

Article XII.—ON THE SKULL OF BUNÆLURUS, A
MUSTELINE FROM THE WHITE RIVER
OLIGOCENE.

By W. D. MATTHEW.

Bunælurus was described by Prof. Cope in 1873¹ from fragments of the lower jaw, which until now have remained the only representation of the genus. Cope referred it to a position in the Mustelidæ near *Putorius* and *Plesiogale*; Dr. Schlosser in his later revision of the European carnivora² considered it close to or identical with *Palæogale* (in which he includes part of *Plesiogale*). Dr. Wortman has recently suggested³ that it might not improbably prove to be a direct descendant of certain of the Viverravidæ.

A finely preserved skull found by Mr. Thomson of the American Museum Expedition of 1901, in the Upper Oreodon

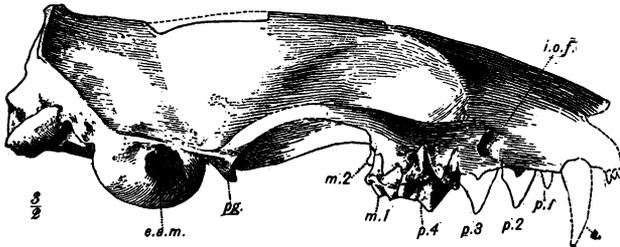


Fig. 1. Side View of Skull.

beds of East Pawnee Butte, Northeastern Colorado, is the subject of the present description. No lower jaw is with it, so that it cannot be positively identified. But the close correspondence in point of size with *B. lagophagus*, the type of which is from the same horizon and region, and the correspondence of the teeth of our skull with the upper teeth of the more carnassial section of the Mustelinæ and of the teeth of *Bunælurus* with the lower teeth of the same group,

¹ Synopsis New Vert. Col., p. 8; Ann. Rep. Hayd. Sur., 1873 (1874), 507; Tert. Vert., p. 946, pl. lxxvii a, figs. 13, 14.

² Affen Lemuren, u. s. w. d. Europ. Tertiärs, p. 386.

³ Amer. Jour. Science, 1901, Vol. XII, p. 145, footnote.

make the identification reasonably safe. No other Musteline is known from the White River.

The characters of the skull confirm the views expressed by Cope and Schlosser as to the position of the genus. It is *Palæogale* with a minute second molar still retained. It belongs to the primitive division of the Mustelinæ, with triangular first molar, no posterior flange on the protocone. The carnassial is primitive in character, somewhat resembling that of *Cynodictis gregarius*, the protocone very large, the shear more oblique than in modern Mustelinæ, less so than in

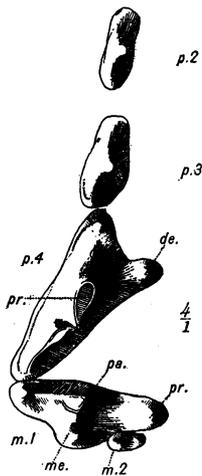


Fig. 2. Crown View of Teeth.

Cynodictis, the fissure between protocone and postero-external blade still quite well marked. There is a small antero-internal basal cusp and a less marked antero-external one. The second and third premolars are of moderate size without triticocones, much higher than in *Mustela*, higher and proportionately larger than in *Putorius*. The first premolar is a single-rooted tooth of small size; first and second premolars are spaced. Alveoli of canines, of moderate size, are preserved.

The bullæ are of primitive character, inflated, short and prominent, instead of flattened and elongated as in *Mustela* and *Putorius*. The palate extends backward only to opposite the anterior edge of the first molar, while in modern Mustelines

it extends considerably behind the teeth. The shorter bullæ leave a much larger surface of the sphenoids and occipitals exposed; the short stout paroccipital process is entirely free of the bulla. The occipital and sagittal crests have the same outlines as in *Putorius ermineus*, but the posterior lobes of the brain are separated from the cerebral lobes by a strongly marked depression; the arches are much heavier, muzzle much longer, resembling that of *Mustela* more nearly, but flatter, longer, more slender toward the tip; infraorbital foramen smaller, postorbital process of the frontal less prominent.

Postorbital constriction much more narrow than in *M. americana*, somewhat more than in *P. ermineus*. Size slightly greater than the weasel.

Bunælorus is one of the primitive group of Mustelinæ found chiefly in the Oligocene of Europe. It belongs to the Putoriine section, which more nearly approaches the Felidæ (through *Proailurus*) in dental reduction (the typical Musteline section more nearly approaching *Cynodictis* and the Viverridæ), but shows little indication of the shortening of the face characteristic of modern *Putorius*.

Following are the more important primitive characters:

1. Dentition less reduced, four premolars and two molars in upper jaw.
2. Fourth premolar more triangular, shear more transverse, notch behind protocone deeper.
3. First molar more viverrine in shape, protocone not expanded transversely, para- and metacones more distinct.
4. Second molar present although minute.
5. Posterior nares not roofed over behind m^1 .
6. Bullæ short, round, and prominent, instead of long and flattened.
7. Paroccipital process free.
8. Cerebrum small and not extending over cerebellum, transverse sulcus strongly marked on external surface of skull by a wide depression.
9. Postorbital processes very rudimentary, postorbital constriction narrow.
10. Infraorbital foramen small.

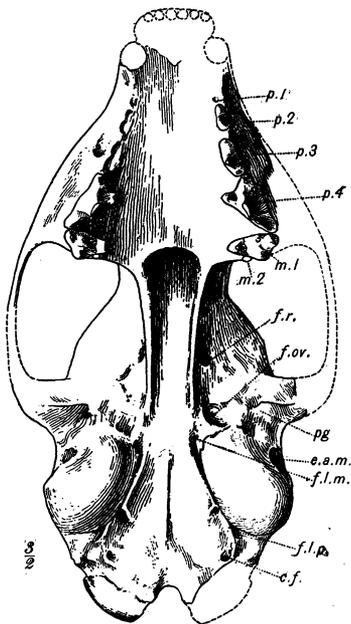


Fig. 3. Inferior View of Skull.

The skull is identified with *Bunælorus* upon the following evidence: *Bunælorus* appears to belong to the more carnas-

sial section of the Mustelinæ, typified among modern genera by *Putorius*, among ancient ones by *Palæogale*, rather than to the section with more tubercular teeth, typified among modern genera by *Mustela*, among ancient ones by *Plesictis*, *Stenoplesictis*, etc. The latter group retains the metaconid on m , and correspondingly the paraconule on m^1 . The former group has no metaconid on the lower carnassial, and on the upper tubercular there is no trace of conules, and the protocone is smaller in proportion. The primitive members of this Putoriine group are hardly distinguishable from primitive felines; *Proailurus*, considered by most writers as a Felid, is placed by Dr. Schlosser (advisedly as it seems to the present writer) among the Mustelids of this group. *Bunælorus* presumably belongs to the primitive division of the Putoriine group.

The White River skull under discussion belongs unquestionably to the Putoriine group, and with the primitive members thereof. It has the strongly transverse tubercular, with reduced protocone and no paraconule. The upper teeth correspond in size and in proportions with the lower teeth on which *Bunælorus* is based. These were found in the same formation and horizon as the skull, at a locality about fifty miles further to the eastward.