

# *Parafusulina rothi* 在內蒙 錫林郭勒盟附近石炭二迭紀地層中的發現\*

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(附 圖 版 1)

1956 年,當時的華北地質局 204 隊在內蒙古錫林郭勒盟溫都爾廟西南 12 公里處(東經 112.5°, 北緯 43°)採得一些蠕科化石,由筆者鑑定。這些蠕科,個體衆多,僅有一種,即 *Parafusulina rothi* Dunbar and Skinner, 並無其他化石共生。這一化石在這個地區還是初次發現。

根據野外隊寄來的地層剖面,該處的地層順序自上而下大致如下:

- |  |          |
|--|----------|
| 3. 灰黃色及灰綠色細砂岩,底部爲石灰岩,產蠕科化石 <i>Parafusulina rothi</i> Dunbar and Skinner. | 厚 40.4 米 |
| 2. 灰黃色砂岩夾石灰岩,石灰岩中產珊瑚化石 <i>Stylidophyllum</i> sp.                         | 厚 24.8 米 |
| 1. 厚層砂岩及石灰岩,底部未出露。   | 厚約 42 米  |

從上述剖面來看,蠕科 *Parafusulina rothi* Dunbar and Skinner 產於該處出露岩層的上部,而在產珊瑚化石 *Stylidophyllum* sp. 層之上約 10 米。

*Parafusulina rothi* Dunbar and Skinner 一種首先發現於北美德克薩斯(Texas)州二迭紀德拉威山(Delaware Mts.)建造的中部及下部<sup>[1]</sup>,在玻璃山(Glass Mts.)的瓦大(Word)建造<sup>[2]</sup>中亦有發現。*Parafusulina* 是一個分佈很廣的屬, Dunbar 和 Skinner<sup>[3]</sup> 並以此作爲一個帶化石,介於 *Pseudoschwagerina* 帶與 *Verbeekina-Neoschwagerina* 帶(或美國南部 *Polydiexodina* 帶)之間。根據文獻所載,在歐洲 Carnic Alps 的 Troghofel 石灰岩、印度鹽嶺下長身貝石灰岩(Lower Productus limestone)、蘇聯阿丁斯克期(Artinskian)、北美林那大及瓦大(Leonard and Word)、中國南部棲霞灰岩上部等地層<sup>[4]</sup>中均有發現。因此,內蒙古溫都爾廟附近含 *Parafusulina* 的地層時代似可推斷不應老於棲霞期。

本文是在陳旭教授、盛金章先生鼓勵和指導下完成的,稿成之後,又承斯行健教授審閱,並詳予修正,筆者謹在此向他們致以衷心的感謝。此外,計承道、劉雪筠等同志代製薄片及攝影,亦一併誌謝於此。

\* 1957 年 5 月 16 日收到。

## 種 的 描 述

亞科 Schwagerininae Dunbar and Henbest, 1930

屬 *Parafusulina* Dunbar and Skinner, 1931*Parafusulina rothi* Dunbar and Skinner

(圖版 1, 圖 1—5)

1936. *Parafusulina rothi* Dunbar and Skinner, Univ. Texas Bull. 3501, p. 181, Pl. II, Figs. 1-8.

1937. *Parafusulina rothi* Dunbar and Skinner, Univ. Texas Bull. 3701, p. 684, Pl. LXXVI, Figs. 1-15.

描述: 壳大, 亞圓柱形, 中部平直, 兩端圓鈍。成蟲通常具有  $6\frac{1}{2}$  壳圈。最大個體長 15 毫米, 寬 3.4 毫米, 軸率約為 4.3:1。旋壁由緻密層和蜂巢層二層組成。隔壁褶綫比較規則, 弦切面上串孔 (Cuniculi) 非常顯著。隔壁數目在一個中切面上自第一壳圈至第六壳圈依次為 11, 17, 19, 22, 30 和 30。軸部填積微弱, 僅見於內圈。初房大, 外徑約 0.34 毫米。通道在內圈者低而窄。

*Parafusulina rothi* 的度量結果 (毫米)

壳 圈	壳 圈 半 長		壳 圈 半 寬		壳 圈 軸 率		旋 壁 厚 度	
	8985	8986	8985	8986	8985	8986	8985	8986
0	0.17	0.23	0.17	0.18	1.0	1.3	0.030	0.025
1	0.51	0.51	0.30	0.30	1.7	1.7	0.030	0.035
2	1.09	1.22	0.43	0.46	2.5	2.6	0.035	0.040
3	1.92	1.98	0.65	0.70	2.9	2.8	0.060	0.060
4	3.39	3.97	0.92	0.90	3.7	4.4	0.080	0.060
5	5.50	5.95	1.30	1.22	4.2	4.8	0.090	0.080
6	7.36	7.74	1.70	1.46	4.3	5.3	0.100	—

