

**Article III.**—DESCRIPTIONS OF TWO NEW GENERA (*ECHMATEMYS* AND *XENOCHELYS*) AND TWO NEW SPECIES (*XENOCHELYS FORMOSA* AND *TERRAPENE PUTNAMI*) OF FOSSIL TURTLES.

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The following results of the author's recent studies of the fossil turtles of North America appear to be worthy of immediate publication.

***Echmatemys*, gen. nov.**

A genus of Emydidae. Neural plates mostly hexagonal, with the broad end forward. Plastron closely articulated with both the peripherals and the costals; with the latter by means of strongly developed axillary and inguinal buttresses. The axillary buttresses ascending beyond the lower borders of the first costal plates. The inguinal buttresses ascending beyond the peripherals and articulating with the inner surfaces of the fifth and sixth costals at their junction. Skull not certainly known, but apparently having the maxillary triturating surfaces furnished with only a rudimentary ridge. Lower jaw with a narrow triturating surface.

The type of the genus is *Emys septaria* Cope, of the Bridger Eocene.

The Emydidae of the Bridger beds have hitherto been referred to the genus *Emys*. A very superficial examination of the carapace shows that these turtles cannot be congeneric with *Emys orbicularis*, the type of *Emys*. In the latter the plastron is joined to the carapace by means of ligaments, and there is a hinge between the hyoplastra and the hypoplastra. In most of the Bridger turtles the plastron is firmly joined to the carapace and there is no hinge. Besides the usual sutural union of the upper and lower portions of the shell, strong anterior and posterior buttresses ascend from the floor of the plastron and join suturally the inner surfaces of some of the costals. Usually these buttresses, especially the posterior ones, are broad, the inner border of the base rising from the plastron half way between the outer border of the posterior lobe and the midline of the plastron. In the American Museum of Natural History there is a specimen of Cope's *Emys septaria* from which is removed the hinder portion of the carapace in such a way as to expose in position the inguinal buttresses. Figure 1 represents a view of these buttresses and the surrounding parts as seen from behind. The width of the carapace is 225 mm. while the width of the space left between the buttresses is only about 80 mm. While the space left between the anterior

buttresses is greater, the latter extend well inward. The effect of these broad partitions is to cut off on each side of the body a deep sternal chamber. In some of the species the buttresses are not so broad. The height to which they rise varies, but it is always greater than the lower borders of the costals concerned. The hinder buttresses ascend sometimes to a point two-thirds the distance from the lower to the upper border of the fifth and sixth costals.

We have little certain knowledge of the structure of the skull. Nevertheless, there is in Princeton University the skull of a Bridger

emys which in all probability belongs to some member of the new genus here proposed. The triturating surface of the upper jaw is narrow and there is at its hinder end a low and short ridge, the homologue of that which is so conspicuous in numerous modern genera of emyds. In the American Museum there is a portion of a lower jaw

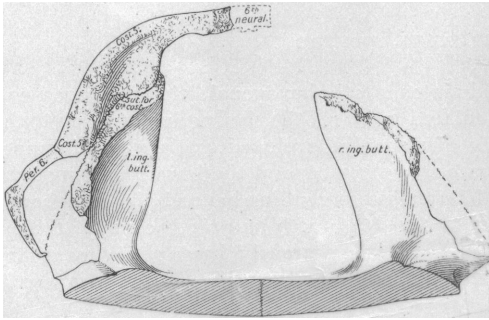


Fig. 1.—*Echmatemys septaria*. Inguinal buttresses from behind.  $\times \frac{1}{2}$ .

which accompanies considerable parts of the shell of a member of the genus. The triturating surface is narrow and furnished with a longitudinal groove. The jaw has evidently resembled that of the Chinese genus *Ocadia*, a figure of which is found in 'Boulenger's Catalogue of Chelonians,' page 86.

The genus *Ocadia* resembles in many respects the one here proposed. It has strongly developed anterior and posterior buttresses; and the general structure of the skull is that of the Bridger skull referred to above. However, the triturating surface of the Asiatic genus is furnished with a well developed longitudinal ridge. The evidence and the probabilities are that no such ridge was present in the species of the Lower Eocene. Likewise the hinder lobe of the plastron of *Ocadia* is narrower than that of the Bridger species.

Besides *Ocadia* there are in Asia four genera which have the buttresses still more powerfully developed. These are *Kachuga*, *Callagur*, *Batagur*, and *Hardella*. All of these have one or more longitudinal ridges on each maxillary triturating surface.

To the genus *Echmatemys* will be referred, besides *Emys septaria*

Cope, also *Emys cibollensis* Cope and *Emys lativertebralis* Cope, both of the Wasatch beds of New Mexico.

### **Xenochelys**, gen. nov.

A genus of Dermatemydidae. Neurals six, the anterior four having the narrow end in front. Costals seven pairs, those of the sixth and seventh pairs meeting in the midline above. Plastron joining the carapace without intervention of buttresses. Only five pairs of plastral epidermal scutes. Two infra-marginals on each bridge. Type, *X. formosa*, of the Oligocene.

### **Xenochelys formosa**, sp. nov.

This species is based on a nearly complete shell which was discovered in 1904, at Quinn Draw, Washington County, South Dakota, by Mr. Albert Thomson, of the American Museum of Natural History. The deposits from which it was taken belong to the lower Titanotherium beds, of the White River formation.

