

國立中央研究院地質研究所

叢刊

第八號

CONTRIBUTIONS

from

The National Research Institute of Geology

ACADEMIA SINICA

No. 8

李四光教授六旬壽辰紀念冊

in Commemoration of Sixtieth Birthday of

Professor J. S. Lee, M. Sc., D. Sc.

地質研究所印行

中華民國三十七年十一月

November 1948

國立中央研究院地質研究所

叢刊

第八號

CONTRIBUTIONS

from

The National Research Institute of Geology

ACADEMIA SINICA

No. 8

李四光教授六旬壽辰紀念冊

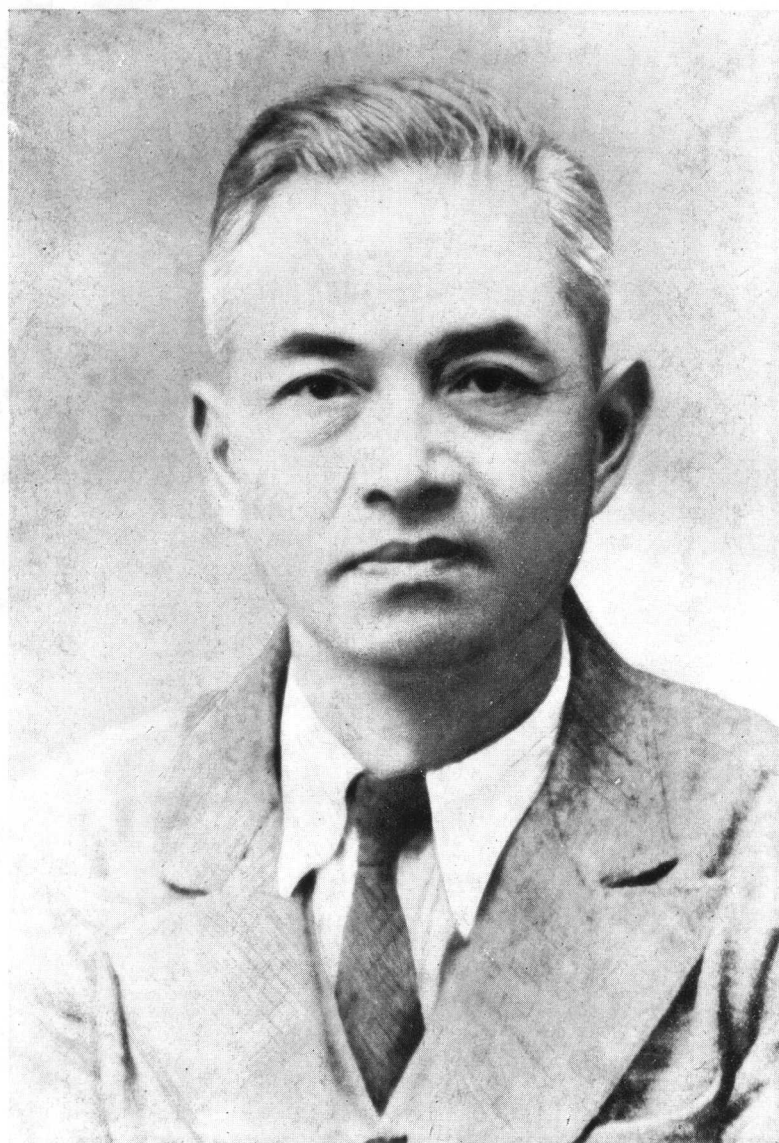
in Commemoration of Sixtieth Birthday of

Professor J. S. Lee, M. Sc., D. Sc.

