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Tabulate corals from Dalnia in the Holy Cross Mts

ABSTRACT: Four new species of tabulate corals have been described from the neptunian dykes on Dalnia Hill (Wocklumeria or Gattendorfia Stage) in the Holy Cross Mts. These species, viz. *Emmonsia dalniae* sp. n., *Michelinopora szulczewskii* sp. n., *Acaciapora infracarbonica* sp. n. and *Kueichowpora polonica* sp. n. are indicative of Lower Carboniferous age of the deposits they are contained in.

INTRODUCTION

The present paper includes the results of studies on tabulate corals from a new faunal locality at Dalnia near Kielce in the Holy Cross Mts (*cf.* Szulczewski 1973).

Among the anthozoans found at Dalnia (*cf.* Szulczewski 1973, Fedorowski 1973), the tabulate corals represent a not very numerous group. They belong to the genera *Emmonsia, Michelinopora, Acaciapora* and *Kueichowpora,* each of them being represented by one new species. These species are most closely related to Carboniferous or Permian forms, in particular to the species described from the Lower Carboniferous. It should be, therefore, assumed that the age of the deposits they occur in on the Dalnia Hill is also Lower Carboniferous. As follows from studies on conodonts (Szulczewski 1973), the entire stratigraphic range of the Dalnia deposits represents Wocklumeria through Gattendorfia stage.

The investigated tabulate corals from Dalnia are marked by very small dimensions of colonies which, as recognized by Szulczewski (1973), may indicate unfavorable environmental conditions for local anthozoan communities.

Acknowledgements. The writer feels indebted to Docent M. Szulczewski (Institute of Geology, Warsaw University) who furnished the material for studies, as well as to Miss M. Czarnocka and Mrs. M. Nowińska from the Institute of Paleozoology, Polish Academy of Sciences, to the former for taking photographs and to the latter for preparing sections of the corals presented.

SYSTEMATIC DESCRIPTION

Order **Favositida** Sokolov, 1962
Suborder **Favositina** Sokolov, 1950
Family **Favositidae** Dana, 1846
Subfamily **Emmonsiinae** Lecompte, 1952

The subfamily Emmonsiinae was erected by Lecompte (1952) for the genera *Emmonsia* Milne-Edwards & Haime and *Caliapora* Schlüter, which are marked by a septal apparatus shaped like squammulae. Sokolov (1955) maintains that the genus *Caliapora* is more closely related to the family Alveolitidae. Recently (Dubatolov 1963), the following genera are assigned to the subfamily Emmonsiinae: *Squameofavosites* Tchernychev, *Dictyofavosites* Tchernychev and *Emmonsia* Milne-Edwards & Haime. These genera differ from each other mostly in the shape of tabulae, which in the genus *Squameofavosites* is identical with that of *Favosites* Lamarck. In the genus *Dictyofavosites*, tabulae are arranged at the same levels in adjoining corallites, while in *Emmonsia* they are strongly bent and locally incomplete.

Genus *EMMONSIA* Milne-Edwards & Haime, 1851

Remarks. — The genus *Emmonsia* is widely distributed from the Upper Silurian through Tournaisian (*cf.* Yanet 1959, Dubatolov 1963) but in Poland it has been found for the first time.

Emmonsia dalniae sp. n.
(Pls 1—3)

Holotype: specimen No. Z. Pal. T/VIII-1, figured in Pl. 1, Fig. 3 and Pl. 2, Fig. 1.
Type horizon: Wocklumeria or *Gattendorfia* Stage.
Type locality: Dalnia Hill near Kielce, Holy Cross Mts.
Derivation of the name: dalniae — after the type locality.

Material. — Forty-seven colonies.

Diagnosis. — Colonies varying in shape. Corallites polygonal in transverse section, 1.5 to 2.5 mm in diameter. Walls straight, 0.05 to 0.2 mm thick. Intercorallite suture distinct. Mural pores 0.2 mm in diameter, arranged in one or two rows. Tabulae uneven, concave, incomplete, locally absent, spaced at 0.1 to 0.5 mm intervals. Squammulae numerous, long, thick, pointed, directed somewhat upwards.

