

河北张北第三紀河狸化石

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中国第三紀的河狸化石自1942年德日进 (Teilhard de Chardin, P.) 研究了山西榆社的材料后,二十年来从未有过任何新的发现或报导。1960年夏,河北省煤管局地质队于河北省张北县瓦房营子附近的汉诺坝玄武岩的粘土夹层中采到一批标本,經由地质部地质科学研究所古生物室轉来古脊椎动物与古人类研究所。化石多破碎,其中有一河狸类的下牙床较为完整,与其共生的还有一兔形类的前臼齿,河狸类的一左胫骨及魚的鳃盖等。笔者現將这批材料做一鉴定与报导。在研究过程中,承楊鍾健所长及周明鎮先生尽心指导;又蒙王哲夫、沈文龙、杜治和张宏等同志分別代为照象、繪图及修理标本,笔者深为感謝。

化 石 記 述

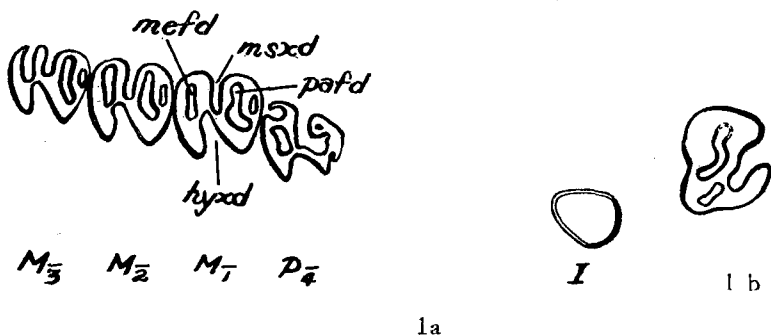
啮齿目 Rodentia

河狸科 Castoridae

单沟河狸属 *Monosaulax*张北单沟河狸 *Monosaulax changpeiensis* sp. nov.

(图版I, 图1a—1d; 插图1)

材料: 一未成年个体的右下颌骨, 水平枝断于第三臼齿之后, 直立枝及轉角部分缺失; 具有完全的颊齿列 (P_4-M_3); 門齿前端殘破。古脊椎动物与古人类研究所编号: V. 2644。

图1 *Monosaulax changpeiensis* sp. nov.

1a. 右下颌骨, 磨面視 3/1。示門齿外緣呈半圓凸面及颊齿图式。

(Right mandible, grinding surface, 3/1)

1b. 前臼齿在中沟消失处的切面, 3/1。示无前坑。

(Cross section of P_4 , 3/1)

地点及层位: 河北张北县两面井瓦房营子西南; 汉诺坝玄武岩的粘土夹层中, 中新世。

特征: 大小、齿型与北美的 *M. hesperus* 比较相近。门齿外缘呈半圆形凸面; 颊齿齿冠较低。前臼齿近截锥形, 始终无前坑 (pafd) 出现, 仅有外稜 (hyxd)、中稜 (msxd) 和后坑 (mefd)。在初磨的牙齿上, 中稜宽阔伸向前方并与外稜紧贴。所有臼齿的前坑前方均有一小坑出现。

描述: 化石呈黝黑色。右下颌骨在第三臼齿后的部分已失落, 就保存的水平枝观察, 牙床不高, 较薄而细长; 腹缘微成弧形向下凸出; 接合面 (symphysis) 处破碎; 唇面的神经孔位于齿虚位的后部。

