	2.9	4.0	1.3	5.0	8.4	45.0	33.1

HAGERSTOWN STONY CLAY.

The Hagerstown stony clay consists of about 8 inches of black to brownish-yellow loam, underlain by a brown to yellowish-gray sticky clay. Usually fossiliferous bluish-gray limestone fragments, 3 to 20 inches broad and 1 to 8 inches thick, are abundant in both soil and subsoil; massive outcrops of hard, bluish-gray crystalline limestone also frequently break the surface.

This type, which is locally known as "lime land" and "black land," occurs in Murphrees and Browns valleys in long, narrow strips, wherever the Trenton or Bangor limestone crops out. The surface is usually rough, stony, and hilly, consisting of ridges and valley slopes. The surface features favor drainage, but in wet seasons the soil often becomes quite sticky and miry, while in dry weather the soil water is rapidly lost if the surface is allowed to bake.

The Hagerstown stony clay owes its origin to a weathering of the Trenton or Bangor limestone of Silurian age, waters charged with solvent gases and acids having dissolved the calcium carbonate and left behind the relatively insoluble constituents of the rock. The stony character of the soil is due to the fact that much of the residual clay has been carried off by rain wash and stream erosion, thus concentrating the unweathered rock fragments on the surface.

The Hagerstown stony clay is naturally quite productive, but owing to the large quantity of rock fragments and outcrop—indicated by symbol on soil map—but little of it is under cultivation. Some of the easy slopes, where the soil and subsoil are deeper and the proportion of rock outcrop and rock fragments less, are cultivated and give good yields of the staple crops, especially the grasses and other forage crops. The more stony areas are better adapted to forestry than to any other use. They may also be used for pasture, and would be particularly fitted as a range for goats or sheep.

On the less stony areas of this soil corn yields from 10 to 30 bushels, wheat 10 to 25 bushels, and cotton one-fourth to three-fourths bale per acre. The yields of forage crops are also satisfactory. Only a small proportion of the type is in cultivation. The value of this type ranges from \$2 to \$5 an acre.

The following table gives the average results of mechanical analyses of samples of fine earth of the Hagerstown stony clay:

Mechanical analyses of Hagerstown stony clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
12117, 12521.....	Soil.....	0.8	5.1	5.0	10.7	5.0	29.0	44.2
12118, 12522.....	Subsoil.....	.8	2.8	1.6	5.4	4.0	27.6	57.7

MEADOW.

The Meadow of Blount County includes mainly the first bottom land along streams. In general the soil, to a depth of 8 or 10 inches, varies from dark clay loam to fine sandy loam in texture, while the subsoil, to a depth of 36 inches, consists of a brown clay loam or sandy clay loam. There are areas where the soil is more nearly a clay on the one hand, or a sand on the other, but as a rule the texture lies between the limits of a fine sandy loam and a clay loam.

The areas of Meadow are usually flat and sometimes wet, as in the lower bottoms, but they now and then occur as high or second bottom land, and are, in this case, often slightly rolling in character. The greater part of the type has an elevation intermediate between the high and the low areas. These bottom lands occur very irregularly, varying from mere strips to areas one-third of a mile in width.

Much of the type is subject to overflow during winter, or the rainy season, but when the streams fall to their normal stage, the greater part of the type has ample natural drainage.

The Meadow owes its origin to stream deposition and accumulation of surface wash from the adjoining highlands, and is a very productive soil, carrying much organic matter and being enriched from year to year by deposits left by overflows. It is well adapted to the staple crops, and most of it is under cultivation. The yields of cotton range from one-half to 1 bale per acre, and of corn from 20 to 40 bushels, while the yields of sorghum cane, corn, hay, and forage crops are usually very good.

AGRICULTURAL METHODS.

The production of cotton is the principal interest of Blount County, and the farm operations all hinge more or less on this crop. In preparing the cotton land the old stalks are broken down. Sometimes this is done by hand with a hoe or stick, but a better way in use by many is to drag a log across the fields by means of mules, or to use a knife roller, which not only breaks down the stalks but cuts them into small pieces, thus greatly facilitating plowing. The land is usually broken to a depth of 2 to 4 inches, which is hardly deep enough to

give the best results. Cotton is planted in April, usually with a horse-power drill planter which opens up the furrow, drops the seed, and covers it, all in one operation. The planting is usually in rows, more or less ridged up, 3 or 4 feet apart, and, if on hillsides, the rows follow contours to guard against washing and gullyng. The contour system of cultivation is very generally followed in the county and is to be commended.

