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NEW BATHYERGIDÆ FROM THE OLIGOCENE OF MONGOLIA¹

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The genera here described are from the Hsanda Gol formation in the Tsagan Nor basin of outer Mongolia, named and defined by Berkey and Granger in American Museum Novitates No. 77, May 25, 1923. They are from the red strata in the lower part of the variegated beds of that formation, the same horizon as the skull and other parts of *Baluchitherium* described by Osborn in Novitates No. 78, May 25, 1923, and from the same or neighboring localities.

The age of the Hsanda Gol formation was provisionally given as Miocene by Berkey and Granger, but the correlation of the fauna described in this and following articles shows that the variegated beds containing the *Baluchitherium* fauna are Oligocene, probably not later than Stampian.

Baluchitherium was first discovered by Forster Cooper in the Bugti Hills, Baluchistan, in beds correlated by him as Upper Oligocene.² The related or identical genus *Indricotherium* was described by Borissiak in 1915, from a formation which he correlated as Oligocene in the Kirghiz steppes north of Russian Turkestan.³ The third discovery, made by the Third Asiatic Expedition of the American Museum, was at Iren Dabasu on the Kalgan-Urga caravan trail in eastern Mongolia, in the Houldjin formation⁴ associated with a few very fragmentary remains of other animals. The fourth discovery in the Hsanda Gol formation is in association with a large and varied fauna mostly of small mammals. The correlation of this fauna will be discussed in a later contribution.

The rodents are the most abundant element of the collection. Many skulls, more or less complete, a few skeletons or parts of skeletons, and some thousands of jaws and fragments of jaws, were obtained by the Expedition in 1922 in the Tsagan Nor basin. They represent eleven species of nine genera, as follows:

¹Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 19.

²Cooper, C. Forster, 1911, Ann. Mag. Nat. Hist., (8) VIII, p. 711, and later articles.

³Borissiak, A., 1915, Geol. Vestnik; 1917, Bull. Acad. Imp. Sci. Petrograd, (6) XI, p. 287.

⁴Granger and Berkey, 1922, Amer. Mus. Novit. No. 42, Aug. 7; Matthew and Granger, 1923, idem, No. 97.

Simplicidentata (Glires, *sensu stricto*)*Tsaganomys altaicus*, new genus and species*Cyclomytus lohensis*, new genus and species? *Prosciurus lohicululus*, new species*Cricetops dormitor*, new genus and species*Tataromys plicidens*, new genus and species*Tataromys sigmodon*, new species*Karakoromys decessus*, new genus and species*Selenomys mimicus*, new genus and species*Eumys asiaticus*, new species

Duplicidentata (Lagomorpha)

Desmatolagus gobiensis, new genus and species*Desmatolagus robustus*, new species

The first two genera are the subject of this paper; the remaining rodents of this fauna will be described in the next contribution.

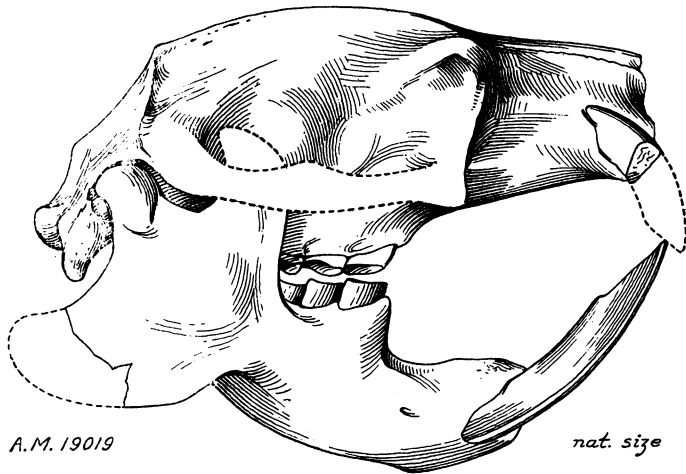


Fig. 1. *Tsaganomys altaicus*, skull and jaws, side view, natural size. No. 19019, type specimen, characters partly supplemented from Nos. 19021, 19030 and 19033.

