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UNIVERSITY OF MICHIGAN

VOL. LX, No. 3, pp. 83-92 (3 pls.)

JULY 11, 1951

CORALS OF THE DEVONIAN TRAVERSE GROUP
OF MICHIGAN. PART IV, *BILLINGSASTRAEA*

BY

GEORGE M. EHLERS and ERWIN C. STUMM



UNIVERSITY OF MICHIGAN PRESS
ANN ARBOR

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MICHIGAN. PART IV, *BILLINGSASTRAEA*

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INTRODUCTION

THIS fourth part¹ of a study of the corals of the Traverse group deals with the astraeoid tetracoral genus *Billingsastraea*. As far as known the genus occurs only in rocks of Lower and Middle Devonian ages. The geological and geographical distribution of the species described is as follows:

EASTERN NORTH AMERICA

*Deerpark Stage*²

Grand Greve limestone (bed 8) of Gaspé Peninsula, Quebec, Canada:

Billingsastraea affinis (Billings)

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

² For 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.

Onesquethaw Stage

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

Billingsastraea "gigas" of authors

Billingsastraea rugosa (Hall)

Billingsastraea verneuili (Edwards and Haime)

Jeffersonville limestone of southern Indiana and northern Kentucky:

Billingsastraea yandelli (Rominger)

Cazenovia Stage

Traverse group of Michigan:

Billingsastraea pauciseptata Ehlers and Stumm, sp. nov.

Billingsastraea rockportensis Ehlers and Stumm, sp. nov.

Billingsastraea romingeri Ehlers and Stumm, sp. nov.

Tioughnioga Stage

Ludlowville formation of New York:

Billingsastraea confluens (Hall)

? Tioughnioga Stage

Upper part of Boyle limestone of central Kentucky:

Billingsastraea ingens (Davis)

Taghanic Stage

Cedar Valley limestone of Iowa:

Billingsastraea billingsi (Calvin)

WESTERN NORTH AMERICA

Onesquethaw Stage

Lower part of Nevada limestone of east-central Nevada:

Billingsastraea nevadensis Stumm

Billingsastraea (Radiastraea) arachne Stumm

Undescribed species from the Lower Onondaga of New York, the Bois Blanc formation of Michigan, the Widder formation of southwestern Ontario, the Ludlowville formation of New York, and the Tully limestone of New York are under study by the authors.

SYSTEMATIC DESCRIPTIONS

Phylum COELENTERATA

Class ANTHOZOA

Subclass TETRACORALLA

Family Disphyllidae

Subfamily Disphyllinae

Genus *Billingsastraea* Grabau

Phillipsastraea (*Billingsastraea*) Grabau, 1917, p. 957.

Billingsastraea, Stumm, 1937, pp. 437-38.

Genotype.—By monotypy, *Phillipsastraea verneuili* Edwards and Haime, 1851, p. 447, Pl. X, Fig. 5.

Horizon and locality of genotype.—The holotype of *Phillipsastraea verneuili* Edwards and Haime was reported as coming from the Devonian of Wisconsin. The specimen was probably collected from the drift, having been carried to Wisconsin by the Pleistocene ice from some exposure of Onondaga strata in Michigan or Ontario.

***Billingsastraea pauciseptata* Ehlers and Stumm, sp. nov.**

(Pl. I, Fig. 3; Pl. II, Figs. 1-4)

Description.—Coralla astraeeid, of low subhemispherical to discoid form with low convex distal surfaces, composed of corallites ranging from 20 to 30 mm. in diameter. Calyxes with circular to subcircular axial pits averaging 10 mm. in diameter and ranging from 2 to 4 mm. in depth and with gently sloping to slightly convex platforms.

In transverse section, septa 34 to 40 in mature corallites; thin, distantly spaced, radially arranged, confluent or abutting; major septa extending almost to axes; minor septa terminating at the margins of the tabularia; septa with crossbar carinae, 3 to 10 to a septum.

In longitudinal section, tabularia 7 to 9 mm. in diameter, composed of thin, complete or incomplete, horizontal or distally arched tabulae. Dissepimentaria moderately wide, composed of numerous relatively large distally convex dissepiments.