Description. — Colonies varying in shape, spherical, mushroom-shaped with a short, thin base, or in the form of slightly flattened branches frequently settling on solitary rugose corals (*cf.* Pl. 3, Fig. 4). The largest colony is 3 cm high, 1 cm wide and 1 cm thick. Corallites polygonal in transverse section, regular, the largest of them slightly rounded, 1.5 to 2.5 cm in diameter. Walls straight, 0.05 to 0.2 mm thick. Intercorallite suture distinct. Pores round, relatively large. Tabulae thin, very uneven, concave, frequently incomplete, spaced at 0.1 to 0.5 mm intervals, locally attached to squammulae or absent at all. Septal squammulae represent the most characteristic feature of this species. They are numerous, long, fairly thick, mostly pointed and directed slightly upwards; well preserved in calices where they are distinctly visible.

Remarks. — *Emmonsia dalniae* sp. n. does not resemble any of the species known from literature. It is marked by small, variously shaped colonies and abundant, thick squammulae with wide bases.

Family **Michelinidae** Waagen & Wentzel, 1886
Subfamily **Micheliniinae** Waagen & Wentzel, 1886
Genus *MICHELINOPORA* Yabe & Hayasaka, 1915

Remarks. — The genus *Michelinopora* differs from the related genus *Michelinia* de Koninck in its corallites resembling those of the genus *Favosites* Lamarck. Tabulae are frequently horizontal, but the microstructure of walls is radial-fibrous and more related to that in *Michelinia.*

The genus *Michelinopora* is distributed in deposits younger stratigraphically than the Carboniferous (Permian of China, Japan and the Island of Timor; Upper Permian and Lower Triassic of Transcaucasia). The Dalnia locality is the first documented Carboniferous locality of this genus.

Michelinopora szulczewskii sp. n.
(Pl. 4, Figs 3—4)

Holotype: specimen No. Z. Pal. T/VII-116, figured in Pl. 4, Figs 3 and 4.
Type horizon: Wocklumeria or *Gattendorfia* Stage.
Type locality: Dalnia Hill near Kielce, Holy Cross Mts.
Derivation of the name: in honor of Docent M. Szulczewski who found this fossiliferous locality.

Material. — One colony.

Diagnosis. — Corallites polygonal, 3 to 4 mm in diameter. Walls 0.10 to 0.15 mm thick. Pores oval, irregular, arranged in one to three rows. Tabulae horizontal, uneven, frequently incomplete, spaced at 0.2 to 0.5 mm and 0.5 to 1.2 mm intervals. Septal spines lacking.

Description. — Colony shaped like a slightly flattened branch, 4 cm high, 3 cm wide and 2 cm thick. Corallites normal to the surface of colony, polygonal in transverse section, 3 to 4 mm in diameter. Walls straight, only very rarely zigzagged, mostly 0.1 and locally to 0.15 mm thick. Intercorallite suture distinct. Pores relatively large, oval, 0.3 to 0.5 mm in diameter, arranged in one to three rows at 0.3 to 1.6 mm intervals. Tabulae horizontal, uneven, very frequently incomplete. In the zones of larger concentration, intervals between them amount to 0.2 to 0.5 mm and in the remaining zones fluctuate between 0.5 and 1.0 mm, very rarely amounting to 1.2 mm. Septal spines lacking.

Remarks. — The species investigated resembles *Michelinopora multitabulata* Yabe & Hayasaka, equalling it in dimensions, but differing from it in the lack of septal projections. On the other hand, *M. allata* Tchudinova and *M. globosa* Tchudinova have corallites with larger diameters. *M. szulczewskii* sp. n. differs from the species so far described in literature in the oval shape of its pores. A similar form was described under the name of *Michelinia egertoni* (Milne-Edwards & Haime) from the Lower Carboniferous of Egypt (Omara 1971). It seems to be a representative of *Michelinopora* having squammulae, whose traces are visible in illustrations (Omara 1971, Text-fig. 2 and Pl. 6, Fig. 7); this species has corallites and pores larger in diameter than those of *M. szulczewskii.*

Suborder **Thamnoporina** Sokolov, 1950
Family **Thamnoporidae** Sokolov, 1950
Subfamily **Striatoporinae** Sokolov, 1950
Genus *ACACIAPORA* Moore & Jeffords, 1945

Remarks. — The genus *Acaciapora,* hitherto known from the Lower Pennsylvanian of the U.S.A., is closely related to the *Striatopora* Hall, which is the reason why Tchudinova (1959) included it in the subfamily Striatoporinae. The two genera have a concentric microstructure of walls, and septal ridges, differing from each other in the arrangement of corallites in a colony and in the shape of calices. In the colonies of *Acaciapora,* corallites are arranged alternately and do not form an axial zone as is the case in the genus *Striatopora.* In *Acaciapora,* calices are varying in size and widely-conical in shape and not pocketlike as in *Striatopora.*

Acaciapora infracarbonica sp. n.
(Pl. 4, Figs 1—2; Pl. 5)

Holotype: specimen No. Z. Pal. T/VII-49, figured in Pl. 5, Fig. 1.
Type horizon: Wocklumeria or *Gattendorfia* Stage.
Type locality: Dalnia Hill near Kielce, Holy Cross Mts.
Derivation of the name: infracarbonica — after the stratigraphic occurrence of this species.

