

AMERICAN MUSEUM NOVITATES

Published by
Number 102 THE AMERICAN MUSEUM OF NATURAL HISTORY Dec. 31, 1923
New York City

56.9,32(1181: 51.7)

NINE NEW RODENTS FROM THE OLIGOCENE OF MONGOLIA¹

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In the preceding number of *Novitates* eleven new species of rodents from the Hsanda Gol formation of Mongolia were listed and two of them described. The remaining rodents are described in this article.

Cricetopidæ

***Cricetops dormitor*, new genus and species**

TYPE.—No. 19054, skull, lower jaw and fore foot.

PARATYPES.—Several more or less complete skulls and numerous upper and lower jaws.

HORIZON AND LOCALITY.—Oligocene, Hsanda Gol formation, near Loh in the Tsagan Nor basin, outer Mongolia.

DIAGNOSIS.—Cheek teeth $\frac{3}{3}$, the upper series decreasing in length and width from first to third, the lower series subequal and of nearly square outline. Brachydont crowns, the cusps arranged in pairs, two pair each on m_2^2 and m_3^3 , but a well-developed anterior pair on m^1 and a rudimentary anterior heel on m_1 . In the lower teeth the outer cusps tend to be crescentic, the inner are nearly round; the upper teeth reverse this arrangement. The skull is cricetoid in proportions, rather long and narrow, arches well preserved on the type and several other specimens show that the infraorbital foramen was round and of rather large size, resembling some of the dormice, e. g., *Graphiurus*, also *Pseudosciurus* and other Oligocene genera and, to a less extent, the Dipodidæ, the masseteric scar on the zygoma wholly beneath it and defined by a clear-cut margin.

The teeth are very like those of *Cricetus* in proportions and pattern, to such a degree that a true affinity rather than parallelism may be indicated. The front of the zygoma, however, is unlike any true myomorphs but approaches the primitive construction which is universal in the Eocene, prevalent in the Oligocene, and preserved among the dormice (not in *Myoxus*) in *Anomalurus*, *Haplodontia* and *Bathyergus* with less alteration than in other modern rodents. The Dipodidæ have the i. o. f. greatly enlarged; cricetids and other myomorphs have the masseteric attachment on the zygoma extended forward and upward in a plate.

¹Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 20.

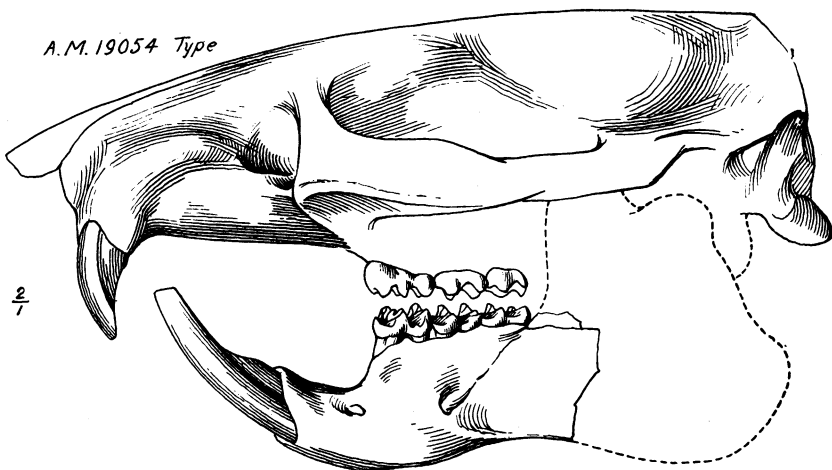


Fig. 1. *Cricetops dormitor*, skull and lower jaw, side view, twice natural size. Type specimen, No. 19054.

