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PAPER 66-5

ILLUSTRATIONS OF CANADIAN FOSSILS

SILURIAN FAUNAS OF ONTARIO

(Report and 19 Plates)

Thomas E. Bolton

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1966

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ABSTRACT

This report is one of several in the Paper series of the Geological Survey of Canada under the general heading of 'Illustrations of Canadian Fossils'. The plates give illustrations of the most common and diagnostic fossils, grouped under three main regions: Southwestern Ontario, Lake Timiskaming, and Hudson Bay-James Bay Lowlands. Each region has a brief statement of stratigraphy and selected bibliography but the main part of the faunal documentation is provided by the legends for the plates.

Illustrations of Canadian Fossils

SILURIAN FAUNAS OF ONTARIO

INTRODUCTION

This report is one of a series, presenting illustrations of Canadian fossils, designed primarily to assist the general geologist in his field investigations. The faunas are treated under three main regional headings: Southwestern Ontario, Lake Timiskaming, and Hudson Bay-James Bay Lowlands.

The fossils are grouped by formations in ascending stratigraphic order and many of the most common and diagnostic invertebrate remains are illustrated. In the accompanying plate legends all information known of the stratigraphic position and geographic location of each specimen figured is detailed. Future changes in specific identification, generic assignment, biostratigraphic correlation, or local stratigraphic terminology will not seriously affect such documentation. In addition, there are comments on the stratigraphic and geographic ranges of the species where appropriate.

SOUTHWESTERN ONTARIO

Plates I - XVII

For detailed descriptions of the various rock units recognized in the Silurian of Southwestern Ontario and their complete faunas, the reader is referred to Williams (1919, 1937), Caley (1940, 1941), and Bolton (1957, 1964). The stratigraphic sequences are outlined below, and brief notes appended on certain correlations that have been determined or confirmed through recent re-examination of surface exposures and fossil collections.

The Silurian of the Niagara Peninsula is closely related to the classic Silurian section for eastern North America as recognized in New York State (Fisher, 1960). Within the Peninsula, the rocks are divided into the following units, the pre-Guelph strata comprising the Niagara Escarpment.

Cayugan Series
- Bertie Formation–argillaceous dolomite with shale interbeds
- Salina Formation–grey shale with interbeds of argillaceous dolomite

Niagaran Series
- Albemarle Group
  - Guelph Formation–granular dolomite
  - Lockport Formation–
    - Eramosa Member–bituminous dolomite with shale interbeds
    - Goat Island Member–dolomite, with Ancaster chert beds at base
    - Gasport Member–crinoidal dolomitic limestone

Clinton Group
DeCew Formation–dolomitic limestone to dolomite
Rochester Formation–calcareous shale and siltstone
Irondequoit Formation–crinoidal limestone, pebble zone at base
Reynales Formation–dolomitic limestone to dolomite, shale partings
Neahga Formation–shale, limestone interbeds, restricted to Niagara Falls-DeCew Falls region
Thorold Formation–sandstone and shale

Alexandrian Series
Cataract Group
Grimsby Formation–red shale and sandstone
Power Glen Formation–shale (Cabot Head Formation–shale) (Manitoulin Formation–dolomite)
Whirlpool Formation–sandstone, shale partings

Rapid lithological changes are evident in the rock units of the upper Clinton and Albemarle Groups at the western end of the Peninsula in the Clappison Corners-Waterdown region near Hamilton. Without the intervening Rochester shale-DeCew dolomite succession the underlying Irondequoit cannot be distinguished from the overlying Gasport. To the north the equivalent of the entire Irondequoit-Eramosa interval is included within the Amabel Formation. Rocks of the lower Clinton Group extend at least 25 miles farther north; both the Reynales and Thorold Formations are present in the Limehouse section west of Georgetown; 3.5 miles north of Georgetown at Hickory Falls, Reynales strata resemble the Fossil Hill dolomite. Corals (Halysites, Heliolites, Favosites, Palaeocyclus) and brachiopods (Pentameroides) characteristic of the Fossil Hill dolomite also are found in Reynales strata at Armstrong Brothers quarry near Clappison Corners (below the Stricklandia canadensis beds), Old Nelson quarry east of Waterdown (Hewitt, 1960, p. 113), Mount Nemo quarry north of Nelson Corners (Hewitt, 1960, p. 114), Halton Crushed Stone quarry west of Milton (Hewitt, 1964, p. 48), and north of Georgetown (Bolton, 1957, p. 95). In many of these sections an undulating, sharp contact separates the Reynales and overlying Amabel. Locally, a thin conglomerate may be present in the basal few inches of the Amabel Formation. This conglomerate is similar to that characteristic of the basal Irondequoit in the Niagara Peninsula.

