

## NOTES ON SOME MARINE EARLY TRIASSIC LAMELLIBRANCHIATA FROM EAST TSINLING, SOUTHERN SHANXI (SHENSI)

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### (Summary)

Some fossils, mainly lamellibranchs, were recently discovered by a field party of the Geological Bureau of Shanxi Province at some 20 km SSE from Zhenan (Chenan) city in eastern Tsinling. The fossil locality is within the type area of the "Chenan series" (Chao and Huang, 1931) and near to the southern border of the Tsinling Axis. The collection was made in a series of grey-black calcareous and slaty shales, the lower part of the "Jinjiling Qun"\*. After a careful study on these life-remains, Mr. C. C. Chen and the writer have arrived at the same conclusion that these fossils are undoubtedly of marine early Triassic. The fauna consists of the following forms:

*Claraia hunanica* (Hsü)

*Cl. zhenanica* Chen et Liu (sp. nov.)

*Cl. cf. wangi* (Patte)

*Cl. ex gr. stachei* (Bittner)

*Cl. sp. ind.*

*Spirorbis?* sp. cf. *S. valvata* (Goldfuss)

Cephalopoda gen. et sp. ind.

Brachiopods genera ind.

All the lamellibranchs belong to one genus *Claraia*—one of the leading fossils of lower Triassic. They evidently show their close affinities both to those early Triassic ones of South China and some other else places of the world. Chronologically, the lower part of the "Jinjiling Qun" is therefore no doubt of early Triassic age, and corresponds to the lower part of the Tayeh Qun and the Chinlung Qun of South China as well as the Feisienkuan Zu in Szechuan Province. It may be safely concluded that at least the early Triassic transgression had reached the southern border of the Tsinling Axis from the South by way of the Tapashan region.

In accordance with the ever-recorded distribution of the marine Triassic in western Tsinling and the present material in eastern Tsinling, it seems necessary to reconsider whether the geological history of both the eastern and western Tsinling palaeogeographically and tectonically were the same with each other after the Palaeozoic periods and whether their final rejuvenation was of Indosinian movements.

The term "Chenan series" was named on the basis of lithological sequence by Chao and Huang (1931). It is typically exposed in Zhenan city and was considered by them

\* Qun (or Chun) and Zu (or Tzu) correspond respectively to the Russian terms *Серия* and *Свита*.

as late Carboniferous or partly Permian. Since then, this term was adopted by different stratigraphers in other else areas of the Tsinling region, although they considered it as lower Palaeozoic, middle Devonian and middle Carboniferous etc., essentially on the grounds of lithological similarities. Owing to the existance of the above mentioned fossils, the "Chenan series" is believed to contain a part of Triassic strata in its type area. In order to avoid further confusion of ideas, the writer suggests to discard the term "Chenan series" in the Tsinling region, and to adopt those names that have been well established in neighbouring regions of definite geological age. Otherwise, new stratigraphical names may be created, if necessary.

Since the manuscript of this paper was prepared to be published, some of the marine early Triassic fossils were reported and illustrated by C. F. Jiang and others (1963, *Dizhi Lunping*, vol. 21, no. 3, p. 121). The fauna was collected from the same locality and horizon of the materials to be dealt with in the present paper. Supplementary considerations concerning the lamellibranchiata fauna of Jiang's collection have thus been made subsequently in the descriptive part of the present work in case of necessary.

In conclusion, it is a pleasure to the writer to acknowledge his indebtedness to Dr. K. Nakazawa of the Kyoto University, Janan, and to Dr. J. M. Dickins of the Bureau of Mineral Resources, Australia, for their kind assistances with valuable references.

## DESCRIPTION OF THE NEW SPECIES

### Genus *Claraia* (Bittner), 1901

(Genotype: *Posidonomya clarai* Emmrich, 1844)

*Claraia zhenanica* Chen et Liu sp. nov.

(Pl. I, figs. 11—15)

1963 *Claraia* sp. Jiang, C. F. and others. *Dizhi Lunping*, Vol. 21, No. 3, p. 121, Figs. 1, 2.

