

NOTE

ON

NANKIN COTTON IN INDIA,

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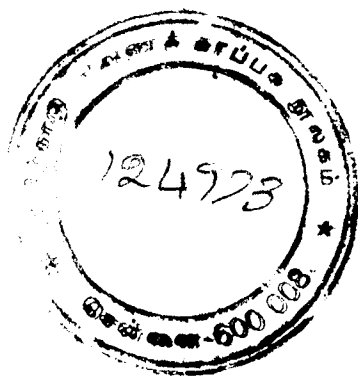
AN order was issued in July 1879 by His Excellency the Commander-in-Chief, directing that the summer uniform of all Native Infantry Regiments should be of *khaki* colour. It was acknowledged that this colour is the best for field service in the country; but experience has proved that it is difficult to fix, and that a uniform shade cannot always be procured; cotton mills in India have failed in dyeing the yarn in *khaki* before the cloth is woven.

In these circumstances, a suggestion was made last year by Lieutenant-Colonel R. F. Angelo, that a naturally dyed cotton might be used, which he found growing at Chunar in Bengal, and which seemed to be of the required colour.* The suggestion, having been supported by the Army Head-Quarters, was referred to the Department of Revenue and Agriculture for consideration, and led to enquiries, of which the following is a result, supplemented by such further particulars as were obtainable.

A fawn-coloured cotton, commonly called Nankin cotton, has been known for many years, and appears to be of Chinese origin. From it is manufactured the beautiful Nankin cloth called by the Chinese Tze-miewha, and much used by them on account of its cheapness and durability. At one time, large quantities of the cloth were exported from that country, but its export has now apparently almost ceased.

From China the seed of this plant appears to have been first introduced into the Madras Presidency about the year 1827. It appears also to have found its way a few years later from Tibet, (whither it probably went from China) into the sub-Himalayan tracts of Northern India. In 1838, the Agricultural Society of Meerut sent to that of Calcutta samples of cotton grown in their

* Samples of cotton and of cloth made therefrom are appended.



garden from the produce of Chinese Nankin seed. Later on the mention of samples of Nankin cotton appears from time to time, and the cultivation of the staple seems to have been tried in several parts of the country on a small scale. No particular attention was apparently paid by Government to encouraging its extension. The persons, however, who undertook its cultivation, have probably found it a useful product, for it stands now as a known crop under regular cultivation in certain tracts, though still on a very small scale.

As at present met with in India, the plant grows in the field to a height of about 18 inches only, but in favourable localities it attains the size of a bush quite 4 feet in height. It is a hardly description of cotton, perennial in habit, and gives more than one picking. Dr. Balfour thinks, that, although of a more stunted growth than the ordinary cotton, it does not possess any characters which constitute a distinct species.

In the Madras Presidency, its cultivation is reported by the Local Government to have passed the experimental stage; but the plant is apparently grown on a very small scale here and there, mostly perhaps as a botanical curiosity. Exceptions, however, occur in the Coimbatore and Godavari districts. In the former, Mr. H. R. Grimes, Superintendent of the Central Jail, grew the cotton on the jail grounds on a sufficiently large scale to have cloth manufactured therefrom. He began the cultivation in 1868, with two seeds given to him by the Hon'ble J. D. Sim. So well did the plants thrive, that Mr. Grimes was able, starting with the two seeds, to plant at different times about 12 acres of land. He does not, however, appear to have kept any record of the details of cultivation, or of outturn. The produce was utilised for the manufacture of cloth in the jail; and in January last we were favoured with samples of the fabric, as well as of some of the thread spun by the convicts, and some cotton in the pod.* In the Godavari district, Dr. Bilderbeck, the then Superintendent of the Central Jail at Rajamundri, procured some seed from Tinneveli in 1877, and grew it very successfully: the

* See samples appended.

plants were six feet high; picking commenced in September and continued for several months; the plants were then cut down to the ground just before the rains, and sent up fresh shoots which gave fresh pickings. The area sown and the outturn obtained are, however, not specified. The produce was every year worked up in the jail into cloth for shikari suits and drill, and the sales of these manufactured articles rose from 16 yards in 1879 to 341 yards in 1882. We obtained 7 yards of the first of the Coimbatore samples, and a like quantity of those of Rajamundri, and transmitted them to the Military Department to enable the Army Clothing Agency to test their suitability. The attention of Brigadier-General Clerk, of the Madras Presidency, was also drawn to this fabric while he was on a visit to the Coimbatore jail, and he took 20 yards with a view of trying it as summer clothing of troops.

