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内蒙古阿左旗乌兰塔塔尔地区渐新世地层剖面及动物群初步观察

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关键词　哺乳动物群　中渐新世　内蒙古阿左旗乌兰塔塔尔

内 容 提 要

内蒙古阿左旗乌兰塔塔尔地区的渐新世地层中，哺乳动物化石丰富，种类繁多。本文是这个动物群研究的初步报道，除对动物群中各成员和地层概况做了简单介绍外，还对化石层的时代作了初步探讨。

1977 年，宁夏地质局区测队三分队在阿拉善左旗淖尔套一带填制新生代地质图时，于乌兰塔塔尔沟的左岸(北岸)发现了一具可能是无角犀的头骨化石，他们把标本寄来古脊椎所鉴定。翌年，古脊椎所内蒙野外队在结束乌盟地区野外工作后，于八月份赴阿左旗工作了十天。参加这次考察的人员除本文作者外，还有陈德旺、谢树华、彭春和齐陶同志。

考察是在原地质队工作的基础上沿沟两岸扩大了范围，采集到一个以啮齿类、兔形类等小哺乳动物为主的动物群，其标本数以千计，具两个以上牙齿的上颌骨达几百件之多。

在野外和室内工作中，我们得到了周明镇教授的鼓励和指导；宁夏地质局区测队三分队的顾其昌工程师等提供了化石点及宁夏地区的有关地质情况的资料；该队的杨东红同志为我们带路寻找化石点；在室内研究过程中，李传夔、翟人杰、张玉萍、郑家坚、齐陶诸同志给予多方鼓励和有益商讨；标本主要由谢树华和彭春同志采集和修理；陈琯同志代为绘图，作者在此一并致谢。

地 层 概 要

乌兰塔塔尔哺乳动物群产于现内蒙古自治区阿拉善左旗锡力高勒公社淖尔套大队南乌兰塔塔尔沟两岸(东经约 105°40′—105°50′；北纬约 39°30′—39°60′)。据前人资料，邻近的吉兰泰图幅中新生代地层广泛发育，包括渐新统、上新统及第四系。

乌兰塔塔尔沟基本上为东西流向，沟内经常干涸，只在雨季有暂时性流水。此沟在巴吉线 42 公里道班处与巴彦浩特至吉兰泰的公路相碰。该处出露的渐新世地层主要沿沟两岸分布，组成残丘或桌状平台地貌。岩层主要为一套棕红色、紫红色、风化后成淡黄色之泥岩、砂质泥岩，夹 1—2 层砂砾岩。砂砾岩在西部(近也木根尚德大队处)厚，含砂成分高；往东则变薄，含砂成分高。岩层产状基本水平，出露厚度约 20 米，未见底。现将在

