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周口店第21地点馬属一新种*

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本文記述了馬属的一新种。材料是 1951—1952 年在北京周口店第 21 地点采集的。关于这一地点的地质及哺乳动物化石情况,賈兰坡等(1959)曾經有过报导。他們認为,这一地点的地质时代应为中更新世末期或晚更新世早期。

鉴于我們对这一段时期我国馬化石情况所知甚少,同时根据作者的研究,認为本文記述的馬属新种,代表从三門馬到普氏野馬的一种过渡类型,因而有必要予以报导。

本文是在周明鎮教授指导下写成的,承王哲夫先生摄影,沈文龙等同志繪图,作者謹致深切的謝意。

馬科 Equidae Gray, 1821

馬亚科 Equinae Steimann and Döderlein, 1890

馬属 *Equus* Linnaeus, 1758

北京馬 (*Equus beijingensis*, sp. nov.)

特征: 上下頜骨及頰齿碩大。下頜骨高,齿缺較长。第一乳前臼齿不存在。門齿区很宽。原尖长。原脊、后脊較平。下頰齿双叶近于 *caballus* 型,下外谷較浅。

产地及时代: 北京周口店第 21 地点,中更新世晚期或晚更新世早期。

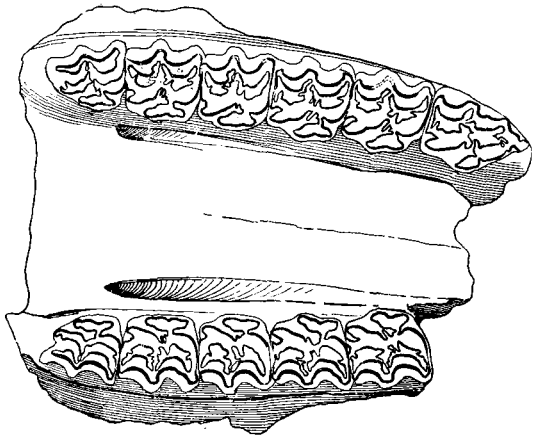

图 1 北京馬(V.2573)上頜骨及頰齿列,腹面視。
Fig. 1. Upper Jaw with Tooth Rows of *Equus beijingensis* (V. 2573), sp. nov., ventral view. ×1/3, approx.

描述:

上頜骨及上頰齿: 上頜骨一块(V.2573, 原編号: Loc. 21, 51、14),仅保存頰齿(右 P^2—M^3, 左 P^3—M^3)所在部分。淡黄色。所属个体相当現代馬六、七岁光景(图 1)。

保存部分相当长而甚宽。左右齿槽外緣最大宽在 P^4、M^1 处,宽 141 毫米。齿列长 199 毫米,前臼齿列与臼齿列分别长 112 与 88 毫米。頰齿大小和三門馬的相当,而比普氏野馬的大,主要是齿长要大一些。

无第一乳前臼齿。除 P^2 外,各頰齿原尖都很长,指数也較大(47.59—

* 8 月 15 日收到。

55.14)；原尖寬而向前突出。前尖、后尖外壁呈弧形。珐瑯質层不很厚，褶皺不很強烈。馬刺在前臼齿上明显存在，在臼齿上則很小，甚至消失。中附尖一般較鈍至較寬。原脊、后脊与齿軸稍稍傾斜到趋向平行。次尖后縮，比原尖小。M^3 后壁有沟槽，在咀嚼面上呈双角形。

下頜骨及牙齿：附有全部牙齿的下頜骨一块（V.2574，原編号：Loc. 21，52、14，頰齿区；Loc. 21，52、17，門齿区），上升枝部分缺失，水平枝下后方磨損。呈乳黃色。所属个体相当現代馬七岁雄性，可能和上述上頜骨属于同一个体（图 2）。

