SOIL SURVEY OF ETOWAH COUNTY, ALABAMA.

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DESCRIPTION OF THE AREA.

Etowah County, with an area of 346,880 acres, or 542 square miles, is situated in the northeastern part of Alabama in what is popularly known as the mineral section of the State. It is bounded on the north by Dekalb County, on the east by Cherokee, on the south by St. Clair and Calhoun, on the west by Blount, and on the northwest by Marshall.

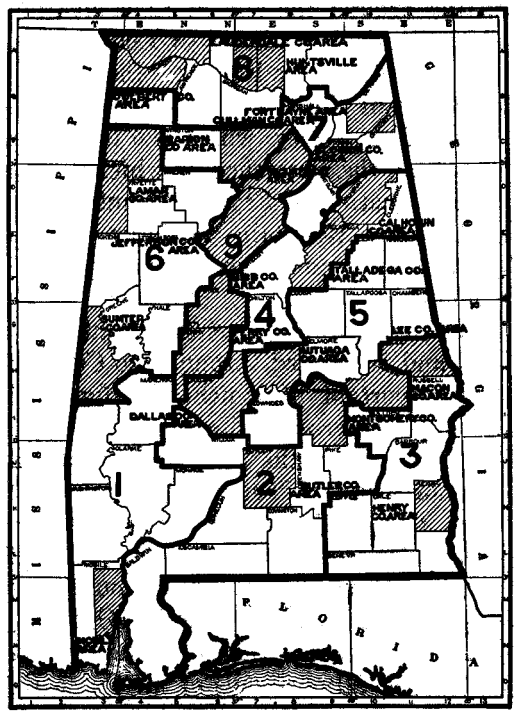

FIG. 17.—Sketch map showing location of the Etowah County area, Alabama.

Included in the county are the broad, undulating valley of the Coosa River, the level or gently rolling plateaus of Sand and Lookout mountains, and a mountainous region characterized by a succession of ridges alternating with narrow limestone valleys. The character and position of these mountains, plateaus, and valleys are closely connected with the character and structure of the underlying rocks or geological formations. Some of these formations occur in rather narrow bands and all run in a general northeast-southwest direction.

In the northwest part of the county the broad top of Sand Mountain forms a plateau having an elevation of from 1,100 to 1,200 feet above sea level, while in the northeast part, extending in a northeast-southwest direction to about the center of the county, is Lookout

Mountain, on which is another smaller plateau 3 to 5 miles wide. These plateaus are quite similar in many respects, each being higher on the edges, sloping gradually toward a trough in the center, and bounded on the edges by bold escarpments 600 to 800 feet high. On Sand Mountain, in particular, are many large, quite level, and densely wooded areas. The continuity of this plateau is broken on the edges in several places by stream action, deep gorges being cut back from the escarpment for some distance.

From Attalla northward the valley between Sand and Lookout mountains is separated into two distinct valleys by an elongated ridge which in places is almost as high as the mountains on either side. The valley, about 5 miles wide between these two mountains, is hilly, due to the character of the underlying limestone. This same belt of hilly country extends southwest of Attalla to the county line, but is bounded on the south by a fault line separating it from the broad, undulating Coosa River Valley. Extending east from Attalla, cutting around the end of Lookout Mountain and Shinbone Ridge, which lies just southeast of Lookout Mountain, this fault line runs northeast from Gadsden to the county line, here also being the boundary of the Coosa River Valley. The southern border of the Coosa River Valley, which is 5 to 7 miles wide, is formed by Calvin Mountain, the watershed of which is a part of the south county line.

The elevation of Etowah County varies from 1,500 feet at a point on Lookout Mountain northeast of Gadsden to a little less than 500 feet at a point where the Coosa River breaks through Calvin Mountain.

The main drainage of the county is toward the southwest to the Gulf and is effected through the Coosa River and its tributaries, the most important of which are Big Wills, Little Wills, Clear, and Little Canoe creeks. Locust Fork of Black Warrior River and its tributaries drain the northwest corner of the county. Only a small area northwest of Mountainboro lies in the Tennessee River drainage basin, this section being drained by Short Creek, which empties directly into the Tennessee River 12 to 15 miles to the north.

The population of Etowah County are mainly the descendants of those who came from Tennessee, Georgia, the Carolinas, and Virginia at an early date, settling on the rich valley limestone soils and on some of the alluvial soils of the Coosa River Valley. Sand Mountain was settled largely by Georgians. The lands in this section of the State were then considered by Alabamians too poor to cultivate, but now their productiveness is well recognized. Within the past few years a small number of Germans have settled in the Sand Mountain section. Some immigrants have located in the towns and found employment at the cotton mills, smelters, or steel plants, and others in the surrounding iron and coal mines.

Except in local sections, the county has always been rather thinly settled. Settlement is most rapid just now on the limestone and alluvial soils around Gadsden and Attalla and on the fertile soils on Sand Mountain. During the past two or three years farm property has been changing hands more rapidly. Pike roads are being built by convict labor, and already several of the main roads have thus been improved.

Gadsden, the county seat and largest town, has a population of about 8,000. Alabama City, a manufacturing town 2 miles west of Gadsden, has a population of about 2,500; and Attalla, with a population of about 2,000 and 3 miles still farther west, is another important town. These three towns are connected by an interurban car line. Iron furnaces are located at all three places. At Alabama City are a large cotton mill and a steel plant, and at Gadsden there are several factories employing several hundred men. Altoona, in the extreme western part of the county, is a coal-mining town and affords a small market for that section.

Etowah County is well supplied with railroads, five lines entering one or more of the three towns in the center of the county. These roads furnish excellent transportation facilities to large outside markets, Atlanta, Chattanooga, and Birmingham all being less than three hours distant. The Coosa River furnishes water transportation as far as Rome, Ga., and to the Shoals, about 20 miles below Gadsden.

CLIMATE.

The climate of Etowah County is comparatively equable and mild. The summers are long and pleasant and the winters are short and mild. There are occasional "cold snaps," though the mercury seldom falls below zero. Light snows of short duration occur nearly every winter. Besides the crops grown, the climatic conditions are favorable for many other crops not yet introduced. The so-called winter crops suitable for stock raising may be safely relied upon through the winter.

The average annual precipitation, which is about 52 inches, is sufficient for all the crops grown. Occasional droughts in middle and late summer would have little effect on crops if the farmers gave more attention to tilling their soils in such a way as to conserve the moisture. During the winter months the rains are heavier and of longer duration, a fact which suggests the advisability of growing winter crops so as to prevent washing and gullying on exposed hillsides and slopes.

The early warm days of spring and the erratic occurrence of killing frosts cause the fruit crop to be uncertain unless care has been used in selecting orchard sites.