Remarks.—This species differs from *B. romingeri*, which occurs in the same stratigraphic position, in having smaller corallites, fewer

septa and carinae, and in lacking thickened major septa in the tabularia. This species is the most abundant representative of the genus in the Traverse strata of Michigan.

Occurrence.—Middle Devonian (Traverse group—lower part of Genshaw formation below Killians limestone member); vicinity of southwest shore of Long Lake in Alpena County; Thunder Bay Island (Alpena County), Lake Huron; 1½ miles north of Posen, Presque Isle County; and rock cut on U. S. Highway 23 just east of Swan Creek about 6 miles southeast of Rogers City, Presque Isle County, Michigan.

Types.—Holotype No. 27001; paratypes Nos. 22952 and 26387, Museum of Paleontology, University of Michigan.

***Billingsastraea rockportensis* Ehlers and Stumm, sp. nov.**

(Pl. I, Fig. 1; Pl. III, Figs. 1-2)

Description.—Coralla astraecoid, of low hemispherical form, composed of corallites ranging from 14 to 22 mm. in diameter, with mature corallites averaging 19 mm. Calyxes with axial pits 5 to 8 mm. in diameter and 2 to 3 mm. in depth and with highly convex peripheral platforms sloping abruptly towards pits and peripheries.

In transverse section, septa 40 to 50; thin, radially arranged, confluent or abutting, major septa extending to axes; minor septa relatively long, terminating at the margins of the tabularia; septa with long, distantly spaced crossbar carinae, 6 to 8 to a septum.

In longitudinal section, tabularia averaging 6 mm. in diameter; composed of very thin, distally concave or convex, incomplete tabulae, interrupted by axial ends of major septa. Dissepimentaria wide, composed of numerous medium-sized globose dissepiments, largely obscured by prominent carinae.

Remarks.—This species is easily distinguished by the very convex peripheral platforms of the calyxes and the distant spacing of the carinae.

Occurrence.—Middle Devonian (Traverse group—bituminous and pyritiferous limestone in lower half of Rockport Quarry lime-

stone); Kelley's Island Lime and Transport Company Quarry, Rockport, Alpena County, Michigan, and rock cut on U. S. Highway 23 on west side of Grand Lake, 4.8 miles north of south county line of Presque Isle County, near south line of sec. 8, T. 33 N., R. 8 E., Presque Isle County, Michigan.

Type.—Holotype No. 18803, Museum of Paleontology, University of Michigan.

***Billingsastraea romingeri* Ehlers and Stumm, sp. nov.**

(Pl. I, Fig. 2; Pl. III, Figs. 3-4)

Description.—Coralla astraecoid, of subhemispherical to discoid form with low convex distal surfaces, composed of corallites ranging from 20 to 45 mm. in diameter. Calyxes with circular axial pits 10 to 12 mm. in diameter and ranging from 4 to 6 mm. in depth and with slightly convex peripheral platforms.

In transverse section, septa 56 to 64 in mature corallites; radially arranged, confluent or abutting; major septa extending almost to axes, thin in the dissepimentaria, thickened in the tabularia; minor septa thin, terminating at margins of tabularia; septa with crossbar carinae, 13 to 17 to a septum; carinae becoming small and obscure in peripheral parts of septa.

In longitudinal section, tabularia 10 to 11 mm. in diameter, composed of thin, distally concave, incomplete tabulae. Dissepimentaria wide, composed of numerous small and large globose dissepiments.

Remarks.—The holotype and only known specimen is so badly worn that the calyxes are imperfectly preserved. It was collected by Carl Rominger, for whom it is named. A characteristic feature of the species is the thickening of the major septa in the tabularia.

Occurrence.—Middle Devonian (Traverse group—lower part of Genshaw formation below Killians limestone member). The only known geographic occurrence of the species is near or on the shore of Long Lake, Alpena County, Michigan.

Type.—Holotype No. 27000, Museum of Paleontology, University of Michigan.

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- STUMM, E. C. 1937. Lower Middle Devonian Tetracorals of the Nevada Limestone. Journ. Paleontol., Vol. 11.