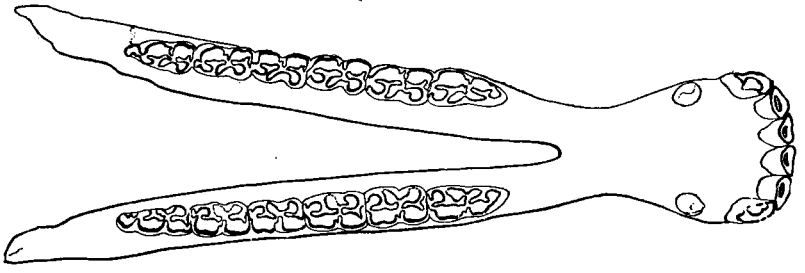

图 2　北京馬(V. 2574)下頜骨及齿列，背面視。
Fig. 2. Lower jaws with Tooth Rows of *Equus beijingensis* (V. 2574), sp. nov., dorsal view. ×1/4, approx.

表 1　北京馬 (V. 2574) 下頜骨及齿列測量和比較：

Table 1　Measurements and comparisons of lower jaws and tooth row of *Equus beijingensis*, sp. nov. (V. 2574) and some other species of *Equus* (in mm.)

比較种 Species / 測量項目 Measurements	北京馬 *E. beijingensis*	三門馬 *E. sanmeniensis*	莫斯巴赫馬 *E. c. mosbachensis*	普氏野馬 *E. przewalskii*	野驢 *E. hemionus*
1. P_2 前下頜骨高 H. of lower jaws before P_2	76	(70.3)	64—75(69.7)	51—55(53)	49—57.5(53)
2. 下頜联合长 L. of symphysis	107	(95)	96—120(104.3)	76—90(86)	65—79(71.6)
3. 齿列长(齿槽) L. of tooth row	199	181,193	192—215(204.8)	186—194(190)	163—177(169)
4. 前臼齿列长 L. of pm. row	106	94—101	97—111	96.5—102(99.5)	84—91.5(88)
5. 臼齿列长 L. of molars row	97	83—88	85—109	89—94(91)	78—84.5(81)
6. 齿缺长 L. of diastema	106	(105,112.5)	113—130(124.2)	76—90(83)	65—79(71.6)
7. 門齿列寬 B. of incisor row	77.8	54,59	72,66	63—69(67)	56.5—65(60.5)
8. 最小寬度 Minimum B.	47.5	(41)	43—49(45)	43—48(44.5)	36—45(39)
9. M_1 下頜間寬度 B. between lower jaws below M_1	98.6	—	—	87—94(92)	78—89(82)
10. 頰齿下最大厚度 Greatest thick of lower jaws	32	—	—	27—30(29)	24—26.5(25)
臼齿-前臼齿列指数 Index (5:4)	91.5	88.3—87.11	92.4—106.2	88.2—94(90.8)	89—94.2(92)
M_3-齿列指数 Index (L. of M_3: 3)	19.1—19.6	15.19—17.87	13.3—18.9	17.5—18.6(18)	16.4—18.2(17.4)
下頜联合-齿缺指数 Index(2:6)	100.94	(90.5,104.2)	74.6—95.5(86)	100—110.5(103.7)	81.4—97.2(88.5)
齿缺-齿列指数 Index (6:3)	53.26	(58,58.3)	55—60.5(57.3)	39.8—45.2(42.7)	42.1—54.6(48.5)

注：三門馬栏括弧中的数字是格罗莫娃(1949)根据照片測量和計算的。臼齿-前臼齿列指数及第三臼齿-齿列指数則是作者計算出来的。右三栏的測量数字据格罗莫娃，括弧中的数字是測量平均数。

就保存部分看，这块下頜骨非常碩大。門齿列寬、P_2 前下頜骨高、左右 M_1 下的頜間寬度及頰齿列下的下頜骨厚度在馬属各种中可算是最大的。其他如下頜联合长、齿列长等，仅欧洲莫斯巴赫馬（*Equus caballus mosbachensis* Reich.）可与之相比。

