SOIL SURVEY OF THE COVINGTON AREA, GEORGIA.

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INTRODUCTION.

Covington, the county seat of Newton County, is situated near the center of the area surveyed, about 40 miles southeast of Atlanta. Social Circle is in the northeast corner of the area, in Walton County, and Newborn lies just on the line between Newton County and Jasper County, in the southeast corner of the area. The region surveyed lies between north latitude 33° 30′ and 33° 40′ and west longitude 83° 40′ and 84° and embraces about 225 square miles. It is a rectangular area, including parts of Newton, Walton, Morgan, Rockdale, and Jasper counties. (See fig. 9, p. 317.)

HISTORY.

Considerable has been written upon the history of the State of Georgia as a whole, dealing with its establishment as a colony of Great Britain, its early settlement, and the various events of interest which mark its progress to the present state of development. But material is scarce from which to obtain definite facts in regard to the area which we have under consideration.

Georgia was the last of the thirteen colonies to be granted a charter by the mother country. This event took place in the year 1732, and a party of English emigrants led by General Oglethorpe, the pioneer and first governor of the colony, crossed the Atlantic and settled at Savannah. "The best people among the needy population of England" were chosen for the first settlers, and these were given grants of land in 50 acre plots on which they were to build a home and start some agricultural industry. Special inducements were offered those who had larger means. To any who would pay his own expenses and take with him ten men servants a grant of 500 acres of land was made, for which a rent of 20 shillings a year per 100 acres was to be paid after ten years. After the colonies declared their independence of the parent power Georgia was permanently established as a State. Her constitution was adopted in 1777.

Previously to the invention of the cotton gin, corn, wheat, oats, and live stock were the chief agricultural interests in the upland portion of the country, while a variety of cotton from which the seed could be

easily picked was grown on the sea islands along the coast. Much of the territory in northern and western Georgia was occupied by the aboriginal tribes, and the early history of the country was marked by many thrilling incidents of Indian warfare, as well as by long contests of a less bloody nature, before the troublesome tribes were finally removed to Western reservations. That portion of the territory now occupied by Newton and several adjoining counties was ceded to the whites by the Creek Nation in 1818, and Newton County, named for Sergt. John Newton, was laid out in the year 1821.

CLIMATE.

The following table, showing the normal monthly and annual temperature and precipitation of the Covington area, Georgia, is compiled from records of the Weather Bureau, climate and crop service, Georgia section. The records were made at Covington, the only station located in the area, but as it is centrally situated and of about average altitude the data can be safely relied upon to show the normal conditions throughout the area.

Normal monthly and annual temperature and precipitation.

Month.	Covington.		Month.	Covington.	
	Temperature.	Precipitation.		Temperature.	Precipitation.
	°F.	*Inches.*		°F.	*Inches.*
January	43.1	4.25	August	79.0	6.36
February	42.1	4.29	September	73.5	2.46
March	53.8	4.95	October	60.3	3.94
April	61.1	4.05	November	51.5	3.29
May	72.4	2.22	December	43.6	3.37
June	78.4	2.20	Normal annual	61.5	48.19
July	79.1	6.81			

The average date of occurrence of the last killing frost in spring is April 4, and the latest frost in recent years occurred April 12, 1900. The earliest date in the fall was October 16, 1896, and the average date November 8.

PHYSIOGRAPHY AND GEOLOGY.

Newton County lies about in the middle of the Piedmont Plateau at a place where its breadth is about 100 miles from southeast to northwest. The Piedmont Plateau is the name given to the belt of eruptive or crystalline rocks that extends in an almost unbroken strip from Maine to Alabama. The rocks are metamorphic crystallines, which are supposed to be ancient sedimentary deposits changed in form by pressure, heat, and other agencies of metamorphism, almost entirely

obscuring their former structure. A suggestion of the old bedding planes is still traceable in some localities, and in the area under consideration the beds dip almost vertically toward the southeast, so that their strike is parallel to the long axis of the Piedmont formation, i. e., north-northeast. In Georgia the Piedmont Plateau is bounded on the southeast by the Coastal Plain, whose formations belong to the Cretaceous and Tertiary periods, which are of comparatively recent age. On the northwest it is bounded by the Cohutta Range and the Paleozoic group of rock formations. No detailed geological survey has as yet been made of the section comprised in the Covington sheet, but the rocks generally conform to those classified elsewhere as Laurentian. They are mostly gneissoid granites, gneisses, and schists. The gneisses often display an irregularly banded structure and are in many instances porphyritic.

