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## *EUDINOCERAS*, UPPER EOCENE AMBLYPOD OF MONGOLIA<sup>1</sup>

BY HENRY FAIRFIELD OSBORN

One of the most surprising and welcome discoveries of the season of 1923 was that of two superior premolar teeth which demonstrate the presence of archaic ungulates of the order Amblypoda in Upper Eocene time in Mongolia, serving as a new link with America. No Amblypoda have hitherto been found in Eurasia, excepting *Coryphodon* of the Lower Eocene of France and England.

In the Uinta B beds of northern Utah, the last surviving Upper Eocene members of the Amblypoda referable to the genus *Uintatherium* Leidy or *Eobasileus* (= *Loxolophodon*) Cope occur in the same beds with titanotheres of the genera *Dolichorhinus*, *Manteoceras* and *Metarhinus*. The Irдин Manha formation of Mongolia is more recent in age than the Uinta B beds of Utah; it is uppermost Eocene, or Uinta C.

In the Irдин Manha formation the presence of Amblypoda in the Mongolian fauna is demonstrated by the two superior premolar teeth. They belong to a new genus distinct from any of the known American or European Eocene forms hitherto described. Consequently we apply the new generic name *Eudinoceras*, the prefix "eu" signifying that the superior premolar teeth are more progressive than those of Marsh's *Dinoceras* (= *Uintatherium*), or of Cope's *Loxolophodon*, in the possession of a prominent internal cone, no trace of which is observed in the Upper Eocene American genera.

DISCOVERY.—The first tooth (Fig. 2A, Amer. Mus. 20101) was discovered by Leader Andrews June 1, 1923, on a bench of the Irдин Manha formation, about two miles south of camp. On September 15, 1923, the author joined the party and, expressing the most lively interest in this tooth, agreed with the other paleontologists that it was undoubtedly one of the Amblypoda and that it established the presence of this order in Mongolia. It was at first compared with the Lower Eocene *Coryphodon*, but its closer resemblance to the Upper Eocene amblypods soon became apparent. The discovery was so important that Leader

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<sup>1</sup>Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 33.

Andrews was photographed on September 17 on the spot where the first tooth was picked up (Fig. 1).

The author had a strong presentiment that he must stop, at a point eight miles to the south of Andrews's find, and examine a small exposure of the Irdin Manha. He said to Mr. Andrews, "I am going to find another *Coryphodon* tooth"; he walked to the bluff a hundred yards distant, traversed about seventy-five feet of the middle of the exposure, and there at his feet lay a second tooth of exactly the same character (Fig. 2B, Amer. Mus. 20102), belonging to an animal of the same size but from the opposite side of the upper jaw! This led to the author's being photographed (Fig. 1). Thus double confirmation was obtained of the presence of the Amblypoda in Mongolia; the explanation of this remarkable telepathic coincidence is left to the psychologist.

***Eudinoceras mongoliensis*, new genus and species**

TYPE.—A third or fourth superior premolar of the right side (Amer. Mus. 20101), collected by Roy C. Andrews, June 1, 1923.

PARATYPE.—A third or fourth superior premolar of the left side (Amer. Mus. 20102), collected by Henry F. Osborn, September 17, 1923.

HORIZON.—Irdin Manha formation, Protitanotherium mongoliense zone, south-eastern Mongolia.

Both these specimens are from the Irdin Manha formation, Upper Eocene.

GENERIC CHARACTERS.—*Eudinoceras*, from the Greek εὖ, intensive, δεινός, terrible, κέρας, horn. The superior premolars are intermediate in structure between the *Coryphodon* and the *Dinoceras* (= *Uintatherium*) premolars, namely, with a prominent internal cone which is present in *Coryphodon* and entirely lacking in *Dinoceras*. Main portion of crown yoke-crested, as in *Coryphodon* and *Uintatherium*; broad anterior and posterior cingula.

SPECIFIC CHARACTERS.—Type (Amer. Mus. 20101), ap. 26 mm., tr. 36 mm., transverse exceeding anteroposterior diameter. Length-breadth index .72. Paratype (Amer. Mus. 20102), ap. 27 mm. est, tr. 41 mm. Length-breadth index .66 est. This may be expressed as follows:

*Eudinoceras mongoliensis* type: r.p<sup>3</sup>, ap. 26 mm., tr. 36 mm., index .72.

*Eudinoceras mongoliensis* paratype: l.p<sup>3</sup>, ap. 27 mm. est., tr. 41 mm., index .66 est.