The average dates of the last killing frost in the spring and of the first in the fall are about April 6 and October 22, respectively. This gives an average growing season for tender vegetation of about six and one-half months.

The mean annual temperature is about 61° F. The mercury seldom goes above 100° F. in summer or below 5° in winter.

The following table, compiled from records of Weather Bureau station at Gadsden, gives the normal monthly and annual temperature and precipitation:

Normal monthly and annual temperature and precipitation.

Month.	Gadsden.		Month.	Gadsden.	
	Temperature.	Precipitation.		Temperature.	Precipitation.
	°F.	Inches.		°F.	Inches.
January	41.4	5.55	August	78.7	4.33
February	42.3	5.47	September	73.9	3.16
March	51.9	6.39	October	61.6	2.67
April	59.6	4.18	November	51.0	3.39
May	73.9	3.63	December	44.2	4.94
June	76.6	4.30			
July	79.5	4.05	Year	61.2	52.06

AGRICULTURE.

With the exception of cotton, which was shipped to a small extent, all the crops grown by the early settlers were consumed at home. Cotton and corn always have been the main crops, with a small acreage devoted to wheat, oats, sorghum, peas, peanuts, hay, vegetables, and tobacco. Cattle raising is also being carried on in a limited way. As the population increased and transportation facilities became better, a type of agriculture similar to that in practice at the present time was gradually evolved.

As in other mountainous sections where land is cheap and easily obtained, the farmers have been slow to adopt improved methods and the use of labor-saving machinery. In some instances steep hillsides and Rough stony land are being cultivated where only the simplest kind of implements can be used, and those who are farming under such unfavorable circumstances are barely making a living. Even on the better soils many farmers are making little headway, largely because of the use of old and crude machinery.

More attention needs to be given to the maintenance of the productivity of the soil through a proper system of crop rotation and by practicing thorough up-to-date cultural methods. Many fields have been planted to either cotton or corn for a number of years, thus materially reducing the yields. The plowing is generally too

shallow and the fields and rows are usually laid out without regard to the lay of the land.

The present backward stage of agricultural development is due in no slight degree to the growing importance of the iron industries of the county.

Cotton is the all important crop. According to the census of 1900, the acreage given to cotton was, approximately, 30,000, producing on an average 1 bale to about 2½ acres. At present cotton is grown much more extensively, though the yields per acre have probably remained about the same. It is grown on most every type of soil regardless of topography or productivity. The best cotton lands are the fine sandy loams, loams, silt loams, and some of the clay loams. On these the yields vary from one-third to 1 bale or more per acre. Cotton is very susceptible to methods of good tillage, which implies not only deep preparation and thorough subsequent cultivation, but a good system of rotation and manuring to keep the soil in a high state of productivity. A few farmers realize the importance of these methods, but the production of a vast majority of the farms could be secured on half the acreage planted.

Corn, the next important crop, is grown only for home consumption. Like cotton, it is grown on nearly all the soils, but does best on the rich alluvial loams, silt loams, and fine sandy loams. The yields range anywhere from 5 to 50 bushels per acre, and average, according to the last census, about 14 bushels per acre. Any of the soils of the area are capable of producing a higher average than this, if good cultural methods are followed. The fact that most farmers neglect their corn crop in favor of cotton partially explains the low yield.

Many other crops are grown in a limited way, among which may be mentioned oats, wheat, sorghum, peas, peanuts, hay, and such vegetables for home use and the local market as Irish potatoes and sweet potatoes, cabbage, collards, beans, onions, etc. The sandy soils are best for garden vegetables, except crops like cabbage, collards, etc., which thrive best on the heavier richer soils. Peas and peanuts are valuable crops, not only because of their feeding value, especially for hogs, but for their beneficial effect upon the soil. There is need of more attention along the lines of dairying, stock raising, and forage crops; also truck and tobacco. The first three lines of farming may be best done on the heavier soils. Tobacco will probably do best on some of the mountainous Dekalb sandy and silty types and Clarksville stony loam.

The fruit industry has been developed by a few on a commercial scale, but most orchards show the lack of proper attention. Several large peach orchards are located in the vicinity of Gadsden and Attalla. Some apple orchards have been set out, and where well

cared for are in a thrifty condition. The Clarksville stony loam on northern slopes is an excellent soil for these fruits. The Dekalb stony silt loam is also very good for apples and the more sandy phase for peaches.

Some system of crop rotation is necessary on all the soils in order to obtain good yields. When a rotation is practiced the soils suffer less from erosion and more profitable yields are continuously obtained without the aid of commercial fertilizers. A rotation of peas, or some other leguminous crop, with corn and cotton has been practiced by the more successful farmers. This practice is to be commended. The sowing of peas, vetch, and other leguminous crops between corn and cotton rows after the last cultivation is another cheap and easy way of keeping the soil in a good productive state. Usually the crop is cut for forage, returning only the roots to the soil, though a few plow under the whole crop. In most cases the latter method is preferred, but when a heavy crop is thus turned under liming may be necessary, not only to aid in the proper decay of organic matter, but to correct any acidity which may arise.

Commercial fertilizers are used generally throughout the county. They are applied, as a rule, merely to increase the yields and without any thought as to the requirements of the soil or its permanent upbuilding. According to the Twelfth Census $39,120 was expended in 1899 for fertilizers by the farmers of this county. The amount spent during the past year would no doubt show a considerable increase.

In the growing of cotton and corn and most other crops that are intertilled, ridge cultivation is generally practiced. Often the fields are left level until the last cultivation, when the soil is ridged up in the rows and the crop "laid by," as it is called. The ridge method of "laying by" crops should be abandoned, as not only the yields are materially reduced by loss in soil moisture, but some of the roots, which lie close to the surface in midsummer, are broken off, thus diminishing the crop's feeding capacity. Level cultivation, except in a few poorly drained areas and where the slopes are not too steep, gives the best results, as the soil retains a larger quantity of moisture and crops suffer less from the effect of summer droughts. Little attention is given to the prevention of soil washing and the formation of gullies. Deeper plowing in preparing the land, where the slopes are not too steep, thus allowing more of the rainfall to be absorbed, will help to prevent washing. In the hilly and mountainous sections terracing and contour cultivation should be practiced with the same end in view. Deeper plowing would not only give the soil greater water-holding capacity, but would also greatly improve the seed bed, thereby allowing young plants to obtain a stronger foothold and to penetrate the subsoil more deeply for food and moisture.

The labor conditions in the area are not of the best. The iron and kindred industries of the county attract considerable labor from the farm because of higher wages paid and employment given for the full year. Much of the hired labor is done by negroes, though considerable work is done by the white farmers and their families, especially in the northern part of the county. During the busy season women and children all work in the fields.

