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## The First Discovery of a Cretaceous Mammal

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### ABSTRACT

The first discovery (recognition) of a Cretaceous mammal was that of *Meniscoessus conquistus* by Wortman in 1882. Its type locality can be restricted to part of Harding County, South Dakota, from newly uncovered correspondence. Mammals of the late Cretaceous Bug Creek facies occur in Wyoming as well as in eastern Montana, and were first collected in 1892.

*Meniscoessus conquistus*, discovered by Jacob L. Wortman and his field companion Hill in 1882 and described by Cope in the same year, was the first Cretaceous mammal to be described. A tooth from the Judith River Formation of Montana had been described by Cope in 1876 as a new dinosaur, *Paronychodon*. Osborn (1893), Simpson (1929), and others following them have regarded *Paronychodon* as a mammal, perhaps a senior synonym of *Meniscoessus*, but R. E. Sloan and R. Estes (personal communications) have informed me that *Paronychodon* is a dinosaur, as Cope believed.

Hatcher found the first mammals from the Lance Formation of Wyoming for Marsh in 1889, and the first tooth from the early Cretaceous Wealden Beds in England was found by Charles Dawson in 1891 and described by Woodward in the same year. However, a multituberculate incisor had been found in the Wealden by John Evans in about 1854; this was not described (Lydekker, 1893) until Woodward's paper had

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opened the subject. Thus, although not the first Cretaceous mammal to be collected, *Meniscoessus* was the first recognized as such, and its discovery by the anatomist Wortman may be taken as the beginning of knowledge of Cretaceous mammals. However, Jurassic mammals had been known for nearly 50 years (the first specimen had been collected more than 100 years earlier, about 1764) and had been the subject of much controversy; indeed, the most important of these, *Amphitherium*, was given the name *Botheratiotherium* by an impatient editor (*vide* Blainville, 1838, p. 735).

The location of the area in which Wortman found the type of *Meniscoessus* has been the subject of some confusion. In 1885 Wortman stated that it came from "Dakota." Even more than most of his contemporaries, he was habitually secretive about his field localities in the far, well founded at the time, that someone else would collect from them before he was finished. One of the later labels with the specimen, after it became part of the American Museum collection, gives the locality as Wyoming. Simpson (1929) regarded the type locality as South Dakota, without giving reasons, and Wilson (1965) has recently presented an admittedly tenuous argument for its being in North Dakota. To my knowledge no one has yet suggested Montana, New Mexico, Utah, or Alberta.

The following quotations are taken from letters written in 1892 by Wortman to H. F. Osborn at the American Museum, which was then employing him. The letters are preserved in the Department of Vertebrate Paleontology at the American Museum.

June 4, 1892

We will follow up the eastern outcrop of the Laramie along the western border of the Black Hills. I find at once that the fossil bearing layer is near *the base* of the formation just as I found it north of the Black Hills in 1883. If we do not meet with success in the region indicated we will pull on north into my old locality on the head of the Moreau River where I am pretty certain of both Mammals and Dinosaurs.

June 8, 1892

In that case we can meet you at *Minasella* Dakota at the northern extremity of the Black Hills. This will be the base of operations in the Moreau Country.

July 22, 1892

We had no success whatever in the Moreau country notwithstanding the fact that we searched with the utmost diligence for two weeks. It appears that my success in 1882 was the merest matter of chance. When we made that trip we stopped looking after we found the skeleton of *Diclonius* and the Mammals. In fact we had all we could do to take care of it and get it into Deadwood for shipment. At that time I saw many favorable looking exposures which we

could not examine and I had thought ever since that the country was rich in fossils. This however proved erroneous. We worked in the hottest weather and under the most unfavorable conditions generally I have ever experienced in my long career but search as we would we could not get more than a few miserable fragments. I found the spot where we dug out the big fellow as well as the place where we got *Meniscoëssus* after some difficulty. We explored the country *thoroughly* about there for a radius of 25 miles but it is entirely barren.

The headwaters of the Moreau River are in northwestern South Dakota, in Harding and Butte counties. A good part of this area is mapped (Darton, 1951) as exposing the Hell Creek Formation, which (with its lateral equivalents) is the only formation known to contain *Meniscoëssus*. The earlier formations in this region are marine,<sup>1</sup> and the later ones are Cenozoic; both would be unlikely to have *Meniscoëssus*. The type locality of *Meniscoëssus conquistus* may therefore be restricted to the intersection of Hell Creek outcrops and the headwaters of the Moreau, or about 15 or 20 townships in the southern part of Harding County, South Dakota. Minasella is an alternate spelling for Minnesela, now a ghost town near Belle Fourche. It is about 40 miles from Minnesela to the nearest exposure of the Hell Creek and about 25 miles to the beginning of the Moreau drainage. Deadwood is even farther south. The skeleton of "*Diclonius*" (now *Anatosaurus*) was either misidentified in the field or never published on, and I have not found it.

