

**Article XXI.—ON THE SKULL OF A NEW TRIONYCHID,
CONCHOCHELYS ADMIRABILIS, FROM THE
PUERCO BEDS OF NEW MEXICO.**

By OLIVER P. HAY.

The skull which is here described was collected in the year 1892 by Dr. J. L. Wortman, then in charge of a collecting party from the American Museum of Natural History. It was obtained in the Puerco beds of the northern part of New Mexico. The specimen bears the catalogue number 6090. The skull is quite complete, with the exception of the absence of the lower jaw. The specimen was enclosed in a nodule of very compact clay, the removal of which was difficult; but this has been skilfully done by Mr. Albert Thomson, of the American Museum. Figures of the object as seen from above, from below, and from the right side are here presented. These are two-thirds the size of nature. These figures are half-tones from wash-drawings prepared by Mr. Erwin W. Christman.

The skull is that of a large and evidently aged individual. No sutures whatever are to be observed, a matter greatly to be regretted in this case.

The premaxilla and the anterior extremities of the maxillæ are missing,

but the portions gone would add little to the length of the snout. The distance from the front of the nasal bones to the

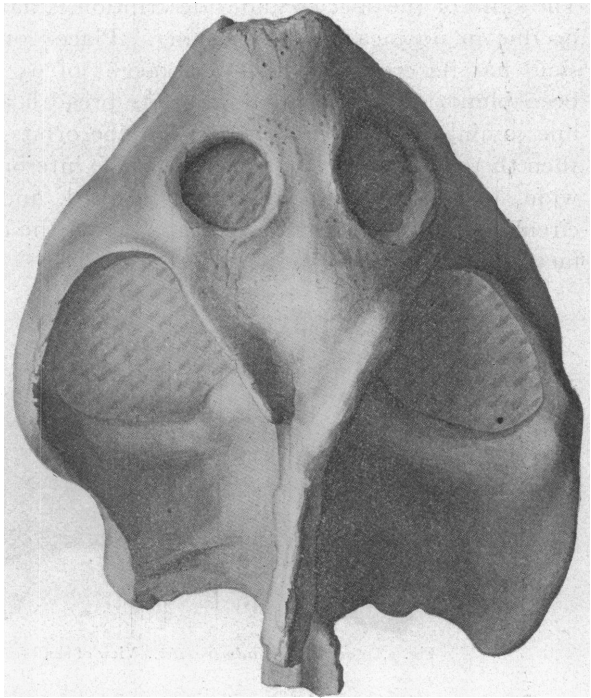


Fig. 1. *Conchochelys admirabilis*. View of skull from above. $\times \frac{2}{3}$

extremity of the occipital condyle is 127 mm. The breadth across the zygomatic arches is 111 mm.; the distance from the outside of one quadrate to that of the other appears to have been about 88 mm.; and the width across the skull at the middles of the tympanic cavities is 108 mm. It will be seen therefore that the roof of the tympanic cavity projects much over the pedicles of the quadrates. Usually in living trionychids the breadth across the pedicles of the quadrates is as great, or nearly as great, as the breadth at any other part. The hinder portion of the skull is shortened. The extremity of the condyle is only 13 mm. behind the line joining the quadrates. In a specimen of *Amyda ferox* 94 mm. long from the snout to the condyle, the latter is placed at a distance of 17 mm. behind the quadrates. Relatively to other species of the group the skull is broad, the breadth being 86 per cent. of the length. In *Pelochelys cantoris*, whose skull is relatively broad, the width of the latter is 82 per cent. of the length. The skull of the species under description is flat, and this appears to be due in no measure to crushing. Placed on a level surface, the skull has its crest elevated to a height of 65 mm. The snout has been blunt. The skull maintains its breadth as far forward as the line joining the posterior borders of the orbits, where it is 98 mm.; then the outlines converge rapidly. The interorbital space is 15 mm. wide. The orbits look outward, forward, and upward. They are circular, with diameters of 22 mm. From the orbits the sides of the face slope downward and outward.

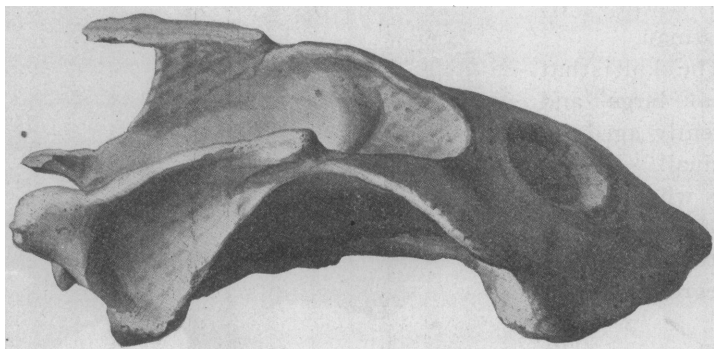


Fig. 2. *Conchochelys admirabilis*. View of skull from left side. $\times \frac{1}{3}$

