

## REPORT ON THE EXCAVATION OF THE CHOUKOUTIEN *SINANTHROPUS* SITE IN 1959

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On June 19th, systematic excavation of the Choukoutien *Sinanthropus* Site for the year 1959 was started. Interrupted on September 24th during the rainy season, the work was resumed on October 14th and continued up to the 17th of November. In total we worked 66 days.

The excavation was carried on by an excavation team of the Institute of Vertebrate Palaeontology, Academia Sinica and joined by a number of young workers of Academia Sinica. The students and the teachers of the Anthropological Department of the Faculty of Biology of Fudan University, Shanghai, also took part in it.

The excavation was made in the deposits at the west end of the Kotzetang Cave. We started to dig from the Level 27 down to the Level 29. As a result of this careful excavation, a *Sinanthropus* mandible was discovered. Besides the human fossil, we also collected a number of *Celtis* seeds, a certain number of well preserved mammalian remains and some stone artifacts.

We are greatly indebted to all the comrades who joined in this field work and to our teacher, Prof. Chia Lan-po for his guidance in the course of the present excavation.

### Stratigraphy

During the whole season's work, we dug from three Levels (Levels 27—29) about 171 cubic meters of fossiliferous deposits. In the upper part of the Level 27, a layer about 30 cm thick of fossiliferous breccia is encountered in the north portion of the sediments. It is the basal part of the Layer 8—9 compared with the geological subdivisions made by Teilhard and Young in 1929. In this part of the deposits the fossil remains are very poor and fragmentary.

The lower part of the Level 27 and the whole Level 28, and the upper part of the Level 29 are the place where our excavation was made in 1959. These three Levels in this part of the deposits can be grouped under two layers.

The upper one consists of about 1.5 m of finely laminated reddish clay, but it becomes red-brown in color towards its base. This clayey layer contains also fine sands, particles of mica, a few calcareous concretions and ashes. The strongly weathered lime-

stone blocks and fragments falling from the roof of the original cave also occur abundantly in this layer. Judging from the distinct lamination, it was possibly deposited by certain water agency. It corresponds to the top part of the Layer 10 of Teilhard and Young.

The lower layer excavated by us this year represents the basal part of the Layer 10 of Teilhard and Young. It is formerly known as the lower ash layer in which the burnt bones of Rodentia and Cervidae and the antlers of *Euryceros* and *Pseudaxis* are abundant. A complete skull of *Hyaena sinensis*, a well preserved maxilla of *Equus sanmenensis* and a crushed skull of *Sus lydekkeri* were also found in it (Pl. I, fig. 3, Pl. II, and Pl. IV, fig. 1).

At the base of the ash layer a thin layer of lime-like material is recognized. It is about 10 cm in thickness and pale in color. The same material can also be seen on the surface of the north wall of this section of the cave, but it is less thick than that of the base of the ash layer.

Below the layer of lime-like material a layer of fossiliferous breccia occurred. It is the top part of the Layer 11. Mammalian fossils obtained in this breccia are few and very fragmentary.

### Discovery of a *Sinanthropus* Mandible

After the sediments of the Level 27 were removed, at the morning of July 6th, a *Sinanthropus* mandible came into light (Pl. I, fig. 1). It is situated about 10 cm south of the north wall, and at the south-west corner of Square R<sub>-1</sub> of this Level. Several piles of *Hyaena* coprolites and a few teeth of Sanmenian Horse were found nearby.

This mandible belongs to an old female individual. Its morphological description has been made and published by Prof. J. K. Woo and one of the present authors (Chao).

### Mammalian Fossils

The mammalian remains are rather abundant and represent 21 species: *Scaptochirus primitivus*, *Neomys bohlini*, *Canis lupus variabilis*, *Canis (Nectereutes) sinensis*, *Vulpes vulgaris*, *Mustela nivalis*, *Ursus spelaeus*, *Hyaena sinensis*, *Felis teilhardi*, *Cricetulus* cf. *grisus*, *Apodemus sylvaticus*, *Mus* cf. *musculus* var. *bieni*, *Gerbillus roborowskii*, *Microtus epiratticeps*, *Ochotona koslowi*, *Equus sanmenensis*, *Rhinoceros mercki*, *Sus lydekkeri*, *Euryceros pachyosteus*, *Pseudaxis grayi* and Bovidae gen. et sp. indet. The Artiodactyla and the Rodentia are more abundant than the other animals, and the Carnivora is less abundant than the Artiodactyla and the Rodentia.