The length of the carapace (Figure 2) is 200 mm., the width, 129 mm. There is a low median carina on the nuchal and again on the

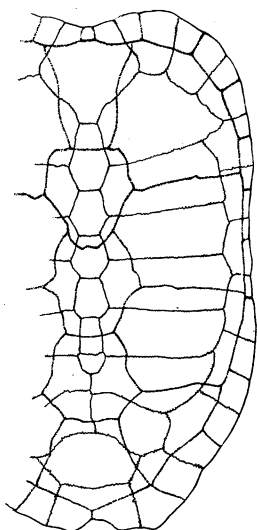


Fig. 2.—*Xenochelys formosa*.  $\times \frac{1}{3}$ . Diagram showing outlines of bones and horny scales of carapace.

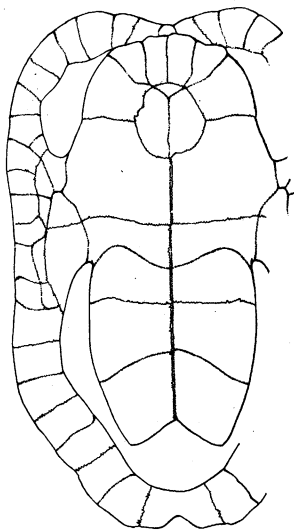


Fig. 3.—*Xenochelys formosa*.  $\times \frac{1}{3}$ . Diagram showing outlines of bones and horny scales of plastron.

hinder end of the carapace. There are traces of a lateral carina on each side. The plastron (Figure 3) is 163 mm. long. The anterior lobe is 80 mm. wide at the base. The bridge is 43 mm. wide. The

posterior lobe is 75 mm. long and 62 mm. wide at the base. There are only five pairs of epidermal scutes on the plastron, the pectorals and the abdominals either having apparently fused or one or the other been suppressed.

The discovery of this genus of *Dermatemydidae* in the Oligocene of this country is very interesting. The few surviving members of the family are confined to Central America. Forms which are to be referred to this family were common in the Upper Cretaceous of New Jersey and have been described under the genera *Adocus*, *Agomphus*, and *Zygoramma*. A still older genus is *Basilemys* of the Judith River and Belly River beds. This genus extends also into the Laramie formation. In the Puerco beds is found the genus *Hoplochelys*, based on Cope's *Chelydra crassa*. The next appearance of the family is in Bridger deposits of Wyoming where *Baptemys wyomingensis* Leidy is not uncommon.

***Terrapene putnami*, sp. nov.**

Some time ago Prof. F. W. Putnam, at that time of the American Museum of Natural History, placed in the writer's hands for examination some bones which had been dredged from the Alafia River, Florida, about a mile from its mouth. This river empties into Tampa Bay. Among these bones are fragments of *Trachemys euglypha*

(Leidy), the type of which came from the Peace Creek beds, believed to belong to the Pliocene, but which appear to furnish some living species. Most interesting of the materials presented by Prof. Putnam is the left hypoplastral of a new species of *Terrapene*, which, in honor of the donor, is called *Terrapene putnami*.

This new species is remarkable for its size and for the thickness of the shell. The bone to be described (Figure 4) is nearly square, its length and breadth each being 73 mm. If this bone had the same

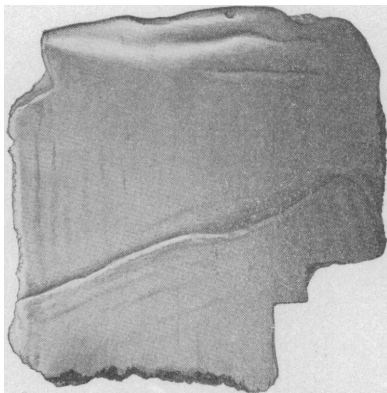


Fig. 4.—*Terrapene putnami*.  $\times \frac{2}{3}$ . Wash-drawing of the lower surface of the left hypoplastron.

ratio to the rest of the shell that the corresponding bone of *T. carolina* has, the carapace had a length of 265 mm., or ten and a half inches. The width of the carapace was about 200 mm. At the midline, just

in front of the articulation of the bone with the xiphiplastron, the hypoplastron is 22.5 mm. thick. In a specimen of *T. carolina* whose hypoplastron is 38 mm. wide the thickness at the point named is only 4 mm. In the fossil the width becomes reduced laterally to 12 mm. two-fifths the distance toward the hinge. It then increases and



Fig. 5.—*Terrapene putnami*.  $\times \frac{2}{3}$ . Section from midline to hinge.

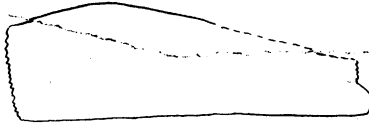


Fig. 6.—*Terrapene putnami*.  $\times \frac{2}{3}$ . Outline of the mesial face of the hypoplastron.

at the hinge is 15 mm. Figure 5 is a section across the bone from the midline to the hinge, while Figure 6 shows the thickness of the border which joins the bone of the opposite side, the narrow end of the figure representing the anterior hinge.

Figure 7 represents the lateral hinge, the hinder end of which is broken away. At its anterior end is a deep and rough pit to receive a process from the carapace, such as we find in *T. carolina*. Behind this is a broad, rough, and perpendicular surface, which joined a similar surface of the carapace. This hinge resembles more that of *T. ornata* than that of *T. carolina*. *T. marnochii*, a large species, was described by Prof. Cope from the Equus beds of Texas, but it appears to have had no such broad hinge.



Fig. 7.—*Terrapene putnami*.  $\times \frac{2}{3}$ . View of the lateral hinge.

The hyo-hyoplastral hinge of *T. putnami* differs in no important way from that of *T. carolina*, except in thickness. In the latter species it is about 3 mm. thick; in *T. putnami*, 12 mm. The upper half is rough for the attachment of ligaments; the lower half is smooth and was covered with horny epidermis. On the lower side of the bone is seen the abdomino-femoral sulcus, which, starting from the lateral hinge, runs inward and somewhat backward to the midline.

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