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CORALS OF THE DEVONIAN TRAVERSE GROUP
OF MICHIGAN. PART III, *ANTHOLITES*,
PLEURODICTYUM, AND *PROCTERIA*

BY

ERWIN C. STUMM



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CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

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(Continued on inside back cover)

CORALS OF THE DEVONIAN TRAVERSE GROUP
OF MICHIGAN. PART III, *ANTHOLITES*,
PLEURODICTYUM, AND *PROCTERIA*¹

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ERWIN C. STUMM

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INTRODUCTION

THE tabulate corals comprise one of the largest groups in the amazingly rich fauna of the Traverse group of Michigan. With the exception of M. A. Fenton's description of species of *Aulopora* from the Gravel Point formation (1937, pp. 115-18) and David Swann's detailed description of the *Favosites alpenensis* lineage (1947, pp. 235-318), no work has been done on this group since the pioneer publications of Alexander Winchell (1866, pp. 83-97) and Carl Rominger (1876, pp. 1-161).

This paper describes the known species of the genera *Antholites* and *Pleurodictyum* and of the subgenus *Procteria* which occur in the Traverse group, with descriptions of *Antholites* and *Procteria* and an investigation of their genotype species. The species described in this paper are very characteristic of the Middle Devonian and are excellent horizon markers for many of the formations within the epoch.

¹Part I is published in Vol. VII, No. 8, and Part II in Vol. VIII, No. 3, of the *Contributions of the Museum of Paleontology, University of Michigan*.

DISTRIBUTION OF SPECIES

*Onesquethaw Stage*²

Lower Onondaga limestone of New York and southern Ontario;
Bois Blanc formation of northern Michigan:

- Pleurodictyum (Pleurodictyum) convexum* (d'Orbigny)
Pleurodictyum (Pleurodictyum) favosoideum (Billings)

Columbus limestone of Ohio:

- Pleurodictyum (Pleurodictyum) cylindricum* (Michelin)
Pleurodictyum (Procteria) michelinoidea (Davis)

Jeffersonville limestone of southern Indiana and northern Kentucky:

- Pleurodictyum (Pleurodictyum) cylindricum* (Michelin)
with which *Michelinia corrugata* Davis is conspecific
Pleurodictyum (Pleurodictyum) maximum (Troost)
Pleurodictyum (Procteria) michelinoidea (Davis)
Pleurodictyum (Procteria) papillosa (Davis)
Pleurodictyum (Procteria) spiculata (Greene)

Cazenovia Stage

Silica shale of northwestern Ohio and southeastern Michigan;
Bell shale of northern Michigan:

- Pleurodictyum (Procteria) cornu* Stumm

Tioughnioga Stage

Ludlowville and Moscow formations of New York:

- Pleurodictyum (Pleurodictyum) insigne* Rominger
Pleurodictyum (Pleurodictyum) styloporum (Eaton)
Pleurodictyum (Pleurodictyum) wardi (Greene)

Prout limestone of northern Ohio:

- Pleurodictyum (Pleurodictyum) insigne* (Rominger)

²For definition of the stage names used in this paper, see G. A. Cooper and others, "Correlation of the Devonian Sedimentary Formations of North America," *Bull. Geol. Soc. Amer.*, Vol. 53, No. 12 (1942): 1732-34.

Hungry Hollow formation of Ontario:

Antholites speciosus Davis

Beechwood limestone of southern Indiana and northern Kentucky:

Antholites speciosus Davis

Antholites bridghami (Greene)

Pleurodictyum (*Pleurodictyum*) *insigne* (Rominger)

Pleurodictyum (*Pleurodictyum*) *minutum* (Greene)

Pleurodictyum (*Pleurodictyum*) *planum* (Davis)

Pleurodictyum (*Pleurodictyum*) *wardi* (Greene)

Four Mile Dam formation of northern Michigan:

Antholites bridghami (Greene)

Pleurodictyum (*Pleurodictyum*) *insigne* (Rominger)

Pleurodictyum (*Pleurodictyum*) *wardi* (Greene)

Taghanic Stage

Thunder Bay limestone of northern Michigan:

Antholites alpenensis Stumm

SYSTEMATIC DESCRIPTIONS

Phylum COELENTERATA

Class ANTHOZOA

Subclass TABULATA

Family Favositidae

Genus *Antholites* Davis

Antholites Davis, 1887, explanation to Pl. 78.

Genotype.—By monotypy, *Antholites speciosus* Davis, 1887, Pl. 78, Figs. 1-2. Middle Devonian. Beechwood limestone; near Louisville, Kentucky.

Generic description.—Coralla compound and encrusting; all known specimens surrounding crinoid columnals or the basal parts of crinoid calyxes. Coralla composed of conical or subpolygonal corallites, typically without tabulae, and therefore open to their bases. Walls with low, rounded septal ridges, separated by uniserial rows of large, subrounded mural pores. No peritheca present.

