A C T A P A L A E O N T O L O G I C A P O L O N I C A
Vol. 24 1979 No. 1

EWA RONIEWICZ

JURASSIC SCLERACTINIAN CORAL *THAMNOSERIS* ETALLON, 1864, AND ITS HOMEOMORPHS

Roniewicz E.: Jurassic scleractinian coral Thamnosevis Etallon, 1864, and its homeomorphs. Acta Palaeont. Polonica, 24, 1, 51—64, April 20, 1979.

Genus *Thamnoseris* differs from the Jurassic representatives of *Fungiastraea* Alloiteau, 1957, in having extratentacular-intercalicular gemmation instead of intratentacular or extratentacular-marginal gemmation, and in its trend towards synapticulotheca formation; there seem to be differences in microstructure and/or histology between the two genera. *Thamnoseris* differs from *Kobyastraea* Roniewicz, 1970, in its porous septa, papillar columella, and vesicular endotheca. Three species of *Thamnoseris* of the Oxfordian/Kimmeridgian are described from the Holy Cross Mts, Poland: *Th.* cf. *frotei* Etallon, *Th.* cf. *blauensis* Koby and *Thamnoseris* sp.
K e y w o r d s: Scleractinia, taxonomy, homeomorphy, Upper Jurassic, Poland.

Ewa Roniewicz, Zakład Paleobiologii PAN, Al. Żwirki i Wigury 93, 02-089 Warszawa, Poland. *Received: March 1978.*

INTRODUCTION

Despite its wide geographic distribution in the European Jurassic, the genus *Thamnoseris* is rather poorly known. It is one of a group of genera displaying thamnasterioid colonies which are often misidentified because their skeletal structures are obscured and difficult to distinguish in any detail. It most closely resembles the genera *Fungiastraea* and *Kobyastraea*.

The investigated material comes from the whole area of the Holy Cross Mts (Góry Świętokrzyskie). Most specimens are poorly preserved, as the skeletons recrystallise easily. Hence, microstructure has been studied only as trace structures in thin sections, and — indirectly — by observation of septal ornamentation.

The specimens are housed in the Institute of Paleobiology, Polish Academy of Sciences (abbreviated here as ZPAL).

Acknowledgments. — I am indebted to Dr. Andrew Packard (University of Edinburgh) for correction of the English.

THAMNOSERIS ETALLON AND *FUNGIASTRAEA* ALLOITEAU

A group of thamnasterioid species described in the last century from the European Upper Jurassic is attributed to the genus *Thamnoseris*

Etallon, 1864, based on the type species *Thamnoseris frotei* Etallon, 1864. Another group of European Upper Jurassic species is assigned to the genus *Fungiastraea* Alloiteau, 1957, based on the Upper Cretaceous species, *Astraea laganum* Michelin, 1841. Despite some differences, both groups resemble one another very closely.

Both the original diagnosis of the genus *Thamnoseris* and the emended diagnosis given by Koby (1887, 1889, 1905) deal mainly with external morphology and the accompanying drawings show only the colony surface. Therefore, the genus was rarely identified by other authors even though it occurs commonly in the Jurassic. No new empirical data were collected during subsequent years but the genus was nevertheless variously interpreted. Wells (1956) considered it as synonymous with *Thamnasteria* Lesauvage. In contrast, Alloiteau (1957) recognized both those genera as distinct taxa. Beauvais (1964) was the first to add new information on the genus, as she gave photographs of the upper surface of the holotype of *Thamnoseris frotei*, both at natural size and ×3. Thus, the genus has so far remained rather poorly known.

In the Holy Cross Mts, the genus is represented by three forms assigned to *Thamnoseris* cf. *frotei*, *Th.* cf. *blauensis* and *Th. sp.* All the species display some characteristics in common, given below as diagnostic of the genus.

Emended diagnosis: Thamnasterioid to cerioid colony surface; irregularly porous, confluent, anastomosing septa; trabecular lobes forming a papillar columella; vesicular endotheca; synapticulotheca commonly developed; trabecules with flattened lateral processes; gemmation extratentacular.

There are some differences between the material investigated from the Holy Cross Mts and the generic characteristics as given by Beauvais (1964). The latter author assesses the gemmation as of intracalicular type, while mostly intercalicular gemmation occurs in the specimens investigated; according to Beauvais (*op. cit.*), the septal faces are covered with "filets horizontaux", while there are separate granules (*Th.* cf. *frotei*, *Thamnoseris* sp.) or pennula- like structures (*Th.* cf. *blauensis*) in the specimens investigated. In fact, the characteristics given by Beauvais (*op. cit.*) overlap with the diagnosis of the genus *Fungiastraea*.

The systematic position of the genus *Thamnoseris* was variously interpreted. Originally, the genus had been considered as related to *Thamnasteria* but subsequently, Beauvais (*op. cit.*) ascribed it to the family Latomeandridae. The present data on corallite internal structure support this latter opinion. Further investigations of skeletal microstructure may, however, lead to changes in the systematic position of *Thamnoseris*.

All the species investigated resemble the Jurassic representatives of *Fungiastraea*, with the similarity increasing from *Th.* cf. *frotei* to *Th.* cf. *blauensis*. *Thamnoseris* sp. occupies an intermediate position.

The genus *Fungiastraea* had been originally ascribed to the family Thamnasteriidae but was subsequently transferred to the family Latomeandridae on the basis of the skeletal structure of its Jurassic representatives (Roniewicz 1976). It resembles *Thamnoseris* in general corallite morphology (vesicular endotheca, papillar columella); but at the same time it displays (1) a different gemmation type, (2) variously developed synapticulotheca, and (3) different septal microstructure and/or histology (the meaning of the terms microstructure and histology is applied after Alloiteau (1952, 1957)).

1. Extrarentacular-intercalicular gemmation prevailing in the investigated species of *Thamnoseris* results in hemispherical or massive colonies (colonies of *Thamnoseris* were characterized by Etallon (1864) Koby (1887, 1889, 1905) and Beauvais (1964) as being of variable shape, convex to flat) with densely packed calices distinctly different from lamellar colonies of *Fungiastraea* formed by extratentacular-marginal (i.e. in the colony margins) and intratentacular gemmation (in the colony center). In *Thamnoseris*, intratentacular gemmation, if any, occurs but is little evident (fig. 5). Because of the difference in gemmation type, colonies of *Thamnoseris* and *Fungiastraea* differ also in the appearance of their calicular surface. In *Fungiastraea*, septa on the surface of the colony are long and wavy, but straight and pointing from one center to another in *Thamnoseris*. In fact, gemmation type so strongly influences colony appearance that Koby — so far the most experienced student of the Jurassic corals — made the genus *Thamnoseris* clearly distinct, while all the Jurassic species assigned at present to *Fungiastraea* were considered as representatives of *Thamnasteria*.

2. The occurence of synapticulotheca appears to be a distinctive feature setting *Thamnoseris* apart from *Fungiastraea*. However, it cannot be regarded as a truly diagnostic character, since synapticulotheca are variably developed in *Thamnoseris* cf. *blauensis* and *Thamnoseris* sp. and may even be absent from some corallites (especially *Th.* cf. *blauensis*).

3. The ornamentation is similar in both genera but there are some differences which reflect a difference in microstructure of the septa. Both have trabecules with strong and regularly distributed lateral projections that appear on the septal surfaces as granules in *Thamnoseris*, and pennules in *Fungiastraea*. The pennules are separate or tend to form menianae. Their typical pennular shape is especially apparent when observed in longitudinal section normal to the septal blade: subtriangular, asymmetrical with concave upper and convex lower surface, tapering distaly and directed upwards (pl. 13: 4; see also typical shape in Gill 1967). Oblique sections of *Fungiastraea* show the characteristic prickle-shaped pennules (pl. 14: 2*b*).

