DOI:10.19800/j.cnki.aps.1996.01.005

第35卷第1期
1996年1月

古生物学报
ACTA PALAEONTOLOGICA SINICA

Vol. 35, No.1
Jan., 1996

论 *Stylostrotion* 及其分类位置*

林英铴　黄柱熙

(长春地质学院,长春 130026)

内 容 提 要

Stylostrotion 不具中轴结构,不与 *Siphonodendron* 同类,故对属的定义作了修订。*Stylostrotion* 是一类典型的皱纹珊瑚,更不同于异珊瑚类,因此不能同意 Fedorowski 的分类。新属 *Xinglangophyllum* 发现于贵州独山星朗的下石炭统上司组,内部构造似 *Stylostrotion*,但缺失二级隔壁及以单体产出。此外,俞建章描述的? *Thysanophyllum* sp. 应归入 *Polygonaria*。

关键词　皱纹珊瑚　异珊瑚　分类位置　束状隔壁　中轴

计荣森(1935)在研究我国南部石炭纪威宁珊瑚时,建立 *Stylostrotion* 属,模式种为 *S. intermedium*,采自广西罗城大罗山威宁灰岩层。自该属发表以后,各国学者对其存在问题持有不同看法(Lang *et al.*, 1940;王鸿祯,1950;Hill, 1956, 1981;俞建章等,1983),他们在讨论本属时都认为有中板存在,主张 *Stylostrotion* 是 *Siphonodendron* 的同义名。1991年,Fedorowski 在《古生代珊瑚的一个新亚纲——Dividocorallia》中,对 *Stylostrotion* 一属提出不同看法,他认为该属隔壁内端在个体中心接触的形态与异珊瑚相近似,因此不但可以单独存在,而且还提出该属应与异珊瑚同类,归在他创建的新亚纲 Dividocorallia 内,作为 Calyxcorallia 目的代表科,并描述波兰 Strunian 晚维宪期的一个新种 *Stylostrotion sudeticum*。

1992年,笔者在贵州独山境内星朗进行生物地层工作时,在下石炭统大塘阶上司组灰岩内发现一批小型单体珊瑚,内部构造与计荣森建立的 *Stylostrotion* 的特征相类似,因此引起了对 *Stylostrotion* 属的再认识。我们详细研究了计荣森描述的 *Stylostrotion* 的属征与模式种附图,认为隔壁形成中板结构值得商榷。该属模式种的横切面有2个个体(计荣森,1935,图版Ⅰ,图 1a),右侧一个在个体中心颇似中轴结构,经详细观察并非中轴,而是由于一级隔壁内端在中心彼此接触所致(计荣森,1935,图版Ⅰ,图 1b—d)。实际上隔壁排列明显呈束状,在模式种附图的左侧一个个体的横切面就十分清楚,隔壁呈三大束,每束有一个较长隔壁末端汇集中心,颇似"中轴"结构。因此 *Stylostrotion* 一属实质上不具中轴,它与 *Siphonodendron* 没有什么关系,也不宜将本属与 *Nemistium*, *Aulina*, *Diphyphyllum* 进行对比。

Fedorowski (1991)虽主张 *Stylostrotion* 可以独立存在,但与异珊瑚同类的看法我们认为有必要进行讨论。Fedorowski 强调隔壁呈束状,末端彼此接触,则主张与异珊瑚同类,这

* 高校博士学科点专项科研基金资助项目。

是不能接受的。异珊瑚是一类个体细小的珊瑚，通常生活在浅海静水环境，隔壁末端不分离，少数长隔壁内端汇集中心，可呈束状排列，没有轮生的二级隔壁，缺失鳞板，外壁表面常具脊、刺、瘤等构造。而 *Stylostrotion* 一属，虽然少数隔壁可在中心末端相接触，但时有分离，并有二级隔壁出现，发育有鳞板，这些特征与皱纹珊瑚相吻合。因此 *Stylostrotion* 属不具有异珊瑚的基本特征，与异珊瑚不属一类。