Geologic range.—Middle Devonian.

Antholites speciosus Davis

(Pl. III, Figs. 1-3)

Antholites speciosus Davis, 1887, Pl. 78, Figs. 1-2.*Michelinia tantilla* Greene, 1899, p. 21, Pl. 9, Fig. 12.*Pleurodictyum (Antholites) speciosus* Stumm, 1949, Card 144.

Description.—Coralla composed of corallites attached to crinoid stem by their bases. Mature corallites conical with rounded calyx margins ranging from 7 to 15 mm. in diameter and from 10 to 13 mm. in depth. Immature corallites subpolygonal in outline. Interiors of walls with low, rounded septal ridges increasing in width distally, separated by uniserial rows of large, rounded or vertically elongated mural pores. Tabulae, epithecae, and peritheca lacking.

Remarks.—Green's hypotype, described as *Michelinia tantilla*, shows perfectly preserved calyx margins which are broken on Davis's holotype.

Occurrence.—Middle Devonian. Beechwood limestone, near Charlestown Landing, Indiana, and near Louisville, Kentucky. Hungry Hollow formation, near Thedford, Ontario, Canada.

Types.—Holotype in the Museum of Comparative Zoology, Harvard University; hypotype (holotype of *Michelinia tantilla* Greene) No. 23478, American Museum of Natural History, New York; hypotype (Hungry Hollow formation) No. 25629, Museum of Paleontology, University of Michigan.

Antholites bridghami (Greene)*Michelinia bridghami* Greene, 1900, p. 40, Pl. 14, Figs. 14-16.*Pleurodictyum (Antholites) bridghami* Stumm, 1949, Card 143.

Description.—Coralla as in *Antholites speciosus* except corallites more narrowly conical, septal ridges thinner, and mural pores proportionately larger and more elongate vertically. Mature corallites with rounded calyxes ranging from 4 to 7 mm. in diameter and averaging 15 mm. in depth. Immature corallites subpolygonal in outline. Tabulae rare, lacking in most corallites. Epithecae and peritheca lacking.

In traverse section, walls of corallites with beaded outline pro-

duced by interception of large mural pores. In longitudinal section, corallites showing narrow conical shape and basal attachment to crinoid stem.

Occurrence.—Middle Devonian, Beechwood limestone; Charlestown and other localities in Clark County, Indiana. Traverse group: Four Mile Dam formation, Dock Street clay member; Alpena County, Michigan; upper part of Gravel Point formation, Emmet County, Michigan.

Types.—Lectotype, the original of Greene's Figure 14 (chosen by Stumm, 1949, Card 143), No. 23538, American Museum of Natural History, New York. Hypotypes Nos. 25641, 26398, 26399, 26400, and 26401, Museum of Paleontology, University of Michigan.

***Antholites alpenensis* Stumm, sp. nov.**

(Pl. III, Figs. 4-7)

Description.—Compound coralla composed of narrowly conical corallites attached to crinoid stems. Calyxes of mature corallites ranging from 4 to 8 mm. in diameter and from 4 to 10 mm. in depth. Walls with thin, typically sharp septal ridges, separated by uniserial rows of mural pores. Pores smaller than in other known species of the genus. No tabulae, epithecae, or peritheca.

In transverse section, walls thin, interrupted by mural pores. In longitudinal section, conical shape of corallites and lack of tabulae apparent.

Remarks.—This species is distinguished from *Antholites bridghami* by narrower, sharp septal ridges and smaller mural pores.

Rominger (1876, p. 76) confused *Antholites alpenensis* with *Pleurodictyum (Pleurodictyum) styloporum* (Eaton) from the upper Hamilton strata of western New York in his description of *Michelinia trochiscus*. Rominger's lectotype of *M. trochiscus* is a hypotype of *P. styloporum* from the Wanakah shale, Eighteen Mile Creek, Erie County, New York.

Occurrence.—Middle Devonian. Traverse group: Thunder Bay limestone; north side of Partridge Point, Thunder Bay, four miles south of Alpena, Michigan.

Types.—Holotype No. 26402; paratypes Nos. 26403, 26404, and 26405, Museum of Paleontology, University of Michigan.

Pleurodictyum (Pleurodictyum) Goldfuss

Pleurodictyum Goldfuss, 1829, p. 113.

Genotype.—By monotypy, *Pleurodictyum problematicum* Goldfuss, 1829, p. 113,

Pl. 38, Figs. 18a-g. Lower Devonian; Eifel district and Nassau, Germany.

Generic description.—Compound hemispherical coralla with convex or flattened distal surfaces, composed of polygonal corallites with walls bearing septal ridges or septal spines or both; walls pierced by irregularly scattered mural pores. Tabulae complete or incomplete, horizontal, convex, or concave. Proximal sides of coralla typically flat, covered with a concentrically wrinkled peritheca.

