

not yet sufficiently examined; and a species of *Cystophora* which may be new.

I have deposited specimens of most of the above in the Canterbury Museum.

ADDENDUM.

4th May, 1901.

The following additional species appear in "Meeres Algen von den Norfolk Inseln," by Major Th. Reinhold (Nuovo Notarisa, series xi., October, 1900):—

31. *Sargassum godeffroyi*, Grun., Alg. Fidji-Tonga-Samoa, i., p. 4.
32. *Sargassum leptopodium*, J. Ag., Spec. Sarg. Austr., p. 115, t. 30. (Determination not quite certain.)
33. *Sargassum stenophyllum*, J. Ag., Spec. Sarg. Austr., p. 104, t. 29.
34. *Griffithsia thyrsigera*, Harv., Trans. Irish Acad., vol. 22, n. 291.
35. *Corallina cuvieri*, Lmx., J. Ag., Spec. ii., p. 572.

ART. XXXI.—On the Occurrence of *Cordyline terminalis* in New Zealand.

By the Rev. Canon WALSH.

[Read before the Auckland Institute, 9th July, 1900.]

ABOUT twelve or fourteen years ago the late Miss M. A. Clarke, of Waimate North, showed me two specimens of a *Cordyline* which I had never seen before, and which she had growing at "Grove Cottage." She informed me that she had found them in a long-deserted native cultivation in the neighbourhood, and that they were specimens of a ti (*Cordyline*) which the Maoris had in former times been in the habit of cultivating for food, but which of late years had fallen into disuse and practically disappeared from the district. Of the two specimens she kindly gave me one, which I planted in my garden, and on her death, which occurred not long after, I took charge of the other. Both of these, though removed more than once to make room for encroaching vegetation, are now in a flourishing condition, and one of them has made very strong growth.

Although the plant was evidently a rare one, I had no idea that the specimens were almost the last survivals of a variety that is practically extinct so far as New Zealand is concerned,

or that, indeed, it possessed any interest beyond that which would naturally surround a relic of old Maori times. My ideas on the subject were changed, however, by a visit I received from Mr. D. Petrie, F.L.S., Chief Inspector under the Auckland Board of Education, who has made some valuable contributions to the botany of the country. Mr. Petrie had never seen a growing specimen of the plant, but, after a careful examination, he was of opinion that it was identical with a species some specimens of which had been recently discovered by Mr. Reid at Ahipara, and which had been described by Mr. T. F. Cheeseman, F.L.S., Curator of the Auckland Museum.* For this species the late Mr. T. Kirk, F.L.S., had proposed the name of *C. cheesemani*, supposing it to be a new species, although Mr. Cheeseman himself considered it to be identical with *C. terminalis*, a plant largely cultivated throughout the Polynesian islands, especially in Fiji and Samoa, for the sake of its edible root, but which had not hitherto been observed in New Zealand. On the advice of Mr. Petrie, I communicated with Mr. Cheeseman on the subject, at the same time sending him a fresh leaf from one of the plants. On examination Mr. Cheeseman told me that the species appeared to be the same as that of the Ahipara specimens, as well as that of the Kermadec Islands, a plant of which he had growing in his garden at Remuera, obtained by himself ten years before; and, further, that he had no hesitation in pronouncing it to be identical with the Polynesian variety, as he had suspected all along; and, as its appearance in New Zealand had not yet been accounted for, he recommended me to collect all available information on the subject from the old settlers and Maoris in the district in which the specimens had been found.

For some time all my efforts in this direction were unavailing. Most of the information I was able to obtain was either vague or otherwise unsatisfactory. The old settlers generally remembered that in the early days a certain species of ti (*Gordyline*) had been cultivated by the Maoris, but most of them confused it with the ti rauriki (*C. pumilio*), a wild species which was commonly eaten but never cultivated. The Maoris were still more unsatisfactory. The younger generation plainly knew nothing at all about the matter, while in the case of the elders my limited knowledge of the language prevented my following them into the region of mythical romance into which the lapse of time seemed to have relegated the subject.

