

AMERICAN MUSEUM NOVITATES

Number 98

Published by
THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City

Dec. 18, 1923

56.(1181:51.7)

THE FAUNA OF THE ARDYN OBO FORMATION¹

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The Ardyn Obo formation was named and defined by Berkey and Granger in American Museum Novitates No. 77. A small collection of mammals was secured in 1922 at "Promontory Bluff" on the Sair-Usu-Kalgan trail, about 150 miles from Sair-Usu and 350 from Kalgan. It consists chiefly of an amynodont, apparently a species of *Cadurcotherium*, of which finely preserved skulls, jaws, limb-bones and feet were secured. These are described by Professor Osborn in another number of Novitates. In addition to these, fragmentary remains of a few other animals were obtained, affording the following faunal list:

Carnivora

Cynodictis ? sp. anterior part of lower jaw (no molars)

Perissodactyla

Cadurcotherium ardynense skulls, jaws, limbs and feet

Ardynia præcox, new genus and species upper jaw, etc.

Artiodactyla

Eumeryx sp. lower jaws

Schizotherium avitum, new species lower molar

Anthracotheriid, gen. indet. lower molar

Chelonina

Testudo insolitus, new species. parts of carapace and plastron; lower jaw

This appears to be an Oligocene fauna. *Cadurcotherium*, *Schizotherium* and *Cynodictis* are characteristic Phosphorites genera; the giant tortoise, while suggesting the giant tortoises of the Miocene and Pliocene in its size, is apparently a rather primitive stage in its costal plates. It may or may not represent the *Baluchitherium* fauna but cannot be very different in geologic age.

Its nearest geographic affinities, it will be observed, are with Western Europe, not with the United States. The bearing of this and other evidence upon Tertiary zoögeographic divisions and upon the centers of dispersal of different groups will be considered in later papers after the pertinent facts have been ascertained and placed on record.

¹Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 17.

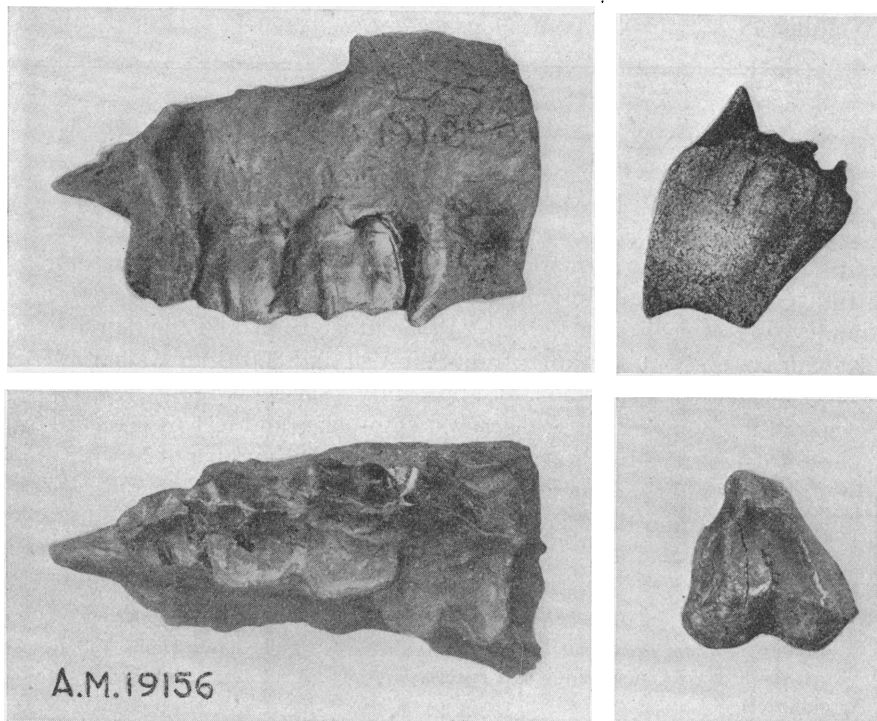


Fig. 1. *Ardynia praecox*, upper jaw, p^2 - m^1 and m^3 of left side, external and crown views. No. 19156, type specimen, Ardyn Obo formation, 1922. Natural size.

Carnivore cf. *Cynodictis*

The anterior part of lower jaw with c - p_2 represents a slender-jawed, fox-like animal, whose exact relations are indeterminate. It agrees with *Cynodictis* so far as it goes.

***Cadurcotherium ardynense* Osborn**

(See Amer. Mus. Novitates, No. 92)

***Ardynia praecox*, new genus and species**

TYPE.—No. 19156, upper jaw with p^2 - m^1 ; m^3 doubtfully associated. Ardyn Obo formation, Promontory Bluff, Expedition of 1922.

CHARACTERS.—Size of *Hyracodon* and crowns of teeth of about the same height and general aspect but premolars considerably reduced and last molar of normal rhinocerotid type, the ectoloph not extended behind the metaloph. The first premolar is absent, the second about half the transverse diameter of m^1 , the third and fourth smaller than m^1 . Ectoloph of p^2 somewhat convex, of p^3 - 4 flat externally;

metaloph and protoloph distinct on p^2 , apparently so on p^{2*} . Ectoloph of m^3 and probably of other molars flat or nearly so, the antero-external rib not conspicuous.