Geologic range.—Middle Silurian to Lower Pennsylvanian.

Pleurodictyum (Pleurodictyum) insigne (Rominger)

(Pl. 1; Figs. 1-3)

Michelinia insignis Rominger, October 1876, p. 75, Pl. 36, Figs. 1-3.

Michelinia dividua Hall, December 1876, Pl. 18, Figs. 10-17.

Pleurodictyum dividuum Fenton and Fenton, 1936, pp. 39-40, Pl. 7, Figs. 1-4.

Description.—Hemispherical coralla with convex or flattened distal surfaces, composed of polygonal corallites averaging 2 mm. in diameter. Calyx walls erect, with faint septal ridges surmounted by thin septal spines along their axial edges. In some corallites ridges not apparent, spines appearing to project in vertical series directly from wall. Mural pores numerous, small, round, irregularly scattered. Bases of calyces typically flat, each formed by uppermost tabula. Bases of coralla with a thick, concentrically wrinkled peritheca through which the basal corallites with rounded outline are clearly visible.

In transverse section walls of corallites apparently solid; projecting septal spines very thin and closely spaced. In longitudinal section tabulae closely set, complete; most of them horizontal, few convex or concave.

Occurrence.—Middle Devonian. Traverse group; Four Mile Dam formation, Alpena region, Michigan. Beechwood limestone; southern Indiana and northern Kentucky. Ludlowville and Moscow formations; western New York.

Types.—Lectotype No. 8535, paratype No. 8534, Museum of Paleontology, University of Michigan.

Pleurodictyum (Pleurodictyum) wardi (Greene)

(Pl. I, Figs. 4-6)

Michelinia wardi Greene, 1903, p. 130, Pl. 37, Figs. 1-3.

Description.—Irregularly hemispherical coralla similar in outline to *P. (P.) insigne*, (Rominger) and composed of polygonal corallites ranging from 2 to 3 mm. in diameter. Walls of corallites thick with well-developed septal ridges in contact. Ridges shorter toward calyx margins giving calyxes a funnel-shaped appearance. Axial edge of each ridge with a vertical row of short, thin septal spines. Proximal side of corallum with a thick, concentrically wrinkled perithecium as in *P. (P.) insigne*.

In transverse section walls thick with wide septal ridges in contact. Septal spines numerous, less than .5 mm. in length. In longitudinal section walls thick, with vertical fibres indicating septal ridges. Mural pores small, round, irregularly scattered. Tabulae typically complete, concave or horizontal.

Remarks.—This species is distinguished from *P. (P.) insigne* (Rominger) by the thicker walls and prominent septal striae. In addition the calyxes are funnel-shaped, whereas in *P. (P.) insigne* the calyx walls are parallel.

Occurrence.—Middle Devonian. Four Mile Dam formation, Alpena region, Michigan. Beechwood limestone; southern Indiana and northern Kentucky. Ludlowville and Moscow formations, western New York.

Types.—Lectotype and paratypes in the American Museum of Natural History, New York. Hypotype No. 20991, Museum of Paleontology, University of Michigan.

Pleurodictyum (Procteria) Davis

Procteria Davis, 1887, explanation to Pl. 41.

Genotype.—By subsequent designation of Lang, Smith, and Thomas, 1940, p. 105, *Procteria michelinoidea* Davis, 1887, Pl. 41, Figs. 3–14.

Subgeneric description.—Patelloid to discoid coralla composed of radiating polygonal corallites with smooth or faintly striate walls pierced by small, irregularly scattered mural pores. Cystose tabellae present in the larger species. Proximal sides of coralla provided with a thick, papillose peritheca.

Geologic range.—Middle Devonian.

Pleurodictyum (Procteria) michelinoidea (Davis)

(Pl. IV, Figs. 1–4)

Description.—Coralla patelloid, averaging 3 cm. in diameter, with flat bases and low, convex distal surfaces, composed of polygonal corallites averaging 4 mm. in diameter. Marginal corallites parallel to base of coralla, intermediate corallites oblique to base, axial corallites at right angles to base. Walls of corallites smooth or with faint septal ridges near margins of calyxes. Walls pierced by small, irregularly spaced mural pores. Bases of corallites flat. Tabulae incomplete, cystose, typically convex distally. Entire proximal side of corallum covered with a thick, papillose peritheca.

Occurrence.—Middle Devonian, Jeffersonville limestone; Falls of the Ohio River near Louisville, Kentucky, in association with two much smaller species, *P. (Procteria) papillosa* Davis with which *Michelinia neglecta* Greene is conspecific, and *P. (Procteria) spiculata* (Greene) with which *Michelinia papulosa* Greene is conspecific, (see Pl. IV, Figs. 5–7). *P. (Procteria) michelinoidea* is present also in the Columbus limestone of Ohio.

Types.—Syntypes in the Museum of Comparative Zoology, Harvard University; Hypotypes Nos. 23406, 23407, 23408, and 23409, Museum of Paleontology, University of Michigan.

