

## 哈爾濱泮拉城子地區發現的犀牛化石

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### (摘 要)

本文記述的犀牛骨骼化石是 1957 年 7 月農民張營賈(譯音)在哈爾濱西南泮拉城子地區發現的。化石地點位在遜格立(譯音)河岸的第一階地中,距現代河谷沖積層高約 2—3 米。地層順序和堆積物的性質由下而上為棕色泥質砂土,厚 2 米,黃土狀岩石,厚 1.40—1.50 米和厚約 0.80 米的微呈棕灰色的土壤。犀牛化石即發現在最下層棕灰色的泥質砂土中。根據我們對這一下頷骨的研究,這類犀牛和披毛犀滿州變種 (*Rhinoceros tichorhinus* var. *manchuriensis*) 有所不同,應歸於已絕滅了的真正披毛犀 (*Rhinoceros tichorhinus* Fischer)。和披毛犀化石共存的有二件骨器,它們同是用肋骨頭(可能是犀牛的)制成的。其中的一件在其尖端和其一邊有磨製的痕跡。由於骨器是和犀牛化石共存的,所以其時代應屬於舊石器時代(即相當於歐洲舊石器時代的馬格德林期),而不是新石器時代。因為在後者是不會有犀牛化石共存的。由於出產化石的地層是在第 1 階地底部的堆積中,所以其地質時代應屬於第四紀的末期。

(邱中郎節譯)

## DISCOVERY OF A FOSSIL RHINOCEROS IN PANLACHENG TZE NEAR HARBIN

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### (Abstract)

In July 1957, a farmer Chang Yung-chai, who lives in Panlachengtze, the southwestern suburb of Harbin, discovered several bones of a fossil animal, while digging a ditch.\*

This discovery was reported to the Museum of Heilungchiang Province, and after a preliminary examination of the place, where the fossil bones were discovered, it was decided to make an excavation.

The excavation, which was started on September 18 and finished on October 6, gave considerable material in the form of a large number of separate bones of a fossil rhinoceros, the description of which is the subject of this article.

\*Four bones discovered by Chang Yung-chai were handed over by him to the Museum of Heilungchiang Province.

Besides the authors, Fu Wen-chiang a member of the Museum of Heilungchiang Province and interpreter Wang Shu-wen took part in the excavation. The excavation was made on the territory of Brick Factory No. 5 (second department) situated on the border of Panlachengtze at a distance of 7.5 km to the south-west from the centre of Harbin (fig. 1).

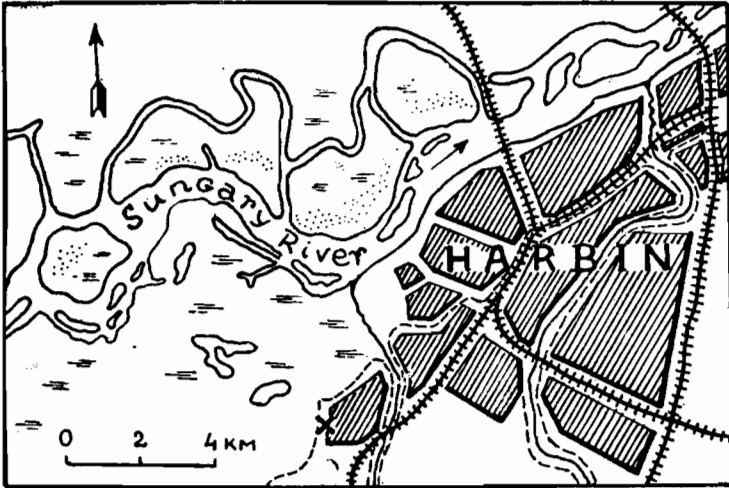


Fig. 1 Sketch-map of the fossil locality of Panlachengtze (cross).

The place of excavation is situated in the western part of an abandoned artificial hollow, formerly used for taking materials for making bricks. The hollow has a rectangular shape stretching from east to west, about 0.25 km in length and 60 to 100 meters in width.

The relief of the place, where the bones were found, represents the first terrace of the Sungari River, lying above flood-lands and rising in a steep ledge to a height of 10 m above the present alluvial valley.

The layer of bones was found at the bottom of the hollow, some 2—3 m above the present alluvium.

