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緬甸蛤(*Burmesia*)在四川西北部的发現

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前言

1957年,某地質队在四川西北部江油一带的黑色頁岩鉆心中,发現了一些瓣鰓类化石,寄送我所請顧知微教授鑑定。最近,顧教授将上述标本交由作者研究,鑑定結果,包括有 *Burmesia lirata* Healey 及 *Posidonia* sp. indet. (sp. nov. ?) 两个种。

上述化石的地面地层层位尚不清楚,現仅将某队在江油官渡地区所作的野外地层剖面列在下面,以供参考。

侏罗系

------平行不整合或不整合~~~~~

4. 黑色頁岩、砂質頁岩、細砂岩,风化面呈黃色,含 *Halobia* sp.	20米
3. 浅灰带黃色厚层鮞状石灰岩	20米
2. 灰色石灰岩,中下部有燧石层	41米
1. 灰白色石灰岩,夹白云岩,白云質灰岩	183米

剖面中1—3层是上三迭統天井山組,从层位及岩性上观察,作者判断 *Burmesia* 等化石的层位系属第四层,赵金科教授等并曾命名为官渡組。

种的描述

緬甸蛤科 Family Burmesiidae Healey, 1908

緬甸蛤 Genus *Burmesia* Healey, 1908

(后选属型: *Burmesia latouchii* Healey[1])

Burmesia 一属是 M. 希勒 (Healey, 1908) 根据緬甸那本层 (Napeng beds) (瑞替克期或諾利克期) 的两个种 *B. latouchii* 和 *B. lirata* 在1908年創立的。属的特征摘述如下:

"壳橫卵形,两側稍有不等,中等凸曲,壳頂小而不显。鉸綫长而直,比壳长略短。壳面飾紋特别,兼有放射状和同心状飾紋,前者限于中部,后者常在前后两部較显著。某些种在壳前端尚具有傾斜的放射褶脊,并有密列成行的小粒点。无齿,有十分发育的內靱托。"

到目前为止,作者从已发表的文献中,能够断定可以归在 *Burmesia* 这个属的,有下列各种:

1) *Burmesia latouchii* Healey (1908), 产于緬甸的瑞替克阶或諾利克阶。

2) *B. lirata* Healey (1908), 产于緬甸的瑞替克阶或諾利克阶。

1) *Burmesia* 的属型种是1923年 C. 第那尔 (Diener) 指出的。

3) *B.* aff. *lirata* Healey, Krumbeck (1913) (可以修正为新种 *B. krumbecki*), 产于印度尼西亚布鲁島 (Buru) 的諾利克阶;

4) *B. praecursor* Krumbeck (1913), 产于印度尼西亚布鲁島的諾利克阶。

5) *B. lirata* Healey, Mansuy (1914), 产于越南北部的諾利克阶。

6) *B. lirata* Healey, Mansuy (1921) (可以修正为新亚种 *B. lirata hsüi*), 产于越南班涿(Ban cho)的諾利克阶。

7) *B. lirata* Healey, Patte (1922), 产于越南康坦 (Con Tange) 的諾利克阶。

8) *B.* sp. nov. aff. *B. praecursor* Krumbeck, Patte (1929), 产于越南北部的諾利克阶。

9) *B. lirata* Healey, Hsü (1940), (可以修正为新亚种 *B. lirata hsüi*), 产于中国云南个旧火把冲的諾利克阶。

10) *B.* cf. *lirata* Healey, Saurin (1941), 产于越南的諾利克阶。

11) *B. wiberi* Wanner et Knipscheer (1951), 产于印度尼西亚密索尔島 (Misol) 的諾利克阶。

12) *B. japonica* Hayami (1959), 产于日本宫城水沼的里阿斯阶。

由上表可以确信，*Burmesia* 一属在諾利克期最为繁盛。主要分布在亚洲东南部的緬甸、越南、印度尼西亚、中国和日本;仅在日本发現于里阿斯期。

此外，L. R. 考克斯(Cox, 1924)曾描述了一种約旦河地方卡尼克期的 "? *Burmesia posteroradiata*", 日本古生物学者速水 (Hayami, 1959) 指出，該种 "壳的前端一半将近光滑、沒有任何放射飾紋，可能不属于 *Burmesia*." 作者同意这种意見。

