

A NEW SPECIES OF ASPIDERETES FROM THE
PASKAPOO FORMATION OF ALBERTA.

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Fragmentary remains of turtles are known from several localities in the post-Cretaceous rocks of Alberta. Some years ago the late Mr. W. E. Cutler collected a smooth-shelled turtle from the Paskapoo beds at Calgary, but this specimen is not available, at present, for study. Carapace fragments of trionychid turtles have been recorded by the writer¹ from a horizon containing remains of Paleocene mammals. Some of these chelonian fossils strongly suggest Upper Cretaceous species, while others appear referable to Paleocene forms. Much more satisfactory material is now available from the Paskapoo formation. During the spring of 1929, Mr. Roy L. Fowler, a resident of the Aldersyde district, and an enthusiastic collector of fossils, discovered several turtle shells in the rocks exposed on Highwood river. Early in the summer the writer visited the locality under the guidance of Mr. Fowler, and was fortunate enough to obtain additional specimens. Mr. Fowler very kindly placed his own specimens at the writer's disposal, and the collection of fossils from this locality is now preserved in the Department of Geology, University of Alberta.

Order CHELONIA
Family Trionychidae
Genus *Aspideretes* Hay
Aspideretes superstes, sp. nov.

(Figs. 1-3)

Types. The holotype is a relatively small, nearly complete carapace, collected by the writer (Cat. No. 334, Dept. of Geol., Univ. of Alberta; fig. 1). A medium-sized, incomplete carapace (Cat. No. 335; fig. 2), collected by Mr. Fowler, and the posterior half of a rather large carapace (Cat. No. 336; fig. 3), collected by the writer, are selected as paratypes. All three specimens are from a cut-bank on the east side of Highwood river, just below the mouth of Sheep river. The locality is in legal subdivision 11, section 32, township 20,

¹ This Journal, 17, 164, 1929.

range 28, west of the 4th meridian. The rocks exposed here are about 600 feet above the base of the Paskapoo formation, and are Upper, or possibly Middle, Paleocene in age.

Diagnosis. Relatively small. Carapace broader than long, concave in front, truncated posteriorly; seven neurals present; first costal narrowing toward margin of shell; no fontanelles. Ventral surface of plastron apparently sculptured.

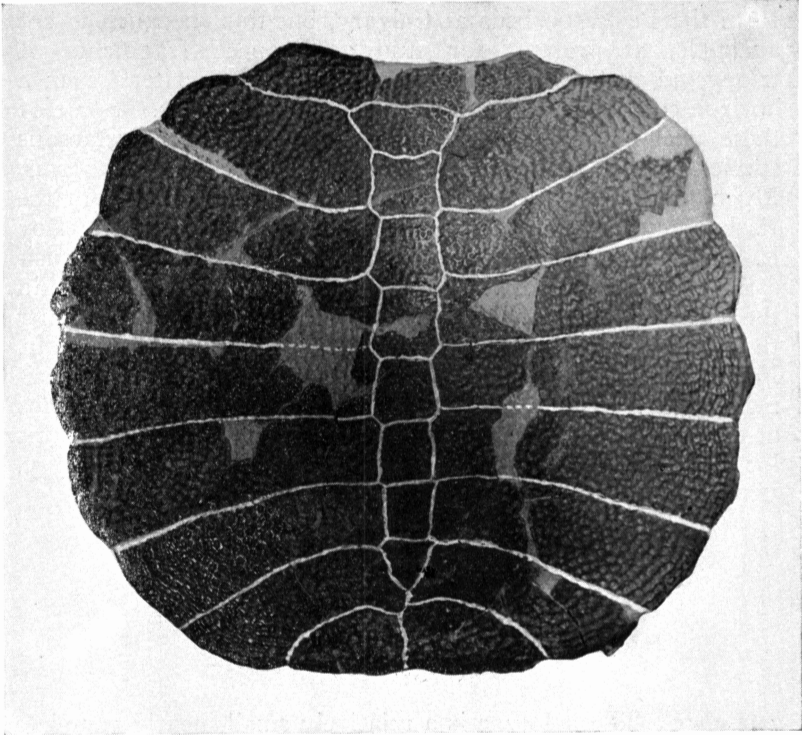


Fig. 1. *Aspideretes superstes*. Dorsal view of carapace, holotype (U. of A. No. 334). X 3/4.