The profile of the excavation and the wall of the slope, adjacent to it, show the following structure of strata in the place where the bones were found (fig. 2):

1. The lowest layer of the profile, in which the bones were found, consists of alluvial silty clayish sand, partly slightly flaky, partly non-flaky; light-brown in colour with pale tint, with rare rusty spots and friable iron concretions. In this layer are found small shells of fresh-water mollusca of *Planorbis* type. The thickness of the layer is 2 m, and the bones of rhinoceros were lying in a more silty lower part of this layer, i.e. about 2 m below its upper border.

2. Above it there lies a layer of loess-like rocks with large dark crotowinas (mole-holes). Thickness 1.40—1.50 m.

3. Still higher there lies buried soil, probably only its lower horizon formed of

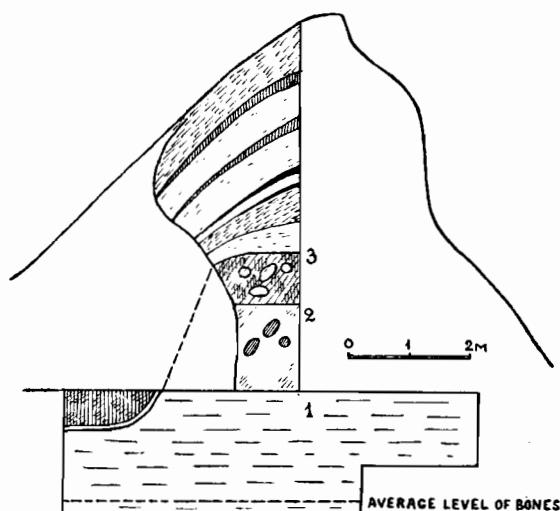


Fig. 2 A schematical geological section of fossiliferous deposits of Panlachengtze.

loess-like rocks, of light-gray colour with slightly brownish-pale tint, with large pale crotowinas. In certain places appear white spots of carbonate. Thickness about 0.80 m.

As a soil layer is not usually very thick, it should be supposed that somewhere a little higher there was a surface of the first "above flood-lands" terrace, which is now buried. Thus the bones of the rhinoceros were covered by a layer of mellow rocks, very near to 4.5 m in thickness, but considering that almost half of it belongs to alluvial sediments, which are usually deposited comparatively fast, one may believe that between the death of the rhinoceros and the time of the sodding of the terrace did not pass a very long period of time.

All overlying (up to 9) layers are a result of landslides and landslips of quite recent time,\* therefore they can be ignored. Their thickness in this place is about 4 m. In the western part of the excavation a pit was exposed (among sandy-clay), which is also filled with slided dark sediments, probably of recent origin.

The excavated bones were lying quite in disorder (Pl. I, fig. 2). The bones adjacent in the skeleton were thrown away to a considerable distance from one another; and on the contrary, lying together were the bones from distant parts of the skeleton. So the humerus lay side by side with the thigh-bone and shin-bone; the ulna was at a distance of about 3.5 m from the humerus. The skull was absent, but the mandible was *in situ*, side by side with the thigh-bone. The distance between the most distant bones was 8 m from the north-east to the south-west and 7.5 m from the north-west to the south-east.\*\* (Pl. IV, fig. 1).

In the southern part of the excavation there was a big heap of bones, including the mandible and three biggest leg-bones. This allows us to think that the body of the

\*Mostly they were probably caused by taking clay for brick manufacture.

\*\*The excavation was stopped, as for its continuation it was necessary to take away a big mass of earth. It is possible that some bones may be still lying there under this mass.

rhinoceros lay somewhere in this region. As both the big bones of pelvis and sacrum lay to the north of this heap, it may be supposed that the rhinoceros's head was lying to the south and its tail to the north.

Almost all the excavated bones belong to one individual. Only in the eastern part of the excavation at the same level and close to the other bones there were found a skull and two bones of a big rodent closely related to marmot (*Marmota sibirica?*), and in the general heap of the bones was found a part of a pelvis of an animal of middle size which looks as if it were ground by water or by some work. Judging by the degree of preservation it seems to be of other time than that of the bones of the rhinoceros\*.

Somewhere there were found small coals and what looked like ash dots and streaks, but no big heap of coal and ash was observed. This is, however, no wonder, as the layer was washed by water.

All bones are slightly fossilized and preserved very badly: some of them are cracked and some destroyed.

