中國古生物誌乙種第十四號

孫雲鑄

第一册

中國奧陶紀及志留紀之筆石

中華民國二十二年九月

實業部地質調查所
國立北平研究院地質學研究所印行
（學術研究與國立中央研究院國立北京大學兩廣地質調查所湖南地質調查所合作）

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中國北部筆石十七前徐淵曼先生曾發見一種經余鑒定已在中國古生物誌乙種第一卷第四號發表近十年來北平地質調查所及北京大學地質系諸先生于各省奧陶紀及志留紀地層中發見筆石頗多本編所述僅關于江蘇湖北江西甘肅綏遠諸省茲分誌于后

（一）江蘇句容縣崙山　盧祖蔭先生採集

1 *Climacograptus looi* Sun

2 *Dimorphograptus confertus* var. *nankingensis* Sun

3 *Monograptus incommodus* Törnquist

4 *Monograptus arguius* Lapworth

5 *Monograptus sandersoni* Lapworth

2 3 兩種爲英國下佛倫星 Valentian 期之標準化石

（二）湖北

甲 五峯漁洋關　謝家榮劉季辰教授採集

1 *Climacograptus latus* Elles and Wood

2 *Climacograptus supernus* Elles and Wood

3 *Diplograptus (Glyptograptus)* cf. *amplexicaulis* (Hall)

1 2 兩種爲英國上奧陶紀 Dicellograptus anceps 帶主要化石屬愛西革倫期 Ashgillian

乙 宜昌分鄉 趙亞曾先採集 謝家榮生

1 *Diplograptus (Orthograptus) vesiculosus* Nich.

2 *Diplograptus (Mesograptus) modestus* Lapw.

3 *Climacograptus medius* Törnquist

4 *Petalograptus palmeus* Barrande

1 2 4 三種曾產英國志留紀 Diplograptus (Orthograptus) vesiculosus 帶亦屬下弗倫星

丙 宜昌龍馬溪 趙亞曾先生採集 李四光教授

1 *Diplograptus (Glyptog.) lungmaensis* Sun

2 *Petalograptus palmeus* (Barrande)

3 *Cephalograptus cometa* (Geinitz)

4 *Monograptus intermedius* (Carruthers)

5 *Monograptus marri* Perner

6 *Monograptus raitzhainiensis* (Eisel)

7 *Monograptus communis* (Lapworth)

8 *Monograptus regularis* Törnquist

9 *Monograptus turriculatus* (Bun) var. *dimorpha* Sun

10 *Monograptus crenularis* Lapworth

11 *Monograptus sedgwicki* Portlock

12 *Callograptus salteri* Hall

前十一種產於志留紀富池頁岩中屬上弗倫星期後一種產生宜昌灰岩中屬下奧陶紀屬愛倫年格期 *Arenigian*

丁 長陽冷水橋 謝家榮教授採集 劉季辰先生採集

1 *Petalograpus palmeus* Barrande

2 *Petalograptus minor* Elles

3 *Monograptus gemmatus* Barrande

4 *Monograptus clingani* Carruthers

5 *Monograptus crenularis* Lapworth

6 *Monograptus changyangensis* Sun

7 *Rastrites hybridus* Lapworth

此種筆石羣亦屬下弗倫星期

（三） 江西武寧 王竹泉先生採集

Dendrograptus cf. *persculptus* Hopk. 屬愛倫年革期

（四） 甘肅平涼 袁復禮教授採集

1 *Didymograptus sagitticaulis* Gurley

2 *Didymograptus yuani* Sun

3 *Nemagraptus exilis* (Lapw.)

4 *Nemagraptus gracilis* (Hall)

5 *Dicranograptus kansuensis* Sun

6 *Dicellograptus divaricatus* (Hall) var. *pingliangensis* Gr. & Sun

7 *Climacograptus parvus* Hall

8 *Climacograptus bicornis* Hall

9 *Diplograptus* (*Orthograptus*) *whitfieldi* (Hall)

10 *Diplograptus* (*Glyptograptus*) *angustifolius* (Hall)

11 *Diplograptus* (*Glyptograptus*) *teretiusculus* var. *kansuensis* Grabau

屬中奧陶紀蘭德林期 Llandeilian

（五） 綏遠鄂爾多斯

德日進
李勝先生採集

1 *Didymograptus euodus* Lapw.

