CORALS OF THE TRAVERSE GROUP OF MICHIGAN
PART VII, THE DIGONOPHYLLIDAE

BY
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CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

Director: Lewis B. Kellum

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VOLUME XVI

1. Two Late Pleistocene Faunas from Southwestern Kansas, by Claude W. Hibbard and Dwight W. Taylor. Pages 1–223, with 16 plates.

VOLUME XVII

3. A New Species of Billingsites, an Ascoseratid Cephalopod, from the Upper Ordovician Ogontz Formation of Michigan, by Robert V. Kesling. Pages 77–121, with 2 plates.
5. Addenda to the Check List of Fossil Invertebrates Described from the Traverse Group of Michigan, by Erwin C. Stumm. Pages 149–171.
INTRODUCTION

Part VII of the study of the corals of the Traverse group of Michigan concerns the Devonian cystimorphs which are placed in the family Digonophyllidae. Two genera *Atelophyllum* and *Lythophyllum* are recognized for the first time in North American strata. Two new species of *Atelophyllum*, one of *Lythophyllum* and five of *Cystiphylloides* are described. Two new subspecies of the common species *Cystiphylloides americanum* (Edwards and Haime) are described.

PREVIOUS WORK

Rominger (1876), Pl. 50, upper tier, placed Traverse group specimens of *Cystiphyllodes* in the common species *C. americanum* but the specimen he illustrated from the Four Mile Dam formation is not that species. Rominger also mentioned the presence of *C. aggregatum* (Billings) from the Thunder Bay region but figured no specimens. His specimens are probably representatives of one of the new compound species described in this paper.

ACKNOWLEDGMENTS

I wish to thank Dr. L. B. Kellum, Dr. C. A. Arnold, and Dr. R. V. Kesling for critically reading the manuscript of this paper. All type specimens illustrated herein are in the Museum of Paleontology, The University of Michigan.

REGISTER OF LOCALITIES

*Localities:*

13. Abandoned Northern Lime Company, quarry ("Main Curtiss and two smaller quarries" of E. R. Pohl), and shore bluffs to west, Emmet and Charlevoix Counties near village of Bay Shore, SW ¼ sec. 6, T. 34 N., R. 6 W. and SE ¼ sec. 1, T. 34 N., R. 7 W. Charlevoix and Petoskey formations.
14. Quarry of Petoskey Portland Cement Company, about 1½ miles west of Petoskey, Emmet County, SW ¼ sec. 2, and SE ¼ sec. 3, T. 34 N., R. 6 W. Gravel Point formation, lowermost Charlevoix formation at extreme east end.
14e. Abandoned "Bell" quarry and ledges on shore about 2 miles east of Bay Shore, Emmet County, near northeast corner sec. 8, T. 34 N., R. 6 W. (Rose quarry of Fenton and Fenton, 1930). Basal Charlevoix and upper Gravel Point formations.
35. Bluffs on northeast shore of Partridge Point, 4 miles south of Alpena, Alpena County. Extends from center into SE ¼ sec. 11, T. 30 N., R. 8 E. Thunder Bay limestone, type locality.
38. Abandoned quarry of Kelley's Island Lime and Transport Company (Great Lakes Stone and Lime Company) at Rockport, Alpena County, sec. 6, T. 32 N., R. 9 E., Upper Bell shale, Rockport Limestone, lower Ferron Point shale.
CORALS OF THE TRAVERSE GROUP

40. Quarry of Michigan Alkali Company, eastern edge of Alpena, Alpena County, Sec. 13, T. 31 N., R. 8 E. Upper Genshaw formation, Newton Creek limestone, Alpena limestone, type locality.

41. Exposures on banks and in bed of Thunder Bay River below Four Mile Dam, Alpena County, ¼ mile south of center, sec. 7, T. 31 N., R. 8 E. Other names currently or formerly applied to this dam site are Fletcher Dam, Three Mile Dam, Broadwell's Saw Mill. Four Mile Dam bioherms, type locality, and Norway Point formation.

53. Quarry of Thunder Bay Quarries Company, eastern edge of Alpena, Alpena County, SE ¼ sec. 14, T. 31 N., R. 8 E. Alpena limestone, Dock Street clay, type section; overlying beds with Four Mile Dam fauna.

