

in the business of flax-dressing, or otherwise interested in the development of this important branch of Native industry; and, in order to make this information more intelligible, I have obtained from the brokers carefully-selected samples of the various qualities of the New Zealand hemp to illustrate my report.

As it is important that producers in the Colony should not only know exactly what kind and quality of fibre is most wanted, and is likely to ensure a ready sale, but also what to avoid sending, I have thought it advisable to forward also samples of the worst class that was offered at the last sales, with the prices they realised affixed. It must be borne in mind that, but for the temporary scarcity of Manila, and the very active demand for New Zealand hemp at that time, these inferior qualities brought a much higher price than they could reasonably be expected to fetch again.

It is of the first importance to the interests of the New Zealand trade to keep out this inferior stuff, and, for the next year or two, at any rate, to maintain a rather high standard of quality. As will be seen further on, the collapse last year was due almost entirely to the over-crowding of a new market with badly-prepared fibre.

Those who have studied the subject here are all agreed as to the high value of the *Phormium* fibre; but there are prejudices to be overcome in the minds of manufacturers and others, and till the fibre comes into pretty general use, its qualities will never be properly understood. Anything that operates as a check to its more extended use—such as a shipment of hard, bad-coloured, and half-cleaned stuff—excites suspicion at once, and throws back the trade. The present scarcity of Manila, and its probable high price in the future, is very much in favour of the low-priced fibres. The New Zealand hemp is making a most favourable impression among the rope manufacturers, who for the last few months have been almost compelled to adopt its use as a substitute for Manila; and I am informed by the Messrs. Noble that even Frost Brothers, whose former prejudice against it is well known, have lately been using it largely in their establishment.

It may safely be averred that the New Zealand hemp has now taken a permanent hold on the market, and only requires a uniform steady supply of good quality to make it a highly remunerative branch of colonial industry.

I shall, first of all, give an account of a new mechanical invention for preparing the fibre (at present in charge of Messrs. T. and C. Nichols) which promises to prove of great ultimate benefit to New Zealand. The subject was first brought under the attention of the Agent-General by the Hon. H. W. Petre, who has since become a director of the company formed in London for giving effect to this new process on a very extensive scale. The inventors were anxious to obtain a promise of encouragement or assistance from the Government, and, at Dr. Featherston's suggestion, they allowed me to visit their provisional works at New Bradford to witness a series of experiments, which I accordingly did, in company with Mr. Petre and other gentlemen interested in the discovery.

It was arranged that I should communicate unreservedly to the Government the results of this visit, with the understanding, however, that no use should be made of the information till the rights of the inventors have been protected by a patent in the Colony—the necessary instructions for that purpose having already been forwarded to an agent in Wellington.

As the machine in use was only a model worked by hand, the experiments were necessarily on a very small scale, but the results, so far as the preparation of the fibre was concerned, were perfectly satisfactory. By a simple mechanical process, and without any subsequent scutching or hackling, a very clean fibre was produced—approaching more nearly in appearance and texture to Maori-dressed flax than anything I have hitherto seen.

Sample A (enclosed) was produced under my own supervision from the lower half of an immature leaf selected by myself.

Sample B (enclosed) was produced from the upper half of a leaf taken indiscriminately from the bundle.

The whole matter, of course, resolves itself into the question of the cost of production. The patentees are very confident on this head, and, as will be seen from the estimate given below, they believe that they can produce it in bulk, landed in London, at from £17 10s. to £20 per ton.

The principle of the process consists in the separation of the fibre by means of repeated blows or concussions delivered by a descending hammer on the edge of a rounded metal anvil, at such an angle as to free the fibre without breaking it. The anvil is so constructed that the leaf on receiving the blow from above has the refuse matter forced out on both sides of the line of impact, and precipitated into a trough below. I forward a sample of the latter marked A.A.

The rude character of the model marred the success of the experiment from a mechanical point of view, and the process appeared long and tedious. The leaf had to be passed through the machine six times in succession before the fibre was effectually cleansed; but it was explained to us that in the perfected machine this loss of time and labour is obviated by the passing of the leaf over six anvils in succession, after which it is carried by a travelling band or web under a brush and a jet of water, and is then delivered in the condition of the sample (marked C),* the whole being effected by a single process.

The chief features in this mode of preparation is that no hackling or scutching is required, and there is, consequently, no loss of fibre in the shape of tow: but it appears to me that the machinery will require extremely fine adjustment to make it answer the required purpose.

Messrs. T. and C. Nichols, the managers of the company, have furnished me with the following estimate of the cost of production under their process, basing their calculations on the data afforded by the Report of the New Zealand Flax Commissioners (Sess. Pap. 1871. G.—No. 4.) It will be observed that in computing wages, fuel, &c., the maximum figures have generally been taken, while a very liberal allowance has been made for freight and other charges of transport:—

* This and other samples, being too bulky for the post, will be sent by first vessel to Wellington.