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ARTICLE XXV.

On the Cultivation of Cotton in India, by J. M. HEATH, Esq.

(Read January 19, 1839.)

IN the year 1818, the attention of the Madras Government was directed to the subject of the introduction of improved descriptions of agricultural produce into India. At that time I held the situation of Commercial Resident of Salem and Coimbatore, and instructions were sent to me by the Board of Trade, to attempt to introduce the cultivation of Bourbon cotton into those districts.

Being entirely unacquainted with the subject myself, I requested my friend Mr. J. M. Strachan, of the house of Arbuthnot and Co., to procure information for me upon the subject, from Mr. G. A. Hughes, of Tinnevely, whom I knew to have been long engaged in the cultivation of Bourbon cotton.

In consequence of this application, I received the accompanying paper, drawn up by Mr. Hughes, and I have great pleasure in laying it before the Committee, as it appears to me to contain more information upon the cultivation of this valuable plant, than I have ever met with elsewhere.

In my endeavours to introduce the cultivation of Bourbon Cotton into a part of the country where it had never before been tried, I had to encounter the usual difficulties which attend on the introduction of any novelty in agriculture: but these difficulties gave way to perseverance, and at the end of four years, I had the satisfaction to see the experiment completely successful. In the season 1823-4, I procured from the district of Coimbatore, 500 bales of clean Bourbon cotton, of 300 lbs. each, and the natives were by that time so well satisfied that the cultivation of this article was more profitable to them than that of the indigenous species, that, I believe, had encouragement to the cultivation been continued, it would, by this time, have completely superseded that species of indigenous cotton which is cultivated in the light and gravelly soil so abundant in the South of India.

In the Madras territories, two varieties of the cotton plant are cultivated, and they require very different soils: one is an annual plant, called in Tamul, *Oopum Parutti*; the other is a perennial plant called *Nadum Parutti*: the first comes to perfection only in the

black adhesive soil, known by the name of cotton ground, and which appears to be formed from the decomposition of trap rocks : the other plant requires a very light loose soil, such as is formed from the disintegration of granitic rocks, and the soil appears more favourable for its growth when mixed with the calcareous tuffa, known in India by the name of *Kankar*.

It was in soil of this kind, which occurs abundantly in Coimbatore, that my experiments were made : I made an abridgment of Mr. Hughes's paper, and had it translated into Tamul ; a copy of this was given to each farmer who agreed to make trial of the seed, and I had a person whose duty it was to go round and inspect the progress of the cultivation, and to make monthly reports to me upon it ; at the proper season for pruning the plants, I went [myself and showed how the operation should be performed, and I believe that the success of the experiment was, in a great measure, owing to this step. I have never observed that the process of pruning has been adopted by the natives in any branch of their husbandry ; and I believe it is quite indispensable for the successful cultivation of the Bourbon cotton.

In the districts on the Coromandel coast, south of Madras, the light soil above described is more abundant than any other ; and there is no doubt that the Bourbon cotton plant might be successfully cultivated wherever it occurs : the only point on which my experience differs from that of Mr. Hughes is, as to the influence of vicinity to the sea, upon the cultivation of this plant. He seems to think that situations near the sea are necessary to bring the plant to perfection ; my experience goes to show that it will come to perfection at 150 miles from the sea.

At the time I commenced my experiments, the price of cotton (Oopum), was about 3*d.* per pound in the district ; this was a high price comparatively, and had been caused by the unprecedented demand for cotton in 1818 : the usual prices had ranged from 2*d.* to 2½*d.* To induce the farmers to make trial of the Bourbon seed, I offered them a price for their uncleaned cotton, which would have made the cost of clean cotton about 4½*d.* per pound ; the value of the Bourbon cotton in the English market was fully 50 per cent. more than that of the country cotton ; and in some instances where proper attention was given to the cleaning, the value of the Bourbon was more than double that of the country cotton.

Before I quitted India, in the year 1825, the situation of Commercial Resident of Salem and Coimbatore was abolished, and the Company discontinued their encouragement of the cultivation of

Bourbon cotton in that quarter. The natives not requiring so fine a material for their own use, and not finding a market for it, on the part of European merchants, discontinued the cultivation: and a great proportion of the land which I left under cultivation with Bourbon cotton, was cleared to make room for grain, or some produce which was more certain of a ready market. The subject was subsequently taken up by a gentleman who had the charge of my private concerns in India during my absence in England, and the provision of Bourbon cotton is, I believe, still continued by him, although I have no means at present of saying to what extent.