The length-breadth indices of these premolar crowns, namely, .72 and .66, as compared with the index of p<sup>4</sup> of *Dinoceras mirabile* type, ap. 23 mm., tr. 30 mm., index .77, indicate that in *Eudinoceras* the premolars are relatively shorter and broader than in *Dinoceras mirabile*. Accordingly we anticipate that in *Eudinoceras* the skull will be found to be shorter than in *Dinoceras*. This suggests the possible relationship of *Eudinoceras* to the genus *Bathyopsis* Cope in which the jaw is relatively

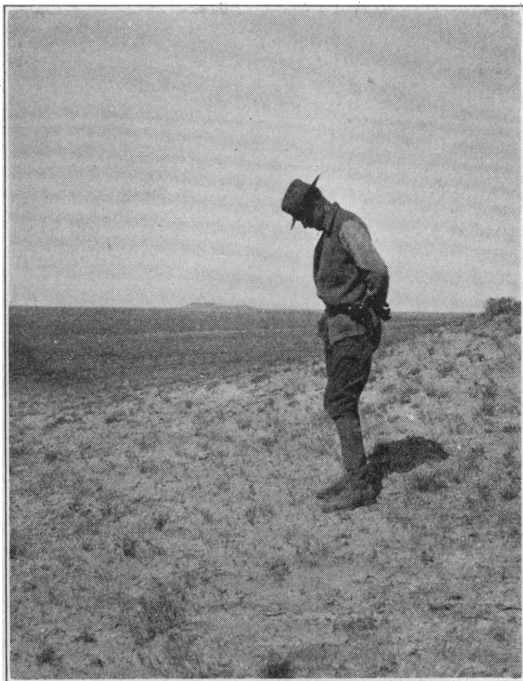


Fig. 1. Discovery of *Eudinoceras mongoliensis* teeth.

(Above) Roy C. Andrews standing on the spot where the type was found, June 1, 1923.

(Below) Henry F. Osborn kneeling on the spot where the paratype tooth was found, September 17, 1923.

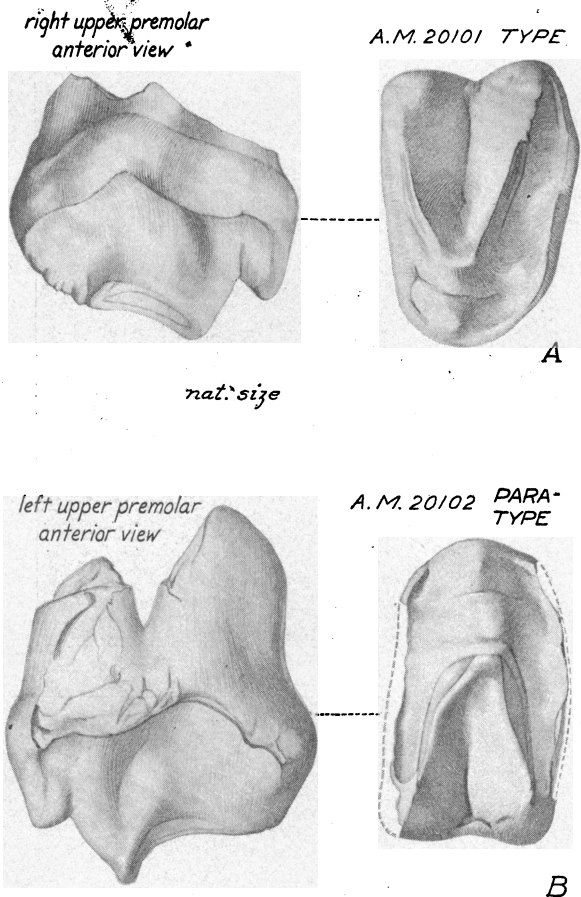


Fig. 2. A, Type of *Eudinoceras mongoliensis* (Amer. Mus. 20101), a third or fourth superior premolar of the right side: crown view (right), anterior view (left). Natural size.

B, Paratype (Amer. Mus. 20102), a third or fourth left superior premolar: crown view (right), anterior view (left). Natural size.

short and deep; the name *Bathyopsis* is derived from the Greek  $\beta\alpha\theta\upsilon\varsigma$ , deep,  $\omicron\psi\iota\varsigma$ , face, signifying deep-faced. We must, however, await the discovery of a cranium of *Eudinoceras* before we can determine whether it has a short-faced, bathyopic, cranium, harmonic with its relatively short and broad teeth.

Meanwhile we may observe that none of the Upper Eocene Dinocerata we have hitherto known, namely, *Uintatherium*, *Dinoceras*, *Eoba-*

*sileus* (= *Loxolophodon*), possesses the prominent internal cone of the premolars characteristic of *Eudinoceras*. The homologue of this cone is apparently a tritocone or anterointernal premolar cusp, as is observed, for example, in the Lower Eocene *Coryphodon testis* p<sup>2-4</sup> (Osborn, 1898, p. 204, Fig. 22).

The above type and paratype figures, reproduced precisely natural size, represent the characters of this opposite pair of teeth. The paratype (tr. 41 mm.) is little broader than the type (tr. 36 mm.) and may represent either a larger individual, or the two teeth may be successive instead of directly opposite, namely, the type may represent a p<sup>3</sup> of the right side, while the paratype may represent a p<sup>4</sup> of the left side.