在古生代皱纹珊瑚中，隔壁作束状排列，少数隔壁内端在中心接触，这种类型的属除了 *Stylostrotion* 之外，还有 *Palaeophyllum*, *Ditoecholasma*, *Pseudopetraia*, *Polygonaria* 等。如果将这类珊瑚与异珊瑚混为一类，归为珊瑚纲内的一种新类型，这是混淆了皱纹珊瑚与异珊瑚两个亚纲的界限，更不能说明异珊瑚与皱纹珊瑚之间存在着亲缘关系。因此，笔者拟将 Fedorowski (1991)建立的 Stylostrotionidae 科归属于皱纹珊瑚亚纲的 Stauriina 亚目，包括以下各属：*Pseudopetraia* Soshkina, 1951, *Palaeophyllum* Billings, 1858, *Stylostrotion* Chi, 1935, *Polygonaria* Fan, 1978, *Sudetiphyllia* Fedorowski, 1991 及 *Xinglangophyllum* gen. nov.。

本文将对 *Stylostrotion* 属的定义作订正；建立 1 新属 2 新种。

属种描述

板柱珊瑚科　Family Stylostrotionidae Fedorowski, 1991

板柱珊瑚属　Genus *Stylostrotion* Chi, 1935 emend. nov.

(= *Donophyllum* Fomitchev, 1953; *Dematophyllum* Wu et Zhao, 1981)

模式种　*Stylostrotion intermedium* Chi, 1935

特征　复体丛状珊瑚。隔壁束状排列，部份隔壁在内端相接触。具二级隔壁。无中轴。横板发育不甚完整，排列穹形。鳞板带窄。

讨论　计荣森在建立 *Stylostrotion* 属时，认为本属有稳定的中板存在，在属征中指出："主隔壁、对隔壁延伸到中心连接形成一个明显的中轴"，因此他将本属与 *Siphonodendron*, *Nemistium*, *Aulina*, *Diphyphyllum* 等属作了比较，把本属归入 Lithostrotionidae 科。本属隔壁呈束状排列，由于少数隔壁内端在中心接触较紧密，其形似在中心有一个"中轴"，但实际不是计氏所称的主隔壁和对隔壁在中心形成的中轴结构。所以本文对属的定义和分类位置进行修正，更不能依据 Fedorowski (1991)的意见将本属列与异珊瑚同类。

Fomitchev 在 1939 年描述了 *Donophyllum* 属及 *D. reticulatum*, *D. diphyphylloidium* 2 种(产于顿涅茨盆地的中石炭世)。1940 年，Smith 等指定该属的后选模式种为 *D. diphyphylloidium*，并认为 *Donophyllum* 属与 *Diphyphyllum* 是同义名。1953 年，Fomitchev 在发表《顿涅茨盆地中晚石炭世及二叠纪皱纹珊瑚》时，重新描述了 *Donophyllum* 属及 4 种，即 *D. intermedium*, *D. reticulatum*, *D. diphyphylloidium* 及 *D. duvanense*，确定了该属为新属，列为 *Diphyphyllum* 的一个亚属，并指定 *D. reticulatum* 为模式种。按照 Fomitchev 意见，在 1953 年描述的 *Donophyllum* 才正式确定为新属，同时对该属的定义及各个种都作了详细的描述，应该是有效的。如果根据 Smith 所选择的模式种 *Donophyllum diphyphylloidium*(见本文图版 Ⅰ，图 11)，其特点与 *Diphyphyllum* 是一致的，将 *Donophyllum* 并入

