

III. ON TWO SPECIES OF TURTLES FROM THE JUDITH RIVER BEDS OF MONTANA.

By O. P. HAY.

Professor J. B. Hatcher has placed in the hands of the writer three specimens of fossil turtles, which were collected during the year 1903 in the Judith River beds of Montana. These are found to belong to two species, which have not hitherto been described. They are as follows :

ASPIDERETES BEECHERI Hay.

Trionyx foveatus, Baur, G., Proc. Acad. Nat. Sci. Phila., 1891, p. 418 (not of Leidy).

The type of this species belongs to the collection of the Peabody Museum, Yale University. It was collected in the Laramie beds of Converse County, Wyoming, in the year 1889, by Prof. J. B. Hatcher and the late Dr. Charles E. Beecher. It is a nearly complete individual, lacking few parts, except the head and most of the neck. A description of it, accompanied by illustrations, will shortly appear in the American Journal of Science. Although the two specimens belonging to the Carnegie Museum are from the more ancient Judith River beds, the writer is unable to discover any characters to distinguish them from the Laramie specimen. Of these Judith River specimens one, number 445, has had a length of about 375 mm. The other, number 541, is smaller. Both were collected on Fish Creek, Montana.

BAËNA CALLOSA sp. nov.

The type of this species bears the number 330 of the Carnegie Museum Catalogue. It was collected on Willow Creek, Montana. It consists of an imperfect carapace and the greater portion of the plastron.

Of the carapace there is present about the anterior three fourths ; but of this most of the peripherals and portions of the costals are missing. The sutures between the various bones appear not to have been obliterated, but the preservation is such that it is impossible to trace them satisfactorily. Most of the anterior border of the nuchal has been

broken away. It has had a thickness of about 6 mm. and in section the edge has been rounded. The third and the fifth and sixth costals have been much thickened to receive the buttresses of the plastron. The second costal, near its proximal end, has a thickness of 5 mm; the fourth, near its distal end, a thickness of 3 mm.

The surface of the carapace presents evidences of a low ridge along the midline. On the area of the first costal scute there is a low elongated boss. In front of this, on the first peripheral, there is

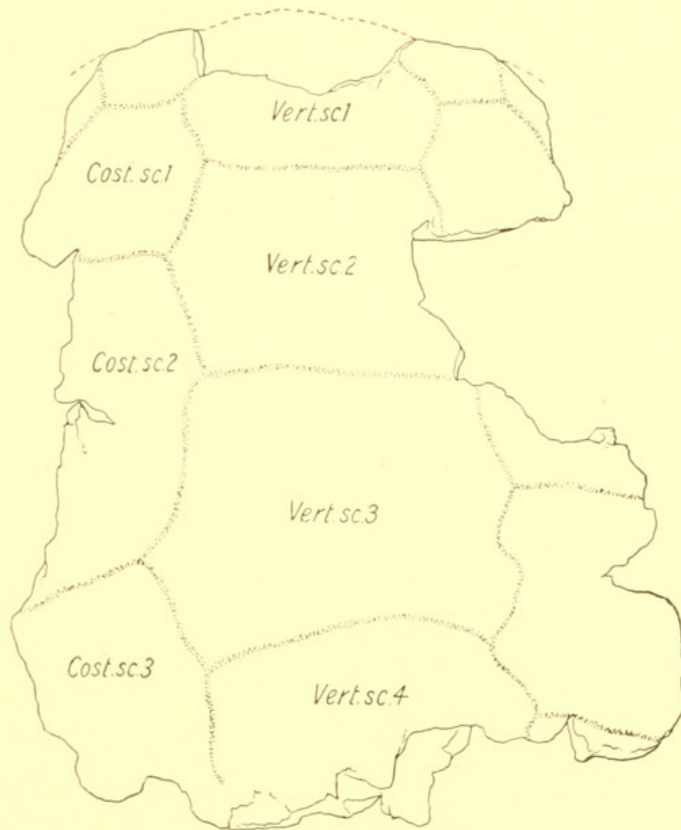


FIG. 1. *Baëna callosa* Hay. Diagram of portion of carapace, $\frac{33}{100}$ natural size, *vert.sc.*, vertebral scute; *cost.sc.*, costal scute.

another and smaller boss. Probably a complete carapace will show these to form the anterior ends of two lateral carinæ.

The carapacial scutes (Fig. 1) have been separated by very distinct sulci. The first vertebral scute has been small, having a length of probably less than 30 mm. and a width of 60 mm. The second vertebral is 48 mm. long and 75 mm. wide; the third vertebral 57 mm. long and 65 mm. wide. The fourth has been fully as wide as the third. The first costal scute is small, being about 36 mm. in antero-posterior extent.