55. Cut on private railway of Kelley's Island Lime and Transport Company, about 1 mile south of Bell, Presque Isle County, SW ¼ SW ¼ sec. 24, T. 33 N., R. 8 E. Bell shale, probably near the middle of the formation.

68. Small shale pit at the northwest corner of the Alpena Cemetery (Evergreen Cemetery), Alpena County, SW ¼ sec. 21, T. 31 N., R. 8 E. Potter Farm formation (part of type locality).

76. Low cuts and ditches on Alpena—Long Rapids road about ½ mile northwest of Norway Point Dam (Loc. 47), Alpena County. Short distance north of center south line sec. 1, T. 31 N., R. 7 E. Four Mile Dam beds and possibly Norway Point formation.

79. Road cut and ditch on "New Shore Road" (new U.S. 23) 1.75 miles east of Swan Creek and 1 mile west of Trout Creek, about 9 miles southeast of Rogers City, Presque Isle County. Approximately ¼ mile east of center sec. 16, T. 34 N., R. 6 E. Lower Ferron Point shales.

Grabau:

1. Middle Alpena Limestone. Quarries, northern end of Alpena. SE ¼ sec. 14 (Fox Quarry), SW ¼ sec. 13 (Collins Quarry), T. 31 N., R. 8 E., Alpena County.


SYSTEMATIC DESCRIPTIONS

Phylum COELENTERATA

Class ANTHOZOA

Order RUGOSA

Suborder CYSTIPHyllINA

Family Digonophyllidae

Genus Atelophyllum Wedekind

Atelophyllum Wedekind, 1925, p. 37.

Type species.—By original designation, Mesophylloides emsti Wedekind, 1922, p. 57, Pl. 2, Figs. 1a-b, upper Middle Devonian, Emst, near Hagen, Eifel, Germany.

Diagnosis.—Simple, subcylindrical to ceratoid rugose corals with a
bell-shaped calyx. In transverse section major septa continuous or discontinuous in periaxial region. Minor septa may be continuous, or discontinuous septal crests. Peripheral region occupied by dissepiments, axial region typically by distally concave tabulae and tabellae. In longitudinal section dissepimentarium wide, composed of small to large, axially and distally convex dissepiments. Tabularium occupying central one-third of corallum, composed of concave, typically incomplete tabulae and tabellae.

Atelophyllum subcylindricum sp. nov.
(Pl. I, Figs. 9–11; Pl. 4, Figs. 1–2)

Description.—Corallum subcylindrical, a complete specimen, the holotype, measuring 10.5 cm in length with an average diameter of about 3 cm. Calyces bell-shaped; a perfect calyx on a paratype 2.5 cm in diameter with steeply sloping walls and a narrow, flat axial pit 8 mm in diameter.

In transverse section periaxial septa ranging from 70 to 78 in two concentric bands each about 2 mm long. Some septa continuous across outer and inner band, others discontinuous, leaving a small unoccupied area between the bands. All septa relatively thin, tapering axially. In some specimens traces of a third concentric band at the margin of the tabularium is present. These bands represent successive septal cones as is typical of the Digonophyllidae. The peripheral dissepimentarium averages about 5 mm in diameter and is composed of axially convex dissepiments about 2 mm long (parallel to the periphery), and 1 mm wide (at right angles to the periphery). The tabularium shows the intercepted ends of the concave tabulae and a stereozone representing the beginning of a fourth septal cone. In longitudinal section the dissepimentarium occupies the peripheral and periaxial regions and is composed of dissepiments becoming thinner and more elongate as they approach the tabularium. The tabularium is composed of very concave tabulae interspersed with irregularly distributed tabellae and showing vertically discontinuous stereozones representing the beginning of successive septal cones.

Remarks.—The species is quite distinct, differing from the genotype species and from the common Australian species *A. fultum* Hill in having much shorter, more nearly discontinuous septa and much more concave tabulae.

Occurrence.—Middle Devonian, Traverse group, Bell shale, in all known outcrop areas of the formation in Alpena and Presque Isle Counties.

Types.—Holotype No. 35175; Paratypes Nos. 35172 and 35173.
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Atelophyllum magnum sp. nov.
(Pl. II, Figs. 8–9; Pl. V, Figs. 6–7)

*Cystiphyllum americanum* Rominger. 1876 *partim*, Pl. 50, upper tier, left-hand figure only.

