

19

*Proceedings of the Madras Government, Revenue Department,
8th October 1873.*

No. 50. Read the following letter from C. J. LYALL, Esq., Officiating Under-Secretary to the Government of India, Department of Agriculture, Revenue, and Commerce, (Fibres and Silk,) to the Hon. R. A. DALYELL, Acting Secretary to the Government of Madras, dated Simla, 2nd September 1873, No. 2-197 :—

I AM directed to forward herewith fifty copies* of a report on the cultivation of flax in India by Mr. W. H. D'Oyly,

* Book Post.

Magistrate and Collector of Howrah,

and to request that you will be good enough, with the permission of His Excellency the Governor in Council, to have them distributed to district officers. I am to add that the Government of India will be glad to be favoured with any further information on the subject which His Excellency the Governor may be able to obtain from the officers to whom the report is distributed, or which may be already in the possession of the Government of Madras.

No. 51. ORDER THEREON, 8th October 1873, No. 1,075.

Miscellaneous.

ORDERED that forty-five copies of the report be sent to the Board of Revenue.

Dated Howrah, the 8th June 1873.

Demi-official from—W. H. D'OYLY, Esq., Collector of Howrah,

To—The Offg. Secy. to the Govt. of Bengal, Agricultural Department.

WHILE I was at home, or rather on my way there and back, I picked up all the information I could get from the journals of the Agri-Horticultural Society of India, and several other books regarding the cultivation of flax in India, and the enclosed report is the result.

Dr. Forbes Watson very kindly took a great deal of trouble in hunting up all the records of experimental cultivation and manufacture in India, and supplied me with numerous extracts from the records of the India Office. I now send on the report to you, as it may be of some use to Government. It has been proved that there is nothing in the soil and climate of certain parts of India against the production of good fibre; in fact very good fibre has been produced, but it has not yet been proved whether the cultivation and manufacture can be carried on profitably. Punjab flax manufactured by Government was proved by sale at auction to be equal to Russian flax, which is better again than Egyptian. Now, if the Egyptians can make it pay, we ought to be able to make it pay also. If India could be made a flax-producing country, it would be a grand thing, not only for India but for England.

I send the report to you demi-officially, so that you can just send it back if you think it is not worth while troubling Government with it.

I believe I have cited chapter and verse for every statement I have made, so that there may be no mistakes.

Kindly acknowledge receipt, and let me know what you think about the matter.

REPORT ON THE CULTIVATION OF FLAX IN INDIA.

Object. THE object of this paper is to show, in as concise a form as possible the results of the several experiments that have been made from time to time both by Government and by private individuals in the cultivation of the flax plant (*linum usitatissimum*) for fibre in various parts of India, and to urge the prosecution of further experiments in such a manner as to give them at least some chance of success. By success I mean something more than the success which has already attended many of the experiments which have been made; for although it has been proved that fibre can be produced from the flax plant grown in this country when the cultivation is properly attended to, and that such fibre would find a ready sale in some of the home markets, still India has not become a flax-producing country.

2. That England should be able to supply her manufactories with flax from India, instead of depending so much as she does on Russia, Prussia, Egypt, and other countries, is a matter of incalculable importance. I exclude Belgium, as there is at present no reason to anticipate any difficulties with regard to the supply from that country, and also because India, though perhaps she may not hope to equal Belgium in the quality of her flax, might still well compete with Egypt, Russia, and other countries. For the Dundee market the Indian flax that has already been produced in the Punjab is admirably adapted. In the Dundee Chamber of Commerce, Mr. O. G. Miller, the Chairman, in 1858, speaking of the Punjab flax, specimens of which were laid on the table, said that "the fair value of the flax at the present time he considered to be fully £45 a ton overhead, and he would be glad to take a quantity of it at that price. * * * * *

Indeed, a mixture of this flax with that of the Baltic would much improve the yarn by imparting strength to it. Such flax would be therefore admirably

Recd letter Govt India dated

4 July/74

W. H. D'Oyly Esq.
Collector of Howrah

Further No 3666/73

date 5 Nov 25 1873

adapted for canvas yarn and other yarn where great strength was required. Every one then would agree that if a supply of *some thousand tons annually* of this flax could be obtained at a fair price, a very great boon would be conferred upon the linen manufacturers of this country, and this district in particular would be benefited more than Belfast or any other town, for we have a hold of the coarser end of the linen trade, for which this flax was better adapted than for the finer spinning of Belfast and Leeds." Dr. Royle, in his work on the fibrous plants of India (page 141), quotes from a letter written by Mr. J. McAdam as follows: "Belgium, Holland, France, and Ireland, can supply all the world with fine fibre, but Russia and Egypt cannot keep pace with the demand for coarse."

3. I believe that the time has now come when the cultivation and manufacture of flax can be carried on in India profitably,—certainly with more hope of profit than it was reasonable to expect in former years—firstly, because higher prices can now be obtained in the home markets;* secondly, because the means of communication both in India and also between India and England have been so much improved, and the rates of freight have lately been so much reduced;† and thirdly, because the great irrigation works lately undertaken by the Government of India in Behar and in other parts of the country, and which are being extended throughout immense tracts of dry and thirsty, and therefore hitherto comparatively unfruitful lands, will supply the only thing wanting to enable farmers to turn these lands to good account,—lands now in many places lying waste to a great extent, and even where cultivated, obtainable in many parts at a very low rate of rent.

4. The Indian plant called *ulsee*, or *teese*, is a variety of the flax plant (*linum usitatissimum*), which is grown exclusively for the seed from which linseed-oil is expressed. This variety has acquired certain characters from the peculiar method of culture adopted with a view to obtain as great a quantity of seed as possible; and this is done at the expense of the fibre, for the plant, in consequence of the peculiar method of culture, is always *short* and *bushy*. The same thing occurs with the plant known commonly in India as *ganja*, or *bhanga*, which produces an intoxicating drug; this is the true hemp plant (*cannabis sativa*), and in India it is not cultivated for fibre, but for the "resinous secretion of its leaves." Dr. Royle, in his work on the productive resources of India, says: "In Europe it is well known that if it be wished to prevent a plant secreting the principles, bitter, acrid, or otherwise, which are natural to it, the practice is to exclude it from the influence of light and air, as in tying up lettuces and covering up celery; so to ensure a full secretion of the principles natural to a plant, an opposite treatment is necessary, and is practised with the hemp in India by openness of planting and consequent exposure to the full influence of light, heat, and air." Hence the flax plant in India being valued on account of the oil of its seed, is sown in lines on the borders of fields, and not thickly, so that it becomes short and bushy, with many branches yielding a heavy crop of seed. This every one who has seen anything of the country where linseed is cultivated must have observed. To secure length and fineness of fibre, it is necessary to sow both hemp and flax very thickly in the same way that jute and sunn-hemp (*crotonaria juncea*)—which by the way is not hemp—are sown.