The plastron (Plate IX) has the hinder extremity missing. The total length cannot, therefore, be accurately determined; but it must have been close to 205 mm. The breadth, measured on the mesoplastra and following the curves, is 186 mm. The whole width of the animal was, of course, somewhat greater. The median region is slightly concave to a ridge which runs from the free border of the front lobe

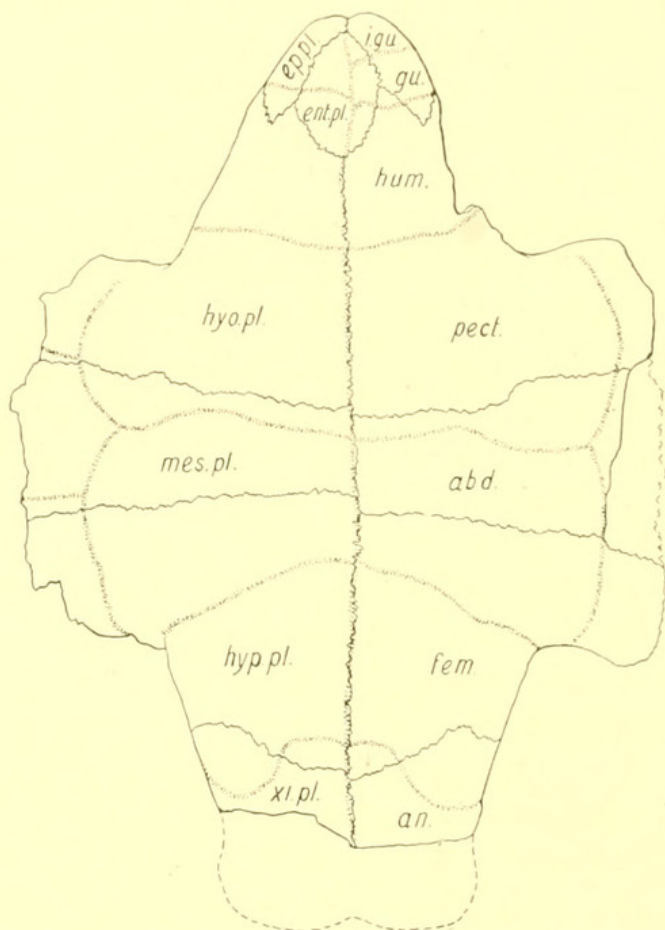


FIG. 2. *Baëna callosa* Hay. Diagram of plastron. $\frac{34}{100}$ natural size. The names of the bones are indicated on the left side of the figure; of the scutes, on the right side. *ep.pl.*, epiplastron; *ent.pl.*, entoplastron; *hyo.pl.*, hyoplastron; *mes.pl.*, mesoplastron; *hyp.pl.*, hypoplastron; *xi.pl.*, xiphiplastron; *i.gu.*, intergular; *gu.*, gular; *hum.*, humeral; *pect.*, pectoral; *abd.*, abdominal; *fem.*, femoral; *an.*, anal.

to that of the hinder lobe. From this ridge the lower surface slopes upward and outward to the borders of the plastral bones. The bridge has a fore and aft extent of 87 mm. The anterior lobe is short and narrow. The length is 52 mm.; the width at the base, 72 mm.; at the hinder ends of the epiplastra, 38 mm. The latter bones are small and they meet along the midline, in front of the entoplastron,

only 5 mm. The entoplastron is relatively large, the length being 28 mm.; the width, 17 mm. Seen from the upper surface, this bone is broadly spear-shaped, with an anteriorly directed process, a longer one directed backward, and a right and a left process. Its length on this upper surface is 33 mm. The free borders of the anterior lobe are rounded in section. The thickness of the bones is about 7 mm.

On the upper surface of this plastron there is a low ridge passing from one axillary buttress to the other, making the thickness of the bone at the midline 9 mm. A similar thickening of the bone is found between the inguinal buttresses, the thickness becoming 11 mm.

The mesoplastral sutures (Fig. 2) are distinct everywhere, except near the midline in front of the right mesoplastron. The left mesoplastron is 21 mm. wide at the midline, and it appears to have had a width of about 43 mm. at the outer end. The mesoplastron of the right side is only 36 mm. wide at the outer end.

The hinder lobe is 83 mm. wide at the base. It is flat below. On the upper surface there is a thickening parallel with the free border on each side. From the summit of the ridge thus formed the surface slopes rapidly to the acute free border and more gently toward the midline. Just behind the inguinal notch the thickness of the bone is 14 mm.; where the hypo-xiphiplastral suture crosses the midline, only 4 mm. thick.

The sulci (Fig. 2) are usually distinctly developed. Those behind the intergulars are somewhat obscure. The intergulars do not separate the gulars. The various scutes meet their fellows along the midline as follows: intergulars, 12 mm.; gulars, 9 mm.; humerals, 32 mm.; pectorals, 41 mm.; abdominals, 27 mm.; femorals, 40 mm. The length of the anals is indeterminable. They lie partly on the hypoplastra. On each bridge there are three inframarginals, whose outer borders rested on the bridge peripherals.