地質研究所印行

中華民國三十七年十一月

November 1948



南鄉一翦梅

用元人調奉題中研為

仲揆先生六秩初度紀念增刊

地史掩蒿萊長待先生抉剔來手
種門牆桃李滿紅也花開白也花
開海外且衝杯星曆剛從大地
迴著述新來添幾許行編天涯
譽編天涯

己丑仲夏

章鴻釗拜福



PROFESSOR JONQUEI SSU-KUANG LEE

Biographical Note

By

C. C. Yü

Professor Jonquei Ssu-Kuang Lee is one of the most distinguished scientists in China. He was born in 1889 at Huang-Kang-hsien of Hupei province. When he was fourteen years old, he was sent by the provincial government to study technology in Japan where he joined the Revolutionist Party and was one of Dr. Sun Yat-San's strongest fellow workers. When he returned to China, he was teaching in the Hupei Technical College at Wuchang. During the 1911 Revolution he took the lead with his students and acted on the order given by Dr. Sun Yat-Sen. After the Manchu government had been overthrown, he made up his mind to go abroad for further study and did not like to take up any high official post.

At first he went to Birmingham University of England and spent some time in the study of literature. He later took great interest in mathematics, astronomy and physics, especially in geology. He received the B. Sc. degree in 1917, and the degree of M.Sc. was awarded to him in 1918 by the University. Much was said in praise of him by his teachers Prof. W. S. Boulton and Prof. C. Lapworth who were of great authority in the geological circles at that time. Later on he left England for some countries on the continent, and so he became proficient in the French and German languages.

In 1920 Dr. Tsai Yuan Pei, the president of the National University of Peking, offered him the post of Professor of geology at the University which he accepted. In the next year he joined with Dr. V. K. Ting, Dr. H. C. Chang and others in the establishment of the Geological Society of China, and was elected to be the Vice-President. Professor Lee, together with Professor A. W. Grabau and their colleagues, had trained up many students in the University. A majority of them have now become well-known geologists all over the country, and have made important contributions to the geology of China. In the meanwhile Professor Lee himself carried on his research work on the Fusulinids of

North China from which much light has been thrown upon the development of the Carboniferous and Permian rocks over the wide area of Eurasia and also the life history of those highly specialized Foraminifera. During the vacation he explored with his assistant the late Y. T. Chao the geology of Yangtze Valley from I-Chang to Tzekuei which is considered by subsequent geologists as the type locality of the Palaeozoic stratigraphy in Central China. Professor Lee published his valuable paper "Geology of the Gorge district of the Yangtze" in 1924 and the classical monograph "Fusulindae of North China" in 1927. In the year 1926 Birmingham University conferred on him the D.Sc. degree. In 1928 he took part, as a member of the Preparatory Committee, in organizing the Central Research Academy, and was appointed as the Director of the Institute of geology. From 1928-30 he founded Wuhan University with his friends. In 1929 he was elected by the Geological Society of London as Foreign Correspondent, and was simultaneously elected the President of the Geological Society of China. In the year 1935-1936 Professor Lee was invited by Universities China Committee in London as exchange lecturer to give lectures at the Universities of England. Part of the Lectures was embodied in his well-known book "The Geology of China" which came out in 1939.

After he was engaged in research in glaciation for a long time with evidences he found in Tatung (Shansi province), Huangshan (Anhui province), Lushan (Kiangsi province) and in the southwestern provinces, Professor Lee definitely declared the existence of Quaternary Glaciation in China, and furthermore divided the Chinese Ice-age into four stages which were thought to be comparable to those in Europe. In 1937 his "Quaternary Glaciation in the Lushan Area, Central China" was published.

During the war time (1937-1945), Professor Lee continued his research work on the development of tectonic pattern or the tectonic types in Southern China, and concluded that the epsilon-type denominated by him is the most important one and is of wide distribution not only in China but in many other parts of the world as well. He had issued a number of studies on this subject such as "Tectonic Framework of China", "The Tectonic Pattern of the Kuangsi Platform" and others some of which were published abroad. In 1945 he received the degree Philosophiae Doctorem (honours causa) from the University of Oslo.

Lately he applied mathematics and mechanics to the researches of the structural pattern together with the experience he got from the field work; Professor Lee wrote an important pamphlet "Out-

line of Geomechanics and its application" which was published in Chinese in 1947. It is a general theory and a fundamental method to cultivate Geological phenomena. It not only can explain but also can predict the geological facts.

Professor Lee was elected the representative of the Geological Society of China to the Eighteenth Session of the International Geological Congress that was held in London in 1948. He offered his paper "The Myth of the Neocathaysian Seas". As he is working so hard that he has been subject to pains in his heart, he is now staying in England to have it cured.