In the Orangeville-Owen Sound-Bruce Peninsula-Manitoulin Island areas, Silurian rocks are divided as follows (Bolton and Liberty, 1955; Bolton, 1957, 1964; Liberty, 1957):

Cayugan Series (Walkerton area only)
Bass Island Formation–dolomite
Salina Formation–dolomite and shale

Niagaran Series
Albemarle Group
Guelph Formation–granular dolomite, biohermal
Amabel Formation
Eramosa Member–bituminous dolomite, 'off-reef' facies
Wiarton Member–crinoidal dolomite, biohermal
Colpoy Bay Member–dolomite, locally biohermal
Lions Head Member–blocky dolomite

Fossil Hill Formation–crystalline dolomite
St. Edmund Formation–fine-grained to sublithographic dolomite
Wingfield Formation–shale and dolomite
Dyer Bay Formation–dolomite with shale partings

Alexandrian Series
Cataract Group
Cabot Head Formation–grey and red shale
Manitoulin Formation–dolomite, biohermal
Whirlpool Formation–sandstone and shale

The unfossiliferous Whirlpool extends only as far north as the Collingwood area. The Manitoulin and Cabot Head Formations are recognized northward to Manitoulin Island and westward into northern Michigan. On Manitoulin Island the Manitoulin Formation is, in part, biohermal. Faunal assemblages typical of this facies also are present on the Bruce Peninsula as far south as Rush Cove, south of Lions Head. The Cabot Head Formation is composed of 51 feet of red and green shale in its type section at Rocky Bay, 3 miles west of Cabot Head, Bruce Peninsula. Manitoulin dolomite is exposed there at water level.

On Manitoulin Island, typical brown, fine-grained St. Edmund dolomite with Favosites colonies has been recognized in the basal few feet of the St. Edmund sequence outcropping along the east shore of Meldrum Bay. This confirms the regional application of the St. Edmund previously suggested by Bolton (1957; see Williams, 1955, p. 123). The sublithographic, conchoidal fracturing dolomites that form the upper part of the St. Edmund Formation on Manitoulin Island, however, are not present in its type section at Rocky Bay. Westward, in Northern Michigan, the St. Edmund is represented by the Byron and Hendricks Formations (Ehlers and Kesling, 1957, 1962).

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LAKE TIMISKAMING

Plates XVII, XVIII

The Silurian rocks of Lake Timiskaming, Northern Ontario, in ascending order are divisible into the Wabi and Thornloe Formations. Hume (1925) assigned at least 120 feet of shales and limestones to the Wabi Formation. A drill-hole has recently been completed that provides valuable stratigraphic information. In the Lake Timiskaming No. 1 Drillhole (LT-1) drilled 1/2 mile northwest of Dawson (Wabi) Point, Thomson (1965) has recognized 278.7 feet of Wabi Formation. The 'Lockport' (Thornloe) as recognized by Hume consisted of at least 186 feet of limestone, dolomite, and thin sandstone disconformably overlying the Wabi. Thomson has estimated a thickness of at least 360 feet for the Thornloe Formation.

The Wabi faunas (ostracods Leperditia fabulina, Zygobolba williamsi, brachiopods Stegerhynchus winiskensis, Plectatrypa lowi) are considered equivalent to similar zones in the Dyer Bay-Wingfield-St. Edmund Formations of Southwestern Ontario. A close correlation also is evident between the coralline faunas of the Thornloe (Ollerenshaw and MacQueen, 1960) and Fossil Hill Formations; similarly, the nautiloids Discosorus, Huronia, Huroniella, and Stokesoceras are common to both formations.

