



I. DESCRIPTION OF A NEW SPECIES OF TORTOISE FROM THE JURASSIC OF UTAH.

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(PLATES I-II.)

By the kindness of Dr. W. J. Holland, Director of the Carnegie Museum, I am permitted to study and describe the large series of fossil chelonian remains, which that museum has accumulated during the years since 1906, before which time the collections in Pittsburgh were subjected to study by Dr. O. P. Hay. It is proposed to treat these collections in a series of articles, each to be devoted to the turtles of a particular formation. The turtles from the Morrison beds are the basis of the present communication. Being the most ancient of any found in North America, they are of peculiar interest.

There are three specimens in the collection, all from the extensive quarry near Jensen, Uinta County, Utah, from which the Carnegie Museum has obtained a wonderful collection of the remains of sauripodous dinosaurs. One of these specimens, Cat. No. 3411, pertains to the well-known genus and species *Glyptops plicatulus* (Cope), and is only of interest as greatly extending the known geographical range of this species. The remaining specimens I regard as representing a new species of *Glyptops* to be described in the following pages. The better preserved specimen, Cat. No. 3380, although differing in several features from the type, is for the present at least referred to the same species.

***Glyptops utahensis* sp. nov.**

Type: Cat. No. 3412, complete carapace and plastron; **Paratype:** Cat. No. 3380; both specimens collected by Earl Douglass, 1913, at Carnegie Dinosaur Quarry, near Jensen, Uinta County, Utah.

Horizon: Morrison, Upper Jurassic.

The carapace of the type, when compared with *Glyptops plicatulus* (Cope), is relatively long and narrow, with a depressed shell, having its greatest depth of 63 mm. at the center. Transversely the carapace is evenly convex, but antero-posteriorly the front portion is but little below the level of the back, whereas the posterior portion descends

from the center to the posterior border on a long gradual slope. The outline of the anterior border of the left side is somewhat distorted from the healing of an old wound. (See Pl. I, fig. 1.) Most of the sutures can be clearly traced, but the sulci marking the limits of the epidermal scutes, except on the ventral areas, cannot be determined in either specimen, and as to the extent of the dorsal scutes we must await the discovery of additional material.

The carapace is 252 mm. long on the midline, and 178 mm. wide. Compared with a specimen of *Glyptops plicatulus* in the U. S. National Museum (Cat. No. 5458) the shell is more depressed and more elongate-oval in its general contour. Anteriorly the border is excavated on the midline and posteriorly it is evenly rounded with a narrow but well-defined median notch. As in *Glyptops plicatulus*, there are eleven peripherals, which extend outward nearly horizontally. Relatively they are thin throughout the series, high on front and back, but narrow above the bridges. The first and second have a height of 25 mm., the fifth of 16 mm.; the ninth of 29 mm.; the eleventh of 26 mm. Their borders are thin and acute in front and behind, but thicken and become somewhat obtuse toward and above the bridges. Along the sides and toward the front on the upper surfaces the peripherals curve upward, thus forming a well defined gutter (best shown in specimen No. 3380, Pl. II, Fig. 1), which becomes wider and shallower especially toward the posterior ends. The deepest part of this gutter is in the center of the peripherals, whereas in *G. plicatulus* it is confined to the outer half of their superior surfaces.

The surface of the carapace is covered with small, rather obscure, but irregularly placed tubercles and ridges, the latter on the median part of the back having a tendency to run in a fore-and-aft direction, but not forming a regular pattern. The sculpture of the carapace would at once distinguish the species from *G. plicatulus* which as Hay¹ says, "is finely sculptured with tubercles and winding ridges, there being about thirteen ridges in a line 10 mm. long." The surface of the plastron and the lower surfaces of the peripherals and bridges in the type of *G. utahensis* are smooth and without sculpture, which would serve to further distinguish it from *G. plicatulus*, which is sculptured beneath. In the second specimen, Cat. No. 3380, there is a decided longitudinal depression or sulcus along the carapace where the second,

¹ Fossil Turtles of North America, Pub. Carnegie Inst., Washington, 1908, p. 49.

third, fourth, and fifth costals join the peripherals, the inner edges of the latter being raised and rounded over. This feature is not apparent on the undamaged side of the type, where the surface of the costals continue smoothly into those of the peripherals.