In *Thamnoseris* granules are protruding, flattened and separated from each other (in *Thamnoseris* cf. *frotei* and *Thamnoseris* sp.) or tend to be

laterally fused (in *Th.* cf. *blauensis*). In longitudinal and oblique sections of the corallite they do not have the typical pennular character, although in cross section they tend to look rather like pennules (pl. 10: 4*b*). Thus it is difficult (1°) to define the character of the ornamentation of *Thamnoseris* and (2°) to say in what degree its microstructure is related to the *Fungiastraea*.

Differences in microstructure and/or histology are confirmed by differences in the state of preservation of the skeleton of *Thamnoseris* and *Fungiastraea* colonies coming from the same beds: in *Thamnoseris* vestiges of coarse septal trabecules, flattened perpendicularly to the septal blade, are common especially in *Thamnoseris* cf. *frotei*, but they are never observed in fungiastreas.

As shown by the above review, the species attributed to *Thamnoseris* differ from those assigned to *Fungiastraea* in quantifiable characteristics. There are some differences of septal microstructure and/or histology; nevertheless, the range of microstructural variability within the *Thamnoseris-Fungiastraea* group seems to not exceed the range observed within some genera, e.g. the Triassic *Omphalophyllia* (see Cuif 1975: 65, 71).

This means that at least the Jurassic species of *Fungiastraea* Alloiteau 1957 could be ascribed to the genus *Thamnoseris* Etallon, 1864, since the only criterion permitting discrimination between them, if microstructure is not taken into account, is the mode of gemmation prevailing

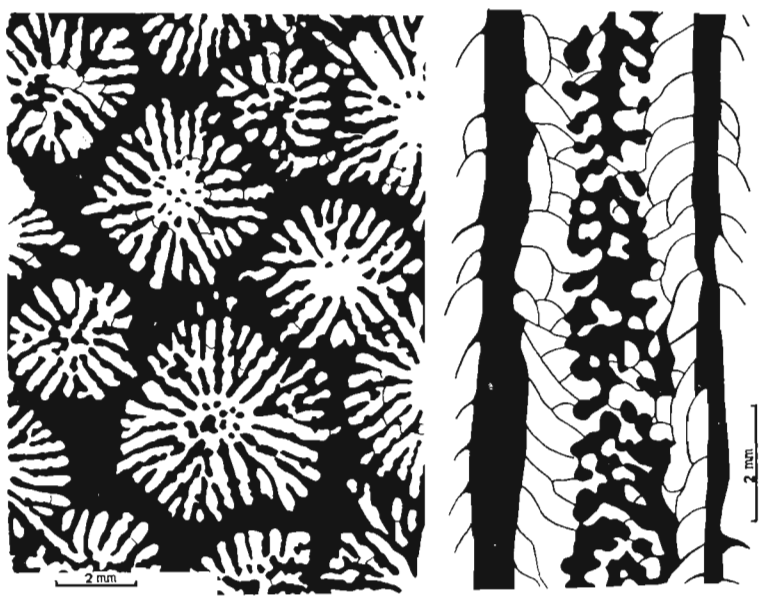


Fig. 1. *Thamnoseris* corallite morphology. *Left* — *Thamnoseris* cf. *frotei* Etallon, Bukowa, L. Kimmeridgian, ZPAL H.III/425: cross section through distal corallite portion. *Right* — the same species, Niziny, U. Oxfordian, ZPAL H.III/822: longitudinal section (see also pl. 4: 2).

in the colony. However, the taxonomic value of gemmation is questionable, as indicated e.g. by the homeomorphic genus *Kobyastraea* (see below). That this criterion is of little value for taxonomy is apprent when one observes recent Scleractinia (e.g. *Montastraea annularis*, see: Barnes 1973). Unfortunately, the problem of the *Thamnoseris-Fungiastraea* relationship cannot be solved unless the best preserved materials are investigated in detail. For the moment systematists remain doomed to incertitude and arbitrariness in their interpretation of the taxonomic range of both generic names.

THAMNOSERIS ETALLON AND *KOBYASTRAEA* RONIEWICZ

While *Fungiastraea* resembles *Thamnoseris* in some important features of corallite structure, *Kobyastraea* and *Thamnoseris* resemble each other only in the appearance of the upper surface of the colony. Gemmation is, in fact, identical in both *Thamnoseris* and *Kobyastraea*; distal parts of the corallites are also similar in both genera. The result is a striking similarity of the upper surfaces of the colonies but the characteristics of corallite internal structure are different and indicate clearly that *Thamnoseris* and *Kobyastraea* should be assigned to different families.

I have distinguished (Roniewicz 1970) polyspecific genus *Kobyastraea*,

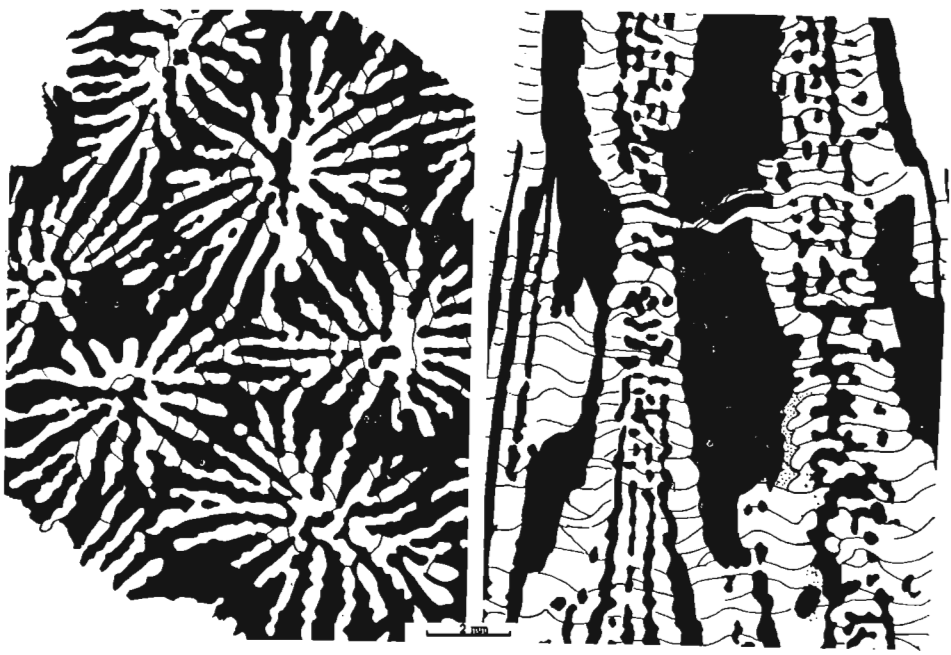


Fig. 2. *Kobyastraea* corallite morphology. *K. lomontiana* (Etallon), environs of Basel, Jura, "U. Rauracian", Mus. Nat. Hist., Basel, No. D 157: *left* — cross section and *right* — longitudinal section.

based on the type species *Thamnasteria lomontiana* Etallon 1864, from among the Jurassic thamnasterias (see also Roniewicz 1976). Originally, it was attributed to the family Thamnasteriidae but it is now transferred to the new family Kobyastraeidae.

Diagnosis of the Kobyastraeidae fam. n.: imperforate septa; anastomosis; paliform teeth; synapticules; lamellar columella; tabuloid endotheca. Monotypic family. Systematic position: Fungiina.

The variability in the development of synapticulotheca and in gemmation type observed in this genus resemble phenomena observed in the *Thamnoseris-Fungiastraea* group. In fact, judging from the above-mentionned characteristics, two groups of species are to be recognized in *Kobyastraea*: (1°) species with extratentacular-intercalicular gemmation prevailing, crowded corallites, cerioid appearance, and well-developed synapticulotheca (*K. coquandi* (Koby), *K. bourgeati* (Etallon) and *K. lomontiana* (Etallon); and (2°) species with intense extratentacular-marginal gemmation co-occuring with intratentacular gemmation with trabecular linkage in the colony center, dispersed corallites, thamnasterioid appearance, and rudimentary synapticulotheca (*K. tenuis* Roniewicz).

