

PALEONTOLOGY. — *On the Jurassic dinosaurs of Madagascar*. Note by Mr. **ARMAND THÉVENIN**, presented by Mr. Albert Gaudry.*

The paleontology collections of the Museum, so rich in fossils from Madagascar, contain many bones of large dinosaurs, recovered since 1896 in the northwestern region of the island by Mssrs. Bastard, Colcanap, Decorse, Frager, Moriceau, and Perrier de la Bathie. The localities of these gigantic reptiles are spread along over more than 300 km nearly parallel to the coast.

Most of the bones were found in the Jurassic, others came from the Cretaceous. All those from the Jurassic seem to belong to the same species, named *Bothriospondylus madagascariensis* by Mr. Lydekker in 1895; according to the vertebrae.

Following a very important delivery from Captain Colcanap of the colonial infantry, Mr. Boule, who had himself studied the first bones received in France, agreed to charge me with continuing this study. On his indications, I restored a forelimb and hind limb of *Bothriospondylus* from Madagascar, which, placed in the paleontology gallery, highlight well the osteological differences of sauropod and ornithomimid dinosaurs. These limbs, if each bone is considered separately, recall living reptiles and above all crocodylians; but, supporting a massive body like columns, they are not without analogy in the relative proportions of the leg and thigh, the arm and forearm, and by the position of the radius in front of the ulna, with the limbs of proboscideans, which have an analogous function.

If the limbs placed in the Museum gallery are compared to the complete skeletons of *Brontosaurus* and *Diplodocus* in American museums, the height of the body of the reptile from Madagascar can be evaluated at around 3.50 m and its length at 15 m; one humerus weighs 84 kg; the femur is 1.40 m tall; a series of 11 consecutive caudal vertebrae is more than 1.30 m.

I was able to study nearly all the characteristic parts of the skeleton of this reptile; it is very close to *Morosaurus* from America: 1st, by the spatulate form of the teeth which are covered in a chagrined enamel; 2nd, by the presacral vertebrae, whose centra have a spongy internal structure, evident in the form of a pocket on the right and left; 3rd, by the chevron bones of the tail; 4th, by the pelvic bones, pubis and ilium; and 5th, by the form of

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the metacarpals. Mr. Lydekker and Mr. Boule already recognized that it also resembled *Cetiosaurus oxoniensis* from the Bathonian of England. These three genera represent the same type of sauropod in North America, Europe, and Madagascar. They will perhaps one day be united under the same name, when complete skeletons of the European and Malagasy forms are known.

Bothriospondylus from Madagascar seems to have lived in the same epoch as *Cetiosaurus* from Oxford. Indeed, according to the stratigraphic indications of Mr. Paul Lemoine, its bones are found in the Bathonian with *Corbula grandidieri* and *Corbula pectinata* in the environs of Antsohihi: these two dinosaurs are thus the oldest sauropods known. The restoration of the limbs of the reptile from Madagascar shows that, like *Cetiosaurus*, it had forelimbs nearly equal to the hind limbs; this is a primitive character there which is not realized any more in most of the Upper Jurassic sauropods from America (*Diplodocus*, for example). These latter, whose forelimbs were markedly shorter, could, more easily than their precursors, draw up on their hind feet while using their tail as a balance.

The sauropod from Madagascar was a little smaller than *Cetiosaurus oxoniensis*; moreover its limbs are thinner and more slender than those of the Oxford reptile, and very different from the massive type realized in the skeleton of *Brontosaurus*. In spite of their large size, these animals were not the giants of the group, because the femur of *Brachiosaurus altithorax* from America is more than 2 m tall, according to Mr. Riggs.