Article XII. — AN ARMADILLO FROM THE MIDDLE EOCENE (BRIDGER) OF NORTH AMERICA.

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The most surprising discovery by the American Museum expedition of 1903 was that of the presence of true Dasypoda or Armadillos in the Middle Eocene or Bridger formation of Wyoming.

Mr. Walter Granger, who was in charge of this very successful expedition, announced the discovery as that of an Edentate; the four specimens, which have been skilfully worked out by Mr. Granger and Mr. Thomson, prove indeed to be closely related to the modern armadillos; the chief differences being the probable presence of a leathery instead of a bony shield, of an enamel covering on the single large caniniform teeth in the upper and lower jaws and the degeneration of other teeth.

This discovery confirms the suppositions of Marsh and Schlosser of the existence of Edentata in the North American Eocene; and the more specific theory of Wortman as to the presence of ancestral Gravigrada ("Ganodonta") in our Eocene, the result achieved by our expedition of 1896.

Thus the very important zoogeographical conclusion is reached that at least two suborders (Gravigrada and Dasypoda) existed on this continent during the early Eocene times, if not in the Cretaceous.

Unfortunately these Armadillos, on the basis of less perfect material, have already been placed under another name and group. Dr. J. L. Wortman referred portions of the jaws, of the skeleton, and of a mistakenly associated tibia, as a new genus, *Metacheiromys*, and a new family, Metacheiromyidæ, to the new suborder Cheiromyoidea, and connected this type with the Microsyopsidæ (animals of doubtful affinity, placed by

¹ Studies of Eocene Mammalia in the Marsh Collection Amer. Jour. Science, Vol. XVI, Nov., 1903, pp. 345-352.

some authors with Lemurs, by others with Rodents), and with the Aye Aye or *Cheiromys* of Madagascar.

The type of *Metacheiromys* is unquestionably identical generically with the specimens discovered by our party. With Mr. Granger's aid I shall here present a brief diagnosis of the principal characters, to be followed later by an illustrated description.

Superorder EDENTATA.¹
Order Loricata *Flower*.

Genus Metacheiromys Wortman.

Metacheiromys dasypus, sp. nov.

Type: Skeleton No. 11718 American Museum.

This animal is much larger than *M. marshi* Wortman, and presents a number of distinct specific characters. It exceeds in size a full grown specimen of *Dasypus sexcinctus*, but presents close osteological resemblances mingled with some more primitive and other more specialized characters. Taking *Dasypus* and *Tatusia* as the standard of comparison, therefore, the following are the principal characters of *Metacheiromys*:

Premaxillary reduced, crescentic. Maxillary with single, laterally compressed, pointed enameled canine (?) in anterior border, behind which is one vestigial tooth. In lower jaw one canine (?) and three (one precanine and two postcanine) vestigial teeth; sharp edentulous dentary border. Cranium broadly flattened posteriorly, and a large tympanic bulla as in Dasypus, unlike the degenerate tympanic ring of Tatusia. Neck short; anterior cervicals resembling those of Tatusia, but not coalesced. As in Tatusia, the neural spines of cervicals low, of dorsals enlarged anteriorly, diminishing gradually posteriorly. Dorsals without supplementary zygapophyses (i. e., nomarthrous), exhibiting large lateral metapophyses which rise above the prezygapophyses as in Tatusia, probably for the support of a leathery dermal shield.

Anterior ribs short and broad, as in *Tatusia*. Clavicles longer and less curved than in *Tatusia*. Five sternals are preserved (6 are found in type of *M. tatusia*), more equal in length than in *Tatusia*; manubrium sterni of somewhat similar form.

Scapula very similar to that of *Tatusia*, with forked acromial process. Humerus with much longer delto-pectoral crest, and much

¹ Including TÆNIODONTA Cope, (GANODONTA Wortman).

broader condyles. Ulna more curved. Radius very similar in form. Metacarpals very abbreviate. Terminal phalanges longer and more pointed.

Additional characters are afforded by the skeleton of a much smaller animal belonging to a third species.

Metacheiromys tatusia, sp. nov.

Type: Skeleton No. 11549 American Museum.

This animal is inferior in dimensions to either M. marshi or M. dasypus, apparently a more primitive form, and represented by an almost complete skeleton lacking the anterior portion of the skull. The chief additional characters are:

Three coalesced sacrals; ilium narrow and rodlike; pubis and ischium deeply depressed as in *Tatusia* and Edentata generally; femur more broadly flattened below than in *Tatusia*; femur, tibia, humerus, and radius of about the same length; these similar proportions of fore and hind limbs separate this animal from *Tatusia*, in which the femur is very much longer than the humerus.

In this species the lateral metapophyses of the lumbar vertebræ are less elongate.

GENERAL CHARACTERS OF Metacheiromys.

Closely similar in its general osteology to Tatusia and Dasypus, but exhibiting a number of more primitive characters, such as free cervicals, more equal sternal segments, fore and hind limbs approximately equal in length, tibia and fibula separate; and certain more specialized characters, such as wide curvature of ulna, elongation of the delto-pectoral crest of humerus. Still more widely specialized is the dentition, which is practically abortive except for the tusklike upper and lower canines which are covered with enamel. These at first sight suggest the tusks of the sloth Cholæpus, but the lower tooth is apparently homologous with the canine. The most striking general feature is the extreme modernization of the skeleton; it lacks only the compound articulation of the dorsal vertebræ and the presence of ossicles in the dermal shield to be described as a fully developed armadillo.