The result of these two trials has not been reported yet. In the meantime, however, owing to the recent orders of the Government of India deprecating the continuance of miscellaneous jail manufactures, the last crops of this cotton were rooted up and destroyed. Mr. Grimes appears to have asked for orders whether a certain area could be re-sown, seeing the fact that attention was being given to the product. The Government of Madras did not see any necessity for so doing, but directed that a supply of seed should be carefully maintained for distribution in the event of a demand being eventually established. An acre of land has accordingly been put under the crop in the Sydapet Farm, and Mr. Robertson anticipates that this will give enough seed for 20 or 25 acres of land, if demand should arise. There are, besides, about 450 lbs. of seed now available at the Rajamundri jail for distribution if required. In view to ascertaining the identity or otherwise of this cotton, as grown in the Madras Presidency, and at Chunar in Bengal, a small quantity of seed from the latter place was asked for; but as none was apparently available at Chunar, a sufficient quantity for one acre was supplied from the Saharunpore Botanical Garden.

In the Bombay Presidency, no record seems to exist of any previous trial cultivation of the Nankin cotton;

and at the request of the Local Government for seed for trial at the Ganeshkhind Botanical Garden, and at the Model Farms at Bhadgaon and Hyderabad (Sindh), a supply was sent through the Director of the Agricultural Department of the North-Western Provinces.

In Bengal, the cotton of the natural *khaki* colour is grown extensively in some districts of the Patna division, and cloth of different qualities is made from it, some of which is good.* The Local Government has furnished samples of the cloth that is made, and says that, if the Government of India propose to make purchases of the manufactured material to any considerable extent, enquiries will be made as to the quantity which the Patna division can turn out. At the same time it has asked for a supply of the seed for experimental cultivation in other divisions of the province, and its request has been forwarded to the Director of the Agricultural Department in the North-Western Provinces for compliance.

In these latter provinces, this cotton has been grown for some time in the Saharunpore Gardens, and in certain parts of the Cawnpore district. The produce from this district has been utilised on a small scale by the Muir Mills: and a specimen of the cloth manufactured by them will be found in the Appendix. The Manager of the Mills, writing to the Director of the Agricultural Department, says:—

“ This Company has grown for some years crops of this cotton, and has manufactured drill from the same.
* * * We have endeavoured to introduce the cotton among the cultivators, but have not succeeded to any extent. We purchase any quantities of the cotton that may be offered to us, but at present very small quantities have been secured, and we are therefore unable to manufacture cloth for sale like the pattern sent you.”

A trial cultivation of this cotton has also been in progress on the Government Farm at Cawnpore, and the Director of the Agricultural Department, writing on the 30th March last, reported that a crop was then

standing in full bearing, that the yield “ so far this year has been 102·8 lbs. of clean cotton per acre, and another picking is expected before the year expires.” The seed from which this crop has been grown was obtained partly from the Rawatpore Estate (Cawnpore), and partly from the Saharunpore Gardens.

Some of the seed grown in Coimbatore has been furnished to the Director for trial and comparison of the produce with that of his own crop.

In the Punjab, Nankin cotton has been cultivated successfully on the estate of Subadar-Major Natha Sing, Aide-de-Camp, near Mean Mir, and has been woven into cloth of which a sample is annexed. The Local Government, however, asked us for a supply of seed for distribution to several officers, and its request was complied with at our instance by the Director of the Agricultural Department, North-Western Provinces, to the extent of permitting a total area of two acres to be sown.

In the Central Provinces a trial cultivation of this cotton has been made at the Nagpur Central Jail. Mr. J. B. Fuller, Director of the Provincial Agricultural Department, who reports the particulars, says that $1\frac{1}{2}$ acres of fairly good black soil were sown, that no special care was given to the cultivation, and that the produce in seed cotton amounted to eight maunds, “ which is equal to about 112 lbs. of clean cotton per acre.” He has asked the Superintendent of the Jail to have a sample piece of drill woven from this produce, and promises to send it to us when ready. He says that, if the Military Department are willing to give a trial order, he can arrange for the preparation of a considerable amount by the end of March next year. He adds that the cotton will be grown on a small scale at the Nagpore Experimental Farm during the ensuing season under conditions which will test its productiveness. A small quantity of the seed grown in Madras has been forwarded to Mr. Fuller by the Madras Government at our request.