Most of the farms are cultivated by the owners, particularly in the mountainous section, though some are tilled by tenants. Some of the tenants are negroes, but the majority are white. Very few farms are rented for cash, the more common practice being to rent on shares. The owner receives one-third of the corn and one-fourth of the cotton, if the renter furnishes tools and work stock, but in case these are furnished by the owner he receives one-half the crops.

There is considerable variation in the size of farms throughout the county. According to the Census of 1900 the average size is 86.1 acres. The value of farm land varies from $3 to $40 an acre, according to the kind of soil and the location of the farm.

That the farmers of the area, as a class, are not in a more prosperous condition is not attributable to the broken topography and nonproductiveness of the land. The tendency to grow all the cotton possible and to depend on it as the only money crop does not assure the best results for the farmer. In most cases it is decidedly unprofitable to grow cotton continuously on the same land, the result of which must be diminishing yields and the gradual impoverishing of the soil. The adaptability of soils to crops should be recognized, and those soils better suited to other crops than cotton should be devoted to such crops. In fact, on land best adapted to cotton a well-balanced crop rotation should be practiced, so as to maintain productivity and good yields. The slopes, which have a strong tendency to wash or gully, can be better left in grass or forested. Some of the heavier soils afford an excellent opportunity for stock raising, dairying, and hay farming, all promising industries of the county. Stock raising and dairying, no doubt, would be found remunerative on practically all soils of the area, as there are good home markets and larger ones near by. In the mountainous section are found soils well adapted to fruit, especially peaches and apples, and to tobacco as well.

The net returns to farmers throughout the county could be materially increased by practicing thorough tillage, rotation of crops, and by growing a greater variety of crops adapted to their soils.

SOILS.

In its physiographic and geological relations, Etowah County forms a part of the great Appalachian province extending from central Alabama to northeastern Pennsylvania. The two divisions

represented in the county are the Appalachian valley and the western division of the Appalachian province, as it is called. The former embraces the Coosa Valley and the latter the mountainous portion of the county. The rocks exposed are all of sedimentary origin, belonging to the Paleozoic age, and consist of crumbled and folded shales, limestones, conglomerates, and sandstones varying in degrees of purity and hardness. They were deposited as ocean sediments during the different eras from Cambrian to Carboniferous and eventually consolidated and afterward elevated to highlands. By folding and subsequent erosion, the soft rocks not being able to resist erosion so well as the harder sandstone cappings, the county assumed the main features of topography already described.

The constituent strata of Etowah County contain, lying in close proximity, large and workable quantities of iron, coal, and limestone, a very desirable and necessary combination for the cheap production of iron.

All of the soils of the county, except alluvial and colluvial strips which represent a mixture of material from several formations, are derived directly from the decay and disintegration of the rocks on which they lie.

In the mountainous part of the county are found five members of the Dekalb series, derived from sandstones and shales, constituting practically the entire area of this region. The silt loam, fine sandy loam, and sandy loam members occupy the rolling tablelands. These are the farming lands in this district, all being well drained and easy to cultivate. While it is true that they are not naturally very productive, they are readily susceptible to improvement by fertilization and good methods of cultivation, and when so treated produce excellent yields of staple crops, particularly cotton, as well as some of the truck crops. The rougher areas give rise to a stony silt loam or to Rough stony land.

The narrow mountain valleys present a variety of limestone soils, due to the composition and structure of the underlying rocks. In point of most importance are the Hagerstown soils, the loam member of which is the only one extensively developed. Derived from the cherty limestones are large areas of Clarksville stony loam. Other soils also occur, varying in degrees of color and texture and amount of rock fragments on the surface.

Located in the Coosa Valley is the oldest formation in the county, a clay shale from which is derived a stiff, waxy, impervious clay locally known as "flatwoods land." In this valley, skirting the Coosa River and overlying material similar to "flatwoods land," are also large areas of alluvial soils, deposited at a time when the stream bed stood at a higher level. Along many of the smaller streams in all parts of the county are found narrow strips of alluvial soil.

In all, Etowah County presents an area of diversity in soils and conditions sufficient to meet the demands of the most diversified farming. Twenty soil types were mapped, varying from heavy clays to sandy loams. While some of these soils show a low agricultural value after their virgin productiveness has been reduced by careless methods of tillage and cropping, all the types of soil, owing to their inherent qualities, if better handled and cropped according to adaptability, could be brought to much account in the agricultural development of the county.

The names and extent of the different types of soil are given in the following table:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Conasauga clay	52,160	15.0	Meadow	7,296	2.1
Dekalb silt loam	50,176	14.5	Huntington sandy loam	5,888	1.7
Clarksville stony loam	47,040	13.6	Locust silt loam	4,992	1.4
Dekalb fine sandy loam	40,384	11.6	Dekalb shale loam	4,928	1.4
Holston fine sandy loam	36,416	10.5	Holston gravelly sandy loam	2,944	.8
Dekalb stony silt loam	26,304	7.6	Holston silt loam	2,368	.7
Hagerstown loam	19,328	5.6	Hagerstown stony clay	1,536	.5
Huntington silt loam	14,528	4.2	Hanceville loam	1,024	.3
Dekalb sandy loam	11,776	3.4	Decatur clay loam	384	.1
Clarksville gravelly loam	9,984	2.9			
Rough stony land	7,424	2.1	Total	346,880	

DEKALB SILT LOAM.

The surface soil of the Dekalb silt loam, to a depth of 8 to 18 inches, consists of a gray to yellowish-gray mellow silt loam having a small sand content of the finer grades. The line between the soil and subsoil is nowhere sharply drawn. The soil grades into a reddish-yellow or yellow silty clay subsoil, not plastic or tenacious, but having a slightly greasy feel. Broken masses of rock fragments are sometimes found within 3 feet, and nearly everywhere on the surface and throughout both soil and subsoil are scattering fragments of sandstone and shale.

The Dekalb silt loam occurs in large areas on Sand and Lookout mountains, occupying for the most part rolling table-lands. On Lookout Mountain, lying about 75 feet above the main body of the type, small areas are found following the crests of ridges which border the escarpment.

The topography of the type, as a whole, is rolling, with a more broken surface near the streams, being the more rolling on Lookout Mountain and in places rather hilly. The natural drainage is good. A tendency to wash is noticeable on the steeper slopes; therefore they should not be planted to cultivated crops.

The soil is of residual origin, derived almost entirely from the broken-down Walden formation, which consists of fine-grained sandstone and sandy shale.

The Dekalb silt loam is one of the extensive and widely cultivated soils on Sand Mountain, while on Lookout Mountain only the more level portions which have been cleared of the native hardwood timber and scattering pine are tilled.

