

ART. II.—*On Moa Beds.* By W. B. D. MANTELL, F.G.S.

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

It may be in the memory of some members now present that at a previous meeting during this session of our Society when the question of the antiquity of Moa remains was raised, one of our members referred to them as having been found in, or under, I forget which, a marine bed at Waingongoro, containing a certain per-centage of extinct species of shells, alleging as his authority a paper by my father contained in the Journal of the Geological Society of London, founded on information received from me. It will be remembered that I then expressed my surprise and regret that the paper or papers in question should be susceptible of so erroneous an interpretation, and promised to recapitulate for our Society all the facts relative to the occurrence of the Moa which had come under my observation, whether those facts had or had not been previously recorded elsewhere. I am sorry that I did not qualify this promise to such extent as should only have pledged me to its fulfilment during our present session, should my other avocations permit—for, unfortunately, I have not since that evening been able to devote the necessary time and attention to the subject—and now that I have at last proceeded to some extent in the examination of my old letters, reports, and memoranda, I find that it will not be possible for me to compile a paper worthy of record without devoting to it far more time than remains to us of our present session. Such a paper, when completed, as in great part it will consist of a repetition of what has already been recorded, I do not regard as one which should necessarily be printed in our *Transactions*, but it may nevertheless be of use to future inquirers if deemed worthy of a place in our unprinted records.

But although unable at this time fully to redeem my promise I may yet be permitted, for the information of our Society, to note briefly the matter on which I propose to treat in my paper now in course of preparation. I take as its groundwork the notes of a paper which I read at the first meeting of the New Zealand Society in 1851, in which I spoke of the various conditions under which I had found remains of *Dinornis* and its contemporaries. In that paper I mentioned as the most ancient specimen which I had seen a fossil bone from a septarium of the blue clay of Onekakara, which, from its structure, had, by high authorities in England, been attributed to a bird. I have now grave doubts as to the nature of this bone, which I am disposed to think is more probably reptilian.

The tertiary deposit at Island Point, Waikouaiti, will next be noticed, and from my letters, written at the time of my examination of it, I shall endeavour to make its position and antiquity clear to the Society. From this

deposit it will be remembered that some of the most perfect and interesting of the early discovered *Moa* bones were obtained—the collection of Mr. Earle, the pair of feet found by Tommy Chaseland, some crania which I think were given to Sir George Grey, and many other specimens of great interest were obtained from this bed.

After noting several other places in which I formerly found these remains, under conditions which satisfied me that if contemporary with man these particular birds had not met their death through his agency, I shall pass to those probably more recent deposits which, from the circumstances under which they occur, were to my mind clearly accumulations of the refuse of human meals.

Of these, the first which met my observation was the very interesting sandflat of Te Rangatapu, near the mouth of the Waingongoro, a locality for *Moa* bones first discovered, I believe, by a member of our Society, the Rev. Richard Taylor, to whom I feel that some apology is due for the grievous poaching which I committed upon his manor.

This sandflat occupies a break in the coast-line cliffs through which it is evident that the river, at no geologically remote period, found its way to the sea; but the sand with which the gap is filled has no connection with the bed of finely laminated sand which is described as occurring in the neighbouring cliffs. It was in excavating in the old surface of this sandflat that I found the *umus* of the old inhabitants, and sundry articles of their use, such as fish-line weights, a *patu paraoa*, etc., and quantities of obsidian chips. Some of the larger bones too had, it seemed to me, been broken while fresh; the fractured ends offering a glazed surface instead of the rough, porous appearance of such as were broken in our attempts to extricate them. At this place, too, fragments of the egg-shells were first found: some much worn by what was mistaken by English geologists for the effect of water-carriage, but which was really attributable to the action of drift-sand. The result of my exploration of this flat—coupled with the tradition of the resident natives that it had been the first settled dwelling-place of their ancestors on their arrival from Hawaiki, and the Maori traditions concerning the existence of the *Moa* and the use of it by them as food, of its bones for implements, and of its feathers as ornaments—was a tolerably clear conviction to my mind that the birds, whose relics I found there, had been killed, cooked, and eaten by those ancestors. This conviction I strove to impress upon my home correspondents, but not with complete success, for they, supported by the opinion of a gentleman of higher scientific and official position in the colony, could not divest their minds of the idea that, occurring as these did in the surface of the material which filled an old river channel, they must have been water-borne from some inland locality.

In my account of this spot I shall be guided by the letters which I wrote at the time of my sending home the collections of which our president has suggested that I should furnish extracts.

The only other important discovery which I shall have to notice, is the old *kainga* at the stream now known as Awamoa, a name given by me instead of its original name of Te Awakokomuka, to prevent confusion with other streams of the latter name in the district. This *kainga*, which we found in 1852, afforded further unmistakable proof of the co-existence of man with the Moa. The bones and egg-shells of *Dinornis* and its kindred, mixed with remains of every available variety of bird, beast, and fish used as food by the aborigines, being all in and around the *umus* (or native ovens) in which they had been cooked. Although my collection from this place reached England in 1853 it remained unopened until after my arrival there in 1856, when I caused it to be conveyed to the crypts of the British Museum, and there unpacked it in the presence of the great authority on our gigantic birds, Professor Owen. With the exception of two small collections which were selected for me by Professor Owen, and which I gave, one to the Museum of Yale College, U.S., and the other to that of the Jardin des Plantes, the whole of this collection is now in the British Museum. The fragments of egg-shells from these *umus* varied in size from less than a quarter of an inch of greatest diameter to three or four inches. These, after careful washing, I had sorted, and having, with some patience, found the fragments which had originally been broken from each other and fitted them together, I succeeded in restoring at least a dozen eggs to an extent sufficient to show their size and outline. Six or seven of the best of these I gave to the British Museum after their purchase of the collection; one is in the Museum of the College of Surgeons; the rest, including one very beautiful egg with a polished ivory-like surface, are still in my ownership somewhere in England. Some idea of the labour entailed by this attempt to rehabilitate eggs may be gathered from the fact that several of those restored consisted of between 200 and 300 fragments. I may add that in the markings, size, and so forth, of the eggs (making allowance for the alteration of the former toward the ends of the eggs) I made out about twenty-four varieties, of which I have specimens.

At a meeting of the Zoological Society a discussion which followed the reading of Professor Owen's first paper on this collection, first showed me how unprepared were the scientific men at home to admit the co-existence of man with the Moa, but at its conclusion I conceive that doubts on that head were removed from the minds of most of those present.

With the exception of a slight notice in the New Zealand "Spectator" of 1853 no attempt at a detailed account of the Awamoa *kainga* has, so far as I remember, been yet published. I therefore hope that this portion at least of

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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.

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.

* 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.