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The University of Nebraska State Museum VOLUME 4, NUMBER 3
MAY 1956

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ABSTRACT

Arretotherium fricki,
A New Miocene Anthracothere from Nebraska

J. R. Macdonald

C. Bertrand Schultz

A new species of middle Miocene (early Hemingfordian) anthracothere, *Arretotherium fricki* Macdonald and Schultz is described based on a cranium from the upper Marsland deposits of Nebraska. The holotype suggests that this genus was derived from the Oligocene genus *Elomeryx* Marsh.

CONTRIBUTION OF the Department of Geology, College of Arts and Sciences,
and the Division of Vertebrate Paleontology of the Museum; and the
South Dakota School of Mines Museum, May 1956

Arretotherium fricki,*

A New Miocene Anthracothere
from Nebraska

INTRODUCTION

The genus *Arretotherium* is a rare member of the Miocene North American mammalian fauna. It is represented by: (1) Douglass' material from the Blacktail Deer Creek region of Montana, which is the type area for the species, *A. acridens* Douglass (1901); (2) some scattered undescribed material from the Rosebud formation of South Dakota; and (3) the Nebraska specimen described below.

The Nebraska specimen (U.N.S.M. 5764) may possibly represent an extreme variant of *Arretotherium acridens* Douglass but there seem to be enough differences to warrant a specific differentiation between these two forms.

DESCRIPTION AND DISCUSSION

ARRETOTHERIUM FRICKI, n. sp. Macdonald and Schultz

Holotype.—A badly crushed cranium with right P¹, M¹—M², M³ (roots), and left C/—P¹ (alveoli), P²—M³, (W+), U.N.S.M. No. 5764.

Type locality.—One half mile SE. of U.N.S.M. Coll. Loc. Bx-12, NE. ¼ of sec. 13, T.28N., R.49W., Box Butte County, Nebraska.

¹ Professor of Geology, South Dakota School of Mines; Curator of Museum of Geology.

² Professor of Geology, University of Nebraska; Director of the Museum, and Curator of Vertebrate Paleontology.

* Named in honor of Mr. Childs Frick, Roslyn, Long Island, N. Y.

Geology.—Upper Marsland formation (early Hemingfordian).

Fauna.—Marsland fauna in western Nebraska includes the following: *Metechinus*, *Gregorymys*, *Pleurolicus*, *Dikkomys*, *Promylagaulus*, *Oreolagus*, *Megalictis*, *Cynarctus*, *Aelurocyon*, *Phlaocyon*, *Hypohippus*, *Archaeohippus*, *Parahippus* (one species approaching *Merychippus*), *Moropus*, *Diceratherium*, *Menoceras*, *Desmathyus*, *Oxydactylus*, *Merycochoerus*, *Merychys*, *Phenacocoelus*, *Aletomeryx*, *Barbouromeryx*, *Probarbouromeryx*, *Machaeromeryx*, *Problastomeryx*, *Pseudoblastomeryx*, *Stenomylus*, and *Syndyoceras*.

Diagnosis.— M^3 mesostyle not notched to base by transverse groove, P^4 greatly reduced, P^2 similar to P^3 , P^1 — P^3 unreduced, canine small with little lateral compression.

Description.— M^3 cingulum reduced, discontinuous around protocone and hypocone; transverse valley blocked by junction of spurs from protocone and hypocone, but not dividing mesostyle at base, retaining depth to base of mesostyle. M^2 cingulum reduced; transverse valley open, becoming shallow near mesostyle. M^1 heavily worn; compressed antero-posteriorly; transverse valley blocked lingually by cingular segment. P^4 reduced; cingulum broken anteriorly, anterior spur of deuterococone continues as cingulum to antero-labial corner. Right P^4 rotated