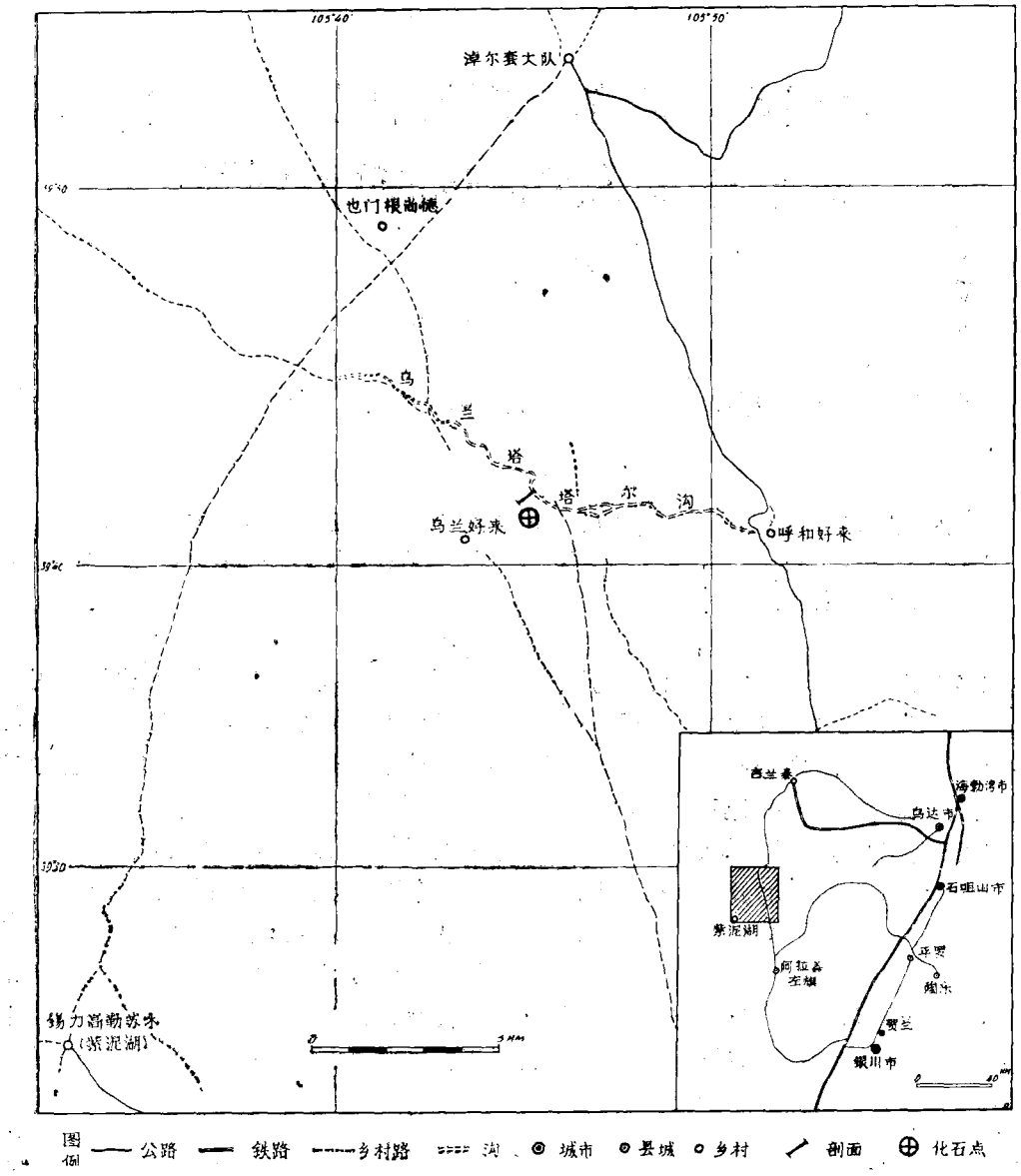

图 1 交通位置图

Fig. 1 Sketch of fossil locality.

乌兰塔塔尔沟右岸(南岸)(见交通位置图)测得的剖面概述如下:

上覆地层

上新统? 橘黄色风化之砂砾岩

--- 假 整 合 ---?

中渐新统 可见厚度 18.6 米

3. 棕红色、紫红色、风化后成淡黄色之泥岩、砂质泥岩。新鲜面成蒜瓣状,含石膏及少量钙质结核,产丰富的哺乳动物化石。厚 9.6 米。

2. 肉红色、浅黄色、风化后成灰绿色、灰黑色之砂砾岩。砾石成分以石英岩为主,砾径多为 1 厘米,

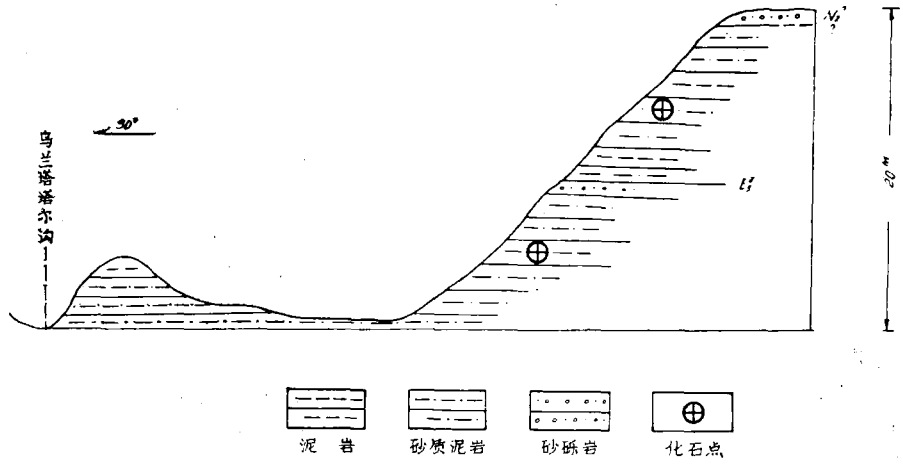

图 2　内蒙古阿左旗锡力高勒公社乌兰塔塔尔沟右岸中渐新世地层剖面图

Fig. 2 Section of middle Oligocene in Ulantatal, Alashan Zuoqi, Nei Monggol (Inner Mongolia)

少数为 5 厘米，个别达 10 厘米。磨圆度一般，分选不佳，钙质胶结。厚 0.5 米。

1. 棕红色泥岩、砂质泥岩。岩性似第三层。亦含丰富之哺乳动物化石。厚 8.5 米。未见底。

这个剖面中最顶层的砂砾岩，也可能仍是渐新世的产物。但从其出露高度、岩层性质（特别风化等）、下部地层中含有石膏（含石膏是这个地区渐新统顶部层位的特征之一）等情况看，且据前人资料本区有上新统存在，拟暂定为不同时代的沉积为宜。

乌兰塔塔尔一带出露的渐新统，岩性很象命名为"清水营"组的典型地点一龙骨梁附近的中渐新世地层，该处也出露一套厚度不大的棕红色、紫红色泥岩、砂质泥岩。

动 物 群 简 记

经过修理和初步观察，这个动物群共代表了七目十六科大约十八属接近三十种哺乳动物化石（见表 1）。

表 1　动物群名单 (Ulantatal faunal list)