The first reliable information I received was from Mr. J. B. Clarke, of Waimate North, who remembered that forty

* Trans. N.Z. Inst., vol. xxix., p. 346.

or fifty years ago it was to be found in many of the native settlements about that district. He was quite familiar with the cooked article, as the Maori nurses and other retainers of the mission families used often to bring small quantities as presents to the children. His attention was first drawn to the growing plant about thirty-five years ago by a Maori youth with whom he was out cattle-hunting, who pointed out some three or four specimens in an enclosure at the settlement of Te Matire, near Lake Omapere, informing him at the same time that "That was the ti which the Maoris cultivated for food." Mr. Clarke recognised my plants as being identical with these. This information was corroborated by the Maoris—Hone Peti, Heremaia Pirika, and Miriam—all of whom identified the plant from my specimens, and gave me a good deal of information about its habits and uses, from which I have been able to construct the following account:—

The plant was known among the Maoris as the "ti pore," and was one of two varieties of *Cordyline* used for food, the other, the *C. pumilio*, being called the "ti rauriki" (= small or narrow-leaved). The former—viz., that under consideration—was only found in cultivation, while the latter is largely distributed in a wild state. The signification of the name is uncertain. The qualification "pore" literally means "cut off close," as in the case of short-cropped hair, and may have reference to the practice of cutting off the top to propagate the plant; or possibly it may have been used to distinguish this from the taller or true varieties. Within the memory of living men the ti pore was grown in most of the settlements about the north, though probably from the fact that it was a slow-growing plant, taking several years to mature, and at best yielding but a comparatively small return, it was never cultivated in very large quantities.

In appearance and habit the ti pore is quite distinct from any other species of *Cordyline* found in New Zealand. A short slender stem, with a tolerably smooth bark, showing a ring for every leaf fallen off, is surmounted by a handsome head of soft glossy leaves, from 1½ ft. to 2 ft. long by 3 in. or 4 in. wide, each leaf being set on a fine stalk and bending over in a graceful curve. In older and well-grown plants the trunk forks off about 3 ft. or 4 ft. from the ground, and the top divides into several heads. This, I am informed, is the case with one of Mr. Reid's specimens at Ahipara, and the same thing may be observed in the Sydney and Brisbane botanical gardens on those obtained from the Polynesian islands. The root was by far the most important part of the plant from the Maori point of view. It is a mass of greenish-white pulpy fibre, of such a consistency as to be easily cut through with a sharp spade. In shape it is a very elongated cone, with an

irregular outline and a lumpy and corrugated surface, and furnished at occasional intervals with thin wiry feeders set on at right angles to the axis. In size the root is out of all proportion to the rest of the plant. On one that I transplanted it was nearly 3 ft. long, with a principal diameter at the upper third of from 3 in. to 4 in., and tapering to a fine point at the lower end. Soil and situation, of course, greatly influence the growth, and the Maoris inform me that on rich alluvial bottoms the roots often attained such large dimensions that it was necessary to quarter them down the middle in order to reduce them to a convenient size for cooking.

The propagation of the ti pore was very easy and simple. The usual plan was to cut off and replant the stalk with a small portion of the root attached in the same manner as is done with the taro. Advantage was also taken of the offsets which often spring up from the foot of the old stocks, especially when any injury has happened to the top. So far as I have been able to learn, the ti pore does not seed in New Zealand.

To prepare the root for food it was finely pounded with a wooden club on a flat stone, in the same manner as the fern-root, until the fibre was quite broken up, after which it was steamed in the *haangi*, or native oven, for from twelve to twenty-four hours. The substance then presented the appearance of a glutinous mass, and the taste is described as of a sugary sweetness far beyond that of the ti rauriki, but, like that root, with a slightly bitter after-flavour. The cooked article was highly esteemed not only for its agreeable taste, but for its nutritive and keeping qualities, especially in time of war, when it was a question of provisioning the pa or carrying food on the war-path. It is probable, however, that owing to the slow growth of the plant it was most generally used merely as a sweetmeat. In fact, the Maoris say that in old times the chewing of a piece of the prepared root when one had nothing else to do gave the same satisfaction as is now afforded by a pipe and tobacco.

