the northern quarries, which was largely made up of these fragments, probably to the amount of hundreds of tons! It will be seen from my paper (*loc. cit.*) that the Sombrero Key is merely the eroded remnant of an atoll, which presented, by its peculiar isolation, the most favourable refuge for this Chelonian family. Their existence in this region seems to furnish an important link in reference to the question of the ancient geographical connection between the Mascarene and the Galapagos Islands. Their occurrence has never been reported on the other guano keys of the Caribbean Sea—Navassa, Swan, Monk's, Redonda, &c; but I would suggest the propriety of an examination of the cargoes of guano from Navassa, &c., as well as from all other localities, which may still be brought to England. The conditions of the existence of this fauna will be discussed with more detail in the remainder of my Sombrero paper, when sufficiently restored and re-written for publication.

ALEXIS A. JULIEN

MY DEAR SIR,—The collection of fossils from the Sombrero Key, which you kindly placed in my hands for examination, comprises the remains of birds, turtles, and Saurian reptiles. Those of the first, and from the more superficial deposit, appear to belong to existing species of sea-birds now found along the coast, and have undergone no change. The following comprises a list of such specimens as are sufficiently well preserved to be identified. There are many other specimens, but they are so much broken that I have not been able to determine them. Specimens numbered from 1 to 17 inclusive are bones of turtles, and those from 1 to 11 inclusive are all from the same, viz., the middle, deposit.[1]

1. Left humerus of a large turtle; the ends are gone and the shaft alone is preserved; it is 6 inches in length, and at the smallest part has a diameter of 2·07 inches, from before backwards, and of 1·57 inches from side to side. Admitting that the usual proportions existed, the whole length would have been about 12 inches.

2. A fragment comprising a large part of a humerus; nearly the whole of the articular facet is preserved, its longest diameter measuring 2·38 inches, thus indicating a large species like that of 1.

3. Middle portion of a femur, 1·25 inch in diameter. This would indicate an entire bone of from 8 to 9 inches in length.

4. Lower third of a left humerus; the inner tuberosity is broken off, and does not therefore exhibit the emargination found in most turtles. This is somewhat smaller than the same part from a Galapagos turtle (*T. elephantopus*), the length of whose carapace was 27 inches.

5. A femur from which the upper portion is broken off. This is of the same size as the corresponding part in the Snapper (*E. serpentina*), the carapace of which was 15 inches long. The transverse diameter of the condyles was 1·35 inch.

6. Middle portion of the shaft of a humerus, 0·55 inch in diameter.

7. A similar fragment, 0·75 inch in diameter.

8. A fragment of one of the marginal bones, 1 inch in thickness. This could have only belonged to a turtle of the size of the Galapagos species.

9. A fragment of the right ilium, including the middle portion, the longest diameter of which last is 1·55 inch, and the two facets for the articulation of the ischium and pubes.

10. The shaft of a femur 0·75 inch in diameter.

11. Upper half of the ascending portion of the scapula; this has a diameter at the articular end of 0·90 inch.

All of the above specimens are from the same deposit in which the matrix is soft and crumbling.

12. Lower two-thirds of a humerus partly imbedded in a very dense matrix, which contrasts very strongly with that found in connection with the preceding specimen. The fragment is 3·50 inches long, 2·35 inches across condyles; a part of the inner one is broken off, but there are some signs of the lateral groove and notch at the end. The narrowest part of the shaft measures 0·92 inch in diameter.

13. Lower end of a radius from the left side.

14. Fragment of a carapace having a raised articular surface for the articulation of the pelvis, as in some of the land turtles.

15, 16, 17. Other fragments of a carapace.

17*a*. An irregular cast of a part of the interior of the carapace and plastron, the walls of the latter (?) being broken, but portions of them still adhering. Three of the median bony dermal plates, the largest 2·25 inches in diameter. These plates have neither ridge nor tuberosity on the median line, though there are slight projections over the head of the ribs resembling those of very old specimens of *E. serpentina*. The plastron is indistinctly seen, but enough remains to show that its union with the carapace was by a broad surface, and not by a narrow one, as in the marine and some of the fresh-water species.

18. A caudal vertebra of a saurian.

19. Anterior half of a lower jaw of a saurian which resembles in size and the arrangement of the teeth that of the *Iguana cornuta*, as figured by Cuvier in the *Ossemens fossiles*. The points of the teeth are compressed and show some signs of having been serrated, though now worn nearly smooth.

20. Fragment of a femur, which closely resembles in size and shape that of the *Iguana tuberculata*.

21. Another fragment of a femur closely resembling the last, but about one-fourth smaller.

The remains of turtles form by far *the largest part* of the collection of which the above is a list. From the fact which you communicated to me, that at *the present time* not a single species of turtle inhabits the *Sombrero Key*, the question at once arises whether these remains belong to species like those now inhabiting the sea, or to such as live either in fresh-water or on the land. After a careful comparison I do not find that any of them can be considered as of marine origin. All the long bones, consisting chiefly of arm and thigh bones, differ in a marked degree from corresponding ones of the sea-turtles in having the axis of the bones strongly curved instead of being nearly straight, in having the shaft at its middle nearly round instead of flattened, and in having the distal ends proportionally much broader. A comparison of the fossil fragments with the corresponding parts of fresh-water and land species is much more difficult, since these two kinds, in their anatomical features, so gradually shade into and so closely resemble each other that there is really no well-marked line of distinction.

It is certain, nevertheless, that the remains above noticed belong either to the fresh-water or land species, and the discovery of them where such no longer exist alive indicates a great revolution in the *previous history* of the island, and is therefore a *marked fact*. In addition we have the interesting remains of one of the species, which is certainly extinct and of gigantic size, equalling the largest specimens which are found living in any part of the world, and thus surpassing any now found in North or South America. The nearest instances of turtles of similar size are in the Galapagos Islands, where is found *I. elephantopus*. Specimens 7 and 10 indicate species as large as those now inhabiting the Americas.

Although among turtles it is almost impossible to establis species from fragments of bones, and these not the most characteristic ones, yet I have no doubt that the remains here described show the existence at least of three species, one, the longest of which represented by specimen 1, was undoubtedly an inhabitant of the land.

JEFFRIES WYMAN

Cambridge, August 14, 1865

[1] The Red Sandrock.—A. A. J.

The Figure of the Planet Mars

IN the report of the proceedings of the Academy of Sciences at Paris for October 22 (NATURE, vol. xviii. p. 712), with reference to a communication from me relative to the flattening of the planet Mars, it is stated that I confirm M. Amigues' conclusions from independent calculations. Allow me to say that the communication referred to, has clearly established by reference to dates of publication, that the calculations I had been the first to make were confirmed by the subsequent results of M. Amigues. A formula presented by me in February, 1870, in which the mean density, surface density, and velocity of rotation of Mars are expressed in connection with its ellipticity, was reproduced by apparently identical methods by M. Amigues, in the *Comptes Rendus* for June, 1874. The conclusions drawn from this formula by M. Amigues were, that in order to account for the high amount of ellipticity assigned to Mars by many astronomers its mean density must be less than its surface density. My conclusion was, on the contrary, that the high ellipticity alluded to was improbable and that the values given by Bessel, Oudemanns, Johnson, and other astronomers, whereby Mars would have an ellipticity nearly the same as that of the earth, should be adopted until the subject was cleared up by fresh observations.

H. HENNESSY

Royal College of Science for Ireland, November 2