根据上述可靠的材料，*Burmesia* 一属包有的各个种，似乎可以归納成下面两个羣：

1) *Burmesia latouchii* 羣，壳前端带有簡单的細射綫，包括：

B. latouchii Healey (1908)

B. japonica Hayami (1959)

2) *Burmesia lirata* 羣，壳前端带有一些斜褶脊，包括：

B. lirata Healey (1908)

B. krumbecki Chen, nom. nov. (= *B.* aff. *lirata* Krumbeck, 1913, S. 77, Taf. 5, Fig. 17)

B. praecursor Krumbeck (1913)

B. lirata hsüi Chen nom. nov. (= *B. lirata* Mansuy, 1921, p. 47, Pl. III, Fig. 30; = *B. lirata* Hsü, 1940, p. 262, Pl. II, Figs. 5, 5a)

B. weberi Wanner et Knipscheer (1951)

Burmesia 属的分类位置迄今尚未固定，M. 希勒 (1908) 建立了 Burmesiidae 科，C. 第那尔 (1923)、許德佑 (1940)、速水 (1959) 与 M. 希勒的意見一致，亦将 *Burmesia* 归于此科；另一方面，L. 喀魯貝克 (Krumbeck, 1913)、L. R. 考克斯 (1924)、J. 聞那尔 (Wanner, 1951) 等則把 *Burmesia* 归入 Anatinidae 科之內。

斜脊緬甸蛤 *Burmesia lirata* Healey

(图版 I, 图 1a, 1b, 1c)

1908, *Burmesia lirata* Healey, Pal. Indica, N. S., Vol. II, No. 4, p. 59, Pl. VIII, Figs. 19—22.
non 1913 *Burmesia* aff. *lirata* Krumbeck, Palaeontogr., Supple. Bd. 4, Lief. 2, S. 77, Taf. V, Fig. 17.
cf. 1914, *Burmesia lirata* Mansuy, Mem. Serv. Géol. Indochine, Vol. III, Fasc. 2, p. 23, Pl. III, Fig. 4.
non 1921, *Burmesia lirata* Mansuy, op. cit., Vol. VIII, Fasc. 1, p. 47, Pl. III, Fig. 30.
cf. 1922, *Burmesia lirata* Patte, op. cit., Vol. IX, Fasc. 1, p. 26, Pl. I, Fig. 19.

non 1940, *Burmesia lirata* Hsü, Bull. Geol. Soc. China, Vol. XX, Nos. 3—4, p. 262, Pl. II, Figs. 5, 5a.
cf. 1941, *Burmesia* cf. *lirata* Saurin, Bull. Geol. Serv. Indochine, Vol. 26, Fasc. 3, p. 16, Pl. V, Fig. 48.

描述：本种仅保存一个左壳。

壳横卵形，比較小，两側稍有不等，中等凸曲。壳頂小，稍突起在直的鉸綫之上。壳长18毫米，壳高12毫米。壳面兼有同心状和放射状飾紋，前者細，布滿壳体表面，而放射状脊綫密集分布在壳的中部，在5毫米間約有10根，放射脊发育相等，总数达33根，但最前7根較粗，且两射脊間隔頗寬。壳前端具有約13根从壳頂开始的傾斜的褶脊，它們的末端遇壳中部的射脊，成30°—40°銳角相交；最初的一根斜褶脊常最短，第二根逐漸增长，以此类推，但最后两根常未遇中部射脊即消失。壳的后背部为一自壳頂射出的显著凹槽所中分。