A.M. 19054
Type

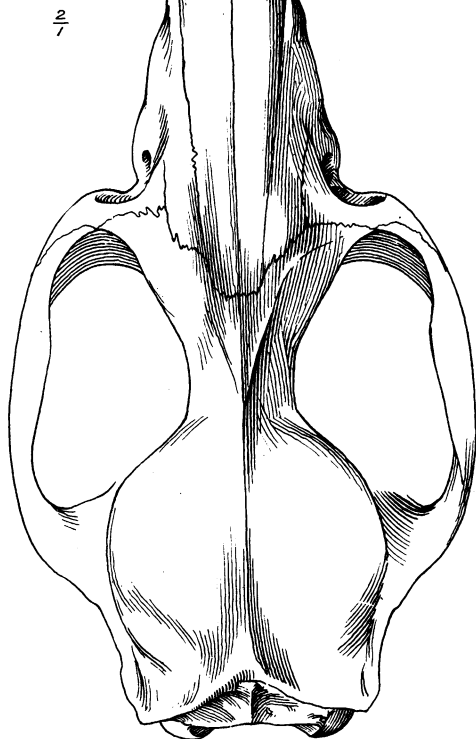


Fig. 2. *Cricetops dormitor*, skull, top view, twice natural size. Type specimen, No. 19054, the occiput supplemented from No. 19051.

This genus would apparently fall into the Dipodoidæ of Miller and Gidley's classification and, if we understand correctly the assumptions underlying their arrangement, could have nothing to do with the Cricetidæ. It appears inadvisable to accept these assumptions until their validity has been more conclusively proven; in some respects they do

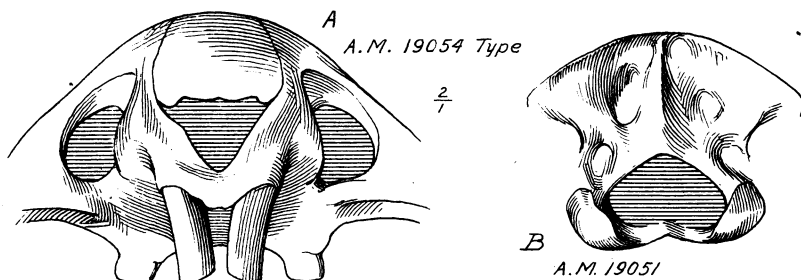


Fig. 3. *Cricetops dormitor*, anterior and posterior views of skull, twice natural size: A, anterior view, showing character of antorbital foramen, from the type; B, occiput from No. 19051.

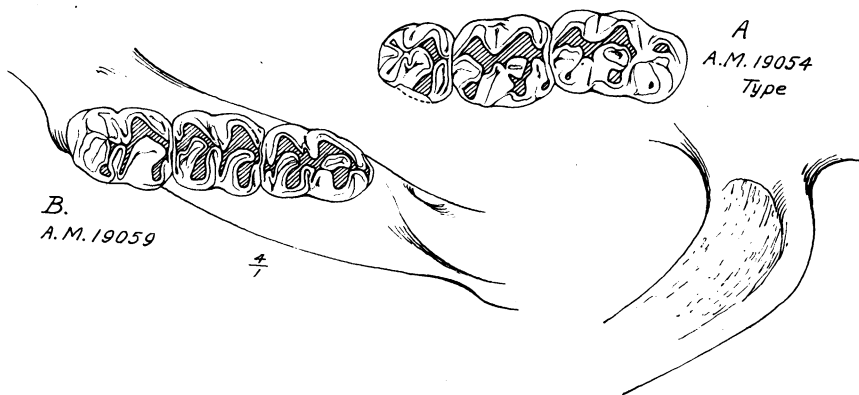


Fig. 4. *Cricetops dormitor*, upper and lower teeth, crown views, enlarged to four diameters: A, upper teeth and roof of zygomatic arch from the type specimen; B, lower teeth, No. 19059.