A number of fragments of lower jaws and teeth of a small rhinoceros and a premaxilla without teeth are of size appropriate to *Ardynia* but there is no proof of their association. If correctly referred, the lower premolars have somewhat the same construction as in *Cadurcotherium*, the molars are more like those of *Hyracodon*, and the premaxilla bore three equal incisors of larger proportionate size than in *Hyracodon*, but of similar arrangement. In absence of more definite proof of association the genus is provisionally referred to the Hyracodontidæ on the ground of the general appearance of the type and the provisionally referred premaxilla, but the premolar construction would suggest Amynodontidæ, and the third molar Rhinocerotidæ.

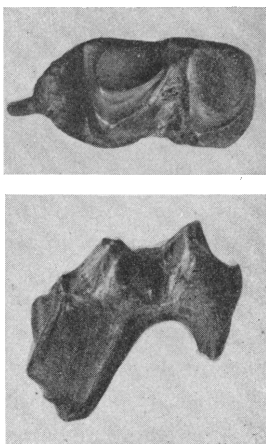


Fig. 2. *Schizotherium avitum*, third lower molar, crown and external views, Ardyn Obo, 1922. Natural size.

***Schizotherium avitum*, new species**

TYPE.—No. 19157, lower m_3 . Ardyn Obo formation, Promontory Bluff, Expedition of 1922.

CHARACTERS.—Size a little less than that of *S. priscum* (= *modicum*) of the Phosphorites; heel of m_3 narrow and more reduced, lacking the transverse cingular crest on each side of it that characterizes *S. priscum*. Trigonid and talonid of sub-equal width, while in *S. priscum* the trigonid is wider than talonid; length of tooth more than twice the width; in *S. priscum* it is somewhat less.

Exact comparison with *S. turgaicum* Borissiak¹ is not possible, as his material does not include the last molar. The Turgai species appears, however, to be very closely related to the Ardyn Obo animal.

An unnamed species from the Gaj formation of India, doubtfully referred by Pilgrim to *Schizotherium*,² appears to be of larger size than the three species of the Holarctic Oligocene.

Measurements of m₃

| | <i>S. avitum</i> | <i>S. priscum</i> | |
|----------------------------------|------------------|-------------------|---------------------|
| | No. 19157 | No. 11077 | No. 10495 (cast) |
| Length, of total, m ₃ | 25.3 | 30.0 | 28.2 |
| “ of heel (hypoconulid) | 2.2 | 3.2 | 2.7 |
| Width of trigonid | 11.9 | 15.1 | 15.0 |
| “ “ talonid | 12.1 | 13.9 | 14.0 |
| “ “ heel (hypoconulid) | 4.0 | 9.5 | 8.9 |
| Index, length to trigonid width | 2.13:1 | 1.99:1 | 1.88:1 |

Anthracotheriid, gen indet.

An incomplete lower molar indicates a small species of this family. It is comparable in size with *Microbunodon* of the Upper Oligocene of Europe, with the smaller *Ancodons* of the Upper Eocene and Oligocene. It compares more nearly with *Ancodon* in height and structure of the crown but is hardly determinable as to genus.

Eumeryx species

The type of this new genus is *E. culminis* of the Hsanda Gol formation in the Tsagan Nor basin. It is a small ruminant, scarcely larger than *Leptomeryx* of the American Oligocene and represented in the Hsanda Gol by numerous parts of upper and lower jaws, limb and foot-bones, which indicate a dentition intermediate between *Leptomeryx* and *Blastomeryx*, somewhat more advanced than in *Prodremotherium* and *Amphitragulus*, while the foot-bones show both metacarpals and metatarsals united into cannon-bones of characteristic Pecoran type, much like the earlier species of *Blastomeryx*.

This interesting form will be described more fully in a later article. The jaws from the Ardyn Obo formation are referable to the genus but it is doubtful whether they belong to the same species, as the construction of the premolars seems to be simpler and nearer to the tragulid type.

¹Borissiak, A., 1921, Ann. Soc. Pal. Russie, III, p. 43.

²Pilgrim, G. E., 1912, Mem. Geol. Sur. Ind., Palaeont. Indica, N. S., IV, No. 2, p. 36.

Testudo insolitus, new species

TYPE.—No. 6275, parts of carapace and plastron of several individuals (co-types) from Promontory Bluff, Ardyn Obo basin, Mongolia.

CHARACTERS.—Middle costal plates not perceptibly wedge-shaped, their sides approximately parallel. Shell moderately thick, sutures slightly open in half-grown specimen, and surface rather heavily undulate. Upon the middle marginal plates the borders of the shields are marked by a somewhat raised ridge on the plate with a deep median furrow; elsewhere the furrows are normal; a precursor, apparently, of the condition seen in *T. cubensis* of the Pleistocene, where the ridge has become much more prominent than the furrow. I have not been able to find any description of this curious character in other species of *Testudo* either living or fossil; but it appears to be indicated in a drawing by Gervais of a costal plate of a tortoise from St. Gerandle-Puy.¹ The species attains the size of the large tortoises so common in the American Miocene, but apparently retains the more primitive character of the Eocene and some Oligocene species in the uniform costal plates. The material is too fragmentary to render profitable any detailed description of the various pieces or discussion of its exact relationships. The curious resemblance to the extinct Cuban species may be interpreted as indicating some affinity between the two, but much more evidence would be needed to prove it. The shell is not thinned and incomplete to any noticeable degree as compared with other large Tertiary continental species.

An incomplete lower jaw, lacking the articular ends of either ramus is referred to this species.

Emydid, gen. indet.

A single fragment of a small emydid with the rugose surface of *Trachemys*.

Trionychid, gen. indet.

Two small incomplete plates represent a small trionychid.

¹Gervais, P., 1858, Zool. et Paléont. Franc., Pl. LIII, fig. 7.