韌带和內韌托沒有保存。

討論：当前的标本不論在外形、壳面装飾、放射脊数目、壳后为一显著凹槽所中分等特征，都与M. 希勒最初描述的緬甸那本层的种相同，仅可区别的是，我們的标本个体較小，壳前端斜褶脊数目少两根；但M. 希勒的图19显示的这些特征，与图20、21亦有較大的不同。由此，我們的标本定为 *B. lirata* Healey 是沒有問題的。

H. 滿苏(Mansuy, 1914; 1921)两次描述了采自越南北部和班涿諾利克阶的 *B. lirata*. 北部的标本已失去壳的原来外形，壳前端尚可見斜褶脊5根；班涿的标本具有大的輪廓，壳前端具有10根斜褶脊，壳中部放射脊密集。

尚有若干越南标本，也被 E. 巴特 (Patte, 1922) 归于 *B. lirata*，但标本保存破碎，較难判断是否可以归在M. 希勒的种中。

1940年許德佑記述了采自我国云南个旧火把冲的 *B. lirata* 的一个左壳，完全具有班涿标本的特征。許氏的标本长61毫米，高40毫米，壳前端具有斜褶脊約8根，壳中部放射脊达36根。这些特征均与M. 希勒的种有所不同。許氏在他的論文中着重地說："我們的标本如果可以創立一个新种，将包括印度支那半島的标本。"

越南諾利克期的 *B.* cf. *lirata* (Saurin, 1941)，壳体中部的放射脊密集，但个体大小与我們的标本相近。

1913年，L. 喀魯貝克 (1913) 記述的一个命名为 *B.* aff. *lirata* 的种，似乎与 *B. lirata*, *B. praecursor* 和 *B. weberi* 都不相同，因为它具有十分寬大的壳頂，壳中部放射脊約18—24根。

可以和我們的标本比較的，有 *B. praecursor* Krumbeck (1913) 和 *B. weberi* Wanner et Knipscheer (1951)。但都是在外形上相似，它們的放射脊数目 (15—18根) 均較少，同时間距甚寬。

总的来看，不同的作者归入 *B. lirata* 的各地标本，它們的前斜褶脊的数目是有变化的。但无論如何，越南班涿和我国云南个旧的大个体标本，前斜褶脊較少，而中部放射脊(超过M. 希勒的种由23—33根的变化范围)則較多，是不同于M. 希勒最初描写的种的。因此，作者的意見，可創立一个新名，称为 *B. lirata hsüi*，以資区别。此外，印度尼西亚布魯島的 L. 喀魯貝克的标本，也有充分理由建立一个新种，称为 *B. krumbecki*。

最后，試列簡表，列举 *B. lirata* 羣中各种的壳面放射脊和前斜褶脊装飾数目的变化，以資比較：

种　　名	壳中部放射脊数目变化	壳前斜褶脊数目变化
Burmesia lirata Healey	23—33	13—15
B. lirata hsüi nom. nov.	>36	8—10
B. krumbecki nom. nov.	18—24	12
B. praecursor Krumbeck	16—18	11
B. weberi Wanner et Knipscheer	15	20

产地及层位：四川江油，上三迭統諾利克阶，或官渡組(?)。登記号：11090。

羽海扇科 Family Pterinopectinidae Newell, 1937

海神蛤 Genus *Posidonia* Bronn, 1828

(= *Posidonomya* Bronn, 1837)

***Posidonia* sp. indet. (sp. nov. ?)**

(图版 I，图 2)

描述：这个种仅在黑色頁岩中保存一个左壳。

壳近卵形，傾斜，微扁平，鉸綫比壳长較短，壳頂区域頗凸曲，位于壳长 1/3 处的前端，并稍升起在鉸綫之上。

壳面具有片状同心脊和微弱不显的放射紋。

比較：我們的标本以頗凸的壳頂区域和微弱不显的放射飾紋为特征。与阿尔卑斯拉丁尼克期的种 *P. wengensis* (Wissmann) 在外形上較为相近，但我們的标本有微弱的放射飾紋，可資区别。意大利晚三迭世的两个种 *P. bittneri*, *P. gemmellaroi* 和美国內华达 (Nevada) 的扁平个体的种 *P. daytonensis*，都不能与当前的标本相比較。

