

they called "*Haro*," and it is evident that many varieties would thus get grouped together, which, under a better arrangement would be more widely separated. Thus the *Paritanewha*, or yellow hill flax, was called a *Tihore* (*Report on Growth, Culture, and Manufacture of New Zealand Flax*, Appendix p. 13,) although it is much more nearly allied to the common swamp flax, and is very different from the *Oue*, or typical *Tihore*.

At present, the colour of the leaf, and more especially the colour of the midrib and margins of the leaf have been taken almost exclusively as the distinguishing marks of the different varieties; but these are altogether unreliable, for not only does the colour of the margin differ in old and young leaves, but often different leaves of the same plant, and even different parts of the same leaf, have differently coloured margins. The attempt, for instance, to distinguish *Tihore* by a red or orange margin would certainly lead to many mistakes, as many of the varieties of the common swamp flax have margins identical in colour with the true *Tihore*; and it appears to me that habit of growth, shape of the leaf, size of the flower-stalk, and shape of the seed-pod, are of far more importance than colour of margin, or even colour of leaf.

There can, I think, be no doubt that at least two distinct species of *Phormium* exist in these Islands. Dr Hooker, in his *Handbook of the New Zealand Flora*, admits two; although at the same time he expresses an opinion that both are but races of one plant. The opinion of so distinguished a botanist must carry with it great weight, but it is quite possible that even he may have fallen into error through not having had sufficient opportunities of examining the plants in their living state, and by having had dried specimens sent to him with wrong names attached to them. Indeed, it seems almost certain that such has been the case, for he describes the pod of *P. Colensoi* as similar to that of *P. tenax*, but smaller. It is of considerable importance that the existence of these two kinds of *Phormium* should be recognised; for, as will be seen, they produce fibre of very different strengths. I must leave to some person better acquainted with botany than myself the difficult task of bringing into order the numerous varieties that are found under various names in different parts of these Islands; but I will briefly describe the two species, and the four most important varieties known to me in the Waikato.

PHORMIUM TENAX, Forst.

Seed-pod erect or inclined; $1\frac{1}{2}$ to 3 inches long, straight or curved. Leaves very long. Flowers red.

1. *Harakeke* (Common Swamp Flax).—Leaves coarse, loose, drooping, point generally blunt. Flower-stalk large—11 to 14 feet high, and 1 to 2 inches in diameter. Pod short, erect. Grows almost everywhere, but attains its largest size (14 or 15 feet) on rich alluvial soil, by the banks of streams. Many sub-varieties are found, some with leaves dark blue-green above, and glaucous below, and some pale olive-green or bronzy. Some varieties have also the butts of the leaves coloured red for some distance up, while others are yellowish green almost to the very base. When the plant is stunted the flower stalk is also small, and the best characteristic is the blunt point to the leaf.

2. *Paritanewha* (Yellow Hill Flax).—Leaves erect, slightly drooping at the tip, yellowish green, generally with red or orange margins, slightly glaucous below, point acute. Flower-stalk small, 4 to 8 feet high, and $\frac{1}{2}$ to 1 inch in diameter. Pod short, erect. Fibre very good, soft and glossy. Plant seldom more than 5 or 6 feet in height; grows generally on clay hills. Passes into common swamp flax, but best distinguished by its nearly erect acute-pointed leaves. Probably often mistaken for *Tihore*.

3. *Tihore*.—Leaves stiff, erect, narrow, never drooping at the tip, olive-green, glaucous below, points very acute or cuspidate, pink at the butt. Flower-stalk 9 to 10 feet high, and 1 inch in diameter. Pod erect, or inclined; seldom flowers, and still more rarely seeds. Plant seldom over 6 feet in height. Grows in rich, dry alluvial land, never in swampy places. I have never seen it except where planted by the Maoris. I have here applied the name to that variety called *Tihore* by the Maoris throughout the Waikato, and which is probably identical with the *Oue* and *Tapoto*. It is best distinguished by its narrow, tapering, sharp-pointed leaves, and erect, close habit. It grows so thickly together that I obtained 186 sets for planting from two bushes.

PHORMIUM COLENZOI, Hook. f.

Seed-pod pendulous, 3 to 7 inches long, twisted. Leaves not so strong, sometimes quite brittle. Flowers red, yellow, or greenish.

1. *Wharariki*.—Leaves erect or slightly drooping, generally rich green, not glaucous below, margins and midrib generally green, or yellowish white; butt white, never red, point acute. Flower-stalk 9 to 10 feet high, and 1 inch in diameter; flowers red. Plant seldom more than 7 feet high. The best and strongest variety of *P. Colensoi*.

2. There is also a yellow-leaved variety, which has sometimes yellow flowers, with which I am not so well acquainted. Its leaves are very brittle. It grows at Coromandel, between Kapanga and the Waiau.

3. The same, or perhaps another variety, grows on hills or precipitous places. Its leaves are of a yellow colour, and often so brittle that a man can break a strip more than an inch in breadth with ease.

In the Province of Auckland *P. Colensoi* is rare, in comparison with the abundance of *P. tenax*, but in some parts of the South Island I am informed that the reverse is the case. The Rev. N. Codrington told me that the flax plant in Norfolk Island grows generally on the sea cliffs, and it is therefore possible that it may be *P. Colensoi*, and not *P. tenax*; which would be sufficient to account for the failure experienced in trying to produce fibre from it, for the fibres of *P. Colensoi* break off so short that the Maoris never attempt to prepare it.

In order to ascertain the relative strength of the different varieties, I took strips of one-eighth of an inch in breadth from the middle parts of young but full-grown leaves and broke them, by means