门齿弯曲平缓, 前部残缺, 横切面近梯形、稍圆, 前缘的珐瑯质构成一光滑的半圆面, 无任何纹饰。

颊齿齿冠较本属其他各种为低。

下前臼齿出齿不久, 近截锥形, 嚼面面积约为牙根处的 3/4 左右。中稜内曲向前与宽阔的外稜相毗邻, 两稜紧贴, 几将牙齿勒切成两半。无前坑, 但在内前侧转角处有一小坑, 前外侧也有一很浅的垂直切沟。在初磨的牙齿上已有后坑出现, 斜横于齿的后方中部, 它的内侧也有一较深大的切沟。外沟宽深, 约伸达牙根部; 中沟约占齿冠高度的一半。在中沟消失处的切面上 (图 1, 1b), 下前臼齿呈椭圆形, 外稜变狭, 向后斜插至嚼面中部。后坑是由齿的后内方斜向前伸与外稜成对顶之势。中稜已变为中坑, 成细长的蠕虫状, 自齿的中部弯向前方。前坑却始终未出现。

下臼齿略成方形, 第三臼齿稍微退缩。具前坑和后坑。前坑较长弯成新月形, 其前方各有一小坑与 *M. hesperus* 的相同; 后坑较短, 横列于齿的后方, 惟第三臼齿的后稜尚未磨成封闭的后坑。中稜狭; 外稜较宽, 伸在中稜与后坑之间。侧面上, 外沟长, 中沟已近消失。臼齿前面有两个小牙根; 后面为一大牙根, 呈半圆形。

标本测量 (单位: 毫米)

	长(L)	宽(W)	高(H)
P ₄ -M ₃ (嚼面) (crown)	15.8		
P ₄ -M ₃ (基部) (base)	17.0		
P ₄ (嚼面) (crown)	4.0	3.0—4.1	
P ₄ (基部) (base)	4.9	4.0—4.8	
P ₄ 齿冠高 (在唇面后方) length (at buccal-posterior surface)			4.8
M ₁ (嚼面) (crown)	4.1	3.8—4.1	
M ₂ (嚼面) (crown)	3.8	3.8—4.0	
M ₃ (嚼面) (crown)	3.9	3.8—3.3	
牙床在 P ₄ 唇面处高 Depth jaw below P ₄ buccal surface			11.0
牙床在 P ₄ 舌面处高 Depth jaw below P ₄ lingual surface			10.3
牙床在 M ₃ 唇面处高 Depth jaw below M ₃ buccal surface			9.0
牙床在 M ₃ 舌面处高 Depth jaw below M ₃ lingual surface			8.9
齿虚位 Diastema	9.0		

比较: *Monosaulax* 属为斯特汤 (Stirton, R. A.) 在 1935 年从 *Palaeocastor* 划出的一类限于北美中新世后期的河狸。当时斯特汤还把与这属特征相同的欧洲标本暂归为 “*Monosaulax*”, 后来欧洲方面也曾有过该属化石的研究报导。

Monosaulax changpeiensis 虽与本属其他各种相象, 特别是与 *M. hesperus* 更接近些,

但也有一些差别,如:

1. 颊齿齿冠较低: 在本属其他种间, 齿冠高度因无确切的测量数字, 仅能就插图对比。在斯特湯 (1935) 的插图 72 中, 有一前臼齿 (No. 31435) 约与张北标本的年龄相当或稍老, 其齿冠高约 6.5 毫米, 而张北标本则为 4.8 毫米; 同样在插图 73 中也有一相当的臼齿 (No. 31431), 冠高约 5.0 毫米, 张北标本则在 3.0—3.8 毫米间。这种齿冠的差异或许说明 *M. changpeiensis* 具有较为原始的性质。

2. 前臼齿无前坑: 关于 *Monosaulax* 属前臼齿的特征斯特湯曾较详细地描述过, 虽然早期牙齿的型式由于插图简略难于对照, 但前坑是不成问题的在磨蚀不久后即行出现, 而张北标本是始终无前坑出露。

3. 前臼齿在早期有较多的纹饰等。

鉴于上述的几点差别和地理分布上的意义, 张北标本可以认为是本属的一个新种。

Castoridae gen. et sp. indet.