由于作者获得的标本太少，是否可以建立一个新种，尚有待于更多材料的証明。

产地及层位：与前一种相同。登記号：11091。

結　束　語

Burmesia 一属共包括 7 个种(其中 1 新种)，它們在地質历程上主要繁盛在諾利克期，仅有一个种产在日本的里阿斯期。*B. lirata* Healey 及其亚种，在亚洲东南部的緬甸 (M. Healey, 1908)[1]、越南 (H. Mansuy, 1914、1921; E. Patte, 1922; E. Saurin, 1941) 和我国云南 (許德佑, 1940) 的諾利克期地层里均有报导。1959 年秋天，作者与梁希洛、李蔚穠两同志調查云南东南部三迭系时，在个旧火把冲地区，也发現了 *B. lirata* Healey 与 *Halobia* aff. *fallax* Mojsisovics 共生。从上述情况来看，作者相信四川江油标本的时代是属于晚三迭世諾利克期的，全部官渡組的时代也可能是諾利克期。

就作者所知，四川海相上三迭統的最早材料，是朱森(1942)命名的"天井山石灰岩"[2]。当前 *B. lirata* Healey 和 *Posidonia* sp. indet. (sp. nov.?) 化石在江油的发現，証实了四川确有晚三迭世地层的存在，这对于四川西北部地質发展史的訊識，頗有意义。

1) 緬甸那本层及印度支那半島上的同时期地层的时代，最初曾被視为瑞替克期，但自 1935 年以后多数古生物学者訊为改属諾利克期更較合适。

2) 許德佑在 1938 年命名的"上三迭統雷口坡系"已被王鈺教授及作者等改属于中三迭統上部。

本文是在顾知微教授的指导和鼓励之下完成的，王鈺教授閱讀原稿并提出意見，作者致以衷心的謝意。庞茂芳同志代为摄制图影，武珮丽同志打印文稿，也一并于此致謝。

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ON THE OCCURRENCE OF *BURMESIA* IN NORTHWESTERN SZECHUAN

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INTRODUCTION

In 1957, a geological party discovered some Lamellibranches on the core-slabs of black shale from a bore in Chiangyu district of Northwestern Szechuan. Only a slab were sent to Prof. C. W. Ku of our Institute for identification. Very recently, Prof. C. W. Ku handed it over to the writer for study. On the slab there are two species, including *Burmesia lirata* Healey and *Posidonia* sp. indet. (sp. nov.?), which are described in the present paper.

The stratigraphical position of the fossils is not very clear. The stratigraphical sequence worked out by the other party in the Kuantu area of Chiangyu is given as follows (in descending order):