This can be explained by the comparatively thin waterbearing layer of soil, which covered it for the last years. But some fractures are covered by patina and give the impression of being old ones.

Only the mandible of the rhinoceros was measured (Pl. II, fig. 1, 2). The measurements of this mandible are near to those of the rhinoceros's mandible, discovered in 1931 in Kuhsiangtun, a suburb of Harbin, neighbouring to Panlachengtze; compared to the mandible of the *Rhinoceros tichorhinus* discovered in 1956 in Fulaerhtzi, there is less similarity (1).

Although the designs of the masticatory surface of the teeth are similar, the length of the toothrow of Panlachengtze rhinoceros is greater (27 to 23 cm) than that of Fulaerhtzi rhinoceros, but on the other hand a part of the mandible from the last molar to the rising hinder part of mandible (processus coronoideus), of Fulaerhtzi rhinoceros is twice larger (8.5 and 4.5 cm), although the total length of the mandible (downward projection from the most distant points) is almost the same (Fulaerhtzi—65 cm, Panlachengtze—67.5 cm). There is a difference in the width of the mandibles in their hinder parts. The distance between the external points of the upper part of processus articularis of Fulaerhtzi rhinoceros is considerably wider (46 to 35.5 cm). Thus the rhinoceros from Fulaerhtzi has wider and more massive hinder parts of mandible and shorter row of teeth.

The height of mandible near the back end of  $M_3$  is the same (about 13 cm), which with almost the same length and height (near hinder parts of mandible) does not allow us to class either rhinoceros from Fulaerhtzi or from Panlachengtze as *Rhinoceros tichorhinus* var. *manchuricus* (4). Investigations revealed that the rhinoceros from Panlachengtze belongs to the extinct *Rhinoceros tichorhinus* Fischer (*Coelodonta antiquitatis*

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\*One must bear in mind that it was found in that part of the heap of bones, which was nearest to the place damaged by the old ditch. Therefore it may have got there from overlying layers.

Blumenb.). If this divergence in the proportions of mandible is not connected with the sex and age of the animal\* it is possible to admit one more variety of *Rhinoceros tichorhinus* in Manchuria.

Among the most interesting finds in the process of the excavation of the rhinoceros in Panlachengtze are two bone implements, one of which was evidently roughly made on the spot. They are two little "ploughshares" made of heads of ribs specially for tearing meat off the bones. The position in which they were discovered clearly shows their use (Pl. III, fig. 1). The first and better one is made of a head of rib, probably of a rhinoceros, struck off aslant with part of the rib itself (Pl. III, fig. 2)\*\*. Its greatest length from the middle of the head is 11.5 cm. To our regret the implement was broken and partly crumbled out in ancient time (probably by work). Therefore the length of the working edge can be given only approximately as 8—9 cm. The sharp end and the working edge are polished from the bottom and only at one side. The result was a very convenient implement for keeping in hand and "tearing" off meat: the head was pressed by hand, and the sharp end went into meat as an awl; when the working (polished) edge slid along the bone and the meat, thanks to the ploughshare form of the implement, it was comparatively easy to tear meat off the bone. Although the implement is very convenient and cleverly invented, the description of such an implement has not been found so far in literature to the best of our knowledge.

The second implement is exactly the same, but not so good (too short to cut off a rib). Besides, it is almost unpolished, if we do not count in some polishing of sharp end and working edge, which could be a result of use of the implement in work. It is possible that it was made right on the spot of a piece of rib of the same rhinoceros, which was being eaten. The measurement of its absolute length is 9 cm, the working edge 5—7 cm. (Pl. III, fig. 3).

The first implement was found *in situ*, as if it were thrust into flesh along the body of vertebra, its head protruding above. The working sliding edge was pressed to the bone. On the contrary, the second implement was pointing up, with its sharp end towards the first implement. It was possibly used to tear the flesh off another lower vertebra or was accidentally thrown into the heap of vertebra. There is one more head of rib, also struck off and with a polished end, but it is greatly damaged; and so it is very difficult to decide if it is also an implement or not. Its end is worn off in some plane other than in the above described implements, therefore it can be an implement of a different type, probably for the same purpose.

Besides the above mentioned implements in the heap of the bones of Panlachengtze rhinoceros, no others were discovered, if not counting several bones with unusual fractures. On several bones can be observed some scratches, incisions and damages, made

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\*The specimen from Fulaerhtzi, judging by the wearing down of its teeth, seems to be older, but in general it is comparatively young.