(图版 I, 2a—2b)

与 *Monosaulax changpeiensis* 化石一起采到的有一近于完整的河狸类的左胫骨。其近端关节面少受磨蚀风化, 胫嵴下部残缺。胫骨前视成“S”形, 下外侧与腓骨的接合面处破碎, 不易看出两骨的愈合程度。胫嵴尖锐向前远伸, 长约胫骨的一半。胫骨外侧后窝浅, 在胫嵴上部骨的切面与 *Trogotherium* 相似, 而与 *Castor* 不同。胫骨远端变粗, 呈方型。与距骨相关节的滑车外侧凹面宽浅, 内侧凹面深狭。其一般特征与 *Castor* 相似。

斯特湯在 1935 年曾简略地描述过 *Monosaulax pansus* 的一胫骨化石, 张北标本在形态上与之颇有相似之处, 惟大小相差较远。北美标本虽无确切测量数字, 但斯特湯提到: “胫骨长短约为 *Castor canadensis subauratus* 的 1/3”, 估计约长 50 毫米左右, 而张北标本则长达 72 毫米。但就下颌骨观察, *Monosaulax changpeiensis* 与 *M. pansus* 的个体大小相近, 因之, 从这种下颌骨与胫骨的大小比例上看, 很难断定张北的胫骨化石与下颌骨可能是属于同一个体或同种的不同个体。这要有待于进一步的研究和发现来解决。

化石编号: 古脊椎动物与古人类研究所 (V. 2645)。

Lagomorpha gen. et sp. indet.

(图版 I, 3a—3b; 插图 2a—2b)

张北的另一件标本是一个属于兔形目的左上第四前臼齿。牙齿半高冠, 唇面具两

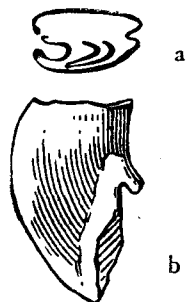


图 2. *Lagomorpha* gen. et sp. indet.

a) 舌面视 5/1 (left P⁴, grinding surface)
b) 侧面视 5/1 (same specimen, lateral view)

个平行的短小牙根,舌面牙根宽厚粗壮,与齿冠交接处成一较显著的界面。牙齿嚼面近卵圆形,长 4.8 毫米,宽 2.0—3.0 毫米。由珙瑯质构成的纹饰偏于齿的前部,新月型谷 (crescentic valley) 的后翼退缩,唇面谷 (buccal valley) 成箕形开口于唇面,在谷两翼的末端各有一小突起。次尖 (hy)、比原尖 (pr) 稍向内缩,内沟较浅短,长约为齿冠高的 $3/4$ 。

从齿的型式、大小和牙根等特点来看,它与 *Desmatolagus* 属有一些相似处,但又更象 *Titanomys*, 特别是与梅遮 (Major, C. I. F., 1898) 的图版 36, 插图 8 及图版 39, 插图 19 的标本更近似些。*Desmatolagus* 是我国较常见的渐新世化石,而 *Titanomys* 则限于欧洲,其时代可晚至中新世。张北标本既与 *Monosaulax Changpeiensis* 共生,由时代上推测归于 *Titanomys* 的可能性或许大些。

化石编号: 古脊椎动物与古人类研究所 (V. 2646)。

結 語

张北的材料虽然破碎零星,但它有一定的生物和地层的意义。首先, *Monosaulax* 属这类比较古老的河狸过去主要发现于北美洲,在亚洲它还是第一次发现。在中新世时,我国北方至少有着 2 种河狸生存,即大的 *Amblycastor* 和小的 *Monosaulax*。