The anterior nasal opening appears to have had little height, rising only 8 mm. above the floor of the passage. Its breadth has been 20 mm. The lateral crests of the parietals converge rapidly and meet opposite the fronts of the proötics. The postorbital arch

has a width of 11 mm. The zygomatic arch has a width of only 8 mm. in the middle of its length. At its anterior inferior border it starts from the hinder extremity of the cutting edge of the maxilla, and ascending it passes backward to the front of the tympanic cavity. It is far more arched than that of living trionychids. The tympanic cavity is relatively longer than that of *Amyda ferox*, the length being 33 mm., one-fourth the length of the skull. In *A. ferox* the length of the cavity is about one-fifth the length of the skull. In contradistinction to *A. ferox*, the upper border of the squamosal is not rolled downward, but stands out as a sharp edge. Moreover, there does not appear to have existed that long backwardly directed process of the squamosal and paroccipital which we find so conspicuous in the living trionychids. It is possible that this process was originally somewhat longer than now appears; but it could have been but little longer.

The fossa enclosed by the zygomatic arch is greatly different from that of *Amyda*. In the latter, and perhaps in all living members of the Trionychidæ, the fossa is longer than broad. In this Puerco genus the length is 34 mm., the width about 38 mm.

The occipital crest has been injured and is partly missing. It has included a lower horizontally expanded border and a thickened superior border. The latter may be, so far as preserved, the backwardly prolonged parietals.

The upper jaws were furnished with subacute cutting edges. From these the palate rises in a high vault, 26 mm. above the cutting edges. The

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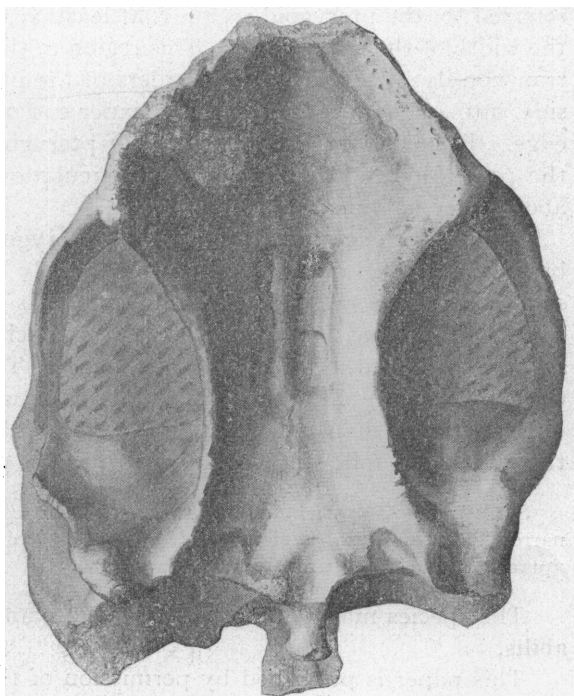


Fig. 3. *Conchochelys admirabilis*. View of skull from below. $\times \frac{3}{4}$

choanæ are removed far backward, their front borders touching a perpendicular plane through the posterior borders of the orbits. The distance from the premaxillæ to these choanæ was about 50 mm. There was, therefore, an enormous crushing surface on the upper jaws, and we may conclude with safety that the animal was accustomed to devouring a prey that was protected by hard coverings, such as mollusks. From each choana a groove in the roof of the mouth extends backward about 30 mm. This probably indicates that in life the fleshy choanæ were situated behind the middle of the length of the skull. As a result of this position of the openings there was no danger, while food was being triturated, of any interference with respiration.

The pterygoid region is greatly narrowed, being where narrowest only 36 mm., a little less than one-half of the distance between the hinder ends of the maxillæ. In the specimen of *Amyda ferox* already referred to, the pterygoid region is at least 33 mm. wide, eight-tenths the width of the upper jaws. This region in the fossil is very concave transversely. Anteriorly the borders of the pterygoids pass, on each side, into a ridge which meets the hinder end of the maxillary cutting edge. Posteriorly the border of each pterygoid extends outward to the pedicle of the quadrate. The articulation of the quadrate was about 20 mm. wide.

In its broadened form, its narrowed pterygoid region, its shortened basioccipital region, and in its apparently abbreviated posterior squamosal process, this trionychid presents such deviations from known genera that the writer is led to the conclusion that it represents a distinct and hitherto undescribed genus. This he proposes to call **Conchochelys**, in allusion to the supposed nature of its food.

Until more shall have been discovered regarding the structure of the animal the following may be taken as the generic characters:

Skull broad. Masticatory surfaces broad and concave. Pterygoid region narrow. Basioccipital region short. Choanæ behind the orbits. Posterior squamosal process apparently much shortened.

The species may be known under the name **Conchochelys admirabilis**.

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