

COTTON, (BY FREE LABOR.)

BY M. D. LONDON, HELENA, ARKANSAS.

THE following article is not presented as an abstract treatise on cotton-growing, but rather as a familiar history of how a thousand and forty acres of cotton were raised in Arkansas by free labor.

Slavery has long seemed the *sine qua non* of successful agriculture in the south, and well is it that the present revolution has developed the grand fact of FREE LABOR; that labor is *always commensurate* with its reward. The rich bottom lands of the Mississippi are now opening to a new civilization. The dark-skinned menial, the chained hero of the soil, is becoming an individual, and, with the hoe and axe, is hewing his way to citizenship.

DIFFICULTIES ENCOUNTERED.

SEED.

The difficulties encountered in 1864 in raising a cotton crop were numerous. Among these were the selection of a plantation in a convenient locality above overflow; the employment of former slaves; the transporting of stock and supplies from the north; the selection of seed, and the protection from guerillas.

Everything depends upon a proper selection of cotton seed. A very small proportion of cotton seeds germinate, even when properly cured and planted; only an average of one seed in four. When the seed is badly cured the planting almost invariably results in a failure, and the planter can only save himself by supplying corn in its place. Cotton seed, to be properly cured, should be selected from the second picking, before the first frost, and should be stored under cover in layers two feet thick, ventilated by air passages. Cotton seed contains chemically thirty-nine per cent. of oxygen, and heats readily whenever it is piled in heaps. Before planting (about the fifth of April in Arkansas) the seed should be dampened and rolled in sand, or, *what is better*, leached ashes. Lime and unleached ashes, though protecting the seed from the attack of insects, contain too much alkali for the oil in the seed. They should not be used either as a compost or for rolling the seed, though, for a general manure, ashes spread upon the land in the winter are exceedingly strengthening to the soil. A future chemical analysis will show the large proportion of alkaline salts which cotton seed abstracts from the soil, and which can only be replaced through cotton seed, lime, ashes, or guano.

An organic analysis of cotton seed made recently by the writer, under the auspices of the Smithsonian Institution, shows the chemical constitution of cotton seed to be thus:

Carbon	37.740
Oxygen	89.663
Nitrogen	7.753
Hydrogen	5.869
Salts, (inorganic)	8.960
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	99.985
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On burning cotton seed to ashes and making a chemical analysis, I found 55.2 of these ashes to consist of phosphate of lime. This leads me to conclude that *cotton seed* would make a valuable manure for wheat or Indian corn, which so soon exhausts the soil of phosphates.

PREPARING THE SOIL FOR THE SEED.

Soil on the Mississippi, in the region of Arkansas, should be ploughed about the first of March—always ploughing old land with a subsoil plough. After standing until the first of April, it should be “bedded up” in beds five feet apart. Immediately after this last ploughing, (from the 5th to the 10th of April,) the cotton seed should be planted. This is done in drills, running towards the sun, on the top of each bed. Many machines have been tried in planting cotton seed, but none have been successful. So large a proportion refuses to germinate that the only way to secure a “stand” is to throw the seed in drills in a continuous stream, *whitening* the ground. From one to one and a half bushels of seed are required to plant one acre of ground.

THE GROWING PLANT.

The first injury which can happen to good seed is the formation of a crust by the action of the sun and rain over the seed, which the young shoot cannot penetrate. This crust has to be broken delicately with a harrow made for the purpose. About the twentieth of April the young plants appear in continuous uneven green rows. A small steel *scrape* is now drawn by one mule by the side of the plants, leaving a straight row of shoots. The laborer now comes along with a ten-inch hoe, and cuts out intermediate shoots, leaving a “stand” from fifteen to eighteen inches apart. This “chopping out” should be done with care, as a bruise on the tender stalk will bring on a disease known as “*sore shin*.” The rows now stand five or six feet one way, and from fifteen to eighteen inches the other, and the regular work of making the crop commences. This consists of ploughing or scraping away the dirt from the roots, letting in the sun during wet weather, and turning the furrow back in dry weather, hoeing by hand during the two operations. The crop should be hoed out three times and ploughed out four times, and at all times must be kept free from weeds until the first of August. A new implement, the “*Shanghai*” plough, which ploughs and scrapes on both sides of the row at once, is now being used with success and economy.

THE COTTON LOUSE—(*Aphis*.)

This is the first insect which attacks the young plant, though the *cut-worm* has been known to ravage the early plant in the regions of South Carolina and Florida. The cotton-louse attacks the under part of the leaf and destroys its life, until it becomes sere and yellow. The production of this insect is increased by ploughing too much dirt upon the young roots and against the tender stalks in wet weather. The remedy is removing the dirt and exposing the roots to the sun's rays. These insects are propagated in immense numbers in warm, damp weather.

THE GRASS CATERPILLAR.

These insects came last year about the middle of August, and were by many at first thought to be the *army worm*, (*Noctua zylina*.) The chrysalis of this worm is of a dark color, and is hatched in the ground. The *grass caterpillar* is about an inch in length, and, though frequently found on cotton, seldom

does any damage if there are any weeds, grass, or vegetation to feed upon. This insect was the source of much amusement on my plantation last year. Reports had come up from New Orleans of the destruction of the entire cotton crop by the army worm, and when the grass caterpillar came I took it for the real army worm. Guerillas, notwithstanding my own *forti*, and the vigilance of Gen. N. B. Buford, commanding the Helena post, had captured my mules and laborers, and the crop was quite full of weeds and grass. I many times congratulated myself as I found this insect devouring the grass and weeds, and I thought it was a happy thing to save my crop, and often felt like taking off my hat and thanking the guerillas for relieving me of my last forty mules. But I was soon disappointed. I escaped the *Scylla*, but fell upon the *Charybdis*. No sooner had the grass worm finished its mission and left the rows clean, than the legitimate

COTTON CATERPILLAR, (*Noctua zylina*.)

made its appearance. This is the cotton army worm, which swept like a blast from New Orleans to Helena, devouring everything of a tender nature before it. In the parishes around New Orleans the crops of 1864 proved a total failure through its ravages.