Bathyergidæ***Tsaganomys altaicus*, new genus and species**

TYPE.—Amer. Mus. No. 19019, skull and lower jaws.

PARATYPES.—Nos. 19020, 19029, 19030, 19033, 19037, 19038, skulls, some with lower jaws associated.

HORIZON AND LOCALITY.—Oligocene, Hsanda Gol formation, red strata, Loh, Tsagan Nor basin, outer Mongolia.

DIAGNOSIS.—Skull short, wide, robust, the occiput very broad and pitched heavily forward with prominent occipital and sagittal crests. Infraorbital foramen

small, oval, situated low down, apparently not traversed by any slip from the masseter, which has a scar for attachment on inferior face of spring of zygomatic arch as in *Bathyergus* (and *Paramys*, etc.). Above the root of the zygoma the orbits are built out laterally to a marked degree with a prominent sharp-edged crest in front, separating them from the muzzle. Although this crest in some ways resembles that of the sciuriforms, it does not appear to have lodged a division of the masseter on its anterior face, but is more nearly analogous to the much less conspicuous preorbital crest of *Bathyergus*. Tympanic bulla broad and flattened anteriorly, extending postero-externally into a short ? meatus. Sagittal crest high, somewhat convex in

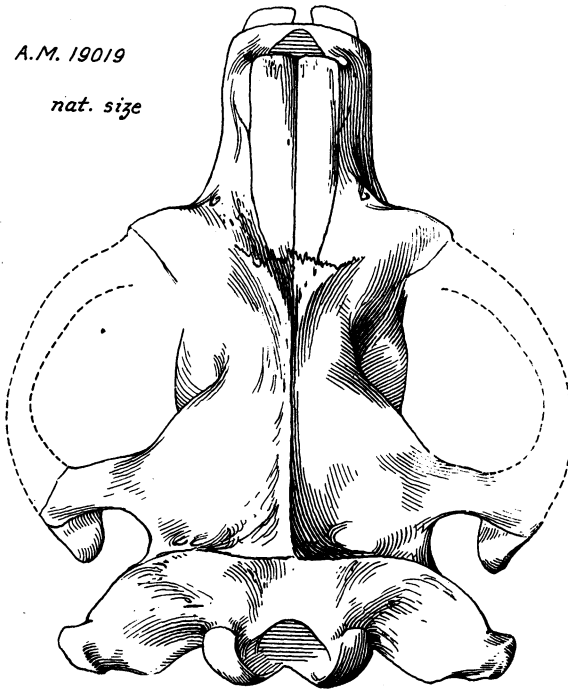


Fig. 2. *Tsaganomys altaicus*, skull, top view, natural size, type specimen.

outline, short, owing to the extreme forward pitch of occiput; postorbital constriction pronounced, abrupt. Interorbital space nearly twice as wide as in *Bathyergus*; nasals narrow with straight sides, increasing slowly but uniformly in width from back to front.

Incisors large, broad, with flat anterior faces ornamented with obscure longitudinal ridges. The socket for the upper pair forms a prominent bulge on the maxilla above the cheek teeth and the curvature is low in both upper and lower pair, so that they project strongly forward at the points. The socket of the lower pair is directly under the condyle of the lower jaw. Cheek teeth $\frac{4}{4}$, very hypsodont, of persistent

growth, without closed roots at any observed stage of wear, round or oval in cross-section, decreasing somewhat in diameter from $p\frac{1}{4}$ to $m\frac{2}{3}$. The crown pattern disappears at a very early stage of wear, as in *Bathyergus*, leaving only an encircling band of enamel. The crown pattern of the unworn lower molars appears to be one external and three internal inflections, the latter rapidly converted by wear into three shallow pockets and then disappearing. The structure of the unworn upper molars consists essentially of three shallow transversely-extended pockets, of which the center one is formed by ridges connecting protocone with paracone and metacone, the anterior and posterior ridges enclosed by anterior and posterior cingular crests, the first comparatively short, connecting protocone with parastyle, the second much longer, sweeping around the margin from behind the protocone to meet the metacone. The cones, however, do not exist as such, the whole tooth being reduced to a series of narrow crests and shallow basins. Jaw massive, corresponding with