The almost total disappearance within a couple of generations of a plant once so widely grown and so easily propagated is not so difficult to account for as might appear at first sight. In the first place, its tropical origin limited its culture to certain favoured spots within a comparatively small area of the northern peninsula, while the fact of its not reproducing itself from seed rendered its preservation dependent on continuous plantation. And as on the general introduction of European trade which took place during the second quarter of the century sugar and other ready-made delicacies of the pakeha could be obtained at a cost of much less labour than was necessary to produce the primitive sweetmeat, its cultiva-

tion would naturally be abandoned, and the few plants which remained in the deserted enclosures would be gradually exterminated as the number of cattle increased and the fences fell to decay. It is not surprising, therefore, that, although there are several men now living who can remember the general cultivation of the ti pore, the number of known survivals should be limited to the four specimens discovered by Mr. Reid at Ahipara and the two in my possession at Wai-mate North.

The question naturally arises as to the probable period at which the ti pore came to the country, and the circumstances under which it was brought in. That it was introduced by the Maoris is self-evident, from the fact that it has never been found in a wild state, and that it cannot reproduce itself in the New Zealand climate without artificial help. The approximate period of Maori history in which the introduction was effected is, however, still an open question, and one of much interest. In a letter to me on the subject, Mr. Cheeseman expressed it as his opinion that the Maoris brought the plant with them from Hawaiki on their original immigration, just as they brought the kumara (sweet potato), the taro (edible arum), the hue (calabash), and the aute (paper-mulberry), while at the same time he admitted that another view might possibly be taken—viz., that it might have been introduced by some of the Maori whalers in the early part of the century, who are known to have introduced the taro hoia (the large coarse variety), and to have attempted the introduction of the yam.

Now, had the introduction and distribution taken place within what may be called the Maori whaling period—or, roughly speaking, the first half of the century—it is scarcely probable that all recollection of an event of such general importance should have already died out. But, although I have made most careful inquiry of many of the older Maoris of the Bay of Islands, the great centre of New Zealand whaling operations, I have been unable to find any recollection whatever of the introduction of the plant, the invariable answer being that they knew nothing at all about it. The only exception was in the case of Hone Peti, who said that there used to be a song about the ti pore, the words and tenor of which he had, however, completely forgotten. This, if it be worth anything, would rather point to a remote origin. Moreover, the case of the ti pore and that of the taro hoia and the yam are scarcely parallel. These plants would appeal strongly to the utilitarian Maori as yielding a large quantity of food, easily grown and readily prepared, while the other would only afford a precarious supply of a fancy esculent, involving infinite labour in its preparation, and, after all, of quite insignificant

nificant value beside the easily-acquired delicacies of the pakeha.

But what would be hardly worth troubling about under one set of circumstances might be extremely valuable under another; and it is quite conceivable that an article of food which would be comparatively valueless once the Maoris had become possessed of the potato, of wheat and maize, of the pumpkin and vegetable-marrow, and had the means of purchasing biscuit and flour and sugar and tobacco, would be worth cultivating at the cost of any trouble at a period when the list of garden produce was limited to the smaller varieties of the kumara and taro (taro Maori), the tasteless hue and the "greens" mentioned by the early navigators, and when the supply of vegetable food had to be eked out with the fern-root and other wild edibles of the bush. I think, therefore, that, in the absence of any evidence to the contrary, we may safely conclude that Mr. Cheeseman's theory is the correct one, and that the plant was brought by the Maoris in pre-historic times, and that most probably the introduction took place on their original immigration to the country.*

ART. XXXII.—Notes on the Cultivated Food-plants of the Polynesians, with Special Reference to the Ti Pore (*Cordyline terminalis*).

By T. F. CHEESEMAN, F.L.S.

[Read before the Auckland Institute, 9th July, 1900.]

I THINK the Institute is indebted to the Rev. Canon Walsh for the trouble he has taken in preparing his paper,† and in collecting evidence proving the former cultivation by the Maoris of the Ti pore, or *Cordyline terminalis*. I have no doubt whatever that he is perfectly correct in the conclusions he has arrived at—that the Ti pore was introduced by the Maoris when they first colonised New Zealand many generations ago, and to a limited extent was cultivated by them until the commencement of European settlement, but in the extreme northern portion of New Zealand only. As the subject is an interesting one, I am desirous of advancing some considerations respecting it which appear worthy of notice.

* See *C. sp., ti tawhiti*, Hooker's Handbook of N.Z. Flora, p. 743 (Hector, 1865).

† See above, p. 301.