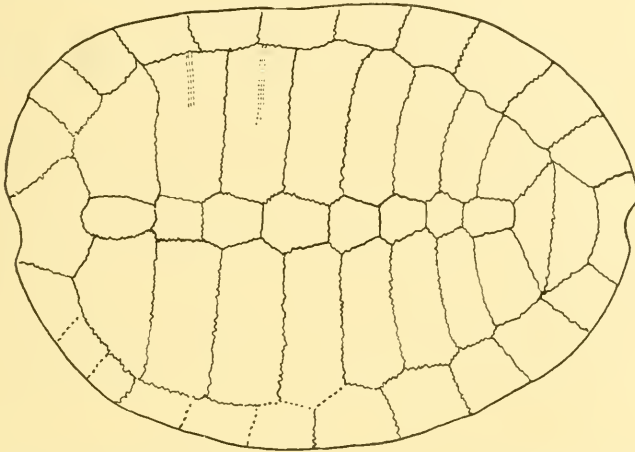


FIG. 1. *Glyptops utahensis*. Carapace of type, No. 3412. One-third natural size.

The nuchal bone is quadrilateral, with the widest side posterior. This side measures 48 mm. in length. The neurals are hexagonal, with the widest end anterior, just as in *G. plicatulus*, except the eighth neural, which is much longer than in any known specimen of that species. The accompanying table presents the dimensions of the neurals as compared with those of *G. plicatulus*, as given by Hay in the publication cited above.

DIMENSIONS OF NEURALS.

No.	<i>G. utahensis.</i>		<i>G. plicatulus.</i>	
	Length.	Width.	Length.	Width.
1	30	17	38	23
2	18 ^e	16 ^e	30	26
3	25 ^e	21	32	24
4	25 ^e	24	26	23
5	19	20	27	23
6	19	19	19	19
7	15	16	18	20
8	23	16	18	21

e = estimated.

The pygal measures 40 mm. transversely and 16 mm. antero-posteriorly; at the median notch it is only 10 mm. fore-and-aft. As in *G. plicatulus* there are two suprapygals.¹ The form of these bones is well shown in Fig. 1. The greatest width of each is 53 mm.; the antero-posterior diameter of the posterior element at the midline is 18 mm.; the same measurement of the anterior element is 14 mm.

The costal plates narrow in succession from before backward, the eighth being relatively wider than in *G. plicatulus*.

The plastron is comparatively narrow. It is thin and flat, except on the hinder two-thirds of the posterior lobe, which is shallowly concave transversely. It has a length of 224 mm., and extends slightly in advance of the border of the carapace. The anterior lobe is 68 mm. long, its width at the base being 87 mm. The borders are relatively thin and rounded.

The entoplastron measures 55 mm. in length, and 55 mm. in width. It is more pointed behind than in *G. plicatulus*, resembling in this respect the entoplastron of *G. depressus* Hay.

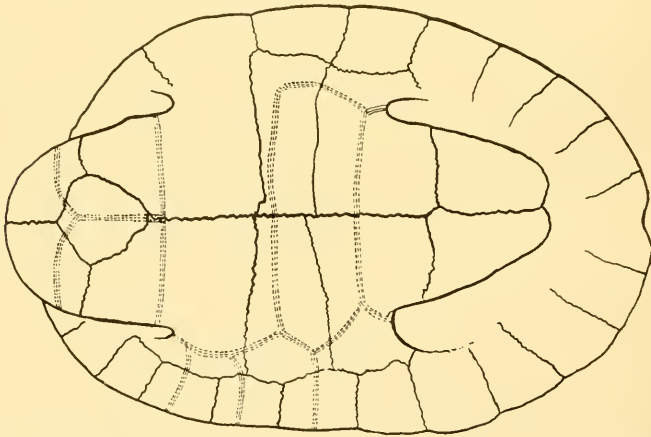


FIG. 2. *Glyptops utahensis*. Plastron of type, No. 3412. One-third natural size.

The mesoplastra differ in width at the midline, the right being 20 mm.; the left 23 mm. The hypoplastrals meet on the midline for about 46 mm. The xiphoplastral bones have their greatest length, 45 mm., at their median junction.

¹ Hay, O. P., Proc. U. S. Nat. Museum, Vol. 35, 1908, p. 162, Fig. 1.

The posterior lobe diminishes rapidly in width, backward from the hypo-xiphiplastral suture, much as in *Probaëna sculpta* Hay. Its posterior extremity is truncated, ending 38 mm. anterior to the hinder margin of the carapace. The free borders of the hinder lobe are acutely edged, the bones being but little thickened back from the margin. The bridge is 87 mm. wide. The sulci of the plastron can only be made out in part as shown in Fig. 2. The gular scutes are broad, the sulci bounding them (See Fig. 2) curving outward and slightly backward, much as in *G. plicatulus*, but not approaching the epi-hyoplastral sutures so closely as in the latter species. The inter-gulars cannot be differentiated. The gular-humeral sulcus cuts across the antero-median part of the entoplastron. The humero-pectoral sulcus passes almost straight across and behind the entoplastron. Inframarginal scutes are present on the bridge, but their full outlines, or exact number, cannot be determined from the present specimens. They appear to lie almost entirely on the plastral bones.