When the cotton plants are three or four weeks old they are thinned out, or "chopped," by hand with a hoe, leaving single plants standing 10 to 20 inches apart in the row. In the meantime, and until the plants bloom, which is usually during the last two weeks of June, the space between the rows is cultivated with a single-horse shovel plow, throwing the soil toward the plants. A two-horse harrow toothed cultivator that will give shallow but thorough cultivation, such as has been found eminently successful in the great corn belts, might be used to advantage on much of the lands of Blount County. Cotton picking extends usually through November and December in about three different pickings. The Russell Big Boll seems to be the favorite variety of cotton grown.

Corn is next in importance, and is grown for home use rather than for market. It is planted in ridged rows and cultivated much the same as cotton. Prior to the full ripening of the grain the leaves are stripped from the stalk by hand, tied in small bundles, dried, and used for fodder for horses and mules and other stock during the winter. When ripened, the ear-corn is removed and the stalks allowed to remain standing to go to waste in the field. Some, however, are beginning to gather the whole plant, as is found profitable in other parts of the country.

Systematic rotation of crops is not general. In the greater number of cases it is a few years cotton, then a few years corn, and then cotton again. However, some are beginning to practice the following crop rotation: First year, cotton, in which may be fall-seeded crimson clover, winter rye or oats to prevent washing and gullyng and to serve as winter and spring forage; second year, corn, in which just before the last cultivation cowpeas may be sown broadcast, which may either be used for fall and winter pasture or for hay if desired; the third year, cotton again is planted. As a rule an application of from 200 to 400 pounds of commercial fertilizer per acre is required for cotton. The period during which any one group of crops may be grown may extend through one or more years, depending upon the character of the soil and convenience of the farmer. And again, a period of several years in grass may follow the above two-year rotation scheme. Owing to the mild, short winter, two or three crops may be produced on the same land within the year, as is suggested in this rotation. There is thus greater opportunity for valuable results

from rotation of crops and other more or less intensive methods than in other less favored sections of the country.

At present much fertilizer—about \$35,000 worth annually—is used, but if more attention were given to crop rotation and to the improvement of cultural methods, a part of this might be dispensed with, or, if used, better results could be obtained.

AGRICULTURAL CONDITIONS.

There exists in Blount County the basis for two great industries—mining and farming. Workable coal, iron, and limestone are often found close together, an ideal condition for the smelter. The mineral resources of the county have not been much developed as yet. The mining operations probably add something to the wealth of the area, and increase the market for farm products somewhat, but in the nature of the case the great bulk of the money invested and received in mining belongs to concerns outside of the county.

The farmers, according to the local standard, are as a rule in a fairly prosperous condition. The average valuation per farm, including land, buildings, equipment, and live stock, according to the Twelfth Census, is about \$800. Most of the farmers are white, and about 54 per cent of the farms are operated by the owners. Of the remaining farms, operated by tenants, only about one-sixth are rented for cash, the rest for a share of the crop. The tenant system, it will be noted, has here quite a strong hold, and, as in other places, it is often associated with a kind of farming that impoverishes the land and leads the farmer into debt. It would be better for merchant and purchaser both if their business relations were more on a cash basis. With the introduction of diversified farming and improved methods of cultivation, the system of renting and credit liens against growing crops will probably be changed for the better.

The average size of the farms, according to the last census, is 90.2 acres. On the basis of ownership the average size would probably be about 120 acres, the census figures including as a "farm" each tenant holding, which varies from 20 to 160 acres. There are many farms comprising from 160 to 640 acres, and a few of 1,000 or 2,000 acres. Much larger tracts are held by mining companies. About two-fifths of the area in farms is under some form of cultivation.

The labor conditions are not very good. Most of the labor is white, the negroes being largely engaged in mining and railroading, and in other industries in the towns. Much of the labor on the farm is therefore done by the owner and tenant and their families. The day wage ranges from 50 to 75 cents or \$1 a day, without board, while by the month from \$12 to \$20 is paid. If board is furnished by the employer, the monthly wage is usually from \$7 to \$12.

The principal farm products of Blount County,^a basing yields and values on the returns of the Twelfth Census, are: Cotton, 10,000 to 12,000 bales; corn, about 500,000 bushels; dairy products about \$150,000; wool, 18,000 pounds; forest products about \$50,000; wheat, 50,000 bushels; miscellaneous vegetables, including tomatoes, about \$50,000; sweet and Irish potatoes, 30,000 bushels; sorghum cane sirup, 45,000 gallons; orchard products, \$10,000; small fruits about \$1,000; peas about 8,000 bushels; peanuts, 1,700 bushels. The investment in live stock is about \$500,000.

