

An arrangement was made with Messrs. Rees and Richardson, of Rangitikei, for the preparation of a ton of steamed and rolled fibre, to be chemically bleached without exposure to the sun. Although they have not been able to supply the article, they have expended much time in carrying out the experiments, which, if successful, might be of considerable value; and in the event of Government considering it advisable further to assist the development of this industry, the Commissioners recommend that they should have a further opportunity of completing their experiments.

Major J. A. Gray, of Kaiapoi, also made an application, on the 12th of August last, for assistance towards the construction of a new machine, by which, he expects materially to improve the preparation of the fibre. The cost, it is stated, would be from £60 to £100; but the Commissioners declined to entertain his offer to divulge his plans, as they could not undertake that they should be tested on account of the late date at which his application was received.

On the 9th September, drawings and descriptions of some very important improvements in the existing stripping machinery, were submitted by Mr. T. Kelly, M.H.R. The value of these improvements, one of the chief of which is an arrangement by which the strippers can be adjusted while in motion, appear so great, that had the application been received at an earlier date, the Commissioners would have complied with his request for assistance towards testing them in practice.

Experiments have been instituted to ascertain the relative durability of ropes made from *Phormium* and other fibres in common use, and a table of the results given in the Appendix No. XII shows that the New Zealand white rope when kept dry will last longer, and wear 60 per cent. better, than tarred rope of the same material, and 34 per cent. better than rope made from Manilla hemp.

Experiments to test durability of rope.

When the ropes are wetted with salt water, however, the result of the comparison is very different. The lasting quality of the Manilla being actually improved, no doubt in consequence of the shrinkage equal to $5\frac{1}{2}$ per cent. which takes place.

On the other hand, the effect of the salt water on the New Zealand rope is to reduce its lasting qualities 34 per cent.

As the experiments on which these results are founded necessarily extend over several months, only one set has yet been completed. Further trials are in progress at the date of this report, and the Commissioners strongly recommend that they should be continued, so that the relative value of different fibres for roping purposes may be definitely determined.

Rope made at Canterbury from *Phormium*, dressed with black oil, has lasted well on board coasting vessels, and has evidently a great power of resisting wet. Plain New Zealand rope, used by Messrs. Stonyer & Co., in a Californian pump, that was constantly in the water, would not last more than seven or eight days; whilst Manilla rope would run for twenty; but a piece of the oiled New Zealand rope under the same conditions did not give way till it had been ninety-five days in continued wear (App. p. 74).

Oiled rope.

As bearing on the question of the relative durability of rope made from New Zealand and other fibre, a correspondence between the Hon. Mr. Vogel and the Commander of the U.S. steamer "Resaca," is given in the Appendix X. (p. 73), and also various letters (App. p. 7 to 9 and 18) particularly referring to Mr. Thorne's method of treating the fibre, from which it appears that New Zealand rope so prepared stands better both for heavy work and for running gear than that made from either Russian or Manilla Hemp.

Durability at sea.

The very favourable opinions which are expressed in these various documents are confirmed by an inspection of samples of rope exhibited in the Museum (Class A. iv. b. and B. vi. c.), which have been in use on board the ship "Crusader," since leaving London last December, the largest for discharging cargo, and the smaller for braces and halyards. To all appearance they are still quite good and sound.

One of the most important duties remitted to the Commissioners was the collection of samples of all kinds of fibre produced in quantity, and by processes not precluded by their expense from being generally adopted. As a basis for

Collection of samples.