

# 河北昌平灰岩組內的三叶虫化石 及其地层意义

項礼文 郭振明

(地质部地质科学研究所)

1935年张文佑教授在河北昌平一带进行地质调查时,在以往所谓“景儿峪灰岩”的上部发现了三叶虫化石,因此张氏将这一部分灰岩命名为昌平灰岩。

昌平灰岩中三叶虫的发现具有重要意义,它涉及华北震旦系和寒武系的界线问题,可惜张氏所采到的化石未曾正式描述发表,而且这批标本已经遗失。为了进一步确定昌平灰岩的时代及其对比问题,1963年5月笔者在高振西教授领导下前往标准地点昌平城北约一公里龙山进行详细化石的采集工作,在昌平灰岩下部,即以以往张氏发现化石的同一层位中,找到三叶虫 *Palaeolenus fengyangensis* Chu 和 *Redlichia* sp.

*Palaeolenus* 为我国早寒武世中期的标准化石,以往仅知广泛分布于西南、华中、西北这些地区,但近几年来,随着地质工作的进展,在华北及东北地区,如山东、安徽、河北、辽宁等省不断有所发现,其层位皆在馒头组之下。至于 *Palaeolenus fengyangensis* Chu 这个种,目前只知产于安徽凤阳猴家山组顶部。因此昌平灰岩内 *Palaeolenus fengyangensis* Chu 的发现,使我们有充分理由,将它作为一个独立的地层单位,它既不能象以往那样并入馒头组中,也不属于景儿峪灰岩组(狭义的)范围之内,因为它们之间在古生物和岩相上,有着显著的差别,是不同时代的沉积。馒头组一般是紫红色、灰黄色頁岩及泥灰岩,以含 *Redlichia chinensis* Walcott 为其特征,其时代为早寒武世晚期;而景儿峪组(狭义的)是紫红色、灰绿色、灰黄色灰岩,具清楚的缝合线构造,迄今尚未发现过化石,其时代为震旦纪。现在我们将昌平灰岩组修正后的含义如下:

昌平灰岩组:以灰黑色厚层豹皮灰岩为主,含三叶虫 *Palaeolenus fengyangensis* Chu 和 *Redlichia* sp.。时代为早寒武世中期。厚30—50米。本组假整合地盖于震旦纪景儿峪组(狭义的)之上,而上复地层中生代髻髻山群呈不整合或断层接触,标准地点在河北昌平城北一公里龙山。

值得提出的,是1963年6月我院陆宗斌和陆松年二位同志,在王曰伦教授领导下,在河北薊县福金山组又发现三叶虫 *Palaeolenus fengyangensis* Chu。联系这一事实,使我们能进一步讨论昌平灰岩组与其年代相当地层之间的对比和华北寒武系下界问题。

根据昌平灰岩组的层位及其所含的化石群,它可以和滇东沧浪铺组上部或黔北明心寺组上部相当;在华北地区,山东临沂的“*Palaeolenus*”灰岩、河南嵩山的硃砂洞灰岩、安徽凤阳的猴家山组顶部、河北薊县的福金山组和昌平的昌平灰岩组,皆为同时代的沉积。这一灰岩岩组在燕山及辽宁地区分布相当普遍,除上述薊县、昌平外,在河北唐山、兴隆,辽宁凌源、本溪、复县等地皆有其踪迹。

关于华北寒武系下界的位置,近几年来爭論頗为热烈,共計有三种意見:置于(1)下馬嶺組底部;(2)景儿峪組底部;(3)昌平灰岩組或福金山組底部。这一重大問題不能說完全已得到解决,但从古生物和地层角度上考虑,目前我們暫认为以昌平灰岩組(或福金山組)的底部作为寒武系下界較為合适。我們可以見到,在华北寒武系与震旦系之間,普遍存在着角度不整合或假整合,誠然,这一不整合面在某些地区表現得不十分清楚,但無論如何,在薊县以及嵩山地区可以見到含有三叶虫化石的寒武系和震旦系之間,具有清楚不整合面的实例,因此孙云鑄教授所創名的薊县运动有普遍意义,只不过这运动在各处表現的強弱程度不同而已。

本文承蒙孙云鑄教授热心审阅文稿,笔者深表感謝。此外,陆松年和陆宗斌二位同志惠贈薊县的化石标本,郭凤九同志摄制图片,一併在此致謝。

### 橢圓头虫科 *Ellipsocephalidae* Matthew, 1887

#### 古油节虫属 *Palaeolenus* Mansuy, 1912

#### 凤阳古油节虫 *Palaeolenus fengyangensis* Chu, 1962

(图版 I, 图 1—7)