\*\*Owing to the absence of several bones of the rhinoceros skeleton, it is not ascertained if this head is a part of the bones of the same rhinoceros, or if this implement was made before.

possibly by the implements at the time of eating animal. But it is too early as yet to speak about these damages before they have been carefully studied.

The rhinoceros was probably killed at the time when it was drinking water or when it attempted to cross the river. How and with what weapon the rhinoceros was killed we could not find out. But there is no doubt that the rhinoceros after its death became a prey to man.

The bones, as we can see, were not lying in the order of a natural skeleton, not in the order of being washed away by water, i.e. if they were sorted by weight and size. It is not probable that the corpse was eaten by wild animals, inasmuch as no bare bones with the traces of teeth were noticed. The carcass was probably divided among a number of hunters and the bones were put together into a heap. The meat was partly eaten on the spot, but a part of it was torn off the bones and carried away. Proof of this is supplied by the two implements—the ploughshares, which for some reason or other remained on the spot.

No site of comparatively long habitation by man was on this spot. Almost entire absence of any bones of other animals as well as of thrown implements and crushed stone seems to proclaim this. Nor could there be a long maintained big fire, because no trace of it has been preserved. Separate coals, discovered in the strata, speak of a small fire, but it could be accidental. The character of deposits tells us that a rhinoceros perished on the silty sandy bank of the river, probably near the sand bank, which was periodically and often inundated. The finds of marmot bones (*Marmota sibirica?*) tell us about a comparatively dry climate probably of the steppe character of the locality. After a recoil of the river the deposits in most parts were covered by a loess-like layer, probably sliding off from the second-above flood-lands-terrace. The large crotowinas may belong to the marmots.

The third soil layer, sufficiently thick, witnesses a subsequent comparatively great damping of the place, but not its swamping; for there are mole-holes. This layer apparently must belong to Holocene.

To our regret, together with the bones of rhinoceros we got only 2 (conditionally 3) implements of man (if the above mentioned crushed bone is not counted). They all tell us that bones were used for household implements. Therefore, only on the basis of the implements, it is very difficult to speak of the "epoch" of their make and use.

We must proceed from the data connected with the conditions of their lying in the earth. First of all, the presence of rhinoceros tells us that the implements belong to the Paleolithic man. It is a well known fact that in the Neolithic the remains of rhinoceros are not found. Furthermore, the bones and implements are lying in the deposits of the first (the lowest) above flood-lands terrace. This tells us that the bones and implements must belong to the end of the Quaternary period. At that time there was a cold, comparatively dry steppe here (the bones of marmot), on which only rivers with a slow current flowed (absence of pebble layers). River deposits are covered by loess-like rocks (comparatively dry climate).

All the above justifies our conclusion that the bones and implements belong to the epoch of the end of Paleolithic connected with the epoch of last freezing\*. According to the international classification of the Paleolithic-Mortillet-Breuil it must refer to Magdalen.

The above mentioned finds excite great interest, both from the palaeontological and the archacological point of view. This region deserves further investigations, as new finds can be discovered here.

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\*The term "glacial stage" we don't use, as in Manchuria there was practically no such glaciation.



Fig. 1



Fig. 2

Fig. 1 General view of the excavation in Panlachengtze (cross).

Fig. 2 Excavation of the *Rhinoceros tichorhinus* in Panlachengtze.





Fig. 1



Fig. 2

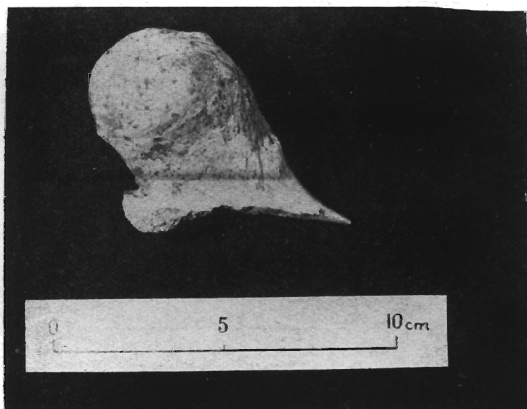


Fig. 3

Fig. 1 Bone implements among the vertebra of *Rhinoceros tichorhinus* Fischer. Upper implement a little away from the position *in situ*.