食虫目 Order Insectivora Bowdich, 1821
　猬科 Erinaceidae Bonaparte, 1838
　　直缘双猬 *Amphechinus rectus* Matthew and Granger, 1924
兔形目 Lagomorpha Brandt, 1885
　兔科 Leporidae Gray, 1821
　　阿尔多斯兔 *Ordolagus* sp.
　鼠兔科 Ochtonidae Thomas, 1897
　　似甘肃中华兔 *Sinolagomys* cf. *S. kansuensis* Bohlin, 1937
　　大中华兔 *Sinolagomys major* Bohlin, 1937
　　? 布林兔? *Bohlinotona* spp.
啮齿目 Rodentia Bowdich, 1821
　圆柱齿鼠科 Cylindrodontidae Miller and Gidley, 1918
　　阿尔丁鼠 *Ardynomys* sp.
　　洛圆柱齿鼠 *Cyclomylus lohensis* Matthew and Granger, 1923
　　似小圆柱齿鼠 *Cyclomylus* cf. *C. minutus* Kowalski, 1974
　林跳鼠科 Zapodidae Couse, 1875
　　似党河更新蹶鼠 *Plesiosminthus* cf. *P. tangingoli* Bohlin, 1946
　? 山松鼠科? Aplodontidae Trouessart, 1897

（续表 1）

模拟新月型脊鼠 *Selenomys mimicus* Matthew and Granger, 1923	*Palaeogale parvulus* Matthew and Granger, 1924
仓鼠科属种未定 Cricetidae gen. et sp. indet.	肉食类科、属、种未定 Carnivora indet.
梳趾鼠科 Ctenodactylidae Zittel, 1893	奇蹄目 Perissodactyla Owen, 1848
褶齿塔塔鼠 *Tataromys plicidens* Matthew and Granger, 1923	两栖犀科 Amynodontidae Scott and Osborn, 1883
西玛塔塔鼠 *Tataromys sigmodon* Matthew and Granger, 1923	卡地犀 *Cadurcodon* sp.
谷氏塔塔鼠 *Tataromys grangeri* Bohlin, 1946	犀科 Rhinocerotidae Owen, 1845
塔塔鼠 *Tataromys* spp.	无角犀 *Aceratherium* sp.
肉齿目(？)？ Creodonta Cope, 1875	偶蹄目 Artiodactyla Owen, 1848
鬣齿兽科 Hyaenodontidae Leidy, 1869	鹿科 Cervidae Gray, 1821
？鬣齿兽？ *Hyaenodon* sp.	原鹿 *Eumeryx* sp.
肉食目？ Carnivora Bowdich, 1821	牛科 Bovidae Gray, 1821
犬科 Canidae Gray, 1821	古高齿兽 *Palaeohypsodontus* sp.
？ *Cynodictis* sp.	哺乳动物目未定 Mammalia Order indet.
鼬科 Mustelidae Swainson, 1835	对锥齿兽科 Didymoconidae Kretzoi, 1943
Palaeogale ulysses Matthew and Granger, 1924	似贝氏对锥齿兽 *Didymoconus* cf. *D. berkeyi* Matthew and Granger, 1924
	对锥齿兽 *Didymoconus* sp.
	哺乳动物未定 Mammalia indet.

直缘双猬 *Amphechinus rectus* Matthew and Granger, 1924

带有牙齿保存状况不同的下颌骨计二十四件。标本大小相差较悬殊，但是逐渐过渡的。鉴于牙齿其他特征相同，可能仍为一个种。它们牙齿的性质，与蒙古三达河和内蒙三盛公地层中的直缘双猬基本一致。

鄂尔多斯兔 *Ordolagus* sp.

材料为带有颊齿保存状况不同的残破的上下颌骨计十四块。1977年，米荣（Muizon）重新研究了德日进（Teilhard）在内蒙三盛公采集的标本，并建立了一新属—鄂尔多斯兔，但根据的仍是下颌骨和下颊齿。我们的标本有上下颌骨及各个部位的颊齿，是否属于德氏鄂尔多斯兔（*O. teilhardi*），还有待研究。

似甘肃中华兔 *Sinolagomys* cf. *S. kansuensis* Bohlin, 1937

一具保存全部颊齿的成年个体的左下颌骨。这块标本的大小与甘肃中华兔很接近，牙齿上的其他特征也十分相似，只是跟座与三角座宽度的比率不完全相同。

大中华兔 *Sinolagomys major* Bohlin, 1937

一具带 P_4—M_2 的年轻个体的左下牙床。三个下颊齿的跟座与三角座宽度的比率与大中华兔和纤细中华兔（*S. gracilis*）比较接近，但个体稍大。

？布林兔？ *Bohlinotona* spp.

米荣在1977年建立了另一个新属—布林兔，并将此放入鼠兔科。我们的标本很可能

为此属动物. 在乌兰塔塔尔地区，这类标本，带有数目不同颊齿的上下颌骨竟达二百多件，是整个地区标本数量最大的一类动物。从大小和其他特征看，也不完全相同，可能表示这类动物不止一个种生存在这个地区。

阿尔丁鼠 *Ardynomys* sp.