**Material:** Four left valves. The best Preserved one is Holotype (Cat. no. 14462). One of the paratypes slightly deformed (Cat. no. 14464).

**Diagnosis:** Quadra-circular and nearly acline. Umbones project scarcely above the hinge line. Anterior auricle of the left valve small but prominent. Concentric sculptures present. Costate merely distinct at the central part of the shell surface, forming with concentric sculptures a lattice-work pattern.

**Description:** Shell of medium size, quadra-circular and subrounded. Holotype measures 26 mm in height and about 32 mm in length. Nearly acline. Inequilaterally, with the posterior part longer. Hinge line straight, with a length approximately three fourths of the shell length (Pl. I, fig. 15). Beak prosogyally or somewhat orthogyally located near the anterior end of the hinge margin, and scarcely projected above the dorsal margin. Umbonal area inflated to a small extent. Anterior auricle small but prominent. Posterior auricle less prominent, larger than the anterior one. Posterior umbonal slope more oblique. Shell body and auricles covered by slightly distinct concentric lines, wrinkles and radial costae. The concentric lines are rather denser. Radial costae weak, numbering 12 to 14, often distinct merely on the middle part of the shell surface and forming a lattice-work pattern with the wrinkles.

**Comparison:** The present species is, in some measure, similar to *Cl. griesbachi* (Bittner) (Bittner, 1899, pl. I, figs. 1,2.) from the Himalaya region in its medium size,

subrounded outline and the position of the umbo. In *Cl. griesbachi*, as mentioned by Bittner, the shell is "very unsymmetrical, more or less oblique; the left valve is considerably inflated, and the inflation of the left valve is by far the strongest in the region of the umbo; the umbo itself projects considerably beyond the hinge line of this valve; the anterior portion of the hinge line of the inflated left valve is not generally formed into a well-developed wing or ear, but in well preserved specimens a slight incurvature in the lines of growth at its margin can be perceived; the surface of both valves appears almost smooth, as the striae of growth are reduced to a merely inconspicuous concentric sculpture, while a true radial sculpture scarcely exists". And, it is emphasized by Bittner that "the smoothness of the surface of the shell, i.e., the vanishing of the sculpture, is the most important feature of the Asiatic form, in contrast to its Alpine congeners, of which not one can be regarded so much as really smooth-shelled as *Pseudomonotis griesbachi*".

The shell of the new species is hardly oblique, a little inequilateral; the umbonal area of the left valve is inflated just in a very small extent, with the umbo weakly projecting beyond the hinge margin in such a scarce attitude that one may consider that it is even with the hinge margin before a careful observation is made. The anterior auricle of the left valve, though small, is considerably developed. And, on the surface of the left valve develop irregularly and alternately concentric lines and wrinkles which together with the radial costae make up lattice-work pattern. It can thus be quite obviously distinguished from *Cl. griesbachi* as described by Bittner.

The Guizhou (Kweichow) form *Cl. guizhouensis*, formerly identified as *Cl. sp. aff. Cl. griesbachi* (Bittner) by Patte (1935, p. 24, pl. I, figs. 1,2,5.), recently regarded as a new form by Mr. C. C. Chen in his manuscript, has also the lattice-work sculptures. But, the anterior auricle of the left valve of *Cl. guizhouensis* is not developed while its posterior auricle is large and flat, and rather distinctly separated from the shell proper. Furthermore, the shell of the Guizhou form is oblique and its umbo prominently projects above the hinge line. So it can also be distinguished from the above described form.

Although the materials of the present form are not very abundant, the writer thinks it is quite adequate to distinguish them from the ever known species of the genus and to be designated therefore as a new species.

There is no example of the right valve of the present new species within the materials at hand. A specimen of the right valve of the genus *Claraia* was, however, recently reported and figured by C. F. Jiang and others (1963, *Dizhi Lunping*, vol. 3, no. 2, p. 121, figs. 1,2.). Which was found at the same locality and in the same horizon of the present new species. As far as its general appearance is concerned, this species of *Claraia* reveals obviously the specific characters of the present new form by the aclined shell, the small but prominent anterior auricle and the costae being merely distinct on the central part of the shell surface. Furthermore, since it is yielded at the same locality and in the same horizon with the just-mentioned new form, it becomes positive to the writer that this right valve of *Cl. sp.* of Jiang's collection is the right valve of the present new species.