Diphyphyllum 也是合适的。但是,我们详细观察了 Fomitchev (1953)对本属的定义及模式种 *Donophyllum reticulatum*(见本文图版Ⅰ,图 12)的特点,本属的主要特征与 *Stylostrotion* 相同,如隔壁呈束状排列,不发育中板及鳞板带窄等,因此我们同意 Fedorowski 的看法,将 *Donophyllum* 作为 *Stylostrotion* 的同义名。俞建章(1933)描述的 *Diphyphyllum*? *vesicotabulatum*,产于广西兴安、罗城等地的大塘阶;邝国敦(1977)描述的 *Donophyllum multisephatum* Kuang,产于广西柳城的大塘阶;左自壁(1982)描述的 *Donophyllum vesicotabulatum minor* Zuo,产于湖南邵东的大塘阶;王洪第(1978)描述的 *Donophyllum irregulare* Wang,产于贵州平塘的大塘阶,它们都应归入 *Stylostrotion*。

吴望始等(1981)建立的 *Dematophyllum* 属,其特点是隔壁呈束状,少数一级隔壁的末端于中心相交,具鳞板,横板穹形等特征与 *Stylostrotion* 相同,本文同意 Fedorowski 的意见,将 *Dematophyllum* 并入 *Stylostrotion*。

时代分布 维宪期至晚石炭世早期,中国;维宪期,俄罗斯、波兰。

泡沫横板板柱珊瑚 *Stylostrotion vesicotabulatum* (Yu)

(图版Ⅰ,图 9)

1933 *Diphyphyllum*? *vesicotabulata* Yu,俞建章,87 页,图版 14,图 5a—d;图版 15,图 5a,b。

1982 *Donophyllum vesicotabulata*,左自壁,198 页,图版 74,图 1。

1991 *Stylostrotion vesicotabulata*, Fedorowski, p. 70.

产地层位 云南施甸由旺,下石炭统大塘阶下部。

星朗珊瑚(新属) *Xinglangophyllum* gen. nov.

模式种 *Xinglangophyllum dushanense* gen. et sp. nov.

特征 小型单体珊瑚,圆锥状至圆柱状。隔壁呈束状排列,每束中有一个较长的隔壁内端在中心汇集,但不形成中板。二级隔壁不发育。具主内沟。鳞板 1—2 列,体积较大。横板不完整,呈穹形排列。

比较 本属一级隔壁呈束状、鳞板发育等特点与 *Stylostrotion* Chi 相似,最主要的不同点是本属以单体产出,二级隔壁缺失,具主内沟。

时代分布 早石炭世大塘期,中国贵州。

独山星朗珊瑚(新属、新种) *Xinglangophyllum dushanense* gen. et sp. nov.

(图版Ⅰ,图 1—8)

描述 小型单体珊瑚,圆锥状至圆柱状。直径一般为 5—7mm。隔壁加厚,向内延伸逐渐变薄。隔壁由复羽榍组成,羽针彼此平行,倾斜平缓,基端与隔壁中心线相垂直。一级隔壁数目 17—21,呈 2—5 束排列,每束有隔壁 3—6 个,其中有一个长的隔壁伸到中心,末端相汇,但不形成中板。二级隔壁缺失。主隔壁较长,内端常偏离一侧形成显著的内沟。鳞板带窄,由 1—2 列体积较大、不匀的鳞板组成。鳞板带内侧鳞板表面灰质加厚组成显著内壁。横板不完整,排列穹形,5mm 内有 7 个横板。

产地层位 下石炭统大塘阶上司组,贵州独山星朗。

多边珊瑚属　Genus *Polygonaria* Fan, 1978

花瓣多边珊瑚(新种)　*Polygonaria floriformis* sp. nov.

(图版Ⅰ,图 10)

1937　? *Thysanophyllum* sp., 俞建章,78 页,图版Ⅹ,图 6a, b。

特征　单骸角柱状。具发达的边缘泡沫带。隔壁呈四束排列,每束有一个长的隔壁在中心相接触。二级隔壁不发育。

描述　复体块状,单骸多角形,直径 12—15mm,一级隔壁数目 24—26,二级隔壁缺失。隔壁呈明显四分束状排列,由 4 束组成,每束有一个较长隔壁内端在中心相会。隔壁外端环绕着宽的泡沫带,宽度可达单骸半径的 2/5。鳞板大型,上凸。横板不甚完整,穹形,平列状,平均横板间距为 0.5mm。