The present species is distinguished from *Glyptops plicatulus* (Cope), described from the same geological horizon, by the following differences:

- (1) Elongated-oval contour of the carapace and its relatively narrow transverse diameter.
- (2) Difference in the pattern of the ornamentation of the carapace and sculptureless plastron.
- (3) Posterior lobe of plastron relatively narrow.
- (4) The greater width of the gutter on the peripherals.
- (5) Deeper median anterior emargination, with a narrow notch on the median posterior border of the carapace.
- (6) The greater length of the eighth neural.

From *Glyptops calatus* Hay the present species is distinguished at once by the coarser and more regular ornamentation of the carapace in the former. From *G. pervicax*, the relatively longer and narrower anterior lobe of the present species is a distinguishing character. From *G. depressus* Hay the species is differentiated by the narrower nuchal and neural bones, by the regular decrease in width of the costals from front to back, and the relatively narrower mesoplastrals.

Specimen No. 3380 from the same geological level and from the same locality, although showing some differences, such as a longitudinal sulcus, or groove, at the junction of the second, third, fourth, and fifth costals with the peripherals, different contour of the entoplastron, and

a slight transverse convexity of the bridges (in the type they are somewhat concave) on account of its close resemblance in form and other features is referred to the present species. Its close resemblance to the type is clearly shown by a comparison of Plates I and II.

EXPLANATION OF PLATE I.

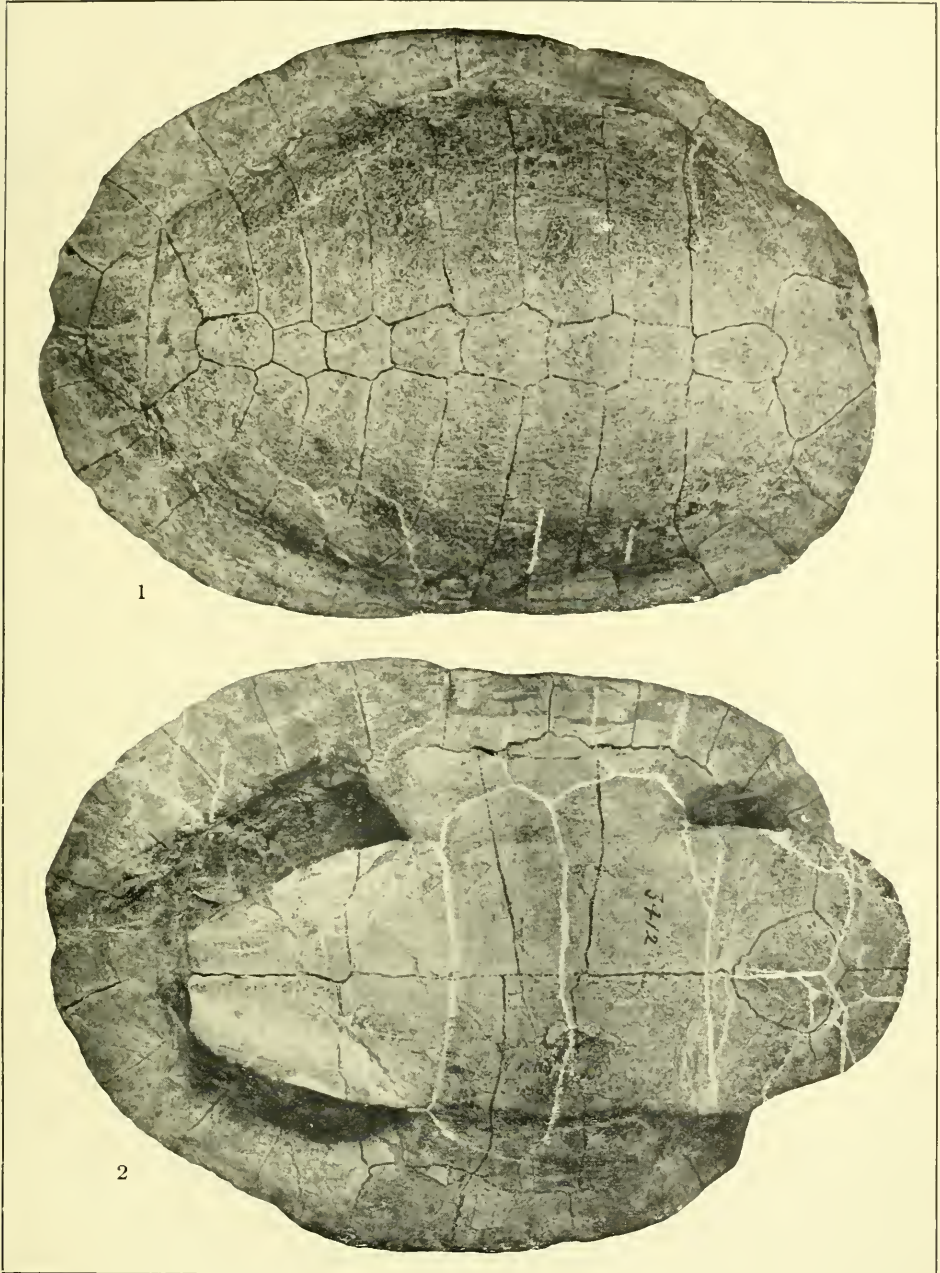
FIG. 1. Carapace of *Glyptops utahensis*. Type, No. 3412, Carnegie Museum
Cat. Foss. Vert. $\times \frac{44}{100}$.