He married Hsü Shu-ping in 1921 and has one daughter Anna L. Lee who has just received the M. Sc. degree from Birmingham University.

SCIENTIFIC CAREER AND HONOURS

- 1913. Entered Birmingham University.
- 1917. Took the degree of Bachelor of Science.
- 1918. Took the degree of Master of Science.
- 1919. Travelling in Europe.
- 1920. Appointed professor of geology at Peking University.
- 1921. Elected Fellow and Vice-President of the Geological Society of China.
- 1925. Elected delegate of the National Peking University and of the Geological Survey of China to the Celebration of the Bicentenary Anniversary of the Academy of Science of USSR.
- 1926. Took the degree of Doctor of Science at Birmingham University.
- 1927. Awarded the Grabau Medal by the Geological Society of China.
- 1928. Appointed Director of the Institute of geology, Academia Sinica.
- 1929. Elected President of the Geological Society of China.
Elected Foreign Correspondent of the Geological Society of London.
- 1935. Elected Member of the Council of Academia Sinica.
Appointed exchange lecturer on geology at University in England.

- 1938. Elected Councillor of the Science Society of China.
- 1939. Re-elected President of the Geological Society of China.
- 1945. Received the Honorary degree of Philosophiae Doctorem from the University of Oslo.
Elected Supervisor of the Chinese Association of Scientific workers.
- 1948. Elected representative of the Geological Society of China to the Meeting of the Eighteenth Session of the International Geological Congress in London.

BIBLIOGRAPHY (1921-1948)

1. An outline of Chinese Geology, *Geol. Mag.* vol. 58 (1921), pp. 258-265, 324-329, 370-377, London.
2. The Stratigraphy of the anthracolithic formation in Liehokou Coal field North China, *Ann. Geol. Soc. Nat. Univ. Peking*, vol. 1 (1922), pp. 1-18, figs. 5.
3. Outline of the geology of China, *Transactions of the Science Society of China*, vol. 1 (1922), pp. 1-45.
4. Note on traces of recent ice-action in North China, *Geol. Mag.* vol. 59, pp. 14-21 (1922), figs. 2, Pls. 2, London.
5. The nature and extent of a stratigraphical break in the Cambro-Ordovician limestone of Northern Anhui and its bearing upon the systematic classification of the Cambro-Ordovician strata, *Bull. Geol. Soc. China*, vol. 1, nos. 1-4 (1922), pp. 89-96.
6. A graphic method of aid specific determination of Fusulinoides and some results of its applications to the Fusulinae from North China, *Bull. Geol. Soc. China*, vol. 2, nos. 3-4 (1923), pp. 51-97, English with Chinese abst. (1923), pp. 87-97.
7. New terms in the description of Fusulinae (abst.), *Bull. Geol. Soc. China*, vol. 3, no. 1 (1924), pp. 13-14.
8. Fusulinae from the Pingting Basin Northeastern Shansi (abst.), *Ibid.* vol. 3, no. 1 (1924), pp. 15-16.
9. Grabouina a transitional form between Fusulinella and Fusulina, *Ibid.* vol. 3 (1924), pp. 51-54, figs. 2.
10. A suggestion of a new method for geological survey of Igneous intrusion, *Ibid.* vol. 3, no. 2 (1924), pp. 109-115.