There are trabecules with prominent lateral processes in both *Thamnoseris* and *Kobyastraea*. In the latter genus they are expressed at the septal surfaces in the form of round granules pointed (*K. coquandi*, *K. bourgeati*) or slightly flattened (*K. tenuis*).

The genera *Thamnoseris* and *Kobyastraea* differ in the following features (fig. 3):

1. In contrast to *Thamnoseris*, the septa of *Kobyastraea* are nonporous and bear thick paliform lobes reflected in the calice as paliform teeth.
2. In contrast to the parietal columella of *Thamnoseris* the columella of *Kobyastraea* is styliform or sublamellar (pl. 11: 3; fig. 2). When coalesced with paliform lobes, it may secondarily become parietal-like. Fused

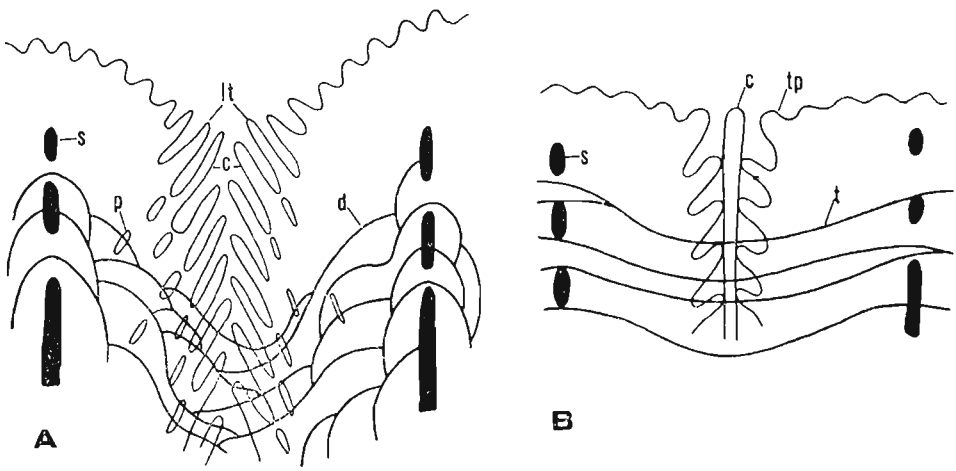


Fig. 3. *Thamnoseris* (*A*) and *Kobyastraea* (*B*) corallite morphology shown in longitudinal section: *c* columella, *d* dissepiments, *lt* trabecular lobes (not anastomosing here), *p* pores, *s* synapticules, *t* tabuloid elements of endotheca, *tp* paliform teeth.

trabecular elements of *Thamnoseris* may temporarily form a solid columella. These differences in structure of the original columella of both the genera can be seen in calices or cross-sections through relatively weakly recrystyllized corallites or in well preserved calices.

3. In contrast to *Thamnoseris*, the endotheca of *Kobyastraea* is tabuloid (pl. 13: 1; fig. 2). The transversal structural elements called in the original diagnosis of *Kobyastraea* "tabuloid dissepiments" cut across at least two corallites. Vesicular elements are lacking.

One may conclude that both the genera considered represent independent phylogenetic lines. Their convergence is probably due to a single controlling factor, as both the genera co-occur in the Jurassic chalky limestones.

Below, diagnostic characteristics are given for those Jurassic families of the suborder Fungiina which produced homeomorphic thamnasterioid

Family	Thamnasteriidae	Kobyastraeidae	Latomeandridae		Andemantastreidae
			Thamnoseris	others	
Ornamentation of septal surface	pennules	granules	flattened granules	pennules, menianes	septal surface "subcarenée"
columella	styliform	styliform or sublamellar	parietal-papillar	parietal-papilar	parietal
costosepta	confluent	confluent	confluent	confluent and subconfluent	confluent and subconfluent
anastomosis	+	+	+	+	+
pores	—	—	irregular	irregular	?
synapticules	basic skeletal element	basic skeletal element	basic skeletal element	rare	+
endotheca	large dissepiments	tabuloid elements	fine dissepiments	fine dissepiments	dissepiments
main type of gemmation	intratentacular	extratentacular (intratentacular)	extratentacular (intratentacular)	intratentacular	?intratentacular
type of linkage	trabecular			lamellar, trabecular	?
axial margin	one paliform tooth		many trabecular lobes		

genera. The familial characteristics are based on the following species investigated by the present author:

family Thamnasteriidae Vaughan et Wells emend. Alloiteau, 1952 *Thamnasteria dendroidea* Lamauroux, *Th. concinna* (Goldfuss);

family Kobyastraeidae fam. n.: *Kobyastraea lomontiana* (Etallon, *K. bourgeati* (Koby), *K. coquandi* (Etallon), *K. tenuis* Roniewicz;

family Latomeandridae Alloiteau emend. Roniewicz, 1976: *Fungiastraea arachnoides* (Parkinson), *F. multicincta* (Koby), *Latomeandra ramosa* (Koby), *Dimorphastraea dubia* Fromentel, *D. conica* Koby, *Comophyllia polymorpha* (Koby), *Microphyllia macropora* (Quenstedt), *Mixastraea danubica* Roniewicz, *Latiastraea variabilis* (Etallon); and family Andemantastreaeidae Alloiteau: after Alloiteau (1952, 1957).

DESCRIPTIONS

Suborder **Fungiina** Duncan, 1884

Family **Latomeandridae** Alloiteau, 1952, emend. Roniewicz 1976

Genus *Thamnoseris* Etallon, 1864

Thamnoseris cf. *frotei* Etallon, 1864

(figs 1, 4, 5; pl. 9: 1—3; pl. 10: 2, 3; pl. 11: 1; pl. 12: 1—3; pl. 13: 2)

Material. — Bukowa: ZPAL H.III/425, 703, 705, 706, 1118; Kodrąb: ZPAL H.III/1567, 1568; Krzemionki Opatowskie: ZPAL H.III/1300; Niziny: ZPAL H.III/822, 1213, 1214, 1215, 1390; Sokołów: ZPAL H.III/590, 723; Sulejów n/Pilicą: ZPAL H.III/1420, 1421; Sniadków: ZPAL H.III/719, 720, 721, 1092.

Dimensions (in mm):

	d (adult)	c—c	s	upper margin dentition
ZPAL H.III/425	4—5	4.5—6	34—37; 7/3	4—6/1 mm
ZPAL H.III/822	4.5—5; 5×6	4.5—6	25—40; 7/3	

Description. — Hemispherical colonies. Calices cover entirely the convex part of a colony. Lower surface costulated. Colony diameter up to 25 cm. In general, colonies are of thamnasterioid appearance, with a shallow ambulacrum-like depression between calices. Other parts of a colony, with prominent and sharp walls, may become cerioid in appearance. Radial elements are confluent, trimodal in size. Each two adjacent septa of the same length may coalesce in the center. Younger septa are commonly attached with their inner margins to the older ones. In the proximity of an attachment, there is a large pore either in both the septa or only in the younger one. Septal porosity is irregular and scarce. Pores are large, invisible in thickened septa. The distal margin is ornamented with thick and sharp denticles. Trabecules 200 μm thick, display prominent lateral processes (= granules). In cross section, the axial part of a trabecule and lateral processes are fused or weakly differentiated; they appear as dark centres. The histological structure of the trabecules is unrecognizable. Granules end with a short and sharp edge. Ca. 8 trabecules occur in the septal part of a radial element of the first order. On the distal margin, the top of a trabecule appears as a rough tooth flattened perpendicularly to the septal