三个带完整齿列的左右下牙床。下颊齿的基本式样与 *Ardynomys olseni* 一样，只是 M_3 较长，个体比这个种小得多，大小与北美早渐新世的 *Ardynomys occidentalis* 相近。这个属的动物过去只在北美、蒙古和苏联的哈萨克斯坦发现过。中国境内的记录只道森（Dawson）在 1968 年的文章中提到内蒙另一地点发现有少量标本。

洛圆柱齿鼠 *Cyclomylus lohensis* Matthew and Granger, 1923

材料有带 P_4—M_3 残破的左下颌骨四个。其他几个左右下牙床带不全的颊齿。这些标本比查干鼠（*Tsaganomys*）小，与洛圆柱齿鼠在大小上接近。在某些标本中，颊齿根部见有封闭现象。

似小圆柱齿鼠 *Cyclomylus* cf. *C. minutus* Kowalski, 1974

具 P_4—M_2 的一残破的左下颌骨。颊齿小，接近于小圆柱齿鼠，但我们的标本不如卡沃斯凯（Kowalski）描述的这个种的齿冠高。

似党河更新蹶鼠 *Plesiosminthus* cf. *P. tangingoli* Bohlin, 1946

一块带有三个颊齿完整齿列的左下颌骨。另外两个下颌骨分别带有颊齿 M_1—M_2 和 M_2。这几块标本的下颊齿齿冠形态与在甘肃党河发现的更新蹶鼠（原副蹶鼠—*Parasminthus*）的基本相近。大小与党河种差不多，只是 M_1 比该种显得更长。

模拟新月型脊鼠 *Selenomys mimicus* Matthew and Granger, 1923

一左下颌断块带颊齿 M_2—M_3。牙齿的式样、齿冠高度以及个体大小均与马修和葛兰阶（Matthew and Granger）1923 年建立的模拟新月型脊鼠相似。

仓鼠科属种未定 Cricetidae gen. et sp. indet.

一块上颌骨带有三个完整的颊齿。四个左右下牙床，除一块仅保存 M_1—M_2 外，其余三块均具有完整的颊齿齿列。这些标本都比较小，确切属种，有待研究。

褶齿塔塔鼠 *Tataromys plicidens* Matthew and Granger, 1923
西玛塔塔鼠 *Tataromys sigmodon* Matthew and Granger, 1923
谷氏塔塔鼠 *Tataromys grangeri* Bohlin, 1946
塔塔鼠未定种 *Tataromys* spp.

在乌兰塔塔尔，塔塔鼠是整个啮齿类中标本数目最多的一类，带有颊齿保存状况不同的左右上下颌骨一百件之多，具有两边完整颊齿齿列的残破的头骨五个以上，其中一个与

带有两边完全下颊齿的一对下颌骨为同一个个体。从牙齿的结构和大小看，它们确实代表了这个属中的好几个种。

似贝氏对锥齿兽 *Didymoconus* cf. *D. berkeyi* Matthew and Granger, 1924

两下颌断块分别带有颊齿 P_2—P_3、犬齿断面和 P_4 的前齿根；完整的 M_1—M_2 及 P_4 的后齿根。这两块标本比较大，下颌骨深而粗壮，但下颌深度比翟人杰记述的新疆吐鲁番盆地桃树园子群中的贝氏对锥齿兽的略浅。

对锥齿兽未定种 *Didymoconus* sp.

标本为同一个体的残破的右上下颌骨，具上齿列 C—P^4；下齿列 I_3—P_4 及 M_1 的前部。另外还有几块上下颌骨附少量颊齿。这些标本与 *Didymoconus colgatei* 个体大小相近，但 P^3 血齿化程度高，具发达的前尖、原尖和小而突出的后尖及清楚的前附尖。P^4 后附尖很不发育。因此它们有可能代表这个属中的另一个新种。

? 鬣齿兽 ? *Hyaenodon* sp.

一左下颌骨前段附颊齿 P_2—P_4 及犬齿断面和 P_1 的齿槽；右下颌残块带颊齿 P_1—P_2。在 P_1 和 P_3 之下各有一颏孔。P_1 小，单根。德日进在内蒙三盛公曾发现过这个属的臼齿。我们的标本仅保存有前臼齿，无法和它直接对比。

? *Cynodictis* sp.

左下颌骨具颊齿 P_4—M_1 及 P_2—P_3 之断面；右下颌骨带 C—P_3 之齿槽；右 P_2 和 M_1 各一个。这些标本与三达河的? *Cynodictis elegans* 在大小和下前臼齿的形态上很接近

***Palaeogale ulysses* Matthew and Granger, 1924**

一左下颌骨具 C—M_1 及 M_2 的两齿根。这是这个地区肉食类中保存最好的一块标本。在大小和牙齿特点上，与 *Palaeogale* (*Bunaelurus*) *ulysses* 极为相象，可视为同种。

***Palaeogale parvulus* Matthew and Granger, 1924**

右下颌断块保存一完整的 M_1 及 P_3、P_4 和 M_2 的齿根。从大小和其他特点看，这件标本可以归入蒙古三达河中渐新世的 *Palaeogale parvulus* 种。

肉食类科、属、种未定 Carnivora indet.

一右下 M_1。牙齿无下后尖，跟座残迹状，有微弱的下次尖。确切归属未能断定。

卡地犀未定种 *Cadurcodon* sp.

