

fibre, there is no doubt of a continuance of a steady trade at prices that will prove remunerative. As long as it is applied to the manufacture of white rope, the price of *Phormium* may be expected to fluctuate with that of Manilla, the best samples averaging about £10 below the price of the latter article.

No improvement appears to have taken place in the quality of the best samples of fibre produced, and the recommendations as to the mode of packing the bales which were made last year, and have since been approved of by the brokers, are only adopted to a very limited extent.

The same brands still continue to command the highest prices in the home market, on account of approaching most nearly to Manilla in external appearance; but it is stated that the practice of mixing *Phormium* fibre with Manilla and other fibres by English rope manufacturers has been abandoned, and the fibre stands on its own merits.

Manufactures.

Phormium fibre is still used chiefly for the manufacture of white rope, of which a large quantity is now produced in the Colony, particularly at Auckland, where Messrs. Lloyd's mill, notwithstanding the introduction of improved machinery, with difficulty supplies the demands which there is for the Californian market.

The establishment of rope-walks, and the manufacture of the raw material in the Colony into a form in which it will better bear the high charges for export is one of the most desirable steps that can be taken towards establishing the industry. Mention was made in the last Report of the Commissioners of the superiority of *Phormium* rope made from fibre dressed with oil in resisting the action of water, and the result of renewed experiments undertaken by Mr. Kebbrell in order to test the relative durability of rope thus prepared, fully confirms the importance of this application, as it appears to increase the lasting power of the rope to a degree that is hardly credible, being equal to four times that of the best Manilla rope.

It will be seen from the report of the Home Agent, Mr. Buller (Appendix, p. 2), that experiments are now being conducted in England with a view of ascertaining the kind of oil that best acts as a preservative of the fibre, under the direction of Professor Church, who last year reported upon the chemical properties of the plant, and who is still employed pursuing his inquiries. If it can be established, which is not unlikely to be the case, that there is a peculiarity in the nature of *Phormium* fibre not shared by Manilla, which enables it to acquire a high degree of durability by so simple a process, there can be no doubt that New Zealand rope will before long rank as superior to all others in the market.

The sample bales of both Native and machine-dressed that were sent home to the Agent-General have been distributed to manufacturers for the purpose of being made into various articles for the International Exhibition now being held in London, and samples of the same articles may be expected shortly to reach the Colony.

The attempt to convert *Phormium* fibre into textile material is still engaging the attention of many gentlemen at home, and especially Mr. Thorne, who is extremely sanguine as to the results, and full reports which have been made on this subject will be found in Appendix II. Samples of yarns and cloth, made both from the pure fibre and from the fibre mixed with European flax, have been sent out to the Colony, the fibre in both cases having been prepared by Mr. Thorne's patent. These show that the manufacture of the coarser kinds of cloth is at least practicable, but whether profitable is not yet determined. On testing the fibre of the pure *Phormium* yarn it is found to have the defect which, as was pointed out in the previous Report, invariably attaches to the fibre when thoroughly cleaned with alkaline solutions—having considerable strength as long as it is kept dry, but on absorbing water, which it does with facility, it has no cohesive strength whatever, resembling, in this respect, bibulous paper.

The yarns and woven fabrics which have been forwarded conclusively prove, however, that the shortness of the ultimate fibres does not prevent the operation of spinning the thoroughly cleaned *Phormium* into fine yarns. Some of the mixed fabrics, such as strong canvas, in which only 25 per cent. of the *Phormium* has been used, have great strength and firmness of texture, and it is the opinion of practical manufacturers that when the fibre is thoroughly "cottonised" it can be successfully employed for manufactures of this class, and would be worth £80 to £90 per ton.

Paper Making.

The remarkable plasticity of thoroughly cleaned *Phormium*, after boiling with alkaline solutions, renders it well fitted for the manufacture of paper of a superior description; and the circumstance previously pointed out (Report 1871, p. 96) that its peculiar qualities in this respect might, perhaps, in skilful hands, lead to the introduction of a new kind of fabric, has attracted the attention of one manufacturing firm (Appendix, p. 2). If the waste fibre from the scraping mills and wet scutchers could be thoroughly treated with alkaline solutions at first, without ever being permitted to dry, a very small per centage of the solution would suffice to reduce it to the "half stuff" of the paper manufacturer.

Cultivation.

The reports on this subject confirm the correctness of the conclusions previously arrived at with respect to the growth, being at first very slow, both from seed and transplanted fans, and that not until at least two years have elapsed can any return be expected in either case, as the leaves on the plants have not until then sufficient length of blade nor quantity of valuable fibre to be useful. This is a question quite apart from the age of the individual leaves, which, for roping, are in best condition when fifteen months old, and for finer fibre when they are somewhat younger. For neither purpose, however, should the leaves be taken from plants that have not acquired a sufficient root mass for their nourishment, and this root mass takes several years to grow. The observations still require to be continued on the same plants, in order to ascertain this accurately, and also to find out the effect on the plant of permitting it to throw up a flower stalk.