5. It appears that the attention of Government was first directed to the cultivation of fibrous plants in the beginning of the present century. The East India Company had hemp farms, and Dr. Roxburgh seems to have been the first to attempt the

* See Appendix A.

† In the first part of the year 1855 the freights for jute varied from £5 5s. per ton to £6 5s.

The quotations now (end of April 1873) are £2 12s. per ton. In July 1872 the steamer *City of Cambridge* took home 100 tons jute at £3 per ton, and in the same month the *City of Canton* took 300 tons jute at £2 10s. per ton.

The *City of Lucknow* took 500 tons jute at £2 7s. 6d. per ton. In May 1872 the ship *Tythenus* took 625 tons jute at £2 5s. per ton.

In both the years 1872 and 1873 the highest rates for jute did not exceed £4 per ton.

production of flax in India. Unfortunately no record appears to have been preserved of the result of his experiments. Dr. Royle, who published a work on the fibrous resources of India, called attention to the subject in 1834, but little seems to have been done till 1839, when a company was formed in London called "the London Experimental Flax Company." By them a Belgian farmer and a Belgian preparer of flax were sent out to Bengal, and experiments were made with more or less success in several parts of Bengal, Behar, and the North-Western Provinces. Riga, Dutch, and country seed, all were tried. Generally, as might be expected, the Riga and Dutch seed proved better than the country seed; still some of the specimens of flax produced from the latter were most favorably reported on and considered by Mr. Denieef, the Belgian farmer, to be worth £66 a ton. This is probably a rather high estimate, for some specimens sent to Liverpool at the same time were valued at from £30 to £45 per ton; but it is right to add that some time after some Punjab flax was actually sold at auction at £54 10s. per ton.* The Agricultural and Horticultural Society of India took the matter up warmly. Medals and prizes were offered; but although the results of experiments were encouraging, the cultivation did not till many years after extend beyond the few bighas in the several places where experiments were made.

6. In the district of Shahabad at a factory called Nonore, which is on the banks of the river Soane, Mr. Leyburn for several years (1840 and previously) persevered, and although his efforts were crowned with great success, still he wrote in a desponding way of the almost insurmountable difficulty he encountered in getting the natives to take to anything new. He must here have referred to the manufacture of the fibre, and not to the cultivation of the plant, for it is beyond doubt that the natives will always take to any cultivation that will pay well, and even to the preparation of the produce, when it is not attended with any great difficulty requiring more than ordinary care. Take, for instance, opium and jute, the cultivation of which has increased so enormously. But the preparation of the flax fibre is infinitely more difficult than that of jute or sunn-hemp, and requires European superintendence, without which the natives would never produce a marketable fibre. Even in the comparatively easy preparation of jute and sunn-hemp, a large proportion of the fibre is more or less damaged by carelessness in preparation. Mr. W. Stalkartt of Ghosery, who owns an extensive rope manufactory, informs me that no less than one-quarter of the sunn fibre brought to him is damaged by carelessness in steeping; the stems are often left for too great a length of time in the water. I may add an extract from a report by Mr. Sturrock, Secretary, Chamber of Commerce, Dundee, dated 11th March 1860—(Journal of the Agricultural and Horticultural Society of India, Part III, Vol. XII):—"As to the quality, it is not nearly so good as a lot sent home by McLeod, which I sold at £54 10s. per ton. It is not so good colored, is altogether harsher, and has much less of the natural sap in it. This we consider must arise from the stock having been allowed to grow too long a time, or not having been pulled early enough, and from oversteeping, or otherwise bad "preparation."†

Again, in the Agricultural and Horticultural Society's Journal for 1863, Part III, Vol. XIII, it will be seen that both Mr. McGavin and Mr. Stalkartt, in reporting on the weakness of samples sent to them for report, attribute the weakness to want of care in preparation. To return to Mr. Leyburn's experiments. It appears from the proceedings of the Agricultural and Horticultural Society in November 1841 that "Mr. Leyburn succeeded in producing an article of lengthened staple, and of a quality vicing with the flax of Russia and elsewhere. A portion of the cultivation was carried on in the sandy bed of the Soane river, and part in the uplands of the district." * * * * * The

* This, however, was a very small quantity, viz. about two tons, which was the best that had been then prepared. See extract from Mr. Sturrock's report quoted in paragraph 6.

† The italics are mine.

following is the result which Mr. Leyburn has arrived at in his calculation of the profit to be expected in the prosecution of this valuable culture:—

Per bigha.							
	Rs.	A.	P.	Produce—	Rs.	A.	P.
Rent of land..	1	8	0	Linseed 5½ maunds	5	8	0
Ploughing ..	0	8	0	Flax, 4 mds., (say) at £35 per ton	46	10	8
Seed ..	0	8	0				
Pulling, beating seed off, watering	5	9	3	Total ..	52	2	8
Paring, cartage, preparation ..	16	0	0	Deduct expense of cultivation as			
Total ..	25	1	3	per contra ..	25	1	3
				Profit on one bigha ..	27	1	5

In a foot-note the size of the bigha is not very clearly shown. The Shahabad bigha at present contains 27,225 square feet, and is therefore about two-thirds of an acre; but Mr. Leyburn puts down his bigha as "something more than the Bengal bigha, which is 1,600 square yards, the third of an English acre." Still, as he calculates the produce at 4 maunds of flax per bigha, which is equal to one ton from seven bighas, it would seem that the bigha referred to by him must be at least as large as the present Shahabad bigha. (See results of other experiments.) The factory maund is equal to 74½ lb, therefore 4 maunds would be equal to 2 cwt. 2 qrs. 18½ lb. At my request a search was made among the records of the Nonore factory by the present owner, Mr. Solano, for any papers that there might be relating to Mr. Leyburn's experiments, but unfortunately the factory was burnt in the mutiny, and no papers on the subject have been found.

7. Mr. Deneef, the Belgian farmer above alluded to, drew out an estimate of the cost of a ton of flax produced from English seed well dressed, and in his opinion worth £50 or more in the home market. It must be remembered that this showed the cost of cultivation, &c., near Calcutta, where it was, and always will be, higher than it is up-country. It will be seen that he calculates that thirty Bengal bighas* would be necessary to produce one ton of flax. His estimate was as follows. (See Agri-Horticultural Society's Proceedings, April 1841):—

	Rs.	As.	P.
30 bighas rent for six months, the other six months for other crops, each Rs. 1-8	45	0	0
6 bighas superior cultivation, to renew the whole farm every 5th year†	30	0	0
10 maunds American or European seed	80	0	0
24 bighas, 4 necessary ploughings, each Rs. 3	12	0	0
Sowing, malees, recolt, rippling, steeping, carrying, and petty expenses	48	0	0
28 maunds, dressing in a very clean way, at Rs. 3-8	98	0	0
Breaking of flax tools	7	0	0
Total ..	320	0	0

Return.