Pleurodictyum (Procteria) cornu Stumm, sp. nov.

(Pl. V, Figs. 1-15)

Description.—Coralla patelloid, ranging from 5 to 25 mm. in diameter, with a low convex distal surface, composed of polygonal corallites averaging 3 mm. in diameter and 3 mm. in depth. Bases of corallites flat, formed on inner side of peritheca. Walls thin, with thin, closely spaced septal ridges and numerous, irregularly scattered mural pores. Distal margins of walls projected upward to form sharp spines at junctions of corallites. Proximal side of corallum concave, provided with a strongly papillose peritheca.

Remarks.—This distinctive species is easily distinguished from all other species of *Procteria* by the spinose wall projections. It is the only known species of the subgenus occurring in strata younger than the Onesquethaw stage.

Occurrence.—Middle Devonian. Silica shale; Lucas County, Ohio, and Monroe County, Michigan. Traverse group: top of Bell shale, Rockport, Alpena County, Michigan.

Types.—Holotype No. 26406, paratypes Nos. 25656, 26407, 26408, 26409, 26410, and 26411, Museum of Paleontology, University of Michigan.

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PLATES

EXPLANATION OF PLATE I

(All figures $\times 2$)

| | PAGE |
|---|------|
| <i>Pleurodictyum (Pleurodictyum) insigne</i> (Rominger) | 210 |

FIG. 1. Distal view of part of a specimen showing polygonal walls and flat bases of corallites. Lectotype (the original of Rominger's Pl. 1, Figs. 2-3) No. 8535, Museum of Paleontology, University of Michigan. Four Mile Dam formation, near Alpena, Michigan.

FIG. 2. Transverse section of the same specimen as in Figure 1 showing solid walls and septal spines.

FIG. 3. Longitudinal section of the same specimen as in Figure 1 showing closely set, usually complete tabulae, and numerous mural pores.

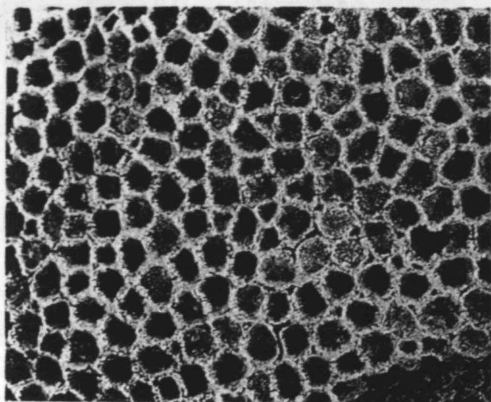
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|---|-----|
| <i>Pleurodictyum (Pleurodictyum) wardi</i> (Greene) | 211 |
|---|-----|

FIG. 4. View of part of distal surface of a specimen showing calyx walls composed of thick septal ridges with spinose axial edges. Lectotype (the original of Greene's Pl. 37, Fig. 2), American Museum of Natural History, New York. Beechwood limestone; Clark County, Indiana.

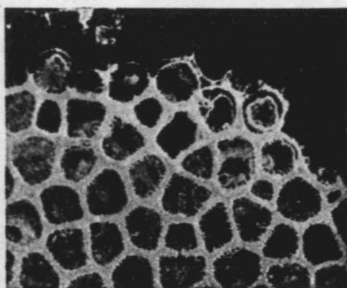
FIG. 5. Longitudinal section of a specimen showing thick walls with irregularly scattered mural pores, and horizontal and concave tabulae. Hypotype No. 20991, Museum of Paleontology, University of Michigan. Four Mile Dam formation, near Alpena, Michigan.

FIG. 6. Transverse section of same specimen as Figure 5 showing thick walls composed of septal ridges in lateral contact, and small, projecting septal spines.

