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## CADURCOTHERIUM ARDYNENSE, OLIGOCENE, MONGOLIA<sup>1</sup>

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*Cadurcotherium ardynense* appears in the Ardyn Obo formation<sup>2</sup> associated with animals of Lower Oligocene age, referred to *Cynodictis*, *Schizotherium* and *Aceratherium*. In the preliminary description of *Cadurcotherium ardynense*,<sup>3</sup> written before the cranial characters were revealed as shown in the present paper, the generic and specific characters were vaguely stated. A restatement is now made of both the generic and specific characters of this animal.

### **Cadurcotherium ardynense** Osborn, 1923

TYPE.—Amer. Mus. 19154, aged skull with complete upper dentition.

PARATYPES.—(1) Amer. Mus. 20441, adult lower jaw of slightly younger age than the type. (2) Amer. Mus. 19155, cranium with complete premolar-molar dentition, of younger age, m<sup>3</sup> not yet in place. (3) Amer. Mus. 20444, palate with molars, old individual. (4) Amer. Mus. 20443, juvenile jaw and milk dentition. (5) Amer. Mus. 20442, limb and foot bones of other individuals; all found close together in the same quarry. According to Granger, the six or seven individual specimens, with remains of limbs, were found on the same level, in one pit, and undoubtedly belong to the same species.

HORIZON.—Ardyn Obo formation, Lower Oligocene, Mongolia.

SPECIFIC CHARACTERS OF *C. ardynense*.—Animals of small size, long and powerful upper and lower tusks, suboval in section; canine tusks suboval in section; incisors rudimentary or absent; lower premolars reduced to  $\frac{3}{2}$ ; inferior molars with longitudinal greatly exceeding transverse diameter; superior molars with transverse exceeding or equaling longitudinal diameter. Facial region deep, greatly abbreviated.

As shown in the aged type (Figs. 1, 2), the skull is abbreviated, the face especially so; facial and premolar abbreviation together with great enlargement of superior and inferior tusks, a distinctive family feature of the Amynodontidæ; principal measurements of the type skull (Amer. Mus. 19154) and of the paratype skull (Amer. Mus. 19155) as follows:

<sup>1</sup>Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 35.

<sup>2</sup>Named and defined by Berkey and Granger in American Museum Novitates, No. 77, p. 12.

<sup>3</sup>Osborn, H. F. 1923. "*Cadurcotherium* from Mongolia." Amer. Mus. Novitates, No. 92, pp. 1, 2.

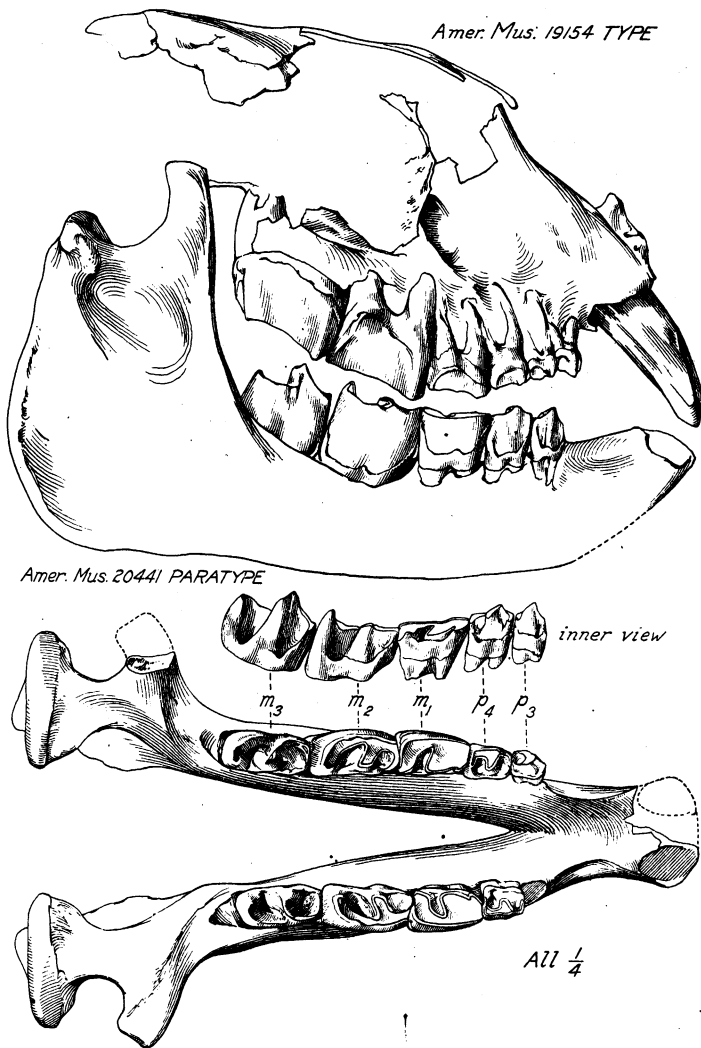


Fig. 1. (Upper figure) type skull of *Cadurcotherium ardynense* (Amer. Mus. 19154). (Lower figure) paratype jaw of same (Amer. Mus. 20441). Both figures one-fourth natural size.