One ton flax, value from £49 to £56.
19 to 20 maunds seed.
Seven to nine maunds codilla.

8. Mr. Wallace, at Monghyr, for some years made experiments, and he perhaps may be said to have been the most successful producer as far as cost of production is concerned. He states in a letter, dated 21st August 1841, to Dr. Spry, Secretary to the Agricultural and Horticultural Society of India, that the expenses of cultivation,

* The Bengal bigha here referred to contains 14,400 square feet (about one-third of an English acre, and about half of the Shahabad and Ghazeeepore bighas). (See report of experiments in those districts.)

† This means that a fifth part of the whole is dug over, so that at the end of five years the whole land has undergone a digging of about nine inches.

rippling, and steeping, were more than covered by the proceeds of sale of seed.

The cost of preparation of three tons he gives as follows:—

	Rs.	A.	P.
Scutching of 3 tons after being broken or crushed by the rollers	190	0	0
Gram and grass for horses and bullocks, syces' wages, &c.	94	0	0
Peons and carpenter	10	0	0
Mofussil expenses and carriage to Calcutta.	60	0	0
Boat-hire and travelling expenses	10	0	0
Total ..	364	0	0

Rs. 364 = £36, or £12 per ton.

Mr. Wallace estimates to produce per bigha* as follows:—Flax, "average crop 9 stone; 16 bighas for a ton; tow, 1st quality 36lb and 2nd quality 14lb; seed, average crop 3½ maunds." He considers that the most preferable land is that which is yearly inundated; chur lands, he says, will yield a good crop if not too sandy, but high lands are preferable if rain falls two months after sowing.†

9. Mr. Deverinne's experiments at Bulleah, 1840-41, were the least satisfactory of all, but a reason is given for this, and it would appear that better results were obtained in other years from his estimate of average crops. In his letter to Messrs. Hamilton and Company, Calcutta, dated 20th September 1841, he estimates the cost of cultivation of 100 bighas and of the preparation and despatch of the produce to Calcutta, at Rs. 2,237; the yield he estimates, in an average season, at from 150lb to 200lb per bigha, or (say) 6¾ tons per 100 bighas; the cost of one ton therefore, landed in Calcutta, would be Rs. 331. The bigha referred to is the Duncanee bigha of 28,336 feet square, about double the size of the Bengal standard bigha. Mr. Deverinne adds that the proportion of flax to codilla is one-third flax to two-thirds codilla, so that besides the 6¾ tons clean flax, there would be 13½ tons codilla.‡ The figures given above are taken from Mr. Deverinne's estimate of an average season; but his actual returns in 1840-41 fell far short of these figures. This, however, is not to be wondered at when we see that the season 1840-41 was an unfavorable one. The plant was blighted in January; from the 10th September till the 20th January, when the flax was in seed, there was no rain; country seed was used; the sowings were too late, and, at the advice of Mr. Bernard, 20 seers of seed only were sown in each bigha, which was found to be much too small a quantity for the production of good flax; part was sown with drill ploughs and part broadcast; the flax was cleaned at an improper time, viz., during the hot winds;§ instead of getting an yield of 3 to 3½ maunds of seed per bigha, he harvested only 1 maund 25 seers per bigha.

10. Although Lord Auckland took a very great interest in the cultivation of flax, as indeed he did in all matters connected with the development of trade in the various fibrous productions of India, and though he requested the Agricultural and Horticultural Society "to supply such accurate detailed information as they may possess, or as they may be able to obtain," still nothing further was done by Government; for it appears that on receipt of the Society's report, the Secretary to the Government of India wrote a letter || to the Secretary of the Agricultural and Horticultural Society from which the following passage is taken:—"The cultivation of flax can no longer be considered a doubtful experiment, since it appears from your report to have proved in many instances successful and,

* Of 3,600 square yards, ½ths of an acre.

† Letter from Mr. J. Wallace to Dr. Spry, dated 2nd September 1841. Proceedings of Agricultural and Horticultural Society, November 1841.

‡ I cannot help thinking that this must be a mistake for ¾ flax to ¼ codilla. Mr. Deneef, see para. 7, puts down 1 ton flax to 9 maunds (or say 7 cwt.) codilla; and Mr. Wallace estimates 9 stone (16lb.) flax to 36lb 1st quality tow and 14lb 2nd quality tow.

§ See Balfour's Cyclopædia of India, page 840; also letter from Mr. Deverinne to Messrs. Hamilton and Company, Calcutta, dated 20th September 1841, published in Agricultural and Horticultural Society's Journal for 1841, page 101.

|| From T. H. Maddock, Esq., Secretary to the Government of India, Revenue Department, dated Council Chamber, the 22nd November 1841, to H. H. Spry, Esq., Secretary to the Agricultural Society.

where successful, to be very fairly profitable. His Lordship in Council is therefore much inclined to doubt whether any bounty or reward from Government is necessary or would be justifiable for the support of this undertaking." This was a rather unexpected blow; the Society seems to have almost dropped the question, and the flax company seems to have collapsed.

11. Later on, some very successful experiments were made by Government experiments in the Punjab, chiefly through the exertions of Mr. Cope. These were on a more extensive scale than those that had previously been made, and Lord Dalhousie took a personal interest in the matter. The plan proposed by Mr. Cope, and approved of by Government, was that premia should be given of Rs. 500, 350, and 200, for the successful cultivation of flax on areas to be respectively not less than 25, 20, and 15 acres; that Government should purchase the entire crop seed and fibre of the required length, paying at the market rate of the seed, with 25 per cent. added for the fibre; that simple instructions should be drawn out and made as widely known as possible.* These and some other resolutions were passed in 1854, and operations commenced during the autumn of the same year. On the pledge of Government to purchase the whole of the produce, large areas were sown with linseed. The cultivation increased from 3,453 acres in 1853-54 to 19,000 acres in 1854-55. These are the returns for eight districts only. The services of a German, Mr. Steiner, were secured, and that part of the cultivation over which he was able to exercise immediate control yielded very satisfactory results; 110 maunds of respectable fibre were thus produced, and purchased by Messrs. Harton and Company of Calcutta.

Unfortunately, however, the instructions given were not generally attended to. I will quote Mr. Cope's own words:—

"But, as a general rule, it was found that the zemindars had so entirely neglected the tenor of the instructions communicated to them, that a great proportion of the plant was found, on examination, totally unsuited to the production of even a decent fibre, and in no one instance would the zemindar exert himself to the extent of attempting even the preparation of any fibre, although the difficulties in the way of doing so are by no means great.† This preparation of fibre is, however, an operation requiring labour, and labour is what the Punjabee cultivator dislikes of all other things if he can possibly avoid it, a fact that points to the desirableness of introducing machinery‡ on an extensive scale, leaving the country people to cultivate and increase the growth of whatever of a vegetable character may be applicable to the arts of Europe."