11. Geology of the gorge district of the Yangtze (from I-Chang to Tzekuei) with special reference to the development of gorges, Bull. Geol. Soc. China, vol. 3, nos. 3-4 (1924, pp. 51, 391, Pls. 2, figs. 7 (with Y. T. Chao).
12. Rock formulas, Ibid. vol. 4, no. 2 (1925), pp. 99-105.
13. Classification and correlation of Palaeozoic coal bearing formation in North China, Ibid. vol. 5, no. 2 (1926), pp. 107-134, Pls. 2. (with Y. T. Chao).
14. On the age and distribution of the Palaeozoic Coal-bearing formation in North China, Proc. third-Pan Pacific Sci. Congr. Tokyo (1926).
15. Fusulinidae of North China, (1927) Palaeontologia Sinica.
16. 古生代以後大陸上海水進退的規程 地質研究所集刊六期 1928年
17. The canon of marine transgression in postpalaeozoic times, Bull. Geol. Soc. China, vol. 7, no. 1 (1928), pp. 81-123.
18. The fundamental cause of evolution of the earth's features, Bull. Geol. Soc. China, vol. 5, nos. 3-4 (1926), pp. 209-262, figs. 10. Also in Science (Sci. Soc. China) vol. 12, no. 12 (1929), pp. 1677-1684.
19. Some characteristics structural types in Eastern Asia and their bearing upon the problem of continental movements, Geol. Mag. vol. 66 (1929), pp. 358-375, 413-431, 457-473, 501-522, London.
20. Theory of Torsion Balance, Mem. Inst. Geol. Acad. Sin., (1930).
21. The Huanglung limestone and its fauna, Mem. Inst. Geol. Acad. Sin., no. 9 (1930), pp. 85-172. Pls. 15. (with S. Chen & S. Chu).
22. Note on the Chihhsia limestone and its associated formation, Bull. Geol. Soc. China, vol. 9, no. 1 (1930), pp. 37-43, figs. 2, (with S. Chu).
23. Distribution of the dominant types of the fusulinoid foraminifera in the Chinese seas, Bull. Geol. Soc. China, vol. 10 (1931), pp. 273-290.
24. Variskian or Hercynian movement in southeastern China, Bull. Geol. Soc. China, vol. 11, no. 2 (1931), pp. 109-127, figs. 23.
25. Further note on the structural types and earth movement, Geol. Mag., vol. 68, no. 99 (1931).

26. A Geological guide to the Lungtan district, Nanking, Inst. Geol. Acad. Sin. Eng. (1932), p. 25, Chinese (1932), p. 13, Pls. 4, Geol. map 1. (with S. Chu).
27. Quaternary glaciation in the Yangtze Valley, Bull. Geol. Soc. China, vol. 13, no. 1 (1933), pp. 15-44, Pls. 1-9, figs. 1-3.
28. Data relating to the study of the problem of glaciation in the Lower Yangtze Valley, Ibid., vol. 13, no. 3 (1934), pp. 395-422, Pls. 5, figs. 12.
29. Framework of Eastern Asia, Report 16th Intern. Geol. Congr. Washington (1933); Reprint abst. pp. Pan Amer. Congr. Geologist (1934).
30. Taxonomic criteria of Fusulinidae with notes on seven new Permian genera, Mem. Inst. Geol. Acad. Sin., no. 14 (1934), pp. 1-32, figs. 8, Pls. 1-5.
31. 中國地勢變遷小史 百科小叢書 商務印書館 1934年.
32. 東亞恐慌中中國煤鐵供給問題 國立武漢大學理科季刊 5卷2期 173—178 1934年.
33. 地殼的觀念 國立武漢大學理科季刊 5卷2期 131—168 1934年.
34. 廬山地質誌略 廬山志上函第一冊 1934年.
35. 地質學上幾點新認識 國立中央大學校刊 二十三年十二月份 2181—2185 1934年.
36. 中國煤的資源 上海黨聲 一卷四八期 1935年.
37. Structural pattern of China and its dynamic interpretation (abst.) Q. J. Geol. Soc. London, vol. 91, no. 563, pts. 3, pp. 106-109. Also Proc., no. 1298 (1935), pp. 103-106.
38. Tectonic framework of China, Nature, no. 136, (1935).
39. Confirmatory evidence of Pleistocene glaciation from the Huang shan, southern Anhui, Bull. Geol. Soc. China, vol. 15, no. 13 (1936), pp. 279-290.
40. Foraminifera from the Donetz Basin and their stratigraphical significance, Bull. Geol. Soc. China, vol. 16 (1937), pp. 57-108.
41. 清水澗頁岩之層位 地質論評 二卷四期 317—320頁 1937年.
42. A geological atlas of the midwestern Nanling (Hengyang-Chu Anhsien Section) Inst. Geol. Acad. Sin. (1937), (with Y. Y. Lee, etc.).
43. Sinian glaciation of China, Abstracts of Papers, XVII Intern. Geol. Congr., (1937), pp. 213-214.