The Chief Commissioner of Ajmere asked for two seers of seed to be sent direct to the Commissioner before the 1st February; and the supply was furnished at our

* Samples appended.

request by the Director of the Agricultural Department, North-Western Provinces and Oudh.

In Central India, the Nankin cotton is grown in quantities large enough for the manufacture of uniforms for the regiments of the Central India Horse. Samples of the cloth manufactured are annexed, the first of the qualities being woven at the Indore mills.

In Berar, this kind of cotton has often been grown in the jails, but the Commissioner thinks that it is not a variety which it would be advisable to introduce into the Province. The Resident concurs with this opinion; but has addressed the Chief Commissioner of the Central Provinces to ascertain the result of the trials made there, "as this will probably show conclusively whether there is any prospect of advantage from the cultivation of this variety of cotton in Berar."

In Coorg little or no cotton is grown, and the Chief Commissioner does not consider it desirable to try the Nankin variety.

The Chief Commissioner of Assam thinks that it would not be practicable to try the experiment in that province, where cotton is only grown by wild tribes, who are not likely to take to a new staple.

In British Burma the Nankin cotton, it would appear, already exists, for a record of the receipt of a sample of this variety of cotton occurs in the proceedings of the Agri.-Horticultural Society of Calcutta. It was sent to the Society in October 1861 from the Koladin river in Arakan, and was reported upon as coarse, harsh and of very short staple, quite unsuited to the English market, although possessing strength of fibre. The Chief Commissioner, however, in reply to our enquiry, expresses the opinion that at present the trial cultivation of this, or of any other kind of cotton in British Burma, would be of no real utility, as cotton is very unlikely to become a crop of that province, climate and character of present cultivation being against it.

Briefly then, the above paragraphs may be summed up thus,—local authorities in British Burma, Assam, Berar, and Coorg, are not at present desirable of under-

taking the trial cultivation of the Nankin cotton; in the Bombay Presidency, in the Punjab, and in the North-Western Provinces. In the Madras Presidency, in Bengal, in the North-Western Provinces, in the Central Provinces, and in Central India, the cultivation of this cotton has passed the experimental stage, cloth has been manufactured of which samples are annexed to this note, cultivation is continued in Government farms or by private people, and if demands arise for the cloth, the cultivation could probably be extended and supplies increased.

The question of demand, however, rests on the suitability of the cloth for the purposes for which it may be required. In the absence of private trade demands, all purposes may at present practically be summed up in the requirements* of the Indian Army and perhaps also those of the frontier police. And for such purposes it is necessary—

- (a) that the colour be of one uniform shade,—it resting with the Army Head Quarters to decide which of the shades shown by the samples is most suitable;
- (b) that the shade do not fade by wear;
- (c) that the cloth be durable; and
- (d) that its price be not excessive.

In considering these points in the light of the information before us, we are at the outset in face of the peculiarity that the produce of the same plant is not always of the same tint. Mr. Bennet writes: "On the same plant bolls of pure white may be found growing alongside of fawn-coloured bolls." Mr. Robertson in Madras, and Mr. Fuller in the Central Provinces, notice the same peculiarity, and Dr. Balfour, writing about this cotton as produced in China, says:—

"Although its seeds may generally produce the same kind, they doubtless frequently yield the white variety, and *vice versa*. Hence, specimens of the yellow cotton are frequently found growing amongst the white in

* I have not been able to obtain any figures of the quantities that would probably be required; but they would be considerable, perhaps something over one million yards annually.

the immediate vicinity of Shanghai; and again a few miles northward in fields near the city of Poushan on the banks of the Yang-tse-kiang, where the yellow cotton abounds, Mr. Fortune* often gathered specimens of the white variety."

It may be that the Nankin cotton hybridises with the ordinary staple when growing side by side with it, or in its vicinity, and that such of the flowers as become so affected produce a white staple instead of a Nankin one. This is not improbable, since the plant which produces the Nankin cotton is said by no less an authority than Dr. Balfour to be a mere variety and not a distinct species. Mr. Fuller corroborates this belief of hybridisation in the following words :—

" I may add that a practical difficulty, which will be experienced in growing this variety of cotton, is the readiness with which it hybridises with the ordinary white variety, to the prejudice of its own colour, which assumes a lighter tinge than the one natural to it. Out of the eight maunds produced at the Nagpur Central Jail, only half had retained the original *khaki* colour."