Jurassic

~~~~~ Unconformity or Disconformity ------

4)	Black shale, sandy shale and fine sandstone, the weathering surface being yellow and containing *Halobia* sp.	20 M
3)	Light gray oolitic limestone, thick-bedded	20 M
2)	Gray limestone, the middle and lower parts being intercalated with siliceous beds	41 M
1)	Grayish white limestone and dolomite and dolomitic limestone	183 M

In this section, the beds 1—3 are classified as Upper Triassic Tienchingshan tzu (Formation). The horizon of *Burmesia lirata* seems to be corresponded with the bed 4 and therefore it is named as Kuantu tzu (Formation) by Prof. K. K. Chao and the writer.

DESCRIPTION OF SPECIES

Family Burmesiidae Healey, 1908

Genus *Burmesia* Healey, 1908

(Lectotype: *Burmesia latouchii* Healey)*

In 1908, M. Healey established the new genus *Burmesia,* being founded on two species, *B. latouchii* and *B. lirata* from the Napeng beds (Rhaetic or Noric) of Upper Burma.

So far as the writer ascertains, the occurrence of the genus may be summed up in the following:

1) *Burmesia latouchii* Healey (1908), from the Rhaetic or Noric of Burma.
2) *B. lirata* Healey (1908), from the Rhaetic or Noric of Burma.
3) *B.* aff. *lirata* Krumbeck (1913) (attributed it to *B. krumbecki* Chen, nom. nov.), from the Noric of Buru, Indonesia.
4) *B. praecursor* Krumbeck (1913), from the Noric of Buru, Indonesia.
5) *B. lirata* Healey, by Mansuy (1914), from the Noric of Tonkin, Vietnam.
6) *B. lirata* Healey, by Mansuy (1921) (attributed it to *B. lirata hsüi* Chen, nom. nov.), from the Noric of Ban Cho, Vietnam.
7) *B. lirata* Healey, by Patte (1922), from the Noric of Con Tange, Vietnam.
8) *B.* sp. nov. aff. *B. praecursor* Krumbeck, by Patte (1929), from the Noric of Tonkin, Vietnam.
9) *B. lirata* Healey, by Hsü (1940) (attributed it to *B. lirata hsüi* Chen, nom. nov.), from the Noric of Kochiu district of Yunnan, China.
10) *B.* cf. *lirata* Healey, by Saurin (1941), from the Noric of Hoa-Huynh, Vietnam.
11) *B. werberi* Wanner et Knipscheer (1951), from the Noric of Misol, Indonesia.
12) *B. japonica* Hayami (1959), from the Liassic of Mizunuma of Miyagi Prefecture, Japan.

It is certain from the above list, that *Burmesia* had mostly flourished in the Noric age. It was found mainly in the southeastern Asia (Burma, Indonesia, Vietnam, Southwestern China and Japan) and the only occurrence in the Liassic is in Japan.

In 1924, the occurrence of *"Burmesia? posteroradiata"* reported by L. R. Cox (1924, P. 85) from the Carnic of Jordan Valley. The writer agrees with Hayami (1959) in the opinion that the anterior half of the shell of *"B. ? posteroradiata"* is almost smooth, lacking any radial ornament, and that it seems not close to the genus *Burmesia.*

According to the available materials, the known species of this genus may be divided into two groups as follows:

1) *Burmesia latouchii* Group: Anterior area is marked with simple and fine radials, including:
Burmesia latouchii Healey, 1908

* The type species of *Burmesia* was selected by Diener in 1923.
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B. japonica Hayami, 1959

2) *Burmesia lirata* Group: Anterior area is marked with several oblique plicae, including:

Burmesia lirata Healey, 1908