44. 地球之年齡 百科小叢書 商務印書館 1929 年.
45. The geology of China, Thomas Murdy & Co. London, (1939).
46. Continental Drift, Geol. Mag., Vol. IXXVI, no. 901 (1939), pp. 289-293, London.
47. 鄂西川東湘西桂北第四紀冰川現象述要 地質論評 五卷三期, 1940年.
48. 中國冰期之探討 學術匯刊 一卷一期 1941年.
49. 地質物理學上之幾個基本問題 地質論評 六卷五, 六合期 1941年.
50. The tectonic pattern of the Kuangsi Platform, Bull. Geol. Soc. China, vol. 21 (1941), pp. 1-24.
51. Reflections on twenty years experience, Ibid., vol. 22, nos. 1-2 (1942), pp. 21-47.
52. The Nanling and the ϵ structure, Ibid., vol. 23, (1943), pp. 471-477.
53. 南嶺何在? 地質論評 八卷一至六期 1943年.
54. Experimental and theoretical study on the ϵ structure, Sci. Rec. Acad. Sin. vol. 1, nos. 3-4 (1945), pp. 461-470.
55. The Nanling and the ϵ structure, Ibid., (1945), pp. 471-478.
56. Quaternary glaciation in the Lushan area, Central China, Mono. ser. B, vol. 2, (1947) Inst. Geol. Acad. Sinica.
57. 地質力學之基礎與方法 中華書局 1947年.
58. Vestiges of Corrie-Glaciation on the Kueichow Plateau, Bull. Geol. Soc. China, vol. 27, (1947), pp. 35-54, 1 map & 4 Text figs.
59. The Strain Ellipsoid and Shear Planes in Rocks, Bull. Geol. Soc. China, vol. 48, (1948), pp. 13-24, 2 figs.
60. Experiments with clay on Shear Fractures., Ibid., vol. 28 (1948), pp. 25-32, 4 Pls., 2 figs.

國立中央研究院地質研究所叢刊第八號

目 錄

	Page
Portrait	
Chinese Poem	H. T. Chang
Biographical Note	C. C. Yü I
The I-Chang Formation and the Ichangian Fauna	
..... Singwu C. Hsü and C. T. Ma	1
Adaptation as a Mode of Development of Fractures and its Relation to Geological Phenomena	W. Y. Chang 53
Archaeological Reconnaissance in Kansu Corridor and in Kokonor Region in Northwest China	W. C. Pei 89
松潘漳臘式砂金礦	李承三 119
Correlation of the Principal Pre-Cambrian Rock Systems of North and South China	H. C. Wang and C. T. Kao 127
The Boulder Clay and its Associated Topographic Features in the Southern Slope of Tapieshan	T. Y. Yü 143
皖西長山一帶淮陽弧形之脊柱與東西向構造帶之反接現象	
..... 孫殿卿 徐煜堅	151
Petrographical and Structural Investigation in the Hengshan Intrusives of Central Hunan	Chia-Yin Wang 161
武漢三鎮地質誌略	俞建章 郭鴻俊 173
Brush Structure and Related Minor Structures in the Vicinity of Tunglu, Chekiang	T. C. Sun and T. C. Ku 181

安徽宜涇煤田地質	劉之遠	195
湖南大義山系構造並略述中國南部走向北偏西十度至廿度之構造山系	吳磊伯	209
贛南山字型構造之脊柱與其他構造線之干擾	馬振圖 谷德振	239
測量節理應注意的幾點	張文佑	255
Notes on a Mammalian Collection probably from the Yüshe Series (Pliocene), Yüshê, Shansi, China	C. C. Young and Peiho T. Liu	273
Trilobites from the Archaeocyathina Limestone	Singwu C. Hsü	293
Notes on the "Gastrioceras" liui Grabau	King-Koo Chao	303
江西南豐大際坑鎢鑛	馬振圖 谷德振	307
Scheelite Deposit of Huilotzun, Nantan, Kwangsi	C. C. Chang	317
關於中國寒武紀地層界綫問題	孫雲鑄	323
A Review of Mesozoic Orogenic Movements in China	C. Y. Lee	331

