

It may be gathered from Appendix IX (p. 66), which refers especially to cultivation and growth, that the leaves of the *Phormium* have reached maturity when they are two years old, after which they begin to decay, and are unfit for manufacturing purposes; but these observations have been made only in the case of plants that have been prematurely deprived of their leaves. Much doubt still surrounds the subject of the normal growth of the species, on which point, without a series of observations extending over a lengthened period—for the plant takes several years to come to maturity—no reliable conclusions can be arrived at. Plantations have been attempted in more than one district, and various experiments have been commenced in order to ascertain the rate of growth and increase of transplanted sets; but so far they all prove that at the end of three years there is no adequate supply of full-grown leaves to give even a moderate rate of interest on the outlay that must be made, and there is no hope that plants grown from seed will be more productive. The Commissioners therefore cannot recommend that at the present time the *Phormium* should be cultivated on an extensive scale for manufacturing purposes, more especially as there is more than a sufficient supply of the raw material to meet a much larger demand than exists at present.

Useful age of leaves.

Cultivation not yet profitable.

The above experiments, are however, being continued by the Commissioners, as in the event of cultivation becoming necessary, it will be of great advantage to have a supply of the best varieties. A plantation has been established in the Botanic Gardens at Wellington, where seedlings are being raised, and all the useful varieties collected. Possession has also been obtained of a very useful nursery at New Plymouth, which was formed with much skill by Mr. Hulke, from whom it has been leased by the Government for a nominal rent (App., p.p. 31 and 32), Mr Hulke continuing to undertake its management. It contains 2,000 plants of fourteen of the best varieties, which are now available for distribution.

Further experiments in progress.

It has been ascertained that all large fields contain some plants of those kinds that are most esteemed by the Maoris, who were accustomed to transplant them to spots near their settlements. The list at page 69 of the Appendix gives fifty-five different names as applied to the *Phormium* plant by the Natives, but it is doubtful if more than twenty marked varieties can be distinguished.

Native names of varieties.

The European manufacturer cannot as a rule make any selection as the Natives do. He must take all that comes to hand, and, as the common sorts form a large proportion of most of the natural fields, the average of his fibre must, for the cause above-mentioned—apart from the inferior process of manufacture which he employs—be less valuable than that of the Natives.

*Phormium* that grows on high or dry ground, though smaller, is in general finer and more easily stripped than that found in swamps—colonial rope-spinners preferring it, and being willing to give a higher price for it on this account.

When two kinds are supplied in considerable quantities to any mill it would be worth the while of the manufacturer to dress and bale them separately.

Fibre from marked varieties should be kept separate.

In Appendix X will be found several miscellaneous reports containing practical hints upon various points relative to the manufacture. The letter from Mr. G. H. Gordon (p. 72) will be specially useful as a guide to the proper sorting, classification, and packing, of the manufactured article, concerning which it embodies the writer's practical experience.

The paper by Mr. Stewart (p. 78), giving the result of experiments to determine the power required to work stripping machines, is well worthy the attention of practical engineers who are engaged in fitting up mills.

A valuable lecture by Captain Hutton, which gives a comprehensive account of the manufacture of *Phormium*, will be perused with interest by those who desire general information on the subject, as it gives a very complete *resume* of all earlier investigations and the result of much personal observation.

From the evidence which has been thus reviewed relative to the *Phormium* fibre as at present prepared for rope making, the Commissioners feel confident that it has now secured a permanent hold on the market at a remunerative value, which will probably rise as shipments of the fibre become more uniform, and its qualities are better appreciated. It also appears that the failures hitherto in the attempt to make it a profitable industry, have not arisen from any fault

*Phormium* now established in the market.