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GIGANTIC LAND-TORTOISES

(LIVING AND EXTINCT)

IN THE

COLLECTION

OF THE

BRITISH MUSEUM.

BY

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only because he adds Abingdon Island to the list of those in which Tortoises occur ('Voyage to the South Atlantic,' Lond. 1798, 4to, p. 152). Also Capt. BASIL HALL landed on this island in 1822, where he found plenty of large Tortoises, of which he laid in a stock which lasted the ship's company for many weeks ('Extracts from a Journal,' Edinb. 1824, 8vo, 2nd edit. vol. ii. p. 140).

Twenty-two years had passed since Porter's cruise when DARWIN visited the Galapagos in the 'Beagle' in the year 1835. A change, by which the existence of these animals was much more threatened than by the casual visits of buccaneers and whalers, had taken place. The Republic of the Equator had taken possession of the archipelago; and a colony of between two and three hundred people banished by the Government had been established on Charles Island, who reduced the number of Tortoises in this island so much that they sent parties to other islands (for instance James) to catch Tortoises and salt their meat ('Journal,' pp. 375, 376). Pigs had multiplied, and were roaming about the woods in a feral state. Darwin adds many interesting observations on the habits of these Tortoises; but as his 'Journal' is in everybody's hands, I quote from his account such parts only as have a special bearing on questions with which we shall have to deal in this treatise. He confirms Porter's observation as regards their deafness, also that "the old males are the largest, the females rarely growing to so great a size. The male can readily be distinguished from the female by the greater length of its tail" (p. 382). An egg which he measured was $7\frac{3}{8}$ inches in circumference, a measure nearly identical with that found by Porter. "The old ones seem generally to die from accidents, as from falling down precipices; at least, several of the inhabitants told me they had never found one dead without some evident cause" (p. 384). "The Vice-Governor, Mr. Lawson, declared that the Tortoises differed from the different islands, and that he could with certainty tell from which island any one was brought. . . . M. Bibron, moreover, informs me that he has seen what he considers two distinct species of Tortoise from the Galapagos, but he does not know from which islands. The specimens that I brought from three islands were young ones, and, probably owing to this cause, neither Mr. Gray nor myself could find in them any specific differences" (p. 394).

After an interval of not quite eleven years, H.M.S. 'Herald' followed the 'Beagle' on a voyage of discovery and survey. The naturalist of that expedition, which reached the Galapagos in the year 1846, found that the progress of civilization had been great ('Narrative of H.M.S. Herald,' by B. Seemann: Lond. 1853, 8vo), or, in other words, that the displacement of the indigenous fauna by man and his companions had proceeded apace. On Charles Island "the cattle had increased wonderfully, and were estimated at 2000 head, beside wild pigs, goats, and dogs. . . . The wild dogs keep the goats and pigs very much down" (vol. i. p. 57); but "no turpin, or terrapin, are living on this island" (p. 59); that is, the Tortoises had been exterminated between the visits of the 'Beagle' and the 'Herald.' On Chatham Island "we saw, for the

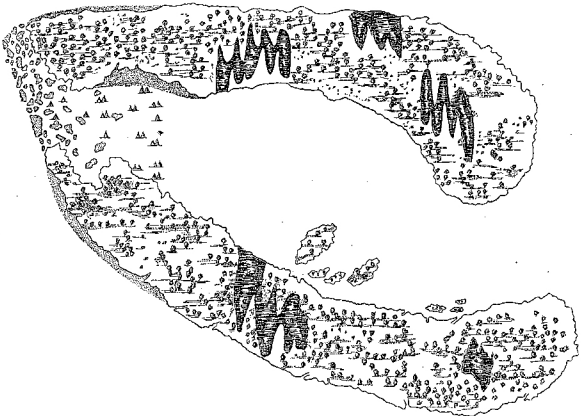
THE RACES OF THE ALDABRA GROUP.

ALL the living gigantic Tortoises which have been brought to Europe from the Indian Ocean within the last forty years are distinguished by the presence of a nuchal shield, convex cranium, and narrow obturatoric bridge. Whenever it has been possible to trace their origin this was found to be Aldabra, a group of small islands north-west of Madagascar, situated in lat. $9^{\circ} 25' S.$, long. $46^{\circ} 20' E.$ Although the majority of the specimens were shipped at Mauritius or the Seychelles, they had been brought there, in the first instance, from Aldabra, to be kept as curiosities or for the sake of their flesh or that of their progeny, which, in that suitable climate, they annually yielded to their owners with great regularity.

It is not at all impossible, nay, probable, that some of the other insignificant islands which are scattered in the same part of the Indian Ocean likewise harboured this Chelonian type; but of this I cannot find anywhere in the old records positive evidence. If it was so, the Tortoises were speedily exterminated, as the islands, from their small size, could not offer to them any place of effectual concealment. These islands seem to have been formerly much more frequently visited by ships on their way to or from India than at present, when they are rather avoided.