标本为一右 M^1；残破的左下牙床两个，各具颊齿 P_3、DP_4、M_1—M_2 和 DP_2—DP_4、M_1。此外还有两个门齿。上下颊齿齿冠均较高，长皆大于宽。上臼齿原脊和后脊斜度较大，原尖和次尖前侧皆明显收缩。下颊齿外壁有弱的纵沟。从这些特点看，与卡地犀属中的一

些种均有所不同。

无角犀未定种 *Aceratherium* sp.

一残破的头骨，保存右侧全部颊齿，左侧只部分颊齿且齿冠已破损；一年轻个体的左下颌骨，带有 C、P_1、DP_2—DP_4 和 M_1—M_2，M_3 尚未萌出。鼻骨相当长，鼻切迹也深。上前臼齿未完全臼齿化，原脊和后脊在内侧相连。上颊齿的前刺很发育，小刺微弱，无反前刺。与欧洲早渐新世的 *Aceratherium filholi* 和晚渐新世的 *A. lemanense* 均有一定的差别，很可能为一新种。

原鹿未定种 *Eumeryx* sp.

三个右下牙床断块，分别保存颊齿 DP_4、DP_4—M_1 和 M_1(?)。一个残破的上臼齿。从牙齿的大小和其他特征看，比较接近德日进描述的内蒙三盛公的 Cervides (*Eumeryx*?)。原鹿，布林（Bohlin）在甘肃渐新世地层中也有过记述。

古高齿兽未定种 *Palaeohysodontus* sp.

一左下颌骨附颊齿 P_4—M_2 及 M_3 的前部；左 M_2—M_3；右 M_2；一下门齿；还有仅保存外侧面的上臼齿一个。从牙齿看，这些标本与在蒙古塔塔沟发现的亚洲古高齿兽(*P. asiaticus*)很相近，只是个体稍大，M_3 的后叶形状有所不同。这属动物是牛科中古老的代表。

哺乳动物目未定 Mammalia indet.

一左下颌断块具残破颊齿 M_1—M_2。牙齿下前尖与下后尖挨得很近；此两尖与下原尖、及下内尖和下次尖构成两条横脊，无斜脊，似有下次小尖，且由此尖向前伸出一微弱的纵脊。

地层时代的初步分析

亚洲中、晚渐新世地层主要分布在我国、蒙古和苏联的哈萨克斯坦，其中以蒙古的三达河组最为典型。我国甘肃党河流域的塔朋布拉格和石羌子沟的渐新世地层和哺乳动物化石，经布林（1937，1942，1946）研究，认为其时代是晚渐新世，至今无大的异议。我国内蒙河套地区的三盛公和宁夏清水营地点，原作者和部分哺乳类学家的看法是上渐新统，但最近王伴月等(1981)通过对内蒙千里山地区的中、上渐新统的研究和对比，倾向于上述两个地点的地层时代为中渐新世比较适宜。蒙古三达河组、自发现和命名后，半个多世纪来，美国、苏联、波兰和蒙古的古生物学家又做了大量的工作。有关地层时代，曾一度众说纷云，但近年来根据动物群的分析和玄武岩同位素年龄的测定，肯定了其时代为中渐新世。

乌兰塔塔尔动物群与三达河动物群相比，几乎完全相当的化石竟达十种以上。其中 *Selenomys mimicus*、*Palaeogale ulysses*、*P. parvulus*、和 *Palaeohypsodontus* sp. 等四种过去仅在三达河组中发现过。显然，乌兰塔塔尔地区的渐新世地层应与三达河组时代大致相当

—中渐新世。

与乌兰塔塔尔比较接近的清水营地层中也发现有洛圆柱齿鼠。前已提及，出露的地层性质基本一致，这也为两地地层时代大体相当提供了佐证。内蒙三盛公与乌兰塔塔尔和三达河地层中也有许多共同的属种，这也有可能表明三者时代基本一致。

值得提出的是，在乌兰塔塔尔动物群中有些成员在三达河组中并未发现过，它们是 *Sinolagomys* cf. *kansuensis*、*S. major*、*Plesiosminthus* cf. *tangingoli* 等。而这些属种过去仅在甘肃晚渐新世地层中见过。这似乎表明在乌兰塔塔尔地区中渐新世地层中也有“典型的”晚渐新世种类存在。而阿尔丁鼠化石，在亚洲和北美多发现在早渐新世或晚始新世地层中，它所在的地层时代，据目前所知，最晚不会迟于中渐新世。上述那些以前所谓晚渐新世种类的存在，一方面说明它们本身在中渐新世时即已出现，同时也可能表明乌兰塔塔尔地区的渐新世地层，时代有可能稍偏晚，会不会是中渐新世晚期呢！