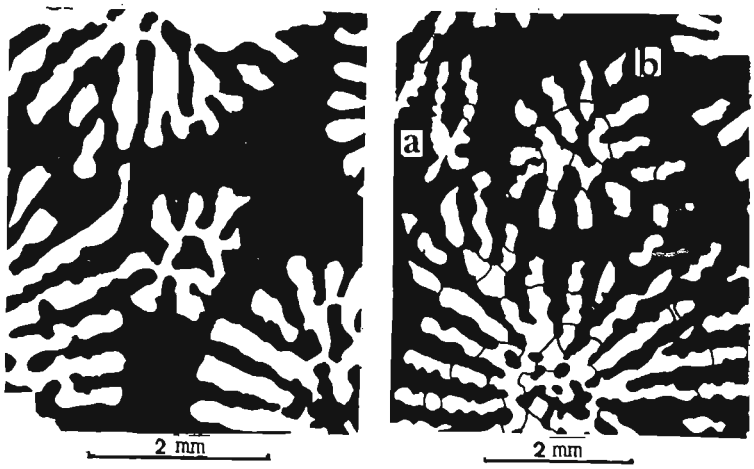


Fig. 4. Extratentacular, intercalicular gemmation in *Thamnoseris* cf. *frotei* Etallon: *left* — specimen ZPAL H.III/425, Bukowa, L. Kimmeridgian, *right* — specimen ZPAL H.III/822, Niziny, Upper Oxfordian; *a* and *b* — young individuals.

lamella. Trabecules are subvertical at the periphery, but inclined towards the axial cavity in the periaxial part. Trabecular lobes are long. The axial cavity, filled with columella, attains one fifth to fourth of the corallite diameter. The columella consisting of randomly fused trabecular lobes, is papillar in the calice, but more or less solid below. Thick synapticules occur mostly in the wall region and in the area of septal periaxial anastomosis. Synapticulotheca variable within a single colony, usually incomplete. Endotheca consists of large concave or subhorizontal dissepiments in the axial part, vesicular in the proximity of the wall. Gemmation is extratentacular, intercalicular as a rule. Young individuals appear in corners among the adults, and use the radial elements of the adults as the base of their own septal apparatus. Intratentacular gemmation, if any, occurs rarely (fig. 5).

Remarks. — The species occurs commonly in the Holy Cross Mts. In places, it forms part of a diverse coral assemblage of chalky limestones (Bukowa, Niziny; for the geological setting and lithology see: Roniewicz 1966). Specimens are recrystallized to a similar extent all over the Holy Cross Mts. In a longitudinal section through a colony, overlapping growth zones of the skeleton appear. Colony growth through development of successive layers was already observed in *Th. frotei* by other authors (Etallon in: Thurmann and Etallon 1864; Koby 1887; Beauvais 1964). The recorded

Fig. 5. *Thamnoseris* cf. *frotei* Etallon, Bukowa, L. Kimmeridgian, ZPAL H.III/425: two young individuals whose position so close together is interpreted as a result of their common origin — by intratentacular gemmation, or, opposite, as a fusion of two neighbours (compare fig. 4, individuals *a* and *b*).

dimensions and number of septa indicate that the investigated form may correspond to the type species of *Thamnoseris*. Nevertheless, the investigated specimens are ascribed only tentatively, since any descriptions and illustrations have so far not delimited the range of *Th. frotei* Etallon *s.s.*

The variation found among the specimens suggests that the material is heterogenous. In, fact, the specimens derived from the south (Niziny and Sokołów) display somewhat fewer septa (e.g. specimen ZPAL H.III/822) than do the specimens from the north and west of the study area. This difference appears quite definite, since the septa are thicker in the former specimens.

A specimen of the same species occurs in the collection housed in the Museum of Natural History in Basel, named as *Isastraea greppini*, no. 2149.

Occurrence. — Poland: Upper Oxfordian (Niziny, Sokołów, Krzemionki) and Lower Kimmeridgian (Sniadków, Sulejów n/Pilicą, Bukowa, Kodrąb).

Th. frotei Etallon — Switzerland: Sequanian.

Thamnoseris cf. *blauensis* Koby 1887

(pl. 10: 4; pl. 11: 2; pl. 12: 4)

Material. — Bałtów: ZPAL H.III/1072, 1295, 1310, 1316, 1317, 1342, 1366, 1516, 1518, 1555.

Dimensions (in mm):	d	c—c	s
	5—8	5—8	35—50 (60); 7/3 mm

Description. — Thamnasterioid, subspherical colonies. Colony diameter up to 10 cm. Corallites are densely packed and variable in size. Septa are strong, moderately porous, straight. Few synapticules in the wall region; synapticulotheca incomplete or lacking altogether. Septa delineate a very small axial cavity (less than one fifth of the corallite diameter as a rule) filled with a columella consisting of few elements. Ornamentation is well developed. Granules are separate or fused laterally resembling true pennules. Endotheca is profuse, with a well developed fine vesicular zone. Gemmation is intercalicular.

Remarks. — The investigated form is nearest to *Th. blauensis* Koby (Koby 1887: 386, pl. 101: 18) in both number of septa and corallite dimensions. Jundging from the original description, *Th. blauensis* does not, unfortunately, exhibit any peculiar feature and hence, it is hardly identifiable.

Occurrence. — Poland: Middle Oxfordian, *transversarium* Zone (Bałtów and its environs). *Th. blauensis* Koby-Switzerland: Upper Argovian.

Thamnoseris sp.

(pl. 9: 4; pl. 10: 1)

Material. — ZPAL H.II/591, 592.

Dimensions (in mm):	d	c—c	s
	3.5—4.5	3.5—4.5	32—40; 11/3

Description. — Corallites are crowded. Many septa occur within a small diameter (geniculated septa included). Septal surfaces are covered with rows of prominent granules. Distal margin displays conspicuous rough denticles. Columella small. Endotheca profuse.

Remarks. — When compared with *Th. frotei*, the investigated form differs not only in the septa number and corallite dimensions but also in its smaller axial cavity. The wall is poorly developed at the colony surface and hence sections resemble the genus *Fungiastraea*. Below the calices the wall is well developed.

Occurrence. — Poland: Upper Oxfordian (Sokołów).

REFERENCES

ALLOITEAU, J. 1952. Madréporaires post-paléozoïques. *In*: J. Piveteau (*ed.*) Traité de Paléontologie, **1**, 539—684, Paris.

— 1957. Contribution à la systématique des Madréporaires fossiles, 7—462. Centre National de la Recherche Scientifique, Paris.

BARNES, D. J. 1973. Growth in colonial scleractinians. — *Bull. Mar. Sci.*, **23**, 2, 280—298.

BEAUVAIS, L. 1964. Étude stratigraphique et paléontologique des formations à Madréporaires du Jurassique Supérieur du Jura et de l'Est du Bassin de Paris. — *Mém. Soc. Géol. France, n.s.*, **43**, 1, 5—287.

GILL, G. 1967. Quelque précision sur les septes perforés des polypiers mésozoïques. — *Mém. Soc. Géol. France, n.s.*, **106**, 58—81.

KOBY, F. 1887. Monographie des polypiers de la Suisse. — *Mém. Soc. Paléont. Suisse*, **13**, 305—358.

RONIEWICZ, E. 1970. *Kobyastraea* n. gen. homeomorphique de *Thamnasteria* Lesauvage, 1823 (Hexacoralla). — *Acta Paleont. Polonica* **15**, 1, 127—451.

— 1976. Les Madréporaires du Jurassique supérieur de la Dobrogea Centrale, Roumanie. — *Paleont. Polonica*, **34**, 17—121.

THURMANN, J. et ETALLON, A. 1864. Lethea Bruntrutana ou études paléontologiques et stratigraphiques sur le Jura Bernois et en particulier les environs de Porrentruy. — *Mém. Soc. Suisse Sci. Nat.*, **20**, 357—412.