1962, *Palaeolenus fengyangensis*, 朱兆玲, 古生物学报, 10 卷, 3 期, 图版 I, 图 1—7; 插图 1。

**材料:** 具有十余块保存尚好的头盖,除表示在图版 I, 图 7 的一块头盖标本采自河北薊县福金山組之外,其他皆产于河北昌平昌平灰岩組。

**描述:** 头盖小。头鞍突出,向前逐渐扩展,具有四对头鞍沟,第四对(最后一对)清楚地在中間相連,第三对略向前伸,然后变浅,平伸地穿过头鞍,第二对短,第一对一般极其模糊。頸环后端具有小中疣。固定頰寬。眼脊清楚。

**討論:** 朱兆玲在建立該种时,已經和 *Palaeolenus* 属內各近似的种作了詳細比較。值得注意的是,本种和产于南朝鮮早寒武世的 *Palaeolenus aotii* Kobayashi (Kobayashi, 1961, 216 頁, 图版 XII, 图 1—5) 十分相似,差別仅在于后者頸环缺失小中疣,其次二者在头鞍形状上亦不尽同。据目前所知,在 *Palaeolenus* 属內,仅有 *P. tingi* Lu 和 *P. fengyangensis* Chu 这二个种的頸环具有小中疣的特征。

种內变异主要表现在內邊緣寬度(纵向測量)的变化。总的來說,本种的內邊緣皆窄,但在各个标本上,內邊緣寬度相对地是有差別的。

在我們一些标本中,有数块很可能是成年期早期的头盖(图版 I, 图 4—6),因此或多或少可以推測出該种在成年期內某些发育的趋向,首先在头鞍沟上有逐渐变浅的現象。其次头鞍前端的形状从平直到比較圓潤。

### 萊得利基虫科 *Redlichiidae* Poulsen, 1927

#### 萊得利基虫属 *Redlichia* Cossmann, 1902

#### 萊得利基虫 sp. *Redlichia* sp.

(图版 I, 图 8, 9)

**材料:** 仅有二块長約 3mm. 左右的小头盖,可能为未成年的标本。

**描述:** 头鞍长,向前逐渐收縮,三对头鞍沟深而清楚,皆在中間相連。頸环两边窄,向

中間显著变寬,在其后端有一中疣。眼叶长,后端远离头鞍。内外邊緣皆窄。

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## ON THE TRILOBITES FROM THE LOWER CAMBRIAN CHANGPING FORMATION AND THEIR STRATIGRAPHICAL SIGNIFICANCE

HSIANG LEE-WEN KUO ZHEN-MING

(Academy of Geological Sciences, Ministry of Geology)

### (Summary)

Some specimens of *Palaeolenus* and *Redlichia* were found in May, 1963 by a field party led by Prof. C. S. Kao from the lower part of the Changping limestone in Changping district, Hopeh. This discovery has enabled us to regard the Changping limestone as an independent stratigraphical unit. Being different in biofacies and lithofacies, the Changping limestone can no longer be deemed as a part of the Manto formation, as is usually done. Nor is it to be included in the Chingeryu formation. The Manto formation is generally composed of purplish red, greyish yellow shale and marl, characterized by *Redlichia chinensis* Walcott which points to a late Early Cambrian age, whereas the Chingeryu formation is of purplish red, greyish green and greyish yellow limestone with distinct stylolitic structure. No fossils have ever been found in the Chingeryu formation, and we ascribe its age to Sinian. The Changping limestone formation is now redefined as follows:

It consists principally of thick, dark grey, leopard skin limestone, bearing *Palaeolenus fengyangensis* Chu and *Redlichia* sp.

Age: Middle Early Cambrian.

Thickness: 30—50 meters.

Locality: Lungshan, 1 km. north of Changping, Hopeh.

It overlies disconformably the Chingeryu formation of Sinian age and underlies either

unconformably or in fault contact with the Mesozoic Tiaochishan group.

Another fact worthy of note in this connection is that under Prof. Y. L. Wang, Messers C. P. Lu and S. N. Lu also found *Palaeolenus fengyangensis* Chu in June, 1963 in the Fukingshan formation in Chih sien, Hopeh. This collection and ours enable us to make a further investigation on the problem of correlation between the Changping limestone and its contemporary formations as well as on the lower boundary of the Cambrian in Hopeh.

