

中国古生物志

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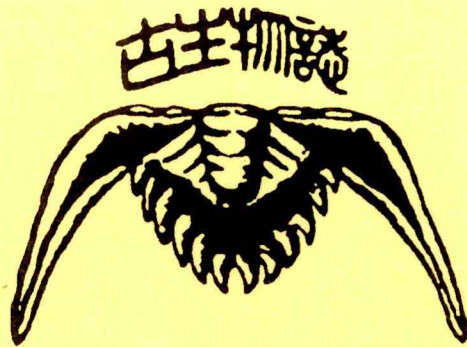
中国科学院 南京地质古生物研究所 编辑
古脊椎动物与古人类研究所

山东及邻区张夏组(寒武系第三统) 三叶虫动物群

(下册)

袁金良 李越 穆西南 林日白 朱学剑 著

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内 容 简 介

山东是我国地台区寒武纪地层和寒武系第三统、芙蓉统建阶型剖面所在地区,寒武纪三叶虫十分繁盛,在世界寒武纪三叶虫动物群中占有相当重要的位置。本书详细记载山东寒武系张夏组长清县张夏虎头山至黄草顶等6条地层剖面,系统描述三叶虫5目、41科、152属(亚属)、371种、60未定种,其中有16新属、7新亚属、120新种。长期以来,张夏组(岩石地层单位)与张夏阶(年代地层单位)等同使用,造成很大的混乱。作者经多年的野外考察,证实张夏组的顶底界线在不同的剖面都不一致,张夏组是一个穿时的岩石地层单位,可分为11个三叶虫化石带。按国际地层指南原则,作者新建了寒武系第三统长清阶和济南阶,废弃以往的张夏阶和崮山阶。根据张夏组三叶虫属种地质时限和地理分布,将张夏组与国内外同期地层进行了精确的对比,讨论了寒武纪三叶虫的第三次灭绝与复苏,对寒武纪三叶虫头、尾、活动颊和唇瓣的正确搭配进行了探索性研究。此外,作者还对长眉虫科、沟肋虫科、壮头虫科三叶虫属于属之间的演化关系进行了探讨。山东张夏组三叶虫动物群的研究,对于正确认识地台区寒武纪地层、三叶虫动物群的性质和古生物地理分区具有重要意义。本书共附图版241幅,插图2幅,表5张。

本书可供生产、科研和教学单位的地质、地层古生物工作者以及三叶虫收藏爱好者参考。

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**Trilobite Fauna of the Changhia Formation (Cambrian Series 3)
from Shandong and Adjacent Area, North China**

by

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There is a long standing debate about the Cambrian biostratigraphy of North China. We propose herein a revision of Cambrian Series 3 trilobite zonation of North China to improve its utility for correlation between North China Platform (shallow water facies) and Jiangnan Slope Belt (relatively deeper water facies). Detailed correlations of trilobite zones between North China platform facies and South China slope belt faices are outlined below. The *Neodrepanura premesnili* Zone can be correlated with the *Glyptagnostus stolidotus* Zone. The *Blackwelderia paronai* Zone is age-equivalent to the *Linguagnostus reconditus* Zone and the upper *Proagnostus bulbus* Zone. The *Damesella paronai* Zone is approximately age-equivalent to the lower *Proagnostus bulbus* Zone and upper and the middle *Lejopyge laevigata* Zone. The *Liopeishania lubrica* Zone can be correlated with the lower *Lejopyge laevigata* Zone and the *Lejopyge armata* Zone. The *Taitzuia insueta*-*Poshania poshanensis* Zone can be correlated with the *Goniagnostus nathorsti* Zone. The *Amphoton deois* Zone is age-equivalent to the *Ptychagnostus punctuosus* Zone and upper part of the *P. atavus* Zone. The *Inouyella peiensis*-*Peishania convexa* Zone, *Megagraulos coreanicus* Zone and *Crepicephalina convexa* Zone are age-equivalent to the lower to middle part of the *Ptychagnostus atavus* Zone. The *Bailiella lantenoisi* Zone and *Tonkinella flabelliformis*-*Poriagraulos nanus* Zone are age-equivalent to the *P. (Triplagnostus) gibbus* Zone. The *Inouyops titiana* Zone and *Metagraulos nitidus* Zone can be correlated with the *Ptychagnostus praecurrens* Zone. The *Sunaspis laevis*-*Sunaspidella rara* Zone and *Sinopagetia jinnanensis* Zone can be correlated with the *Peronopsis taijiangensis* Zone (or *Oryctocephalus oreintalis* Zone) and The *Ruichangaspis mirabilis* Zone, *Hsuchuangia hsuchuangensis* Zone, *Shantungaspis aclis* Zone and *Yaojiayuella ocellata* Zone are correlated with the *Oryctocephalus indicus* Zone (see Table 2). Trilobite fauna of the Changhia Formation includes 371 species, 60 indeterminate species, belonging to 152 genera (subgenera), 41 families, 5 orders, of which 120 species and 23 genera (subgenera) are new.