VAUGHAN, Th. W. and WELLS, J. W. 1943. Revisions of the suborders, families and genera of the Scleractinia. — *Geol. Soc. America Spec. Pap.* **44**, v-vii, 1—363.

WELLS, J. W. 1956. Scleractinia. *In*: R. C. Moore (*ed.*) Treatise on Invertebrate Paleontology, Coelenterata, F, 328—444, Lawrence.

EWA RONIEWICZ

JURAJSKI KORAL *THAMNOSERIS* ETALLON, 1864 (SCLERACTINIA) I JEGO HOMEOMORFY

Streszczenie

W jurze Gór Świętokrzystkich występują trzy gatunki *Thamnoseris*, w tym gatunek zbliżony do typowego, *Th.* cf. *frotei* Etallon, jako najpospolitszy.

Budowa wewnętrzna koralitów u *Thamnoseris* przypomina budowę jurajskich gatunków rodzaju *Fungiastraea* Alloiteau, 1957, zaś cechy zewnętrzne kolonii — rodzaj *Kobyastraea* Roniewicz 1970. W odróżnieniu od *Fungiastraea* u *Thamnoseris* pączkowanie jest międzykielichowe i występuje wyraźna tendencja do tworzenia synaptikuloteki. Cechy te, aczkolwiek powodujące znaczne różnice w wyglądzie powierzchni kolonii, wydają się mieć na tyle małą wartość taksonomiczną, iż niewykluczona jest

możliwość potraktowania *Thamnoseris* i *Fungiastraea* jako rodzajów synononimicznych, jeśli dalsze badania nie wykażą zasadniczych różnic w mikrostrukturze szkieletu.

Różnice między *Thamnoseris* a *Kobyastraea* polegają na: 1. innej budowie septów — porowatych i opatrzonych licznymi wyrostkami trabekularnymi u *Thamnoseris* i nieporowatych, z pojedynczymi zębami polikształtnymi u *Kobyastraea*; 2. innym typie kolumelli — parietalnej u *Thamnoseris* i stylikowatej lub sublamellarnej u *Kobyastraea*; 3. różnej budowie endoteki — pęcherzykowatej u *Thamnoseris* i subtabularnej u *Kobyastraea*.

Mikrostruktura u *Thamnoseris* i *Kobyastraea* wykazuje pewne zbieżności — trabekule są ornamentowane krótkimi wyrostkami, które odznaczają się na bokach septów jako silnie wystające mniej lub bardziej spłaszczone guzki. Różnice w architekturze szkieletu pozwalają uważać te dwa rodzaje za przedstawicieli odmiennych rodzin: Latomeandridae Alloiteau i Kobyastraeidae fam. n. Podobieństwa są wyrazem konwergencji, tak częstej wśród Scleractinia.

Praca została wykonana w ramach problemu MR. II/3.

EXPLANATION TO THE PLATES 9—14

Plate 9

Thamnoseris Etallon: septal arrangement and wall at the colony surface

1. *Thamnoseris* cf. *frotei* Etallon, Holy Cross Mts, U. Jurassic, coll. IGEOL UJ: Colony surface partially covered with sediment; a shallow depression (here filled with sediment) is developed between some corallites, ×3.
2. The same species, Bukowa, L. Kimmeridgian, ZPAL H.III/425; cross section of the distal portion of corallites; wall well developed, ×3.
3. The same species, Śniadków, L. Kimmeridgian, ZPAL H.III/719: different aspects of the same colony — *a* a well preserved surface and *b* an eroded portion, ×3.
4. *Thamnoseris* sp., Sokołów, U. Oxfordian, ZPAL H.III/591; cross section of the distal portion of corallites, ×3.

Plate 10

Thamnoseris Etallon: septal ornamentation

1. *Thamnoseris* sp., Sokołów, U. Oxfordian, ZPAL H.III/591: pennula-like semilunar granules on septal faces, cross section, ×30.
2. *Th.* cf. *frotei* Etallon, Śniadków, L. Kimmeridgian, ZPAL H.III/719: *a* parietal columella in surface view, *b* ornamentation of distal edge of septa, ×20.
3. The same species, Niziny, U. Oxfordian, ZPAL H.III/822: *a* corallite axial portion

in cross section, ×20; *b* cross section, granules on the septal faces and a vestigial microstructure (*t*), ×40.

4. *Th.* cf. *blauensis* Koby, Bałtów, M. Oxfordian, ZPAL H.III/1555: cross section of septa showing (*a*) their porosity and (*b*) granules of different sizes on the faces (circles), ×20.

Plate 11

Thamnoseris Etallon and *Kobyastraea* Roniewicz: septal arrangement, columella and wall development

1. *Th.* cf. *frotei* Etallon, Śniadków, L. Kimmeridgian, ZPAL H.III/721: distal portion of the corallites in cross section, ×6.
2. *Th.* cf. *blauensis* Koby, Bałtów, M. Oxfordian, ZPAL H.III/1079: distal portion of the corallites in cross section, ×5.
3. *K. coquandi* Etallon, Bukowa, L. Kimmeridgian, ZPAL H.III/428: distal portion of the corallites in cross section; styliform columella and paliform teeth (*right* lower corner) are visible, ×6.

Plate 12

Thamnoseris Etallon: endotheca

1. *Thamnoseris* cf. *frotei* Etallon, Śniadków, L. Kimmeridgian, ZPAL H.III/1092: longitudinal section showing dissepimental endotheca and intercalicular zone devoid of mural synapticules (arrows), ×10.
2. The same species, Niziny, M. Oxfordian, ZPAL H.III/822: longitudinal section showing dissepimental endotheca, parietal columella and synapticulotheca (*sw*), ×10.
3. The same species, locality and age, H.III/1213: longitudinal section of corallites with endotheca, columella nad synapticulotheca (*sw*) well developed, ×10.
4. *Th.* cf. *blauensis* Koby, Bałtów, U. Oxfordian, ZPAL H.III/1555: longitudinal section with dissepimental endotheca and partially developed synapticulotheca (*sw*), ×10.