张北标本采自汉诺坝玄武岩流的粘土夹层中,距该玄武岩的标准地点——汉诺坝去不过二、三十公里。过去地质学家们多把这一玄武岩流与东北的撫順系相对比,时代定为晚渐新世。张北材料的发现为这一玄武岩的时代提供了新的线索。因为 *Monosaulax* 属在时代上是发现于晚中新世,或许还稍早些,今对比中国的 *M. changpeiensis*, 一則它的齿冠较低,可能较为原始;同时与它共生的兔形类又与中新世中期的 *Titanomys* 属相近似。因此,就两种化石相互参证,把产化石的地层试定为中新世还是比较合理的。或者说仅就古生物方面的依据来看,在这厚达 500 米的汉诺坝玄武岩的夹层中是包含了中新统的沉积在内。

参 考 文 献

- Barbour, G. B. 1929 The Geology of the Kalgan Area. Mem. Geol. Surv. China, (A) 6, 54—61.
 Black, C. C. 1961 Rodentia and Lagomorpha from the Miocene Fort Logan and Deep River Formations of Montana. Postilla, Yale Peabody Mus. 48, 6—7.
 Bohlin, H. 1942 The Fossil Mammals from the Tertiary Deposit of Taben-buluk, Western Kansu. part 1, Insectivora and Lagomorpha. Pal. Sinica, n. s., (C) 8a, 29—79.
 Major, C. I. F. 1898 On Fossil and Recent Lagomorpha. Trans. Linnean Soc. (2) 7, 433—49.
 Schreuder, A. 1929 *Conodontes (Trogontherium)* and *Castor* from the Teglian Cray. Archs. Mus. Teyler (III) 6, 215—22.
 Stirton, R. A. 1935 A Review of the Tertiary Beavers. Univ. Calif. Publ. Bull. Dept. Geol. Sci. 23(6), 391—458.
 Teilhard de Chardin, P. 1942 New Rodents of the Pliocene and Lower Pleistocene of North China. Inst. Ge'o-Biol. Pekin, 9, 1—23.
 Wood, A. E. 1940 The Mammalian Fauna of the White River Oligocene. part II, Rodentia. Trans. Amer. Phil. Soc., n. s., 28, 351—7.
 Wood, H. E. 1945 Late Miocene Beaver from Southeastern Montana. Amer. Mus. Novitates, 1299, 1—6.
 Young, C. C. 1955 On a new *Trogontherium* from Hsiatsaohwan, Shihhunghsien and with notes on the Mammalian Remains from Chi-Tsu, Wuhohsien, Anhwei. Acta Pal. Sinica, 3(1), 55—6.

A TERTIARY BEAVER FROM CHANGPEI, HOPEI PROVINCE

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(Summary)

Some mammalian fossils were collected from the interbedding clay of Hanopa Basalts, Changpeih sien, Hopei. Among the material are a mandible of beaver, a tibia of another castorid, a lagomorph upper premolar and a pisces operculum. These fossils are described in this note.

Family Castoridae

Genus *Monosaulax*

Monosaulax changpeiensis sp. nov.

(Plate I, 1a—1d, fig. 1)

Type: Right mandible of an immature individual with all cheek teeth (P_4 — M_3), but lacking the anterior part of incisor and ascending ramus (IVPP No. 2644).

Locality and Horizon: Wafangyingtze, Changpeih sien, North Hopei, near Kalgan. Interbedding clay of Hanopa Basalts, Miocene.

Diagnosis: Similar to *Monosaulax hesperus* in size and cheek teeth pattern. Incisor with round enamel anterior surface; cheek teeth comparatively lower than the other known species of this genus. Premolar cylindrical, mesoflexid broad extending forward to join the hypoflexid anteriorly. Parafoissettid never appear at any stages of wear. Molars with a tiny fossettid anterior to parafoissettid as in *M. hesperus*.

Description: The lower jaw is relatively shallow and slightly convex downward ventrally. The mental foramen is on the rear of the diastema. Incisor curves moderately and is rounded trapezoid in cross-section. Enamel of the external border is smooth-surfaced. Crowns of cheek teeth is comparatively lower than in other species.