The topography is typical of a foothill area, or possibly a little less broken. It might be defined as "hilly." Few level areas of great extent occur, though in no place are the slopes so steep as to be unfit for agricultural purposes. The altitude averages about 750 feet, and varies from 650 to 850 feet, with one point about 880 feet above sea level.

The general direction of the drainage is southward, the major streams being the Yellow and Alcovy rivers, which unite farther south to form the Ocmulgee. The creek valleys are usually narrow, with rather steep slopes, but the larger streams are bordered by belts of meadow land, often marshy, and subject to overflow at flood time.

A few rocky ridges are found, but only small areas are so stony as to have no agricultural value. There are, however, a few areas indicated on the soil map by the symbol (V) where the bed rock outcrops at the surface, and these have no value for agricultural purposes.

SOILS.

Of the three types of soil found in this area two are residual and the third a sedimentary deposit made by rivers and smaller streams. The residual soils are derived from the decomposing crystalline rocks, which belong to the metamorphic group of the Piedmont Plateau. The depth of the loose covering varies widely, being nothing in some places where the bed rock outcrops at the surface to 40 or 50 feet in other localities. The level spaces are covered deeply with soil, while on the steeper slopes of the hills, where erosion has gone on more rapidly, the depth of the decomposed mantle is much less. The soils of this area have been given the names Cecil clay, Cecil sandy loam, and Meadow.

The following table shows the area of the several soil types and their proportion of the whole area surveyed:

Areas of different soils.

Soil.	Acres.	Per cent.
Cecil clay	99,930	69.5
Cecil sandy loam	27,500	19.1
Meadow	16,410	11.4
Total	143,840	.....

CECIL CLAY.

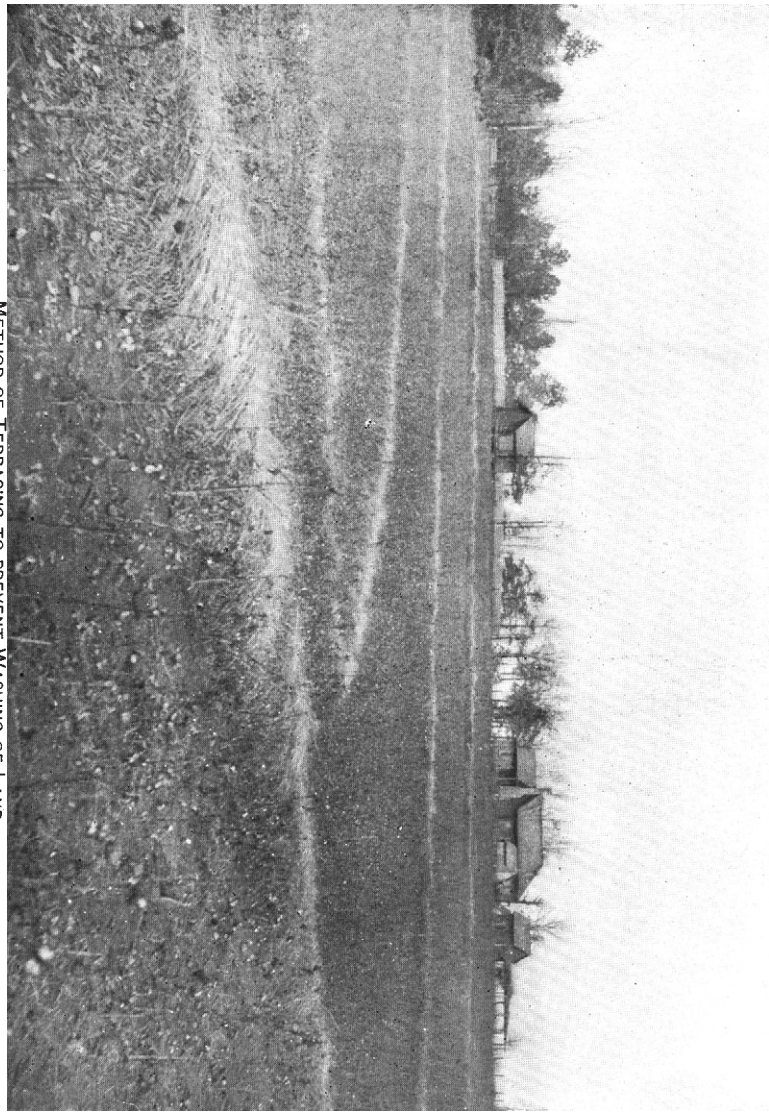
As the above figures show, this is the predominant type of the area under investigation. It is found in all sections of the area and is probably the most widely distributed of the soil types of the Piedmont group. The areas in which it is found include all variations of upland physiography, though it is more often characterized by the rougher, more broken topography than are the other types. When the tops of the ridges are covered by a cap of sandy loam it is usual to find the clay on the steeper slopes to the streams. This is probably due to the fact that the hillsides are more subject to washing, and the loose coating of sand is more easily carried away by processes of erosion.