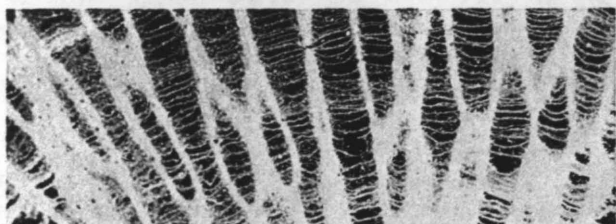
PLATE I



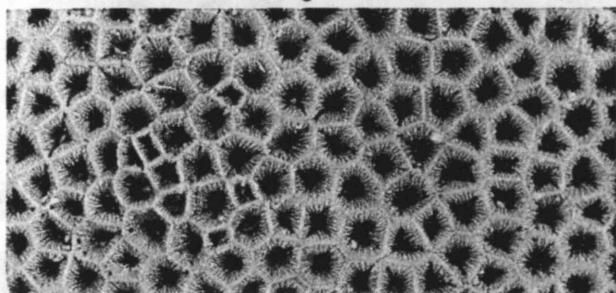
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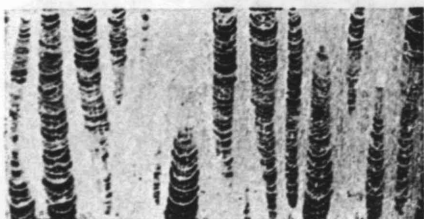
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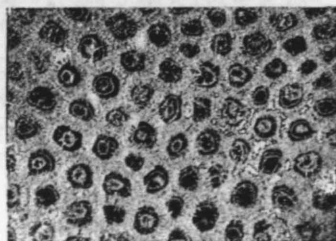
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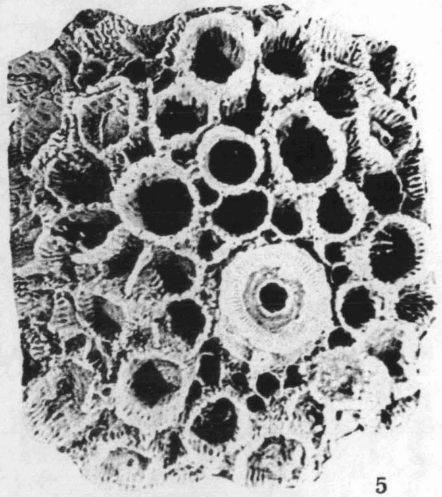
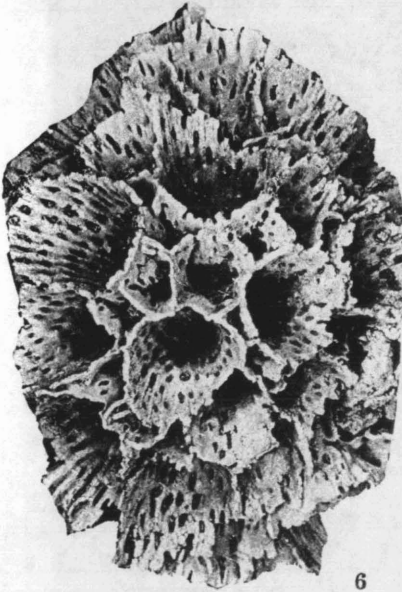
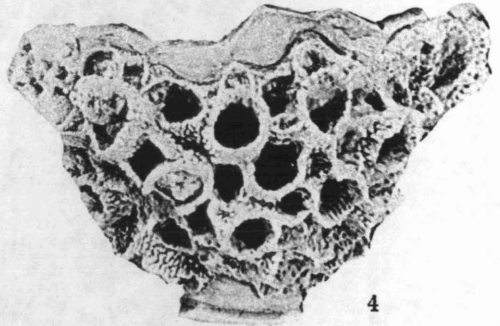
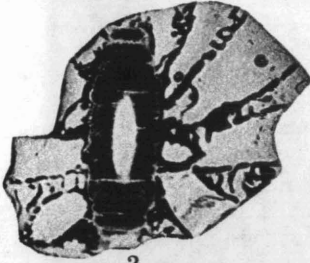
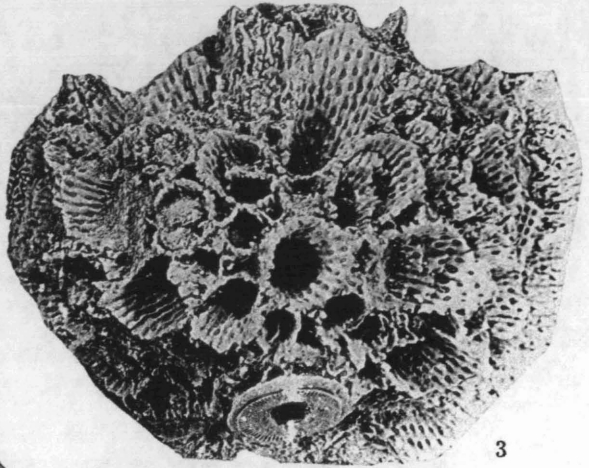


5



6

PLATE II



EXPLANATION OF PLATE II

(All figures $\times 2$)

| | PAGE |
|--|------|
| <i>Antholites bridghami</i> (Greene) | 208 |

FIG. 1. Transverse section through corallites of a specimen showing rounded septal ridges separated by large mural pores. Hypotype No. 26398, Museum of Paleontology, University of Michigan. Four Mile Dam formation, Dock Street clay member, quarry of the Thunder Bay Quarries Company; Alpena, Michigan.

FIG. 2. Longitudinal section of another specimen showing narrow conical form of corallites and bases of attachment to crinoid stem. Hypotype No. 26399, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 1.

FIG. 3. Exterior view of another specimen showing septal ridges, large, uniserial mural pores, and mode of attachment. Hypotype No. 26400, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 1.