The principal crops grown are cotton and corn, with scattering small fields of oats, wheat, and grasses. Wheat planted in October and harvested in June produces a good quality of straw, but the yields of grain are light, averaging about 8 bushels per acre. Grasses do well and should be more widely grown. Cotton produces from one-fourth to five-eighths of a bale, and corn from 5 to 40 bushels per acre, depending upon the state of cultivation.

As on all the soils of the area, a small acreage is given to cowpeas and peanuts, and also to sorghum for both forage and sirup.

The Dekalb silt loam is best adapted to grasses and general farming purposes. It ranges in price from $10 to $25 an acre.

The results of mechanical analyses of the soil and subsoil of this type are given in the following table:

Mechanical analyses of Dekalb 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.*
19857	Soil	0.3	1.0	3.5	14.8	12.9	56.4	11.3
19858	Subsoil	.0	1.1	3.1	10.9	12.7	46.9	25.3

DEKALB SHALE LOAM.

The soil of the Dekalb shale loam consists of about 8 inches of a yellowish-gray or gray heavy silt loam. In structure it is rather compact and when rubbed between the fingers has a greasy feel. By reason of the compact and greasy nature of this soil much of the rainfall, particularly when the soil is dry, runs off quickly in surface drainage. Large quantities of shale fragments are found upon the surface and in the soil. The subsoil to a depth of 24 to 30 inches is a yellow to reddish-yellow silty clay resting upon a broken mass of shale and shaly sandstone from which it is derived.

The surface features range from rolling to slightly hilly, but are rarely so rough that the soil can not be cultivated. Between the ridges and knolls are numerous intermittent streams affording excellent drainage.

The Dekalb shale loam is of limited extent, only two areas being mapped, one in the southeast corner and the other just northeast of Howelton, in the west-central part of the county.

Only a few small fields of this type are being cultivated, and the yields of cotton and corn secured are scarcely enough to meet the cost of producing the crop. The best use of this type is for forestry or as pasture.

The results of mechanical analyses of soil and subsoil are given in the following table:

Mechanical analyses of Dekalb shale 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.*
19853	Soil	3.7	9.1	2.8	4.9	8.3	54.3	17.2
19854	Subsoil	2.9	7.1	2.5	4.4	4.0	50.3	29.1

DEKALB SANDY LOAM.

The soil of the Dekalb sandy loam is a yellowish-gray to yellowish-brown medium to fine sandy loam, with a depth varying from 10 to 15 inches. The subsoil is a yellowish-brown medium to fine sandy loam heavier than the soil. Bed rock often occurs within 3 feet and occasionally appears upon the surface.

Only four areas of the Dekalb sandy loam are found in the county. The main bodies occur along the slopes on either side of the plateau on Lookout Mountain and smaller areas southeast of Attalla and south of Altoona. The surface in places is somewhat hilly, but for the most part consists of easy slopes varying from rather level to gently rolling in character. The type is naturally well drained by small and mostly intermittent streams and as a rule is not droughty, except where the underlying rock is close to the surface.

The type is derived from the weathering of Lookout sandstone, a gray to brown medium to fine grained stone.

The Dekalb sandy loam is easily cultivated and responds readily to good methods of cultivation and to fertilization. Cotton yields from one-third to five-eighths of a bale per acre, and when well cultivated better results are secured. The yield of corn varies from 5 to 40 bushels. Some cowpeas are grown, and very good yields of both Irish and sweet potatoes are secured. This type presents a good opportunity for fruit raising, particularly the northern slopes, owing to the greater immunity from late killing frosts in the spring. Peaches, plums, and cherries do well. Apples are readily grown and the fruit is well flavored and of large size. This is perhaps the best truck soil found in the area, though not well adapted to cabbage or cauliflower, which require a heavier soil. Melons have been grown with excellent success. Tobacco has been grown for home use to some extent, and it is believed this crop would prove a remu-

nerative one to the farmer. The Dekalb sandy loam can be bought for $3 to $15 an acre.

The results of mechanical analyses of samples of the Dekalb sandy loam are shown in the following table:

Mechanical analyses of Dekalb 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.*
20278	Soil	0.4	7.4	21.5	31.8	7.1	24.1	7.9
20279	Subsoil	.9	8.4	18.0	26.5	5.0	24.6	16.8

DEKALB STONY SILT LOAM.

The Dekalb stony silt loam is a mountain-side type consisting of a yellowish-gray or brown fine sandy loam or silt loam about 10 inches in depth, usually underlain by a lighter yellowish-brown or gray fine sandy loam or silt loam grading at from 2 to 3 feet into a clay. Areas where the soil is found to be silty are almost always bordered by the Dekalb silt loam and are more productive. Fragments of sandstone, some of which are very large, are strewn over the surface and throughout the soil mass. Occasionally bed rock is found within 3 feet of the surface. Large rock outcrops or cliffs frequently appear throughout areas embraced by this type of soil and are indicated on the map by symbols.

The Dekalb stony silt loam owes its origin to the weathering and breaking down of the underlying light or brownish-gray fine-grained sandstone.

Occurring on the sides of plateaus and mountain sides leading down into the limestone valleys, as does this soil, and owing to the comparatively low prices at which other land is sold, it is not considered profitable to use this soil for the production of staple crops. It is best for it to remain forested to the native hardwood and scattering pine timber or else used for the production of apples or peaches. The sandy phase is best suited to peaches. A few small fields are cultivated to corn, moderate yields being secured.

The results of mechanical analyses of this type of soil are given in the following table:

Mechanical analyses of Dekalb stony 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.*
20280	Soil	1.1	2.3	1.1	2.4	5.4	74.8	13.2
20281	Subsoil	1.1	1.8	.9	2.2	6.5	71.2	16.4

DEKALB FINE SANDY LOAM.

The soil of the Dekalb fine sandy loam, to a depth of 8 to 12 inches, is a yellowish-gray to yellowish-brown fine sandy loam containing some silt. This material is underlain by a yellow to reddish-yellow fine sandy loam heavier than the soil and often grading at about 3 feet into a silty clay of a more decided yellow color. In proximity to streams and depressions a few small scattering areas of a more sandy phase of this type occur.

The fine-grained sandstone from which this type is derived is sometimes encountered within 3 feet of the surface, and outcroppings occasionally occur.

The type for the most part occurs in the northwest part of the county occupying the table-lands on Sand Mountain. Another small body is found on Lookout Mountain north of Gadsden, and three scattering areas occur along the south county line bordering Calhoun County.

In surface features the Dekalb fine sandy loam varies from rather level to gently rolling, with a few steep slopes near some of the larger streams. The topography of the type for the most part admits of easy drainage, but in a few instances during wet seasons artificial drainage is desirable and this may be easily secured by means of open ditches nearby natural drainage channels. The type is intersected by many small streams which are mostly intermittent.

