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Dated 29-5-1861.

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department,
29th May 1861.

No. 271. Read the following letter from Captain RALPH TAYLOR, Her Majesty's 17th Madras Infantry, to J. D. SIM, Esq., Secretary to Government, Revenue Department, Fort Saint George, dated Madras, 8th May 1861 :—

SIR,

1. I have the honor to forward herewith, for the perusal and information of Government, two copies of a short essay on the culture of Cotton from foreign seed in this country, written by me for the Horticultural and Agricultural Society of India.

2. Only a few copies of this paper have been printed for my private use, and its publication hereafter will depend upon the opinion of the Society as to its practical utility, or otherwise.

No. 272.

ORDER THEREON, 29th May 1861, No. 1,112.

The Government thank Captain Taylor for his Pamphlet.

(Signed) J. D. SIM,
Secretary to Government.

AN ESSAY ON THE CULTURE OF COTTON IN INDIA FROM FOREIGN SEED.

At the present day it is notorious that the fact of Indian Cotton being the worst staple, and bearing the lowest price in the English markets, is as much owing to carelessness of culture, as to the inferiority of the aboriginal plant. Therefore, if the same mode of cultivation be pursued with the foreign seed, there is every probability of its produce deteriorating, and after some time becoming as bad as the now exported cotton, which it is desired to improve. Englishmen, at least those who have given any attention to the subject, understand that the existing growth of cotton in India is, on account of its shortness of staple, and other imperfections, unsuited to the wants of the spinners, who never buy it consequently, when they can get other. An improved culture of the Indian plant would certainly cause a corresponding improvement in production, but probably it would never reach the staple or value of American cotton. The two great and main advantages, therefore, from the introduction of a superior plant are, 1st—a tangible improvement both in quality and quantity of the raw material; and 2dly, a decided profit thereby to both producer and consumer. By the majority of the latter class, these two results are considered inevitable, and it has become our business in these latter days to endeavour to impress the minds of the agriculturists of India, if possible, with the same stolid facts. It is not the purpose of this paper to show how this may be done otherwise than by culture, but we must infer that the farmers will be made aware, by the practical demonstration of easier markets and better prices, of the great importance to themselves to bring about these improvements. Before proceeding to detail what has already been done, and what may henceforth, with advantage, be done in the matter of foreign seed, it is as well to take a short glance at the mode of culture now pursued with the common Indian cotton plant, the errors of such culture, and their consequences.

Cotton is essentially a sunny plant, but at the same time in these regions, it suffers more from drought than moisture. Thousands of the young plants in a field of cotton are dried up merely from the want of sufficient moisture in the soil to allow of the plant getting over the tenderness of the first two months or so; hence also arises that straggling appearance of a field of cotton, that shrivelled look of the plants, and that miserable out-turn per acre. It is very evident that in some parts the climate is against cotton cultivation, while the soil is suited to it. This is generally the case where the rains are uncertain, and the country subject to drought. In such parts partial irrigation for cotton might be adopted with much advantage. Good water for man and beast in some of the cotton districts is another cause for neglect of culture. The writer knows some of the richest cotton plains in Southern India, where the soil is the very finest black loam, especially adapted for the growth of cotton, but where water is so scarce and so bad, that it is not possible to find labor or population sufficient to till all the available ground. To return, however, to culture—the native farmer does not generally grow cotton two years successively on the same land. His plant being a perennial, one year he sows grain, one year cotton (speaking of Southern India, as the writer's experience does not extend to the North.) Following him after his harvest of grain, we find he does nothing to his field until after the first fall of rain, when he ploughs up the dried stalks and allows them to rot. One more ploughing about 4 inches deep, and the land is prepared for seed. No other manure than the dried stalks is given, at least the writer has never seen any, and the land is now left till the farmer thinks sufficient rain has fallen to moisten the ground well for a depth of 8 to 10 inches. He then sows in lines with a hollow tube, through which he drops the seed, as a bullock or two pull the machine along. After this he may visit the field occasionally when the plants have come up, and will run a weeding plough between the lines once or twice; the plants then take their own course, flower, and ripen in about five months, and the cotton is picked off, or picked up, whenever the leisure and inclination of the farmer may permit. So far, such is the ordinary mode of culti-

vation among the aboriginal population in the cotton districts; and, when we consider that the out-turn is from 60 to 100 lbs. per acre; that the already too often dirty cotton is made still dirtier in the farmers' houses when being separated from the seed by his family; we ought not to feel any surprise at the smallness of the production, or at the quality or little value which such produce must necessarily command in European estimation. The chief errors in the foregoing description of culture seem to be as follows: 1st. Want of drainage. 2nd. Want of manure. 3rd. Irregular sowing. 4th. No thinning of plants. 5th. Insufficient weeding. 6th. Want of care in picking at the proper season.—Now, the greatest part of the above mistakes are very simply remedied; but so long as the ancient kind of cotton continues to be grown, there is but little chance of any change taking place for the better; and therefore, it is hoped by the introduction of foreign seed to induce a somewhat better culture, and to incite the farmer at the same time with the prospect of a larger crop and a more valuable quality of cotton than that which he has hitherto been in the habit of growing. It is necessary then to consider whether any objections to the foreign seed exist on the part of the Indian farmers, and what they are: 1st, there is the novelty of the thing, opposed to the ancient custom and practice of their fathers; 2ndly, ignorance of the results, doubt as to whether the seed is good, whether it is suited to their land, and if it germinates, whether the produce will be so good or so valuable as their own; and 3rdly, doubt as to whether their primitive implements will suffice to clean the cotton,—i. e. separate the fibre from the seed—and even if they do, whether the seed will then be of the same household use to them that their own is. Many of these objections are undoubtedly valid, though probably such as may arise on the introduction of any novelty. They are, however, all capable of satisfactory explanation, if not of removal.