The soil arises from the decomposition of granite, gneiss, gabbro, and other metamorphic rocks. The usual derivation is from a gray gneiss that is rich in feldspar. Occasionally we find a mica schist giving rise to this soil, and in such cases small particles of muscovite mica are found in the soil.

In general this type is very uniform in its mechanical composition, although a few variations occur that do not differ from the typical samples sufficiently to warrant a separation into new types, and these will be briefly described later. In its typical form the soil is composed of a heavy red clay loam or clay, to a depth of 5 or 6 inches, underlain by stiff, tenacious red clay to a depth of 3 feet or more.

The color of the soil varies somewhat from a bright red to dark red or red brown, but usually it is of a dark or brick-red shade. This color is so characteristic that it aids greatly in the field mapping, and in areas where it is so widely distributed it can often be recognized in plowed fields at a distance of a half or three-quarters of a mile.

The surface is, as a rule, free from stones, though in some cases there are fragments of quartz and other rocks strewn over it. In the southwest portion of the area, just west of the Yellow River, there are a few ridges where cultivation, though possible, is not carried on profitably on account of the stony nature of the clay; but these areas are so small as to be of no considerable importance. The proportion of stone seldom exceeds 20 per cent.



METHOD OF TERRACING TO PREVENT WASHING OF LAND.

CECIL CLAY WASHES.

With clean cultivation of cotton and superficial plowing these lands wash badly, and many fields are annually thrown out of cultivation to grow up in old-field pine and accumulate a soil mulch. Such washing can be prevented by terracing, deeper and more thorough cultivation, and by rotation of crops.

Where road cuts and other excavations have afforded an opportunity to examine deep sections, the stiff, tenacious clay of the subsoil is found to grade into a less thoroughly weathered material, containing more sand and fragments of undecomposed rock, until finally the unmodified bed rock is reached. Veins of quartz and other resistant rock are found running through the otherwise thoroughly decomposed subsoils, and often a fresh cut reveals the original rock structure, though complete disintegration has taken place.

Though the Cecil clay is a heavy clay soil, it is comparatively well drained and does not suffer in excessively wet seasons more than the more sandy soils. If the underdrainage were more complete, however, it is probable that the soil would suffer less from washing. Crops on this soil are very susceptible to injury by drought, for just at the time when the crops need cultivation most the surface is apt to be dried and baked so hard that it is nearly impossible to work it. But it is a strong, productive soil, recognized as excellent land for the production of cotton, wheat, and corn. The average yield of cotton is about one-half bale per acre, while corn (in the ear) and wheat will yield from 8 to 10 bushels per acre. With careful cultivation, however, and under favorable conditions, 1 bale of cotton per acre or 15 to 20 bushels of wheat can be produced. There are a few peaches grown on this soil, and when proper care and cultivation are employed good results are obtained, but at present they are not grown extensively for the market.

An important variation from the typical Cecil clay, and one which covers large areas, is characterized by a coating of loam from 4 to 6 inches in depth. The soil is generally of a reddish or dark-brown color and is somewhat sticky from the large proportion of clay which it contains. The subsoil in these areas is more gritty with sand and unweathered fragments of rock than is the case in the typical occurrence of the type. It is considered a very desirable soil, being more easily cultivated than the heavier clay soil and at the same time possessing the quality of strength and fertility derived from the underlying red clay. Another variation of this type is what is locally known as "mulatto land." It covers large areas east of the Alcovy River, in the middle-eastern section of the area. It is a dark-red or red-brown clay loam 6 or 7 inches deep, underlain by dark red clay. Mechanical analysis would probably show a larger percentage of silt and less of true clay in this phase than in those previously described; in the field it appeared to be a lighter soil than the others. This variation may come from the character of the rock, though it is frequently due to more thorough cultivation and more judicious manuring, and can always be thus artificially produced from the red clay. The soil contains a larger percentage of organic matter, and being more easily worked than the typical clay, is considered a more desirable soil.