讨论　俞建章(1937)原称为 *Thysanophyllum* sp.的标本不具中板、隔壁呈束状排列等与 *Thysanophyllum* 有显著不同,而与 *Polygonaria* 属的特征相吻合。因此,我们将其作为 *Polygonaria* 的一个新种。

新种的泡沫板体积大,泡沫带完整之特点可与本属其他各种区别开来。

产地层位　湖南临武香花岭,下石炭统大塘阶下部。

参 考 文 献

王洪第,1978:珊瑚纲。西南地区古生物图册(贵州分册)(二),132—133 页。地质出版社。

左自壁,1982:珊瑚纲。湖南古生物图册(二)。第 1 号,130 页。地质出版社。

邝国敦,1977:珊瑚纲。中南地区古生物图册(二),197 页。地质出版社。

吴望始、赵嘉明等,1981:华南地区邵东组的珊瑚化石及其地质时代。古生物学报,**20**(1):1—12。

计荣森,1935:增补湖南云南广西三省之威宁系珊瑚化石。中国古生物志,乙种第十二号第六册,20—23 页。

俞建章,1933:中国下石炭纪珊瑚化石。中国古生物志,乙种第十二号第三册,78—88 页。

俞建章,1937:中国南部丰宁世珊瑚化石。国立中央研究院地质研究所西文集刊,第十六号,51—52 页。

俞建章、林英锪等,1983:石炭纪二叠纪珊瑚。吉林人民出版社。

Fedorowski, J., 1991: Dividocorallia, a new subclass of Palaeozoic Anthozoa. Bulletin de Linstitut Royal des Sciences Naturelles de Belgique, Sciences de La Terre, **61**: 70—80.

Fomitchev, V. D., 1939: "Coelenterata" in the Atlas of the Leading Forms of the Fossil Faunas of USSR. 5, Centr. Geol. Prosp. Inst. Leningrad, p. 59.

Lang, W. D., Smith, S. and Thomas, H. D., 1940: Index of Palaeozoic coral genera. British Museum (Nat. Hist.), London, p. 54.

Wang, H. C., 1950: A Revision of the Zoantharia Rugosa in the light of their minute skeletal structure. Phil. Trans. Roy. Soc. London. B, **234**(611): 212.

Фомичев В. Д., 1953: Кораллы Rugosa и верхнекаменноугольных и пермских отложений Донечкого бассейна. Госгеотехиздат, стр.440—449.

[1995 年 5 月 29 日收到]

ON GENUS *STYLOSTROTION* CHI AND ITS SYSTEMATIC POSITION

Lin Ying-dang and Huang Zhu-xi
(*Changchun College of Geology, Changchun* 130026)

Key words Rugosa, heterocoral, systematic position, bunchwise septa, palicolumella

Summary

After the establishment of the genus *Stylostrotion* by Dr. Chi in 1935, many palaeontologists in China and abroad have different opinions. As Chi described in diagnosis of this genus: "It has a distinct palicolumella", some palaeontologists, such as S. Smith, D. Hill, Yu and Wang, regard it as a synonym of the genus *Siphonodendron*. However, J. Fedorowski established a new subclass Dividocorallia (Palaeozoic Anthozoa) in 1991, holding a different opinion from Chi about this genus. He indicated the inconstant number of major septa in quadrants, which are similar to that of heterocoral, and so he established the new family Stylostrotionidae, which belong to the order Calyxcorallia under the subclass Dividocorallia. Through examining the description and figures of this genus in Chi's paper, the authors found that there are two individual transverse sections in the type specimen (Pl. Ⅰ, fig. 1a), with a palicolumella-like structure at the center of the right one. In fact, this is a structure caused by the connection of inner septa, rather than a palicolumella; the left one also presents this characteristic, with its septa in bunchwise arrangement, and each bunch has a long septum prolonged to the center and conneced to others. Hence, it may be concluded that this genus has no palicolumella and bears no any relationship with *Siphonodendron*. It is unavailable to correlate the genus with *Nemistium*, *Aulina*, *Diphyphyllum*, and therefore it is necessary for us to emend the diagnosis of the genus in this paper.