**Description.**—Corallum simple, narrowly ceratoid, large; holotype, the only known specimen, about 7 cm long with a maximum diameter at the margin of the calyx of about 5.5 cm. Exterior with faintly defined, closely spaced annulations. Calyx bell-shaped, with a narrow, sloping peripheral platform, steeply sloping walls, and an axial pit less than 1 cm in diameter filled with distally convex tabellae. Septa prominent from margin of calyx to margin of axial pit. In transverse section septa approximately 90 in number, appearing as two concentric bands in the periaxial region with a maximum length of 12 mm. Some septa continuous from inner to outer band, others discontinuous. Most septa thickened by stereoplasm. Septal zone bounded peripherally and axially by zones of dissepiments ranging from 2 to 6 mm in diameter. Axial area occupied by a stereozone representing the initial stage of another septal cone. In longitudinal section periaxial area represented by medium-sized globose dissepiments. Enlarged dissepimentarium on one side apparently representing the internal structure of an attachment talon. Periaxially, six successive septal cones represented by zones of stereoplasm. Axially, tabularium composed of distally convex tabellae.

**Remarks.**—The species is quite distinct from all other known species of *Atelophyllum*. It approaches the genotype species *A. emsti* in having convex tabellae in the tabularium, but differs in the possession of thickened, more discontinuous septa.

**Occurrence.**—Middle Devonian, Traverse group, Four Mile Dam limestone, locality 41.

**Type.**—Holotype No. 8610.

Genus *Lythophyllum* Wedekind

**Type species.**—By original designation *L. marginatum* Wedekind, 1925, p. 32, text figs. 32–33 on p. 25, Middle Devonian, Untere Stenophyllen-schichten; Dachsberg, near Gerolstein, Eifel, Germany.

**Diagnosis.**—Simple cystiphyllloid corals with internal structures resembling those of *Cystiphylloides* except that the tabularium moves progressively peripherally between the neanic and ephabetic stages.
Lythophyllum alpenense sp. nov.
(Pl. I, Figs. 6–7; Pl. IV, Fig. 3)

Description.—Corallum simple, ceratoid, holotype measuring 3.5 cm long and 2.5 cm in maximum diameter. Exterior weathered, calyx not preserved. In transverse section disseptimentarium filled with extremely small globose dissepiments crossed by numerous short, blunt septal crests. Tabularium with margin about 3 mm from the periphery, composed of small tabellae. In longitudinal section dissepiments are elongate and directed axially. The tabulæ are relatively small and typically distally convex.

The marginal migration of the tabularium is distinctly visible.

Remarks.—The species differs from the genotype species L. marginatum in having much smaller dissepiments and smaller tabellæ. The septal crests in L. marginatum are spinose while those in L. alpenense are thick and blunt.

Occurrence.—Middle Devonian Traverse group, Genshaw formation, locality 40.

Type.—Holotype No. 35213.

Genus Cystiphylloides Chapman

Cystiphylloides Chapman, 1893, p. 46.

Type species.—By monotypy, Cystiphyllum aggregatum Billings, 1859, p. 137, text fig. 28, Middle Devonian, Onondaga limestone, near Simcoe, Ontario, Canada.

Diagnosis.—Simple phaceloid or subceroid coralla with subcylindrical to ceratoid corallites. Exterior typical with closely spaced expansions caused by calycinal rejuvenescence. Calyxes bell-shaped or funnel-shaped without well-defined peripheral platforms. Interior with a peripheral disseptimentarium filled with globose dissepiments and an axial tabularium filled with globose tabellæ. Septal cones degenerate, leaving faintly defined septal crests appearing as short spines in the disseptimentarium. In some species septal crests are lacking.

Cystiphylloides alpenense sp. nov.
(Pl. II, Figs. 3–4; Pl. III, Figs. 5–6; Pl. IV, Fig. 11)

Corallum phaceloid or dendroid, loosely aggregate, apparently attached only at bases of corallites. Corallites cylindrical to subcylindrical averaging about 3 cm wide, with rugose exteriors; strongly developed growth annulations spaced at irregular intervals. Calyxes apparently relatively shallow,
bell-shaped. In transverse section dissepimentarium with small dissepi-
ments and strongly developed concentric bands of septal crests. As many
as four concentric bands, each from 1 to 2 mm wide, visible in one section.
Tabularium composed of small tabellae. In longitudinal section dissepi-
ments small, globose, crossed by invaginated septal cones. Tabellae very
small, extremely globose, convex distally.