FIG. 2. Plastron of the same. $\times \frac{44}{100}$.

EXPLANATION OF PLATE II.

FIG. 1. Carapace of *Glyptops utahensis*. Paratype, No. 3380, Carnegie Museum
Cat. Foss. Vert. $\times \frac{40}{100}$.

FIG. 2. Plastron of the same. $\times \frac{40}{100}$.



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FIG. 1. Carapace of *Glyptops utahensis* Gilmore. Type. No. 3412, Cat. Vert. Foss. C. M.
FIG. 2. Plastron of *Glyptops utahensis* Gilmore. No. 3412, C. M. Both figures about $\frac{44}{100}$ nat. size.

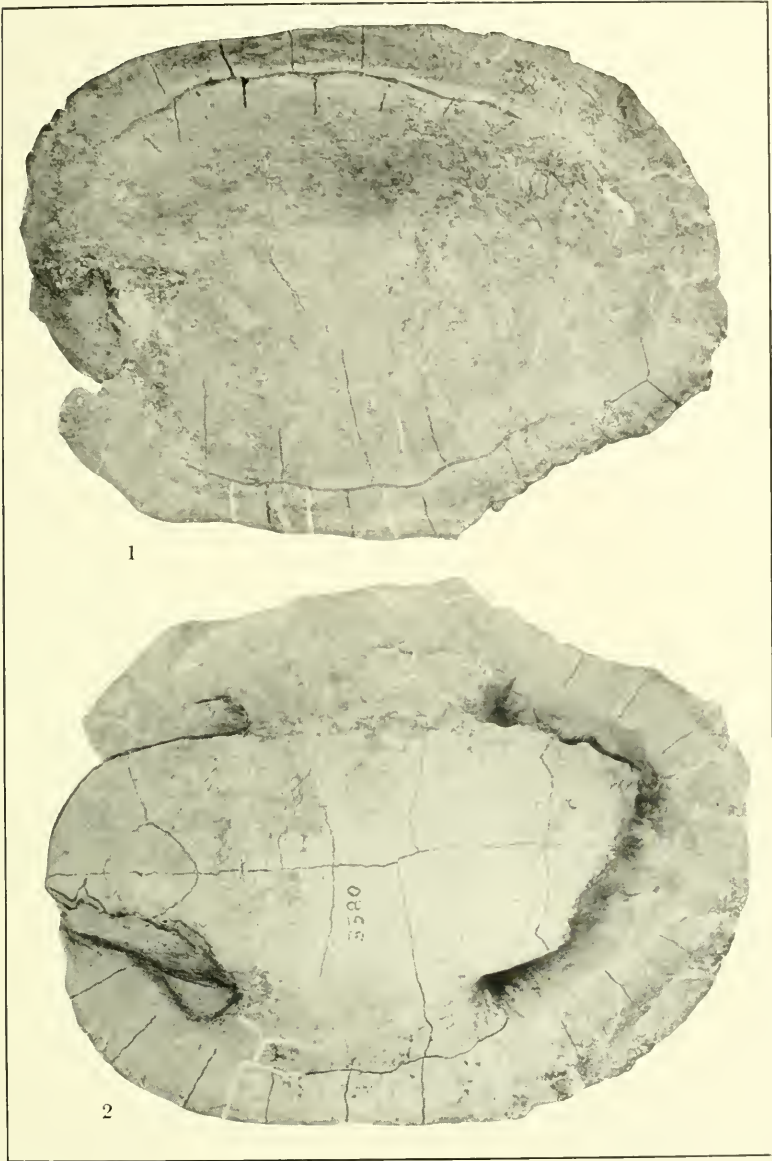


FIG. 1. Carapace of *Glyptops utahensis* Gilmore. Paratype, No. 3380, Cat. Vert. Foss., Carnegie Museum.

FIG. 2. Plastron of *Glyptops utahensis* Gilmore. No. 3380, C. M. Both figures about $\frac{10}{100}$ nat. size.