

tenacity and strength; and when it is desired to make cordage these long fibres are kept distinct and prevented from fraying out by the application of a little oil. In the European method of preparing the fibre on the other hand, the action of the stripping machine is so imperfect as to leave adherent tissue, which experience has shown cannot be removed without washing, which process, however, tends to entangle the bundles and deprive them of the clean defined form which is so characteristic of the best roping fibres.

5. The bleaching and drying of the fibre, if the washing has been thoroughly performed, should be effected with ease and rapidity; and in the Southern Districts especially this is a point of great importance during the winter months. Bleaching and drying.

If a pure white fibre were required the sun bleaching might be dispensed with altogether, as purity of colour can only be obtained by thoroughly washing out the *bitter* principle from the plant. As already stated, however, washing to such an extreme degree is not desirable when the fibre is intended for the rope maker.

The only course, therefore, is to employ the action of the sun to convert the residue of extractive matter that remains in the fibre (See Appendix, p. 94) into a form that is not prone to undergo further change.

The effect of the sun's light is therefore to change the nature of the substance producing a yellow red tinge, that varies in depth with the amount of extractive matter in the fibre. The action of boiling water on the flax is to darken this extractive matter to a gray tint, leaving it in the same condition as if it had been effected by the light. The macerating effect of the hot water on the fibre bundles is, however, prejudicial to the use of fibre thus treated for rope making.

6. If the early stages of the process have been carried out in the above manner, the fibre will contain little that requires to be removed from it by scutching, which should therefore be performed rather with the view of burnishing the fibre than of reducing the quantity by the production of a large proportion of tow. It is the saving thus effected that must cover the extra expense for labour in selecting and preparing the leaves, and in thoroughly washing the fibre. Scutching.

Experience shows that the application of a small quantity of oil to the *Phormium* fibre not only improves its appearance, but also reduces its liability to undergo further maceration in water. The samples exhibited by the Natives of fibre prepared for making their fishing lines and other cordage, show that they appreciate the value of this application. Oiling.

Oil is used by the rope maker to facilitate the spinning of the fibre, but the best time to apply the oil,—at least in the case of flax that is to be made into rope in the Colony—would be as a final stage of the scutching, as a much smaller quantity would then be sufficient. It may be suggested that after the dust and broken fibre has been removed from the hank, the fibre could be lightly varnished with oil in a second scutch, the beaters of which touch against a piece of felt passed through a slit in the roof of the box from a trough-shaped cistern of oil on the top. The kind of oil to be used will require to be experimented on, but the Natives use animal oil, and the result, so far as obtained of certain investigations that are in progress, indicates this kind to be the best, and that it is superior to the application of tar, which has an action on the fibre like that of acids. (See Appendix, p. 96).

When the fibre is intended for export, it is doubtful if the advantage derived from oiling before making it up in bales would be commensurate with the increased risk of combustion taking place in it, unless it were kept for a considerable time before being compressed.

Experience has shown that iron lashings for the bales, whether in the form of wire or hoop iron, do not meet with favour in the market, and should not therefore be employed.

Opinion now appears generally in favour of protecting the bales with covering of scrim or other light cloth, without which the wet, dirt, and chafing that occurs during the land carriage and whilst lying about on muddy wharves, cannot fail greatly to injure the fibre, and no doubt is the cause of much of the so-called "sea damage" from which so many of our exporters have suffered. Covering bales.