The following table is intended to present the most obvious differences in the proportions of the plastral bones in the three species, *B. hatcheri*, *B. marshi* and *B. callosa*. The width of the bridge is taken as the unit.

Dimensions.	<i>B. hatcheri.</i>	<i>B. marshi.</i>	<i>B. callosa.</i>
Width of bridge.	1.00	1.00	1.00
Length anterior lobe.	.92	.58	.60
Width " "	1.00	.79	.82
Width hinder " "	1.04	.75	.94

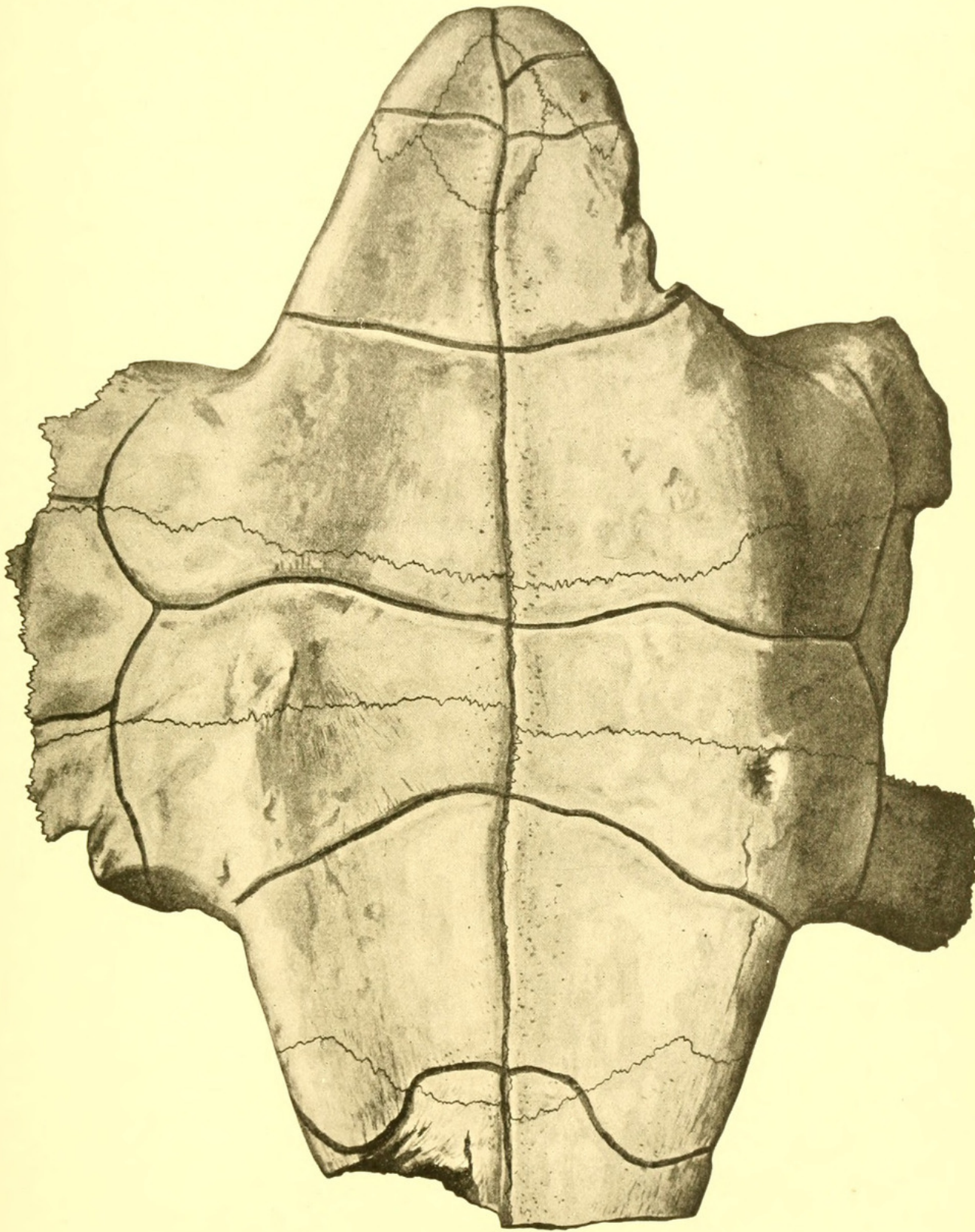
It is seen that *B. hatcheri* has, relatively to the width of the bridge, large anterior and posterior lobes; that *B. marshi* has both lobes small; and that *B. callosa* has the anterior lobe short and of moderate width, while the hinder lobe is broad at the base.

The description of *B. marshi* will soon appear in the American Journal of Science.

The anterior lobe of the plastron of the present species is narrower and more pointed than that described by Lambe (Cont. Canad. Palaeont., iii, 1902, p. 44, fig. 9) under the name *Baëna antiqua*.

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Plastron of *Baëna callosa* Hay. $\frac{67}{100}$ natural size.





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