B. praecursor Krumbeck, 1913

B. krumbecki Chen, nom. nov.

(=*B.* aff. *lirata*, Krumbeck, 1913, s. 77, Taf. 5, Fig. 17)

B. lirata hsüi Chen, nom. nov.

(=*B. lirata*, Mansuy, 1921, p. 47, Pl. III, Fig. 30; *B. lirata*, Hsü, 1940, p. 262, Pl. II, Figs. 5, 5a)

B. weberi Wanner et Knipscheer, 1951

The taxonomic position of *Burmesia* seems to be not yet fixed. In 1908, Healey proposed the Family Burmesiidae, and C. Diener (1923), T. Y. Hsü (1940) and I. Hayami (1959) all followed to attributed the genus to the same Family. On the other hand, L. Krumbeck (1913) and L. R. Cox (1924), J. Wanner and H. C. G. Knipscheer (1951) classified it to the Family Annatinidae.

Burmesia lirata Healey

(Pl. I, Figs. 1a, 1b, 1c)

1908, *Burmesia lirate*, Healey, Pal. Indica, N. S., Vol. II, No. 4, p. 59, Pl. VIII, Figs. *19—22*.
non 1913, *Burmesia* aff. *lirata*, Krumbeck, Palaeontogr., Supple. Bd. 4, Lief. 2, S. 77, Taf. V, Fig. 17.
cf. 1914, *Burmesia lirata*, Mansuy, Mem. Serv. Geol. Indochine, Vol. III, fasc. 2, p. 23, Pl. III, Fig. 4.
non 1921, *Burmesia lirata*, Mansuy, op. cit., Vol. VIII, fasc. 1, p. 47, Pl. III, Fig. 30.
cf. 1922, *Burmesia lirata*, Patte, op. cit., Vol. IX, fasc. 1, p. 26, Pl. I, Fig. 19.
non 1940, *Burmesia lirata*, Hsü, Bull. Geol. Soc. China, Vol. XX, Nos. 3—4, p. 262, Pl. II, Figs. 5, 5a.
cf. 1941, *Burmesia* cf. *lirata*, Saurin, Bull. Geol. Serv. Indochine, Vol. 26, fasc. 3, p. 16, Pl. II, Fig. 48.

Description: The present species is represented by only a left valve.

Shell elongately ovate, small, slightly inequilateral and moderately convex. Umbo small, rising a little above the hinge-line. Length 18 mm, Height 12 mm.

The surface ornamentation consists of concentric line and radials. The former are fine, covering the whole surface, but they attain their prominence on the postero-dorsal part and on the antero-ventral margin. The radials are distributed densely in the middle of the shell surface, counted 10 within a breadth of 5 mm. These radials are approximately of equal strength and their total number are about 33, of which 7 in the more anterior area are slightly coarser and widely spaced. In the anterior of the valve the ornamentation consists of about 13 oblique plicae, originating from the umbo, ending abruptly and meeting the radials of the middle surface at acute angles of 30°—40°. The first oblique plicae is frequently the shortest, the second gradually longer and so on, but the last two often stop shortly before reaching the radials of the middle surface.

The postero-dorsal area is divided from the central part by a conspicuous median depression, running backward from the umbo.

The ligament and chondrophore unknown.

Remarks: In its outline, ornamentation and number of radials, the present specimen is quite identical with the original form described by Healey from Napeng beds of Burma. It is distinguished from the Burmese form only by its smaller size and number of the oblique plicae in the anterior, but the size and the number of the plicae exhibited in fig. 19 of Healey's figures are also distinguishable from those of figs. 20, 21, Pl. 8. Hence, with tolerable safety our specimen can be referred to *Burmesia lirata* Healey.