**Horizon & Locality:** Lower part of "Jinjingling Qun", lower Triass. Jinliling, Zhenanxian, Shanxi.

Field no.: IV-6/xua-2.

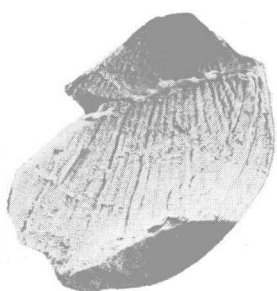
Cat. no.: Holotype 14462; Paratypes 14463—14465.

## 图版 I 说明

- 图 1. *Claraia hunanica* (Hsü), 左瓣, 略变形。壳上附有 *Spirorbis?* sp. cf. *S. valvata* (Goldfuss).  
×1 登记号: 14467
- 图 2, 3. *Cl. ex gr. stachei* (Bittner). 登记号: 14468  
2. 左瓣, 外模。×2  
3. 同一标本之复制油泥塑型。×2
- 图 4, 5. *Cl. sp. ind.* 登记号: 14469  
4. 左瓣, 外模。×2  
5. 同一标本之复制油泥塑型。×2
- 图 6, 7. *Cephalopoda* gen. et sp. ind.  
6. 原大。登记号: 14470  
7. 原大。登记号: 14471
- 图 8. *Brachiopoda* gen. et sp. ind. A. ×2 登记号: 14472
- 图 9. *Brachiopoda* gen. et sp. ind. B. ×2 登记号: 14473
- 图 10. *Claraia* cf. *wangi* (Patte), 左瓣。×2 登记号: 14466
- 图 11—15. *Cl. zhenanica* Chen et Liu, (新种)。  
11. 全型标本。左瓣。×1.5 登记号: 14462  
12. 副型标本。左瓣。×1 登记号: 14465  
13. 副型标本。左瓣。×1 登记号: 14464  
14. 全型标本。左瓣。×1 登记号: 14462  
15. 副型标本。左瓣。×2 登记号: 14463

## EXPLANATION OF PLATE I

- Fig. 1. *Claraia hunanica* (Hsü), left valve, slightly deformed and covered with *Spirorbis?* sp. cf. *S. valvata* (Goldfuss): ×1 Cat. No. 14467.
- Figs. 2, 3. *Cl. ex gr. stachei* (Bittner). Cat. No. 14468.  
2. Left valve, external mold. ×2  
3. Plasticine replica of the same specimen. ×2
- Figs. 4, 5. *Cl. sp. ind.* Cat. No. 14469.  
4. Left valve, external mold. ×2  
5. Plasticine replica of the same specimen. ×2
- Figs. 6, 7. *Cephalopoda* gen. et sp. ind.  
6. Natural size. Cat. No. 14470.  
7. Natural size. Cat. No. 14471.
- Fig. 8. *Brachiopoda* gen. et sp. ind. A. ×2 Cat. No. 14472.
- Fig. 9. *Brachiopoda* gen. et sp. ind. B. ×2 Cat. No. 14473.
- Fig. 10. *Claraia* cf. *wangi* (Patte), left valve. ×2 Cat. No. 14466.
- Figs. 11—15. *Cl. zhenanica* Chen et Liu (sp. nov.).  
11. Left valve of the holotype. ×1.5 Cat. No. 14462.  
12. Paratype, left valve. ×1 Cat. No. 14465.  
13. Paratype, left valve. ×1 Cat. No. 14464.  
14. Holotype, left valve. ×1 Cat. No. 14462.  
15. Paratype, left valve. ×2 Cat. No. 14463.



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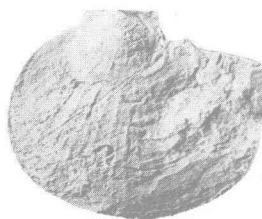
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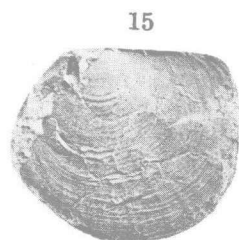
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