P_4 when first erupt is conical, dimensions of triturating surface are approximately three-fourths that at the base. A very broad mesoflexid extends anteriorly to connect closely with hypoflexid. Parafoissettid never appears at any stages of wear although a tiny pit is seen placed on the anter-interior surface, but obviously this is not a fossettid for it wears away soon. Metafoissettid is located obliquely on the medium of rear of the tooth and a small niche leads to it internally. Hypostriid on the buccal surface runs from hypoflexid downwards nearly the entire length of crown, whereas mesostriid is only to half length.

An elliptical cross section was shown after disappearance of mesostriid. Hypostriid becomes narrow and mesoflexid changes into a fossettid which curves far anteriorly. Metafoissettid extends anteriorly and obliquely from internal posterior side.

Molars are square in outline and the third one reduces slightly. They possess a tiny fossettid anterior to long-crescentic parafoissettid as in *M. hesperus*. Metafoissettid, comparatively shorter than para., is placed transversely on the rear. In M_3 the metaflexid is

not inclosed as a fossettiid. A slightly broader hypoflexid inserts between mesoflexid and metafossettid. The hypostriid is long and the mesostriid nearly vestiged. Lower molars have two small anterior roots and a large posterior one.

Comparison: It is evident that Changpeih sien specimen is in general close to *Monosaulax* of North America except in the following respects: 1) Crown of *M. changpeiensis* is lower, thus probably more primitive; 2) Parafossettid never appears in premolar; 3) P_4 is more complicate at early stage of wear.

Castoridae gen. et sp. indet.

(Plate I, 2a—2b)

A nearly complete left tibia (IVPP V2645) collected together with the above specimen, similar in shape to that of a Nevada specimen (Loc. 2027) of *M. pansus* except in size. The measurement for *M. pansus* was not given. Judging from the statement "approximately one-third as large as that of recent beaver (*Castor canadensis subauratus*)" (Stirton, 1935 p. 418), it is estimated as 50 mm long, but the Chinese specimen is 72 mm, about 50% longer. As the jaws of *M. changpeiensis* and *M. pansus* are nearly same in size, so that the tibia from Changpei may not be that of *M. changpeiensis*.

The tibia is roughly S-shaped in anter-posterior view. Its tibial crest projects forward far and sharply, its posterior tibial fossa relatively shallower than that in the recent beaver.

Lagomorpha gen. et sp. indet.

(Plate I, 3a—3b, fig. 2a—2b)

Another specimen (IVPP V2646) is an isolated lagomorph P^4 . It is subhyposodont and with two small roots on the buccal side and a large lingual one. The grinding surface is ovate. The posterior wing of crescentic valley is more or less reduced and the buccal velley, with two tubdercles on each side, opens externally. Hypotria is comparatively shallow and short, extending to three-fourths of the crown height.

This tooth has some resemblance to *Desmatolagus*, but is more similar to the Miocene European Ochotona—*Titanomys* (Major 1898, Pl. 36, fig. 8; Pl. 39, fig. 19).

图 版 I 說 明
(Explanation of plate I)

Monosaulax changpeiensis sp. n. V 2644

- 1a. 右下頷; 嚼面 3/1
(Right mandible; grinding surface)
- 1b. 右下頷; 唇面, 略視自上方 3/1
(Right mandible; external view, above)
- 1c. 右下頷; 舌面 3/1
(Right mandible; internal view)
- 1d. 前臼齿在中沟消失处的切面; 3/1
(Right mandible; cross section of P₄ of the same, after disappearance of mesostriid)

Castoridae gen. et sp. indet. V 2645

- 2a. 左胫骨; 前視 1/1
(Left tibia; anterior view)
- 2b. 左胫骨; 內側視 1/1
(Left tibia; inter-anterior view)

Lagomorpha gen. et sp. indet. V 2646

- 3a. 左上第四前臼齿; 嚼面 5/1
(Left P₄; grinding surface)
- 3b. 左上第四前臼齿; 側視 5/1
(Left P₄; lateral view)

