

## NEW ZEALAND FLAX.

BY J. C. RUSSELL.

THE attention of the traveler who stands for the first time on the shores of New Zealand is especially attracted by two characteristics of its flora, one or the other of which will be present in every scene that impresses itself on his memory.

The first is the profusion everywhere of ferns of many different forms and colors, which present every gradation, from the strange and graceful tree-ferns, which raise their spreading crowns of feathery fronds thirty or forty feet from the ground, down to the little bright green ferns, with fronds scarcely half an inch long, which cling to the rocks far below in the dark ravines, where they are constantly wet with spray.

The other plant which especially calls for his examination, and

which is the subject of our sketch, is a flag-like, liliaceous plant, growing in large spreading clusters of sword-shaped leaves, which are often eight or ten feet in length, and of a bright, shining green color. Many of these bunches support an upright flower-stalk, with purple blossoms, which resembles, somewhat, the inflorescence of the banana, held in an upright position. This plant is known to the colonists as New Zealand flax, and to the botanist as *Phormium tenax*, of which several varieties have been described.

It is very characteristic of New Zealand, being found nowhere else, except on the Norfolk and Chatham Islands.

During our stay in New Zealand we found it growing wherever we went, from the low shores of the southern part of the South Island, where it covers immense fields, up to an elevation of four and five thousand feet among the southern Alps.

The spreading masses of Phormium growing among thick groves of the palm-like grass-tree (*Cordyline australis*) give to many retired nooks and valleys a soft tropical beauty, that forms a pleasing contrast with the usual rugged and Alpine grandeur of New Zealand scenery.

The New Zealand flax covers thousands of acres, both in the North and South Island; this amount, although vast, could be increased many fold by cultivation. Seemingly, it likes best the low, wet land near the coast, but also grows with great luxuriance along the banks of rivers and lakes, where it can obtain plenty of moisture.

To the natives of New Zealand, before the blessings of civilization (?) were thrust upon them, the Phormium was what the cocoa-nut palm is to the inhabitants of the tropics, or the bamboo to the Hindoo and Malay. The Maori woman, sitting on the earthen floor of her hut, makes an incision across a leaf of Phormium with the sharp edge of a mussel-shell; then placing the leaf on the edge of the shell, with the cut side up, rapidly draws it between her thumb and the shell, thus stripping off the green pulp, and leaving the tough fibre ready for use.

Of this the Maoris weave their mats and rugs, which are very soft and warm, and often wrought in an elegant pattern by means of colored Phormium.

These mats, together with garments made of the dried, undressed leaves, formed the scanty clothing of the natives before the coming of the Europeans.

The dried leaves, when split into narrow strips, are used to

make coarse matting for the floor, and baskets to contain fruit and serve as dishes.

The long, tough fibre is made into strong nets and fishing-lines, and is also of great use in building houses, canoes, etc.

The stone adzes with which the Maoris dug out and ornamented their canoes were lashed to wooden handles by bands of Phormium, which also furnished the canoe with sails.

The clear white gum that exudes from the base of the leaves is used as glue and also for chewing; with the colonists it forms an excellent substitute for mucilage and sealing-wax.

The bright-eyed Maori boy makes his toy canoe of the green leaves, and gathers the sweet honey from the blossoms of the Phormium.

At the present day the more enlightened natives use it instead of writing-paper, and "with a sharp-edged shell engrave their thoughts upon it."

One night while spearing the monstrous eels that inhabit the New Zealand lakes, we became acquainted with another of the uses of this interesting plant; the old dead leaves, when bound into small bundles, made excellent torches, which answered our purpose nearly as well as pine knots, with the use of which most of us are familiar.

These are a few of the purposes for which Phormium is used by the simple New Zealander.

To civilized man it would become a hundred-fold more useful, could he but invent a cheap and satisfactory method of cleaning the fibre.

This fibre has been found by experiment to be the strongest known, with the exception of silk, being twice as tenacious as common hemp.

Numerous machines have been invented to meet this want, but as yet none have been a success.

Could such a method be devised, this strong and beautiful fibre would compete favorably with the manilla of the Philippine Islands, or the flax and hemp of Europe and America.

Such a discovery would bring to New Zealand greater wealth than she has derived from her gold mines, and, together with the immense amount of wool that is annually shipped from her shores, make those rich islands eminently a fibre-producing country.

With the imperfect means at their command the colonists have already produced considerable quantities of dressed Phormium. This, in former years, was small in quantity, but of an excellent

quality, being prepared by the Maoris. In 1870, there was sold in the London market four thousand tons of Phormium fibre; this, however, was of an inferior quality, having been imperfectly prepared by machines. Its principal use is, at present, in the manufacture of ropes, for which purpose it is usually mixed with manilla. Numerous chemical means have been resorted to for obtaining the fibre, but without satisfactory results. Thus far civilized man, with all his array of machines and engines, has been unable to do the simple work of cleaning the Phormium fibre as well as the tattooed cannibal did with a sea-shell.

