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XIV.—Notes on some vertebrate fossils from the Province of Bahia, Brazil, collected by Joseph Mawson, Esq., F.G.S.

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fig. 2 ('Steinkohlen-Calamarien,' part ii.); but they are not so regular. They may have originated from fungi; similar formations occur on other plants.

The above description and remarks have been forwarded to me by Dr. Weiss, to whom I sent a sketch of the fossil for his examination and description, as his knowledge of this group of fossils is probably more intimate than that of any other palæobotanist, and especially when impressions of the plant have to be dealt with. The most interesting point in this fossil is the association of the character of *Eucalamites* and the chain-like leaf-scars of *Calamitina* on the same specimen.

I am much indebted to Dr. Weiss for his kind assistance in examining and describing this plant.

Horizon. Middle Coal-measures; in ironstone nodule in shale above "Thick Coal."

Locality. Shut End, between Himley and Kingswinford, South Staffordshire.

EXPLANATION OF PLATE VII.

Eucalamites britannicus, Weiss, n. sp. (natural size).

XIV.—Notes on some Vertebrate Fossils from the Province of Bahia, Brazil, collected by Joseph Mawson, Esq., F.G.S.
By A. SMITH WOODWARD, F.G.S., F.Z.S., of the British Museum (Natural History).

So long ago as the time of Spix and Martius's travels* the occurrence of vertebrate fossils in the rocks of Brazil had been observed; and during the preparation of his great work upon the "Poissons Fossiles" Agassiz met with numerous examples of fishes from the supposed Upper Cretaceous deposits of Cearà, of which he published two brief notices †. Somewhat later ‡ Mr. Allport made known

* J. B. von Spix and C. F. von Martius, 'Reise in Brasilien,' 1823-31, Atlas, pl. xxii, fig. 5.

† L. Agassiz, Appendix to G. Gardner's "Geological Notes made during a Journey from the Coast into the Interior of the Province of Cearà, in the North of Brazil," Edinb. New Phil. Journ. vol. xxx. (1841), p. 83. Also "Sur quelques Poissons fossiles du Brésil," Comptes Rendus, vol. xviii. (1844), pp. 1007-1015.

‡ S. Allport (with notes by Egerton, Morris, and Rupert Jones), "On the Discovery of some Fossil Remains near Bahia in South America," Quart. Journ. Geol. Soc. vol. xvi. (1860), pp. 263-268, pls. xiv.-xvii.

the occurrence of Reptilian remains, with scales and teeth of *Lepidotus*, in the province of Bahia. Professor Hartt afterwards * added important details in regard to the stratigraphy of the fossiliferous deposits; and still later † several detailed descriptions of the genera and species have been published, notably by Professor Cope. Of the Bahia fossils the most important collections have been made by Mr. Joseph Mawson, F.G.S., of the Brazilian Imperial Central Railway; and a small series recently presented by that gentleman to the British Museum, supplementing previous donations of six years ago, affords material for a few interesting observations.

MAMMALIA.

The only Mammalian bone is a left scaphoid "from alluvium at Olhos d'Agua, in the interior of the province of Bahia, 13½ kilom. S. of Queimadinhos Station, on the Brazilian Imperial Central Bahia Railway." In size the fossil is quite equal to the corresponding bone of the well-known *Megatherium americanum*, and its characters are so similar that there can be no doubt as to its indicating the presence of a gigantic Megatherioid in the north-east of Brazil in Pleistocene times. Whether, however, the animal is generically distinct from *Megatherium* or merely a hitherto unrecognized species must be determined by the future discovery of more characteristic parts of the skeleton.

REPTILIA.

A large number of stout Reptilian teeth and an imperfect caudal vertebra occur among the fossils from the supposed Upper Cretaceous Sandstones of the Bahia coast, and are not improbably referable to the Crocodilian genus *Hyposaurus*, Owen. Prof. Cope has already described satisfactory evidence of one species, *H. Derbianus*, from the Upper Cretaceous of the province of Pernambuco; and it is possible that Mr. Mawson's fossils may pertain to the same form. The teeth, when unworn, are marked by numerous extremely fine,

* C. F. Hartt, "Geology and Physical Geography of Brazil (Thayer Expedition)," 1870.

† E. D. Cope, "On two Extinct Forms of Physostomi of the Neotropical Region," Proc. Amer. Phil. Soc. vol. xii. (1871), p. 53; also "A Contribution to the Vertebrate Palæontology of Brazil," *ibid.* vol. xxiii. (1886), pp. 1-21, pl. i. A. Smith Woodward, "On the Fossil Teleostean Genus *Rhacolepis*, Agass.," Proc. Zool. Soc. 1887, pp. 535-542, pls. xlvi., xlvii.

short, longitudinal rugæ; an anterior and a posterior keel divide the external face from the internal, and the latter is often faintly ribbed by numerous straight longitudinal ridges. Some examples are figured by Allport (*loc. cit.*).

PISCES.

All the fish-remains collected by Mr. Mawson were obtained from the same beds as the Crocodilian teeth upon the coast, and the determinable specimens belong to the four genera *Diplomystus*, *Chiromystus*, *Lepidotus*, and *Acrodus*.

Diplomystus longicostatus, Cope.