not seem to us conformant to the general tenor of the evidence of fossil rodents, and have compelled these authors—as they admit at the beginning of their classification—to deny, practically, that any of the extinct types of rodents are either directly or approximately ancestral to any of the existing types, and to assign all of the numerous resemblances in

dentition, skull and skeleton which would suggest a more or less ancestral relationship, to parallel—or rather, convergent—evolution. No interpretation of the affinities of existing and extinct rodents can avoid the assumption of a large amount of parallelism, but it would seem that Messrs. Miller and Gidley have carried it to improbable extremes in support of certain preconceived theories of what can or cannot occur in the modification of the zygomatic and dental construction, and that a reasonable application of the law of probabilities to what we know of fossil rodents would lead to some modification of these theories and a resultant simplifying of their otherwise admirable revision, which we fully recognize as based upon a most thorough and complete review of the order, particularly as including the extinct as well as the existing genera. It is proper to emphasize, however, that they have not yet published the evidence in support of their conclusions, and this may prove to overcome the difficulties which we see in accepting them without certain modifications. The fauna herein described will add materially to the fossil evidence and in our opinion may make it necessary to reconsider to some extent the very complex and difficult problem of the true affinities and evolution of the major groups within the order. That, however, is an undertaking much beyond the scope of the present contribution.

It does not appear advisable to assign this genus to any recognized family, as its systematic position turns upon the above problem. It might be placed with the dormice save that this family includes, auct. Miller and Gidley, two groups of quite diverse affinities, and *Cricetops* appears to be quite as diverse from either as they are from each other. It might be referred to Pseudosciuridæ or Eomyidæ on the zygomatic characters, but the teeth are wholly unlike any of the genera of those families. The same objection applies to its reference to the Theridomyidæ. It is still less possible to associate it with *Ischyromys* or *Paramys* or with the Dipodidæ. Anomaluridæ in the broad scope given to the family by Winge and Schlosser would perhaps include this and the following genera, but it would require at least subfamily distinction. With it, in the same broad sense, might be placed a number of new genera from the Hsanda Gol, which are known only from upper and lower jaws and appear to have some resemblance in masseter attachments, although, except for *Selenomys*, they are quite diverse in dentition. Pending a reconsideration of the relations of these anomaluroid or dipodoid genera, it appears convenient to place *Cricetops* and *Selenomys* in a separate family and refer *Karakoromys* and *Tataromys* to the Eomyidæ.

***Selenomys mimicus*, new genus and species**

TYPE.—No. 19085, an upper jaw.

PARATYPES.—Nos. 19086–19093, a series of upper and lower jaws.

HORIZON AND LOCALITY.—Hsanda Gol formation, near Loh, Mongolia.

DIAGNOSIS.—Three subequal molar teeth, no premolars. (There is some doubt about the absence of the upper premolar.) Crowns of molars moderately high, each composed of four inward-facing crescents, an anterior and a posterior pair, as in ruminant molars. The lower jaw in front of the molars is rather thick, not deep, moderately long; incisor not preserved. Angle only partly preserved, appears to be straight, as in *Myomorpha* generally.

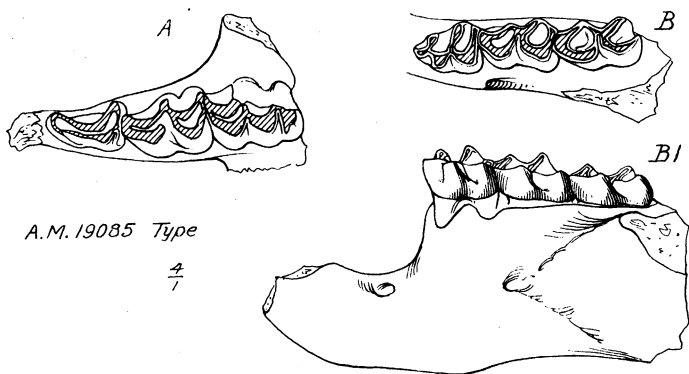


Fig. 5. *Selenomys mimicus*, upper and lower teeth four diameters: A, upper teeth, right side; B, lower teeth, left side, crown view; B1, external view of left ramus of lower jaw. All from the type specimen, No. 19085.

