

my paper will be found interesting to those of our Society who have made Moa remains their study. But for this, as well as for the former part of my paper, I shall require the aid of diagrams to render my descriptions intelligible, and the materials for these I fortunately possess in my old letters.

I wish, in conclusion, to be distinctly understood on one point. I have not myself any fixed theory in connection with these Moas, their antiquity, or recentness. I feel that the information as yet accumulated is not sufficient to justify me in adopting any of the theories afloat, far less in venturing to add to their number. But while thus diffident myself, I do not feel called upon to withhold my respect from those who, with acuter intellect, or greater courage, step forward in the direction in which at present I dare not venture to advance; and by placing more clearly on record my own early observations of facts in connection with the subject of these theories, I hope to remove such stumbling blocks as they may have encountered from inaccuracies in previous notices of my collections, arising most probably from the imperfect manner in which I made myself understood to my correspondents at home.

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ART. III.—*An Account of the First Discovery of Moa Remains.*

By the Rev. RICHARD TAYLOR, F.G.S.

[*Read before the Wellington Philosophical Society, 6th November, 1872.\**]

IN the beginning of 1839 I took my first journey in New Zealand to Poverty Bay with the Rev. Wm. Williams (the present Bishop of Waiapu). When we reached Waiapu, a large pa near the East Cape, we took up our abode in a native house, and there I noticed the fragment of a large bone stuck in the ceiling. I took it down, supposing at first that it was human, but when I saw its cancellated structure I handed it over to my companion, who had been brought up to the medical profession, asking him if he did not think it was a bird's bone. He laughed at the idea, and said, what kind of bird could there be to have so large a bone? I pointed out its structure, and when the natives came requested him to ask them what it belonged to. They said it was a bone of the Tarepo, a very large bird which lived on the top of Hikurangi, the highest mountain on the East Coast, and that they made their largest fish-hooks from its bones. I then enquired whether the bird was still to be met with, and was told that there was one of an immense size which lived in a cave, and was guarded by a large lizard, and that the bird was always standing on one leg.

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\* In the discussion on the foregoing paper, Art. II. the Rev. Richard Taylor, F.G.S., made the following statement, which he afterwards reduced to writing.—ED.

The chief readily gave me the bone for a little tobacco, and I afterwards sent it to Professor Owen by Sir Everard Home; this took place in the beginning of 1839, and some months later another bone of the Tarepo was procured by a sailor in the same part, which was given to Mr. Rule, who forwarded it to Professor Owen some time before mine reached him, but I think I may justly claim to have been the first discoverer of the Moa.

On our reaching Poverty Bay (Turanga) I learnt that they were constantly finding these huge birds' bones. Mr. Williams soon after commenced a missionary station there, and a year or two later obtained a large number of these bones quite perfect. Some of them were forwarded to Dr. Buckland, and others to me, but one of those I received was a human bone.

Early in 1843 I removed from the Bay of Islands to Wanganui, and my first journey was along the coast of Waimate. As we were resting on the shore near the Waingongoro Stream I noticed the fragment of a bone which reminded me of the one I found at Waiapu. I took it up and asked my natives what it was? They replied, "A Moa's bone, what else? look around and you will see plenty of them." I jumped up, and, to my amazement, I found the sandy plain covered with a number of little mounds, entirely composed of Moa bones; it appeared to me to be a regular necropolis of the race.

I found the natives of the West Coast were totally ignorant of the name given on the other side of the island, the Tarepo. It was here I first heard of the word "Moa." I was struck with wonder at the sight, but lost no time in selecting some of the most perfect of the bones, and then considered what was to be done with them and where to bestow them. I had a box in which my supplies for the journey were carried, this I emptied and filled with the bones instead, to the amazement of my followers, who exclaimed, "What is he doing? What can he possibly want with those old Moa bones?" One suggested *hei rongoa pea* (to make into medicine perhaps); to this the others consented, saying, *koia pea* (most likely).

This visit to the Waingongoro was the opening up of one of the most interesting fields of research for the naturalist. My enquiries after the Moa, and carrying off some of its bones, caused much talk among the natives. I was most anxious to obtain a skull of the bird. I was told there was a great one in a swamp some miles inland. I promised a large reward for it, and though they said I should have it they did not keep their word.

In reply to my questions about its size they told me it was quite as large as that of a horse, a sure proof that the bird had never been seen by any of those I spoke to. They, however, told me that these huge birds were formerly very abundant before the Europeans came, but they gradually diminished and finally disappeared. Their nests were made of the refuse of fern-root on which they fed, and they used to conceal themselves in the

koromiko (*Veronica*) thickets from which they were driven and killed by setting the thickets on fire; hence originated the saying, *Te koromiko te nahanu i tunu ai te moa* (the *Veronica* was the tree which roasted the Moa). The koromiko when burnt emits a kind of resin from its bark, which looks like grease, hence the origin of the saying, as all suppose the Moa to have been a very fat bird, which I should think was very questionable. When I next visited Waingongoro, expecting to carry off another load of Moa bones, I found, to my surprise, that they had disappeared. I afterwards heard that Mr. Mantell had passed that way after me, and had cleared the place of all worth taking. I seldom, however, travelled over the sandhills bordering the coast without finding some remains of the Moa, especially on those near the Wanganui Heads. On one occasion I found a large number of fine specimens, and being unable to take them with me on my journey I made a pile of them, carefully covering them up, and marking the spot, intending to remove them on my return, but when I came back I found every one had disappeared, some one else having found the prize and secured it.