Paper by G. A. HUGHES, Esq., enclosed in the preceding.

THE plant is of so hardy a description that it may be safely believed it will grow well in any situation, yet to have it sufficiently productive, much attention must be given to soil as well as to culture. With this view, all very rich, heavy, retentive stiff soils, should never be selected; for although they produce luxuriant plants, yet they have much and more tendency to produce redundancy of wood and leaf than of produce, and almost always to the generating of insects. The red and brown loams, or, indeed, any silicious or calcareous soil, fertile in a moderate degree, are, upon the whole, in my idea, the most suitable and the most fruitful. What is commonly known to us under the denomination of cotton soil, the deep black vegetable loam, is, I think, to be entirely avoided. The Bourbon species has almost in all respects, a character different from the indigenous, and as far as my observation goes, demands a mode of treatment similar to that of America. In the point of climate, the vicinity of the sea, or situations to which the influence of the sea air extends, are, on every account, I believe, to be preferred. The vicinity of the Ghauts, or any situation near high mountains, on our Peninsula, should not possibly be chosen, because the climate near them is certainly likely to be less uniform in the hot months than this shrub requires; a dry soil and a dry atmosphere from March to May, and from July to September, seem almost essential to the good quality of the wool as well as to its productiveness.

Before touching upon the operation of pruning, which I practice twice in the year, and not once only, it might be as well to say something on the culture. I am now entirely convinced the plant will last a great number of years, and will not at all fall off if well and properly managed. The objection to this in other countries is said to be that it produces swarms of insects, but this, I suspect,

is the defect of treatment and of soil, rather than the age of the plant, since the youngest plantations are equally liable to this evil. Under the persuasion that it may be preserved with advantage many years, a systematic and careful culture from the very first must be the best. The seeds should be sown, or the young plants be set in straight rows, eight feet apart, and the rows also regularly eight feet asunder. Placing the little mounds of plants (containing two, or at most three each), at regular squares, in this mode, is of much advantage throughout. The facility for ploughing and hoeing is greater in this than in the common methods. The free admission of sun, the freest circulation of air and light winds, are of the greatest benefit to a perfect culture. This may be mentioned, because I know that too close a cultivation is a common mistake. By the last mode, the plantation may become a close low thicket so much infested by rats and snakes, as almost to be a work of danger to enter it. If the seed can luckily be got into the ground in September, the young plant may be sufficiently strong to resist the pernicious and continued wet of a heavy monsoon. Little is gained by sowing seed in October, November, and December, unless the land is very high, of a dry description, and clean from weeds, which, at this period, generally smother all other vegetation near them. The clear intervals of these months answer well of course for transplanting, and the first week of January, in general, very well also, both for sowing and transplanting. It is well, however, to have the plants well established in the soil some days before the heavy rains, and with this object, I have lately succeeded wherever it was desirable, in transplanting the young plants on the very first rain, and this year early in October. They bear it extremely well in cloudy and light rainy days, and it will succeed without doubt, immediately, if they have a small portion of earth attached to them. Whenever this mode is proposed, a seed bed must be prepared and sown in July, in soil tolerably good, and watered from some well near the place that is to receive the plants in October.

Of late I have given the plantations under my own immediate eye their principal pruning, as soon as ever the heavy rains have passed away, say from the 15th to the 31st December, or just at the time before the sap becomes active. In the fine days of January, I plough the plantation thoroughly three or four times over. In less than two months the whole is again in the finest foliage and in full blossom, and continues in full bearing all the months of March, April, and May. Just at this time, at the crisis of extreme heats, a short suspension may be observed to the production of fruit-buds.

I should mention that, at the pruning above adverted to, I clear the plants entirely of all the very young wood, or all with soft green bark, cutting the shrub down generally to two feet high and two feet wide, but leaving all that can be properly left of the firm wood with the strong white and brown bark. In June again there will generally be a good portion of pods still remaining on the plant, and the rain here is at that season very light; and I find it enough to cut away merely the long straggling twisted soft shoots with diminutive pods; and if this is done very early in June, the better. But under all circumstances, the plant would yield a good produce from July to September, unless it should receive any damage from rain in those months. In June, perhaps, if the soil allows, it is enough to give the plantations a slight hoeing with the mamootis. In the old plantations, nothing seems necessary to be attended to in the monsoon, but draining them of the rain as much as may be practicable.