According to Fedorowski (1991), this genus is a kind of heterocoral, and is regarded as a new Palaeozoic anthozoan. However, the authors have a different opinion, since the heterocoral has a specific structure, which is characterized by the never separated inner end of septa, the absence of minor septa and dissepiments, with some boss, spines and ridges on the wall. While this genus has minor septa and a dissepimentarium, with the inner end of septa occassionally separated, indicating that it is a typical Rugosa, instead of heterocoral. In case this genus is placed in the heterocoral, it would present a confusion between the Rugosa and the Heterocorallia. Therefore the authors suggest that the family Stylostrotionidae Fedorowski (1991) be

placed under the suborder Stauriina of the Rugosa, including *Pseudopetraia* Soshkina, *Palaeophyllum* Billings, *Stylostrotion* Chi, *Polygonaria* Fan, *Sudetiphyllia* Fedorowski and *Xinglangophyllum* gen. nov.

DESCRIPTION OF NEW GENUS AND SPECIES

Stylostrotion Chi, 1935 emend. nov.

(= *Donophyllum* Fomitchev, 1953; *Dematophyllum* Wu et Zhao, 1981)

Type species *Stylostrotion intermedium* Chi, 1935

Diagnosis Compound corallum fasciculate. Septa arranged bunchwise; part of septal ends connected at center. Minor septa present but palicolumella absent. Tabulae incomplete and arched. Dissepimentarium narrow.

Discussion Chi's diagnosis for the genus *Stylostrotion* reads: "A distinct palicolumella is formed by the prolongation of the cardinal and counter septa meeting the other septa at the center". He compared the genus with *Siphonodendron*, *Nemistium*, *Aulina*, *Diphyphyllum*, and placed it in the family Lithostrotionidae. The bunchwise arranged septa and their inner ends are connected, looking lika a medial plate, instead of a real palicolumella as described by Chi. So it is very necessary for us to emend the diagnosis of *Stylostrotion* Chi concerning its palicolumella and systematic position.

In 1939, V. D. Fomitchev described the genus *Donophyllum* and two species, *D. reticulatum* and *D. diphyphylloidium* from the Middle Carboniferous in Donetz Basin. In 1940, S. Smith pointed out the species *D. diphyphylloidium* as the genolectotype of *Donophyllum* which he considered as a synonym of *Diphyphyllum*. Till 1953, V. D. Fomitchev redescribed the genus *Donophyllum* with four species, *D. intermedium*, *D. reticulatum*, *D. diphyphylloidium* and *D. duvanense*. He placed *Donophyllum* as a new subgenus of *Diphyphyllum*, and pointed out the species *Donophyllum reticulatum* as a genotype. After carefully examining the diagnosis and figure of *D. reticulatum* Fomitchev, the authors found that *Donophyllum* is very closely allied to the genus *Stylostrotion*, and so they agree to Fedorowski's opinion that the genus *Donophyllum* is a synonym of the genus *Stylostrotion*. Thus, the species *Diphyphyllum*? *vesicotabulatum* Yu (1933), *Donophyllum multiseptatum* Kuang (1977), *D. vesicotabulatum minor* Zuo and *D. irregulare* Wang (1978) must be placed in the genus *Stylostrotion*.

In the genus *Dematophyllum* established by Wu in 1981, the septa are arranged bunchwise, a few long septa are connected with each other at inner ends, with the presence of dissepiments and arched tabulae; these characteristics coincide with those of *Stylostrotion*. So the authors agree to Fedorowski's opinion that the genus *Dematophyllum* Wu et Zhao is also a synonym of *Stylostrotion* Chi.

Horizon and locality Visean, Russia and Poland; Carboniferous (Tatang to early Late

Carboniferous), China.