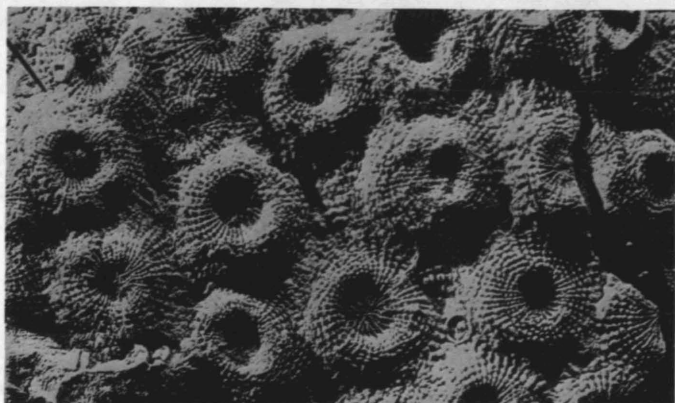
PLATES

EXPLANATION OF PLATE I

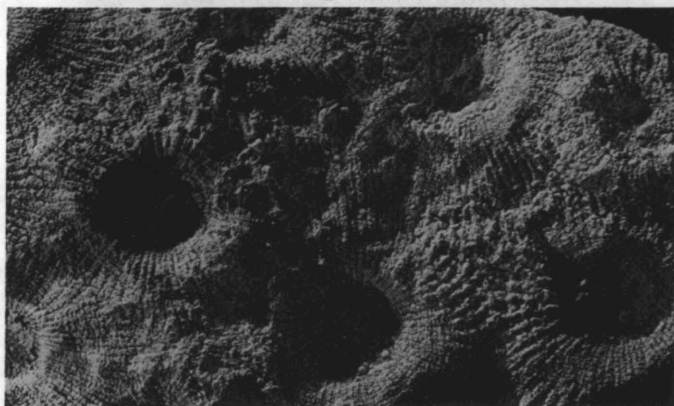
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	PAGE
<i>Billingsastraea rockportensis</i> Ehlers and Stumm, sp. nov.	86
<p>FIG. 1. Distal view of part of corallum showing corallites with axial pits and highly convex peripheral platforms. Holotype No. 18803. Rockport Quarry limestone; Kelley's Island Lime and Transport Company Quarry, Rockport, Alpena County, Michigan.</p>	
<i>Billingsastraea romingeri</i> Ehlers and Stumm, sp. nov.	87
<p>FIG. 2. Distal view of part of weathered surface of corallum showing corallites with large axial pits and slightly convex peripheral platforms. Holotype No. 27000. Lower part of Genshaw formation below Killians limestone member; vicinity of Long Lake, Alpena County, Michigan.</p>	
<i>Billingsastraea pauciseptata</i> Ehlers and Stumm, sp. nov.	85
<p>FIG. 3. Distal view of part of weathered surface of corallum showing corallites with distantly spaced septa. Holotype No. 27001. Lower part of Genshaw formation below Killians limestone member; vicinity of Long Lake, Alpena County, Michigan.</p>	

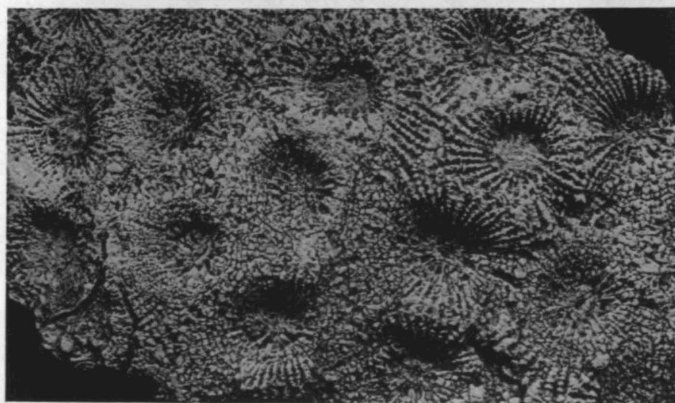
PLATE I



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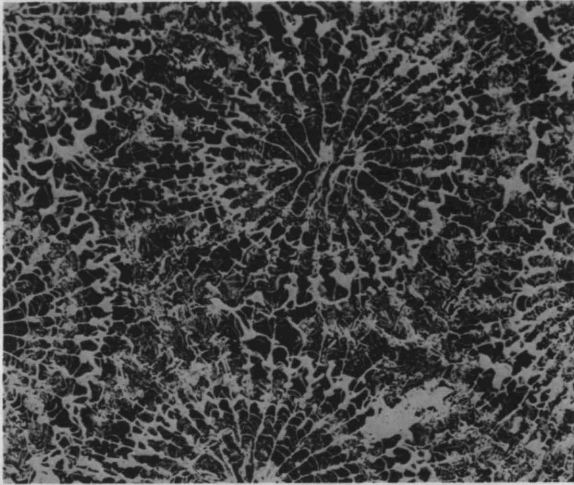