Following are the tabulated results of mechanical analyses of typical samples of Cecil clay:

Mechanical analyses of Cecil clay.

[Fine earth.]

No.	Locality.	Description.	Soluble salts, as determined in mechanical analysis.	Organic matter and combined water.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
6264	2 miles SE. of Social Circle.	Sandy loam, 0 to 5 inches.	0.01	2.28	3.38	13.40	10.36	26.02	10.60	18.86	15.37
6262	3 miles NE. of Covington.	Clay loam, 0 to 6 inches.	.04	4.64	4.22	14.92	13.12	21.36	6.96	16.68	18.32
6266	2 miles S. of Winton.	Heavy loam, 0 to 6 inches.	.01	6.18	3.72	12.02	9.16	20.58	9.42	17.38	22.03
6267	Subsoil of 6266....	Clay loam, 6 to 36 inches.	.01	5.36	2.26	9.66	8.50	23.20	8.22	15.30	27.63
6265	Subsoil of 6264....	Stiff clay, 5 to 36 inches.	.01	5.00	4.20	11.16	8.00	17.56	6.08	18.50	30.01
6263	Subsoil of 6262....	Stiff clay, 6 to 36 inches.	.04	11.04	2.32	6.10	6.00	12.10	2.62	13.48	46.10

CECIL SANDY LOAM.

The second of the soils in extent and importance is the Cecil sandy loam. It is found in patches in all parts of the area, though the larger areas occur in the north and west. As a rule the topography in these areas is less broken, but the type is found in some instances occupying the most rugged features of the land. As indicated before, the level hilltops are sometimes covered by a coating of Cecil sandy loam, while on the lower slopes the Cecil clay is found.

Like the Cecil clay, the Cecil sandy loam is a residual product arising from the disintegration of crystalline rocks. The rock from which it is formed is generally a gray gneiss or gneissoid granite. In its typical form the soil is a medium sandy loam, gray in color, and usually free from stone on the surface. The sand, which is from 7 to 14 inches deep, with an average depth of 9 inches, is less homogeneous than the sedimentary sands which have been worked over and sorted by the water. Though large fragments are not present in great numbers, there are coarse angular fragments of quartz both in the soil and subsoil. The first 4 or 5 inches of the soil itself are of a darker shade, due to the presence of decaying vegetable matter. The soil passes to the subsoil through a sticky sand and gritty clay to the stiff clay that underlies the lighter covering. This intermediate stratum is not more than 3 or 4 inches in thickness, and often the change is quite abrupt from sand to clay. The underlying clay is stiff and tenacious, of a

pink or light-red color, passing gradually into dark-red clay very similar to the subsoil of Cecil clay, though somewhat lighter, and containing a greater admixture of sand and fragments of undecomposed rock. In certain areas, notably those characterized by rougher features of topography, the soil is shallower. Occasionally the bare rock is exposed at the surface, and in one instance the road for a distance of several rods crossed the naked surface of the bed rock, but cases are rare where this rock outcrop extends over more than an acre or two. Where the area is large enough to be of importance we have indicated its location on the map by a symbol. Not only is there a difference in the depth of the soil in these places, but the soil itself is a little coarser and contains more fragments of quartz and feldspar.

The chief crop grown on the Cecil sandy loam, as on the Cecil clay, is cotton, of which the average yield is about one-third of a bale to the acre. Corn yields on the average about 8 bushels per acre. Cowpeas are also grown, and the farmer finds this a helpful crop in improving the condition of the soil. They are sometimes sowed broadcast in the cornfield after the corn is well up, and need no further cultivation. Sweet potatoes do remarkably well on this soil, yielding from 75 to 100 bushels per acre. Irish potatoes, though seldom planted, are a successful crop when properly cared for.

The soil is well adapted to trucking, but there is no industry of the kind extensively carried on, garden products being raised only for home use.