One morning the chief John Williams brought me nearly a perfect skeleton of a very large Moa, which only wanted the skull to make it complete. The wind had blown away the sand from the old level, and upon it he found the bones, laid just as it had died, with the rings of the wind-pipe, and a heap of quartz pebbles which had once been in its gizzard. Thinking it highly probable a further search would enable me to find the skull, I rode to the spot and found my conjecture correct; the wind had removed the sand from a larger surface since my native friend had been there, and the first sight was a very gratifying one, there was the entire skull stretched out and partly imbedded in the clay soil, with the upper and lower bills quite complete. I found when I attempted to remove it that it was in a most friable state.

I succeeded, however, at last, and most carefully wrapped it up and placed it in the crown of my hat. I had scarcely remounted my horse before the animal began to buck-jump most violently; in an instant I found myself sprawling on the ground, with my treasure scattered about in innumerable fragments. Though in great pain I managed to collect some of the largest pieces, and amongst them the extremities of the upper and lower mandibles, which were afterwards sent to Professor Owen.

So abundant were Moa bones in former years that whenever a sandhill was shifted by the wind, and the old surface exposed, it was generally found to be strewn with the remains of the Moa, but the grand place to find them used to be in the shell-heaps—our Maori middens,—which form some of the most conspicuous objects on our western shores, where they stand out in bright relief amongst the sandhills. In the scarce months, which used to be called *mangere mumi*, the lazy grumbling season, the natives used to flock

down to the coast and subsist upon shell-fish or anything else they could find : sometimes a seal, more frequently a slave, and occasionally a Moa, whose bones are generally found entire, as they only are destitute of marrow. These are very interesting heaps, and well worth visiting as affording the means of reading some pages of Maori history in bygone days. The last visit which I paid to Waingongoro, was in 1866, in company with Sir George Grey. On our arrival there he asked me to show him the place where I discovered the great deposit of Moa bones in 1843. I took him at once to the place, and to my astonishment I found the hillocks almost as thickly covered with bones as when I first saw them ; the wind had uncovered a lower stratum since my former visit. Several officers stationed at the neighbouring redoubt expressed their surprise when told the bones were those of the Moa. They had seen them times without number, but supposing them only beef bones, passed them without further notice. Several soldiers volunteered their services, and a great number of those old ovens were opened ; all worked in good earnest, and no one more heartily than the Governor. It was quite amusing to see His Excellency grubbing up the old ashes, and carefully selecting what he thought worth carrying away.

A large cloth was spread on the ground, and the various articles found were piled upon it ; these were of a very miscellaneous character, consisting not only of bones of the Moa, and fragments of its eggs, but of almost every other bird indigenous to these islands, including those of the kakapo and kiwi, with chert flakes, fragments of highly polished axes, and other articles. These ovens seem to have been made in a double line, and to have been used for many years, as each layer of ashes was separated by a thin stratum of sand from the one immediately below, and the number of them was very great. The natives informed me that when the Moa hunt was to take place, notice was given to the neighbouring places, inviting them all to the battue. The party then spread out to enclose as large a space as possible, and drive the birds from their haunts, then gradually contracting the line as they approached some lake, they at last rushed forward with loud yells and drove the frightened birds into the water, where they could be easily approached in canoes, and despatched without their being able to make any resistance. These Moa hunts were, doubtless, very destructive, as from the number of men employed, and the long lines of ovens, the slaughter must have been very great ; and, in addition to this, from the large quantity of egg-shells, a clear proof is given that they were eagerly sought for and feasted upon. Thus, the poor birds had little chance of continuing their race. Another cause of their disappearance may be also mentioned, the extinction of the tuatara, the largest lizard existing on these islands, on which they are said to have fed, with other varieties of the same family, which since the introduction of the

cat have also passed away. Thus the Moa may be said, without doubt, to be extinct in this island, whether it is so in the other is a question still to be decided, and if it should be urged that so large a bird could not well escape being seen, it may be said in reply that being in all probability a night bird like the kiwi, and one of solitary habits, selecting the most lonely places, and such haunts still abounding in the alpine regions of the south, it is by no means improbable that it still survives. I may also state that the plain of Waingongoro is called Rangatapu, which may either apply to the hunters (the sacred band) or the ovens (the sacred row), and that the name Moa, like that of the roa, was most probably derived from the bird's cry. Amongst the islands to the north the name of Moa is applied to the domestic fowl. The Moa has passed away, and its hunters as well, and the proverb is being fulfilled,—

*Kua ngaro a moa te iwi nei;*

“The Maori, like the Moa, has passed away.”

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ART. IV.—*On New Zealand Lake Pas.* By the Rev. RICHARD TAYLOR, F.G.S.

[*Read before the Wellington Philosophical Society, 9th October, 1872.*]

It is now nearly thirty years since I first visited Horowhenua Lake, which, though not of great extent, is still one of much beauty. I was then struck with its singular appearance from a number of *watas*, or native store-houses, being erected on posts in the middle of the lake, and seeing the natives ascend to them from their canoes by means of a notched pole.

When afterwards, in 1854, the remains of villages were discovered in the Swiss lakes, and similar ones, called crannogues, in Ireland, it then struck me that the same practice had formerly prevailed in New Zealand, and especially in the Horowhenua Lake, and that the *watas* I had seen there were but remnants of the custom. On putting the question to Tamihana Te Rauparaha he said that he recollected two pas being in it, which belonged to the Muaupoko tribe, the ancient owners of the district, and that one was called Te Namuiti, but he could not recollect the name of the other.

Afterwards I was so fortunate as to obtain from an old chief of the Muaupoko tribe a sketch of the lake, in which he placed six pas, giving me their names and positions. Their sites are still to be seen, as so many islets, covered with a luxuriant vegetation. The old chief also described the way they formed them—first by driving strong stakes into the lake to enclose the required space, then by large stones being placed inside them, and all kinds of rubbish being thrown in to fill up the centre, upon which an alternate stratum