Material. — Fifty fragmentary colonies.

Diagnosis. — Colony shaped like a branch. Corallites polygonal, rounded, short, 3 to 6 mm in length, alternately arranged. Calices widely-conical, varying in size between 1.5 and 2.5 mm. Walls 0.1 to 0.6 mm thick. Pores numerous, 0.1 to 0.2 mm in diameter. Tabulae very uneven, frequently incomplete. Septal apparatus in the form of ridges.

Description. — Colonies in the form of cylindrical, slightly ramified branches, to 8 mm in diameter. The largest fragment makes up part of a branch 3 cm long. Corallites short, 3 to 6 mm in length, arranged alternately and not forming a central part, polygonal in transverse section, with slightly rounded peripheral walls, 1.2 to 1.4 mm in diameter. Corallites gradually deviate from the axis of colony and open on the surface in the form of widely-conical calices varying in size, smaller of them reaching *c.* 1.5 mm in diameter and larger 2 to 2.5 mm. Septal ribs, whose traces are visible in transverse and longitudinal sections, occur in calices. Walls of corallites, at first very thin (merely 0.1 to 0.2 mm in thickness), in the peripheral part, where they become thickened by stereoplasma, reach 0.4 to 0.6 mm in thickness. Microstructure of walls concentric. Intercorallite suture distinct. Pores numerous, mostly 0.1 mm and locally 0.2 mm in diameter, arranged in the lower part of corallites at intervals of about 0.1 to 0.5 mm.

Remarks. — *Acaciapora infracarbonica* sp. n. differ from the remaining two species of this genus, viz. *A. subcylindrica* Moore & Jeffords and *A. venusta* Moore & Jeffords, in smaller diameters of corallites, very low calices and walls having a distinct suture.

Order **Syringoporida** Sokolov, 1962
Family **Syringoporidae** Nicholson, 1879
Genus *KUEICHOWPORA* Chi, 1933

Remarks. — The genus *Kueichowpora* differs from the closely related genus *Syringopora* Goldfuss in very straight, funnel-like tabulae and a wide axial canal. This is a genus so far known only from the Lower Carboniferous of Taymir, Central Asia and China.

Kueichowpora polonica sp. n.
(Pl. 6)

Holotype: specimen No. Z. Pal. T/VII-100, figured in Pl. 6, Figs 1—5.
Type horizon: Wocklumeria or *Gattendorfia* Stage.
Type locality: Dalnia Hill near Kielce, Holy Cross Mts.
Derivation of the name: polonica — after the country of finding.

Material. — A fragmentary colony.

Diagnosis. — Corallites about 7 mm long, oval in transverse section, 2.5 to 3.0 mm in diameter, spaced at intervals of 0 to 1.5 mm. Walls 0.2 to 0.3 mm thick. Tabulae vesicular or funnel-like, with axial canals 0.5 to 1.5 mm in diameter, spaced at intervals of 0.1 to 0.5 mm. Septal apparatus lacking.

Description. — Colony small, bushlike, syringoporoid. Connecting canals very short. Corallites fused in the basal and lower part and freely diverging in the upper part. Corallites oval in transverse section, 2.0 × 2.5 to 2.5 × 3.0 mm in diameter. Intervals between them varying within limits of 0 to 1.5 mm. Walls 0.2 to 0.3 mm thick. Microstructure fibrous, much the same as in the genus *Syringopora.* Epitheca well preserved, fairly thick. Thin tabulae of two types, vesicular and funnel-like, distributed along walls and forming a wide canal oval in transverse section, up to 0.5 × 1.5 mm in diameter. Distances between tabulae measured near the walls of corallites amount to 0.1 to 0.5 mm. Spiny projections are visible locally, but due to the lack of a sufficient number of thin sections it is impossible to state with certainty the presence of septal apparatus.

Remarks. — *Kueichowpora polonica* sp. n. resembles *K. setamaiensis* Minato, from which it differs in larger diameters of corallites, and axial canal, as well as in thicker walls.