A large part of the Dekalb fine sandy loam is under cultivation. Owing to its texture it is easily worked and readily absorbs the rainfall. While it is not naturally a strong, fertile soil it is very susceptible to good methods of tillage and to fertilization, particularly the addition of vegetable matter. It is perhaps adapted to a wider variety of crops than any other soil type in the area. Cotton and corn are the only crops extensively grown. A small acreage is given to potatoes, oats, peas, peaches, apples, and a few garden vegetables. Yields of cotton vary from one-half to 1 bale or more and of corn from 10 to 45 bushels or more per acre, the yields depending on treatment given these crops. Sweet potatoes do very well, as do Irish potatoes. In adaptation to truck crops this type is about equal to the Dekalb sandy loam. Melons do very well. Cabbage and kindred crops should not be grown commercially on this soil. On northern exposures peaches do well and the apples are of large size and well flavored. It is probable that tobacco could be successfully grown on this soil. Land of this type of soil varies in value from $10 to $30 an acre.

The results of mechanical analyses of soil and subsoil of the Dekalb fine sandy loam are given in the following table:

Mechanical analyses of Dekalb 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.*
19855	Soil	0.0	0.9	7.8	34.2	7.4	41.9	8.0
19856	Subsoil	.0	.8	7.5	33.6	7.4	38.6	12.3

CLARKSVILLE STONY LOAM.

The surface soil of the Clarksville stony loam to a depth of 10 to 14 inches consists of a gray to yellowish-gray or light-brown silty loam to silt loam. Underlying this material is a yellow or reddish-yellow heavy silt loam which quickly grades into a silty clay, all containing a small per cent of sand, mostly of the finer grades. Scattered on the surface and throughout the soil mass are found from 15 to 50 per cent of angular chert and siliceous limestone fragments varying in size up to 10 inches or more in diameter. This type is locally known as "gravelly land."

The type occupies a very broken country consisting of hills and ridges, with intervening narrow valleys. It occurs in bands of varying widths, the widest being between 3 and 4 miles, and all running in a northeast-southwest direction. The largest bodies are found north and west of Attalla and near the south county line bordering Calhoun County.

The Clarksville stony loam is of residual origin and is the result of the weathering and breaking down of Knox dolomite formation, which is a limestone containing a large percentage of difficultly soluble quartz in the form of chert. The more soluble portion of this type was gradually dissolved, leached out of the soil, and carried away, leaving behind the hard flinty material.

Owing to its topographic position and stony nature little of this soil is under cultivation, and at present it is very largely covered with a growth of oak timber, some pine, chestnut, and hickory. It is best, perhaps, that much of it should remain forested. When cleared and cultivated the tendency to wash is noticeable. While the soil is usually of a gray color it becomes, when cultivated for some time, so depleted of organic matter as to be almost white. Usually only the more gentle slopes, where rock fragments are smaller and less numerous, are being tilled.

Staple crops do moderately well on newly cleared fields, but unless considerable care is taken to keep up the fertility of the soil yields scarcely pay for the cost of production. In favorable locations

peaches and apples do well, the fruit being of good flavor and excellent keeping qualities. On the less stony areas it is believed tobacco could be successfully produced.

The Clarksville stony loam can be bought for $3 to $10 an acre.

The results of mechanical analyses of soil and subsoil are given in the following table:

Mechanical analyses of Clarksville stony loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
19833	Soil	4.5	10.7	5.2	7.4	2.4	54.3	15.3
19834	Subsoil	5.1	6.7	3.4	5.2	2.2	51.0	26.5

CLARKSVILLE GRAVELLY LOAM.

The soil of the Clarksville gravelly loam to a depth of about 12 inches is a gray to yellowish-gray silt loam containing a small amount of fine sand. The subsoil is a grayish to reddish-yellow heavy silt loam quickly grading into a silty clay which is also slightly sandy. From 10 to 25 per cent of small angular chert gravel is found on the surface and smaller quantities appear throughout the soil mass.

This type is nearly always found lying adjacent to areas of Clarksville stony loam. In some respects these two soils are closely related, while in others they are widely separated. They are much the same in texture and are identical in derivation; except in a few instances the material of the gravelly loam is colluvial, having been washed down from higher lying areas of Clarksville stony loam. There is a wide difference in topography, the gravelly loam being undulating to gently rolling and therefore more easily cultivated.

Much of this soil is under cultivation. Cotton and corn are the only crops grown and usually fair yields are secured. This type of soil is best suited to general farming and stock raising. Prices paid for land of this character range from $3 to $15 an acre.

The results of mechanical analyses of soil and subsoil are given in the following table:

Mechanical analyses of Clarksville gravelly 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.*
19837	Soil	1.7	5.5	6.1	10.6	2.6	59.3	14.1
19838	Subsoil	1.1	4.3	5.5	9.6	2.5	54.9	21.9

HOLSTON FINE SANDY LOAM.

The surface soil of the Holston fine sandy loam is composed of about 12 inches of light or yellowish-gray fine sandy loam containing a considerable amount of silt. The subsoil is a brownish-yellow to yellowish-brown fine sandy loam to silty loam. At depths varying from 4 to 10 feet material is encountered which is similar to that of Conasauga clay.

The Holston fine sandy loam, locally known as "piney-woods land," is confined to the valley of the Coosa River and is one of the most extensively developed soils found in this region. Its position is that of a high second bottom and is never subject to overflow. The topography of the type is undulating and the drainage adequate. It is an alluvial soil, the material having been brought down by the river and deposited in times of overflow or when the stream bed stood at a higher level.

The soil is easy to cultivate, but is somewhat deficient in organic matter. It responds readily to good tillage and fertilization, however, and the addition of barnyard manure or other organic matter proves highly beneficial.

Practically all of this soil is under cultivation and is used principally in the production of cotton, with a small acreage to corn. It is well adapted to cotton, but only fairly well to corn. Several of the garden vegetables are grown for local markets and all do well, especially potatoes. Prices paid for this soil vary from $15 to $35 an acre.

The results of mechanical analyses of samples of this soil type are given in the following table:

Mechanical analyses of Holston 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.*
19847	Soil	0.2	1.0	2.5	28.1	14.1	46.8	7.4
19848	Subsoil	.0	.5	2.1	24.4	13.3	45.3	14.3

HOLSTON GRAVELLY SANDY LOAM.

The soil of the Holston gravelly sandy loam consists of about 10 inches of light-gray fine sandy loam containing a considerable amount of silt and from 15 to 40 per cent of fine waterworn gravel. The subsoil is a grayish-yellow to yellow fine sandy loam heavier than the soil and grading at 3 to 5 feet into a yellow heavy silt loam or silty clay. Waterworn gravel appears in the subsoil in small quantities.