At Vicksburg and Goodrich's Landing they were not so destructive, and at Helena a fair crop of cotton was saved. The islands of the Mississippi were safe from its ravages. The following engraving, drawn by T. Glover, of the Agricultural Department, who is the author of a valuable scientific treatise on insects frequenting the cotton plant, represents the chrysalis, caterpillar and fly of this insect:



The army worm of 1864 measured about one and one-fourth inch in length, and was of a green color, with parallel light stripes along the back. They continued to grow darker in color with each successive brood as the season advanced. The worm commenced its ravages at New Orleans as early as August first, and continued to travel northward, sweeping destruction through every cotton field on the main shores until it reached Helena, about the tenth of September. I do not understand why the islands in the river were untouched, but certain it is that on island 74, about the mouth of the Arkansas, 1,700 acres of cotton were grown without the appearance of the army worm. This worm is said to appear periodically about once in ten years in Arkansas. In 1856 many fields were ruined.

Rev. Dr. J. B. Pinney informs me that, in his travels up and down the river on a balmy evening, he saw the moth of the army worm in swarms on the boat, flitting and creeping hither and thither over the bulwarks and along the hurricane deck, attracted by the boat lights. A diversity of opinion exists as to how the species of this insect is propagated, and how it survives during the winter season. It is generally concluded that the moth deposits itself between leaves in warm locations in adjacent swamps. These moths remain folded between the leaves until the following summer, when, warmed by the sun, they fly away and deposit their eggs upon the leaves of the cotton plant. These eggs are very numerous. In warm, damp weather, propagation goes on with the greatest rapidity. The army worm subsists upon the leaf until nothing remains but the dismantled ribs. It also devours the young "squaws," drying up the sap from the young bolls, and exhausting the life from the terminal shoots. Often remaining about twenty days, destroying every green thing from the

lowest branch to the terminal shoot, the caterpillar ceases to feed, and rolling up the dismantled ribs, it forms a skeleton cocoon, and goes to rest. No means of prevention are yet discovered against this insect.

COTTON MATURING.

The cotton plant grows from eight inches to eight feet high. The bolls begin to mature and continue ripening from the first of September. It is generally agreed that all blossoms coming before the fifteenth of September will ripen and make good cotton. Three hundred and fifty pounds of lint, or twelve hundred pounds of seed-cotton, is an average yield. The process of picking cotton is very slow, requiring at least ninety days, commencing on the first of September, to pick out the entire crop. A gin-house is easily constructed, requiring only room for the lint cotton as it passes out of the gin. A wall tent has answered for a gin-house very well. A good eighty-saw gin will gin eight bales of cotton in twelve hours, which is as much as seventy-five laborers can pick.

FREE VERSUS SLAVE LABOR.

Free labor, when paid in proportion to the amount of work done, has been found remarkably successful. The following impartial schedule will show the average amount of wages earned by each person during the summer. These names are taken from the list of one hundred and seventeen laborers, who received from sixteen to twenty-five dollars per month :

	Months' labor.	Received in rations.	Received in clothing.	Received in cash.	Total.	Family.
Cæsar Graves	6½	\$34 00	35 50	45 00	164 00	Wife, two children.
Willis Bowlar	7	65 00	24 00	81 00	170 00	Wife.
Tom Wright	6	40 00	35 00	69 00	143 00	Single.
Joshua Bradley	7	55 00	25 00	96 00	176 00	Single.
Sylvester Hubbard	5	38 00	12 00	75 00	125 00	Wife, child.
Jack Freeman	6	39 00	57 00	54 00	149 00	Wife.
WOMEN.						
Lucinda Allson	6	37 00	36 00	25 00	98 00	One boy.
Tabitha Cobbs	6	34 00	28 00	19 00	81 00	Two children.
Mollie Fellows	6	36 00	16 00	24 00	76 00	One child.

Many of these laborers, of their own option, worked over time, and received remuneration therefor, which accounts for the amounts received.

The negroes manifest the most intense fear and dismay at the appearance of guerillas, preferring to sleep in the woods to running the risk of capture in their own cabins. This fear has kept them from the faithful discharge of duties and contracts. It is the general opinion that, with a limited amount of education, they will labor as *freedmen* as well as the freemen of the north. It is certain that the full black African will labor more studiously than the northern negro touched with Anglo-Saxon blood.

EXPENSE.

The average expense of raising one thousand acres of cotton by free labor last year was \$30,000, or \$30 per acre, including the payment of rent to the government or private citizen, and the purchase of new stock and implements from the north.

It is a demonstrated fact that labor is performed by freedmen to an amount commensurate with the wages paid, as well in the south as in the north. Capitalists, in opening up again the cotton lands of the south, need have no fear of the freedman as a laborer. Day by day he is vindicating himself from the calumny of slavery; day by day he is clearing his way to a grander destiny!