A small fragment of this species does not add anything to Professor Cope's description; but it may be remarked that the occurrence of the genus in the Bahia sandstones is not so unexpected a circumstance as might be inferred from the Professor's concluding paragraph. In the first place, the deposit is clearly not marine, but freshwater or estuarine, as demonstrated by the Mollusca and Entomostraca*; and, in the second place, at least one species of *Diplomystus* is abundantly represented in the Upper Cretaceous beds of Syria. Though not hitherto detected, the common "*Clupea brevissima*"[†] of Mount Lebanon exhibits all the typical characters of *Diplomystus*. The dorsal scutes are seen in almost every example, and are especially well displayed in Brit. Mus. no. 49488; they are at least as broad as long, with a longitudinal keel; and the elongate anal fin is quite similar to that of the Wyoming Eocene *D. analis* and *D. pectorosus*, though comprising a slightly less number of rays.

Chiromystus Mawsoni, Cope.

The specimen upon which Prof. Cope founded the new genus and species *Chiromystus Mawsoni* is a large elongated fish, with the vertebral column measuring 0.310 m. in length. It is placed in the Hyodontidæ, and particularly characterized by the enormous development of the preaxial pectoral fin-rays. Of this genus also the present collection comprises two interesting fragments, the one showing some anterior vertebræ and crushed bone, with the left clavicle and pectoral fin, the other the greater portion of the abdominal and caudal regions. The stout pectoral fin-rays are exhi-

* See descriptions of Morris and Rupert Jones in Allport's paper, *loc. cit.*

bited, the feeble pelvic fins, the opposed small dorsal and anal, and the delicate overlapping cycloid scales. These fossils, however, only indicate a fish about 0.15 m. in length, though the proportions are so similar that it seems most probable they merely represent the young of the species already described.

Lepidotus Mawsoni, sp. nov.

Several scales and teeth have already been figured and briefly noticed by Allport and Egerton (*loc. cit.*); and, as the result of Mr. Mawson's researches, the British Museum is now provided with a large series of these detached fragments. The scales are in every respect typical of the genus, and derived from all the principal regions of the body. Some are of very large size measuring no less than 0.04 m. antero-posteriorly; and the majority have a smooth external surface, sometimes irregular, but only rarely showing faint traces of posterior radiating grooves, with a few large posterior crenulations. A most remarkable peculiarity of the scales consists in the enormous thickness of the laminated bony base; for the greater portion of the base (*e. g.* in B. M. nos. 5534 *a, b*) not unfrequently becomes swollen into a prominent rounded excrescence, unequalled by any other *Lepidotus*-scale the present writer has had the opportunity of examining. The associated teeth, presumably referable to the same fish, are notably small in proportion. While many of the scales are as large as those of the great *Lepidotus maximus*, the known teeth scarcely attain the dimensions of those of *L. Mantelli*; and it is very unlikely that if the Brazilian species originally possessed teeth equalling those of *L. maximus*, they would hitherto have escaped detection. The latest evidence collected by Mr. Mawson thus appears to confirm Sir Philip Egerton's early suspicion that the Bahia *Lepidotus* is distinct from all other described species; and the fossils are quite as satisfactory as those upon which many other species of the genus are founded. The fish may therefore appropriately receive the name of *Lepidotus Mawsoni*.

Acrodus nitidus, sp. nov.

A single tooth of *Acrodus* is an interesting addition to the known fauna of the Bahia sandstones. It is elongated in shape, measuring only 0.004 m. in length and 0.0015 m. in maximum breadth; the coronal surface is rounded and slightly raised mesially in the usual manner; and the apex

is worn by trituration during life. The coronal surface is remarkably smooth, even more so than in the English Upper Cretaceous species, *A. levis* (unless it be in part due to wear), only a few short, rounded, radiating ridges being observed upon the sides. The indistinctness of the markings, considered in connexion with proportions already noted, separates the tooth from those of all other species yet known; and the name of *Acrodus nitidus* will recall its most prominent peculiarity.

Other remains from the Upper Cretaceous beds are still too imperfect for certain determination. One fragment appears to be a portion of the cranial roof of a large *Arapaima*-like fish; but this and the accompanying fossils must be left for interpretation by further discoveries, which, it is to be hoped, may soon result from continued search.

XV.—On new or little-known South-African Reptiles.

By G. A. BOULENGER.

DURING a recent visit to Europe Mr. L. Peringuey, Assistant Director of the South-African Museum, Cape Town, submitted to me various interesting Reptiles, which form the subject of the following notes. They were obtained partly by Mr. Peringuey himself in Namaqualand and Damaraland, between the mouth of the Orange River and Walfisch Bay, partly by M. Juste De Coster at Delagoa Bay.

Duplicates of some of the new or rare species, viz. *Homopus signatus*, *Cedura africana*, *Pachydactylus fasciatus*, *Rhoptropus afer*, *Mabuia Peringueyi*, *Typhlops Schlegelii*, and *Homalosoma variegatum*, have been presented to the British Museum by the Trustees of the South-African Museum.

Homopus signatus, Walb.

Two specimens were obtained by Mr. Peringuey at O'Kiep, Namaqualand (2500 feet), and afford the first information as to the animal of this tortoise, known for a century from the shell only. The young specimens referred by Gray to *H. signatus* belong to *H. areolatus*. It is surprising to find that the number of claws in the fore foot is five instead of four, the characteristic number in *Homopus*; the tortoise is none