門齿碩大，齿坎在 I_1 和 I_2 上都很发达，但在 I_3 上則未封閉。犬齿也很发达，右側的保存較好，其尖端达到門齿咬合面的水平。

无第一乳前臼齿。頰齿碩大，前臼齿及 M_3 的长度比普氏野馬的稍大。下后尖近于圓槌形，下后附尖从三角形至伸长的条状。內谷呈U形。下原尖和下次尖外壁寬大，中部甚至稍稍凹陷。外谷不深。外谷后方有下外附尖。下內尖也很碩大，几与下后尖、下后附尖相当。珐瑯質层較厚，褶皺也較簡单。

比較：北京馬上下頜骨碩大，有些測量数字超过其他种馬的最大限度，其他仅欧洲莫斯巴赫馬可与之相比。

与莫斯巴赫馬相比較，北京馬仅頰齿列长及齿缺长較小于其平均数或最小限度，其他数字都超过它的平均数或最大限度。同时莫斯巴赫馬以門齿小、門齿区狹、齿缺长、牙齿褶皺強烈为其主要特征，而这几点恰好和我們的标本相反。

与三門馬相比較，它們的上下頜骨长寬比率較接近，但除齿缺长小于三門馬平均数外，其他数字也都超过它的。同时北京馬原尖长，后脊平，无第一乳前臼齿、双叶 *caballus* 型、下內谷U形，且門齿列甚寬，都說明北京馬与三門馬显然不同，而比它明显进步。

与普氏野馬相比較，除了上下頜骨长寬比率相差很远以外，北京馬还保留着一些原始特征，如 M^3 后有双角形咀嚼面，P_2 前下頜骨高度特别大，而齿缺較长等。

討論：格罗莫娃(1941、1949)根据普氏野馬具有較长的面部、很大的牙齿、珐瑯質层比較厚而褶皺微弱、相对小的臼齿、下門齿齿坎发达、掌蹠骨及趾骨細长等等，認为普氏野馬不可能从任何欧洲馬类中找到它的起源，而应当是亚洲的土著。同时根据上述特征与三門馬最为接近，因此她認为普氏野馬很可能是三門馬或与三門馬极相近的馬的后裔。

从本文对北京馬的描述和比較来看，它的頰齿形态已和普氏野馬的很相近，而上下頜骨长寬比率則較接近三門馬的，同时 M^3 后有双角形咀嚼面、齿缺較长，也是接近三門馬的原始特征。而 P_2 前下頜骨高度，比三門馬和普氏野馬的都大。因此，北京馬可能是稍許特化、而仍存在若干原始性質的、从三門馬到普氏野馬中的一种过渡类型。

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A NEW SPECIES OF *EQUUS* FROM LOCALITY 21 OF ZHOUKOUDIAN*

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(Summary)

A new species of *Equus* is described in this paper. The fossils were collected from Locality 21 of Zhoukoudian in 1951—1952. The geological deposition and mammalian fauna of this Locality had been reported by Prof. Chia and others (1959). They suggested that the geological age of this Locality belongs to late phase of middle Pleistocene or early phase of Late Pleistocene.

Equus beijingensis, sp. nov.

Diagnosis: Upper and lower jaws and cheek teeth large, lower jaws high, diastema comparatively long. DP1 absent. Incisor row broad. Protocone long, protoloph and metaloph more parallel to axis of the tooth row, metaconid and metastylid closer to caballine type, outer valley shallower.

Locality and geological age: Loc. 21 of Zhoukoudian, late phase of middle Pleistocene or early phase of late Pleistocene.

Description: Anterior of a skull with both upper jaws and cheek teeth (V.2573) retains only right P^2—M^3 and left P^3—M^3. It is yellowish in colour, representing an individual six or seven years of age.