FIG. 4. View of another specimen encrusting the base of a crinoid calyx. Only basal parts of corallites are preserved. Hypotype No. 25641, Museum of Paleontology, University of Michigan. Upper part of Gravel Point formation, abandoned quarry one-eighth mile south of Little Traverse Bay, NW. $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 34 N., R. 6 W., Emmet County, Michigan.

FIG. 5. Exterior of another specimen encrusting base of crinoid calyx showing basal parts of corallites with intercalation of buds. Hypotype No. 26401, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 1.

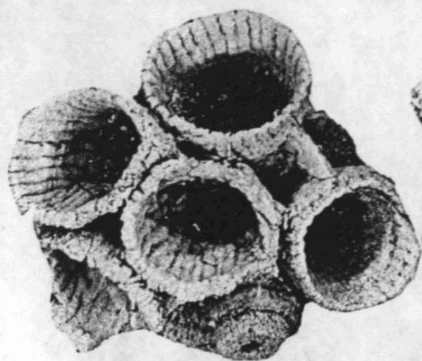
FIG. 6. View of lectotype (the original of Greene's Pl. 14, Fig. 14) No. 23538, American Museum of Natural History, New York. Beechwood limestone; Charlestown, Clark County, Indiana.

EXPLANATION OF PLATE III

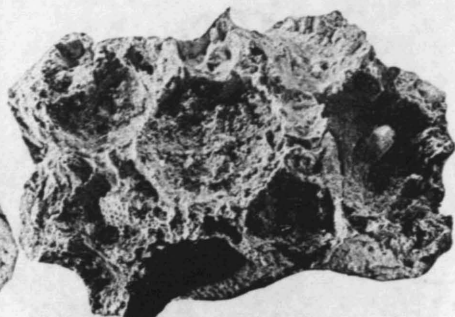
(All figures $\times 2$)

- | | PAGE |
|---|------|
| <i>Antholites speciosus</i> Davis | 208 |
| FIG. 1. Distal view of a specimen showing rounded septal ridges increasing in thickness toward calyx margins. Hypotype (holotype of <i>Michelinia tantillo</i> Greene) No. 23478, American Museum of Natural History, New York. Beechwood limestone; near Charlestown, Clark County, Indiana. | |
| FIG. 2. Side view of same specimen as Figure 1 showing large, uniserial mural pores. | |
| FIG. 3. View of a weathered specimen. Hypotype No. 25629, Museum of Paleontology, University of Michigan. Hungry Hollow formation—coral bed; abandoned brick and tile yard, one-half mile north of Thedford, Ontario, Canada. | |
| <i>Antholites alpenensis</i> Stumm, sp. nov. | 209 |
| FIG. 4. View of a complete corallum showing narrow, conical corallites with thin, sharp septal ridges and small, uniserial mural pores. Holotype No. 26402, Museum of Paleontology, University of Michigan. Thunder Bay limestone; north side of Partridge Point, four miles south of Alpena, Michigan. | |
| FIG. 5. Longitudinal section of another specimen showing conical shape of corallites and bases of attachment. Paratype No. 26403, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4. | |
| FIG. 6. Longitudinal section of a small corallum showing mode of attachment to crinoid stem. Paratype No. 26404, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4. | |
| FIG. 7. Transverse section of another specimen showing outlines of conical corallites with angular septal ridges interrupted by mural pores. Paratype No. 26405, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4. | |

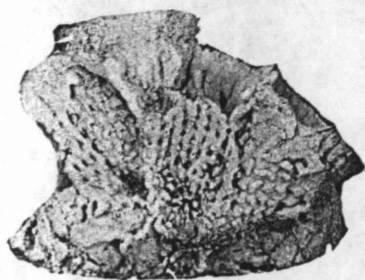
PLATE III



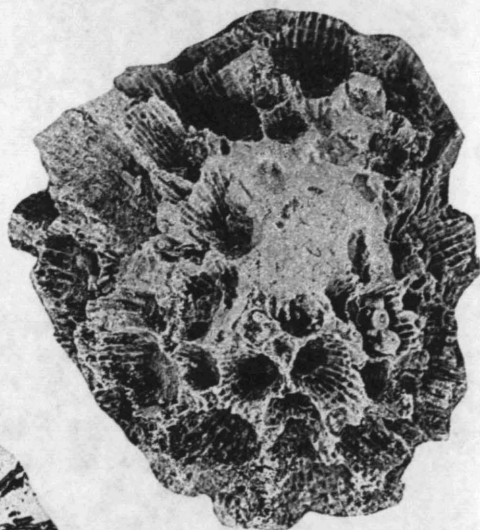
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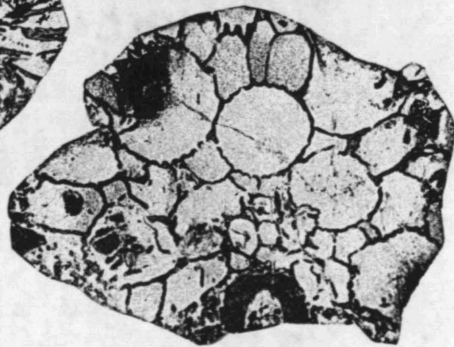
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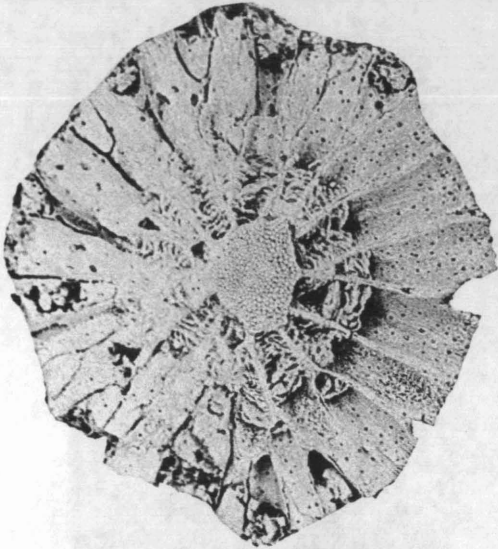