比較: 當前的標本和北美德克薩斯 (Texas) 所發現的正型標本在許多重要特徵上均相酷似, 但壳圈較少。*Parafusulina rothi* 和 *Parafusulina bakeri* Dunbar and Skinner 之區別是前者軸率較大, 並且具有微弱的軸部填積。

## 參 考 文 獻

- [1] Dunbar C. O., Skinner J. W. and King R. E., 1936. Dimorphism in Permian fusulines, Univ. Texas Bull. 3501, p. 181, Pl. 2, Figs. 1-8.
- [2] — and —, 1937. Permian Fusulines of Texas, Univ. Texas Bull. 3701, p. 677, Pl. 76, Figs. 1-15.
- [3] — and —, 1931. New Fusulinid genera from the Permian of West Texas, Amer. Jour. Sci. (5), vol. 22, p. 258.
- [4] Thompson M.L., 1948. Studies of American Fusulinids, Pal. Contr. Univ. Kansas, p. 54-55.

# ON THE OCCURRENCE OF *PARAFUSULINA ROTHII* IN THE PERMO-CARBONIFEROUS ROCKS OF HSILINGRAMENG, INNER MONGOLIA

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(with 1 plate)

In 1956, a geological party of the Geological bureau of North China collected some limestone pieces carrying fusulines from the "Permo-Carboniferous" formation near Wentolmiao in Hsilingrameng, Inner Mongolia. The specimens were sent to the writer for identification. It is found that these limestone pieces contain only one species, i.e. *Parafusulina rothi* Dunbar and Skinner. This species is described and illustrated in the present paper.

The stratigraphical sequence worked out by the geological field party is given briefly as follows:

- |  |        |
|--|--------|
| 3. Gray-yellow and gray-green, fine sandstones. The lowermost part is a limestone bed containing <i>Parafusulina rothi</i> Dunbar and Skinner. | 40.4 m |
| 2. Gray-yellow sandstones intercalated with limestones containing <i>Stylidophyllum</i> sp.  | 24.8 m |
| 1. Thick-bedded sandstones with limestones.  | 42 m   |

The species *Parafusulina rothi* Dunbar and Skinner occurs in the upper part of this formation. The limestone bed from which the fossils were derived is about 10 meters above the *Stylidophyllum* sp. bed.

*Parafusulina rothi* Dunbar and Skinner occurs commonly in the Delaware Mts<sup>[1]</sup>. and Word formations<sup>[2]</sup> of Texas in North America. The fusulinid genus *Parafusulina* was first established by C. O. Dunbar and J. W. Skinner<sup>[3]</sup> in 1931. It is a widespread genus and occurs in the Troghofel limestone of the Carnic Alps, the Lower Productus limestone of India, the Artinskian limestone of USSR, and in the Leonard and Word formations of North America.<sup>[4]</sup> In South China, it has been found from the upper part of the Chihhsia limestone. The genus *Parafusulina* is also a very good zonal fossil of the Lower Permian age. As has been pointed out by many authors, the so-called *Parafusulina* zone lies almost without exception between the *Pseudoschwagerina* zone and *Verbeekina-Neoschwagerina* zone (or *Polydiexodina* zone of N. America) in the whole world. The geological age of the *Parafusulina*-bearing formation of Wentolmiao

in Inner Mongolia cannot be older, in the writer's opinion, than the Chihsiá Limestone in South China.

The writer is greatly indebted to Prof. S. Chen and Mr. J. C. Sheng for their cordial encouragement and guidance throughout this work. He owes to Prof. H. C. Sze for his critical reading of the manuscript.

DESCRIPTION OF SPECIES

**Subfamily Schwagerininae Dunbar and Henbest, 1930**

**Genus *Parafusulina* Dunbar and Skinner, 1931**

***Parafusulina rothi* Dunbar and Skinner**

(Pl. I, Figs. 1—5)

1936, *Parafusulina rothi* Dunbar and Skinner, Univ. Texas Bull. 3501, p. 181, Pl. II, Figs. 1—8.

1937, *Parafusulina rothi* Dunbar and Skinner, Univ. Texas Bull. 3701, p. 684, Pl. LXXVI, Figs. 1—15.

All specimens are large and have developed cuniculi in the tangential section. The largest form is 15 mm long and 3.4 mm wide with form ratio 4.3:1. The shells are subcylindrical, about  $6\frac{1}{2}$  volutions. The median part is not inflated, and the poles are bluntly rounded.

The spirotheca is composed of tectum and keriotheca with coarse alveoli. The septa are regularly fluted, its counts of the first to the sixth volution are 11, 17, 19, 22, 30 and 30, respectively. The proloculum is large with its outside diameter usually about 0.34 mm. The axial filling is feebly developed only in the inner volutions. The tunnel is low and narrow in the inner volutions.