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HUDSON BAY-JAMES BAY LOWLANDS

Plates XVIII, XIX

Along the Severn, Fawn, Winisk, Ekwan, and Attawapiskat Rivers, rocks of Silurian age have been assigned to the following formations (Savage and Van Tuyl, 1919):

Niagaran Series
- Attawapiskat Formation–limestone, coral bioherms, 85 feet
- Ekwan River Formation–limestone, 100 feet
- Severn River Formation–limestone and dolomite, 75 feet

Ostracods (Leperditia fabulina, Dihogmochilina latimarginata) and brachiopods (Stegerhynchus winiskensis, Glassia variabilis) relate the Severn River Formation to the Wabi of Lake Timiskaming and the St. Edmund and its equivalents of Manitoulin Island-northern Michigan. On the basis of coral and nautiloid assemblages, the Ekwan River and Attawapiskat Formations are correlated with the Thornloe of Lake Timiskaming and Fossil Hill of Southwestern Ontario.

Along the rivers of the western James Bay Lowlands, Martison (1953) assigned 26 feet of dolomite, limestone, and sandstone to the Severn River Formation, 61 feet of grey limestone with chert inclusions to the Pagwa River Formation, and 296 feet of dolomite, red and grey siltstone and shale, and limestone to the Kenogami River Formation. Corals in part characteristic of the Fossil Hill and Thornloe Formations (Favosites, Syringopora) and in part of the Lockport-Guelph (Fletcheria elegans, F. guelphensis) of Southwestern Ontario are scattered throughout the Pagwa River Formation. The Kenogami River Formation is correlated with the Salina and Bass Island Formations.

Subsurface investigations have indicated that the Severn River Formation is underlain by 110 feet of argillaceous limestone believed equivalent to the Virgiana-bearing Port Nelson Formation of northern Manitoba (Hogg et al., 1953, p. 136). The Precambrian basement is overlain by 159 feet of dolomitic limestone, sandstone and gypsum; a Silurian age is tentatively assigned to these rocks.

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PLATE I

Manitoulin Formation

FIG. 1. Brockocystis tecumseth (Billings). Typical echinoderm stem segment, end view, X3. Main highway 3/4 mile east of eastern entrance to Gore Bay village, Manitoulin Island. Hypotype, GSC No. 20468.

FIGS. 2-4. 'Atrypa parksi' Williams. Pedicle, brachial and side views, X1. Top of bluff northeast of West Bay, Manitoulin Island. Hypotype, GSC No. 17952 (also in Cabot Head Formation-Pl. II, figs. 5, 6).

FIGS. 5-6. Mendacella sp. Pedicle and brachial views, X1. Manitoulin Island, Fig. specs. GSC Nos. 17954, 17955.

FIGS. 7-10. 'Platystrophia biforata' (Schlotheim). Brachial, pedicle, posterior and anterior views, X1. Eugenia Falls. Hypotype, GSC No. 17957 (also in Cabot Head Formation).

FIG. 11. Leptaena sp. Pedicle view, X1. North end of flats on main highway west of West Bay village, Manitoulin Island. Fig. spec., GSC No. 20469.

FIG. 12. Platystrophia sp. cf. P. reversata (Foerste). Pedicle view, X1. Gore Bay-Kagawong Lake road, 3/4 mile south of main highway, Manitoulin Island. Hypotype, GSC No. 20470.

FIG. 13. Crinoid of the Homocrinus type. Right posterior view of theca, X2. Top of escarpment on road directly west of Collingwood. Fig. spec., GSC No. 20471.

FIG. 14. Dolerorthis flabellites var. euorthis Foerste. Brachial view, X1. North end of road exposure 1/2 mile southwest of Y-junction near east shore of South Bay, Indian Reserve No. 26, Manitoulin Island. Hypotype, GSC No. 20472.

FIGS. 15-16. Fardenia plicata Bolton. Brachial views, X1. Same locality as Fig. 14 and corner of west-secondary and Kagawong Lake roads, 1 1/4 miles south of main highway, Manitoulin Island. Hypotypes, GSC Nos. 20473, 20474.