Fig. 2 An implement made of a *Rhinoceros* rib head.

Fig. 3 A second implement made of a *Rhinoceros* rib head.

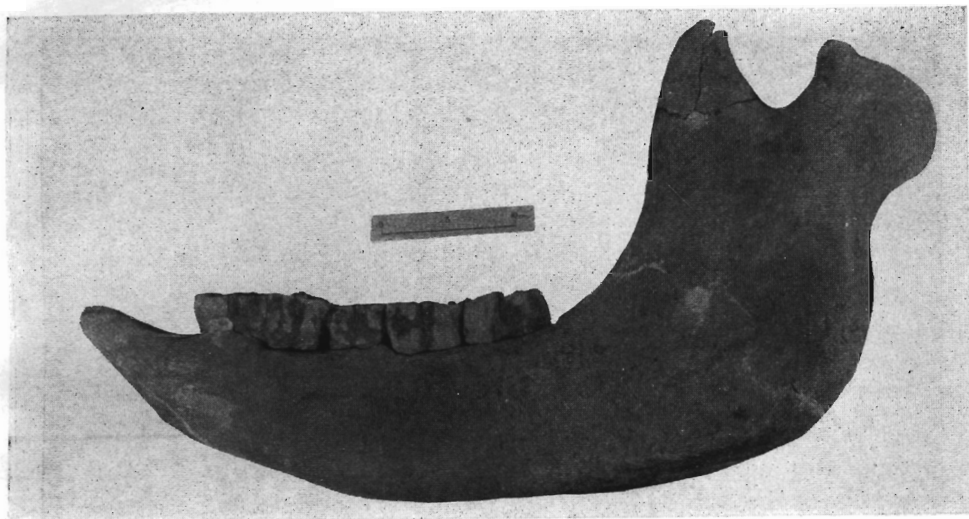


Fig. 1

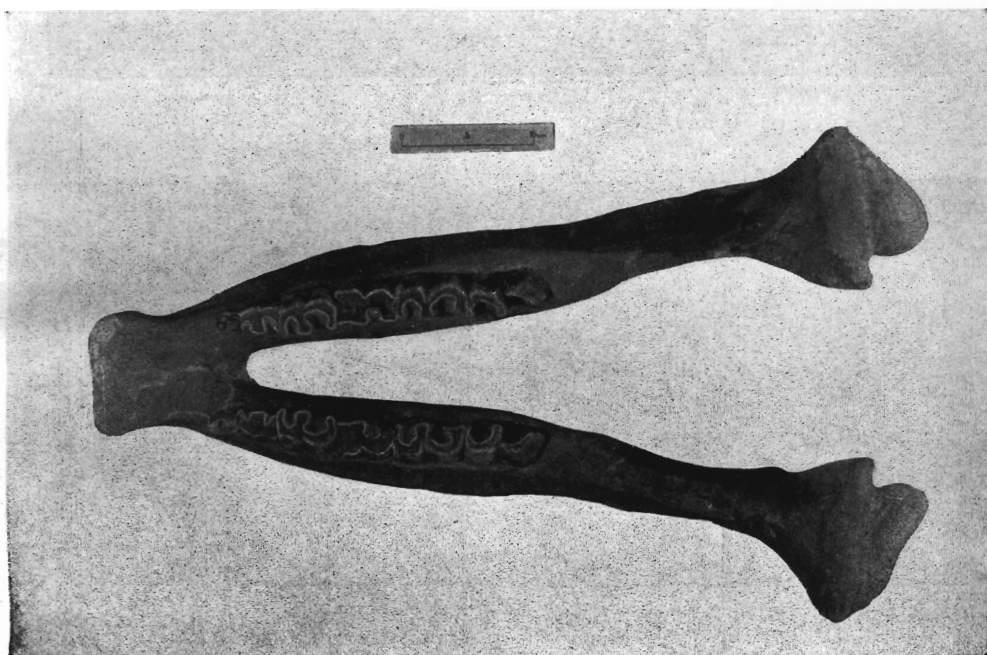


Fig. 2

Fig. 1 *Rhinoceros tichorhinus* Fischer. Mandible. Left side.

Fig. 2 *Rhinoceros tichorhinus* Fischer. Mandible from above.