综上所述，我们把内蒙阿左旗乌兰塔塔尔地区含哺乳动物化石的渐新统的时代暂定为中渐新世。

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参　考　文　献

王伴月等，1981：内蒙千里山地区中、上渐新统的发现及其意义。古脊椎动物与古人类，**19**(1)，26—34。

齐陶，1975：宁夏早渐新世查干布拉格哺乳动物群。同上，**13**(4)，217—224。

李传夔、邱铸鼎，1980：青海西宁盆地早中新世哺乳动物化石。同上，**18**(3)，198—214。

杨钟健、周明镇，1956：甘肃灵武渐新世哺乳类动物化石。古生物学报，**4**(4)，447—459。

邱铸鼎等，1981：青海西宁盆地中新世哺乳动物。古脊椎动物与古人类，**19**(2)，156—173。

胡长康，1962：甘肃宁夏哺乳动物化石地点。同上，**6**(2)，162—172。

徐余瑄，1978：陕西西安和蓝田的早渐新世两栖犀。地层古生物论文集第七辑。中国地质科学院地层古生物论文集编委会。109—117。

翟人杰，1978：吐鲁番盆地东部桃树园子群的哺乳动物化石。中国科学院古脊椎动物与古人类研究所甲种专刊第十三号，新疆古生物考察报告(三)，准噶尔盆地南缘二叠、三叠纪脊椎动物化石及吐鲁番盆地第三纪地层和哺乳动物化石，126—131。

Berkey, C. P. and W. Granger, 1923: Later sediments of the desert basins of central Mongolia. *Amer. Mus. Novitates*, No. 77, 1—16.

Bohlin, B., 1937: Oberoligozäne Säugetiere aus dem Shargaltein-tal (Western Kansu). *Palaeont. Sinica. N. S. C.*, No. 3, 1—66.

————, 1942: The fossil mammals from the Tertiary deposit of Taben-Buluk, Western Kansu. Part. 1: Insectivora and Lagomorpha. *Ibid.*, No. 8a, 1—113.

————, 1946: The fossil mammals from the Tertiary deposit of Taben-Buluk, Western Kansu. Part. 2: Simplicidentata, Carnivora, Perissodactyla and Primates. *Ibid.*, No. 8b, 1—259.

Kowalski, K., 1974: Middle Oligocene Rodents from Mongolia. Results of the Polish-Mongolian Paleontological Expedition Part. V., *Palaeont. Polonica*, No. 30, 1—178.

Matthew, W. D. and W. Granger, 1923: The Fauna of the Houljin Gravels. *Amer. Mus. Novitates*, No. 97, 1—6.

————, 1923: The Fauna of the Ardyn Obo Formation. *Ibid.*, No. 98, 1—5.

————, 1923: New Bathyergidae from the Oligocene of Mongolia. *Ibid.*, No. 101, 1—5.

————, 1923: Nine new Rodents from the Oligocene of Mongolia. *Ibid.*, No. 102, 1—10.

————, 1924: New Carnivora from the Tertiary of Mongolia. *Ibid.*, No. 104, 1—7.

————, 1924: New Insectivores and Ruminants from the Tertiary of Mongolia, with remarks on correlation. *Ibid.*, No. 105, 1—3.

McKenna, M. C. and C. P. Holton, 1967: A new insectivore from the Oligocene of Mongolia and a new subfamily of hedgehogs. *Ibid.*, No. 2311, 1—12.

Mellett, J. S., 1968: The Oligocene Hsanda Gol Formation, Mongolia: A Revised Faunal List. *Ibid.*, No. 2318, 1—16.

Muizon, Christian de., 1977: Révision des Lagomorphes des Couches à *Baluchitherium* (Oligocène Supérieru) de San-tao-lo (Ordos, Chine). *Bull. Mus. Natl. Hist. Nat. (Paris)*, 3e ser., no. 488 (Sci. Terre 65): 1—29.

Osborn, H. F., 1900: Phylogeny of the Rhinoceroses of Europe. *Bull. Amer. Mus. Nat. Hist.*, Vol. 13, 229—267.

————, 1923: *Cadurcotherium ardynense* from Mongolia. *Amer. Mus. Novitates*, No. 92, 1—2.

————, 1924: *Cadurcotherium ardynense*, Oligocene, Mongolia. *Ibid.*, No. 149, 1—4.

Sulimski, A., 1970: On some Oligocene Insectivore Remains from Mongolia. *Pal. Polonica*, No. 21, 53—72.

Sych, L., 1975: Lagomorpha from the Oligocene of Mongolia. Results of the Polish-Mongolian Palaeontological Expeditions, Part VI. *Palaeont. Polonica*, No. 33, 183—199.

Teilhard de Chardin, P., 1926: Descriptions des mammifères Tertiares de Chine et de Mongolie. *Ann. Paléont.* Vol. 15. 1—52.

Trofimov, B., 1958: New Bovidae from the Oligocene of Central Asia. *Vert. Palasiatica*, Vol. 2, 243—247.

PRELIMINARY OBSERVATIONS ON THE OLIGOCENE DEPOSITS AND MAMMALIAN FAUNA FROM ALASHAN ZUOQI, NEI MONGGOL

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Key words Mammalian Fauna, Middle Oligocene, Alashan Zuoqi Nei Monggol (Inner Mongolia)

Summary

In 1978, an IVPP field team recovered a large collection of Oligocene mammals representing several hundred individuals at Alashan Zouqi, western Nei Monggol (Inner Mongolia). These mammals are collected from both sides of a small gully named ulantatal, and therefore the fauna is called the "Ulantatal fauna". This paper briefly introduces this fauna and presents a preliminary discussion of its geological age.