I know not well how to answer the query regarding the annual produce on any given quantity of land—at least with the precision and satisfaction I would wish to do. It is a very speculative point, and admits of wide limits of estimation. We may learn from books, that from 200 to 300 pounds of clean cotton are produced, and are expected, per acre in the West Indies and in America. Here some of my dependants, to whom I have allotted small spots of land to grow it for me in their way, think they perform wonders if they give me as much as fifty the acre. This is obviously a matter mostly resolving itself into the degree of judgment or diligence exercised in the cultivation, and no less so perhaps in the suitability of soil and situation. Speaking for myself, I shall be very well content indeed to be sure of getting one hundred pounds the acre of fine clean cotton; and yet, advertent to the very prolific nature of this species of cotton shrub, I can give no good reasons why much more might not be expected. On this point, important as it must be admitted to be, and on all considerations of expense, as compared to the produce from any given measurement of land, I must confess that with all my experience I yet feel an incompetency to impart anything like precise and definite information. I cannot calculate my cotton to cost me less in this country than twelve-pence the pound. The freight is of course paid in England. But it is very obvious that if it were within the possible labours of any individual to produce anything in quantity that was material, the benefit would be abundantly handsome; but the difficulties to carrying it on on a large scale, cannot be known to those who have not engaged actively in the undertaking. The natives can in nothing be trusted, as I have

found to my serious loss. But I will pass from these considerations to what is of much more importance.

The extract of a letter I lately received from my London agents and which I annex, may prove of great utility in pressing upon the attention of your friend, the vast importance which is attached to the process of cleaning. I have known, to my cost, how easily these things may be overlooked: care to this department of the business must commence from the very gathering of the pods. The cotton should never be picked but at the most mature state; and even then, although gathered in the very hottest weather, the seed contains so much moisture that it is well to have it carefully dried immediately afterwards, two or three days, and before it is set aside; and care too should be taken that it does not at this time contract dirt and sand in the wool. Before I send it to the mill, it is now my practice to have the pods of cotton, as it is attached to the seed, most carefully examined in the first instance, and all the decayed, damaged, discoloured immature part of it, first separated; at this stage, probably, not less than one-tenth of the whole is rejected in this way—and it is well rejected; it is then put to the mill after a little exposure to the sun in the usual way everywhere. But at the same time that the wool is separated from the seed, I have other women always present to clean it again by hand, as soon as it comes from the mill; all remaining impurities are better detected at this time than if the wool were previously pressed together again. The wool in this way is merely, I may say, *searched*, not pulled or broken. Even in this process there is a loss of scarcely less than five per cent. It is a good day's work for one woman to clean by the mill $9\frac{3}{8}$ pounds of paruttis, or the cotton with the seeds; the wool which is separated is quite as much as another will manage, giving a produce of $2\frac{1}{4}$ pounds on a large average of very fine and extremely clean cotton, which is immediately placed in strong Dungaree bags, until I have enough for a bale.

Extract of a Letter from Messrs. Fairlie, Bonham, and Co., London, 22nd April, 1817, to George Arthur Hughes, of Tenneville.

“We enclose the Price-Current of cotton-wool at the present sale at the India House, amongst which it gives us much pleasure to point out your five bales by the *Grant*, which sold from 2s. $1\frac{3}{8}d.$ to 2s. $1\frac{7}{8}d.$ per pound.

“The great improvement which this parcel shows to be attainable in the cultivation of the Bourbon species with you, is indeed very encouraging, and seems to open a fair field to future operations on a

more extended scale; you have hitherto succeeded in this instance only in producing a real equivalent for the Bourbon wool, what we formerly had being but a distant imitation, and in request only when the true Bourbon was particularly scarce and dear. For it is not the fineness, nor the cleanness of the staple, important as these qualities must always be, that will suffice to raise it to its proper estimation. Evenness of fibre, and susceptibility of being drawn out into a thread, without the fibre being entangled, are also indispensable, and may be greatly marred by the process of beating with sticks, so as to occasion that entanglement. Managed as the present consignment has been, so much superior to the preceding fifteen bales, any quantity would here meet a ready sale, and we should suppose would amply recompense the trouble and care which it demands.

“We think this is a matter of so much importance, that we have taken a sample from these bags, which we intend to accompany this letter, that, by reference to it, you may keep in view the qualities that would always command this market.”