Plate 13

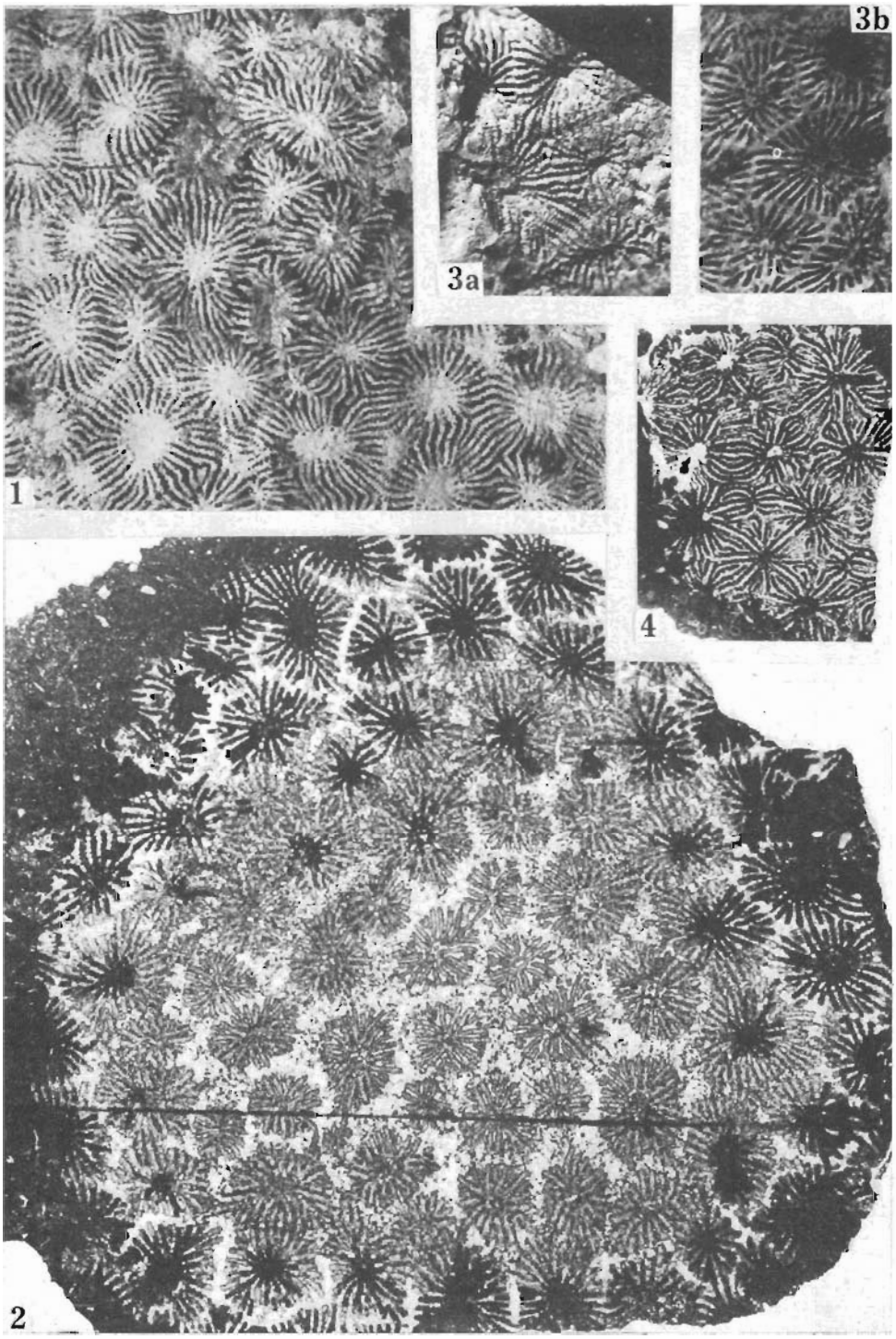
Thamnoseris Etallon, *Kobyastraea* Roniewicz and *Fungiastraea* Alloiteau: septal ornamentation

1. *Kobyastraea coquandi* Etallon, Bałtów M. Oxfordian, ZPAL H.III/665: longitudinal section showing circular shape of granules and synapticules (circle), ×10.
2. *Th.* cf. *frotei* Etallon, Niziny, U. Oxfordian, ZPAL H.III/822: periaxial part of septa in longitudinal section, with large pores and slightly protruding lateral ornamentation, ×15.
3. *Fungiastraea arachnoides* (Parkinson), Bałtów, M. Oxfordian, ZPAL H.III/1076: septa in longitudinal section with strongly protruding lateral ornamentation, ×15.
4. *Fungiastraea* sp., Stoki, M. Oxfordian, ZPAL H.III/1124: section of septa showing semilunar pennules in longitudinal lateral section (upper *right* side) and longitudinal axial section of pennules (lower *left* side) with edges directed upwards (circles), ×20. (see also pl. 14: 2).

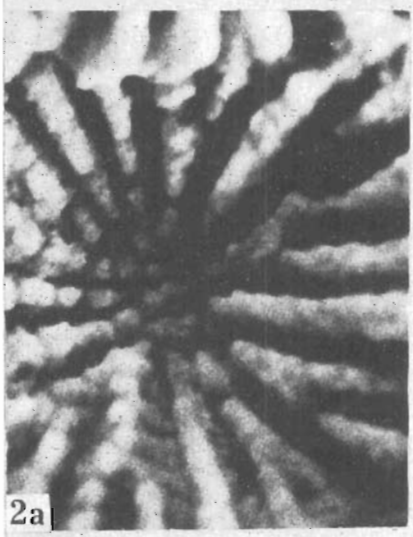
Plate 14

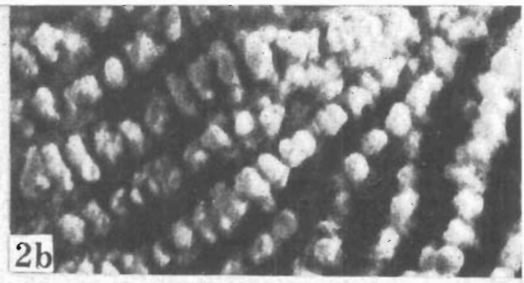
Fungiastraea Alloiteau: corallite morphology and ornamentation

1. *Fungiastraea multicincta* (Koby), Bukowa, L. Kimmeridgian, ZPAL H.III/432: cross section, granules isolated and protruding, ×10.
2. *Fungiastraea* sp., Stoki, M. Oxfordian, ZPAL H.III/1124: *a* thamnasterioid colony in cross section, parietal columella well developed, ×3; *b* longitudinal axial section of pennules with edges directed upwards (*left* side), lateral sections of pennules showing their semilunar shape (*right* side), ×15 (for more details see pl. 13: 4).
3. *Fungiastraea multicincta* (Koby), Bukowa, L. Kimmeridgian, ZPAL H.III/431: cross section of the distal portion of colony; columella invisible — covered with sediment, septa undulated, wall lacking, ×3.
4. *Fungiastraea arachnoides* (Parkinson), Bałtów, M. Oxfordian, ZPAL H.III/1480: cross section of septa showing (*a*) characteristic prickle-shape of obliquely sectionned pennules and (*b*) trapezoidal shape of pennules section tangentially, ×20. Compare with granules in *Thamnoseris* shown in pl. 10.
5. The same species, locality and age, ZPAL H.III/1360: longitudinal (*right*) and tangential (*left*) sections of septa showing pennules and vesicular dissepiments, ×10.