2 *Climacograptus teilhardi* Grabau

3 *Climacograptus licenti* Grabau

上述筆石計得七族十二屬四十三種新種七餘多係歐種中國奧陶紀及志留紀地層全恃筆石而定其重要余已于中國含筆石之地層一文（中國地質學會誌第十卷）詳言之茲不贅

民國十二年余開始研究中國筆石承丁文江教授翁文灝所長葛利普教授時加指教徐光熙先生任本誌筆石繪圖余十分感激李四光主任袁復禮教授謝家榮教授劉季辰趙亞曾德日進李勝盧祖蔭諸先生所採標本予鑄研究尤爲感激

是編民國十五年已經脫稿是年因赴西班牙馬德里國際地質會議之便順道留英劍橋大學研究英國筆石藉與中國筆石比較承劍橋大學地質系伊里斯 Elles 博士馬耳 Marr 教授殷勤指導深爲感謝特誌于此

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Ordovician and Silurian Graptolites from China

BY

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With VII Plates.

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CONTENTS

ORDOVICIAN AND SILURIAN GRAPTOLITES FROM CHINA

BY Y. C. SUN

INTRODUCTION

The Graptolite fauna of China was first collected in 1908 by Coggin Brown from Yunnan and identified by Dr. G. L. Elles[1]. The first Graptolite of North China was collected in 1916 by Prof. Y. M. Hsü, from the Kaoli limestone of Taian. Shantung and described by the author in the Palæontologia Sinica[2]. In 1923 Prof. P. L. Yuan[3] discovered Ordovician Graptolites in the Pingliang shale of Pingliang, Kansu where the graptolites were found in great abundance. In the same year Péres Teilhard de Chardin and E Licent[4] also found some Ordovician Graptolites in western Ordos. In 1924 Mr. C. C. Wang[5] collected one Graptolite from the Lower Ordovician at Wushimen, Kiangsi.

The Kiangsu graptolite fauna was first reported by Frech[6] in 1912 from Lunshan and yields the following species:

Climacograptus scalaris His.
Linograptus nilssoni Barr.
Diplograptus sp.
Retiolites? sp.

In 1924 Prof. Weiman Hsü and students of the South-Eastern University visited the same region and made a small collection of Graptolites which were identified by Prof. Grabau[7], but Mr. T. I. Loo of the Geological Survey obtained a large collection of this fauna in the following year.

The most important collection of graptolites was obtained from Hupei by several Expeditions of the Geological Survey and of the National University. In 1924 Prof. J. S.

1. F. R. Cowper Reed, Ordovician & Silurian Fossils from Yunnan, Palæontologia Indica, new series, Vol. VI, memoir No. 3, p. 3.
2. Y. C. Sun. Contributions to the Cambrian Fauna of North China, Palæontologia Sinica, Series B. Vol I, fase. 4.
3. P. L. Yuan, Graptolite beds of Pingliang E. Kansu, Bull. Geol. Soc. China, No. IV.
4. Teilhard de Chardin & E. Licent, Geology of the Northern Western & Southern borders of the Ordos, Bull. Geol. Soc. China No. III.
5. C. C. Wang, Geology of the Shiushui Valley, Kiangsi Prov. Bull. Geol. Surv. China No. 14.
6. F. Frech, oberes Untersilur und tiefstes Obersilur in Süd China. In Richthofen China Vol. V, pp. 14-17, pl. 4.
7. A. W. Grabau, Stratigraphy of China Vol. I, p. 437.

Lee[1] and the University party went to Ichang and brought back a large collection of Graptolites. In the same year Prof. C. Y. Hsieh and Mr. Y. T. Chao[2] surveyed that region and obtained another collection of Graptolites from Fênhsiang, Ichang. In 1925 Mr. C. C. Liu and Prof. Y. C. Hsieh[3] also found many Graptolites in the Changyang and Wufeng districts, Hupei.

In 1928, Messrs. C. C. Yü[4] and W. P. Shu collected a few Graptolites from Nanchang, Hupei.

In 1926 Messrs. C. C. Liu[5] and Y. T. Chao obtained a large collection of Graptolites from Lunyu district, Chekiang.

In 1927 Mr. S. S. Yoh[6] obtained several Graptolites from the Ordovician of Tsunyi district, Kweichou.

In 1928 Dr. V. K. Ting and Messrs. Y. T. Chao and Huang also made several collections of Graptolites from Kweichou and Shensi.