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Warsaw, September 1972

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A. STASIŃSKA

KORALE TABULATA Z DALNI W GÓRACH ŚWIĘTOKRZYSKICH

(Streszczenie)

Przedmiotem pracy jest analiza zespołu stosunkowo drobnych kolonii korali Tabulata, występujących w osadach synsedymentacyjnych żył neptunicznych z pogranicza dewonu i karbonu na Dalni koło Karczówki w Górach Świętokrzyskich (*por.* Szulczewski 1973). W badanym zespole (*por.* pl. 1—6) stwierdzono obecność przedstawicieli 4 rodzajów, z których każdy reprezentowany jest przez jeden gatunek będący nowym, a mianowicie: *Emmonsia dalniae* sp. n., *Michelinopora szulczewskii* sp. n., *Acaciapora infracarbonica* sp. n. oraz *Kueichowpora polonica* sp. n. Analiza znanych dotychczas zasięgów stratygraficznych występujących tutaj rodzajów pozwala sądzić, iż partia osadu wypełniającego żyły, a zawierająca rozważane korale reprezentuje dolny karbon.

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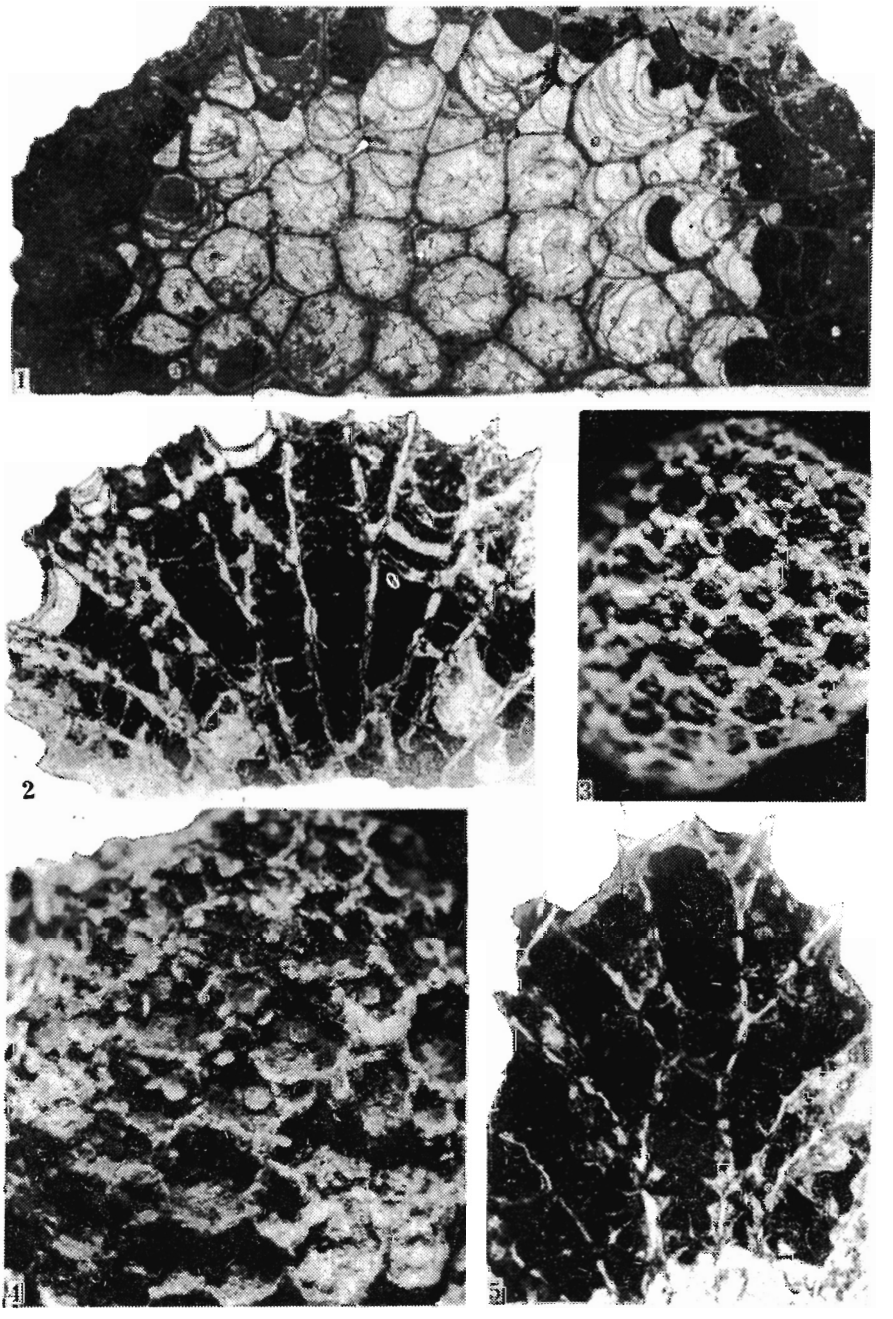
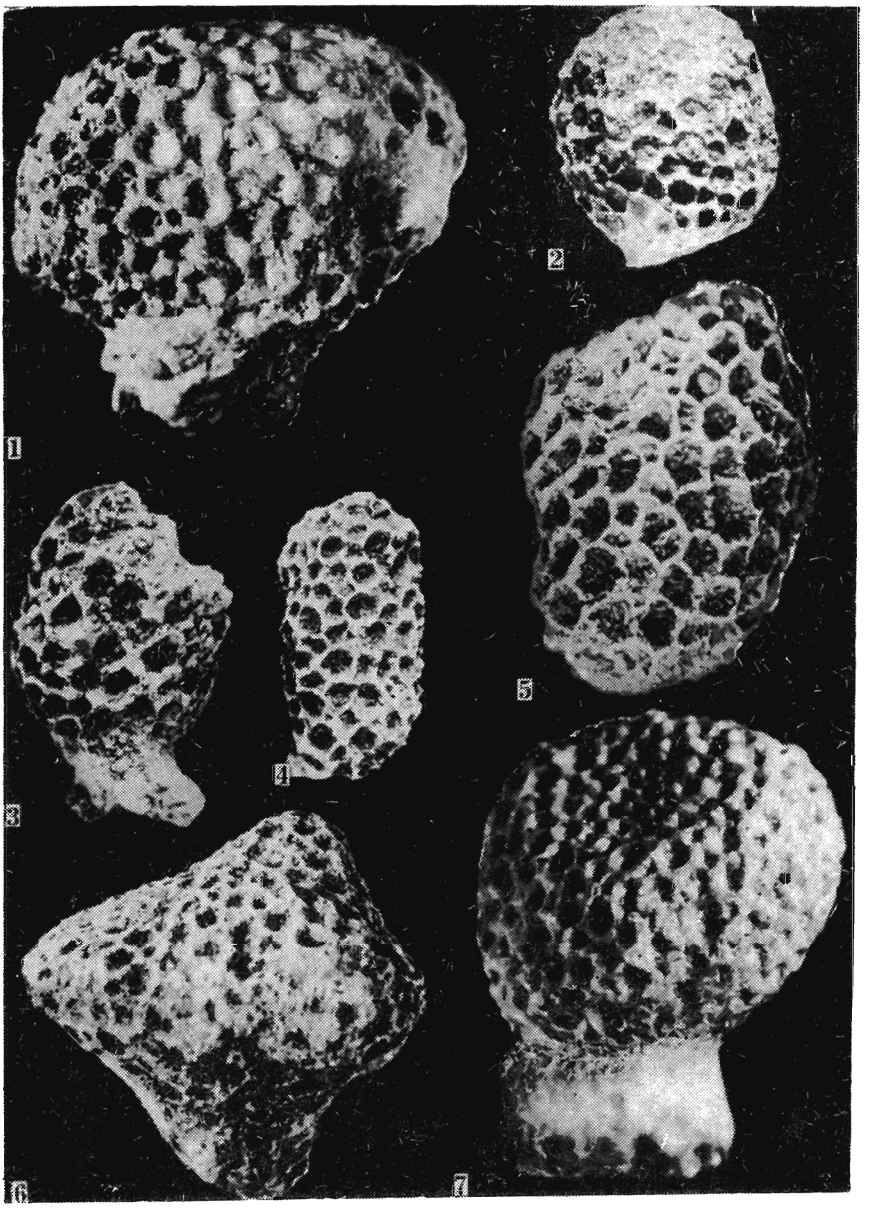