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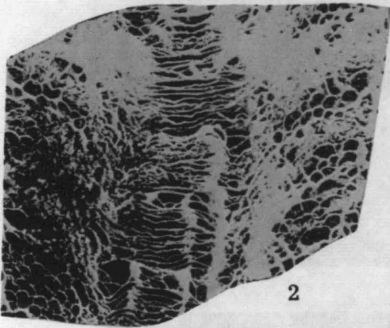


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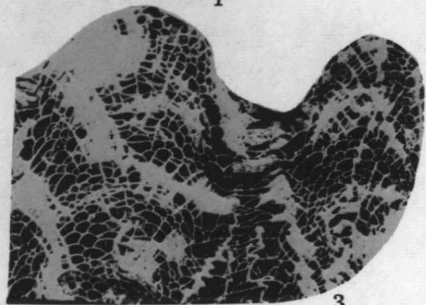
PLATE II



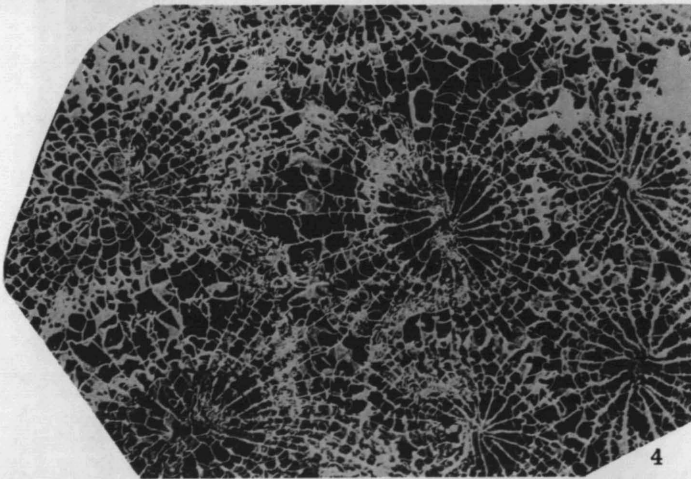
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3



4

EXPLANATION OF PLATE II

(All figures $\times 2$)

	PAGE
<i>Billingsastraea pauciseptata</i> Ehlers and Stumm, sp. nov.	85

FIG. 1. Transverse section showing thin, widely spaced carinate septa. Paratype No. 22952. North-south road north of schoolhouse in NE. $\frac{1}{4}$ sec. 4, T. 33 N., R. 6 E. (Posen Township), Presque Isle County, Michigan.

FIG. 2. Longitudinal section of a corallite of the same specimen as Figure 1 showing horizontal, closely set tabulae, most of which are complete.

FIG. 3. Longitudinal section of a corallite of another specimen showing globose dissepiments and rows of carinae. Holotype No. 27001. Lower part of Genshaw formation below Killians limestone member; vicinity of Long Lake, Alpena County, Michigan.