Remarks.—This species most resembles the type species C. aggregatum
but does not have the attachment talons between corallites characteristic
of that species. In addition, the dissepiments of C. alpenense are much
smaller and the tabellae are also much smaller and are distally convex while
those of C. aggregatum (Stumm, 1961, Pl. 4, Fig. 3; Pl. 5, Fig. 5) are
typically flat or concave.

Occurrence.—Middle Devonian, Traverse group, upper part of Alpena
limestone, locality 40 and 53, Grabau locality 1; Four Mile Dam limestone,
localities 40, 53, and 76.

Type.—Holotype No. 44079; paratypes Nos. 44296 and 44297.

Cystiphylloides? amalgamaturn sp. nov.
(Pl. III, Figs. 7-8; Pl. V, Fig. 5)

Corallum subceroid, composed of cylindrical to subcylindrical coral-
lites ranging from 1 to 3 cm in diameter. Exteriors of corallites with strong-
ly developed annulations. Calyces shallow, saucer-shaped. In transverse
section corallites attached with or without connecting walls, dissepiments
very large, tabellae relatively small. Boundary between dissepimentarium
and tabularium indistinguishable. Septal crests apparently lacking. In
longitudinal section dissepimentarium narrow with interspersed zones of
small and large dissepiments. Tabularium wide composed of highly distally
convex tabellae.

Remarks.—It is quite possible that this is a spongophyllid coral allied
to Tabellaephyllum. It is difficult to assign the species and it is placed
 provisionally with Cystiphylloides.

Occurrence.—Middle Devonian, Traverse group, Potter Farm forma-
tion, locality 68.

Type.—Holotype No. 35286.

Cystiphylloides americanum (Edwards and Haime)
(Pl. II, Figs. 1, 2, 7)

Remarks.—Typical specimens of this common species are present in
the middle part of the Traverse group.
Occurrence.—Middle Devonian, Traverse group, Alpena limestone, localities 40 and 53; Four Mile Dam limestone, localities 41 and 53; Gravel Point formation, localities 14 and 14e.

Types.—Hypotypes Nos. 35230 and 35301.

Cystiphylloides americanum bellense subsp. nov.
(Pl. I, Figs. 1–3, 8; Pl. IV, Figs. 5–10)

Description.—Corallum simple, typically subcylindrical or short ceratoid, ranging from 4 to 8 cm long and from 2 to 3 cm in diameter at the calyx margins. Exterior with closely set, typically well-defined growth annulations. Calyces bell-shaped with inwardly sloping peripheral platforms, steep walls, and narrow axial pits. Septal crests prominent in calyces of some specimens, obscure in others. In transverse section dissepimentarium wide, composed of globose dissepiments and small, spinose, irregularly distributed septal crests. Tabularium occupying axial one-third of corallum, composed of distally convex tabellae. In longitudinal section peripheral dissepiments and axial tabellae clearly defined. Dissepiments somewhat globose and convex axially and distally. Axial tabellae small and distally convex.

Remarks.—The subspecies is similar to typical C. americanum from the Hamilton group of New York and southwestern Ontario, but differs in its short, stubby growth form.

Occurrence.—Middle Devonian, Traverse group, Bell shale, localities 30, 38, 55; Rockport Quarry limestone, locality 38; Ferron Point formation, locality 79.

Types.—Holotype No. 35169; Paratypes Nos. 35168, 35171, 35177, and 35182.

Cystiphylloides americanum elongatum subsp. nov.
(Pl. III, Figs. 3–4; Pl. V, Fig. 1)

Description.—Corallum very long, expanding rapidly in neanic stage to maximum diameter and remaining cylindrical to a maximum length of almost 34 cm with an average diameter of 4.5 cm among specimens seen. Exteriors lightly to moderately annulated. Calyces shallowly bell-shaped. Internal structures similar to those of typical C. americanum except that septal crests are much less developed, and the boundary between the tabularium and dissepimentarium is not as clearly defined.

Occurrence.—Middle Devonian, Traverse group, Thunder Bay limestone, locality 35.
**Cystiphylloides petoskeyense** sp. nov.  
(Pl. II, Fig. 10; Pl. III, Fig. 9; Pl. VI, Figs. 1-3)

*Cystiphyllum aggregatum* Rominger, 1876, p. 139, non Billings, 1859.