The Ulantatal locality is in the Jilantai Basin which contains deposits of Oligocene, Pliocene and Pleistocene age. At Ulantatal, only about 20 meters of Oligocene strata are exposed and these strata form monadnocks and mesas. The Oligocene strata consist mainly of light reddish-purple and sandy yellowish mudstone and clayey siltstone with one or two intercalated beds of sandstone and gravel. Some horizons also contain gypsum and conglomerate. The lithology of the Oligocene strata at Ulantatal is somewhat similar to that of the middle Oligocene strata near the Qingshuiyin (Tsingshiyin) locality in Ningxia.

Brief description of the fauna

After preparation and preliminary study, about 30 species representing 18 genera, 16 families and 7 orders of mammals are present in the Ulantatal fauna (cf. the faunal list in the Chinese text).

Amphechinus rectus Matthew and Granger, 1924

24 mandibles of variable preservation represent a wide size range but as a whole from a gradational series. The morphology of the teeth of these specimens is essentially the same as specimens found in both the Hsanda Gol and Sanshenggong (Saint-Jacques) faunas of Nei Monggol, so at present the Ulantatal specimens are referred to the same species.

Sinolagomys cf. *S. kansuensis* Bohlin, 1937

The cheek teeth of a left mandibular ramus of an adult are identical to those of *S. kansuensis* in size and morphology but differ in the ratio between measurements of the talonids and trigonids.

Sinolagomys major Bohlin, 1937

The ratios of talonid to trigonid measurements of a juvenile lower jaw with P_4-M_2 from Ulantatal are nearly the same as those of *S. major* and *S. gracilis*, but the teeth from Ulantatal are larger.

? *Bohlinotona* spp.

In 1977, Muizon described the new genus *Bohlinotona* and placed it in the Ochotonidae. Over 200 variably-preserved upper and lower jaws from Ulantatal may pertain to this genus, and, if so, represent the largest sample of *Bohlinotona*. Based on the size and morphology of these specimens, more than one species probably is represented.

Ordolagus sp.

In 1977 Muizon also restudied the specimens found at Sanshenggong by Teilhard and established the new genus *Ordolagus* on the basis of lower jaws and cheek teeth. 14 fragmentary upper and lower jaws from Ulantatal represent all the cheek teeth though they are not in a sigle individual. Whether or not they pertain to *O. teilhardi* will require further study.

Ardynomys sp.

The three fragmentary lower jaws from Ulantatal include complete rows of cheek teeth which are essentially identical to those of *A. olseni* except for their smaller size and longer M_3's. Until now, *Ardynomys* was known mostly from North America, the People's Republic of Mongolia and Kazakstan (USSR). Only Dawson (1968) previously mentioned a specimen from China.

Cyclomylus lohensis Matthew and Granger, 1923

In addition to 4 fragments of left lower jaws bearing P_4-M_3, several other mandibular rami with incomplete cheek teeth were collected at Ulantatal. These specimens are nearly the same as those of *C. lohensis* and are smaller than those of *Tsaganomys*. The closing of roots can be seen in some of the Ulantatal specimens.

Cyclomylus cf. *C. minutus* Kowalski, 1974

A partial left lower jaw with P_4-M_2 has teeth that are smaller but not as hypsodont as those described by Kowalski.

Plesiosminthus cf. *C. tangingoli* Bohlin, 1974

Of 3 lower jaw fragments from Ulantatal, one bears a complete cheek tooth row. These teeth are nearly the same size and the same crown morphology as those of *P. tangingoli* except that M_1 of the Ulantatal specimen apparently is longer.

Selenomys mimicus Matthew and Granger, 1923

The cheek teeth of a partial left mandibular ramus with M_{1-3} are essentially identical in size, crown height and morphology to those of *S. mimicus* from Hsanda Gol.

Cricetidae gen. et sp. indet.

A broken palate with M^{1-3} and 4 lower jaw fragments (3 bearing complete cheek tooth rows) may represent more than one species.

Tataromys plicidens Matthew and Granger, 1923

Tataromys sigmodon Matthew and Granger, 1923

Tataromys grangeri Bohlin, 1946

Tataromys spp.

Specimens of *Tataromys* are particularly abundant at Ulantatal. There are over 100 upper and lower jaws bearing cheek teeth of variable preservation. Of 5 damaged skulls bearing complete dentition, one is associated with a finely preserved mandible. Based on their size and tooth morphology, these specimens certainly represent more than three species.

Didymoconus cf. *D. berkeyi* Matthew and Granger, 1924.

2 broken mandibles, one with P_{2-3} and the other with M_{1-2}, from Ulantatal are the same as those of *D. berkeyi* in more robust mandible.

Didymoconus sp.

Besides several mandibular rami bearing a few cheek teeth, there is a fragmentary upper and lower dentition consisting of C-P^4 and I_3-P_4 belonging to a single individual. This specimen is the same size as *D. colgatei* but P^3 has a well-developed paracone and protocone, a small metacone and a distinct parastyle and thus is relatively molariform. Thus, a new species of *Didymoconus* probably is present at Ulantatal.

? *Hyaenodon* sp.

2 broken mandibular rami, one with P_{2-4} and the other with P_{1-2}, were collected at Ulantatal. The P_1 of the latter specimen is relatively small and single-rooted.