According to its fossil content and stratigraphic position, the Changping limestone formation corresponds to the upper part of the Tsanglangpu formation of eastern Yunnan, or to that of the Mingsinsze formation of northern Kweichow. In North China, the deposition of "*Palaeolenus*" limestone in Lini, Shantung, the Chushatung limestone in Sungshan, Honan, the upper part of the Houchiashan formation in Fengyang, Anhwei and the Fukingshan formation in Chih sien, Hopeh are all contemporary with the Changping limestone formation in Changping. In fact, this limestone formation is wide-spread in Liaoning and Yenshan region. It appears not only in Chih sien and Changping, but also in Tangshan and Hsinglung, Hopeh and Linyuan, Penchi, Fuhsien, Liaoning, etc.

As to the position of the lower boundary of the Cambrian in Hopeh there has been an ardent dispute recently, and there are altogether three different opinions; that is, to fix it to the bottom of (1) the Hsiamaling formation; (2) the Chingeryu formation; (3) the Changping formation or the Fukingshan formation. This problem, of course, cannot be said to have been solved entirely, but from the palaeontologic and stratigraphic point of view we think it fit, at the present, to regard the bottom of the Changping formation (or Fukingshan formation) as the lower boundary of the Cambrian.

The angular unconformity or disconformity prevails between the Sinian and the Cambrian in North China. It is true that the phenomenon is not very apparent at some places. But, nevertheless, we can see easily the distinct unconformity between the Sinian and the trilobite-bearing Cambrian in the district of Chih sien and Sungshan. Therefore, the Chih sien movement proposed by Prof. Y. C. Sun holds universally good, except that the intensity with which this movement appears is varied at different places.

## 图 版 說 明

(本文內所描述的标本保存在地質部地質科学研究院)

### 图 版 I

图 1—7. *Palaeolenus fengyangensis* Chu

1—3. 头盖,  $\times 6$ . 登記号: 173—175。

4—6. 成年早期早期的头盖,  $\times 6$ . 登記号: 176—178。

7. 头盖,  $\times 6$ . 登記号: 179。

图 8—9. *Redlichia* sp.

二个未成年的头盖,  $\times 6$ . 登記号: 180—181。

### Explanation of Plate

(The specimens described in this paper are kept in the Academy of Geological Sciences, Ministry of Geology)

### Plate I

Figs. 1—7. *Palaeolenus fengyangensis* Chu

1—3. Cranidia,  $\times 6$ . Cat. Nos. 173—175.

4—6. Early holaspide cranidia,  $\times 6$ . Cat. Nos. 176—178.

7. Cranidium,  $\times 6$ . Cat. No. 179.

Figs. 8—9. *Redlichia* sp.

Two immature cranidia,  $\times 6$ . Cat. Nos. 180—181.



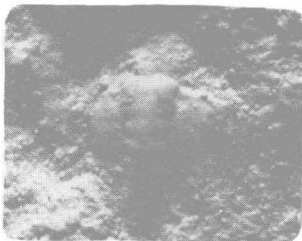
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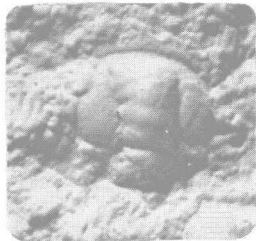
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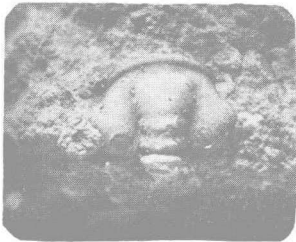
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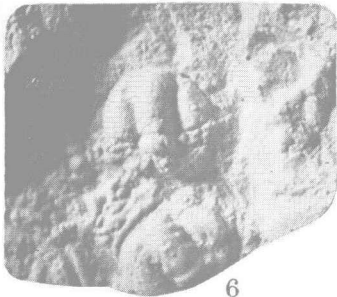
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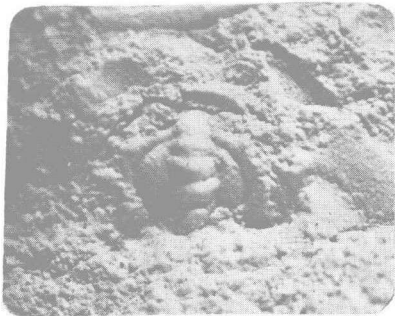
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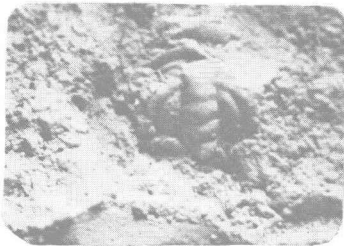
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6



8



9