Mr. Fuller is of opinion that this deterioration could probably be considerably checked by careful selection of seed. The point is of sufficient practical importance for further experiment, and the attention of the Local Governments, who are causing, or are about to cause, the cultivation of the plant to be tried, may be invited to it.

Whatever the result of the further study of this point may prove to be, it may for present purposes be noted here that Colonel Angelo writes that when he met with this cotton at Chunar, his first idea was to see whether it would always continue to yield cotton of the *khaki* colour. He accordingly obtained some seed, raised crop after crop for three years, and now feels satisfied that the colour is no accident. This is, of course, known to be correct.

The fact, however, remains, pending the result of attempts above suggested for checking it, that more than one shade of cotton is produced by the same plant. Mr. Robertson says that "these differences disappear to a considerable extent when the cotton is ginned, due to the thorough admixture of the fibre in the process of ginning," and that "during the spinning and weaving process, a still greater uniformity in colour will be secured." Mr. Bennet also writes that, in the process of cleaning, spinning and weaving, uniformity of colour is obtained; and this is quite evident from the samples appended to this note.

Therefore, we may premise that, for present purposes, we have sufficient reason to believe that a uniformity of shade can be depended on, if demand should arise.

The next two points, *viz.*, whether the shade is lasting, and the cloth durable, will probably be pronounced upon by the Army Clothing Agency at Calcutta, and the Brigadier-General in Madras, as regards the produce of the Coimbatore and Rajamundri jails. Regarding that of the Central Provinces, we have been promised a sufficiently large sample, which will also be tried. Colonel Angelo testifies that cloth made from the cotton grown in Chunar has been constantly worn as clothing; that the colour has not faded in washing, and has not been affected by perspiration, the oldest clothes being precisely of the same tint as the newest. Such has also been the experience with cloth made from the *khaki* cotton grown in Tirlhut (Patna division) and known there as *kukti* cloth. A friend who recently returned from Tirlhut showed me some clothes, which, after having been in use for four years, retained their original colour. I have myself tried a small piece from each of the samples received by us from Coimbatore, Rajamundri and the Patna Division (the other samples being too small to afford being cut up), and have given each a fairly good washing: the result, which will be seen from the pieces on the second page of samples, appears satisfactory. Finally, we have the testimony of Major W. J. Pickance, the present Superintendent of the Rajamundri jail, who writes: "The

* See Mr. Fortune's *Wanderings*, pp. 264 to 273—(old publication).

drill manufactured from this staple is very strong, and does not, after being worn and washed, present the same streaky appearance that dyed khaki does. It was highly approved of by the officers employed with the Runpa Field Force during the recent fituri."

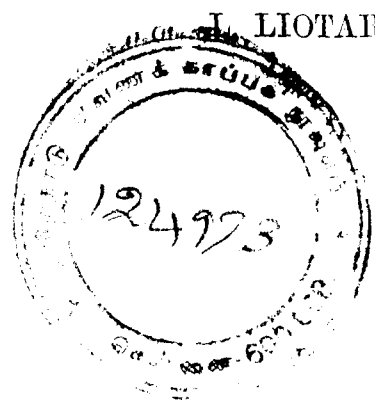
As to price, we have not been furnished with any particulars.

So far as regards *khaki* or Nankin cotton found in India. In the course of correspondence, it appeared that a superior kind of this sort of cotton was cultivated in certain parts of Arabia. We accordingly addressed Her Majesty's Political Agent and Consul at Muscat, and received from him 21 lbs. of the "seed of the best variety procurable in Oman." This was obtained by the Political Agent through His Highness the Sultan, who kindly sent a special messenger to the cotton-growing districts in Oman to procure the seed. He also sent a small quantity of unpicked cotton as a sample. A sample taken from this source will be found annexed. The seed has been distributed between the Governments of Madras, Bombay, North-Western Provinces and Oudh, the Punjab, and the Central Provinces, with a request for careful trial cultivation under circumstances which will prevent any hybridisation and will test its productiveness and quality.

SIMLA :

25th April 1883.

J. LIOTARD.



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