

TRANSACTIONS

OF THE

NEW ZEALAND INSTITUTE.

ART. I.—*On Boulders and Travelled Blocks, in the Wellington Province.*
By J. C. CRAWFORD, Esq., F.G.S.

[Read before the Wellington Philosophical Society, April 7, 1868.]

It is proposed to confine the remarks in this paper: firstly, to those boulders which are of considerable size: or secondly, those which appear to belong to rocks not found *in situ* in this part of the country.

Under the former head, we find in numerous localities—as for instance, on Belmont-hill, on the Porirua-road, between the Tutaemanu peninsula and Duck-creek, at Makara, etc.—large blocks of dioritic sandstone apparently deposited in lines, and generally resting upon decomposing sandstones.

Several theories may be propounded, as to the mode of deposition of the blocks:

Firstly, they may be the hard nuclei of strata, the softer parts of which have decomposed.

Secondly, they may show the lines of old watercourses, before denudation had worn down the valleys to their present depth.

Thirdly, they may be ice-carried. Although the dioritic blocks are of the nature and character of rocks, *in situ*, in the neighbourhood, yet rocks of the same character abound on the opposite side of the Straits, as also generally throughout the Tatarua range; so that there is no *prima facie* reason why these boulders may not have travelled from a distance, as well as those of the second class, which we propose afterwards to consider.

The second class of boulders consists of rocks not found in this vicinity, and which must have been brought from a distance. Of these, not many have yet been discovered. I have, myself, found the following:

I. A block of granite, about a foot long, found between Evans' and Lyall's Bays, several hundred feet from, and about twelve feet above, high-water mark. This block bears the character of a rock from the Nelson province; and has no marks of human workmanship upon it.

2. A boulder of garnet-schist from the same locality, five or six inches long, and partially rounded or water-worn. The original locality of this boulder would also appear to be the Nelson province.

A piece of decomposed micaceous granite, was brought to me from the Hutt, some years ago; exact locality where found, not known. And in the museum, there is a fragment of a piece of granite which was found near the Tinakori-road; but of which, it having been broken up, I have not been able to obtain sufficiently reliable intelligence to put in evidence. It appears, however, that it is a New Zealand specimen, apparently from the west coast of the South Island.

There are at least three ways by which these foreign specimens may have been carried.

1. By canoe or ship.
2. By seaweed.
3. By floating ice.

The dioritic blocks may have been carried by a fourth moving power, viz, by glacier; but that power could hardly apply to the granite or schists, as the distance whence they must have come is so great.

To suppose the existence of a climate in these latitudes, sufficiently cold to infer the presence of glaciers and of floating ice, it is not necessary to bring in the idea of a secular cooling of the globe, nor even of a greatly increased mass and height of mountains. A prolongation of the New Zealand plateau, as dry land, in the direction of Mounts Erebus and Terror, or other parts of the Antarctic continent, would, by blocking and deflecting the Polar current, probably cause the refrigeration necessary to produce the effect.

I shall not, at present, venture to decide upon the cause which has placed either description of boulders in their present position. There is an absence of marks of ice action on the rocks of our mountains, but the rocks are, in general, too soft for us to expect in them, the retention of striated marks. I am, therefore, not prepared to decide upon the effect of the action of ice. The boulders from Lyall's Bay were found some twelve or fourteen feet above high-water mark; and had they been deposited by seaweed, it must have been when the land was at a lower level. They were also too far from the water's edge, to render it probable that they were brought as ballast, either by canoe or by ship.

I shall content myself by thus calling attention to the subject, in the hope that, before long, fresh evidence may be procured. More boulders may be found, and their nature and position carefully noted; and probably *striae* may yet be discovered.

ART. II.—*On the Measurements of Dinornis Bones, obtained from excavations in a swamp, situated at Glenmark, on the property of Messrs. Kermode and Co., up to February 15, 1868.* By JULIUS HAAST, Esq., Ph.D., F.R.S., Government Geologist, Canterbury, N. Z.

[Read before the Wellington Philosophical Society, July 28, 1868.]

THE locality in question, situate on the property of Messrs. Kermode and Co., north of the river Waipara, has long been celebrated for the great number of M^oa bones found there, and which have been dug out