Xinglangophyllum gen. nov.

Type species *Xinglangophyllum dushanense* gen. et sp. nov.

Diagnosis Small conic-cylindrical solitary coral. Septa arranged bunchwise, with a long one prolonged to the center of corallum in each bunch and connected with others, but not forming a medial plate. Minor septa undeveloped. A cardinal fossula present. Dissepimentarium narrow, and large, with 1—2 rows of dissepiments. Tabulae incomplete and arched.

Remarks In dissepiments and bunchwise arranged septa, the genus is similar to the genus *Stylostrotion*, but markedly differs from the latter in the solitary corallum, the absence of minor septa and the presence of a cardinal fossula.

Distribution Datang stage, Lower Carboniferous; Guizhou, China.

Xinglangophyllum dushanense gen. et sp. nov.

(Pl. I, figs. 1—8)

Diagnosis As for the genus.

Description Septa thicker, gradually becoming thinner toward the center, composed of trabecula, with parallel fabric middle and middle line of septa perpendicular. Corallum 5—7mm in diameter. Major septa 17—21 in number, arranged in 2—5 bunches, each bunch containing 3—6 septa, with a longer one prolonged to the center and connected with others, but not forming a medial plate. Minor septa absent. Cardinal septum longer, with inner end usually declined laterally, and so cardinal fossula becoming obvious. Dissepimentarium narrow, with 1—2 rows consisting of unequal huge dissepiment. Inner wall conspicuous. Tabulae incomplete and arched, with 7 in 5mm.

Distribution Shangsi Formation, Datang stage, Lower Carboniferous; Xinglang, Dushan of Guizhou.

Polygonaria Fan, 1978

Polygonaria floriformis sp. nov.

(Pl. I, fig. 10)

1937 ? *Thysanophyllum* sp., Yu, p. 78, pl. 10, figs. 6a, b.

Diagnosis Corallum with a wide lonsdaloid dissepimentarium. Septa arranged in four bunches, each bunch with a long septum prolonged to the center and connected with others. Minor septa undeveloped.

Description Cerioid corals with corallites 12—15mm in diameter. Septa arranged in 4 bunches, each bunch with a long septum prolonged to the center and connected with others; all septa not extending peripherally around a wide lonsdaloid dissepimentarium. Dissepiments large

and convex. Tabulae incomplete, arched, averagely about 0.5mm apart.

Remarks The species was first described by Yu in 1937, who placed it in *Thysanophyllum* doubtfully without identification. In the absence of a medial plate and the bunchwise arranged septa the specimen is different from *Thysanophyllum*, but similar to *Polygonaria*, and thus ? *Thysanophyllum* sp. has been corrected to a new species of the genus *Polygonaria*.

Distribution Lower Datang stage; Xianghualin, Lingwu of Hunan.

图 版 说 明

标本均保存在长春地质学院。

图 版 I

1—8. *Xinglangophyllum dushanense* gen. et sp. nov.

1a, b. 横切面及纵切面，×6；登记号：CD95001, 95002(holotype)。2a, b. 横切面(近杯部)及纵切面，×7；登记号：CD95003, 95004。3—7. 不同个体的横切面，×6；登记号：CD95005—95009。8. 横切面，示部份隔壁内端分离，×7.5；登记号：CD95010。贵州省独山县星朗，下石炭统大塘阶上司组。

9. *Stylostrotion vesicotabulatum* (Yu)

9a, b. 复体丛状的横切面，×3；登记号：CD95011。9c. 纵切面，×3；登记号：CD95012。云南省施甸县由旺，下石炭统大塘阶下部。

10. *Polygonaria floriformis* sp. nov.