Table of Measurements

	U.N.S.M. 5764 <i>A. fricki</i>		C.M. 704 <i>A. acridens</i>	
	Left	Right	Left	Right
M^3 greatest antero-posterior diameter	25.7			28.3
M^3 greatest transverse diameter	24.9		29.4	29.4
M^2 greatest antero-posterior diameter	24.4	24.6	25.8	24.7
M^2 greatest transverse diameter	23.3	24.4	26.8	26.4
M^1 greatest antero-posterior diameter	19.6	18.7		18.2
M^1 greatest transverse diameter	20.7	20.4		
P^4 greatest antero-posterior diameter	12.6		15.5	
P^4 greatest transverse diameter	15.3		18.8	
P^3 length of blade	16.1			
P^3 greatest transverse diameter	12.7		14.3	
P^2 greatest transverse diameter				7.9
P^1 greatest antero-posterior diameter		9.8		9.2
P^1 greatest transverse diameter		5.0		3.9
Diastema C/— P^1	15.5			
Canine alveolus antero-posterior diameter	11.1			
Canine alveolus transverse diameter	7.3			
C/— M^3	142.1			
P^1 — M^3	119.5			
M^1 — M^3	68.1			72.4

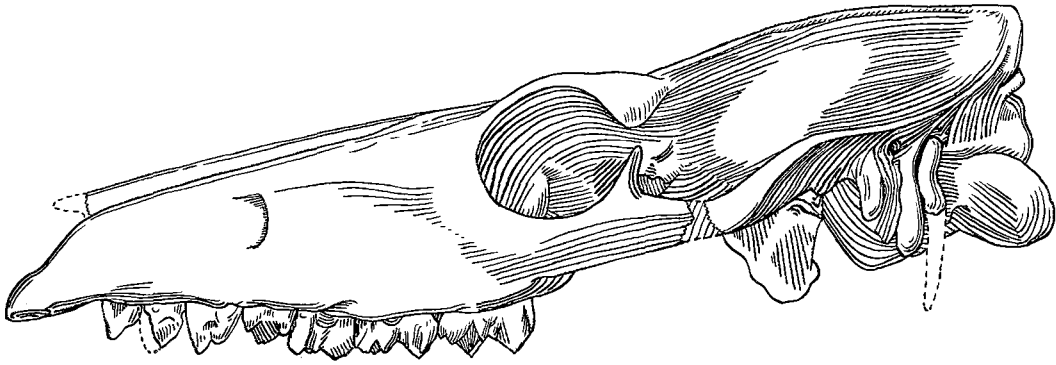


FIG. 1—Lateral view of skull, U.N.S.M. 5764, holotype of *Arretotherium fricki* Macdonald and Schultz, from the upper Marsland formation of Box Butte County, Nebraska. X $\frac{1}{2}$. Drawings by Roger Metcalf, Photographic Productions Department, University of Nebraska.