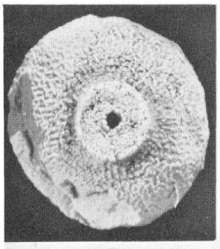
FIGS. 17-19. Stegerhynchus neglectum (Hall). Anterior, side and brachial views, X3. Creek bed 1/2 mile east of main highway on East-West secondary road east of Gore Bay airfield, Manitoulin Island. Hypotypes, GSC Nos. 20475-20477.

FIGS. 20-21. Eoconularia n. sp. Views of periderm, face showing strong transverse ribs internally, mid-line, and fine cross wrinkles on shell fragments and flattened specimen with fine cross wrinkles on surface of shell fragment interrupted at small corner groove, X2. Main highway 1 3/4 miles west of Manitowaning village, Manitoulin Island. Hypotypes, GSC Nos. 20478, 20479.

FIGS. 22, 27. Streptelasma sp. Calyx and side views, X2 and X1. Same locality as Fig. 12. Fig. spec., GSC No. 20480.

FIGS. 23-24. 'Coelospira' planoconvexa (Hall). Pedicle views, X1. Most easterly located quarry outskirt of Owen Sound and stream bed east of quarries at Dundas. Hypotypes, GSC Nos. 17959, 17960.

FIGS. 25-26. Palaeofavosites asper (D'Orbigny). Typical corallum and surface view, X1. North end of exposure on first road west of Kagawong village extending to Kagawong Lake, 1 mile south of main highway, Manitoulin Island and south of Kemble. Hypotypes, GSC Nos. 20481, 17961.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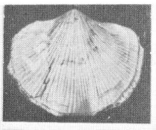
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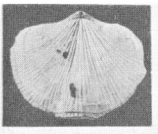
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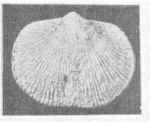
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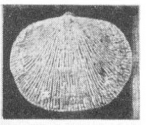
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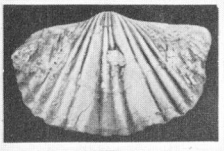
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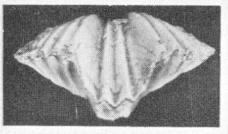
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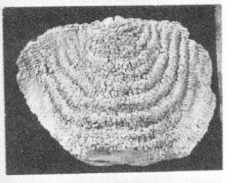
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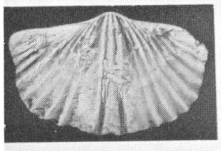
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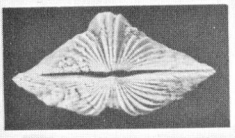
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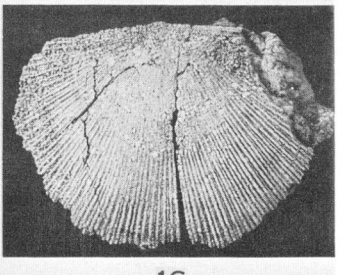
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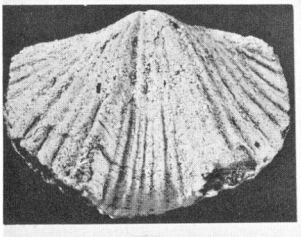
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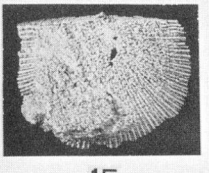
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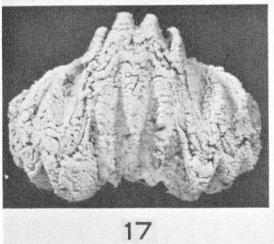
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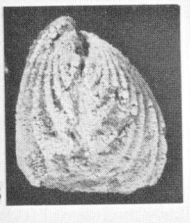
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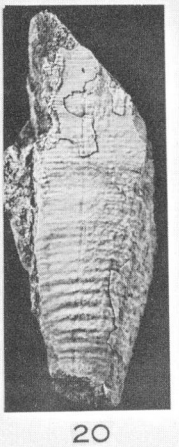
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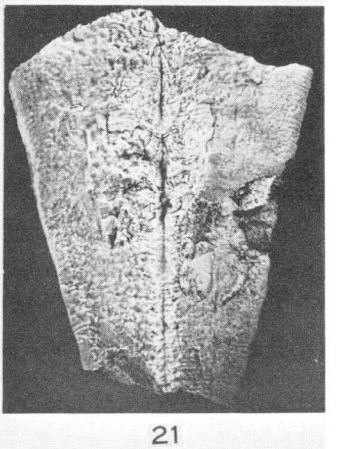
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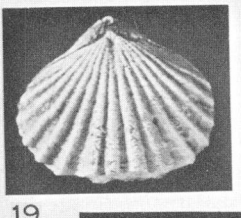
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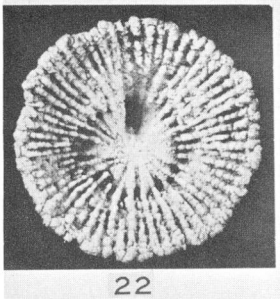
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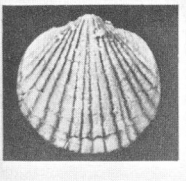
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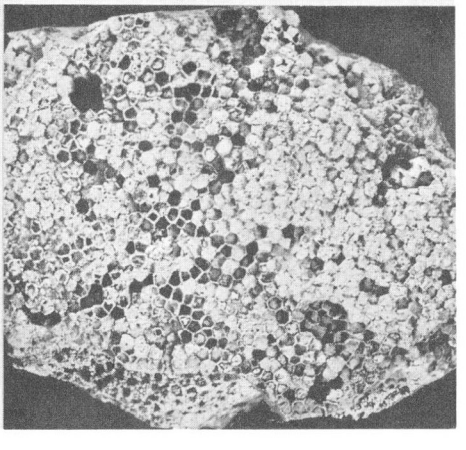
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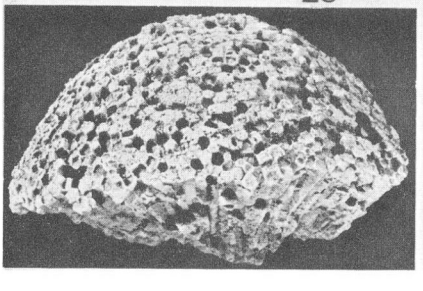
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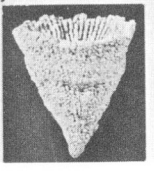
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PLATE II