Finally the Peking National University Expedition in charge of the author discovered Dictyonema and other genera of Dendroidea in the Kaiping Basin, Hopei province.

Graptolites from Hupei, Kiangsu, Kiangsi, and Kansu and Ordos are described in this memoir, while the other collection will be studied by myself and others.

The work was begun in 1924 under the direction of Prof. Grabau and the manuscript was ready in 1926.

During his stay in Europe in 1927 the author had the opportunity to compare Chinese Graptolites with British forms at the Sedgwick Museum, Cambridge and also with Törnquist's collection of Graptolites at the Lund Museum, Lund, Sweden.

In conclusion I wish to express my thanks to my teacher Prof. A. W. Grabau for his valuable directions and suggestions. I would further tender my best thanks

1. J. S. Lee, Geology of the Gorge District of the Yangtze, Bull. Geol. Soc. China Vol. 3, No. 3-4.
2. C. Y. Hsieh & Y. T. Chao, Geology of Ichang, Hsingshan, Szekuei & Patung districts, W. Hupei, Bull. Geol. Survey China No. 7.
3. C. Y. Hsieh & C. C. Liu, Geology and Mineral Resources of S. W. Hupei. Bull. Geol. Surv. China N. 9.
4. C. C. Yü & W. P. Shu, Geology of Hsiangyang, Nanchang etc. Hupei, Mem. Institute of Geology, Academia Sinica, No. 8.
5. C. C. Liu & T. T. Chao, geology of Southwestern Chekiang. Bull. Geol. Surv. China No. 8.
6. S. S. Yoh, a geological reconnaissance from Changchiang, Szechuan to Kueiyang, Kweichou. Bull. Geol. Surv. China No. 11.

to Dr. V. K. Ting, Editor of Palæontologia Sinica, Director W. H. Wong and Prof. J. S. Lee, Prof. L. Wang and Mr. K. H. Hsü of Peking National University for their help and suggestions.

Part of the work was carried out at the Sedgwick Museum, Cambridge and I have also to thank Dr. G. L. Elles and Prof. Marr for their suggestions and guidances.

DESCRIPTION OF SPECIES

Order **DENDROIDEA** Nicholson

Family **DENDROGRAPTIDÆ** Koomer

Genus **DENDROGRAPTUS** Hall

Dendrograptus cf. **persculptus** Hopk.

Pl. I, Fig. 1a-b.

1874. *Dendrograptus persculptus*, Hopk., Quar. Journ. Geol. Soc. 31:663 Pl. XXXVI, figs. 4 a-4 d.

A very poorly preserved specimen from Kiangsi is probably of this species. The main stem is not shown and the branches are somewhat undulating and branched at the distal portion without having dissepiments. They are very uniform in width, maintaining 0.5 mm in an average. There are twelve thecæ in the space of 10 mm. which project out along the ventral edge in the form of marginal teeth.

This species was first named by Hopkinson from the Arenig of St. Dawid's rocks of S. Wales.

As our specimen is so fragmentary, its identification with Hopkinson's figure is provisional.

HORIZON & LOCALITY:– Lower Ordovician: from the upper thin-bedded argillaceous limestones of Wushimen limestone at Henglupu, North of Wuning city, Kiangsi (Coll. C. C. Wang).

Genus **CALLOGRAPTUS** Hall

Callograptus salteri Hall

Pl. I, Fig. 2 a, b.

1865. *Callograptus salteri*, Hall. Canadian organic Remains, Decade 2, p. 135, Pl. 19, fig. 5-8.
1875. *Callograptus salteri*, Hopkinson & Lapworth. Quar. Journ. Geol. Soc. 31:667, pl. 34, fig. 10.
1896. *Callograptus salteri*, Gurley Journ. Geol. 4:300.

1897. *Callograptus salteri*, Roemer & Frech. Lethaea palaeozoica, Bd. 1. p. 577.
1902. *Callograptus salteri*, Ruedemann. N. Y. State Paleontol. An. Rep't. p. 554, 555, 565.
1904. *Callograptus salteri*, Hall, Graptolites of New York, Part 1. Ruedemann p. 584, Pl. 3. figs. 13-15.

This species is represented by several specimens which have the funnel-like fronds as in *Dictyonema*. It is 4 cm. or more in length, with both outer margins forming an angle of 70°-80°.