**Description.**—Corallum closely phaceloid or subcerioid with corallites typically in lateral contact, attached by epithelial expansions. Corallites subcylindrical, averaging a little less than 3 cm in diameter. Exteriors with well-developed annulations. Calyxes shallowly bell-shaped to saucer-shaped. Faint septal crests visible in some calyxes. In transverse section dissepiments and tabellae relatively large, of same size. Boundary between dissepimentarium and tabularium indeterminate. No septal crests visible in longitudinal section, also no distinct boundary between dissepimentarium and tabularium visible. Dissepiments and tabellae of same size and typically distally convex, becoming more nearly axially convex near the periphery.

**Remarks.**—This species is peculiar in the similarity between the dissepiments and tabellae. In this respect it is quite distinct from other phaceloid species of the genus. It has a much more closely aggregate growth form than *C. alpenense*.

**Occurrence.**—Middle Devonian, Traverse group, Petoskey limestone, localities 13 and 21; Potter Farm formation, locality 68.

**Types.**—Holotype No. 44082; paratypes Nos. 44081 and 44313.

**Cystiphylloides phacelliforme** sp. nov.  
(Pl. I, Figs. 4–5; Pl. V, Fig. 2)

**Description.**—Corallum phaceloid, composed of subcylindrical corallites ranging from 2.5 to 3 cm in diameter. Exteriors extremely rugose with deep, offset annulations. Calyxes shallow, saucer-shaped, 1 cm deep in holotype.

In transverse section dissepimentarium filled with large dissepiments with no trace of septal crests. Tabularium filled with medium-sized tabellae. In longitudinal section dissepiments large, globose, distally and slightly axially convex. Tabellae convex distally. Boundary between dissepimentarium and tabularium indistinct.

**Remarks.**—The species is easily distinguished from *C. aggregatum* by the larger sized, strongly rugose corallites and by the lack of septal crests.

**Occurrence.**—Middle Devonian, Traverse group, Ferron Point formation, locality 79, Genshaw formation, Grabau locality 28.

**Type.**—Holotype No. 35289.
Cystiphylloides potterense sp. nov.
(Pl. III, Figs. 1–2; Pl. IV, Fig. 4; Pl. V, Fig. 3; Pl. VI, Figs. 4–5)

*Description.*—Corallum short, stubby, ceratoid to trochoid. Exterior moderately to heavily annulated. Calyx shallow to moderately deep, saucer-shaped or bell-shaped. Thick septal ridges prominent in calyx. In transverse section dissepimentarium distinguished from tabularium by smaller size of dissepiments. In longitudinal section dissepiments relatively large, coarse, with thick walls. Tabellae irregularly arranged, some distally convex, others horizontal. Septal cones moderately developed.

*Remarks.*—This species is distinguished from typical *C. americanum* in having much coarser dissepiments and more prominently developed septal ridges in the calyx.

*Occurrence.*—Potter Farm formation, locality 68; Petoskey limestone, locality 21.

*Types.*—Holotype No. 35266; paratype Nos. 35178 and 44315; unfigured paratype No. 35313.

Cystiphylloides tabulatum sp. nov.
(Pl. II, Figs. 5–6; Pl. V, Fig. 4)

*Description.*—Corallum simple, short ceratoid, heavily annulated, and with a shallow, saucer-shaped calyx. In transverse section dissepiments and tabellae of approximately equal size. Septal crests short, spinose, numerous, present throughout all except axial areas. In longitudinal section dissepiments and tabulae typically large, elongate, distally and axially convex, boundary between dissepimentarium and tabularium indeterminate. Strongly developed septal cones present in periaxial and peripheral regions. In some areas of the periphery clusters of small dissepiments visible.

*Remarks.*—This species is distinguished by the large, elongate dissepiments and tabellae and by the strongly developed septal cones and septal crests.

*Occurrence.*—Middle Devonian, Traverse group, Gravel Point formation, localities 14 and 14e.

*Types.*—Holotype No. 35300; paratype No. 44314.
LITERATURE CITED


Manuscript Received October 6, 1961

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<tr>
<td>FIG. 5. Side view of same specimen.</td>
<td></td>
</tr>
</tbody>
</table>