We do not know of anything near to this peculiar genus. It is provisionally associated with *Cricetops*, which has some suggestion of approach in pattern, but the jaw proportions are quite different. *Ctenodactylus* has a pattern which suggests derivation from something of this type but it retains the premolar in upper and lower jaw which *Selenomys* has lost. So far as preserved, the character of the zygomatic arch accords with *Cricetops*; the genus is clearly not a myomorph and probably belongs in the same group as *Cricetops*.

? Eomyidæ***Tataromys plicidens*, new genus and species**

TYPE.—No. 19082, a palate with p^4 - m^3 , r. and 1.

PARATYPES.—Nos. 19081, 19083, 19084, upper and lower jaws.

HORIZON AND LOCALITY.—Hsanda Gol formation, Loh, Mongolia.

DIAGNOSIS.—Premolar smaller than the molars, trigonal with three submarginal crests, not at all molariform in pattern but of fair size. Molars with two principal

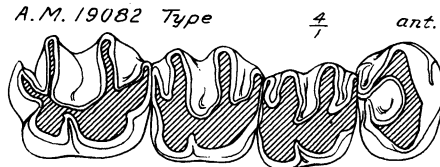


Fig. 6. *Tataromys plicidens*, upper teeth, right side, enlarged to four diameters. From type specimen, No. 19082.

transverse crests connected by an external commissure; on m^2 and m^3 supplementary anterior and posterior crests obliquely inward from the main crests opposite commissure. The lower molars reverse this pattern in the usual manner but the arrangement is less regular.

***Tataromys sigmodon*, new species**

TYPE.—No. 19079, a palate.

HORIZON AND LOCALITY.—Hsanda Gol formation, Loh, Mongolia.

DIAGNOSIS.—Dentition and details of construction of teeth very close to *T. plicidens* but of smaller size, length of $p^4-m^3=8.8$ mm.

***Karakoromys decessus*, new genus and species**

TYPE.—No. 19070, lower jaw, both rami with cheek teeth and left incisor complete.

HORIZON AND LOCALITY.—Hsanda Gol formation, red beds, Loh, Tsagan Nor basin, Mongolia.

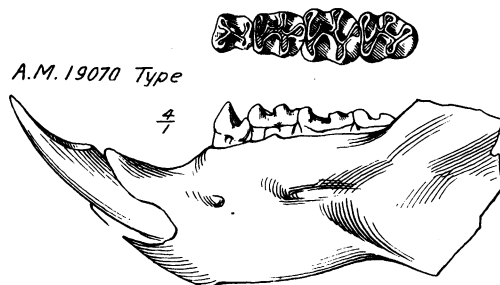


Fig. 7. *Karakoromys decessus*, lower jaw, type specimen, four times natural size, external view of left ramus and crown view of cheek teeth.

DIAGNOSIS.— P_4 present, much smaller and simpler than molars. Molars increasing slightly in size from first to third, moderately brachyodont, longer than wide, the crowns with high transverse crests, a principal anterior (trigonid) and posterior (talonid) crest connected by a commissure, and a hypoconulid crest extending postero-internally from a point on the outer half of the talonid crest. P_4 with a single transverse crest and a wide but short posterior heel.

This genus appears to be nearly related to *Tataromys* in molar construction.

Paramyidae

Prosciurus lohiculus, new species

TYPE.—No. 19100, upper jaw with p^4 - $m^?$.

HORIZON AND LOCALITY.—Oligocene, Hsanda Gol formation, Loh, Mongolia.

DIAGNOSIS.—Upper molars and p^4 with crests arranged much as in *P. vetustus*, but higher and lacking any trace of mesostyle on external margin between the crests. Size about a fourth larger than *P. vetustus*.

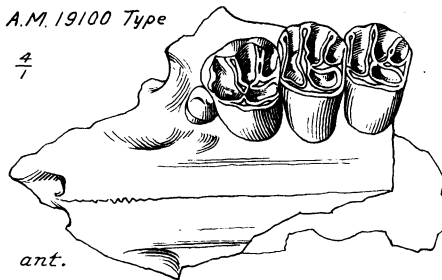


Fig. 8. *Prosciurus ? lohiculus*, upper jaw, four times natural size, type specimen, No. 19100.