3b
3a
1
4
2

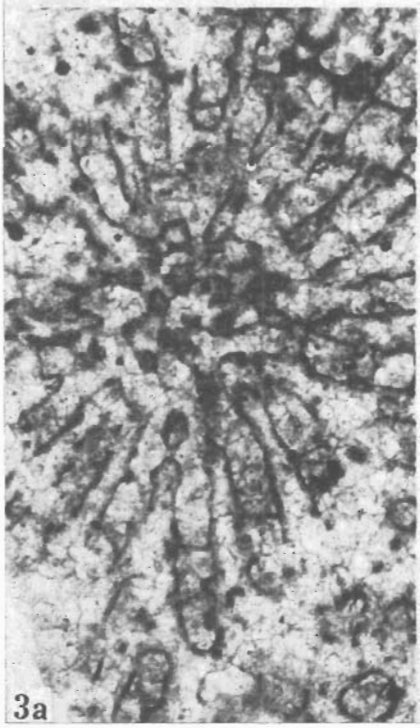

1

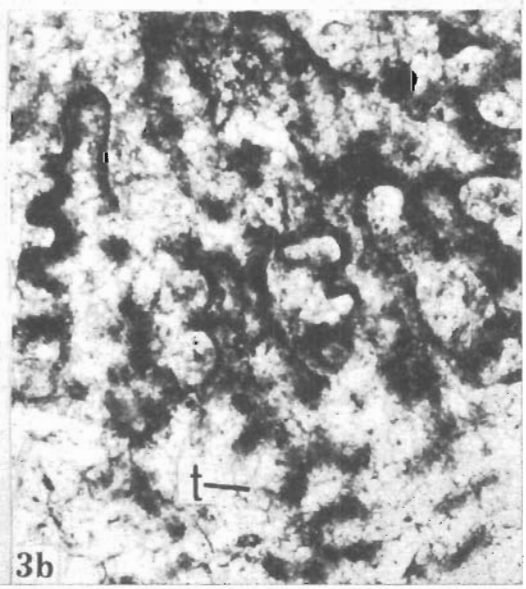

2a


2b

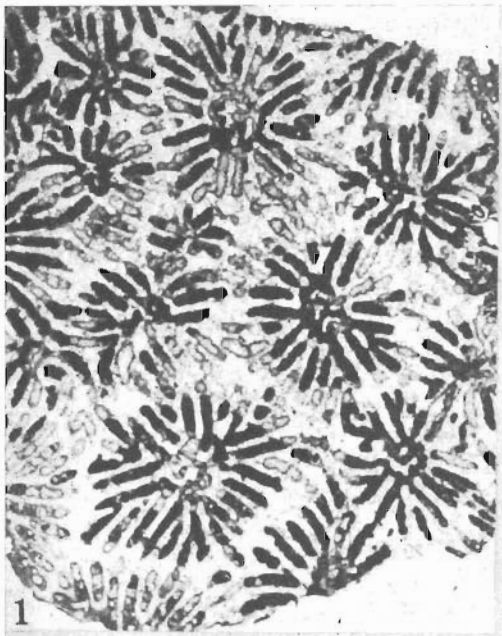

4a


4b


3a

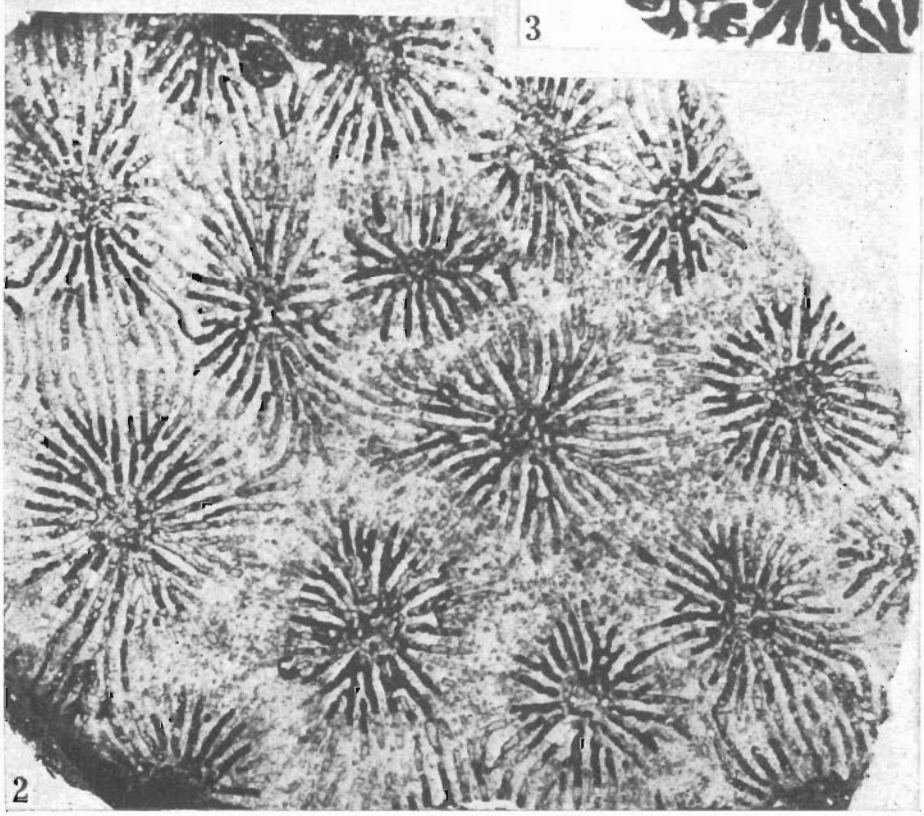


3b

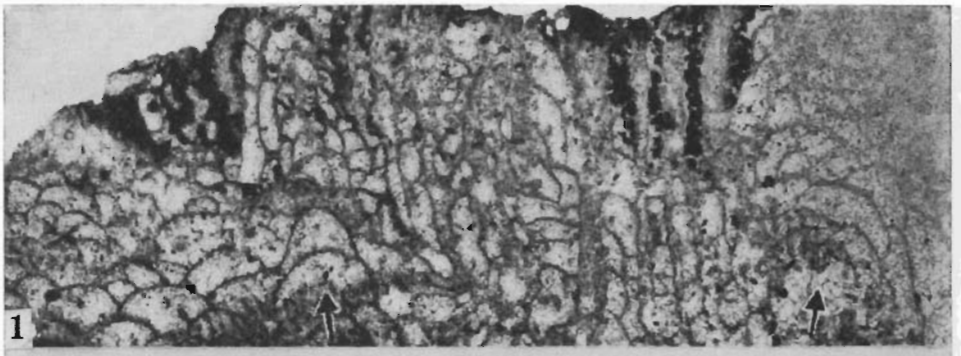


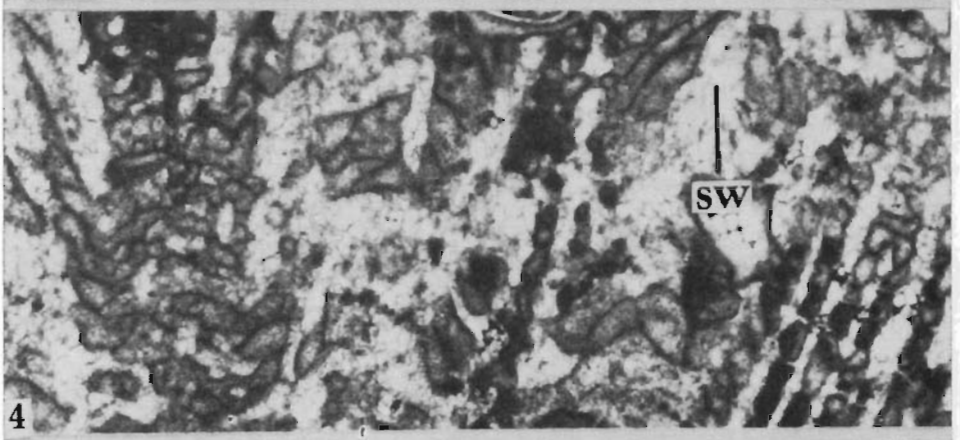
1

3

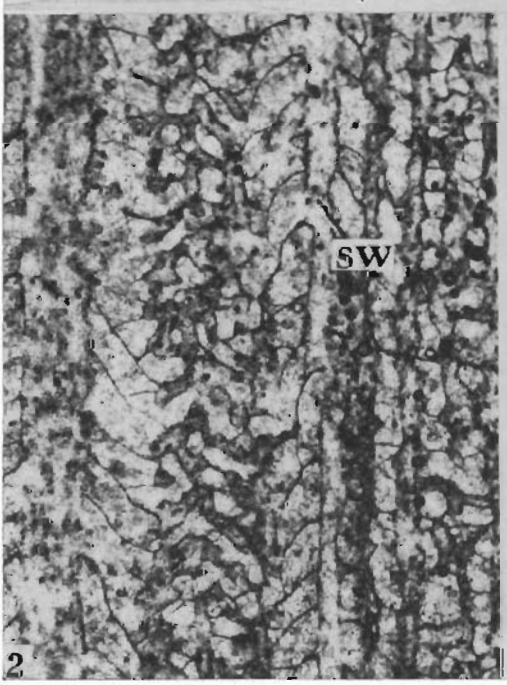