Again, Mr. Cope says: "The Indian, or more correctly the Punjabee, in fact does not know what labour is. No wonder he prefers sitting smoking his hookah, now and then peeling his sunn stems by way of a change, to standing up like a man to break and scutch flax or any similar profitable, but distasteful, occupation. He may be brought to grow the plant, but I much fear that is all—for the present at least."

There is undoubtedly a good deal of truth in these remarks. All the flax that was produced in the Punjab was produced by hired labour, except in one isolated instance, namely, at Deenanuggur, where Mr. Cope found that a small quantity had been prepared by the cultivators.

Owing to the inattention of the cultivators to the simple instructions given, the premia offered by Government were not earned; none of the prescribed conditions having been complied with. Mr. Cope, however, recommended that the premia should not be altogether withheld, and a sum of Rs. 1,491 was apportioned to the most deserving cultivators. Unfortunately, however, the

* See paper on the introduction of flax as a fibre-yielding plant into India, and especially into the Punjab, by H. Cope, published in Vol. XI of the Journal of the Agricultural and Horticultural Society of India, 1859.

† Here I think Mr. Cope is wrong, for the testimony of all other persons whose experience renders their opinions of great value shows that the preparation of the flax fibre is more difficult than that of any other fibre—rhoea perhaps excepted.

‡ The italics are mine. In paragraph 18, I have given my reasons for the belief that the use of machinery is necessary for preparation of this fibre in India.

payment was delayed for two years. It is therefore not to be wondered at that farmers and cultivators lost the small interest in the matter which had at first been excited by the offer of the premia. Lord (then Sir John) Lawrence, in the Punjab report of 1855-56, says: "In 1855 (the autumn of that year is here meant) about 25,000 acres of linseed (that is half the superficial area sown in 1854-55) were sown, but the season, being dry, was unpropitious; no merchantable flax was obtained." Now, irrigation would have prevented the loss caused by the dry season. Mr. Cope, in his paper above cited, says that Sir John Lawrence must have made a mistake, for "the very fibre which has attracted so much attention at Belfast, Dundee, and Leeds, was prepared from flax grown in the districts of Goojranwalla and Lahore during the season of 1855-56." The quantity sent home, however, was very small, being about two tons. Some 55 maunds, prepared by Mr. Steiner, were sent to Belfast, where the quality was tested. At a special meeting of the Chamber of Commerce at Belfast, the question of the cultivation of flax in India was discussed, and some yarn, spun from the Punjab flax, was examined and pronounced to be of the value of from £35 to £45 per ton. Subsequently, at Dundee a meeting of the Chamber of Commerce was held (September 1858), and three kinds of flax from the Punjab were valued respectively at £48, £46, and £38 a ton. The Chairman, Mr. Miller, remarked on the strength of the Punjab flax. In a letter, dated Lahore, 20th July 1859, written by Mr. T. H. Thornton, Personal Assistant to the Officiating Financial Commissioner, to the address of the Secretary to the Government of the Punjab, the financial results of the experiment are given. In looking at these results we must remember, as Mr. Thornton says, that the object of this experiment "was not to ascertain whether the exportation of flax could be remunerative, but to make investigations regarding the soil best adapted for its culture, and to initiate the zemindars into the processes required for preparing the fibre for the European market" (paragraph 9 of the above cited letter). "It appears also that a considerable portion of the seed and inferior fibre was distributed gratuitously among the zemindars" (paragraph 7 of the same letter). Attached to this letter is a statement of the sale proceeds of Goojranwalla flax which I give below, as it shows what a large margin is left for the cost of cultivation and preparation:—

	£	s.	d.	£	s.	d.
RECEIPTS.						
Sale proceeds of 19 bales sold at Belfast, as per account ...	63	6	4			
Sale proceeds of 9 bales sold at Dundee, as per account ...	28	15	10			
				92	2	2
DISBURSEMENTS.						
From Wazeerabad to Mooltan, including cost of packing...	4	10	1			
From Mooltan to London ...	16	0	6			
From London to Belfast per steamer, including warehousing in London, commission, &c., &c. ...	4	15	0			
From London to Belfast, including storing, commission, &c., at Belfast ...	3	18	2			
For carriage of bales to Dundee, &c., &c. ...	1	12	9			
				30	5	1
Net proceeds ...				61	5	1

Now, it will be seen from the above that after paying all costs of carriage, packing, warehousing, and commission, there remained a balance of £61 5s. 1d. to cover the expenses of cultivation and preparation of two tons (or rather less) of flax. Then, again, over and above this there would be the proceeds from the sale of seed and codilla. Mr. Wallace of Monghyr found that the proceeds from the sale of seed alone covered the cost of cultivation, and he has shown that the expenses of preparation, packing, and carriage to port, need not exceed £12 a ton—say £24 for the two tons; but even if we double this amount, there still remains a large balance for profit.

12. In 1854-55 and 1855-56 Mr. Gubbins, then Judge of Allyghur, made some experiments, using both foreign and native seed, and sent some of the flax straw produced to the Agricultural and Horticultural Society in Calcutta, and also some specimens of fibre, prepared in a rough way *without the usual process of retting*. The straw was forwarded to the Chamber of Commerce, Dundee. This was grown "*from native seed and after the native fashion solely for the sake of the seed.*"—(See Journal of the Agricultural and Horticultural Society, Vol. IX, 1854, p. 379.) Mr. Robert Sturrock, Secretary to the Chamber of Commerce, Dundee, thus reported on it: "From this it appears that if proper means as to sowing, growing, and cleaning are taken, India may be a flax-producing country; and in order that we may be provided with as much information as possible, could you state at about what price such fibre, prepared and ready as the sample, could be shipped from India? Unless it can be laid down here at a certain cost, it could not be used; and I have to mention that the Directors of the Chamber consider that if such flax could be laid down at a price not exceeding £35 a ton, it would be useful in the manufactures of this place. The price refers to this particular sample; *if better, more could be got.*" These remarks referred to the following report:—

Copy of Report.