The greatest breadth between external walls at the vicinity of P^4 or M^1 is 141 mm, the length of tooth row is about 200 mm and the length of premolar row 112 mm. The size of cheek teeth is equal to that of *E. sanmeniensis*, but larger than that of the living *E. przewalskii*, chiefly in length.

The DP^1 is absent. With the exception of that of P^2 the protocone is very long. The index of protocone is comparatively large (47.59—55.14), the protocone is rather broad, the degree of forward protrusion of the process is greater. The outer walls of paracone and metacone are curved. The enamel layer is not very thick and not very strongly plicated. The caballine fold shows markedly on premolars, but not so on molars or even absent. The mesostyle is in general comparatively broad. The protoloph and metaloph are not aslant, sometimes even parallel with the axis of the teeth. The

* Generally spelt as Choukoutien.

hypocone is smaller than the protocone. There is a groove at the back facet of M^3 showing two projections on the crown of the posterior part.

The lower jaws (V.2574) of the type are well fossilized and yellowish in colour and with horizontal ramus and all teeth preserved. The specimen probably belongs to the same individual with the above mentioned upper jaw, representing a male of seven years old.

Judging from the preserved part, the lower jaws are very large. The breadth of incisor region, the height of lower jaws in front of P_2, the breadth between lower jaws below M_1 and the maximum thickness of lower jaws below cheek tooth row may be in measurements the largest among *Equus*. The other measurements, such as the length of symphysis and the length of tooth row, can only be compared with those of the *E. caballus mosbachensis* of Europe. The measurements of the lower jaws are given in table 1 in the Chinese text.

The incisors are large. The infundibulum is developed on I_1 and I_2, but not closed on I_3. The canines are also developed and in the specimen the right one is well preserved, with its top reaching to the level of cropping surface of incisors.

DP_1 is absent. The cheek teeth are large, and the premolars and M_3 are even larger than those of present *E. przewalskii*. The metaconid is shaped like a round hammer and the metastylid is triangular or band-like. The inner valley is U-shaped. The outer walls of protoconid and hypoconid are broad, even becoming concave in the middle. The outer valley is not very deep and the back wall has a spur. The endoconid is also very large, but not so much as the metaconid and metastylid. Enamel layer is comparatively thick and its plication is simple.

