
VII

MERYCHIPPUS ISONESUS (COPE) FROM THE LATER
TERTIARY OF THE CROOKED RIVER BASIN,
OREGON

BY JOHN H. MAXSON

WITH ONE TEXT-FIGURE

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Contribution No. 23

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Although Tertiary deposits, presumed to be the correlative of the Mascall and Rattlesnake formations of the John Day basin, are known to occur in the Crooked River basin south of the Ochoco Mountains in central Oregon, no vertebrate fossils of diagnostic value have been obtained from these beds. Merriam and Sinclair¹ record the finding of a caniniform premolar of a merycoidodont in Mascall beds exposed on the divide between Camp Creek and the Crooked River. Recently R. W. Chaney² has reviewed the evidence on which is based the recognition of the Mascall horizon in the Crooked River region.

In the course of palæontological investigations conducted in central Oregon under the leadership of Dr. Chester Stock, an upper tooth of *Merychippus* was collected in deposits, regarded as Mascall in age, along the Crooked River between Post and Paulina. In view of the opportunity to compare the stage of evolution of this specimen with that represented by the dentition of the merychippine forms from the type Mascall, a description seems desirable. The writer wishes to acknowledge the guidance of Dr. Stock during the progress of this study.

OCCURRENCE AND NATURE OF THE DEPOSITS

From Paulina, Crook County, Oregon, to a point west of Post the Crooked River pursues a general east-west direction, whence it flows northwesterly to its junction with the Deschutes River. In the vicinity of Post it crosses a broad north-south anticline where it has excavated a basin, cutting into the Clarno formation. Several miles west of Post the Crooked River enters a narrow gorge with abrupt basalt walls. These Columbia basalts continue along the south flank of an east-west anticline whose axis lies north of Prineville and south of Mitchell.

In the structural basin southeast of these folds occurs a late Tertiary series of terrestrial deposits. At the fossil locality the exposed portion of the formation superadjacent to the Columbia basalts consists largely of grayish tuffs and sand. Above these deposits rests an extrusive of rhyolitic character.

¹ J. C. Merriam and W. J. Sinclair, Univ. Calif., Publ. Bull. Dept. Geol., vol. 5, p. 196, 1907.

² R. W. Chaney, Carnegie Inst. Wash. Publ. No. 346, pp. 45-138, 1927.

The complete tooth described herein was collected in four scattered fragments whose position indicated a source but a few feet beneath the base of the flow. The exposure is approximately 0.5 mile northwest of the W. A. Carson ranch house, which is on the Crooked River about halfway between Post and Paulina. Its location is in the S $\frac{1}{2}$ of S $\frac{1}{2}$ Section 2, T 17 S, R 21 E, Willamette Meridian. Unfortunately additional materials from this locality include only fragments of teeth of horse and rhinoceros.

DESCRIPTION OF SPECIMEN

The tooth, No. 13, Calif. Inst. Tech. Coll. Vert. Pale. (fig. 1, *a*, *b*, *c*), is a left upper premolar three or four, showing a comparatively slight amount of wear.

Dimensions—Anteroposterior diameter 19.6 mm.; transverse diameter 20.5 mm.; outside length 25.8 mm.; inside length 12.2 mm.

In size it is larger than *Merychippus seversus* and almost identical with that of the type *M. isonesus* described by Cope.

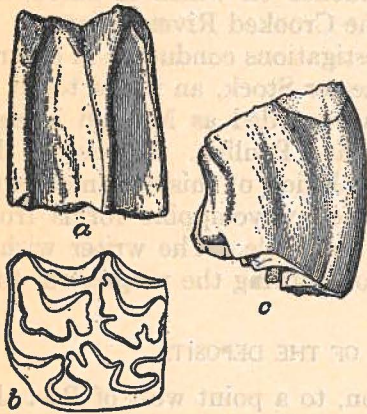


FIG. 1, *a*, *b*, and *c*—*Merychippus isonesus* (Cope). Superior premolar, No. 13, natural size. Late Tertiary beds, Crooked River basin, Oregon. *a*, outer view; *b*, occlusal view; *c*, anterior side.

The tooth is quite heavily coated with cement and possesses moderate curvature. Protocone and hypocone are subequal in size, the former being oval with a long isthmus, while the latter is elongate and appressed. The hypocone is strongly united to the metaconule at an early stage of wear. The protocone shows more wear than the hypocone, yet it is but weakly connected to the protoconule by a long slender isthmus.

The fossette borders are comparatively simple. The post-fossette has two major plications, a pli hypostyle and a pli post-fossette. The pre-fossette has merely a pli crochet. A pli caballin is present.

The characters in which this form differs from *Merychippus isonesus*, namely, a slightly larger size, the early union of protocone and protoconule, and the comparative simplicity of the fossette borders, might be interpreted as showing a somewhat different stage for the Crooked River species. However, the form represents very nearly *M. isonesus* in development of tooth crown and enamel pattern. It thus furnishes evidence suggesting that the beds from which it comes are the correlative of the Mascall formation at the type locality in the John Day valley which yielded the species *M. isonesus*.