Small areas of this soil are found here and there throughout the Coosa River Valley. It occurs as narrow ridges or mounds within

the boundaries of other soil types found on second bottom, or along the slopes of bluffs between the Holston fine sandy loam and Huntington silt loam.

The type is sometimes cultivated to cotton, and fair yields are secured. The soil lacks organic matter, hence applications of barnyard manure and the growing of cowpeas and kindred crops are highly beneficial. Owing to its somewhat droughty condition, this soil requires careful methods of cultivation to conserve soil moisture.

The results of mechanical analyses of soil and subsoil are shown in the following table:

Mechanical analyses of Holston gravelly 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.*
19849	Soil	4.1	11.0	4.9	10.8	7.7	51.8	9.7
19850	Subsoil	3.2	8.4	4.2	9.9	8.3	48.6	17.5

HOLSTON SILT LOAM.

The Holston silt loam is a light to yellowish-gray floury silt loam, underlain by a heavy silt loam to silty clay. The subsoil is often mottled and a small number of iron concretions are present, underlying which at depths varying from 4 to 15 feet appears material similar to that of Conasauga clay.

The Holston silt loam is of small extent, covering in all an area of about 3 square miles. It is found around the heads of some of the smaller streams in the Coosa Valley or bordering stream courses where the drainage is rather poor. The topography of the type is level. The type is of alluvial origin, the material having been deposited in more quiet waters than the more sandy alluvial soils.

Scarcely any of this soil is being cultivated. It is best adapted to grass or general farming and stock raising. To secure the best results artificial drainage is necessary.

The results of mechanical analyses of soil and subsoil of this type are given in the following table:

Mechanical analyses of Holston 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.*
19845	Soil	0.3	2.9	2.8	13.4	12.9	55.7	12.0
19846	Subsoil	.0	2.1	2.3	12.3	12.1	53.3	18.0

HUNTINGTON SILT LOAM.

The Huntington silt loam, locally known as "river land," is a brown to dark-brown silt loam about 7 inches deep, underlain by a reddish-brown heavy loam or silty clay. The presence of mica flakes is common in this soil. Occasionally areas of a sandy surface soil appear and where large enough to be mapped on the scale used were classified as Huntington sandy loam.

This type occurs as first bottom skirting the Coosa River and is subject to occasional overflow. The surface is level to undulating and the drainage adequate.

The Huntington silt loam is derived in part from alluvial material brought down by the river. The underlying Conasauga shale formation oftentimes enters into the composition of this soil.

Practically all of this soil is under cultivation. No other soil in the county is so extensively used for the production of corn, to which crop it is well adapted. Cotton is not extensively grown, partly because it is not as well adapted to this soil, also because of injury received from early overflows. An excellent opportunity is here presented for dairying, stock raising, and general farming.

The results of mechanical analyses of the soil and subsoil are found in the following table:

Mechanical analyses of Huntington 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.*
19843	Soil	0.0	0.9	0.9	2.4	5.0	64.0	26.9
19844	Subsoil	.1	1.3	.9	2.3	4.4	57.6	33.2

HUNTINGTON SANDY LOAM.

The Huntington sandy loam is somewhat variable as to texture and depth of soil. These variations occur at such short and irregular distances as to make a separation impracticable. The soil is a medium to fine sandy loam 6 to 18 inches in depth, underlain by a reddish-yellow to yellowish-brown silty sandy clay. This type is found in a few scattering, small areas along the immediate banks of the Coosa River and is subject to overflow.

The Huntington sandy loam is largely of alluvial origin but material similar to that of Conasauga clay, which always appears at depths varying from 3 to 10 feet, also enters to a small degree into the composition of this type. Much of the soil material is of more recent deposition by the river than the second-terrace alluvial soils of the area. The surface of this type is undulating and the drainage adequate.

Corn is practically the only crop grown on this soil and very good yields are secured. Cotton is not grown to any extent because of the danger of overflow. This soil is well adapted to melons and most of the garden vegetables.

The following table gives the results of mechanical analyses of the soil and subsoil of this type.

Mechanical analyses of Huntington 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.*
19865	Soil	0.1	2.9	19.6	46.6	10.7	15.2	5.0
19866	Subsoil	.0	3.5	16.8	35.4	6.5	19.0	18.3

CONASAUGA CLAY.

The Conasauga clay is the heaviest soil found in the county. To a depth of about 6 inches it consists of a yellowish-brown clay loam or clay, underlain by a yellow or reddish-yellow, heavy, impervious plastic clay. The surface 2 to 4 inches of soil is sometimes a light-gray fine silt which is probably a river deposit. The largest area of this phase lies southeast of Gadsden. Waterworn gravel is also common over the surface of the type, but seldom occurs in such quantities as to interfere with cultivation. This clay soil is of a very plastic nature when wet, and hard when dry, and at certain moisture stages is very tough and sticky, making traveling over it quite difficult.

Areas of this type are confined entirely to the Coosa River Valley. The largest body lies southwest of Gadsden and others less extensive are found toward the east. The topography is level to undulating. The natural surface drainage is sufficient except in a few localities where artificial drainage is required.

The Conasauga clay is derived from the disintegration and breaking down of the underlying Conasauga shale formation. The seams of limestone appearing in this formation probably have little or no influence upon the soil. The close and impervious nature of the soil so seriously affects the movements of soil moisture that during the hot summer crops do not get the amount of moisture required and therefore become stunted and either do not fruit at all or make inferior yields. To overcome this condition and improve the structure of the soil the incorporation of organic matter, by applying stable manure or by turning under green manuring crops, and liming are strongly recommended. Only a few fields are under cultivation and many have been abandoned. Cotton and corn are the only crops grown and yields scarcely repay the cost of production.

This type is best adapted to hay and stock raising. It ranges in price from $3 to $10 an acre.

The average results of mechanical analyses of soil and subsoil of the Conasauga clay are given in the following table:

Mechanical analyses of Conasauga clay.

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.*
19839, 19841.....	Soil.....	2.3	7.4	2.2	3.6	2.4	57.3	24.5
19840, 19842.....	Subsoil.....	.3	2.9	1.8	4.2	1.9	31.7	57.1

HAGERSTOWN LOAM.

The Hagerstown loam to a depth of 8 to 12 inches consists of a yellowish-brown loam, underlain by a reddish-yellow or yellow loam grading at about 2 feet into a clay loam or clay.

The type occurs in the narrow limestone valleys between the several mountain ranges, being most extensively developed in Big Will's Valley, though found in various other parts of the county.

The floors of these valleys are undulating to gently rolling and intersected by small streams; consequently they are well drained.