2


1

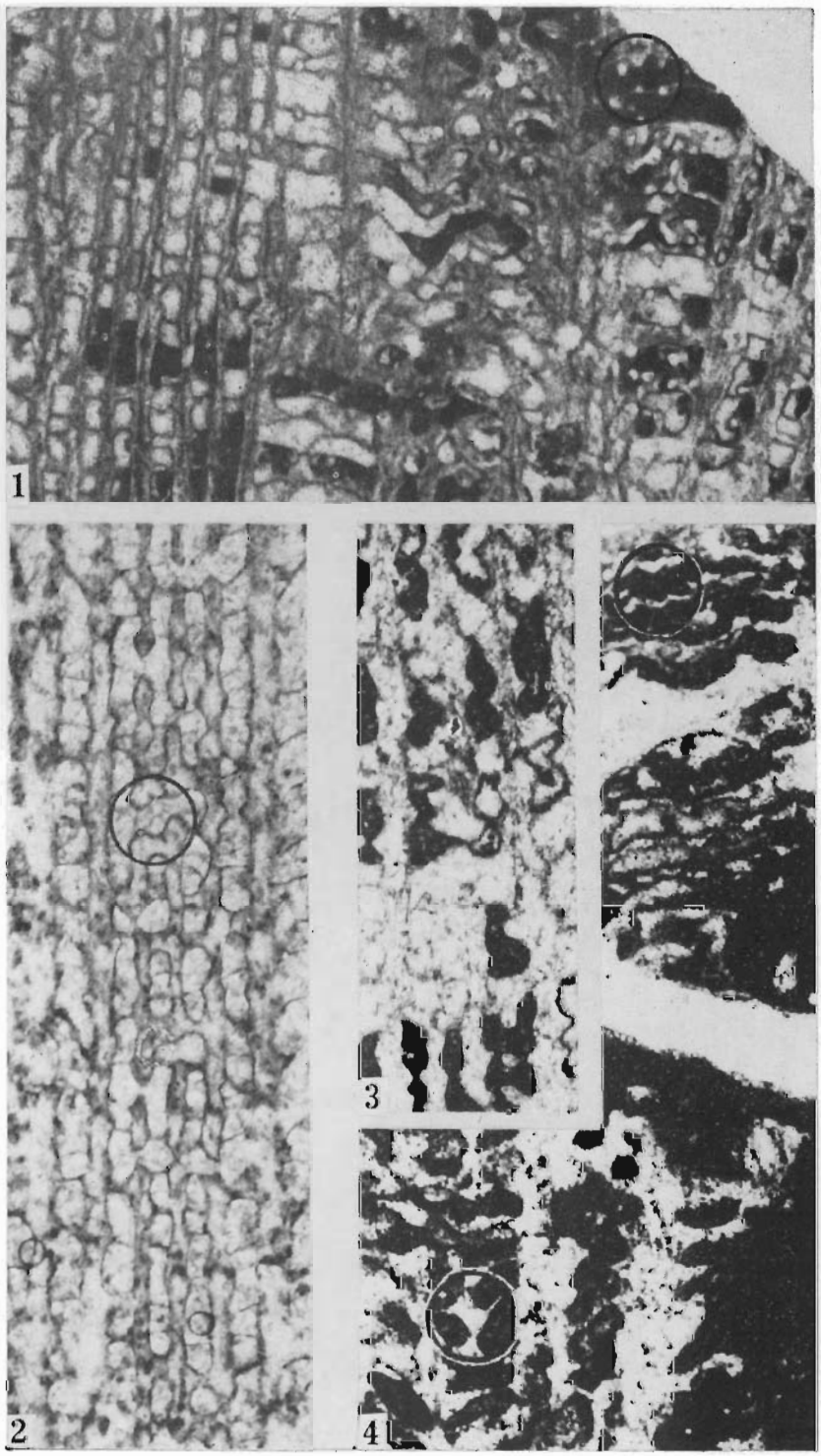


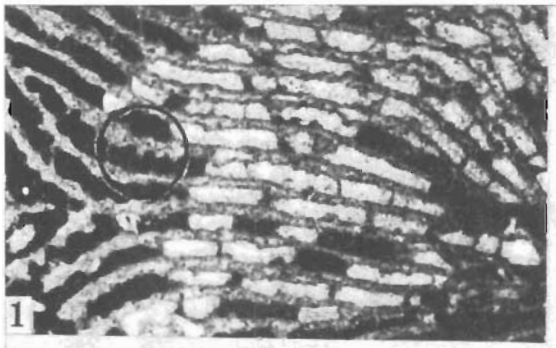
4

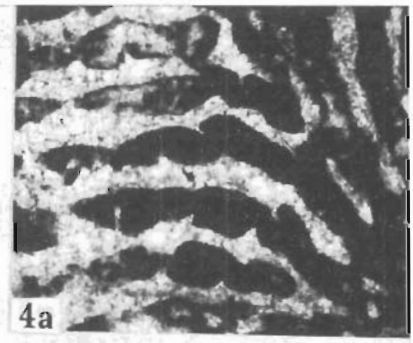


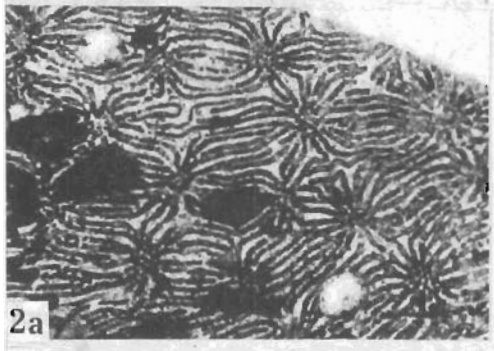
2

3

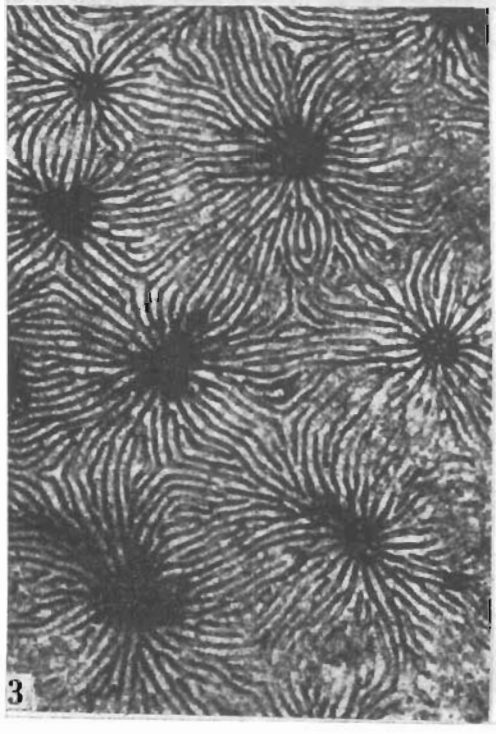

1
2
3
4

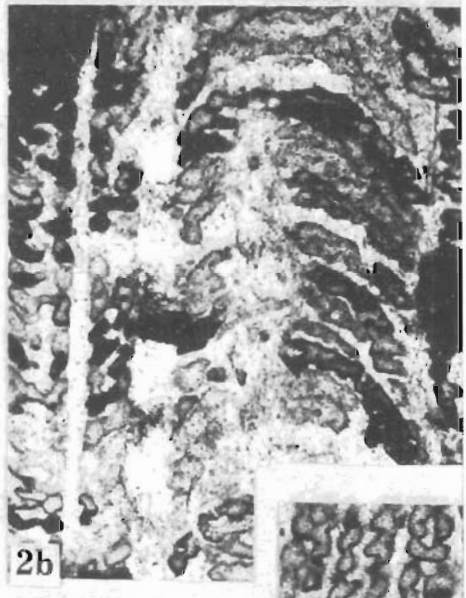

1

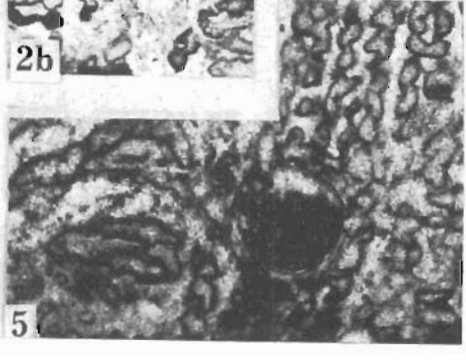

4a


2a


4b


3


2b


5