Mansuy described twice the form from the Noric both of Tonkin (1914, p. 23, Pl. III, Fig. 4) and Ban Cho (1921, P. 47, Pl. III, Fig. 30) in Vietnam. The Tonkin form does not preserve the perfect outline, but it possesses 5 oblique plicae in the anterior; while the Ban Cho form is large in size and of about 10 oblique plicae in the anterior part.

Another Vietnamese specimen which was attributed to the same species by Patte (1922, p. 26, Pl. I, Fig. 19) is too fragmentary.

The Kochiu form of this species which was recorded by T. Y. Hsü (1940, p. 262, Pl. II, Figs. 5, 5a) is represented by a left valve. T. Y. Hsü's specimen has a length of 61 mm and a height of 40 mm and the anterior ornamentation consists of about 8 oblique plicae and 36 radials. He explains clearly in his paper: "If a new species is to be credited for our specimen, one should do the same for those Indochinese forms." (1940, p. 263)

Saurin's figure (1941, p. 4L, Pl. II, Fig. 48) from the Noric of Vietnam has the radials densely spaced on the middle surface. This form resembles closely to our specimen in size.

A form nominated as *B.* aff. *lirata* was reported by Krumbeck (1913, s. 7, Taf. 5, Fig. 17). This specimen seems to do nothing with *B. lirata*, *B. praecursor* and *B. weberi*, because it has a widely enlarged umbo and 18—24 radials on the middle surface. Thus it shows a different character from that of Healey's species.

Compared with our form, *B. praecursor* Krumbeck (1913) and *B. weberi* Wanner et Knipscheer (1951) show similar outlines, but their radials are all less in number (15—18) and more widely spaced on the middle surface.

On the whole, various authors had referred to *B. lirata* for specimens that the number of the oblique plicae are quite variable. The large form with less oblique plicae and more radials from Ban Cho of Vietnam and Kochiu of Yunnan are different from the species originally described by Healey. Therefore the writer is of the opinion that a new sub-species may be created for this form, namely *Burmesia lirata hsüi* Chen. Further, Krumbeck's form from Buru of Indonesia seems also adequate for the establishment of a new species, and may be called *Burmesia krumbecki* Chen.

As a result, a comparison table is made to show the variation of the number of the radials ornamentation and the oblique anterior plicae of *B. lirata* group as follows:

Species	number of radials varies in the middle shell surface	number of oblique anterior plicae varies
Burmesia lirata Healey	23—33	13—15
B. lirata hsüi Chen, nom. nov.	more than 36	8—10
B. krumbecki Chen, nom. nov.	18—24	12
B. praecursor Krumbeck	16—18	11
B. weberi Wanner et Knipscheer	15	20

Horizon and Locality: Noric (Kuantu tzu ?), Chiangyu district of Northwestern Szechuan, China. (Cat. No. 11090)

Family Pterinopectinidae Newell, 1937
Genus *Posidonia* Bronn, 1828
(= *Posidonomya* Bronn, 1837)
Posidonia sp. indet. (sp. nov. ?)

(Pl. I, Fig. 2)

Description: Only a left valve is known of this species. Shell subovate, oblique, slightly flattened. Hinge-line straight and shorter than the greatest length of the shell. Umbonal area rather convex, rising a little above the hinge-line, the umbo being located at the anterior 1/3 of the length of the valve.