Among the Carnivora we should like to mention the presence of an interesting mandible of Mustelidae. The posterior portion of mandible behind the M1 was missing. The only preserved P4 is of an ordinary type of Mustelidae, but very small (2.5 mm.

in length and 1 mm in breadth). The horizontal ramus is long and slender than that of the known forms of Mustelidae in Loc. 1 (length from I1 to P4 by alveolus is 7.5 mm and height about 3.5 mm near P2). Judging from its size, it is comparable with the smallest form such as *Mustela nivalis* living now in North-east and North China and in Inner Mongolia (Pl. I, fig. 2). However, the discovery of more materials probably will enrich our fossil list of Choukoutien deposits.

Specially interesting is the presence of three type of the *Euryceros* antlers recognized by Young. As to the lower jaws of *Euryceros* the degree of pachyostosis also varies greatly. Prior to a detailed study, the problem of the co-existence of two distinct forms of *Euryceros* deer in the same cave can not be solved as yet (Pl. III and Pl. IV, fig. 2).

### Stone Implements

Some pieces of stone implements were collected *in situ* in the excavation of 1959. Most of them are made of vein quartz and non-typical. They may be grouped under several known types, such as choppers, scrapers and points, and no description seems to be necessary.

### References

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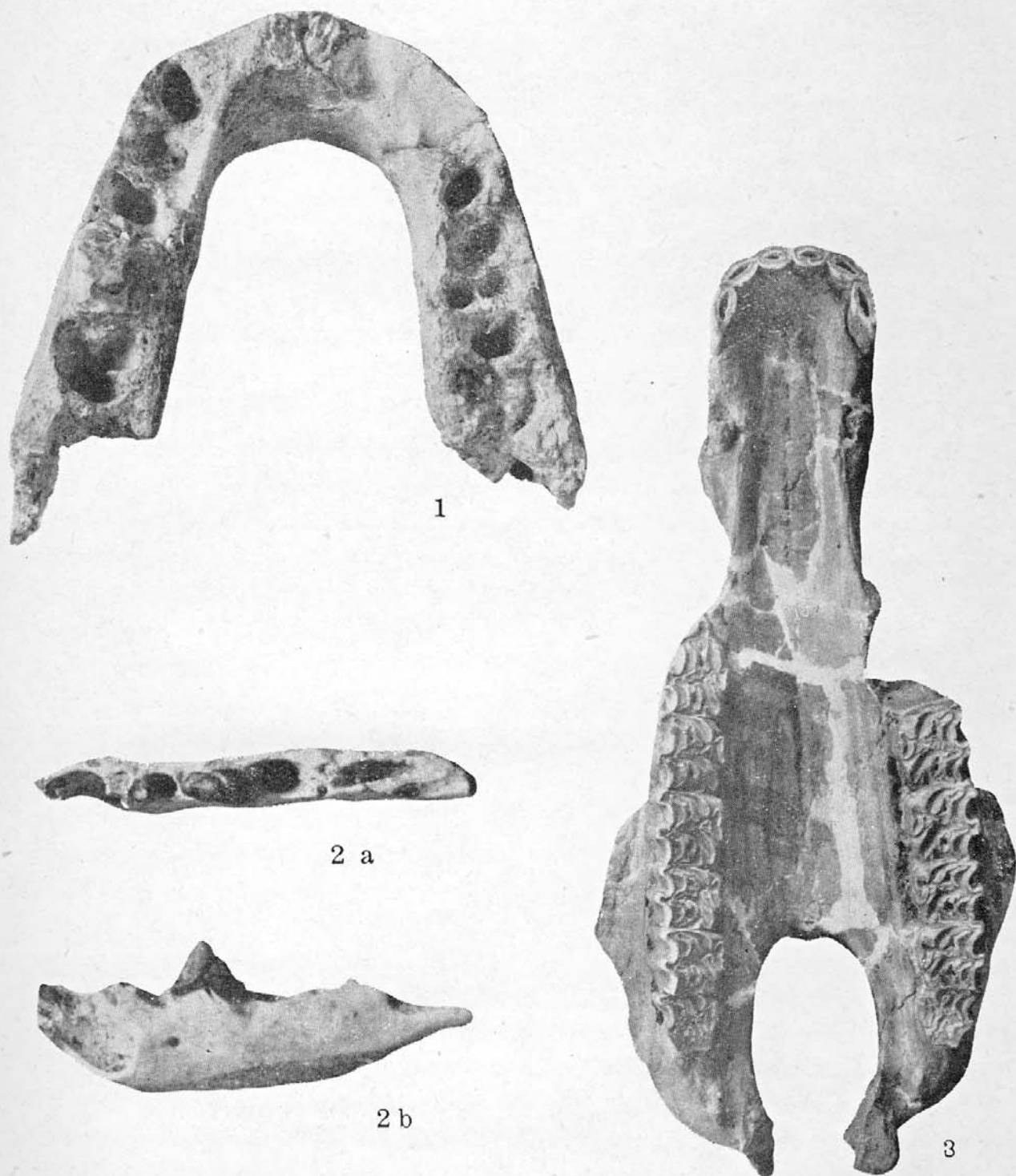
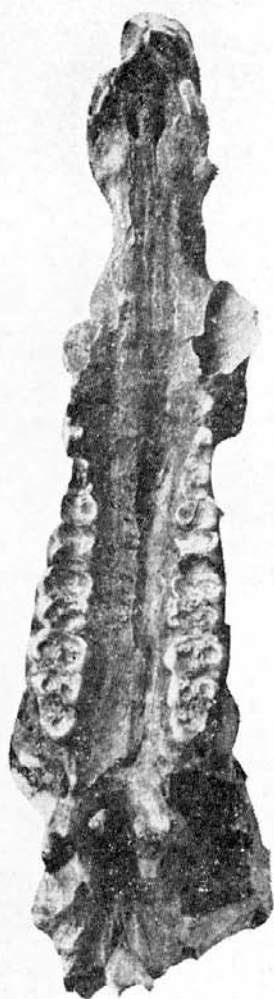