The main stem is more or less flexuous and robust. Branches have the uniform width, about 0.5 mm and they are much wider than the interspaces by which they are separated. They are sometimes undulating and bifurcated at irregular interval, but are rarely connected by dissepiments. They appears to diverge and assume immediately subparallel directions. There are 16 to 18 thecæ in the space of 10 mm., but the apertures of the thecæ are very obscure.

This species originally comes from the Quebec group at Gros Maule in Canada. Gurley once observed this species in the "main Point Levis zone". Hopkinson and Lapworth have also identified this species from the Middle Arenig of Whitesand bay, St. Davids, Wales. H. F. Cleland has also obtained it from the Beekmantown beds at Tribes Hill, in the Mohawk Valley, N. America.

Our specimens were obtained by Prof. J. S. Lee from the higher beds of the Ichang limestone of Hupei.

HORIZON & LOCALITY:— Lower Ordovician: In the higher beds of Ichang limestone, Ichang, Hupei. (Coll. University Expedition).

Order **GRAPTOLOIDEA** Lapworth

Family **DICHOGRAPTIDÆ** Lapworth

Genus **DIDYMOGRAPTUS** M'coy

Didymograptus sagitticaulis Gurley

Pl. I, Fig. 3 a, b.

1847. *Graptolithus sagittarius* (Hisinger), Hall, Pal. N. Y. 1:272; Pl. 74, fig. 1.
1883. *Graptolithus sagittarius*, Walcott, Alb. Inst. Trans. V. 10 (1879, advance sheet, p. 34).
1883. *Monograptus sagittarius*, Whitfield, Am. Jour. Sci. Ser. 3. 26:380.
1886. *Didymograptus sagittarius* (Hall), Lapworth. Roy. Soc. Can. Trans. V. 5, Sec. 4. p. 180 f. 183 p.
1889. *Didymograptus* cf. *sagittarius* (Hall), Lapworth. Geol. Sur. Can. An. Rep't, Ser. 2, V. 3, Pt. 1. p. 95 B.

1890. *Didymograptus sagittarius*, Walcott, Geol. Soc. Am. Bul. 1:338.
1892. *Didymograptus sagittarius*, Gurley, Geol. Sur. Ark. An. Rep't. 3:411.
1896. *Didymograptus sagittarius*, Gurley, Jour. Geol. 4:68.
1896. *Didymograptus convexus*, Gurley, Ibid. P. 67; Pl. 5. fig. 8.
1904. *Didymograptus sagittarius*, Dale, U. S. Geol. Sur. Bul. 242, p. 33.
1908. *Didymograptus sagittarius*, Gurley, Graptolites of New York, Part 2 (Ruedemann) p. 247, 251 plate 14, fig. 3.
1924. *Didymograptus sagitticaulis*, Grabau, Strat. China p. 431.

This species is represented by several fragments of the stipes, one of them being 26 cm. long and of the same width at both ends i. e. 2.9 mm. The thecæ are inclined at angles of about 30° and are about 3 mm. long, overlapping for nearly 2/3 their length. They are about 1/3 as wide as long, the outer margin being very gently concave. The apertural margin is almost straight forming an acute angle with the outer margin. There are seven thecæ in 10 mm. A more proximal portion about 2.5 mm. wide shows overlaps of about half their length of thecæ, their width being slightly less than one half of their length.

As this species is characterized by its giant form which in the proximal part rapidly increases in width (in 50 mm. from 0.2 to 1 mm.), but more distally is of nearly uniform width. A number of smaller stipes are undoubtedly the proximal parts of this species. They range from 1.5 to 1.8 mm. in width with 8 or 9 thecæ in 10 mm. to 1.2 mm. in width with 9 thecæ in 10 mm. Otherwise they agree with the larger form.

This species was originally found in the Normanskill shale of Albany region, Mt. Moreno; Poughkeepsie, Canada; and Arkansas and Pease River in British Columbia. It is also unknown in England.

HORIZON AND LOCALITY:— Middle Ordovician: from compact finely arenaceous liliceous gray argillutytes (Pinliang shale) at Kwanchuang (Pingliang), Kansu, collected by Prof. P. L. Yuan.

Didymograptus yuani Sun sp. nov.

Pl. I, Fig. 4 a, b.

This species is represented only by one single specimen with two rather wider branches and diverging from a sicula at an angle of 320° (300-320°).

The stipes are not rigid and their dorsal walls are slightly curved. They widen from 0.5 mm. at the proximal end to a maximum width of 1.7 mm. in the distal portion.