"On examination you will find it, I think, to contain considerable promise, there being evidently nothing in the soil or climate of the district in which it is grown opposed to the production of a flax that could be used by spinners generally in this country. From the straw having been intrinsically a very poor article, such as the flax steepers in this country would scarcely purchase at all, you will find the quality of the finished sample also indifferent, but nevertheless it is a *marketable article*, and I think good results might follow if another experiment was made in which more pains was bestowed on the cultivation." It must be remembered that this flax was raised from country seed sown thinly in the same way that natives sow for the sake of a good crop of linseed. Mr. Gubbins, to show the natives what use could be made of the enormous quantity of refuse *ulsee* straw which they throw away after the seed has been collected, made from some of this refuse straw a quantity of string which was purchased by a Calcutta firm. It does not appear whether his lessons yielded much fruit; but I suppose that there being no purchasers on the spot, the experiment was dropped, and now, as formerly, thousands of tons of teesee stalks are thrown away, from which at least a large quantity of string could be manufactured without expense and with very little trouble. In some parts of India the stalks are given as food to cattle; but cattle are equally fond of the refuse after the fibre has been extracted. In the steam retteries in England the water which runs through the flax stems is always used with the husks of flax and chopped straw to feed cattle, and forms a very nutritious food.—(See Mr. Blechynden's notes of a visit to Wishaw Flax Works, Journal of the Agri-Horticulture Society for 1854, Vol. IX, p. 27.)

13. Experiments on a small scale were made at Burdwan, and four other experiments on a smaller scale. samples were presented to the Agricultural Society by Mr. J. Erskine in July 1844; these were raised from acclimated and up-country seed, and were pronounced to be of a fair quality, and valued at from £30 to £34 per ton. In Chittagong Mr. Sconce, then Collector of that district, in 1843 produced some flax from acclimated Europe seed, and also some from country seed; the latter yielded a flax that was softer and finer, but much shorter and weaker than that raised from acclimated seed. At Jubbulpore Mr. Williams produced some flax of good quality, and Dr. Royle considered that this part of India is the best adapted for the growth of flax, the climate being a medium between the extreme dryness of the North-West Provinces and the moisture of Lower Bengal—an argument that would apply equally well to the province of Behar. The Jubbulpore hemp (*crotonaria tenuifolia*), brought into notice by Mr. Williams, is well known, and Dr. Royle judged from its length and strength, as well as by the specimens of flax grown by Mr.

Williams, that "the climate of the Saugor and Nerbuddah territories is eminently suitable to the production of flax." The linseed of these territories is a white species, and seed collected therefrom was distributed for experiments to different parts of the country. Mr. Finch of Tirhoot found that three-fourths of the crop raised from this seed "was destroyed by caterpillars, while the common linseed, grown in the vicinity of the white, was left untouched by them."—(See Royle's Fibrous Plants of India, p. 144.) Mr. Henley near Calcutta was unsuccessful. In the first year he procured from Bhaugulpore some flax straw, but the plant had been grown for seed in the native fashion, and the result was that it was too bushy for the production of fibre; the next year he took a patch of land—"fine friable loam, fit for anything; it had been a cauliflower bed, and was therefore deeply spade-cultivated and highly manured." (Letter to Dr. Royle, quoted by Dr. Royle in his work on the Fibrous Plants of India, p. 168.) He had the best seed sown very thickly. The plants came up well, and attained a height of three feet, but the result was that the fibre was small and weak, and inferior to the Jubbulpore and up-country flax.

14. From the results of the several experiments that have been made, I think it may be fairly inferred—first, that flax of a marketable quality, and of a quality for which there is a great and increasing demand, can be produced in several parts of this country, notably in Behar, the North-West Provinces, the Punjab, and the Central Provinces; secondly, that it is quite possible to manufacture flax fibre profitably where the area of cultivation is limited, and under the immediate supervision of a qualified European; thirdly, that the native cultivators generally will not prepare the flax, but that they can and will grow the plant in the way that is necessary for the production of good fibre *if it is made worth their while*; i.e., if a price be paid for the produce equal to what the cultivators make by other crops on the same land at the same season; fourthly, that to firmly establish the cultivation of flax for fibre, it is absolutely necessary that Government should give every encouragement and help that it is in its power to give, and that whatever may be the nature of that encouragement and help *it should not be withdrawn too soon*, as formerly it was, both in Lord Auckland's and subsequently in Lord Dalhousie's time.

15. It remains to be seen whether flax can be cultivated *extensively* in this country in such a way as to yield a fair profit, (1st) to the cultivator, and (2nd) to the purchaser of the plant and preparer of the fibre. To show this, it will first of all be necessary to calculate how much the latter would have to pay the former for the plant when ready for pulling, and for this purpose I have collected certain information from persons well qualified by long experience and intimate acquaintance with the agricultural classes to give accurate information on the subject. The answers given by these gentlemen to certain questions which I asked will be found in Appendix B attached hereto. I may mention here that Mr. Mylne is a member of the firm Burrows, Thomson and Mylne, who hold from Government a lease of the extensive Jugdeespore estates, which formerly belonged to the notorious rebel-leader Koorn Singh. This estate has been transformed by them from a jungle into one of the most valuable estates in that part of the country (zillah Shahabad), and they bear the very highest character as zemindars. Mr. Charles Fox with his elder brother owns several indigo factories in Shahabad, and is the able manager of the Maharajah of Doomraon's extensive estates. Moulvie Syud Abdool Hye is the manager of the Court of Wards' estates in Shahabad, and is also a zemindar holding land in zillahs Patna and Jaunpore. I am much indebted to all these gentlemen for the trouble they have taken to obtain for me as accurate information as possible.

16. It will be seen from Appendix B that *teesee* is sown by the natives for the seed crop in two ways—sometimes broadcast, and sometimes in lines with or round other crops. To make the cultivation of the same plant *for fibre* profitable to the ryot, he must be paid for the produce of his field a sum equal to what he would

Collection of information as to value of produce of 1 bigha of land on which flax might be grown.

Estimate of cost of flax straw and of the manufacture therefrom of fibre.