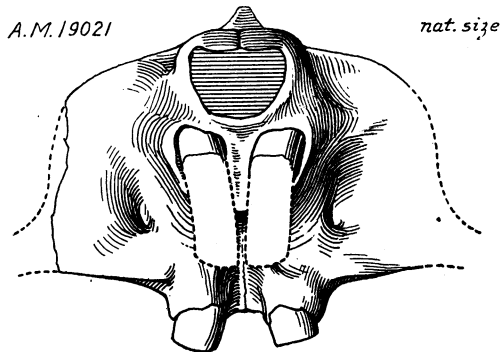


Fig. 3. *Tsaganomys altaicus*, front view of skull, showing small antorbital foramen with wide crest external to it. No. 19021, natural size.

Bathyergus in the relations of angle and coronoid so far as they are preserved.

The milk dentition is well shown in No. 19023; dp^3 is a small peg-like tooth with simple blunted crown; dp^4 has almost exactly the form and pattern of m^1 but is of smaller size and presumably shorter crowned; dp_1 is similarly like m_1 in pattern, but somewhat smaller, narrower, and with the anterior and posterior fossæ slightly impressed, the median inflections, both internal and external, more persistent and the external inflection directed more backward.

REMARKS.—This appears, if properly referable to the family, to be the first fossil record of Bathyergidæ, hitherto known from the recent Ethiopian fauna. It is by no means close to the living genera and should perhaps be distinguished as a separate subfamily, **Tsaganomyinæ**, on the short massive proportions of skull with heavy forward pitch of occiput, wide differences in otic region and some rather minor differences in teeth. It suggests the Asiatic ancestry of the family, although it cannot be considered as even approximately ancestral to the living genera.

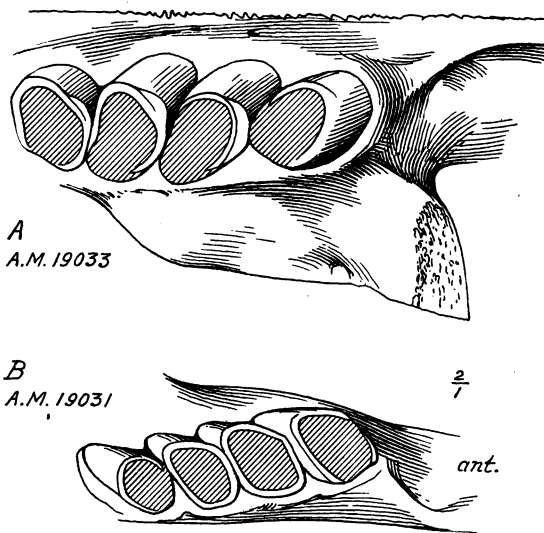


Fig. 4. *Tsaganomys altaicus*, upper and lower teeth of left side, crown views, twice natural size. Nos. 19033, 19031.

***Cyclomylus lohensis*, new genus and species**

TYPE.—No. 19096, skull, badly preserved.

PARATYPES.—No. 19098, upper and lower jaw; Nos. 19095, 19097, palates; No. 19099, incomplete skull, badly preserved. All from same horizon and locality as the preceding species.

DIAGNOSIS.—Dentition apparently as in *Tsaganomys*, molars of similar apical pattern early lost, but less hypsodont and of much smaller size, the roots closing when full grown. Skull much narrower and smaller, the proportions more as in *Bathyergus* but the cranium not so flat and broad as in that genus; zygomatic arch of moderate proportions, the orbits not built out as in *Tsaganomys*, infraorbital foramen apparently small and low set, masseter attachment on under face of zygomata limited by a scar. The angle of the lower jaw springs from the side as in *Tsaganomys*, so far as the specimens show, but its exact relations are not so fully demonstrated.

The permanent premolar is preceded by a minute, simple dp^4 and a large round molariform dp^4 , as in *Tsaganomys*.