I discovered the above letters while trying to find the provenance of some mammal teeth collected by Wortman and Peterson in 1892 from the Lance Formation. These teeth are an arctocyonid DP<sup>3</sup>, an arctocyonid P<sup>4</sup>, a leptictid-like P<sub>4</sub> or possibly DP<sub>4</sub>, and an incomplete, *Cimolestes*-like, upper molar, all belonging to otherwise unknown species or even genera. These teeth, the first collected remnants of the Bug Creek facies (for which, see Sloan and Van Valen, 1965), remained unrecognized in the American Museum collection for 70 years (I identified the two arctocyonid teeth in 1962). They probably came from the Lance north of the Cheyenne River, in Wyoming, as will be discussed elsewhere in connection with their description. The small collection that prompted the exploitation of the Bug Creek region itself had been in

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<sup>1</sup> The immediately underlying Colgate member is usually regarded as part of the Fox Hills Formation but is at least partly terrestrial and has non-marine fossils in this region (Waage, 1965). Because of the regression of the Maestrichtian sea, the Colgate in South Dakota is not older than the basal part of the restricted Hell Creek in areas to the west. No mammals are yet known from the Colgate, but the possibility cannot be excluded that the type of *M. conquistus* came from this member. In this case the type locality would be extended by a few miles.

the American Museum for 24 years, although in the latter case several more or less cursory attempts had been made before 1962 to relocate the original site.

I am grateful to Dr. R. W. Wilson for the identification of *Minasella* and for other comments.

#### REFERENCES

- BLAINVILLE, HENRI MARIE DUCROTAY DE  
 1838. Nouveaux doutes sur le prétendu Didelphe de Stonesfield. *Compt. Rendus Séances Acad. Sci. Paris*, vol. 8, pp. 727-736.
- COPE, EDWARD DRINKER  
 1876. Descriptions of some vertebrate remains from the Fort Union beds of Montana. *Proc. Acad. Nat. Sci. Philadelphia*, pp. 248-261, and *Paleont. Bull.*, no. 22, pp. 1-14 (same paper).  
 1882. Mammalia in the Laramie Formation. *Amer. Nat.*, vol. 16, pp. 830-831.
- DARTON, N. H.  
 1951. Geologic map of South Dakota. Washington, D. C., United States Geological Survey.
- LYDEKKER, RICHARD  
 1893. On a mammalian incisor from the Wealden of Hastings. *Quart. Jour. Geol. Soc. London*, vol. 49, pp. 281-283.
- MARSH, OTHNIEL CHARLES  
 1889. Discovery of Cretaceous Mammalia. *Amer. Jour. Sci.*, ser. 3, vol. 38, pp. 81-92.
- OSBORN, HENRY FAIRFIELD  
 1893. Fossil mammals of the upper Cretaceous beds. *Bull. Amer. Mus. Nat. Hist.*, vol. 5, pp. 311-330.
- SIMPSON, GEORGE GAYLORD  
 1929. American Mesozoic Mammalia. *Mem. Peabody Mus., Yale Univ.*, vol. 3, pp. 1-171.
- SLOAN, ROBERT E., AND LEIGH VAN VALEN  
 1965. Cretaceous mammals from Montana. *Science*, vol. 148, pp. 220-227.
- WAAGE, K. M.  
 1965. Origin of repeated fossiliferous concretion layers in the Fox Hills Formation. *State Geol. Surv. Kansas Bull.*, vol. 169, pp. 541-563.
- WILSON, ROBERT WARREN  
 1965. Type localities of Cope's Cretaceous mammals. *Proc. South Dakota Acad. Sci.*, vol. 44, pp. 88-90.
- WOODWARD, ARTHUR SMITH  
 1891. On a mammalian tooth from the Wealden Formation of Hastings. *Proc. Zool. Soc. London*, pp. 585-586.
- WORTMAN, JACOB LAWSON  
 1885. Cope's Tertiary Vertebrata. *Amer. Jour. Sci.*, ser. 3, vol. 30, pp. 295-299.