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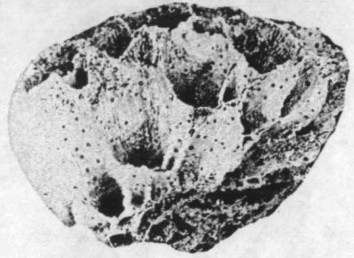
PLATE IV



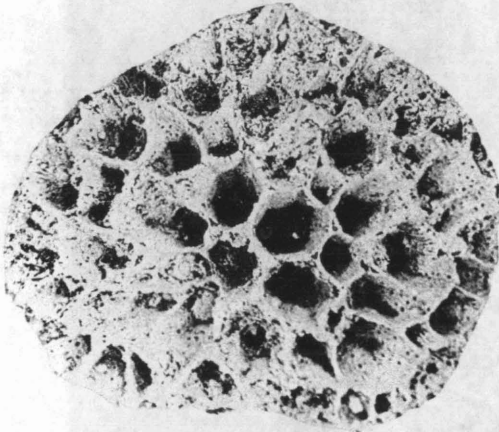
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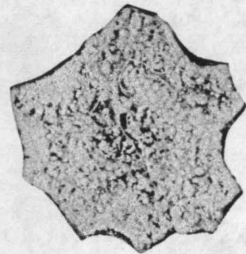
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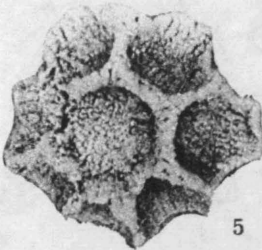
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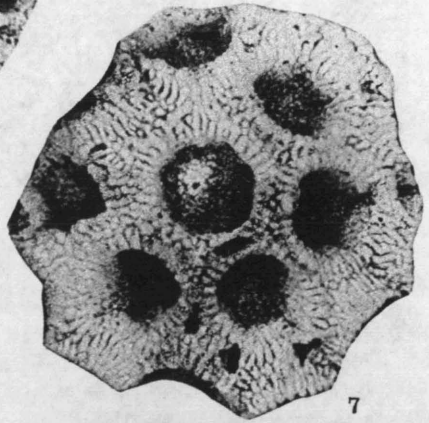
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EXPLANATION OF PLATE IV

(Figures 1-4 $\times 2$; figures 5-7 $\times 3$)

- | | PAGE |
|---|------|
| <i>Pleurodictyum (Procteria) michelinoidea</i> (Davis) | 212 |
| <p>FIG. 1. Proximal view of a specimen showing narrowly conical corallites with small, irregularly scattered mural pores, cystose dissepiments near bases of corallites, and a part of the papillose peritheca in the axial region. Hypotype No. 23406, Museum of Paleontology, University of Michigan. Jeffersonville limestone; Falls of the Ohio River, near Louisville, Kentucky.</p> | |
| <p>FIG. 2. Distal view of another specimen showing polygonal calyx margins and upper parts of walls with faint septal ridges and scattered mural pores. Hypotype No. 23407, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 1.</p> | |
| <p>FIG. 3. Thin section of another specimen showing distally convex, cystose tabellae. Hypotype No. 23408, Museum of Paleontology, University of Michigan. Columbus limestone; near Sandusky, Erie County, Ohio.</p> | |
| <p>FIG. 4. Side view of a broken specimen with corallites showing well-preserved mural pores. Hypotype No. 23409, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 1.</p> | |
| <i>Pleurodictyum (Procteria) papillosa</i> (Davis) | 212 |
| <p>FIG. 5. View of distal surface of a specimen showing thin-walled corallites with flat bases. Tabellae are lacking in this species. Hypotype (holotype of <i>Michelinia neglecta</i> Greene) No. 23453, American Museum of Natural History, New York. Same horizon and locality as original of Figure 1.</p> | |
| <p>FIG. 6. Proximal view of same specimen as Figure 5 showing papillose peritheca.</p> | |
| <i>Pleurodictyum (Procteria) spiculata</i> (Greene) | 212 |
| <p>FIG. 7. Distal view of a specimen showing polygonal, flat-bottomed corallites with thick walls composed of closely set septal ridges. Syntype No. 23448, American Museum of Natural History, New York. Same horizon and locality as original of Figure 1.</p> | |