1. Introduction

Cambrian rocks crop out in middle and southern parts of Shandong, *i. e.* west of Anqiu-Juxian and east of Ji'nan-Pingyin lines (Text-fig. 1). The Cambrian strata of Shandong include the following formations in descending order: the Chaomidian Formation, Kushan Formation, Changhia Formation, Manto Formation, Changping Formation and Liguang (= Wushan) Formation. The Cambrian deposits of Shandong belong to eastern subprovince of Sino-Korean Platform (Zhang and Jell, 1987, p. 5). The Cambrian trilobites of Shandong represent the typical North China Faunal Province, one of the oriental faunal realms (Lu *et al.*, 1974a). In comparison with the typical Faunal Province and transitional Faunal Province in SE China, endemic non-agnostid trilobites clearly dominate in North China Faunal Province, in both species richness and evenness, and pandemic agnostid trilobites are rare. Trilobite fauna of the Changhia Formation includes 371 species, 60 indeterminate

species, belonging to 152 genera (subgenera), 41 families, 5 orders, of which 120 species and 16 genera, 7 subgenera are new. Based on sequential occurrences and ranges of species (see Table 1), the trilobite fauna of the Changhia Formation ranges from upper Hsuchuangian Stage, via Changqingian Stage to lower Jinanian Stage and 11 trilobite zones can be established in descending order: *Damesella paronai* Zone, *Liopeshania lubrica* Zone, *Taitzuia insueta-Poshania poshanensis* Zone, *Amphoton deois* Zone, *Crepicephalina convexa* Zone, *Megagraulos coreanicus* Zone, *Inouyella peiensis-Peishania convexa* Zone, *Bailiella lantenoisi* Zone, *Tonkinella flabelliformis-Poriagraulos nanus* Zone, *Inouyops titiana* Zone, and *Metagraulos nitidus* Zone. According to criterion of *International Stratigraphic Guide*, the name of synchronous lithostratigraphic unit could not directly apply for the name of chronostratigraphic unit. Thus, the Changqingian Stage (instead of Changhian Stage) with Hutoushan-Huangcaoding section, near Zhangxia Town, Changqing County as the type section should be erected. Its base is defined by the first appearance datum (FAD) of *Inouyella peiensis* Resser et Endo in Kobayashi, 1935, and the new stage contains 6 trilobite zones in descending order: 6. *Liopeshania lubrica* Zone, 5. *Taitzuia insueta-Poshania poshanensis* Zone, 4. *Amphoton deois* Zone, 3. *Crepicephalina convexa* Zone, 2. *Megagraulos coreanicus* Zone, and 1. *Inouyella peiensis-Peishania convexa* Zone. In addition, the Jinanian Stage (instead of Kushanian Stage) with Tangwangzhai section, near Gushan Town, Changqing County as the type section is proposed. Its base is defined by the FAD of *Damesella paronai* (Airaghi, 1902), and the new stage contains 3 trilobite zones in descending order: 3. *Neodrepanura premesnili* Zone, 2. *Blackwelderia paronai* Zone, and 1. *Damesella paronai* Zone. To date, the Cambrian Series 3 in North China can be subdivided into 4 stages including 19 trilobite zones as follows:

Jinianian Stage

19. *Neodrepanura premesnili* Zone
18. *Blackwelderia paronai* Zone
17. *Damesella paronai* Zone

Changqingian Stage

16. *Liopeshania lubrica* Zone
15. *Taitzuia insueta-Poshania poshanensis* Zone
14. *Amphoton deois* Zone
13. *Crepicephalina convexa* Zone
12. *Megagraulos coreanicus* Zone
11. *Inouyella peiensis-Peishania convexa* Zone

Hsuchuangian Stage

10. *Bailiella lantenoisi* Zone
9. *Tonkinella flabelliformis-Poriagraulos nanus* Zone
8. *Inouyops titiana* Zone
7. *Metagraulos nitidus* Zone
6. *Sunaspis laevis-Sunaspidella rara* Zone
5. *Sinopagetia jinnanensis* Zone
4. *Ruichengaspis mirabilis* Zone
3. *Hsuchuangia hsuchuangensis* Zone

Maochuangian Stage

2. *Shandongaspis aclis* Zone
1. *Yaojiayuella ocellata* Zone