The Hagerstown loam is of residual origin, being the result of the breaking down and weathering of Bangor, Chickamauga, and Knox dolomite limestones. Bordering the edges of these valleys there are occasionally small areas over which lies a thin mantle of fine material which has found its way down from adjacent slopes.

The Hagerstown loam is one of the most extensively cultivated soils in the county and was one of the first to be cleared for cultivation. It has been used almost exclusively for the production of cotton and corn, to which crops it is well adapted. Tobacco could be profitably produced. It is also well suited for general farming.

The agricultural value of the Hagerstown loam depends largely on location, its price varying from $15 to $35 an acre.

The results of mechanical analyses of soil and subsoil are given in the following table:

Mechanical analyses of Hagerstown 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.*
19863.....	Soil.....	0.0	0.5	1.4	13.1	15.4	52.5	17.2
19864.....	Subsoil.....	.0	.4	1.0	10.4	8.0	53.6	26.4

HAGERSTOWN STONY CLAY.

The Hagerstown stony clay to a depth of about 6 inches is a yellowish-brown to brownish-yellow clay loam or clay, underlain by a yellowish-brown or yellow heavy tough clay. Limestone fragments are found on the surface and throughout the soil mass; also rock outcrops are frequent.

The type occurs in narrow bands along the lower slopes and base on the northwest side of Lookout and Red mountains.

The Hagerstown stony clay is the result of the weathering of Chickamauga limestone. The slopes are rather too steep and rough and the surface too stony for the profitable cultivation of the staple crops, though well adapted to the production of apples.

The results of mechanical analyses of this type of soil are shown in the following table:

Mechanical analyses of Hagerstown stony clay.

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.*
19861	Soil	2.3	7.5	2.4	4.2	7.1	48.2	28.3
19862	Subsoil	.2	1.1	1.3	7.9	5.0	23.3	61.1

DECATUR CLAY LOAM.

The Decatur clay loam is very limited in extent, the aggregate of the three small areas found being not more than 2 square miles. The soil to a depth of 8 inches consists of a reddish-brown clay loam grading at from 18 to 24 inches into a stiff red clay.

The type is found within areas of Hagerstown loam, and is most typically developed in the vicinity of Turkeytown. The topography is undulating or gently rolling and the drainage good.

This type is the result of the weathering and breaking down of the Knox dolomite formation, containing little, if any, chert.

All of the Decatur clay loam is under cultivation and cropped almost exclusively to cotton and corn, very good yields of both being secured. It is an excellent soil for general farming; also for grasses. It is generally considered a stronger soil than the Hagerstown loam.

The results of mechanical analyses of soil and subsoil are given in the following table:

Mechanical analyses of Decatur 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.*
19851	Soil	0.4	3.2	2.3	5.0	7.2	48.9	32.8
19852	Subsoil	.9	3.1	2.0	3.8	5.2	46.3	38.5

HANCEVILLE LOAM.

The Hanceville loam consists of about 6 inches of reddish-brown heavy loam underlain by a lighter colored reddish-brown clay loam or clay.

The type occurs in bands on the tops of ridges, mainly on Lookout Mountain. One small area is found about 2 miles north of Aurora. The surface is gently rolling and occasionally hilly, and the drainage is good.

The Hanceville loam is a residual soil derived from the breaking down and weathering of the underlying sandstone formation, probably Lookout sandstone.

This is the strongest mountain soil in the area. It is best adapted to general farming. Very good yields of corn and forage crops are secured. Some peaches are grown, but it is not considered an especially good soil for this crop in that the keeping quality of the fruit is not satisfactory. Apples would undoubtedly do well. Prices paid for this land vary from $3 to $15 an acre.

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

Mechanical analyses of Hanceville 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.*
9869	Soil	0.3	3.8	13.4	26.1	3.5	27.2	25.5
9870	Subsoil	.0	3.2	10.6	20.2	4.4	24.9	36.7

LOCUST SILT LOAM.

The Locust silt loam to a depth of about 14 inches is a grayish-yellow silt loam and grades into a strong yellow silty clay. At from 5 to 7 feet below the surface is often found a stratified layer 6 to 8 inches thick of angular chert gravel.

Areas of this soil are confined to Murphree Valley in the northwestern part of the county. They vary in width from one-fourth to three-fourths of a mile and lie along Locust Fork of Black Warrior River and its tributary, Bristow Creek. The surface of the type is slightly undulating, with the drainage toward a stream flowing down the center of the valley.

The Locust silt loam is apparently an alluvial soil, having been deposited by water. It is a fairly strong soil and all of it is under cultivation, producing very good yields of cotton and corn. It is best adapted to the production of hay and to stock raising and general farming.

The results of mechanical analyses of the soil and subsoil are given in the following table:

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.*
19867	Soil	1.0	2.0	1.4	4.2	6.5	66.7	17.9
19868	Subsoil	1.3	2.3	1.3	3.9	16.0	48.4	26.9

MEADOW.

The type mapped as Meadow includes first bottom lands occurring as marginal strips along some of the smaller streams. The variableness of the soil in such features as texture, color, and structure, occurring at such short and irregular intervals, makes a separation impossible. This soil is subject to inundations, but these are seldom of such duration as seriously to affect crops. The type is of recent alluvial origin, being composed largely of a mixture of material from adjacent uplands. Position and manner of formation are the chief factors in making the separation. The Meadow is largely forested, and with few exceptions no attempt has been made to bring it under cultivation. If artificially drained by straightening some of the streams and cutting a few ditches to provide for seepage water, this soil would be very desirable for corn and the more sandy areas for many of the vegetables.

ROUGH STONY LAND.

Rough stony land is a term applied to broken, stony areas of no value except for the small amount of timber and sparse pasture they afford. The character of the soil varies with the different underlying formations. Here it is derived from sandstone similar to that of the Dekalb soils which always border these areas. A number of areas of Rough stony land too small to show on the soil map occur in different parts of the Dekalb fine sandy loam, sandy loam, and stony silt loam.

SUMMARY.

Etowah County lies in the northeastern part of Alabama and covers an area of 542 square miles. The elevation of the county varies from about 500 to about 1,500 feet and the topography is characterized by valleys, plateaus, and mountains. The main drainage is toward the southwest to the Gulf and is effected largely through the Coosa River and its tributaries.

Gadsden, the county seat, is the largest town, with a population of about 8,000. Alabama City, a manufacturing town 2 miles west

of Gadsden, has a population of about 2,500, and Attalla, with a population of about 2,000 and 3 miles still farther west, is another important town. Iron furnaces are located at each of these towns. At Alabama City there are also a large cotton mill and a steel plant, and at Gadsden several factories employing several hundred men. Atlanta, Chattanooga, and Birmingham are all less than three hours distant.

