NINE NEW RODENTS FROM THE OLIGOCENE OF MONGOLIA

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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.

Cricetopidae

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 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 m1 and m2, but a well-developed anterior pair on m1 and a rudimentary anterior heel on m2. 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 Dipodidae, 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, Haplodonta and Bathyergus with less alteration than in other modern rodents. The Dipodidae 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.

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

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 Cricetidae. It appears inadvisable to accept these assumptions until their validity has been more conclusively proven; in some respects they do 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

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**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.
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 Pseudosciuridae or Eomyidae 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 Theridomyidae. It is still less possible to associate it with Ischyromys or Paramys or with the Dipodidae. Anomaluridae 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 Eomyidae.
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.

![Selenomys mimicus diagram](image)

**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*.

**? Eomyidae**

*Tataromys plicidens*, new genus and species

**Type.**—No. 19082, a palate with p4–m3, r. and l.
**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 m¹ and m³ 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 p⁴–m³ = 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.**—P₄ 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. P₄ 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 p4–m3.

**Horizon and locality.**—Oligocene, Hsanda Gol formation, Loh, Mongolia.

**Diagnosis.**—Upper molars and p4 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.](image)

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 m1–3.

**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: m1–3 = 5.5 mm.; m3 = 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 m1-4, 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 p2- m3.

**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 p3 - m2 and roots of p2 and m3. 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 $\frac{3}{4}$ as in Leporidae but the first and last teeth of the series ($p_3$, $m_3$) 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 molars). 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 $p_1$-$m_2$.
Paratype.—No. 19116a, lower jaw with $p_1$-$m_2$.

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.

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