of the *whare-whakairo,* or large communal assembly hall, is of considerable interest. The book is well illustrated, and the note on Maori pronunciation is welcome, but an index is lacking. The get-up of the book is a credit to the New Zealand firm which publishes it.

THE ATTITUDE OF DIPLODOCUS.[1]

SINCE Mr. Carnegie gave a plaster cast of the skeleton of Diplodocus to the British Museum in 1905, he has distributed other copies of this remarkable Dinosaur to the museums of Paris, Berlin, Vienna, and Bologna. A large part of an actual skeleton was also given by the late Mr. Morris K. Jessup to the Senckenberg Museum in Frankfurt. A widespread interest has thus been aroused in the gigantic Sauropodous Dinosauria, and there have been many discussions as to their original form and mode of life.

When the late Profs. Marsh and Cope first obtained nearly complete skeletons of these reptiles, they compared the limbs with those of an elephant, and decided that the creatures must have walked in a quadrupedal manner, with the body well raised above the ground. Considering their immense weight, the position of their nostrils on the highest point of the head, and the feebleness of their dentition, which seems to imply a succulent food, the professors were agreed that the animals must have spent much of their life under water. Prof. Cope also supposed that the long neck, which characterises all the Sauropoda, would enable them to reach the surface to breathe while browsing on water-weeds in a considerable depth of water. It is now generally admitted that the theory of their semi-aquatic mode of life is well founded, and it has been observed that the feeble teeth are not placed in close series, but separated by small gaps, as if they formed a strainer for the food which was taken in. Much difference of opinion, however, has arisen as to the attitude of the limbs.

Messrs. Hatcher and Holland, who prepared the cast of Diplodocus, and Prof. H. F. Osborn, who mounted a skeleton of Brontosaurus in the American Museum at New York, followed Marsh and Cope in arranging the limbs for a quadrupedal walking gait. Dr. O. P. Hay, of Washington, on the other hand, subsequently maintained that the limbs must have been bent, like those of a crocodile, for crawling, and last year Mr. Gustav Tornier, of Berlin, elaborated this theory, publishing a somewhat fantastic sketch of the skeleton as he would arrange it. Prof. O. Abel, of Vienna, has now prepared an interesting summary of all these discussions, and finally concludes that the attitude of Diplodocus and its allies, with which the restorations have made us familiar, is really the correct one.

Prof. Abel begins his paper by deploring the fact that most museums restore the skeletons of extinct animals, partly by hypothetical plaster-work, partly by using the bones of more than one individual, without any clear explanation on the labels. He has, therefore, taken the trouble to state exactly the nature of the materials from which the well-known cast of *Diplodocus carnegii* was made, and he has no serious fault to find with its general composition. It is possible that two or three vertebræ are lacking, and part of the tail may not be sufficiently stout, otherwise there is little to criticise. He thinks that the axis of the head is in direct line with that of the neck, as usual in reptiles, and that the browsing attitude is due to the natural curvature of the end of the neck. He points to the deeply ovate cross-section of the trunk as showing that it is not adapted for crawling along the ground, but must have been lifted during locomotion. He then discusses the structure of the feet in detail, and demonstrates that they are digitigrade, the fore feet more so than the hind feet. As in Iguanodon (of which footprints show the impressions) there must have been elastic pads beneath the toes, and most of the weight of the body seems to have been supported by those below the reduced outer toes. The structure of the digitigrade feet necessitates nearly upright limbs, which would support the trunk and give the reptile a true walking gait. There would be a slight outward bend of the elbow, but otherwise no sprawling attitude. The Sauropoda, therefore, form no exception to the rule, that the extinct Dinosaurs resembled mammals and birds in their habits and movements.

[1] "Die Rekonstruktion des Diplodocus." By O. Abel. Abhandl. k.k. zool.-botan. Ges. in Wien. Bd v., Heft 3. Pp. 60+Tafel 3. (Jena: G. Fischer, 1910.) Price 2.40 marks.

THE PROTECTION OF NATURE.[1]

"IT is the first time a very comprehensive attempt has been made to do important public service of this character on purely non-partisan lines. . . . It is indeed a great work. We have here the first Commission of the kind ever established by a National Government. . . ." Thus the Hon. Clifford Sifton, chairman of the Commission for the Conservation of the Natural Resources of Canada, at the conclusion of the Commission's first annual meeting, held in January of this year.

The establishment of this Commission is a noteworthy departure, and is actually a method of insuring the future prosperity of the country. Canada is peculiarly amenable to such a step, as large areas of her land are in the hands of the Government, and also peculiarly in need of it. The latter point is obvious when it is remembered that owners of timber property are only just beginning to assimilate the idea of afforestation, that lumbermen are constitutionally destructive, and that forest fires are not an occasional catastrophe, but seasonally recurring and accepted phenomena. In England we hardly realise this last fact, or the destruction produced by a forest fire. The following statement gives a glimpse of the reality:—"The spring fires are not, as a rule, so dangerous to the forests, as they are what we call leaf fires, while the fall fires are soil fires. The leaf fire will run through the woods, and while it destroys a lot of timber, it does not have the same effect as a fire in the fall, because that not only takes the leaves and wood, but it takes the soil as well, and *burns down five feet, so that for a thousand years nothing will grow on that land.*" (My italics.) It appears that railway locomotives cause the majority of these devastating conflagrations.

Destruction without perpetuation has been carried on in other departments. "In the Yukon there are," says Mr. Congdon, "hundreds of square miles where I do not think you could now find a single fur-bearing

[1] First Annual Report of the Commission of Conservation, Canada. By courtesy of the High Commissioner for Canada, 17 Victoria Street, London. (Ottawa: The Mortimer Co., 1910.)

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