Description. The moderately convex carapace is rounded-subquadrate in outline, the posterior border being straight and the lateral margins broadly rounded. The nuchal is concave in front, and correspondingly convex along its posterior margin. The anteroposterior width of this bone is about the same for all portions except the lateral extremities, which are truncated obliquely. The greatest dimension of the nuchal,

i.e., the distance between the two posterolateral angles, is a little less than half the width of the carapace. The preneural is broader than long, and widest at the anterior margin. This bone distinctly exceeds all the neurals in width. The neurals are seven in number, and are all longer than wide. The first

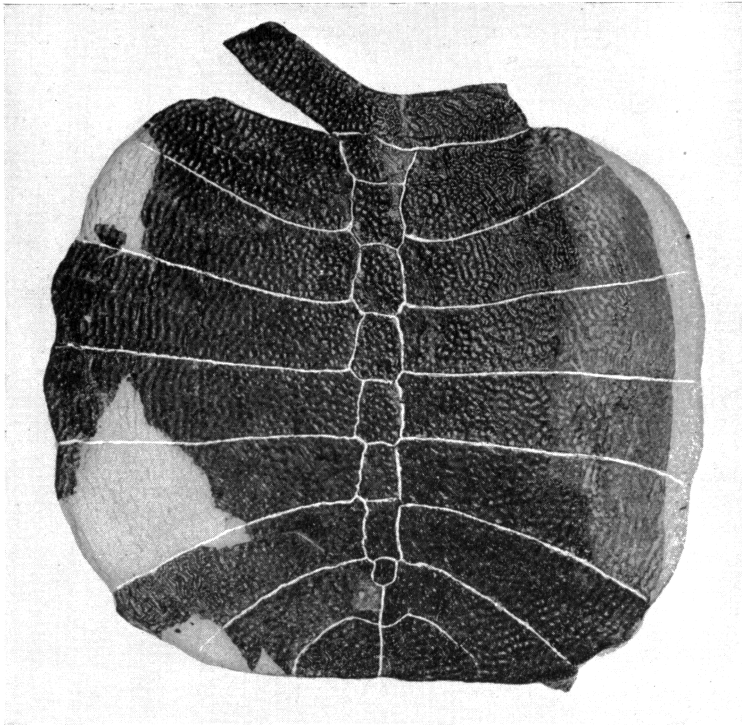


Fig. 2. *Aspideretes superstes*. Dorsal view of carapace, paratype (U. of A. No. 335). X 1/2.

four have the typical hexagonal shape, with short posterolateral sides. The fifth and sixth are almost rectangular, with slightly convex lateral margins. The last neural, in the holotype, is triangular, with the apex directed posteriorly; in the other specimens the bone is irregularly ovoid. In none of the carapaces is this seventh neural in contact with the last pair of costals. In the first of the eight pairs of costals the anteroposterior width is greatest near the neurals, and nar-

rows distinctly toward the extremities. Costals 2 to 7, however, widen toward the lateral margins, and the more posterior ones show a backwardly directed curvature. The median borders of the seventh pair are in contact partly with the last neural, partly with each other. The eighth pair meet along the mid-line without interruption. Each of this last pair of costals is almost the shape of a right triangle, the curved anterior border forming the hypotenuse.