This species is referred to *Prosciurus* provisionally. It is too imperfectly known for satisfactory allocation. It equally resembles in dentition several modern Sciurine genera or subgenera, but the masseteric scar appears to be confined to the inferior face of the zygomatic process of the maxilla, much as in *Prosciurus*, *Paramys* and related genera.

Eumys asiaticus, new species

TYPE.—No. 19094, upper jaw with m^{1-3} .

HORIZON AND LOCALITY.—Oligocene, Hsanda Gol formation, near Loh, Mongolia.

DIAGNOSIS.—Tooth pattern much as in *E. elegans*, masseteric plate of zygoma typically myomorph and closely resembling that of *Eumys* and *Cricetodon*. Size: m^{1-3} = 5.5 mm.; m_{1-3} = 6 mm.

This appears to be the only true myomorph rodent in the Hsanda Gol fauna. It is closely allied in tooth pattern to *Eumys* of the American and *Cricetodon* of the European Oligocene. The Miocene species of *Cricetodon* are, so far as I have examined, decidedly more advanced towards *Cricetus*.

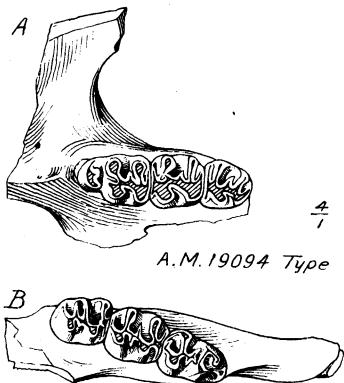


Fig. 9. *Eumys asiaticus*, upper and lower jaw fragments, four times natural size: *A*, upper jaw, left side, with m^{1-3} , showing also the obliquely-pitched masseter plate in front of zygomatic arch; *B*, lower jaw, right side. The anterior end of the upper jaw faces to left, of lower jaw to right. Type specimen, No. 19094.

Leporidae

Desmatolagus gobiensis, new genus and species

TYPE.—No. 19103, upper jaw with p^2 - m^3 .

PARATYPES.—Various upper and lower jaws.

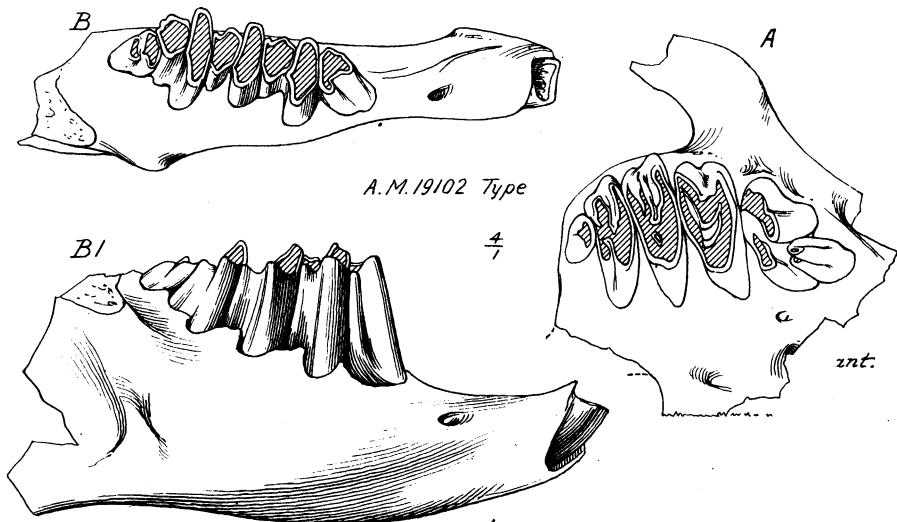


Fig. 10. *Desmatolagus gobiensis*, upper and lower jaw, four times natural size: *A*, crown view of upper cheek teeth; *B*, crown view of lower teeth; *B1* external view of lower jaw, right side. Type specimen, No. 19102.

