

2. What are the methods of cultivation most suitable to those botanical species or varieties which possess the finest quality of fibre?
 3. What is the best time for cutting down and preparing the leaf?
- II. Quality of the fibre.

- a. Varies in different species of *Phormium* and different varieties of *P. tenax*; but it has yet to be determined what species or varieties yield the finest qualities of fibre, whether in the
 - (a.) Cultivated, or
 - (b.) Wild
 } plant.
- b. Is improved by cultivation.

This has long been recognized by the Maoris, who cultivate, solely for its fibre, the New Zealand flax plant as carefully as they do their maize or potato as food-plants.

III. Cost of production and market value.

The present scarcity and high value of labour in New Zealand renders the cost of collecting the wild flax plant, of preparing the fibre, and of transporting it to seaports, too great to enable the colonist to offer dressed flax in the European market at a price nearly equal to that of Russian flax, and other similar fibres, with which it must compete.

The cost of proper cultivation of the plant and proper preparation of the fibre, under present circumstances, would be still greater.

IV. Suitable processes, chemical and mechanical, have yet to be devised for dressing, bleaching, and dyeing the fibre.

It has been obviously a common error of experimentalists to conclude that the processes and machinery which have proved successful in preparing other fibres, should be equally suitable and successful here.

V. Not only has New Zealand flax to compete with many fibres of established reputation, which are easily and cheaply produced in countries where labour is abundant—not only, as regards paper-making, must it enter the market against rags and other waste products of civilization, which are necessarily greatly cheaper than a dressed fibre—but it will have to compete with hundreds of fibres of equal, or nearly equal, value, which abound in all our warmer Colonies, and occur generally throughout temperate and warm parts of the world, whose applications will be developed in proportion as colonization progresses, and as chemistry and mechanics are brought to bear on processes suitable for their preparation.

VI. Labour is likely to become cheaper and more abundant in other Colonies than New Zealand, which are quite as rich in fibre-producing plants, while the difficulties attending the separation and dressing of the fibre will probably be more speedily overcome in the case of these other plants and fibres.

VII. There is therefore no good ground for the too sanguine anticipations of Colonists and Colonial Governments as to the future high value of new Zealand flax as an article of Colonial export. Present data merely afford encouraging ground for experiment.

VIII. One of the most hopeful directions of experiment is the acclimatization of the New Zealand flax plant in countries suited for its growth, where labour is cheaper, and chemical and mechanical skill are more readily obtained.

No. V.

Copy of a Letter from HENRY FIELD, Esq., Wanganui, to the Hon. JOHN HALL.

DEAR HALL,—

Wanganui, 25th August, 1869.

As I see by *Hansard* that you are endeavouring to effect something useful to the Colony in regard to the flax, I sit down to write a few lines as to my own experience on the subject.

When first I came to New Zealand I had, like many others, a great idea of making the flax our great export, and was fired with the ambition of solving the problem by dint of my own mechanical genius and knowledge. Accordingly, during my residence at Waitotara, I tried a great many experiments with the flax, and actually succeeded in producing an article quite as good as the bulk of that which is now exported, and by precisely similar means, the only difference between the little machine I constructed and those now generally in use being, that mine had no feeding-rollers, and that the beaters were of hard wood instead of iron or brass. I, however, abandoned the matter after a time for three reasons:—

1. I found that the fibre of the flax ordinarily growing in the swamps was so defective and variable in colour and strength, that I arrived at the conclusion that any proper supply of leaves for manufacturing purposes could only be got by careful cultivation of the best sorts in the same way as is practised by the Maoris.

2. I found that the force necessary to crush the woody matter, so as to be easily separable from the fibre by washing, stained the latter to such an extent that no amount of bleaching, short of what would partially rot the fibre, would restore it to anything like what I considered a satisfactory colour. I fancied that the presence of the colouring matter would be very objectionable, as tending to rot the fibre more quickly, and though I tried boiling with soda, as a means of restoring the colour, the result was unsatisfactory, as the strength of the fibre was damaged by the alkali long before its whiteness was comparable to that of the hand-dressed fibre, such as the Maoris were in the habit of bringing to market in considerable quantities.

3. As the Maoris only got from the merchants a penny per lb. for a far better article than there was any possibility of my supplying at that time in any quantity, (for such, in fact, as the accompanying sample No. 4,) it was perfectly clear the manufacture would not then pay.

I therefore turned my attention to ascertaining the best varieties of the flax, and during my walks in the neighbourhood I sampled from time to time, and at various seasons of the year, several hundreds of bushes growing in the Native cultivations. I found that though, as a rule, the fibre tore out of the leaf more easily during spring and autumn, when the growth of the leaves was most vigorous than either