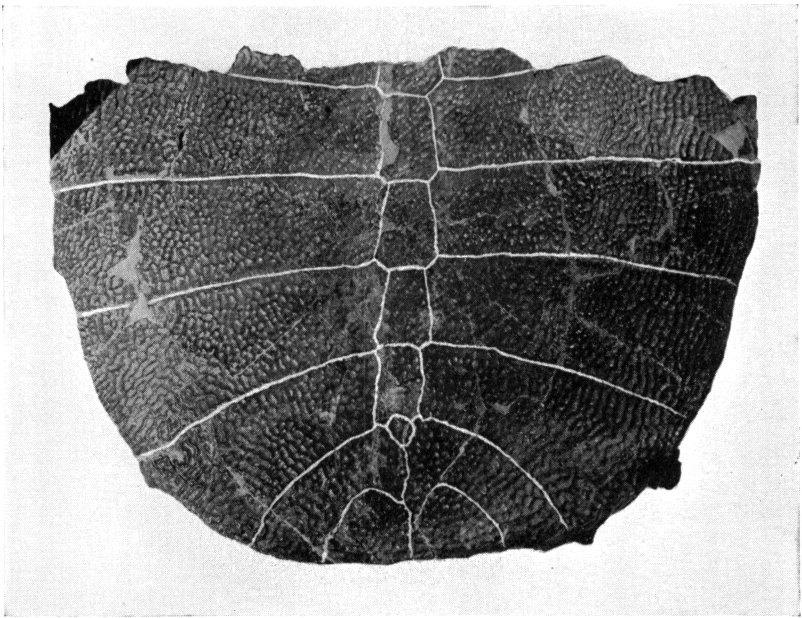


Fig. 3. *Aspideretes superstes*. Dorsal view of incomplete carapace, paratype (U. of A. No. 336). X 1/2.

The sculpturing of the carapace is typical of the genus. Near the mid-line the dorsal surface bears numerous circular pits, which commence to become confluent about half-way toward the sides, and finally form a series of more or less continuous grooves, which parallel the lateral margins of the costals. The pits occur between three and five to a distance of ten millimetres. The steeply bevelled margins of the carapace are without sculpturing.

The ventral surface of the carapace is accessible, but merely corroborates the evidence of the dorsal surface. Shell fragments associated with the carapaces, and believed to pertain to the plastron of the same species, show a well-developed sculpturing.

Measurements.

Length of small carapace (holotype)	109 mm.
Transverse width of same	121 mm.
Length of medium-sized carapace (No. 335 paratype) ..	165 mm.
Transverse width of same, estimated	180 mm.
Transverse width of large carapace (No. 336 paratype)	197 mm.

Remarks. *Aspideretes superstes* belongs to the group of broad-shelled species, which is prominent in the Upper Cretaceous fauna. Characteristic members of this group are *A. foveatus* (Leidy), *A. coalescens* (Cope), *A. splendidus* Hay, *A. latus* and *A. allani* Gilmore. The present species, however, may be distinguished readily from each of these by the structure of the carapace. *Aspideretes subquadratus* Lambe² is much closer to the present species. The only important difference is in the first costals, which widen distally in *A. subquadratus* and narrow in that direction in *A. superstes*. The former species occurs in the Pale beds (upper Belly river series) about 200 miles due east of where the Paleocene *A. superstes* was discovered. It does not seem improbable, considering the structural and geographic proximity of the two species, that *A. superstes* is the actual descendant of *A. quadratus*.

Paleocene Trionychidae are not so well known as those from Upper Cretaceous rocks. The various fragments studied by the writer, from the Paskapoo formation and equivalent beds in Alberta, are not definitely referable to *A. superstes* on the basis of sculpture. In Montana *Aspideretes nassau* Hay³ occurs in rocks of Middle Paleocene age. This species is known from a carapace, which is incomplete anteriorly. The posterior neurals and costals appear to resemble those of *A. superstes*, but the carapace of *A. nassau*, as interpreted by the writer, is longer than broad, and ovoid, rather than sub-square, in outline. More detailed comparisons of *A. superstes* with *A. nassau* must await the discovery of additional

² Trans. Roy. Soc., Canada, ser. 3, 8, sec. 4, 11-13, pl., 1914.

³ Carnegie Inst., Washington, Public. 75, p. 498, fig. 653, 1908.

specimens of the latter. *Aspideretes quadratus* Gilmore,⁴ from the Puerco beds (Lower Paleocene) of New Mexico, is also a member of the broad-shelled group of species. The shape and arrangement of the neurals and costals in this species are similar to those features in *A. superstes*, but *A. quadratus* has a much larger carapace, which tapers posteriorly. It is plausible to regard *A. quadratus* as an offshoot of the *A. subquadratus*-*A. superstes* line.

Known species of *Aspideretes* from the Eocene belong to the group with elongate, ovoid carapaces.

In conclusion it may be stated that *Aspideretes superstes*, as far as can be determined, has its closest affinity with *A. subquadratus* of the Upper Cretaceous, of which it may be the direct descendant. This relationship is in harmony with the decided Cretaceous aspect of the Paleocene lower vertebrate fauna.

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⁴U. S. Geol. Surv., Profess. Paper 119, pp. 59, 60, fig. 29, pl. 22, 1919.