Fig. 1 *Sinanthropus Pekinensis*, mandible, occlusal view, 1/1.

Fig. 2 *Mustela nivalis*, left mandible; 2a, occlusal view, 4/1; 2b, outer side view, 4/1.

Fig. 3 *Equus sanmenensis* Teilhard et Piveteau, maxilla, crown view, 1/3.



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Fig. 1 *Sus lydekkeri* Zd., crushed skull, crown view.  
Fig. 2 *Pseudaxis grayi* Schl.

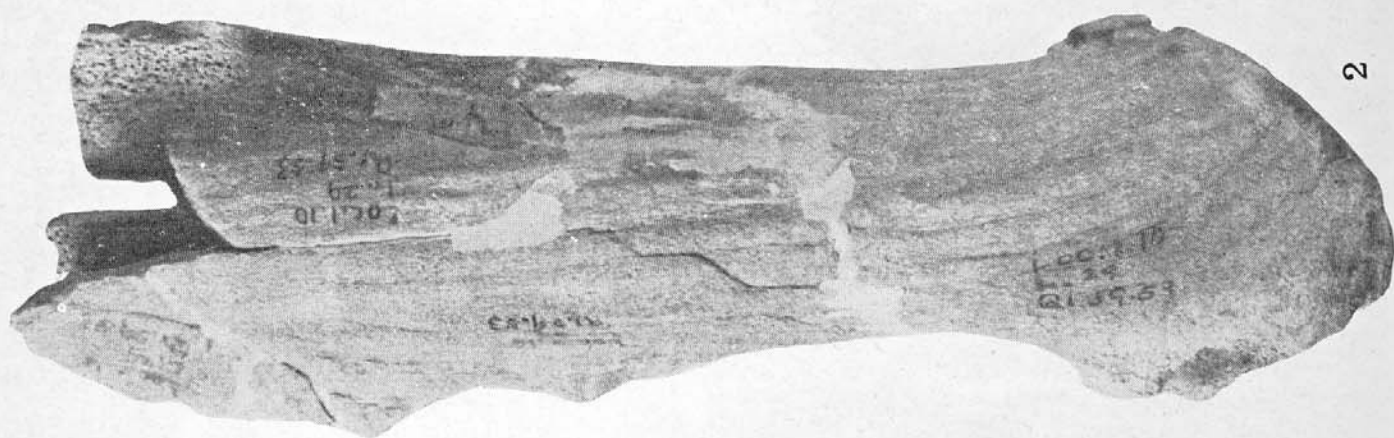




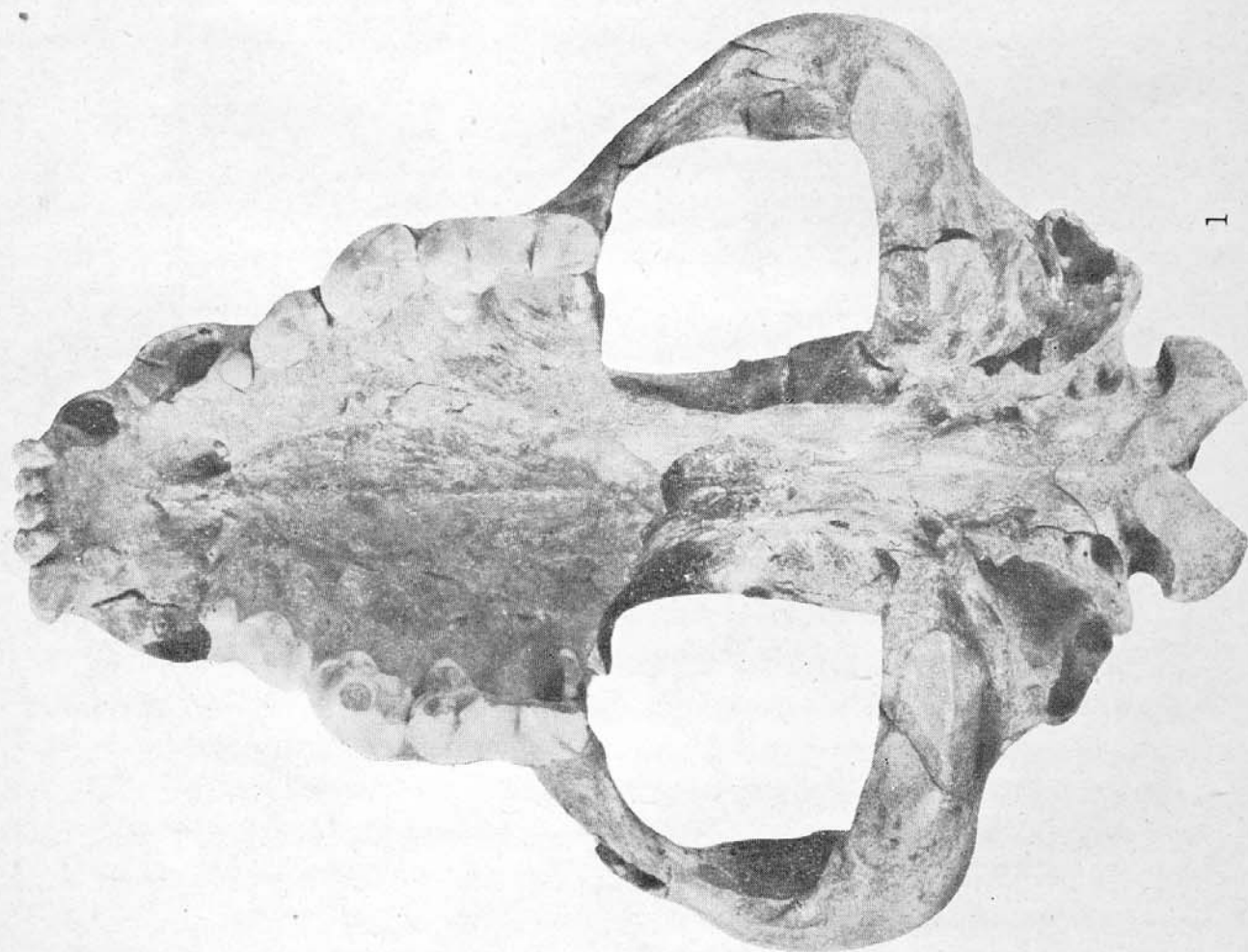
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Antlers of *Euryceros pachyosteus* Young  
Fig. 1 Type A, 1/3.  
Fig. 2 Type C, 1/2.



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Fig. 1 *Hyaena sinensis* Owen, skull, palatal view, 1/2.

Fig. 2 *Euryceros pachyosteus* Young, antler, 1/2.