get for the produce of the same field when cultivated in the ordinary way. When sown round the edges of barley, wheat, or gram fields, the linseed yield per bigha would be about one maund, value Rs. 3, and the value of the produce of the other crops would be about Rs. 10, the value of the fodder Rs. 2, and of the oil Rs. 3, or in all Rs. 18 (see Appendix B).^{*} The value of seed saved for the next year sowings may be considered as a set-off against the value of seed sown. When sown broadcast, the yield of linseed in a good year might be from 5 to 7 maunds (see Appendix B), or an average yield, taking good and bad seasons into account, would be about $3\frac{1}{2}$ to 4 maunds. Syud Abdool Hye puts down the average yield at a somewhat smaller figure, but when we consider that Mr. Leyburn, Mr. Wallace, and others, got $3\frac{1}{2}$ maunds of seed per bigha from the plant that they cultivated for fibre, and remembering that when grown in the native fashion for seed the yield would be greater, I think we may look on Messrs. Mylne and Fox's figures as the more correct. Besides, in calculating what would be a fair sum to pay the ryot, it is better, if we err at all, to err in his favor. Putting the average yield then down at 4 maunds, the value would be Rs. 12. In either case, therefore, in an average season the value of the produce of a bigha† of land from Kartick (November) till February or March would not exceed Rs. 16. From former experiments it appears that from 15 to 16 bighas are necessary to produce one ton of flax. If, therefore, ryots were asked to grow the linseed plant in the way necessary to produce good fibre, and were paid at the rate of Rs. 16 per bigha for the produce, the purchaser would have to pay Rs. 250 for the produce of 16 bighas. The seed would be worth Rs. 168, calculating the yield at $3\frac{1}{2}$ maunds per bigha, and the value at Rs. 3 per maund (see paragraph 9). Deducting, then, the value of the seed from the price paid to the ryots, there would be a balance of Rs. 88 to be added to the cost of preparation, packing, and carriage to port, and if this cost does not exceed Rs. 120 (£12) per ton (this is what it cost Mr. Wallace at Monghyr), the flax could be shipped at Calcutta at £20 16s. per ton. The cost of freight, screwing, and insurance, should certainly never exceed £6 per ton (£4 10s. would be nearer the mark); so that a ton of flax might be landed in England, Scotland, or Ireland at £26 16s. a ton at the outside. Then, besides this ton of flax, there would be (say) 8 cwt. of codilla, which could be disposed of in Calcutta for from £3 to £3 10s.‡ The ton of flax, if moderately well prepared, would fetch not less than £40, and probably more.§ The expenses in England would be about £1 11s. per ton (see Appendix C.)|| In the above calculation the value of the refuse, both for fodder and for manure, has not been taken into consideration. The following table will show in a more convenient form the figures above given:—

Expenditure.			Receipts.		
	Rs.	As. P.		Rs.	As. P.
Price of produce of 16 bighas ...	250	0	0	56 maunds seed, at Rs. 3 each ...	168 0 0
Cost of preparation, packing, and carriage ...	120	0	0	8 cwt. codilla (say) ...	32 0 0
Freight from Calcutta to England, and insurance and screwing ...	60	0	0	1 ton flax ...	400 0 0
Expenses in England, warehousing, commission, &c., &c. ...	15	8	0		
Profit ...	154	8	0		
Total ...	600	0	0	Total ...	600 0 0

^{*} This is perhaps the outside value of a good crop. Rs. 16 would be rather above than under the average value of produce.

† The bigha of 27,225 square feet.

‡ From what I have been able to ascertain, the owners of paper-mills would gladly give from Rs. 2-8 to Rs. 3 per maund for codilla.

§ Turkish flax is now quoted at £40 and St. Petersburg 12 head at £55. See Appendix A.

|| In Appendix C the total cost is less. I have added 10 shillings, as the commission on sale of flax would be double of what is put down for jute.

17. In the above calculation it will be observed that I have adopted Mr. Wallace's estimate of the cost of preparation, packing, and carriage, which is undeniably a low one, and probably would not cover the cost if machinery was employed with European supervision; but even if we raise these figures to Rs. 200 (£20) per ton, there would still be a profit of Rs. 74-8 (£7 9s.) per ton if the flax sold at £40 per ton; or a profit of Rs. 24-8 (£2 9s.) per ton if the flax realized only £35 per ton. Another Rs. 10 (£1) might safely be added to the profit, as the freight insurance and screwing would in all probability never exceed £5 per ton, but, on the contrary, be found generally to cost even less.

18. The several processes which have to be gone through when only manual labor is employed from the time that the plant is ready for pulling till the fibre is ready for scutching, require great care; and without constant and close supervision, such as it would be impossible to afford with any hope of ultimate profit, the natives would never turn out a marketable fibre. The pulling, stooking, stacking, rippling, water-retting, drying, &c., &c., require the greatest care and attention. By the introduction of steam retteries, fibre can be prepared immediately the plant is received from the cultivators, and within two days. An interesting account of a visit to the Wishaw Flax Works near Glasgow is given by Mr. Blechynden, and published at page 25, Part I, Vol. IX of the Journal of the Agricultural and Horticultural Society of India for 1854. In this Watt's patent process of preparing flax is explained: "The flax straw is delivered at the works by the grower in a dry state with the seed on." So that all that the cultivator has to do is to grow the plant, pull, stook, and deliver it at the works. One of the great advantages of the steam processes is that the seed and chaff is *all saved*, while it is generally lost by the cold-steeping process. "The shoves or refuse woody matters are also employed in these new works as fuel, whereby a great saving in coal is effected." Another very great advantage that would be gained by the introduction of steam retteries into India would be that the risk of damage during the lengthy processes of preparation by hand during the hot season, when the hot winds prevail, would be almost altogether avoided. As regards the question whether machinery would pay in India, the best proof is that they pay in England where a much higher price has to be paid for the flax straw. Mr. Blechynden, in his report of a visit to the Redford Flax Works, states that the proprietors contract with the farmers for the supply of flax straw at £4 per ton—p. 22, Part I, Vol. IX, Agricultural and Horticultural Society's Journal for 1854). A Committee of the Royal Flax Society of Ireland, in reporting* on Mr. Watt's system, state that 1 cwt. of flax straw weighed with the seed on yields $13\frac{1}{2}$ lb. of fibre; so a ton of flax would yield 270 lb. of fibre. The necessary amount of flax straw, therefore, to produce 270 lb. of fibre would cost £4, and consequently the amount of flax straw necessary to produce one ton of fibre would cost a little over £33. If, therefore, it pays the manufacturers in England to pay £33 for an amount of flax straw which will produce a ton of fibre, it ought to pay manufacturers in India to pay the ryot £25 (Rs. 250) for the produce of 16 bighas; and I think I have shown in paragraph 16 that Rs. 250 would pay a ryot well for the produce of 16 bighas.

19. The part of Bengal which would be most suitable for many reasons for the experimental cultivation of the flax plant for fibre would be that comprised in the districts of Patna and Shahabad—first, because all the lands of these districts will be irrigable directly the Soane irrigation works have been completed; and, secondly, because the soil, being a rich clay, is eminently suitable; and, thirdly, because Dehree, on the Soane, where there is a large Government work-shop superintended by an officer of considerable experience and ability, would be an excellent site for the establishment of a steam rettery; and, fourthly, because the means of communication by the several canals and

* In their 12th annual report.

branch canals will render carriage both cheap and safe. As regards the soil best adapted for flax, Mr. Deneef, the Belgian farmer, was of opinion that lands subject to inundation that are annually renewed by alluvial deposit are well suited. He writes to Dr. Spry, Secretary to the Agricultural Society, as follows: "Les terrains qui sont renouvelés annuellement par les débordements du Ganges, ou qui sont frais et riches, conviennent le mieux pour la culture du lin."