For the novelty of the thing, the question on the part of the natives "Why do you want to thrust foreign seed upon us when we are quite content with what we have" must be answered "Because we want to buy a better quality of cotton and more of it; because it will cost you no more to grow the one

than the other, and yet you will get a better price for the new kind ;—therefore, the latter will prove advantageous to both parties." The native farmer will upon this reserve to himself the right of doubting those facts until they are brought home to his sense and understanding by tangible and substantial proof. Consequently, one of the most important points to establish as soon as possible is the conveying to the ryots the conviction of its being as much to their advantage as to ours to cultivate a better description of plant. Notwithstanding any failures which may have occurred hitherto, the most effectual method of doing this, is to distribute quantities of seed gratuitously, or upon loan, until the crop therefrom shall be gathered (I prefer the latter as conveying some value with it to the ryot,) and to offer to buy at the same time the whole of the produce from it at ten per cent. more than the market price of indigenous cotton. The greatest difficulty of all is to keep the variety unmixed, because mixing is *the* dodge which the native is sure to resort to, out of preference to his own seed. When once however the increased value of unmixed American cotton is apparent, there will be no lack of cultivation or produce. As soon as this proof is brought home to the natives; as soon as they appreciate that the foreign seed supplied to them is better on all accounts than their own, efforts to preserve it unmixed and unadulterated, and to cause some improvements in the culture of the plant will prove successful. But again in this instance also it must be proved that such improvements will cause an increase of production. A very large quantity of land in the district of Dharwar (upwards of 100,000 acres) is said to be now cultivated with American cotton, and it has been found that the superiority of the plant, besides the enhanced price which it commands in the market, has become so notorious that the cultivation of it continues to extend without effort, but gradually and successfully. The only drawback being, that it has got very considerably mixed with the common native seed. It does not appear what improvements have taken place in the culture of the plant, but from such information as can be obtained, it seems the increase of produce per acre has not been large. We may conclude from

this that up to the present time very little, if any, improvement in agriculture has taken place even there. A very short and simple list of instructions printed in the vernacular for general distribution in the Cotton Districts, would prove of immense benefit to ryots and others, and one of the most prominent should be to (1) keep the foreign seed given them perfectly unmixed with any other variety, or the value will be lessened. In the matter of cultivation the first subject is drainage, which natives do not understand, and any artificial method would prove both too complicated and too expensive for them. It would be sufficient to utilise the natural means, so as to (2) prevent water from standing in the field where plants are growing, and also to prevent any part of the land from being washed away. Next as to (3) manure; whatever the soil is, every one should use as much manure as he is able. (4) Moisten the seed in water for four hours, then sow it by hand in holes three feet apart (if New Orleans or ordinary American; other kinds require greater space), two or three seeds in each hole, and cover over with an inch or so of earth. (5) When the plants are six inches high, thin them, leaving one (the strongest-looking) only in each hole. (6) Always keep the plants free from weeds at all stages. (7) Never pass three days without looking at them, and beware of insects. (8) Pick the cotton immediately after the bursting of the capsule or pod, which holds it, leaving the capsule on the tree. (9) Keep the cotton clean while carrying it home, ginning, and packing. Some few such directions as these might have the effect, if sufficiently widely promulgated, of improving the culture, because they are sufficiently simple and easy of adoption, as to meet the understanding and means of every cultivator. While however all the above measures may be employed towards introducing the cultivation of foreign cotton, there is another very important point which must never be lost sight of by those who are attending the subject in this country, and that is, the means of ginning the cotton when produced. For the present the Indian farmer gins his own cotton in his own house with his own family, because to him this is at once the easiest and most economical way. The "churka" or common native gin is adapted to the short-stapled variety, but it has been found not to be