Among the specimens united by the common characters stated above, not unimportant differences may be observed; they are difficult to reconcile with our ideas about the amount of variability within the limits of the same species or race; but we can account for them by assuming that the animals came from different though neighbouring islands. More especially the islands of which the Aldabra group consists are separated by narrow deep channels of the sea, perfectly impassable to animals so helpless in the water as Land-Tortoises. In other respects the islands are described as covered with verdure, low tangled bushes interspersed with patches of white sand. Two of the islands are rather low, hummocky near the centre. The third island is the largest, extending about eighteen sea-miles in length and two or four miles in breadth; it is much higher than the others, and partly covered with very high trees, that may be seen eight or nine leagues from the deck of a moderate-sized ship. Besides these three larger islands, there are several very small outlying islets. The first record of the existence of Land-Tortoises in Aldabra I find on a map of this group given by

Dalrymple from the observations made in the boat 'Charles' and tartan 'Elizabeth' in 1744, where, the author adds, "they found a great many Land-turtle much larger than those at Rodrigue." Our knowledge of the configuration of these islands is still so incomplete that it will be useful to reproduce Dalrymple's chart; it is clearly faulty in its north-eastern portion (where the channel between the second and third main islands is omitted), but gives some idea of the smaller islets in the lagoon.

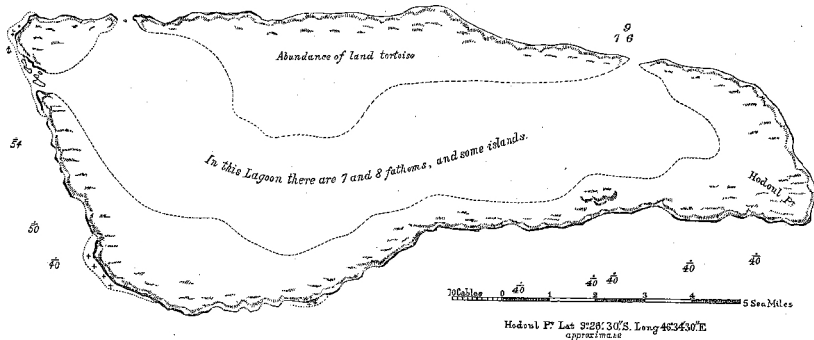


ALDABRA (from Dalrymple).

On applying to the Hydrographer, Capt. Evans, C.B., for more recent information, he, with his usual kindness, directed my attention to an unpublished chart deposited by the late Admiral W. F. W. Owen in the archives of the Admiralty, and reproduced here (p. 20) with the permission of the hydrographer. It appears that the group was partially surveyed by Lieut. R. Owen, of H.M.S. 'Leven,' in 1824, which, with H.M.S. 'Barracouta,' was engaged at that time, under the command of Capt. W. F. W. Owen, in the exploration of this part of the Indian Ocean*. This is at present the most reliable

* See 'Narrative of Voyages to Explore the Shores of Africa, Arabia, and Madagascar, performed in H.M. ships "Leven" and "Barracouta," under the direction of Capt. W. F. W. Owen, R.N.' 2 vols. 8vo. Lond. 1833. No complete and continuous detailed account of the work of those ships is given in that 'Narrative'; and more especially I am unable to find Lieut. Owen's visit to Aldabra mentioned.

chart of the group; and the parts of the coast-line actually seen and surveyed by Lieut. Owen are distinctly shown. As he gives the depth of the lagoon, he must have entered



ALDABRA.

(Surveyed by Lieut. Rich. Owen, R.N., H.M.S. 'Leven,' 1824.)

it in boats, although he does not take further notice of the smaller islands, the surveying of which could not possibly be of any importance to the navigator.

Aldabra has never been permanently inhabited—a circumstance by which the Tortoises were saved from utter extinction. Although the number was constantly being thinned by the raids of crews of passing whalers or fishing-vessels, a small remnant found a safe refuge in the tangled and almost impenetrable thickets; if these be allowed to be invaded or cut down, the Aldabra Tortoise will disappear, like those of the Mascarenes*.

* A report having reached England that a permanent settlement was about to be made on Aldabra, steps were taken to secure the protection of the Tortoises; and this will not be an inappropriate place to put on record a memorial sent to the Government of Mauritius, as well as the replies thereto:—

"To His Excellency the Hon. Sir Arthur Hamilton Gordon, K.C.M.G., Governor and Commander-in-Chief of Mauritius and its dependencies.

"We, the undersigned, respectfully beg to call the attention of the Colonial Government of Mauritius to the imminent extermination of the Gigantic Land-Tortoises of the Mascarenes, commonly called 'Indian Tortoises.'

"2. These animals were formerly abundant in the Mauritius, Réunion, Rodriguez, and perhaps other islands of the western part of the Indian Ocean. Being highly esteemed as food, easy of capture and transport, they formed for many years a staple supply to ships touching at those islands for refreshment.

1. TESTUDO ELEPHANTINA.

After having carefully studied the detailed description given by Duméril and Bibron under the above heading, it seems to me very probable that several specifically distinct forms were included in it. The scutes are described by the French herpetologists as sometimes striated, sometimes entirely smooth, whilst I exclude from this species all individuals with perfectly smooth scutes, the absence of sculpture not being dependent either on sex or entirely on age. On the other hand I refer to this species specimens of black as well as brown coloration, whilst the latter is stated to be one of the characteristics of *T. elephantina* in the 'Erpétologie générale.' Thus the limits assigned to this species by its authors do not appear to coincide with those determined by myself.