Mr. Wallace thus reports* on the different kinds of lands:—

Alluvial	...	Will yield a good crop if not too sandy.
High land	...	Preferable if rain falls two months after sowing.
Inundated	...	The most preferable of any.
Dosala (i.e., two-year land)	...	Very good if not too low.
Loose and sandy	...	Plant will not come to the same perfection.
Hard clay	...	Produces good plant, but of very coarse quality.

Mr. Deverinne was of opinion that "the best lands are those in which there is a small mixture of sand; such lands are easily prepared, and can be well pulverised."† The large district of Shahabad is almost entirely surrounded by rivers from which spills annually inundate and renew the lands of the riparian estates. There are also in this district a great number of Government and Court of Wards' estates, so that almost every facility exists for experiments on a large scale.

20. There is a considerable difference of opinion as to the propriety or otherwise of Government engaging in trade. I would point out the case of Egypt. I think that there can be little doubt that it was owing entirely to Government operations that the flax trade became permanently established in that country. To this day flax is prepared by Government, and quotations in the home papers are given showing the prices of flax prepared by Government and of flax prepared by natives. The flax produced there is not quite equal to the best Russian, and it has been proved that flax can be produced in India which will command prices equal to those obtained for the best Russian marks. The only question, therefore, that remains to be solved is the question of cost; and I really do not see why, when the quality of Indian flax is equal to, if not better than that of Egyptian flax, we should not be able to prepare the fibre here as cheaply as it is done in Egypt.

21. It was my intention, while at home on leave lately, to collect information as to the improvements in, and the cost of, machinery; the prices now paid for flax straw, the cost of preparation, and the demand for the coarser kinds of flax; but unfortunately my stay in England being of such short duration, I was unable to do so. I have, however, been making inquiries, and shall be glad hereafter to submit a supplementary report, if such information is likely to prove of any use to Government. I also propose to trace the growth of the trade in Egypt.

22. Dr. Forbes Watson very kindly supplied me with numerous extracts from the records of the India Office on the subject of flax cultivation in India. I only regret that I have not been able, from want of sufficient spare time, to enter more fully and completely into the subject than I have done. If, however incomplete as it is, this report will in any way tend to bring the subject of flax cultivation in India into notice, and to the prosecution of further experiments, my object will have been gained. I trust that the result of such further experiments may be what is undoubtedly much to be desired, that India will some day become a flax-producing country for the benefit both of her agricultural classes, and of the trade here and in the United Kingdom.

* Letter to Dr. Spry, Secretary to the Agricultural and Horticultural Society, dated 2nd September 1841.

† Letter to Dr. Spry, dated 20th September 1841. These letters are all to be found in the Society's report to Government, submitted with a letter from Dr. Spry, the Secretary to the Society, dated 25th September 1841.

APPENDIX A.

The following quotations are taken from*—

Flax.		£	£
1850.			
January.—Riga P. T. R., per ton	...	34	42
" St. Petersburg, 12 head	...	32	33
" ditto 9 "	...	0	0
" Friesland	...	35	45
March.—St. Petersburg	...	38	45
July ditto	...	38	45
October ditto	...	35	42

The following average prices of Russian and Prussian flax are taken from Parliamentary papers; accounts and papers, 1868-69, 29th volume; statistical abstract, United Kingdom, page 34:—

Russian and Prussian Flax.		£. s. d.	£. s. d.
	per cwt.		per ton
1854	...	2 11 3	51 5 0
1855	...	2 11 0	51 0 0
1856	...	2 4 0	44 0 0
1857	...	1 15 8	35 0 4
1858	...	2 6 3	46 5 0
1859	...	2 12 4	52 6 8
1860	...	2 10 3	50 5 0
1861	...	2 8 5	48 8 4
1862	...	2 16 0	56 0 0
1863	...	2 13 7	53 11 8
1864	...	2 13 3	53 5 0
1865	...	2 11 10	51 16 8
1866	...	2 15 4	55 6 8
1867	...	2 14 9	54 15 0

Present price of flax (see *Economist* of 15th March 1873, page 326.)

	£. s. d.	£. s. d.
Riga W. F. P. K.	...	71 0 0
St. Petersburg, 12 head	...	53 0 0
Ditto 9 "	...	44 0 0

The following, showing the variations in the price of Friesland flax, is taken from the Journal of the Statistical Society of London, Vol. XXIII, page 104:—

Friesland Flax.		£	£
		41	47
1845-50, average six years	...	38	46
1851, 1st January	...	42	55
1853, 1st July	...	50	65
1857, 1st "	...	...	...
1858, 1st January	...	...	65
1859, 1st "	...	...	...
1860, 1st "	...	...	...

APPENDIX B.

The following answers to some questions of mine were kindly given by Mr. Mylne of Behea, by Mr. Charles Fox of Cuttea, and by Syud Abdool Hye, Manager of Court of Wards' estates, Shahabad:—

Answers by Mr. Mylne.

1. Linseed grows best in kewul, or clay lands.
2. It is sown in drills on the borders of wheat, barley, and other grain fields.
3. When sown broadcast on clay or kewul lands, and escapes red rust or birdee, to which it is quite as liable as wheat, the produce may be from 5 to 7 maunds per bigha.
4. When sown in drills round barley or wheat fields, the produce is from 5 to 7 passerees per bigha, according to the number of drill rows. The produce of such fields in grain crops varies from 7 to 10 and 15 maunds, according to season, quality of land, and

* Deputy Collector, Babu Gour Dass Bysack, kindly took a great deal of trouble in searching for these particulars.

cultivation. Linseed is also sometimes sown with gram broadcast and by drills, the result in such cases being an average of 2 maunds of linseed and 5 to 8 maunds of gram. It is also sown broadcast among the rice when it is nearly ripe, and when there remains little water on the fields in Kartick. The produce in this case is from 1 to 5 and 6 maunds, according to circumstances.

5. These are Cheytee crops, and it is usual to take a badowee or rainy-weather crop from the same land if it is not left chowmas or open fallow.

6. Linseed is sown in Kartick with the rubee or cheytee crops above-mentioned; the land receives on an average from four to six ploughings.

7. Cheytee is never weeded, but receives on an average three waterings.

8. It is difficult to estimate the cost of labor, as the custom of paying in kind prevails. A hurwaha or laborer receives, free of rent, $3\frac{1}{2}$ cottahs of land for each of the usual crops—bhudai, aghunee, and cheytee, also 3 seers of grain for every day he is at work, and during the harvest, one bundle of grain crop for every 20 bundles he brings to the threshing floor, and a dhoty cloth yearly. Indigo planters pay 4 annas per each chass, or ploughing, given to this land.

The maunds and seers above referred to are kutchu weight. This weight is to pukka or bazaar weight as 13 is to 20.

The bigha is to the acre as 10 is to 16, that is, 1 bigha 12 cottahs = 1 acre. Local bigha 3,025 square yards.