adapted to the foreign and longer-staple kind of cotton; therefore when introducing the foreign seed, measures must be taken to provide the means of ginning the produce. For this purpose, several kinds of cottage gins have been invented and exhibited at Manchester, and although some of these were fully capable of the work intended for them, and all of them a vast improvement on the primitive wooden machine now in common use in this country, yet it was thought that all the requirements of an universal cottage gin had not been combined in any one of the instruments then exhibited. Those requirements are—cheapness, durability, easy working, large out-turn. Mr. Dunlop's gin however on the occasion alluded to won the first prize. The Cotton Supply Association having had the kindness to present the writer with one of these as well as one of Mr. Wanklyn's, he has had opportunities of trying both several times. The objections to Mr. Dunlop's were that its cost was too high, and the working power required for it rather too great, both of which objections were susceptible of removal or modification. The cottage gin exhibited by Mr. Wanklyn also won a prize. It is half the price of Mr. Dunlop's, and is easier worked; but does not turn out such a large quantity of cotton per diem. It is very possible that by this time either or both of these machines may have been perfected, and if so, some steps should be taken to provide a good number for sale in all Districts where foreign cotton is introduced. If ginning cotton on a large scale is required, the Macarthy gins with steam or water power are the best. Mr. Shepherd, late of Cairo, has a large establishment of this kind on the banks of the Nile. A 14 horse-power engine turns 60 Macarthy gins, situated in the very heart of the cotton growing Districts; and the attempt has not only proved eminently successful as a pecuniary speculation, but is looked upon by the people with immense satisfaction. The proof is that the factory is supplied with a greater amount of work than the gins are capable of performing within a certain time, and that consequently more are about to be set up to meet the demand. Mr. Shepherd has proved that Macarthy gins are suited to Egyptian cotton, and besides this, many other trials in England have proved that they

are adapted to all the foreign varieties. Saw gins should not be used at all; their only merit is rapidity of work. It will be a very strong objection indeed to the cultivation of foreign seed, if there is any doubt about the ryot or farmer being able to gin his cotton so near to his lands as to prevent any extra expense to him for that purpose. Much stronger indeed, and more positive is that objection than one which was made by the farmers of a District bordering on Dharwar, when the cultivation of American cotton on a large scale was first introduced about three years ago; viz. that their cattle would not eat the seed. Now this would be a very serious matter to them, because it affects their milch cows and buffaloes. Knowing the folly and falseness of this objection, an opportunity occurred for the District officer to put it to the test. Talking one day to a large native farmer regarding the new cotton, the latter urged the above objection, adding that as his buffaloes would not eat the seed, it would be a considerable loss to him. He was requested to send for one of his buffaloes, and a basket of American seed, to satisfy the officer. As soon as they were brought, the basket was placed before the buffaloe, which immediately began to eat the seed as if already thoroughly accustomed to it. Turning to the man for an explanation of this phenomenum, he got up and said "Oh Sir, I never tried the buffaloe, but heard that cattle would not eat it." This incident, which was pretty generally known, caused the imaginary objection above noticed to die out altogether in that quarter, and the result was that the growth of American cotton was considerably extended. In Dharwar, the American saw gin has become, through Dr. Forbes' exertions, quite common, and is used generally in the villages throughout the District. In the same manner as a better staple variety of the cotton plant has been cultivated in that District and the culture gradually extended to its present dimensions, so also by a little liberality in the first instance; a little instruction and the means of clearing or ginning the cotton in the second; and a sure and speedy market with better prices in the third and last, can foreign seed be introduced and cultivated in any of the cotton districts of India, where the climate, by yearly drought, is not opposed to the nature of the plant. The

climate of Dharwar is superior to many other parts of India, and this may be urged as a proof why New Orleans cotton may not necessarily succeed elsewhere; but although Dharwar itself is high and well situated, the plains in which the cotton grows enjoy much the same temperature and climate as that which is recorded of other places. If the same pains and care are bestowed in other Districts, and every precaution taken to prevent mixing in the first instance, experience teaches that the foreign seed will produce a better staple; and if the culture of the plant can be somewhat improved by the simple measures before alluded to, the objects of mutual advantage, increased supply and improved quality from India will undoubtedly be attained. One other point must always be remembered with reference to foreign seed, and that is there are so many varieties of the cotton plant growing in so many different climates, that it is more than probable failures will occur from the erroneous selection of seed, and that kind which the planter is most anxious to grow may not be adapted to the particular spot he has selected to cultivate; therefore he should try another kind. As a general rule "Sea Island" is not adapted to the plains, nor is Pernambuco; but both of these may be grown on the coast, with a very small amount of irrigation. Egyptian likes moisture too, or soil that will retain it long. New Orleans is that best adapted for our plains, but where the country is subject to drought, it would be better to improve the indigenous plant; and this may be done very considerably by following the rules herein mentioned, and stimulating the native farmer by giving better prices for clean and unadulterated cotton.

R. N. TAYLOR,
Captain.

MAY 1861.

Recd 1861 Sept 6th
Pro: of Govt for May.
No 1115

From,
Captain R. N. Taylor,
H.M. No 17 Regt
Dated 8th May
Recd 9th " 1861

Lagos, - Our received
From Govt of Cuba d 8/23
July/61 & Ent 27 inst

Forwards two Printed
Copies of an Essay on the
Cultivation of Cotton from
Foreign Seed in this country
for the Perusal and in-
formation of Government

No 1117. 29th May
William Crober

No 1112.

H.M. Govt. considers
Captain Taylor's exertions
to be very commendable.

Foreign Office
29th May 1861

J. D. L.

Return thanks Capt
Taylor for his
Pamphlet.

Copy to Captain R. N. Taylor. C.O. 29

No 271 + 272.