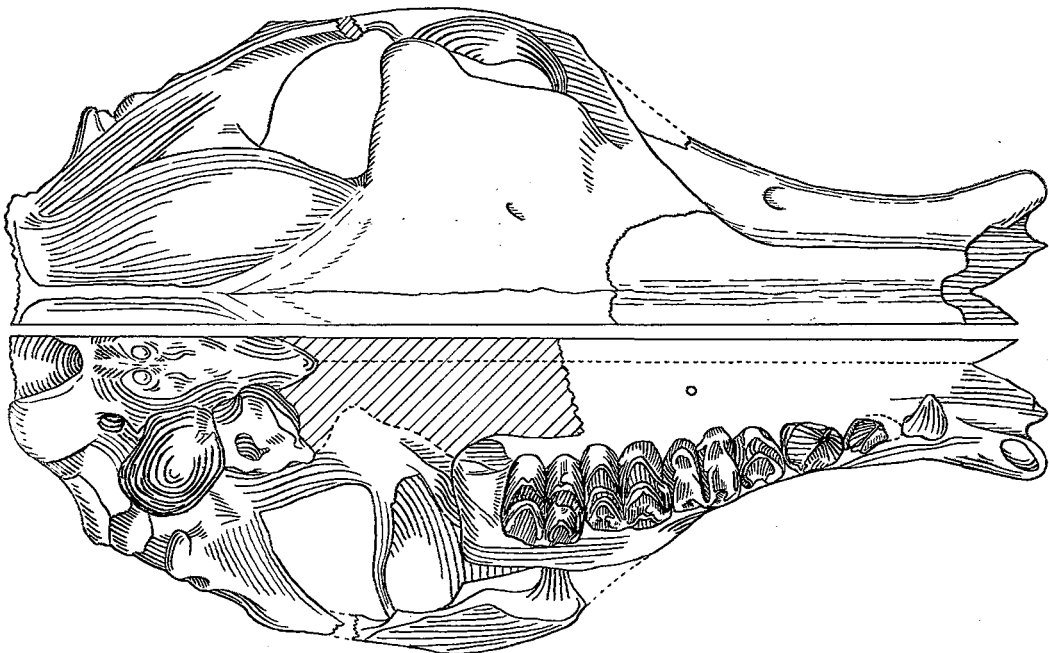


FIG. 2—Ventral and dorsal views (combination of both sides) of skull, U.N.S.M. 5764, holotype of *Arretotherium fricki* Macdonald and Schultz, from the upper Marsland formation of Box Butte County, Nebraska. X $\frac{1}{2}$.

clockwise slightly more than 90° and erupted beneath M^1 which it has partially ejected. P^3 with diagonal blade; triangular base with posterior lingual shelf. P^2 (only posterior portion preserved) compressed antero-posteriorly, similar to P^3 . P^1 compressed laterally; unreduced. Alveolus for canine rounded; slightly compressed laterally; separated from P^1 by short diastema. Cranium badly crushed ventro-dorsally; tympanic bullae very large; palatal and choanal regions badly crushed and broken; rostrum short, flaring abruptly around canines.

Remarks.—*Arretotherium fricki* differs from *A. acridens* in several ways. While it is always possible that the holotype of this species may represent a sexual or individual variation of *A. acridens*, it seems reasonable to suppose that it is a distinct form.

In contrast to Douglass' species the molars are smaller; the cinguli are reduced; the transverse valley of the M^3 is blocked by spurs from both the protocone and the hypocone and it does not cut the mesostyle all the way to the base; the transverse valley of M^2 is not blocked by the spurs from the protocone

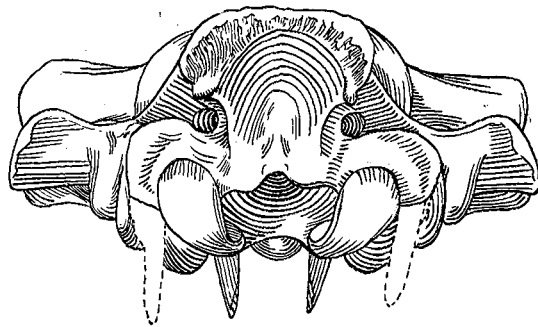


FIG. 3—Occipital region of skull, U.N.S.M. 5764, holotype of *Arretotherium fricki* Macdonald and Schultz, from the upper Marsland formation of Box Butte County, Nebraska. X $\frac{1}{2}$.

and the hypocone. These differences are of a minor nature and may be found among individuals of the Oligocene genera *Aepinacodon* Troxell and *Elomeryx* Marsh.

The P^4 is greatly reduced while $P^1 - P^3$ are unreduced; P^2 (represented by posterior portion only) is similar to P^3 in that it shows a small posterior lingual shelf and a diagonal blade

rather than being laterally compressed as in *A. acridens*. P¹ is relatively large and apparently nearly as tall as P².

The alveolus for the left canine is entirely outside the cheek tooth row; it is rounded and slightly laterally compressed in contrast to the great compression of the canine that Douglass described.

The combination of a small canine and unreduced premolars does not follow the pattern of sexual dimorphism found in the closely related Oligocene genus *Elomeryx* and so the distinctions would seem to be of specific value.

The relationship of *Arretotherium* to *Elomeryx* has not been completely established but there are many factors which indicate that *Elomeryx* is ancestral to *Arretotherium*. Unfortunately the choanal region of the palate of this specimen is badly broken so that it is impossible to determine whether or not this form had the attenuated tubular posterior extension of the palatines which characterizes *Elomeryx*. However, the short rostrum, the reduced diastema between the P¹ and the canine, the shape of the P² and the conformation of the cranium strongly suggest that *Arretotherium* is a direct descendant of *Elomeryx*.

LITERATURE CITED

- DOUGLASS, EARL. 1901. Fossil mammalia of the White River beds of Montana. Trans. Amer. Phil. Soc. 20 (5): 237-279, Pl. 9, 1 map.