THE I-CHANG FORMATION AND THE ICHANGIAN FAUNA

By

SINGWU C. HSU and C. T. MA

With 9 Plates

CONTENTS

	PAGE
Introduction	3
Part I, Stratigraphical Discussion	3
Part II, The I-changian Graptolites (by Singwu C. Hsü)	11
Family <i>DENDROGRAPTIDAE</i> Roemer	
Genus <i>Dictyonema</i> Hall	
<i>Dictyonema asiatica</i> Hsü (sp. nov.)	11
Family <i>ACANTHOGRAPTIDAE</i> Bulman	
Genus <i>Acanthograptus</i> Spencer	
<i>Acanthograptus sinensis</i> Hsü (sp. nov.)	13
<i>Acanthograptus sinensis</i> , var. <i>fenhsiangensis</i> Hsü (var. nov.)	14
<i>Acanthograptus sinensis</i> , var. <i>ituensis</i> Hsü (var. nov.)	14
<i>Acanthograptus macilentus</i> Hsü (sp. nov.)	15
<i>Acanthograptus bifurcus</i> Hsü (sp. nov.)	16
<i>Acanthograptus erectoramosus</i> Hsü (sp. nov.) ..	17
<i>Acanthograptus flexiramiatus</i> Hsü (sp. nov.) ...	17
<i>Acanthograptus rigidus</i> Hsü (sp. nov.)	18
Part III, The I-changian Trilobites and other Fossils (by Singwu C. Hsü)	18
Family <i>AGNOSTIDAE</i> M'Coy	
Genus <i>Agnostus</i> Brongniart	
<i>Agnostus</i> sp. undt.	19

Family <i>CREPICEPHALIDAE</i> Kobayashi	
Genus <i>Temnoura</i> Resser and Endo	20
<i>Temnoura grandispiniger</i> Hsü (sp. nov.)	21
<i>Temnoura alata</i> Hsü (sp. nov.)	23
Family undt.	
Genus <i>Psilocephalina</i> Hsü (gen. nov.)	23
<i>Psilocephalina lubrica</i> Hsü (sp. nov.) (with two mutations)	24
<i>Psilocephalina sinuata</i> Hsü (sp. nov.)	27
<i>Psilocephalina carinata</i> Hsü (sp. nov.)	27
Family <i>DIKELOCEPHALIDAE</i> Miller	
Sub-family <i>DIKELOKEPHALININAE</i> Kobayashi	
Genus <i>Dactylocephalus</i> Hsü (gen. nov.)	28
<i>Dactylocephalus dactyloides</i> Hsü (sp. nov.)	28
<i>Dactylocephalus dactyloides</i> , mut. <i>cylindrica</i> Hsü (mut. nov.)	31
<i>Dactylocephalus obsoletus</i> Hsü (sp. nov.)	31
<i>Dactylocephalus transversus</i> Hsü (sp. nov.)	32
Genus <i>Asaphopsis</i> Mansuy	33
<i>Asaphopsis granulatus</i> Hsü (sp. nov.)	34
<i>Asaphopsis immanis</i> Hsü (sp. nov.)	37
<i>Asaphopsis angustigenatus</i> Hsü (sp. nov.)	38
<i>Asaphopsis planispiniger</i> Hsü (sp. nov.)	39
Family <i>ASAPHIDAE</i> Burmeister	
Genus <i>Tungtzuella</i> Sheng	
<i>Tungtzuella</i> cf. <i>yunnanensis</i> Sheng	41
Family <i>TAIHUNGSHANIDAE</i> Sun	
Genus <i>Taihungshania</i> Sun	
<i>Taihungshania</i> (?) <i>parva</i> Hsü (sp. nov.)	41
<i>CYSTOIDEA, BRACHIOPODA</i> and <i>PELECYPODA</i> .	
<i>Cystoid</i> , gen. et sp. undt.	42
Genus <i>Lingulella</i> Salter	
Sub-genus <i>Lingulepis</i> Hall	
<i>Lingulepis</i> cf. <i>acuminata</i> (Conrad)	43
Genus <i>Modiolopsis</i> Hall	
<i>Modiolopsis parallelus</i> Hsü	44

