

Article XVIII.—NOTICE OF TWO NEW OLIGOCENE
CAMELS.

By W. D. MATTHEW.

***Pseudolabis dakotensis*, gen. et sp. nov.**

Char. gen.—Dentition $I\frac{3}{7}$, $C\frac{1}{7}$, $P\frac{4}{7}$, $M\frac{3}{7}$. I^{1-2} large. I^3 , c^1 , and p^1 caniniform. P^4 with double internal crescent. Molars without mesostyle.

Char. spec.—Larger than any species of *Poëbrotherium*, molars as hypsodont as in that genus, resembling them except in size and in absence of mesostyle. P^2 unreduced, without internal cingulum. P^3 with strong, complete internal cingulum. P^4 with two distinct internal crescents, the posterior one sending up a ridge towards the middle part of the external crescent. Skull with large prelachrymal vacuities and a broad circular pit in the maxilla above and a little in front of the infraorbital foramen. Orbits closed behind, the postorbital process of the frontal nearly as much extended as in *Procamelus*. The anterior ends of the frontals are excavated along the median line into a marked depression.

Type, No. 9807, a nearly complete skull, from the Protoceras Beds of South Dakota. Found by J. W. Gidley.

This is the first camel reported from the Protoceras Beds. It is very distinct from any described genus, and clearly off the line of descent of any of the Miocene genera. The molars are like those of *Hypertragulus* in absence of mesostyle; the double internal crescent of p^4 is a unique character, but evidently a special modification from an incomplete internal crescent such as may be seen in p^3 in many artiodactyls. The skull is remarkably modernized for an Oligocene camel, resembling the Middle Miocene types. The genus apparently represents a side line of cameline descent, of which we know nothing further.

***Miolabis (Paratylopus) primævus*, subgen. et sp. nov.**

The type of *Miolabis* is *M. transmontanus* (Cope) of the Mascall formation in Oregon. It differs from *Poëbrotherium* in the spacing of the anterior teeth, caniniform $p\frac{1}{7}$, reduction

of p^2 , somewhat more brachyodont molars with prominent external ribs and styles, and much larger size. From *Protolabis* and *Procamelus* it differs in the more brachyodont molars with prominent external ribs and styles, and large i^{1-2} . From *Protomeryx* it differs in the shorter, less compressed premolars, and probably in the more brachyodont molars.

The species here described comes from the Oreodon Beds of South Dakota, and is of the size of *Poebrotherium*, but otherwise resembles *Miolabis*, except in the reduction of p^2 . This is not a character of more than subgeneric importance, and I cannot discover any more trenchant distinctions, in spite of the wide difference in age. More nearly related to the new species are two camels from the John Day formation, of intermediate age, described by Cope and Wortman under the preoccupied name of *Gomphotherium*.¹ I take the species of the Oreodon Beds as type, because it is the most clearly distinct from the type of *Miolabis*, and because it is represented by a better-preserved and more complete specimen than the John Day species.

The type (No. 9806) is from the Upper Oreodon Beds of South Dakota, and consists of a finely preserved skull and jaws, with the neck, part of the back, and a large part of both fore and hind feet. It was found by J. W. Gidley.

Char. subgen. — P^2 unreduced, long and trenchant.

Char. spec. — Size of *Poebrotherium labiatum*, but with more elongate muzzle, i^3 , $c\ddagger$, and $p\ddagger$ caniniform and spaced. Skull with considerable prelachrymal vacuities, and a shallow depression in maxillaries above and a little in front of infraorbital foramen. Orbits not closed posteriorly. Metapodials like those of *Poebrotherium*, the median pair not united into a cannon-bone, the lateral pair reduced to small nodules in both fore and hind feet. The shaft of the fibula is still present, at least towards its lower end; in *Poebrotherium* the shaft has completely disappeared.

In previous contributions I have provisionally referred *Gomphotherium* Cope to Leidy's genus *Protomeryx*. But *Protomeryx*, as represented by *P. hallii* Leidy and *P. campester*

¹ *Gomphotherium* Cope, 1886, is antedated by *Gomphotherium* Burmeister, 1837, and by *Gomphotherium* Filhol, 1884. See Palmer, Index Generum Mammalium, p. 298.

Matthew, appears to be like *Poebrotherium* in the very long, compressed, trenchant premolars and higher-crowned molars, and its resemblance to *Gomphotherium* (*Paratylopus*) in the spacing of the front teeth is probably due to parallelism.

The two new forms herein described add to the evidence that the Camelidæ were polyphyletic, including several distinct lines of descent, as Osborn has shown to be the case with the Rhinoceroses and Titanotheres, and Osborn and Gidley with the Horses. At least three series must have been established as early as the Oligocene.

