

Fossil Myriapods From Choukoutien*

(周口店多足類化石)

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With 1 Plate and 5 Text-figures

摘要：1932—1937年間在周口店中國猿人產地及其他地點採得八十餘件節足動物化石，多破碎，完整者極少。顏色不一，由乳白而棕黃，兼有呈半透明玻璃狀者。經初步觀察，應屬節足動物門，多足綱，倍腳目，馬陸科，計一屬兩種：

一、山馬陸(*Iulus cf. terrestris*) 此種在第一，三，十五地點及山頂洞均有發現。此與現生的山馬陸無甚差異，僅肛板及由二肛板所成之肛門溝稍大。

二、裴氏小馬陸(*Iulus pei* Chia & Liu (sp. nov.)) 此種於第一，四，十五地點及山頂洞均有發現。由身體及頭部形態，身體環節數目(三十個以上)，知其與山馬陸同屬。但其決非幼小山馬陸，因其體節數目多於長成之山馬陸。但與現生於日本的一種 *Nipponoiulus truncatus* 近似，惟後者體節數較少，尾端鈍圓。

關於馬陸屬化石，據現在所知最早發現於始新統地層中，直到現在仍有生存，變異極小。以上所述二種若非與其他脊椎動物化石共生於周口店地點，則其年代頗難鑑定，因其有以後爬入岩隙死後石化之可能，不過上述之標本不但有共生脊椎動物為證，且有的已埋藏於固結的礫岩中，其屬於更新統時期可無疑義。

INTRODUCTION

The specimens which we study and describe in this paper were collected from different localities in Choukoutien region during the years 1932 to 1937. Most of them are broken. They represent about 80 individuals of which only 5 are complete. All these individuals belong to one genus and two species. For

*Received for publication in September, 1949

carrying on the present work we are indebted to Dr. W. C. Pei for his encouragement and guidance; to Dr. H. P. Lu¹ for his valuable help in determination; and to Messrs. H. H. Yao² and K. Chang³ for their kindness for taking the photographs for our plate.

DESCRIPTION OF THE FOSSILS

Order DIPLOPODA (CHILOGNATHA)

Family JULIDAE

Genus JULUS Linn.

Julus cf. terrestris

(Pl. I, Figs. 1-8.; Textfigs. 1-3)

Material. Referrable to this species there are 9 pieces from Loc.1, 14 pieces from Loc.3, 13 pieces from Loc.15 and 9 pieces from Upper Cave of Choukoutien. All poorly preserved.

Diagnosis. Body cylindric, head well differentiated from trunk and bearing one pair of antennae and eyes (many ocelli crowded together in a cluster). Mouth parts composed of lips (labrum & labium), mandibles and maxillae. Labium formed by fusion of second pair of maxilla. Trunk (thorax and abdomen) composed of fifty (50-54) similar body rings. Body ring with one arched dorsal scute and two pleural scutes. Each segment, behind the fifth (except the last), bearing two pairs of legs. Anus situated on the terminus of last segment.

Description. Specimens different in color, as from milk-white to yellowish brown and in calcification, i.e., some semi-transparent and some entirely petrofied. Head, rounded. Antennae one pair in number, club-shaped with 6 joints preserved (about 5 mm long) and situated on the vertex of the head beneath the eyes (Fig.1, A).

Eyes incomplete. Labrum nearly oval shaped, with a vertical sulcus on its lower part, dividing it into right and left half. Mandibles and maxillae incomplete. Genae narrow and triangular in shape situated on lateral side and on front of anterior dorsal scute (Fig.1, A). Dorsal

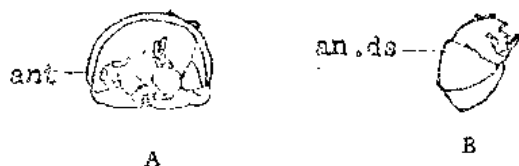


Fig. 1 *Julus cf. terrestris*. Head A, anterior view. B, lateral view (Cat. no. JF.9). $\times 3$. Abbreviations: ant., antenna; an. ds., anterior dorsal scute.

scute, large, especially the anterior one (Fig. 1, B). Pleural scute, small, composing a body ring. Pleural scute, narrow; legs on it closely situated. Legs closely set into the body, and their basal joints, coxal joints, nearly touch



Fig. 2 *Julus cf. terrestris*. Middle part of the body. A, dorsal view, B, ventral view (Cat. no. IF.10). $\times 3$. Abbreviation; l., leg.

(Fig. 2, B). Each leg consists of 6 joints. Last segment of the body legless and triangular in form, connecting with a pair of anal plates. Anal plates, semi-spherical, forming a longitudinal groove at

middle, i.e. the anus (Fig. 3, A&B).