? *Cynodictis* sp.

In addition to an isolated P_2 and M_1, there are 2 lower jaws from Ulantatal, one with P_4-M_1 and the other with the alveoli for C-P_3. These specimens resemble ? *Cynodictis elegans* from the Hsanda Gol Formation in size and structure of the lower premolars.

Palaeogale ulysses Matthew and Granger, 1924

A left mandibular ramus with C-M_1 and the roots of M_2 is the best specimen of a carnivore found at Ulantatal. Its assignment to *Palaeogale* (*Bunaelurus*) *ulysses* is justified by its size and tooth morphology.

Palaeogale parvulus Matthew and Granger, 1924

The size and morphology of a partial right dentary with P_3 and M_1 and roots of P_4 and M_2 closely resemble those of *Palaeogale parvulus*.

Carnivora, indet.

A well preserved right M_1 from Ulantatal lacks a metaconid and bears a weak talonid and hypoconid.

Cadurcodon sp.

Besides an isolated M^1 and two incisors there are two left dentary fragments, one with P_3 DP_4 and M_{1-2} and the other with DP_{2-4} and M_1 from Ulantatal M^1 is relatively longer and hypsodont and has a relatively oblique protoloph and metaloph and its hypocone and protocone are distinctly contracted. The labial faces of the lower cheek teeth have weak vertical grooves. In view of the above distinctive features, the Ulantatal specimens may represent a new species.

Aceratherium sp.

A fragmentary skull with complete right cheek teeth and partial (broken) left cheek teeth plus a juvenile left dentary fragment with C, P_1, DP_{2-4}, M_{1-2} and unerupted M_3 were collected at Ulantatal. The nasals of the former specimen are relatively long and the nasal incision is relatively deep; its upper premolars are submolariform with the protolophs and metalophs forming a "U-shaped" shelf lingually. These specimens from Ulantatal thus may represent a new species.

Eumeryx sp.

There are three right dentary fragments from Ulantatal: one with DP_4, the other with DP_4-M_1 and the last with M_1 (?). A broken upper molar also is present. In size and structure they resemble specimens of *Cervides* (*Eumeryx*?) described by Teilhard.

Palaeohypsodontus sp.

The Ulantatal material consists of 2 fragmentary left dentaries, one with P_4-M_2 and the other with M_{2-3}; an isolated right M_2; and an incisor. These specimens are identical to those of *P. asiaticus* from the Hsanda Gol Formation, which is the oldest representative of the Bovidae.

Mammalia, indet.

The M_{1-2} of a left dentary fragment have paraconids and metaconids that are close together. Together with the protoconids, entoconids and hypoconids, these two cusps form two transveres ridges (no oblique crests). There seem to be longitudinal ridges extending anteriorly from hypoconulids on these teeth. At present, this specimen's ordinal affinities have not been determined.

Preliminary analysis of geological age

Among the middle and upper Oligocene deposits of Asia, which are located mainly in China, Mongolia and Kazakhstan (USSR), the best known is the Hsanda Gol Formation. The late Oligocene age of the fossils from Taben-buluk and Shih-chiang in Kansu studied by Bohlin (1937, 1942, 1946) has not been questioned. Based on their study of the stratigraphy of the upper and middle Oligocene deposits of the Qianlishan District (Nei Monggol), Wang *et al.* (1981) assigned a middle Oligocene age to the deposits in Qingshuiyin and Sanshenggong which Teilhard and some other paleontologists earlier considered to be of late Oligocene age. In the nearly half a century since its discovery, a great amount of work by Soviet, American, Polish and Mongolian paleontologists has been devoted to the Hsanda Gol Formation. Radiometric data now confirm that the age of the Hsanda Gol Formation is middle Oligocene.

More than 10 species of fossil mammals from Ulantatal are very similar to those from the Hsanda Gol fauna. Among these, *Selenomys mimicus, Palaeogale ulysses, P. parvulus* and *Palaeohypsodontus* sp. are known only from the Ulantatal and Hsanda Gol. Evidently, the age of the Ulantatal fauna is the same as that of the Hsanda Gol fauna: middle Oligocene.

Besides the lithological similarity of the strata at Ulantatal and Qingshuiyin, there also are some fossil mammal species (e.g., *Cyclomylus lohensis*) found at both localities. These similarities between Ulantatal and Qingshuiyin also extend to Sanshenggong, demonstrating that these three localities are of the same age.

It is worth noting that some components of the Ulantatal fauna (e.g., *Sinolagomys* cf. *S. kansuensis, S. major* and *Plesiosminthus* cf. *P. tangingoli*) are found only in the late Oligocene at Taben-buluk and have not been found in the Hsanda Gol Formation. Thus, some typically late Oligocene taxa are present in the Ulantatal fauna. In contrast, *Ardynomys,* a taxon present at Ulantatal, is typically found in early Oligocene or late Eocene deposits in Asia and North America. Its occurrence at Ulantatal indicates that *Ardynomys* survived until at least the middle Oligocene.

In conclusion, the age of the Ulantatal fauna can be preliminarily assessed as middle Oligocene.