Answers by Mr. Charles Fox.

1. Teesee is most largely sown in the Dunwar pergunnah and in the southern parts of Bhojpore pergunnah. In some parts of the Dera the crop is also cultivated, but not so extensively as in the high lands. Good clay soil is generally selected.

2. It is generally sown on the borders of fields.

3. When sown broadcast the yield would be, as nearly as I can ascertain, about five maunds.

4. It is generally sown round wheat and barley fields. The yield of the teesee would be about a maund, and that of the other crops ten to fifteen maunds per bigha.

5. Bhudoi and aghunee crops are raised from the land on which teesee is sown.

6. Linseed is sown in the month of Kartick. The land is prepared during the rains, and receives five or six ploughings, less, if the land is in good order.

Cost of Cultivation.				Value of Produce.			
			Rs. A. P.				Rs. A. P.
Ploughing	...	...	1 8 0	Teesee	...	...	3 0 0
Weeding	...	...	0 4 0	Other crops	...	...	10 0 0
Irrigation	...	...	1 8 0	Refuse sold for fodder for cattle	...	...	2 0 0
Seed	...	...	1 8 0	Oil	...	...	3 0 0
				Seed	...	...	1 8 0

It is impossible to ascertain correctly the cost of cultivation, as the work is generally done by the ryot himself, assisted by his wife and children; and where outsiders are entertained, they are generally paid in kind. The above figures represent, as nearly as I can estimate, the cost of cultivation.

C. Fox.

Answers by Syud Abdool Hye.

1. The ground to be twice ploughed in Assar (July).

2. Should there be rain, then in Kartick (November); the ground to be ploughed three or four times and the seed sown; if no rain, the ground should be ploughed oftener, but care should be taken not to irrigate the land for ploughing.

3. There are two modes of sowing—one called tahirah, i.e., by means of a hollow tube attached to the end of the plough, through which the seed is made to pass as the plough works; the other mode is sprinkling with the hand.

4. The tahirah mode will require 5 seers to the bigha, and sprinkling $7\frac{1}{2}$ seers. The former method yields the greater crop.

5. After sowing the ground should never be watered, this spoils the seed, but there is no harm should it rain.

6. A very good yield is considered to be 5 maunds pukka. It is sold at Rs. 3 per maund. The average yield is about $2\frac{1}{2}$ to 3 maunds.

7. The stalks in these parts are burnt for fuel, but the husks, after the seeds have been extracted, are used to adulterate other kinds of bhoosah used for feeding cattle.

From

To

8. After sowing no weeding is required.

9. The remuneration given for cutting is as follows:—For every 21 bundles cut one bundle is given to the laborer. When paid in cash, for each bigha 16 men are engaged for cutting, storing, threshing, and extracting seed, and are paid at a contract rate of one and a half anna per man, or Rs. 1-8 per bigha.

10. Sandy soil is not adapted for growing linseed. The bigha is $5\frac{1}{2}$ hath luggee.

11. Those who have cattle of their own, and ploughs, should they not be in very good circumstances, feed their animals from the produce of their land as far as they can, and let them out to graze. Those in a better position keep a servant, who cares for the animals, ploughs the land, and cuts the produce,—in fact does everything connected with the cultivation. The pay of such servant is Rs. 2 to 2-8 per mensem. Ten bighas of land at the utmost can be ploughed with one plough and one pair of bullocks.

S. M. ABDOL HYE,

Manager, Court of Wards' Estates, Shahabad.

APPENDIX C.

Statement of Charges on Sale of Jute in London, kindly supplied by Mr. R. A. Lyall (Messrs. Lyall, Rennie and Co.)

	£.	s.	d.
1. Landing charges, including lighterage, portorage, &c...	0	3	6 per ton.
2. Warehousing and fire insurance*	0	3	1 "
3. Commission at $2\frac{1}{2}$ per cent. on £20 per ton	0	10	0 "
4. Weighing, delivery, any scale dues	0	0	9 "
5. Brokerage	0	4	0 "
	1	1	4

* This price was fixed by me merely for the purposes of calculation.

No. 197

FROM

C. J. LYALL, ESQUIRE,

Offg. Under Secretary to the Government of India,

TO

The Secretary to the Government of Madras

Department of Agriculture,
Revenue, and Commerce.

(Fibres and Silk.)

Sept 2
SIMLA, the 2^d August 1873.

SIR,

Brok Nat

I AM directed to forward herewith 50 copies of a Report on the cultivation of flax in India by Mr. W. H. D'Oyly, Magistrate and Collector of Howrah, and to request that you will be good enough *with the permission of His Excellency the Governor* to have them distributed to district officers. I am to add that the Government of India will be glad to be favoured with any further information on the subject which *His Excellency the Governor* may be able to obtain from the officers to whom the report is distributed, or which may be already in the possession of the Government of *Madras*

I have the honor to be,

SIR,

Your most obedient Servant,

Chas. J. Lyall

Offg. Under Secretary to the Government of India.

Recd 1873 Sept
No. 2906
1873.

DEPARTMENT OF AGRICULTURE,
REVENUE, AND COMMERCE.

[FIBRES AND SILK.]

To

No. ²
197

Dated 2nd Sept
August 1873.

Recd 10th Sept

SUBJECT.

FORWARDS for distribution among District Officers
copies of Mr. D'Oyly's Report on the cultiva-
tion of flax in India, and requests that they
may be called upon to furnish such further
information on the subject as may be available.

SO 8 October /73

No. 1075

Revenue Department.

No. 1075

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 8th October 1873.

Read the following letter from the
Government of India in the Dept.
of Agriculture, Revenue & Commerce

Forwarding for distribution
among District Officers, copies of
Mr. D'Oyly's Report on the cultivation
of flax in India, and requesting
that they may be called upon to
furnish such further information
on the subject as may be available

H. B. 2nd Sept. 1873 No. 197

Ordered that 45

copies of the Report be sent to
the Board of Revenue for
distribution among the
District Officers

2. The Board have

recently requested the Collector,
with reference to an order
of Government, to furnish
information regarding the
cultivation of flax, ganja,
and sunn for the Bengal
Government

G. B. dated 19th August 1873.
No. 840.

Government, and if these
reports are made as full
as possible, copies may
be sent to the Govt. of India
also, in compliance with
the present requisition

3. The Board will be
requested to report the
result of the cultivation of the
New Zealand flax from the
seed forwarded to them
with the order of Government
dated 27th May 1870, No. 773.

4/10/73

W. J. H. S.

Bo. M. M. M. M. M.
45 Copies of the Report
sent to the Govt. of India
on 10/10/73
W. J. H. S.

Ms
Mr Doyle's Report
on the Cultivation
of Flax in India

Ms