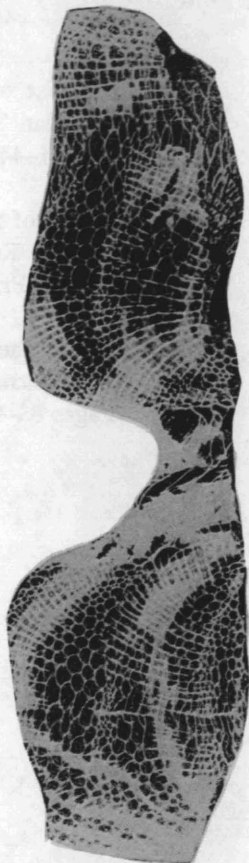
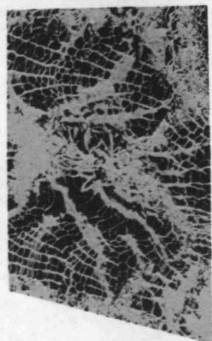
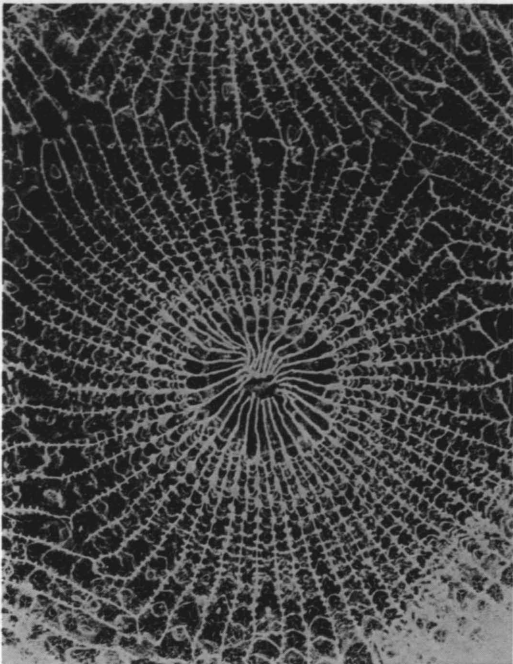
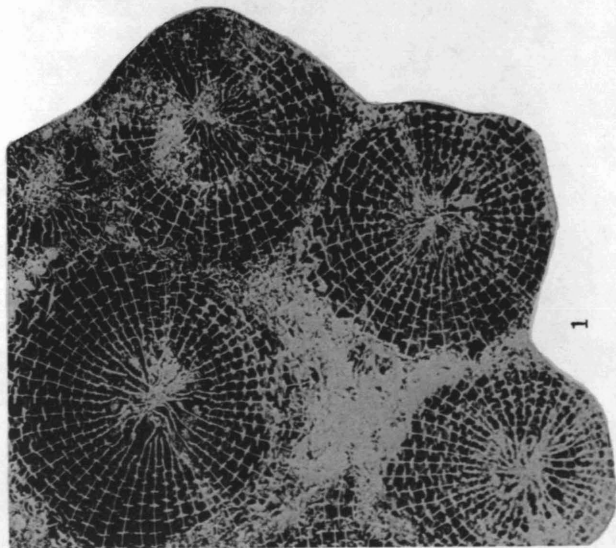
FIG. 4. Transverse section of several corallites of same specimen as Figure 3 showing thin, widely spaced septa and distantly spaced carinae.

EXPLANATION OF PLATE III

(All figures $\times 2$)

- | | PAGE |
|---|------|
| <i>Billingsastraea rockportensis</i> Ehlers and Stumm, sp. nov. | 86 |
| <p>FIG. 1. Transverse section showing thin septa with evenly spaced crossbar carinae. Holotype No. 18803. Rockport Quarry limestone; Kelley's Island Lime and Transport Company Quarry, Rockport, Alpena County, Michigan.</p> | |
| <p>FIG. 2. Longitudinal section of a corallite of the same specimen as Figure 1 showing globose dissepiments and incomplete tabulae.</p> | |
| <i>Billingsastraea romingeri</i> Ehlers and Stumm, sp. nov. | 87 |
| <p>FIG. 3. Transverse section of a small part of corallum showing thickening of the septa in the tabularium and large number of carinae which become increasingly smaller towards periphery. Holotype No. 27000. Lower part of Genshaw formation below Killians limestone member; vicinity of Long Lake, Alpena County, Michigan.</p> | |
| <p>FIG. 4. Longitudinal section of a corallite of the same specimen as Figure 3 showing numerous closely spaced carinae, wide dissepimentarium composed of relatively large globose dissepiments, and narrow tabularium with incomplete tabulae.</p> | |

PLATE III



VOLUME IX

1. **Check List of Fossil Invertebrates Described from the Middle Devonian Traverse Group of Michigan**, by Erwin C. Stumm. Pages 1-44. Price \$.75.
2. **Ostracods of the Family Hollinidae from the Bell Shale of Michigan**, by Robert V. Kesling and Gordon W. McMillan. Pages 45-81. Price \$.75.
3. **Corals of the Devonian Traverse Group of Michigan. Part IV, *Billingsastraea***, by George M. Ehlers and Erwin C. Stumm. Pages 83-92. Price \$.50.