"3. No means being taken for their protection, they have become extinct in nearly all these islands; and Aldabra is now the only locality where the last remains of this animal form are known to exist in a state of nature.

"4. We have been informed that the Government of Mauritius have granted a concession of Aldabra to parties who intend to cut the timber on this island. If this project be carried out, or if otherwise the island is occupied, it is to be feared, nay, certain, that all the tortoises remaining in this limited area will be destroyed by the workmen employed.

"5. We would therefore earnestly submit it to the consideration of your Excellency whether it would not be practicable that the Government of Mauritius should cause as many of these animals as possible to be collected before the wood-cutting parties or others land, with the view of their being transferred to the Mauritius or the Seychelle Islands, where they might be deposited in some enclosed ground or park belonging to the Government, and protected as property of the Colony.

"6. In support of the statement above made and the plan now submitted to the Mauritius Government, the following passages may be quoted from Grant's 'History of Mauritius,' 1801, 4to:—

"We (in Mauritius) possess a great abundance of both land- and sea-turtle, which are not only a great resource for the supply of our ordinary wants, but serve to barter with the crews of ships' (p. 194).

"The best production of Rodriguez is the land-turtle, which is in great abundance. Small vessels are constantly employed in transporting them by thousands to the Isle of Mauritius for the service of the hospital' (p. 100).

"The principal point of view (in Rodriguez) is, first, the French Governor's house, or rather that of the Superintendent appointed by the Governor of the Isle of France to direct the cultivation of the gardens there and to overlook the park of land-turtles; secondly, the park of land-turtles, which is on the sea-shore facing the house' (p. 101).

"7. The rescue and protection of these animals is, however, recommended to the Colonial Government less on account of their utility (which now-a-days might be questioned in consideration of their diminished number, reduced size, and slow growth, and of the greatly improved system of provisioning ships, which renders the crews independent of such casual assistance) than on account of the great scientific interest attached to them. With the exception of a similar tortoise in the Galapagos Islands (now also fast disappearing), that of the Mascarenes is the only surviving link reminding us of those still more gigantic forms which once inhabited the continent of India in a past geological age. It is one of the few remnants of a curious group of animals once existing on a large submerged continent, of which the Mascarenes formed the highest points. It flourished with the Dodo and Solitaire; and whilst it is a matter of lasting regret that not even a few individuals of these curious birds should have had a chance of surviving the lawless and disturbed condition of

The amount of variation in the form of the carapace is considerable, much greater than in any of the other Gigantic Land-Tortoises; and the differences between these variations are quite equal, and in some measure analogous, to those observed between some of the Galapagos Tortoises for which I have adopted distinct specific denominations. But, whilst in the latter such external modifications are combined with marked features of the skull and other parts of the skeleton, the skulls of the varieties of *T. elephantina* surprisingly agree in the details of form with one another.

It is this species to which J. E. Gray and others applied the name of *Testudo indica* par excellence; finding that the varieties of external form closely resemble, and almost repeat, those from the Galapagos, they included in it, more or less, all the other Gigantic Land-Tortoises. That name must be restricted to the species described by Perrault (Mém. pour servir à l'hist. nat. des anim. 1676, p. 193, c. tab.).

Characteristic of this species is the concentric striation of the scutes, which, most distinct in young specimens, never disappears entirely, not even in the largest and oldest examples; then the declivity of the first vertebral scute; the moderate reversion of the margins of the carapace; the undivided caudal scute*; the broad skull, with the posterior margin of the paroccipital not excised.

The specimens available for examination may be grouped as follows:—

past centuries, it is confidently hoped that the present Government and people, who support the 'Natural-History Society of Mauritius,' will find a means of saving the last examples of a contemporary of the Dodo and Solitaire.

(Signed)

"JOSEPH D. HOOKER.

"H. B. E. FREER.

"RICH. OWEN.

"CHARLES DARWIN.

"ALFRED NEWTON.

"JOHN KIRK.

"ALBERT GUNTHER."

"London, April 1874."

This memorial received the full attention of Sir A. Gordon, who, in his reply, promised that the lessee should be bound to protect the animals, and to remit annually to Mauritius a pair of living ones, which, with others acquired by purchase, would be preserved in a paddock of the Botanic Gardens at Pamplemousses. On Sir A. Gordon leaving Mauritius soon afterwards, M. Bouton, the Secretary of the Royal Society of Mauritius, submitted the matter to his successor, Sir A. P. Phayre, who replied as follows:—

"MY DEAR M. BOUTON,—I return you the papers received from you regarding the gigantic Land-Tortoises. I have made arrangements with the Chief Civil Commissioner in order to have those on Aldabra preserved.

"Believe me,

"Yours sincerely,

(Signed) "A. P. PHAYRE."

* But for this character I should regard *Testudo gigantea* of Schweigger and Duméril and Bibron as identical with *T. elephantina*. Possibly the division of this scute is only an individual peculiarity of the specimen on which this species was founded.