**Table of measurements (in mm) of *Parafusulina rothi***

Volution	Half length		Radius vector		Form ratio		Wall thickness	
	8985	8986	8985	8986	8985	8986	8985	8986
0	0.17	0.23	0.17	0.18	1.0	1.3	0.030	0.025
1	0.51	0.51	0.30	0.30	1.7	1.7	0.030	0.035
2	1.09	1.22	0.43	0.46	2.5	2.6	0.035	0.040
3	1.92	1.98	0.65	0.70	2.9	2.8	0.060	0.060
4	3.39	3.97	0.92	0.90	3.7	4.4	0.080	0.060
5	5.50	5.95	1.30	1.22	4.2	4.8	0.090	0.080
6	7.36	7.74	1.70	1.46	4.3	5.3	0.100	—

Remarks: The present specimens are identical almost in all respects to the holotype of this species described by Dunbar and Skinner. The only difference is that our form has smaller number of whorls, but it is quite

conceivable that the discovery of more specimens may compel us to recognize more definitely the close agreement between the two forms. *P. rothi* closely resembles *Parafusulina bakeri* Dunbar and Skinner from the Leonard formation in Texas, but differs in the form ratio and in having axial fillings.

Occurrence: This species occurs abundantly in the Lower Permian limestone about 12 Km SW of Wentolmiao, Hsilingrameng, Inner Mongolia.

## 圖 版 說 明

本文描述的薄片均保存在中國科學院古生物研究所，所有圖影未加任何潤飾，攝影者劉雪瑒同志。

圖 1—5. *Parafusulina rothi* Dunbar and Skinner.

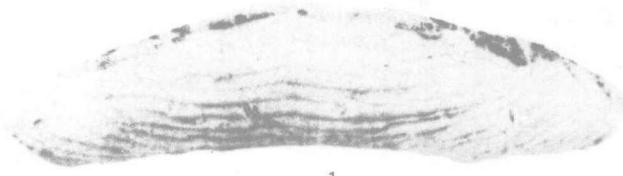
1. 個體 ( $\times 5$ )，示壳之外形。登記號碼：8985.
- 1a. 同上，軸切面 ( $\times 8$ )。
2. 軸切面 ( $\times 8$ )。登記號碼：8986.
- 3, 4. 弦切面 ( $\times 8$  及  $\times 20$ )，示 Cuniculi 構造。登記號碼：8987, 8988.
5. 中切面 ( $\times 10$ )。登記號碼：8989.

## EXPLANATION OF PLATE

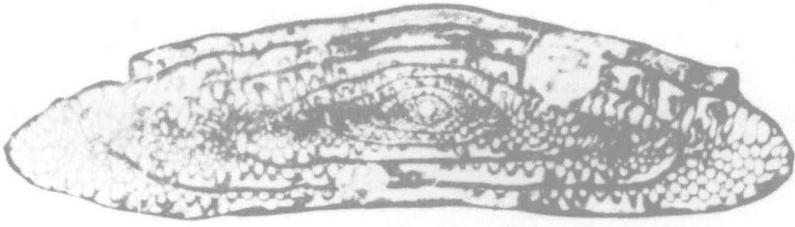
All slices described in this paper are kept in the Institute of Palaeontology, Academia Sinica. All figures are unretouched photographs. Photo by S. Y. Liu.

Figs. 1—5. *Parafusulina rothi* Dunbar and Skinner.

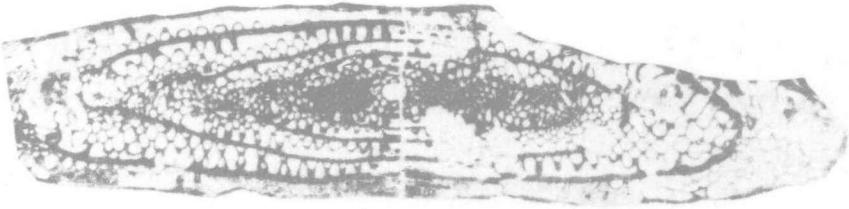
1. External view ( $\times 5$ ). Cat. No. 8985.
- 1a. Same, axial section ( $\times 8$ ).
2. Axial section ( $\times 8$ ). Cat. No. 8986.
- 3, 4. Tangential sections ( $\times 8$  and  $\times 20$ ) showing the cuniculi. Cat. Nos. 8987, 8988.
5. Sagittal section ( $\times 10$ ). Cat. No. 8989.



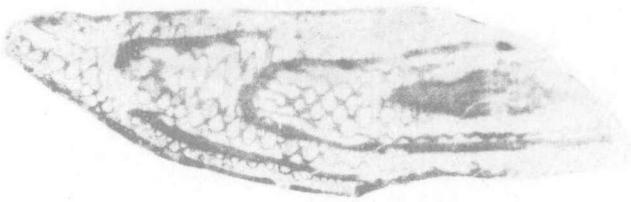
1



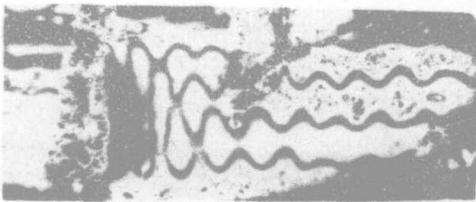
1a



2



3



4



5