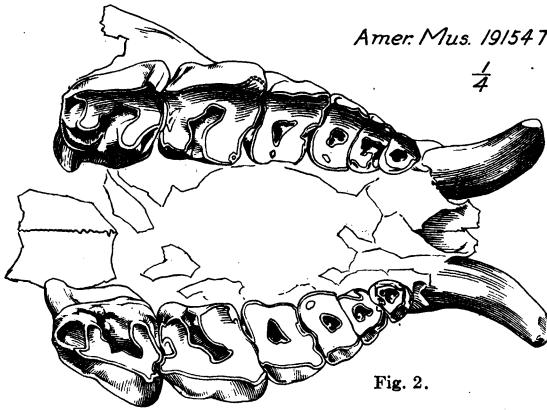


Fig. 2.

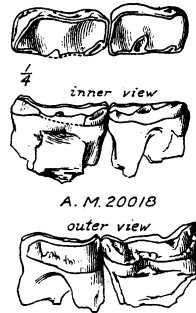


Fig. 3.

Fig. 2. Palate of type cranium of *Cadurcotherium ardynense* (Amer. Mus. 19154). One-fourth natural size.

Fig. 3. *Cadurcotherium* ?sp. (Amer. Mus. 20018),  $l.m_2, m_3$ . One-fourth natural size. These teeth are in the Barnum Brown collection of 1922, found on the Irrawaddy River, Burma, and they correspond with the species described by Pilgrim.

	Type Amer. Mus. 19154 mm.	Paratype Amer. Mus. 19155 mm.
Total length of cranium and face.....	....	370 <sup>1</sup>
Length from orbit to premaxilla.....	123 <sup>1</sup>	153 <sup>1</sup>
Total depth of cranium, third molar tooth.....	175	165 <sup>1</sup>
Length of lower jaw, angle to symphysis.....	363	....
Superior premolar-molar series.....	183	183 <sup>1</sup>
Inferior premolar-molar series (A. M. 20441)...	....	164
Superior premolars, $p^{2-4}$ .....	56	56
Superior molars, $m^{1-3}$ .....	137	132
Height of ectoloph, $m^3$ .....	....	59
Height of ectoloph, $m_3$ .....	55 <sup>1</sup>	....

Fortunately the younger cranium (Amer. Mus. 19155) supplements the aged type (Amer. Mus. 19154) and gives us the complete characters of the superior and inferior dentition. In the deeply worn premolars of the type (Fig. 2), the proto- and ectoloph unite internally; in the younger cranium, when unworn,  $p^4$  shows a separate proto- and ectoloph.

DENTITION.—In the juvenile paratype jaw (Amer. Mus. 20443) the dental formula is:  $Di_{\overline{1}} Dc_{\overline{1}} Dp_{\overline{3}} M_{\overline{1}+}$ . In the adult jaw (Amer. Mus. 20441) and type skull (Amer. Mus. 19154) the formula is:  $I \frac{1}{2} C \frac{1}{1} P \frac{2}{2} M \frac{2}{2}$ .

<sup>1</sup>Estimated.

Thus in the young there is one pair of lower milk incisors. In the adult the evidence is doubtful; there may have been a temporary pair of incisors. The superior and inferior canines equally large, the lower tusks being rounder, the upper tusks oval anteroposteriorly; ap. 31 mm., tr. 22 mm., length 81 mm. The premolars are reduced to two lower and three upper, the formula being:  $P\frac{3}{2}$ ;  $p_3$  is a simple, laterally compressed crown;  $p_4$  is submolariform;  $p^{2-3}$  have rudimentary internal crests.

The laterally compressed, extremely hypsodont crowns of the inferior molars,  $m_{1-3}$ , are generic characters of *Cadurcotherium*. In  $m^1$  the transverse diameter (46 mm.) greatly exceeds the anteroposterior (32 mm.). In  $m^2$  the anteroposterior diameter (46 mm.) equals approximately the transverse (56 mm.). In  $m^3$  the anteroposterior diameter (56 mm.) equals the transverse (56 mm.). We are therefore able to define this Mongolian species with considerable accuracy.