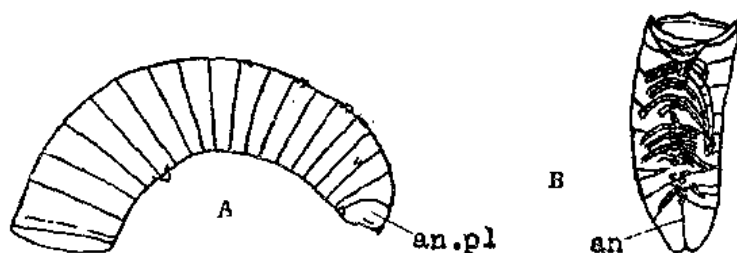


Fig. 3 *Julus cf. terrestris*. Posterior part (Cat. no. IF. 12) A, lateral view, B, ventral view (Cat. no. IF.11). $\times 3$. Abbreviations: an.pl., anal plate, an., anus.

Measurements of one individual are different from the other due to the age discrepancy. Of a complete individual (Pl. I, Fig. 3), which comprises 53 body rings, the length is about 80 mm., while maximum width 7 mm (in diameter).

Conclusion. All these specimens as described above resemble to *Julus terrestris*, living at the present time in North China. Only the anal plate and its groove of the fossils are a little larger than those of the living form. We, therefore, refer them to *Julus terrestris*.

Horizon and Localities. Early Pleistocene of Loc. 1, 15, 3 and Late Pleistocene of Upper Cave of Choukoutien.

Julus peii Chia & Liu (sp. nov.)

(Pl. I, Figs. 9 & 10; Textfigs. 4 & 5)

Material. 9 pieces from Loc. 1, 2 pieces from Loc. 4, 12 pieces from Loc. 15 and 4 pieces from Upper Cave of Choukoutien.

Description. A small form of millipede was found in association with the large one described above; so its calcification and color are similar. It differs from the former in the slenderness of both its body and appendages (Pl. I, Fig. 9). But that these two forms belong to one genus is doubtless

for their cylindrical body, head form and the number of body rings (more than 30).

The head of all the collected specimens of the present form is more or less clear in outline but not well preserved and only the fragments of antenna and mandibles are present. As indicated by our well preserved specimens its body rings are numbered from 70 to 71. Its first dorsal scute is not much larger than any of those behind, and the last 4 body segments form a tip, tapering backward (Fig.5). Its legs are slender and in its legs, the femur, the tibia and the tarsus, which are clearly distinguishable on our specimen, are consequently very slender (Fig.4). Of a complete individual the measurements of the body (70 body ring) are about 40 mm in length, and 2 mm in width (in diameter, Pl.I, Fig.9).

Considering the number of body rings of our fossil Myriapods it does not represent the larva of the above species *Julus* cf. *terrestris*. It is also different from Japanese living form, *Nipponoiulus truncatus* Kishida, in the number of body ring (50 body rings in *Nipponoiulus truncatus*) and in tapering terminal-portion (truncated in *Nipponoiulus truncatus*) of its body.

Horizon and Localities. Early Pleistocene of Loc.1, 15, 4 and Late Pleistocene of Upper Cave of Choukoutien.



Fig. 4 *Julus peii* Chia & Liu. Middle part. Ventral view. (Cat. no. IF, 32). $\times 10$.



Fig. 5 *Julus peii* Chia & Liu. Posterior part. Lateral view (Cat. no. IF, 32). $\times 10$.

CONCLUSION

The earliest fossil Myriapods were found in Upper Silurian of Lannarkshire and belong to the genus *Archidesmus*. The fossil *Julus* is recorded as early as in Eocene¹. The specimens described here were collected in association with large fossil bones of Pleistocene age from different localities in the Choukoutien region. Their age is consequently of Pleistocene. However, it is not impossible that these small Arthropods might have crept into the fissure or cave in a time after the ossious deposit already became consolidated. But, for most of our specimens were found in the deep part of our excavation and even some buried in the ossious deposits, therefore we consider them having the same antiquity as the bone fossils.

Since the literature of fossil Myriapods is rare it is not easy for us to

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make a detailed study at the present time. And we hope later discoveries will throw more light on this subject.

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EXPLANATION OF PLATE

- Fig.1 *Iulus cf. terrestris*. Anterior part, lateral view, $\times 2$. Cat. no. IF. 1.
 Fig.2 *Iulus cf. terrestris*. Head part, lateral view, $\times 2$. Cat. no. IF. 2.
 Fig.3 *Iulus cf. terrestris*. Adult individual, lateral view, $\times 4/3$. Cat. no. IF. 3.
 Fig.4 *Iulus cf. terrestris*. Anterior part, lateral view, $\times 2$. Cat. no. IF. 4.
 Fig.5 *Iulus cf. terrestris*. Posterior part, lateral view, $\times 2$. Cat. no. IF. 5.
 Fig.6 *Iulus cf. terrestris*. Broken individuals joined together, ventral view, $\times 5/2$, Cat. no. IF. 6.
 Fig.7 *Iulus cf. terrestris*. Posterior part, lateral view, $\times 2$ Cat. no. IF. 7.
 Fig.8 *Iulus cf. terrestris*. Young individual, lateral view, $\times 3/2$. Cat. no. IF. 8.
 Fig.9 *Iulus peti* Chia & Liu (sp. nov.). Complete individual, lateral view, $\times 2$. Cat. no. IF. 32.
 Fig.10 *Iulus peti* Chia & Liu (sp. nov.). Anterior part, lateral view, $\times 2$. Cat. no. IF. 33.