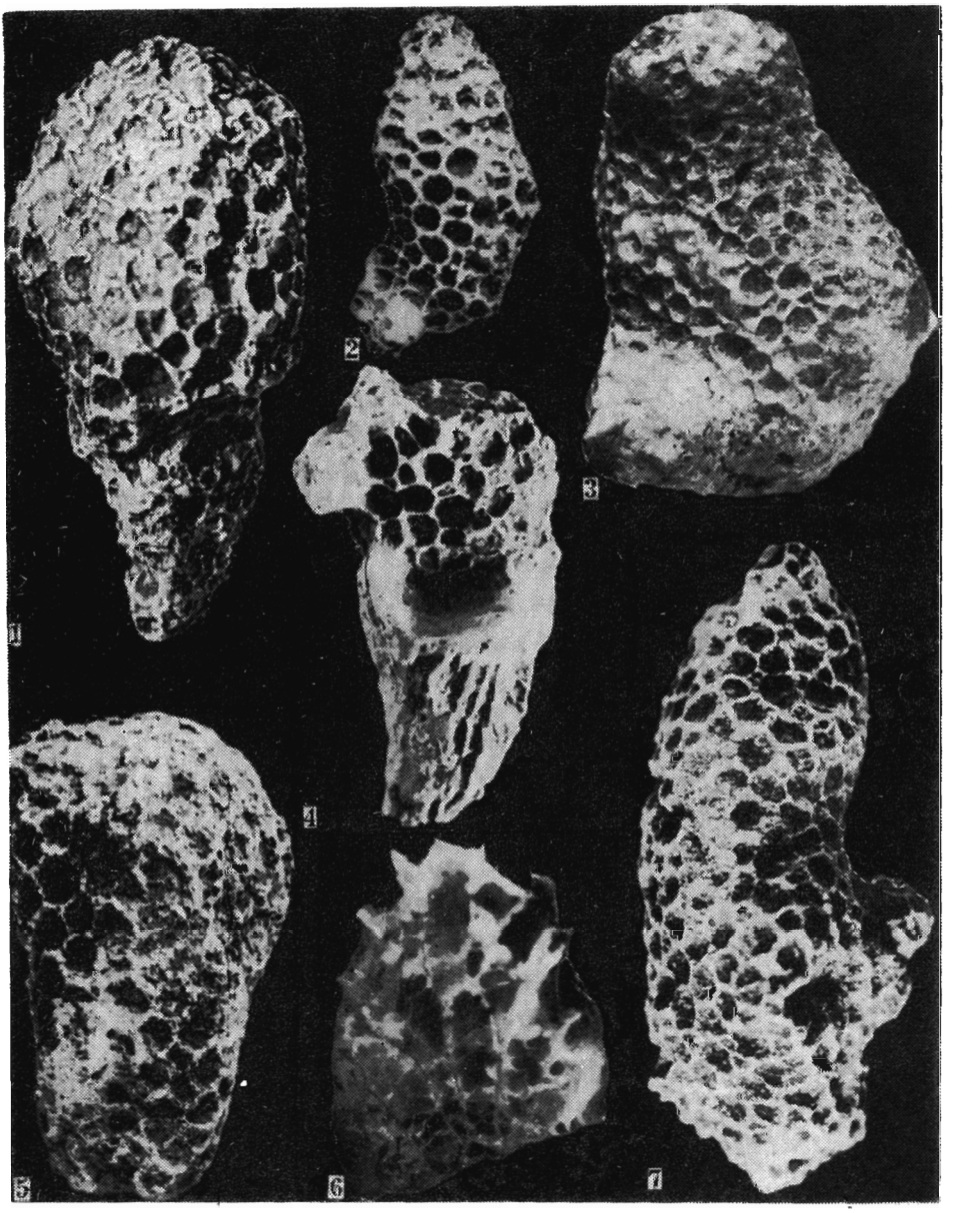
Emmonsia dalniae sp. n.

1 — cross section (Z. Pal. T./VII-101), × 6.5; 2 — longitudinal section (Z. Pal. T/VII-102), × 6; 3 — weathered surface of colony (holotype) with septal squammulae (Z. Pal. T/VII-1), × 5; 4 — weathered surface of colony with septal squammulae (Z. Pal. T/VII-4), × 7.5; 5 — (longitudinal) section (Z. Pal. T/VII-103), × 9



Emmonsia dalniae sp. n.

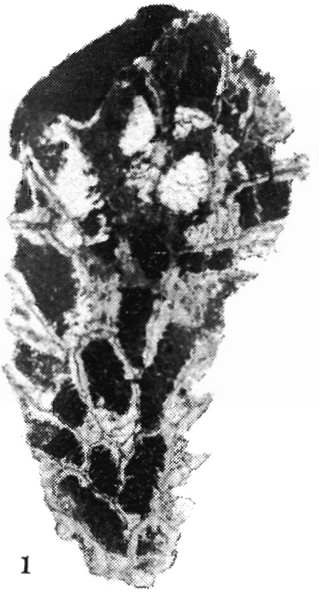
1-7 — colonies various in shape (Z. Pal. T/VII-1-7), × 3; *1* presents the holotype (*cf.* Pl. 1, Fig. 3)



Emmonsia dalniae sp. n.