Surface ornamented by lameller concentric undulations and weak radials.

Comparison: The present specimen is characterized by its rather convex umbo and weak radials, appearing somewhat similar in shape with the Ladinic *Posidonia wengensis* (Wissmann). This form is not closely comparable to *P. bittneri* and *P. gemmellaroi* from the upper Triassic of Italy and *P. daytonensis* of Nevada.

The preservation of the material at hand in too poor to warrant the erection of a new species.

Horizon and Locality: Same as the preceding species. (Cat. No. 11091)

CONCLUSION

The genus *Burmesia* comprises seven species (including a sub-species) and they had mostly flourished in the Noric age. Only in Japan there is a species to occur in the Liassic. The species *Burmesia lirata* and its sub-species were recorded in the Noric rocks of Yunnan of China, Burma[1], and Vietnam in Southeastern Asia. In the autumn of 1959, Miss. H. L. Liang, Mr. W. N. Lee and the writer found also *Burmesia lirata* in association with *Halobia* aff. *fallax* in the Hopachung tzu (Noric) of southeastern Yunnan.

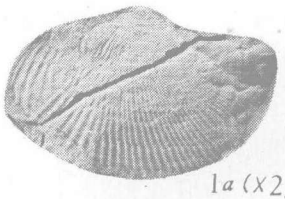
Consequently the writer wishes to make certain that the geological age of *Burmesia lirata* and *Posidonia* sp. indet. (sp. nov.?) of Northwestern Szechuan would be Noric, and that the Kuantu tzu (Formation) seems to be also of Noric age.

So far as the writer is aware of the earliest data of the marine Upper Triassic of Szechuan was S. Chu's "Tienchingshan limestone" in 1942[2]; By the discovery of the present evidence of *Burmesia lirata* and *Posidonia* sp. ind. (sp. nov. ?) from Chiangyu district, it is definitely proved that the marine Upper Triassic had been really developed in Szechuan.

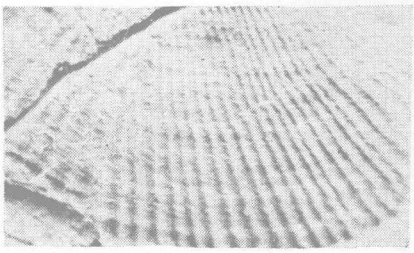
The writer would record his sincere thanks to Prof. C. W. Ku for his kind encouragement throughout the present study.

1) The geological age of Napeng beds and its equivalent formations of Burma and Indochina were regarded originally as Rhaetic. Since after 1935, however, more paleontologists and geologists inclined to considered them as of Noric age.

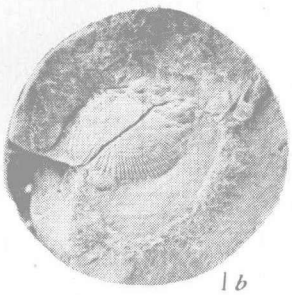
2) T. Y. Hsü's "Upper Triassic" Leikoupo tzu (Formation) is referred to Ladinic by Profs. Y. Wang and K. K. Chao and the writer.



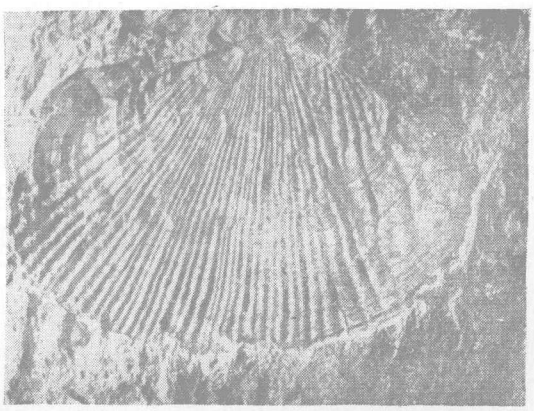
1a (X2)



1c (X5)

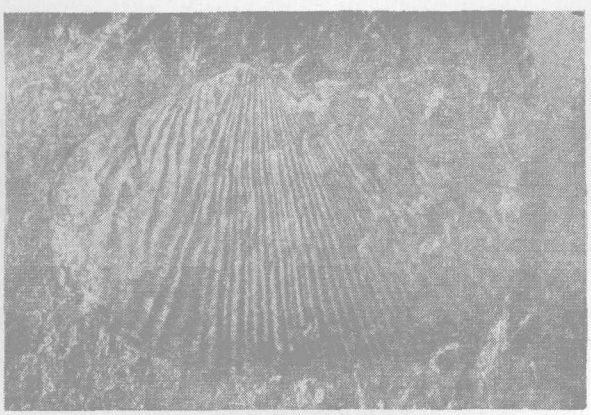


1b



3a

2 (X2)



3b

图版 I 說明

图 1. *Burmesia lirata* Healey
1a. 左壳 (× 2)
1b. 左壳 (原大)
1c. 左壳的一部分 (× 5), 表示細致的小粒点
四川西北江油县,諾利克期,登記号: 11090
图 2. *Posidonia* sp. indet. (sp. nov. ?)
左壳 (× 2)
产地同上,登記号: 11091
图 3. *Burmesia lirata hsüi* Chen (nom. nov.)
3a. 左壳外模 (原大)
3b. 左壳内模 (原大)
云南个旧火把冲,火把冲組(諾利克),朱 甲許德佑 1940,图版 II, 图 5, 5a

Explanation of Plate I

Fig. 1. *Burmesia lirata* Healey
1a. left valve, × 2;
1b. left valve × 1;
1c. A Part of the left valve enlarged 5 times to show the minute puncti.
Noric, Chiangyu district of NW Szechuan, Cat. No. 11090.

Fig. 2. *Posidonia* sp. indet. (sp. nov. ?)
Left valve, × 2.
Same locality, Cat. No. 11091.

Fig. 3. *Burmesia lirata hsüi* Chen (nom. nov.)
3a. External mould of left valve, × 1;
3b. Internal mould of the same, × 1.
Hopachung tzu (Noric), Hopachung, Kochiu, Yunnan, after T. Y. Hsü 1940, Pl. II, Figs. 5, 5a.