Etowah County is well supplied with railroads, five lines entering one or more of the three towns in the center of the county. The Coosa River is navigable up as far as Rome, Ga., and to the shoals 20 miles below Gadsden.

The climate is favorable to the production of a wide variety of crops. The summers are long and pleasant and the winters short and mild. The so-called winter crops suitable for stock raising may be relied upon through the winter. The annual precipitation of about 55 inches is ample for all crops grown. The average growing season for tender vegetation is between six and seven months.

Cotton is the all-important crop, and corn is next, though grown only for home consumption. A comparatively small acreage is devoted to wheat, oats, sorghum, peas, peanuts, hay, vegetables, and tobacco. Cattle raising is also being carried on to a small extent.

The farmers of the county in order to maintain the productivity of their soils should adopt thorough tillage methods and a system of crop rotation. The adaptation of soils to crops should be recognized and a greater diversity of crops grown. Other crops than cotton would be more profitable on much of the cultivated land. On some of the heavier soils suited to forage crops, dairying and stock raising would be promising industries, and in some localities the production of fruit, especially peaches and apples, on a larger commercial scale would prove remunerative. Certain soils in the county under proper treatment are adapted to tobacco and truck crops, and other crops might be introduced with profit.

Much of the labor on the farms is done by negroes, though during the busy season the white farmer and his family work in the fields. Most of the farms, particularly in the mountainous section, are cultivated by the owners.

The prices paid for farm land vary from $3 to $40 an acre, according to the kind of soil and the location of the farm.

Etowah County forms a part of the great Appalachian province. The rocks exposed are all of sedimentary origin, belonging to the Paleozoic age, and consist of crumbled and folded shales, limestone, conglomerates, and sandstones, varying in degrees of purity and hardness. The underlying strata contain workable quantities of iron, coal, and limestone.

All of the soils of the county, except alluvial and colluvial strips, which represent a mixture of material from several formations, are derived directly from the decay and disintegration of the rocks on which they lie.

Twenty soil types were mapped in the county, varying from heavy clays to sandy loams.

The Dekalb soils, derived from sandstones and shales, cover practically the entire mountainous section of the county. The silt loam, fine sandy loam, and sandy loam are the farming lands of this district.

The Dekalb silt loam, one of the extensive types, is best adapted to grasses and general farming. Cotton produces from one-fourth to five-eighths of a bale and corn from 5 to 10 bushels per acre, the yields depending upon the methods of cultivation.

The Dekalb fine sandy loam is probably the most extensively developed and widely cultivated soil on Sand Mountain. While not naturally a strong fertile soil, it is easily worked and is very susceptible to good methods of tillage and fertilization, the addition of vegetable matter being particularly effective. It is perhaps adapted to a wider variety of crops than any other soil type in the area. Cotton and corn, the principal crops, give good yields. Sweet potatoes, Irish potatoes, melons, and most truck crops do well. On northern exposures peaches and apples are successfully grown. It is probable that this soil is also adapted to tobacco.

The Dekalb sandy loam is, in its adaptability to crops, similar to the Dekalb fine sandy loam, but it is not quite so productive.

The Dekalb shale loam and Dekalb stony silt loam are cultivated only to a slight extent. These types are best adapted to forestry or to pasture. On some portions of the stony silt loam apple and peach orchards would do well.

The Hanceville loam, though not extensively developed, is one of the strongest mountain soils. It is best adapted to general farming. Very good yields of corn and forage crops are secured. Apples would undoubtedly do well.

The narrow limestone valleys present a variety of limestone soils, due to the composition and structure of the underlying rocks. In point of importance are the Hagerstown soils, the loam member of which is the only one extensively developed. Derived from cherty limestone are large areas of Clarksville stony loam and a small area of gravelly loam.

The Hagerstown loam is extensively cultivated to cotton and corn, to which crop it is well adapted. It is also well suited for general farming and for grasses. Tobacco could also be profitably produced.

The Hagerstown stony clay, owing to its stony nature and rough topographic position, is not used for cultivated crops. It is well adapted to the production of apples.

The Decatur clay loam is very limited in extent. It is the strongest limestone soil found in the county. Very good yields of both cotton and corn are secured. It is an excellent soil for general farming and also for grasses.

The Clarksville stony loam is the most extensive of the limestone soils. Owing to its topographic position and stony nature little of this soil is under cultivation. Staple crops do moderately well. Peaches and apples give excellent returns, the fruit being of good flavor and excellent keeping qualities. On the less stony areas it is believed tobacco can be successfully produced.

The Clarksville gravelly loam produces fair yields of cotton and corn. This soil is best suited for stock raising and general farming.

The Conasauga clay is the heaviest soil found in the county. Owing to the plastic nature of this soil and the difficulty in working it, together with the fact that crops suffer in both very dry and wet weather, causing yields to be low, it is seldom cultivated. Cotton and corn are the only crops grown, and the yields scarcely repay the cost of production.

Rough stony land is a term applied to broken stony areas of no value except for the small amount of timber and sparse pasture they afford.

In the Coosa River valley are large areas of alluvial soils deposited at a time when the stream bed stood at a higher level. These soils are composed of a mixture of material from different formations brought down from points farther up stream and have been mapped as Holston and Huntington soils.

The Holston fine sandy loam is the most extensive of these alluvial soils. It is above overflow, and the drainage is adequate. Practically all the type is under cultivation and is used principally in the production of cotton, with a small acreage given to corn. It is well adapted to cotton, but only fairly well to corn. Most garden vegetables do well, especially potatoes.

The Holston gravelly sandy loam is adapted to about the same crops as the fine sandy loam.

The Holston silt loam is of small extent. Though lying above overflow, it is flat and poorly drained. It is best adapted to grasses, general farming, and stock raising.

The Huntington silt loam, locally known as "river land," occupies first bottom and is subject to overflow. The surface is level to undulating and the drainage adequate. The type is cultivated mainly to corn, to which crop it is well adapted. Some cotton is grown, though

with less success than corn, partly because of injury from early overflows. This soil offers excellent opportunities for dairying, stock raising, and general farming.

The Huntington sandy loam, which occurs along the immediate banks of the Coosa River, is more liable to overflow than the Huntington silt loam. Corn is practically the only crop grown, and very good yields are secured. The soil is well adapted to melons and most garden vegetables.

Areas of Locust silt loam are confined to Murphree Valley, in the northwestern part of the county. It is apparently an alluvial soil, with undulating surface and good drainage. It produces good yields of cotton and corn. It is best adapted to the production of hay, to stock raising, and general farming.

The type Meadow includes first bottom lands occurring as marginal strips along some of the smaller streams. This soil is subject to inundations of short duration, but these are seldom serious enough to affect crops. When drained it is excellently adapted to corn and many vegetables.

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