1-5, 7 — colonies various in shape (Z. Pal. T/VII-8-13), × 3; 6 — longitudinal section (Z. Pal. T/VII-104), × 3

4 — presents colony encrusting a rugose coral



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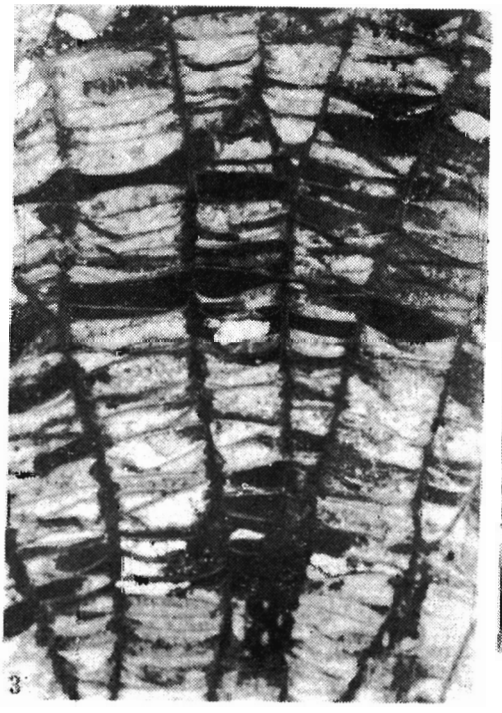

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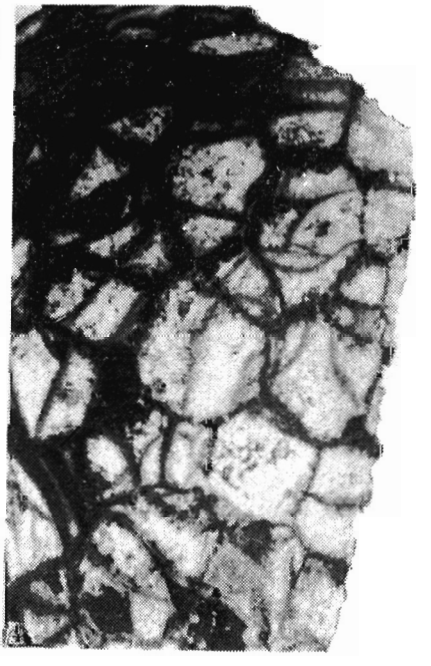
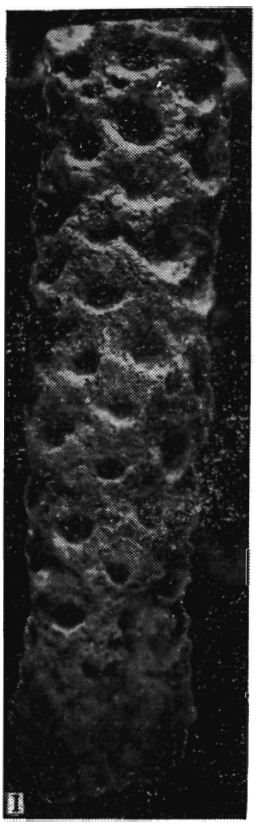


Acaciapora infracarbonica sp. n.

1 — longitudinal section (Z. Pal. T/VII-198), × 6; 2 — cross section (Z. Pal. T/VII-119), × 10

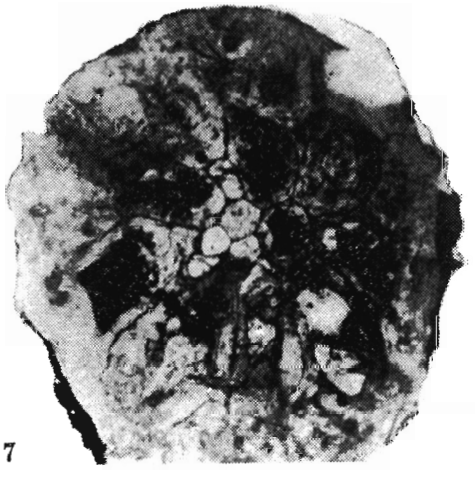
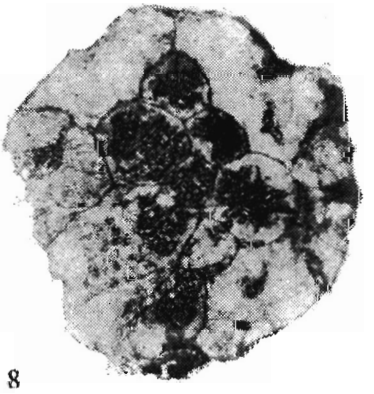
Michelinopora szulczewskii sp. n.