10a. 角柱状单骸横切面，×2.3。10b. 另一单骸纵切面，×2。湖南省临武县香花岭，下石炭统大塘阶下部。引自俞建章，1937，图版 X，图 6a, b。

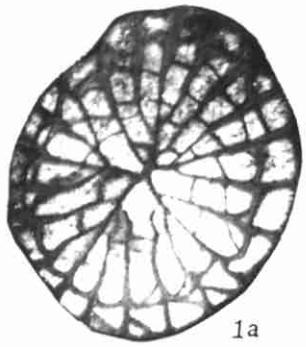
11. *Diphyphyllum diphyphylloidium* (Fomitchev)

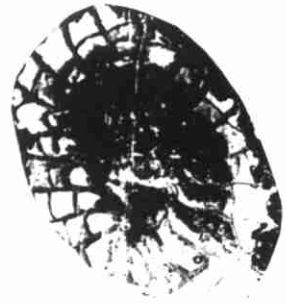
11a. 横切面，×2。11b. 纵切面，×2。引自 Fomitchev, 1953, 图版 30, 图 1a, b. 原称 *Donophyllum diphyphylloidium* Fomitchev；顿涅茨盆地中石炭统。

12. *Stylostrotion reticulatum* (Fomitchev)

12a. 横切面，×2。12b. 纵切面，×2。引自 Fomitchev, 1953, 图版 30, 图 9a, b, 原 *Donophyllum reticulatum* Fomitchv；顿涅茨盆地中石炭统。Fomitchev 指定的 *Donophyllum* 属的模式种。


3

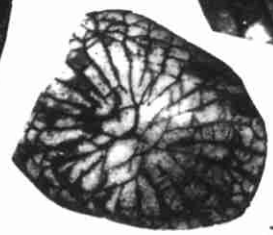

1a


2a

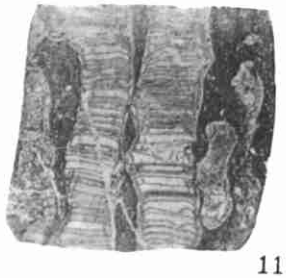

4

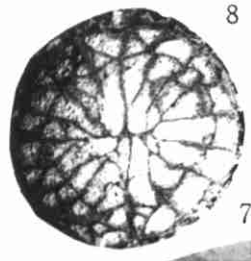

1b


2b

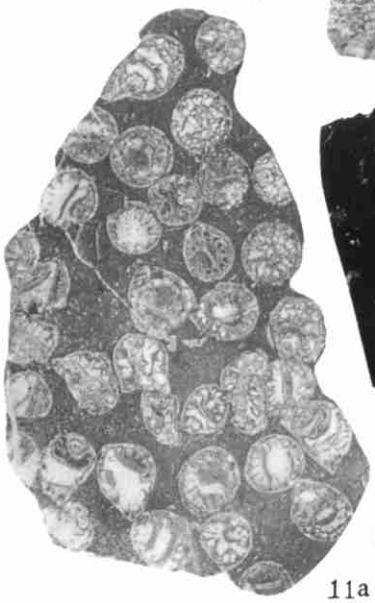

8


5


11b


7

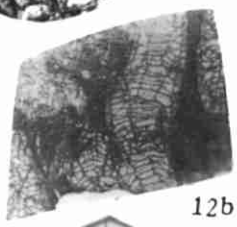

6

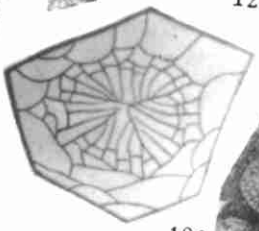

11a


9a

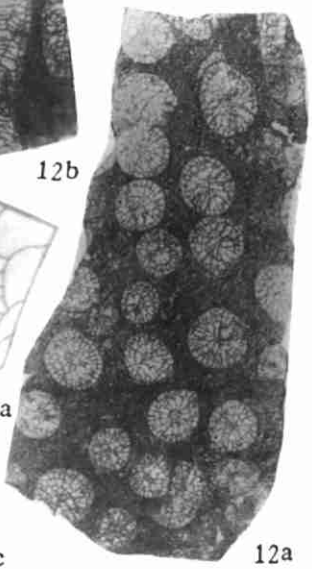

9b


10b


12b


10a


9c


12a