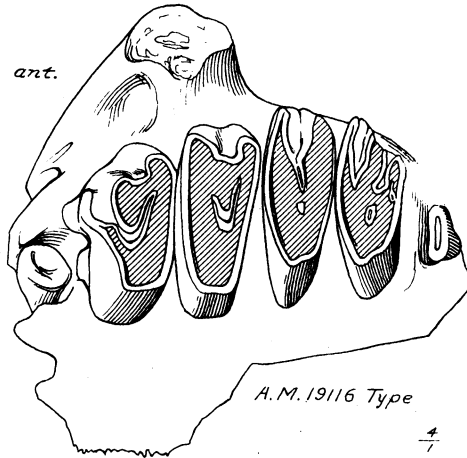


Fig 11. *Desmatolagus robustus*, upper jaw, crown view, four times natural size, showing $p^3 - m^2$ and roots of p^2 and m^3 . Type specimen, No. 19116.

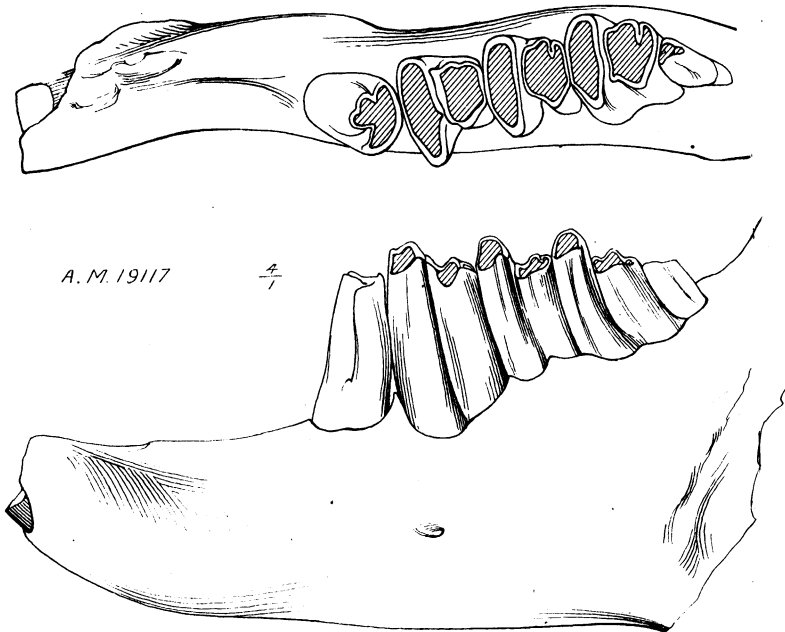


Fig. 12. *Desmatolagus robustus*, lower jaw, superior and external views, four times natural size. No. 19117.

HORIZON AND LOCALITY.—Oligocene, Hsanda Gol formation, red beds, Loh, outer Mongolia.

DIAGNOSIS.—Cheek teeth $\frac{6}{3}$ as in Leporidae but the first and last teeth of the series (p_2^2 , m_3^2) greatly reduced. Although it retains the formula of the Leporidae, the genus undoubtedly is related to the Ochotonidae and may be considered ancestral to some of the genera (not to *Titanomys*, which is stated to have rooted molars¹). It is placed in the Leporidae provisionally upon the formal distinction of the number of cheek teeth.

***Desmatolagus robustus*, new species**

TYPE.—No. 19116, lower jaw with p_3 - m_2 .

PARATYPE.—No. 19116a, lower jaw with p_4 - m_3 .

HORIZON AND LOCALITY.—Oligocene, Hsanda Gol formation, red beds, Loh, Outer Mongolia.

DIAGNOSIS.—Size, one-half greater than the preceding, to which it is in other respects nearly alike.

¹The published descriptions and figures of *Titanomys* do not seem to prove, however, that the permanent teeth have roots. In *Falcolagus* the milk molars have roots but the permanent teeth are rootless.