ANNA STASIŃSKA

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. Emmomsia 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 Emmomsia, 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. Nowinska from the Institute of Palaeozoology, 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 Caliopora Schlüter, which are marked by a septal apparatus shaped like squammulae. Sokolov (1955) maintains that the genus Caliopora 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: Wockumeria or Gattendorfia Stage.
Type locality: Dalmia 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 *Micheliiniinae* Waagen & Wentzel, 1886  
Genus *MICHELINOPORA* Yabe & Hayasaka, 1915

Remarks. — The genus *Michelinopora* differs from the related genus *Michелиnia* de Koninek 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 *Michелиnia*.

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.

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**Michelinopora szulczewskii** sp. n.  
(Pl. 4, Figs 3—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. Inter.corallite 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 multitalabulata* 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 *Michелиnia 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. TIVU-49, figured in Pl. 5, Fig. 1.
Type horizon: Wockumeria or Gettendorfia Stage.
Type locality: Dalmia 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. 3.5 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 thicken 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. TVI-100, figured in Pl. 6, Figs 1—5.  
Type horizon: Wocklermite 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.  

Institute of Paleozoology  
of the Polish Academy of Sciences  
Warszawa 22, Al. Zwirki i Wigury 93  
Warsaw, September 1972

REFERENCES

A. STASIŃSKA

KORALE TABULATA Z DALNI W GÓRACH ŚWIĘTOKRZYSKICH

(Streszczenie)

Przedmiotem pracy jest analiza zespołu stosunkowo drobnych kolonii korali Tabulata, występujących w osadach synsedimentacyjnych żył neptunickich z pogranicza dewonu i karbonu na Dalmii koło Karczów 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.

Zakład Paleozoologii
Polskiej Akademii Nauk
Warszawa 22, Al. Żwirki i Wigury 93
Warszawa, we wrześniu 1972 r.
Emmonsia dalniae sp. n.

Emmonsia dalniae sp. n.

1-7 — colonies various in shape (Z. Pal. TVII-I-7), × 3; 1 presents the holotype (cf. Pl. 1, Fig. 3)
Emmonia 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
Acaciapora infracarbonica sp. n.

Michelinopora szulczewskii sp. n.
3 — longitudinal section of the holotype (Z. Pal. T/VII-116), X 4.5; 4 — cross section of the holotype, X 5
Acaciatora infracarbonica sp. n.

1-4 - fragments of colonies: 1 holotype (Z. Pal. T/VII-40), $\times$ 4; 2 paratype (Z. Pal. T/VII-50), $\times$ 4; 3-4 other paratypes (Z. Pal. T/VII-51, 52), $\times$ 3; 5 - longitudinal section (Z. Pal. T/VII-120), $\times$ 6; 6 - tangential section, close to the surface of colony (Z. Pal. T/VII-121), $\times$ 10; 7 - cross section (Z. Pal. T/VII-122), $\times$ 7.5; 8 - cross section (Z. Pal. T/VII-123), $\times$ 9
*Kueichowpora polonica* sp. n.; holotype (Z. Pal. T/VIII-100)

1 - longitudinal section, \( \times 10 \); 2-4 - cross sections, \( \times 10 \); 5 - general view of the colony in rock matrix, \( \times 5 \)