The following table shows the results of mechanical analyses of samples of Cecil sandy loam:

Mechanical analyses of Cecil sandy loam.

[Fine earth.]

No.	Locality.	Description.	Soluble salts, as determined in mechanical analysis.	Organic matter and combined water.	Gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0.0001 mm.
			P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
6270	1½ miles N. of Oxford.	Medium sand, 0 to 12 inches.	0.01	1.62	12.92	21.54	10.96	18.24	8.90	16.58	9.13
6268	1½ miles S. of Almon.	Medium sand, 0 to 12 inches.	.01	1.94	13.56	18.60	11.12	23.34	8.84	12.72	10.07
6272	2 miles S. of Winton.	Medium sand, 0 to 10 inches.	.02	2.62	12.58	16.90	13.16	22.68	6.86	15.06	10.18
6273	Subsoil of 6272....	Tenacious clay, 10 to 36 inches.	.01	4.62	8.48	11.72	8.14	17.80	8.68	15.08	24.45
6269	Subsoil of 6268....	Heavy clay, 12 to 36 inches.	.01	6.10	6.74	10.24	5.80	13.96	6.94	20.42	29.77
6271	Subsoil of 6270....	Stiff clay, 12 to 36 inches.	.01	6.88	9.78	9.16	3.66	6.84	2.94	21.34	39.57

MEADOW.

Standing third in extent comes the Meadow. These lands are locally known as "bottom lands," and though they comprise a comparatively small area, still they are of great importance. This type of soil occupies the river and creek bottoms. Along the smaller streams it exists as a narrow band, sometimes not more than 200 yards wide. On the Yellow and Alcovy rivers, however, the meadow broadens out in some places to a width of a half mile on each side, and in such localities it is valued very highly for the production of certain crops.

The type arises from the deposition of sediments by the streams. At the annual flood time the rivers and creeks overflow their banks, and being loaded with fine sand and silt, which they drop as the current becomes less rapid, they build up a flat that grows and broadens from year to year. The texture of these bottom-land soils varies widely, depending upon the soil of the neighboring upland from which they are derived and upon the conditions of deposition. Sometimes it is a fine silt or clay; again it almost pure sand, but generally it is a mixture of sand and clay. There are, occasionally, strips of sand running parallel with the stream which mark the course of runways at the time of overflow. Usually we find a considerable amount of organic matter in the soil—much more than in the upland soils; and this gives to the earth a dark and sometimes mucky appearance. Leaves, twigs, and decaying branches of trees are found to a depth of 3 or 4 feet.

In its natural condition the meadow is wet and marshy and covered by a growth of marsh grass, willows, sweet gum, and other water-loving vegetation.

It requires considerable labor and trouble to get these lands into condition so that they can be worked, but when once cleared and drained they are so productive that it is profitable for the farmer to improve them. If the meadow is narrow, all that is necessary is an enlarging and deepening of the stream bed. The course of the creek is usually straightened and the material is thrown out on each side, forming small embankments that serve as slight levees. If the meadow is broad it is necessary to run cross ditches to form a good system of drainage. This ditching and deepening of the stream course is not intended to prevent overflow at the time of the annual spring floods, but is to carry off the superfluous water after the crop has been planted and to prevent damage by heavy rains and floods during the growing season. Sometimes a row of willows is planted across the meadows to check the too rapid flow of the flood waters and to force deposition or prevent the cutting away which is apt to result when the water is very high.

The chief crop raised on this meadow land is corn. Under favorable circumstances as high as 30 to 40 bushels per acre are produced, while the average yield is from 15 to 20 bushels. This is double the yield

GENERAL VIEW OF ONE OF THE SMALL MEADOW AREAS.

These small meadow areas make excellent grass lands for hay and pasture and good corn lands if they can be protected from overflow in time of floods. If properly protected and well drained they form a valuable feature of the farms.

that the upland soils produce. Oats do remarkably well on this soil, yielding from 25 to 30 bushels per acre. It is the best grass land, too, yielding from 1 to 3 tons of hay per acre. Sorghum is often grown to advantage on the Meadow soil, but cotton and wheat are seldom planted here.

Considerably more of the Meadow would be under cultivation if it were not for the danger of losing an entire crop by late floods. Heavy rains in July and August are sometimes disastrous to the crops on these lowlands. Hence it is natural that the farmer should be timid about risking the total loss of a crop for the sake of more profitable yield.