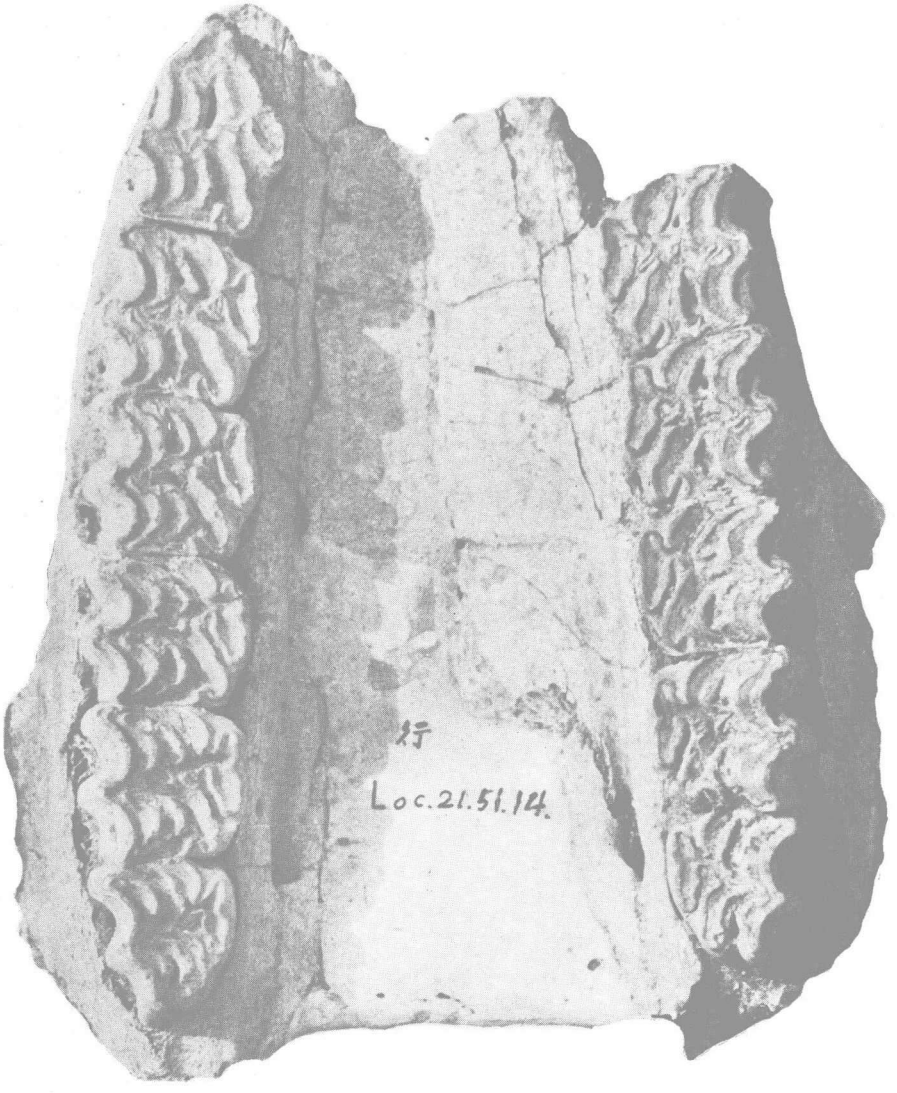
Comparison and Remarks: The upper and lower jaws are very large, some figures of measurements are even beyond the maximum limits of those in other *Equus*, while the others can only be compared with *Equus caballus mosbachensis*. But the latter is characterized by small incisor region, long diastema and strongly plicated enamel of teeth.

In comparison with *E. sanmeniensis*, although their ratios of upper and lower jaws are similar, *E. beijingensis* is characterized by longer protocone, less aslanting metaloph, absence of DP1, caballine type of metaconid and metastylid and broad incisor row. All these characters show that *E. beijingensis* is markedly different from *E. sanmeniensis* and more progressive.

E. beijingensis, having different ratios in the length and breadth of upper and lower jaws as compared with *E. przewalskii*, showed some primitive characters such as: two projections on the crown of the posterior part of M^3, greater depth of lower jaw in front of P_2 and longer diastema.

