

early childhood by his father, who imbibed his own interest in zoology and botany as a pupil of MacGillivray, and throughout his life never referred to his old professor without some term of affection. The writer, therefore, has always regarded himself as a grandchild of MacGillivray's influence. It was his fortune afterwards to receive in the same classroom his own zoological training, and to engage in curatorial work in the museum in which many of the specimens were labelled in MacGillivray's handwriting, and some years still later to follow closely the track of the *Rattlesnake*, the naturalist of which was John MacGillivray, the professor's eldest son, and its surgeon Huxley, also the writer's revered master. As familiar to the reviewer, too, is MacGillivray's beautiful handwriting—of which a specimen is reproduced on p. 68 of the "Life"—as if it were that of a member of his own family; for, by a strange chance, one of his brothers had the good fortune, while a student, perhaps about 1865, to rescue for a few pence from a butterer's mean uses a large bundle of MacGillivray's journals. Sad to say, only a few pages ran consecutively, but they were perused with something approaching to veneration. These contained, if memory serves, descriptions of some new species of mollusca; notes of excursions, with zoological and botanical observations—pages, perchance, of the second volume of "A Year's Residence and Travels in the Hebrides," which the "Life" records as lost; memoranda on the conduct and concentration of his pupils, while sitting for their class examination; the names tabulated according to "nations" (natal regions), and to harmony and disharmony in colour of their hair and eyes, with the proportion of successes or failures in these categories. Alas! it is to be feared that these pages have now also gone the way of all things.

It is gratifying, especially to Aberdonians, to find MacGillivray's memory so sympathetically revived in this volume, and to feel that it will be kept green thereby for the future among his successors in the title of ornithologist.

THE MAORIS OF NEW ZEALAND.¹

MR. JAMES COWAN has done the student as well as the general reader a service in publishing the material he has personally collected from the *kau-matuas*, the old and learned men of many Maori tribes, for the time is rapidly approaching when very little more can be gathered from the natives. The book is by no means of the monographic kind, but consists of what are virtually a series of essays on different subjects, based entirely on first-hand information and the experiences of a lifetime of sympathetic intercourse with the Maoris.

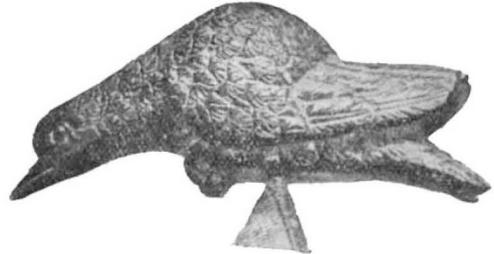
The subject-matter may be grouped as follows:—The origin and migrations of the Maori and the settling of New Zealand; religion, tapu, omens, and the like; social customs, houses, canoes, tattooing; nature lore, folk-tales, poetry; while the last third is mainly devoted to the Maori in war, intertribal and with Europeans, and to cannibalism.

Comparatively early in the book we find it stated "that the Maori-Polynesian is a brand, though a distant one, of the Caucasian race is now generally accepted." It may be granted that the main stock of the Polynesians had, in the remote past, some relationship with the ancestors of certain peoples now living in Europe, but since then mixture has taken place with other races. A few students of Maori and

¹ "The Maoris of New Zealand." By James Cowan. With numerous illustrations from photographs and drawings. Pp. xxiv+356. (Christchurch, N.Z.; London: Whitcombe and Tombs, Ltd., 1910.) Price 15s. net.

other Oceanic languages have endeavoured to trace them to a Semitic origin, but there is no likeness between the grammar, and Polynesian and Semitic words are made in an absolutely different way, and there is no sort of likeness in the changes they undergo. The so-called evidence of connection is based only on the resemblances of certain words, but this is a method that could be adopted to prove any other theory. It comes therefore as a shock to read, "Certainly there seems to be adequate evidence to justify us in arriving at these general conclusions: that it was on or near the shores of the Persian Gulf and of Arabia that the ancestors of the Maori-Polynesian lived; that they had racial affinities with the ancient Chaldeans, from whom they gained most of their astronomical knowledge; that they also were blood relations of the Phœnicians, who were the most adventurous of ancient mariners; that they had affinity with the Egyptians, some of whose religious traditions they absorbed" (p. 31). "The coastal people of south-western Asia were from ancient times navigators with a knowledge of the stars; they, and probably the early Egyptians, were amongst the earliest sailors"—[what evidence is there that the Egyptians were ever a seafaring people?]. "They coasted down the eastern shores of the African continent, at any rate as far as the Zambesi, and they also visited, and probably partly colonised, Madagascar; this would account for the resemblances between the Maori-Polynesian language and the Malagasy" (p. 35).

The sole evidence for this south-westerly migration



The Korotangi. From "The Maoris of New Zealand."

of the ancestors of the Polynesians is the undoubted relationship of Malagasy with Austronesian languages. Malagasy is definitely related to the Indonesian group of languages, especially the Batta of Sumatra, Ngadju Dayak of Borneo, Sangir, and certain Philippine languages (e.g. Tagal), which must be regarded as more primitive than the Melanesian languages or the later Polynesian; but there is nothing Semitic about any of them, and we cannot at present profitably trace the Indonesian-Polynesian stock further back than to the supposed "Gangetic Race" of J. H. Logan, a conclusion to which S. Percy Smith evidently subscribes in his valuable little book, "Hawaiki." Mr. Cowan fortunately deals very little with such problematical questions, and we can feel more at ease when he confines himself to purely Maori ethnology.

There is an interesting account of the several voyages of the historic canoes to New Zealand, and an illustration is given of a carved stone bird, the *korotangi*, or "cying dove," which was brought in the Tainui canoe from the ancient home of the race. Mr. Cowan asserts, and we can well believe him, "it is not of Maori manufacture"; it is 10¼ inches long, and "carved with high artistic finish out of a very hard and heavy dark-green metallic stone." Of especial value are the numerous translations of Maori invocations, charms, and poems. The chapter on social life is superficial, and tells us nothing about the real social organisation of the people. The account

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 vertebrae 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

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.

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.

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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