AGRICULTURAL CONDITIONS.

Of the total population in this section about half are negroes, and only a very small percentage of these own farms. About 50 per cent of the white people own the land they work, and so the white and colored tenants make up a large part of the agricultural population. A few of these rent their farms "on shares," but by far the greater number pay "standing rent." The rent is usually paid in cotton, at the rate of 1 bale for 15 acres. So the rent of a "one-horse" or 30-acre farm is 2 bales of cotton. The rate is made irrespective of the market value of cotton, and in this way the landlord shares with the tenant the disadvantage of low prices.

As a rule the tenant runs a small farm of 30 to 60 acres and hires very little labor. Landowners, however, often have plantations of 500 or 1,000 acres, and employ colored labor, which they obtain for an average wage of 50 cents a day.

The condition of the tenant is often deplorable. As a rule he is poor, and this is too often due to carelessness or improvidence. He buys a large part of his provisions from a town merchant, who gives him credit, with a lien on his cotton crop for security. The planter may overestimate his crop, or the price of cotton may be lower than was expected, and as a consequence he finds himself in debt at the end of the year. This would be less apt to occur if more farmers would have their own garden plots and raise more of the articles of food which they now buy.

In a climate so temperate as that of middle Georgia, where snow seldom falls and frosts are light, it is not necessary to make the same provision against the cold as in the more northern latitudes. And so it is natural to find the farm buildings, both the dwellings and the barns and stables for the housing of live stock, smaller and less substantial than in regions where the winters are long and more severe. The average plantation barn is small and loosely constructed of pine boards. There is generally a central passage from end to end, on each side of which is a row of box stalls for horses or mules. There is one large bay overhead, where the hay, corn fodder, and peas are stored.

Outside the main part of the building and extending along each side are sheds or "lean-tos," where farm wagons, implements, and machinery are stored. Corn and other grain is sometimes stored in the barn, but usually there is a separate building or crib for this purpose. Indeed, it is customary to see a group of small outhouses, often rudely constructed of logs, for the temporary storing of unginned cotton, or for swine and poultry.

The dwellings themselves are small and of a single story, built of rough boards or hewed timbers. They have no foundations of stone or brick, but are supported by wooden posts. They often appear shabby and mean, but are usually neat and serve their purpose very well, where the occupants live out of doors for nine months of the year.

The more well-to-do planter, who is often landlord of considerable property, has a more comfortable home, equipped with modern conveniences, with a windmill to furnish his water supply and with telephonic communication with town.

Cotton is the principal crop grown in Newton County. More than half the land under cultivation is planted to cotton. Little need be said here of the culture of this crop, since much has already been written upon the topic elsewhere; but in one or two respects the mode of cultivation has an important bearing upon soil conditions. In the first place, the cotton grower does not plow more than 4 or 5 inches deep. A small one-horse plow is used and only enough earth is turned to provide for the planting of the seed, and so the soil proper is very shallow, especially in tracts where cotton is planted successively from year to year. A gradual deepening of the soil by increasing the depth of the furrow an inch or so each year would doubtless prove beneficial. Again, to do well, cotton requires a great deal of clean culture. No weeds, grass, or foreign vegetation must be allowed to grow in the rows while the cotton is growing, This, combined with the fact that commercial fertilizers are almost exclusively used, results in great lack of organic matter in the soil. No humus is formed; there is little vegetable matter incorporated in the soil to form by its decay those organic acids which are supposed to play an important part in the decomposition of the minerals of the soil and to prepare them for assimilation by the plant; and so the soil, which is naturally strong and fertile, becomes little more than a medium through which the food contained in the fertilizer is applied to the roots of the plant. It might almost be at times an inert medium.

Corn, wheat, and oats are the chief grain crops, but are seldom raised for the market. The average yield of corn and wheat on the upland is from 8 to 10 bushels per acre. Sorghum is grown to considerable extent in this area. It is sometimes used as a forage crop, for which it is well adapted. Many boil the juice of the cane, from which they make sorghum sirup for domestic use.

There is no dairying interest whatever in this section, with the exception of one or two small farms in the neighborhood of the larger towns, where there is a local market for the product. The farmer usually has one or two cows to supply his own needs, or buys his butter from a neighbor at a comparatively low price. But what cattle there are in this region are of good stock, mostly Jersey or Jersey grades. Bermuda grass makes excellent pasture, besides preventing washing of the land and checking it where it has begun.