EXPLANATION OF PLATE V

(All figures $\times 2$)

| | PAGE |
|---|------|
| <i>Pleurodictyum (Procteria) cornu</i> Stumm, sp. nov. | 213 |

FIG. 1. Distal view of a well-preserved specimen showing the thin-walled polygonal corallites and the vertical projections at their junctions. Holotype No. 26406, Museum of Paleontology, University of Michigan. Silica shale; from well drilling, one mile south of Cone, Monroe County, Michigan.

FIG. 2. Side view of same specimen as Figure 1 showing projections, septal ridges, and mural pores.

FIG. 3. Proximal view of same specimen as Figure 1 showing papillose peritheca.

FIG. 4. Distal view of a smaller specimen showing calyces with fine septal ridges. Paratype No. 26407, Museum of Paleontology, University of Michigan. Top of Bell shale; Kelley's Island Lime and Transport Company quarry at Rockport, Alpena County, Michigan.

FIG. 5. Side view of same specimen as Figure 4 showing low convex distal surface and small projections.

FIG. 6. Section of another specimen cut parallel to peritheca showing radiating corallites and small, scattered mural pores. No tabulae are present. Paratype No. 26408, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4.

FIG. 7. Distal view of an immature specimen with unusually smooth calyx margins. Paratype No. 26409, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4.

FIG. 8. Side view of same specimen as Figure 7 showing low convex distal surface.

FIG. 9. Proximal view of same specimen as Figure 7 showing papillose peritheca.

FIG. 10. Distal view of another small specimen showing small projections and septal ridges. Paratype No. 26410, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4.

FIG. 11. Proximal view of same specimen as Figure 10 showing finely papillose peritheca.

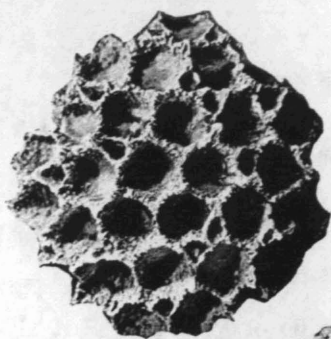
FIG. 12. Section cut at right angles to peritheca showing subparallel corallite walls on inner surface of peritheca. Paratype No. 26411, Museum of Paleontology, University of Michigan. Same horizon and locality as original of Figure 4.

FIG. 13. Distal view of a mature specimen with prominent septal ridges. A bryozoan encrusts the axial corallites. Paratype No. 25656, Museum of Paleontology, University of Michigan. Basal part of Silica shale; quarry of the Medusa Portland Cement Company, Silica, Lucas County, Ohio.

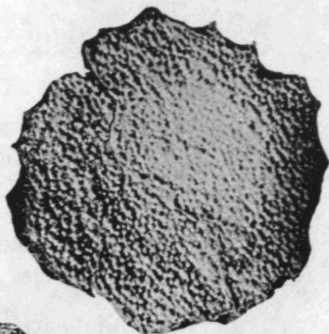
FIG. 14. Side view of same specimen as Figure 13 showing convex distal surface.

FIG. 15. Proximal surface of same specimen as Figure 13 showing peritheca with strongly developed papillae.

PLATE V



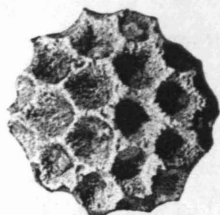
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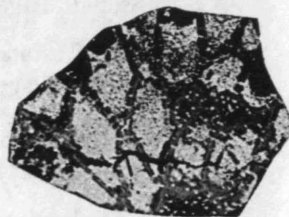
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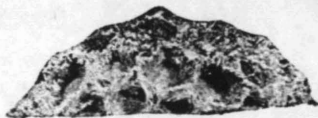
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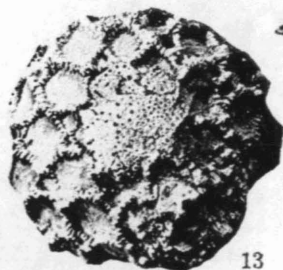
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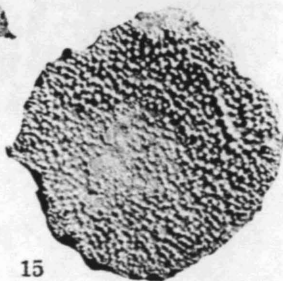
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