References Cited	45
Explanation of Plates	46
Plates I-IX	

INTRODUCTION

In 1937 we made a general geological survey in I-tu⁽¹⁾ and Changyang⁽²⁾ districts, Western Hupeh. At Patzelao⁽³⁾, a hill near the village called Shihmen⁽⁴⁾, about 12 km. to the west of the I-tu city which was situated at the Southern bank of the Yangtze and about 50 km. to the southeast of I-chang, we studied in detail the I-chang Limestone and fossils were collected. Ma again visited the place the next year. He restudied the section at the same locality. Measurements of the successive beds of the formation were carefully taken and a copious collection of fossils was made by him alone. In 1936, in the section near Fenhsiang⁽⁵⁾, in the gorge district, Mr. Y. Wang of the National Geological Survey collected some dendroid graptolites from the *Acanthograptus* beds which is evidently of the same horizon as the *Acanthograptus* zone in the Patzelao section. He kindly handed over to us for study his graptolite collection. The description of the fossils in these collections and the results of our field observations are incorporated in this paper.

Our sincere thanks are due to Prof. J. S. Lee for his kind guidance and encouragement, to Dr. C. C. Yü for his good advice given to us when the work was in progress, and to Mr. Y. Wang for his kindness in handing over to us for study his graptolite collection.

PART I, STRATIGRAPHICAL DISCUSSION

The Cambro-Ordovician formations in Central China have long been reported by various authors. Willis and Blackwelder's Kisinling Limestone (Willis and Blackwelder, 1912) and Noda's Ping-Shan-Pa Limestone (Noda, 1915) are the earliest names proposed for the Cambro-Ordovician rocks. As revealed by subsequent studies, these names, however, include formations which are not differentiated and well defined. It was not till in 1924 Prof. J. S. Lee studied the geology of the gorge district of the Yangtze that the late Middle Ordovician Neichia Series was separated from the Lower Ordovician limestone which was in turn separated from

(1) 宜都, (2) 長陽, (3) 巴子壩, (4) 石門, (5) 分鄉

the Lowest Cambrian Shih-pai Shale (Lee, J. S. 1924). Since then Lee's subdivision has served as a standard for students of Cambro-Ordovician Stratigraphy of Central and South China, although the age of the I-chang Limestone has given rise to much discussion.

It is well-known that a fossil zone is present in the upper part of the I-chang Limestone wherever this limestone is exposed. According to reports of various geologists, this zone contains the following fossils:

Cameroцерас triformatum Yü⁽¹⁾

C. hupehensis Yü⁽²⁾

Batostomella antiqua Yabe

Callograptus cf. salteri Hall

Eccyliopterus sp.

Asaphus sp.

Orthis sp.

In the basal layers of the limestone there is another fossil zone, in which the fossils, according to Chi (Chi, Y. S. 1940), are as listed below:

Archaeocyathus hupehensis Chi

Cambrocyathus cf. dissepimentalis (Taylor)

C. sibiricus (von Toll)

C. biseriatus Chi

Retecyathus laquens Vologdin

R. kusmini Vologdin

R. cf. camptophragme Vologdin

Protopharentra cf. densa Bornemann

Girvanella sinensis Yabe

Redlichia sp.

Between the two fossil zones there is always an enormous thickness of limestones which are deficient in fossils serviceable for stratigraphical purpose, though the presence in them of "cryptozoa-like" structures (Hsieh, C. Y. and Chao, T. Y., 1925)

(1) = *Proterocameroцерас mathieui* Grabau (Partim), Lee, J. S. p. 368, (listed), 1924.

(2) = *Proterocameroцерас mathieui* (Grabau (Partim), Lee, J. S. 1924, p. 368 (listed) and *Cameroцерас styliiforme* Grabau (Partim), Yü, 1930, p. 23, Pl. I, Fig. 1.