3 — longitudinal section of the holotype (Z. Pal. T/VII-116), × 4.5; 4 — cross section of the holotype, × 5



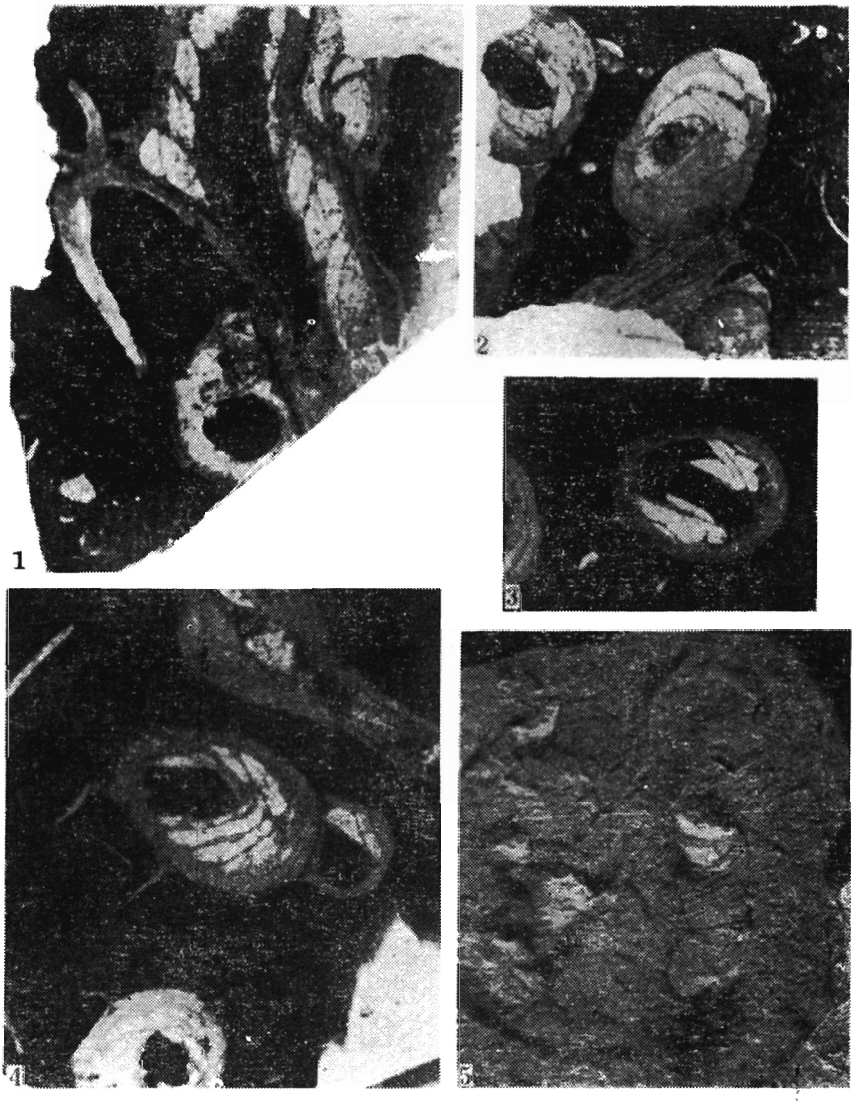




Acaciapora infracarbonica sp. n.

1-4 — fragments of colonies: *1* holotype (Z. Pal. T/VII-49), × 4; *2* paratype (Z. Pal. T/VII-50), × 4; *3-4* other paratypes (Z. Pal. T/VII-51, 52), × 3; *5* — longitudinal section (Z. Pal. T/VII-120), × 6; *6* — tangential section, close to the surface of colony (Z. Pal. T/VII-121), × 10; *7* — cross section (Z. Pal. T/VII-122), × 7.5; *8* — cross section (Z. Pal. T/VII-123), × 9



Kueichowpora polonica sp. n.; holotype (Z. Pal. T/VIII-100)

1 — longitudinal section, × 10; *2-4* — cross sections, × 10; *5* — general view of the colony in rock matrix, × 5