1. *Paratylopus*—*Miolabis*—*Oxydactylus*.

2. *Poebrotherium*—*Protomeryx*—*Protolabis*—*Procamelus*.

3. ? —*Pseudolabis*. ?

All of these may be regarded as derived from the Upper Eocene *Protolabis*. In the Miocene the Camels show increasing divergence and variety of type, and their relationship to the preceding and succeeding stages is far from clear. It should be understood that, in the series indicated above, the known species of the successive genera are seldom if ever in any direct line of descent, and the genera themselves only approximately so. This conclusion, reached from study of the fossils, is quite to be expected in view of the imperfect evidence on which we must base our study of these extinct phyla. While we have reason to believe that the centre of dispersion of the Camelidæ was somewhere on the North American continent, we have no reason to believe that it was in the particular regions from which our fossil species have been obtained. And if otherwise, the successive genera must have spread to the regions where their fossil remains are found, in a series of waves of migration, each genus undergoing more or less change, and giving rise to new species, in the course of its change of habitat.

The subjoined table shows the occurrence of the different species of Camelidæ of the Oligocene and Miocene:

SERIES A.

Molars low-crowned, with strong external ribs and styles ("but-tresses"). Fourth premolar simple.

- I. Undiscovered form with no caniniform teeth.
- II. I^3 , c_1 , p_1^\dagger , caniniform, spaced. Limbs of moderate length, I^{1-2} large. *MIOLABIS*.
 (a). P^2 unreduced (subgenus *Paratylopus*).
 1. Small, slender skull. *M. (P.) primævus*.
 Upper Oreodon Beds (Mid-Oligocene), S. Dakota.
 2. Larger, shorter, and heavier skull, broader muzzle.
M. (P.) sternbergi.
 Diceratherium Beds (Upper Oligocene), Oregon.
 3. Much larger, skull unknown. *M. (P.) cameloides*.
 Promerycochoerus Beds (Lower Miocene), Oregon.
 (b). P^2 reduced (subgenus *Miolabis*).
 4. Size of *M. cameloides*. Muzzle slender.
M. transmontanus.
 Mascall Beds (Mid-Miocene), Oregon.
- III. Limbs much elongated. I^{1-2} reduced. *OXYDACTYLUS*.
 (a). P^2 unreduced. Size large.
 1. Skull more elongate. *O. longipes*.
 2. Skull shorter. *O. brachyodontus*.
 Upper Miocene, Nebraska.

SERIES B.

Molars progressively higher-crowned, external ribs and styles weak. Fourth premolar simple.

- I. Limbs of moderate length. I^{1-2} unreduced. P_1^\dagger not caniniform. No diastema behind c_1 *POËBROTHERIUM*.
 1. No caniniform teeth, no diastemata. Size small.
P. eximium.
 Lower Oreodon Beds (Mid-Oligocene), S. Dakota.
 2. C^1 caniniform, p_1 partly so. A considerable diastema behind p_1^\dagger *P. wilsoni*.
 Oreodon Beds (Mid-Oligocene), S. Dakota, etc.
 3. Larger than the preceding, p_1 more truly caniniform.
P. labiatum.
 Oreodon Beds (Mid-Oligocene), Colorado, etc.
- II. P_1 caniniform. Diastemata behind c_1 and p_1 *PROTOMERYX*.
 1. Size of *Poëbrotherium labiatum*. *P. campester*.
 Leptauchenia Beds (Upper Oligocene), Colorado.
 2. Larger, diastemata shorter. *P. hallii*.
 ? Miocene, Nebraska.
- III. I^{1-2} more or less reduced. Molars longer-crowned, size larger. Metapodials still separate. *PROTOLABIS*.
 Several species, from Middle and Upper Miocene.

- IV. I¹⁻³ absent. Metapodials united. Limbs of moderate length.
 - PROCAMELUS.
 - Several species, from Upper Miocene.
- IVa. Limbs and neck greatly elongated.....ALTICAMELUS.
 - Several species, from Middle and Upper Miocene.
- V., etc. Premolars variously reduced.
 - PLIAUCHENIA, CAMELOPS, ESCHATIUS, } Pliocene to
 - CAMELUS, AUCHENIA } Recent.

SERIES C.

Molars higher-crowned, external ribs weak, mesostyle absent. Fourth premolar with two internal crescents.

- I. Unknown.
- II. Dentition unreduced. I³, c¹, and p¹ caniniform, spaced.
 - PSEUDOLABIS.
 - Larger than *Poëbrotherium*, smaller than Miocene camels.
 - P. dakotensis.*
 - Protoceras Beds (Upper Oligocene), S. Dakota.