The figures given show that cotton ranks first, corn next, and dairy products third. As pointed out in another connection, it would seem that more attention might be profitably given to live stock, including poultry, and to the growing of crops incident thereto. Then, too, orchard and small-fruit cultivation might be extended with profit, except in localities of low elevation or where the transportation facilities are not good. On the higher ridges and hills peaches can be grown successfully, while on most of the slopes or flat-topped mountains apples and small fruits could be produced in abundance. As far as noted, fruits seem peculiarly free from fungous diseases in this county.

In the discussion of each soil type separately the crops to which each is adapted have been noted, but it is thought desirable to review at this point some of the characteristic crop features of the different types.

The Dekalb sandy loam includes some of the poorest land, but some of it has been improved and made quite productive. Occurring as it often does on the heights bordering deep valleys and on easy slopes on the mountain tops, much of it is well adapted to the growing of peaches and other fruits. Much of it is also valuable for the production of the staple crops. The stony areas are of little use except for forestry and as a range for live stock.

The Dekalb fine sandy loam is an extensive and important highland type very well adapted to the production of staple crops, vegetables, and small fruits, and some areas have the topographic features favorable for peaches and other orchard fruits.

The Upshur sandy loam is a type of relatively limited extent, but strong and productive of the staple crops, small fruits, and, in places, peaches and orchard fruits. The stony areas, as in the case of the Dekalb sandy loam, are fit mainly for pasture and forestry.

The Upshur loam is probably the strongest and the most productive of the upland soils. It is well adapted to cotton, corn, sorghum cane, hay, and forage crops, and, in a few localities, to vegetables, small fruits, and orchard fruits. Most of the type is in cultivation.

^a When the census was taken, the county comprised 753 square miles. Since then (in 1901), it has been reduced to 626 square miles.

The Dekalb clay, an extensive type, occurring as "slaty" ridges and rolling highlands, is fairly productive of the staple crops on the more level areas, and on the ridges it is adapted to forestry, orchard fruits, small fruits, and pasture.

The Fort Payne stony loam is the prevailing type of the Murphrees and Browns valleys. Some of it is suited to the staple crops, while much of the more stony or "gravelly ridge" phases is valued chiefly as forest land or as a stock range. Accessible, favorably situated areas might be used for the growing of peaches and other orchard fruits.

The Hagerstown stony clay occurs to a limited extent in the valleys just mentioned, the less stony phase being quite productive of the staple crops, while the greater part is in forest, consisting mostly of red cedar, a valuable wood for telephone poles, posts, and other purposes. The soil is also well suited for wild pasture, and on the higher slopes for orchard fruits. It also often includes limestone outcrops easy to quarry for use in the iron furnaces and for lime burning and other purposes.

The Meadow, or stream-bottom land, is, as a rule, very productive. Owing to liability to overflow in the winter or rainy season, it is adapted chiefly to summer crops like cotton and corn, though such as are usually uninjured by overflow, like grasses, are well suited to the type. The wooded areas afford excellent wild range for live stock.

The transportation facilities are inadequate. Much of the area is from 8 to 25 miles from a railway, and there is no water transportation. Railway lines of the Louisville and Nashville system pass through a part of the western and southeastern sections of the county. In the fall and winter heavy truck wagons, laden with such products as cotton, are frequently seen en route to points on these lines, to Attalla, on the Alabama Great Southern Railroad, distant from the center of the county about 25 miles, and to Birmingham, which lies about 40 miles to the southwest.

The wagon roads are all dirt roads, often rough and hilly, and in rainy weather quite muddy. Fortunately, however, the adjoining counties sometimes have better roads, as has Jefferson, thus affording easier hauling for part of the way for such products as are drawn to Birmingham. The material for making good road beds, such as rock, sand, clay, and gravel, is usually near at hand, and a movement for road improvement is being considered.

The market conditions, being dependent upon the transportation facilities, are not very good for much of the central portion of the county. There is considerable local trading with merchants in the towns and at the numerous crossroads stores of the county, which serve as depositories of bale cotton and cotton seed, whence these are eventually hauled to outside markets. The towns of the county are

comparatively small, and consume but little of the farm products, though quite important as depots. Oneonta, the county seat, according to the last census, has a population of 583, and Blountsville 500, while the other towns range from crossroads settlements containing a family or two to villages of 100 or 150 population. The mail service is quite good, through star routes and the gradual extension of rural free delivery, and reaches nearly all parts of the county daily.

The educational facilities of the county consist principally of public schools, but as yet the schools are usually open for but a short term, and with moderate equipment and efficiency. At Blountsville there is a Congressional district school of agriculture, which is the leading educational institution in the county. The indications are that other schools are soon to be established and the existing system made more efficient.

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