Crab grass is usually grown for hay and produces from 1 to 2 tons per acre. Orchard grass is also used.

Perhaps the most serious problem which the farmer in this and similar regions has to meet is that arising from the washing of the soils. The country is so rolling and broken that a very small percentage occupies a level position and practically all is subject to more or less washing.

Several causes unite to bring about this result. The rainfall is said to be very heavy at certain seasons, descending in such torrents at times that stream beds, which are dry through most of the year, are flooded to overflowing. The physical properties of the soil are such that very little of this water can pass off underground, the clay which forms the subsoil being so compact that it will not allow the water to pass through it, except very slowly. And so, on the slopes, little ditches and gullies are formed; and when once these washes are started it is nearly impossible to stop them from growing. The clay subsoil, stripped of its protective covering of vegetation and soil, is easily worn and washed away by waters carrying sand and gravel as instruments of erosion. Then, when the washout has become sufficiently deep, a caving-in process begins, and we often see gorges 20 to 30 feet deep, with precipitous walls, due entirely to washing by rains.

Another important cause which contributes to the excessive washing of soils lies in the method of clean culture consequent upon the raising of cotton. Where cotton is planted continuously from year to year the soil is constantly exposed to the processes of erosion. There is no covering of vegetation to protect it, or to furnish by its decay a humus coating. Commercial fertilizers are almost universally used, and so there is no incorporation of organic materials from barnyard or "green" manures. So the planter has to devise some physical means of preventing this disastrous washing, if it is to be prevented.

A method formerly used, which has passed almost entirely out of use in this district, was to carry the water off by gradual descent in parallel ditches running along the side of the hills. This was not effective. The method now in universal practice is that of terracing. By this means the hill slope is converted into a succession of benches, each bench being approximately level. The breadth of these terraces varies with the steepness of the natural hill slope, narrower on the steeper slopes and broadening out where the inclination is more

gentle. The farmer has come naturally to use the term "terrace" to signify the ridge or embankment which separates one terrace proper from the one next lower. These ridges or "terraces" when properly constructed are from a foot to 18 inches high, made by throwing up the earth from each side. They encircle the hill or cross the fields, as the case may be, conforming to the natural contours of the surface. When the terraces are not perfectly level the water is apt to collect in low places and overflow, carrying the embankment with it and causing similar damage to terraces below. Or if there is a gradual slope to the edge of the field, a wash will soon be formed, and working its way back from the ends of the terrace will cause much trouble. The vertical distance between the terraces should not exceed 3 or 4 feet. Where there is more than this the soil is liable to suffer from washing at times of heavy rainfall, and the water will gain sufficient velocity to cause a break in the embankment.

Where hillside ploughs are used the furrows are all thrown in the downhill direction, and thus the terrace is gradually leveled off. This is the ideal method of terracing, but in practice few planters conform to it. On account of the expense it is seldom that the terraces are carefully surveyed with leveling instruments, and they are often put at a vertical distance of 7 to 10 feet apart, proving little more than dams to check the flow of water.

There are some disadvantages in this method of sidehill cultivation. The field is divided into a number of irregularly shaped plots, each one of which must be plowed and cultivated separately. The rows of cotton or corn run parallel to the terraces, and as the width of each plot varies according to the contour of the hill there are many short and broken rows. Then, the embankments themselves occupy in the aggregate a considerable part of the field, and from this no crops are raised. But the advantage resulting from terracing in the improved condition of the soil so far outweighs these disadvantages that this method of cultivation has come to be universally practiced throughout the region.

Other methods are sometimes employed to augment the benefit derived from terracing. The "rotation of crops" is one. Instead of planting one crop year after year on the same piece of land the crops are varied from year to year. Peas are known to benefit the land upon which they are grown, though it is not customary, as in some sections, to plow them under as green manure. It is claimed that this method causes the land to "sour," and the farmer finds it more profitable to use the peas as a forage crop and to plow under the stubble in the late fall after it has begun to decay.

By deepening the plowing each year the land is improved. This is particularly true of the Cecil clay. That phase of the Cecil sandy loam, however, that is underlain by yellow clay will not stand deep plowing.

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