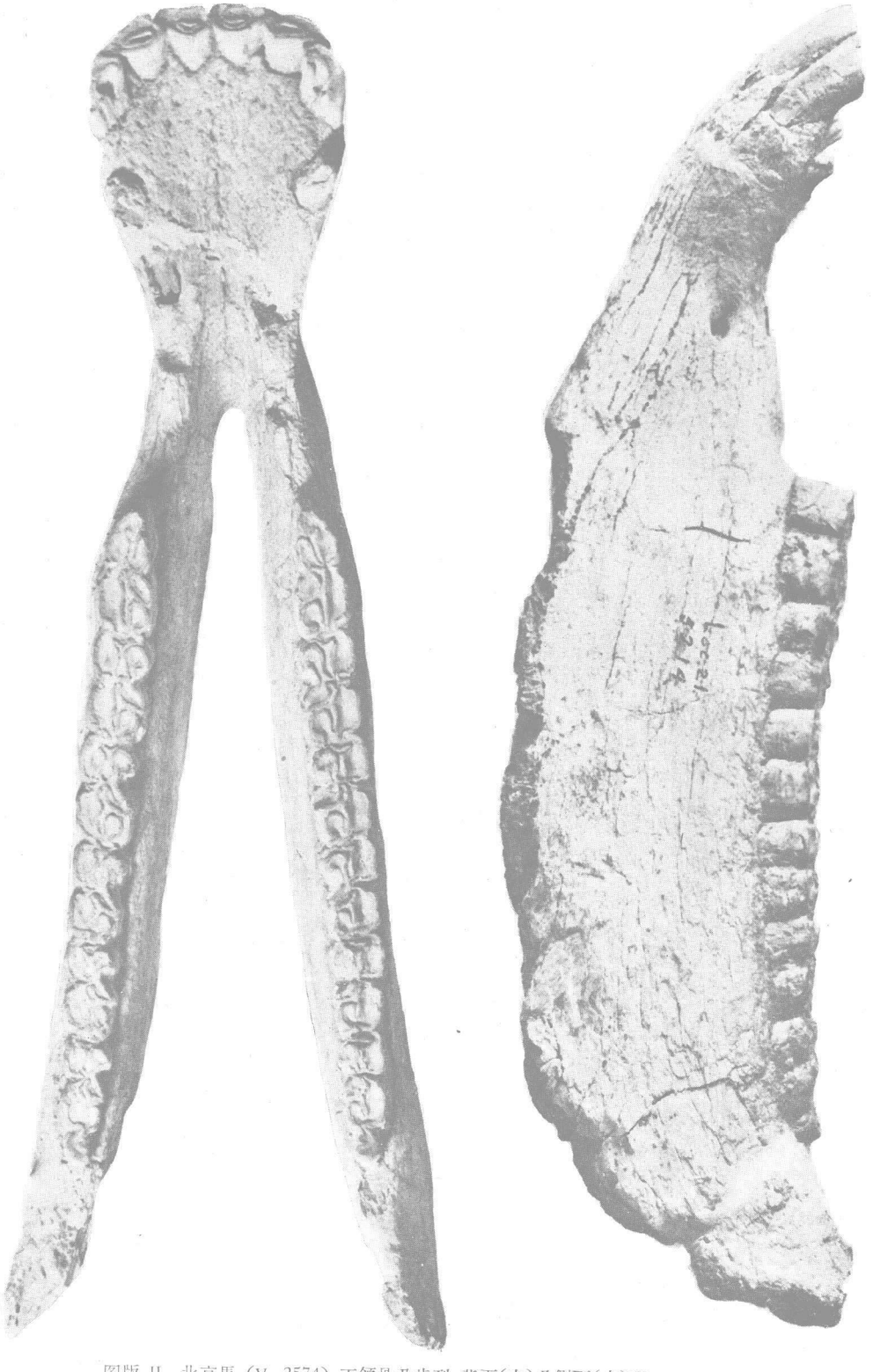
Gromova V. (1941, 1949) suggested that the *E. przewalskii* is descended from *E. sanmeniensis*. They show many common morphological characters such as: longer and narrower face, larger teeth, thicker and less enamel folds, thinner and longer limbs etc.

It seems to the present writer that *E. beijingensis*, although its ratios in the length and breadth of upper and lower jaws are similar to those of *E. sanmeniensis*, and diastema is long, there are two projections on the crown of the posterior part of M^3, but the form of cheek teeth is near to *E. przewalskii*, besides, the lower jaws before P_2 is deeper than that of *E. sanmeniensis* and *E. przewalskii*, all of these suggested that *E. beijingensis* may be a form intermediate between *E. sanmeniensis* and *E. przewalskii*.



图版 I. 北京馬 (V. 2573) 上頜骨及頰齿列,腹面視。

Pl. 1. Upper jaw with Tooth Rows of *Equus beijingensis* (V. 2573), sp. nov., ventral view. ×2/3, approx.



图版 II　北京馬 (V. 2574) 下頷骨及齿列,背面(左)及側面(右)視。
Pl. 2. Lower Jaws with Tooth Rows of *Equus beijingensis* (V. 2574), sp. nov., dorsal (left) and side (right) views. ×1/2, approx.