Manitoulin Formation

FIGS. 1-8. 'Orthorhynchula' bidwellensis Bolton.

FIGS. 1-2. Brachial and pedicle views, small valves with shallow sinus, X2. Corner East-West secondary and Rockville roads, Bidwell tp., Manitoulin Island. Hypotypes, GSC Nos. 20482, 20483.

FIGS. 3-6. Pedicle, anterior, brachial and side views typical representatives, X1. East-West secondary road, 3/4 mile east of Rockville road, Bidwell tp., Manitoulin Island. Hypotypes, GSC Nos. 20484-20487.

FIGS. 7-8. Brachial and pedicle views large representatives with fine growth lines and wide sinus, X1. Same locality as Figs. 1, 2. Hypotypes, GSC Nos. 20488, 20489.

FIGS. 16, 19, 21. Palaeophyllum umbellicrescens Chadwick. Vertical section and corallum, X2, tangential section, X4. West of Manitowaning village (?), hypotype, GSC No. 20493; 2 miles west of "The Rock", hypotype, GSC No. 20495; "The Rock" near Manitowaning village, Manitoulin Island, syntype, GSC No. 13592.

FIGS. 17, 18, 20. Palaeophyllum williamsi Chadwick.

FIGS. 17-18. Tangential sections different levels in same corallum, X4 and X2. Ridge on Bidwell road, con. I-II, Assiginack tp., 3/4 mile east of Manitou Lake, Manitoulin Island. Hypotype, GSC No. 20494.

FIG. 20. Surface view of corallum, X2. East of Manitowaning Bay, Manitoulin Island. Holotype, GSC No. 4508.

Cabot Head Formation

FIG. 15. Resserella eugeniensis (Williams). Brachial interior view, X1. Eugenia Falls. Hypotype, GSC No. 17956 (also abundant in Manitoulin Formation).

Grimsby Formation

FIG. 9 Pelecypods-right valve winged Pterinea undata (Hall) with several elongated Cleidophorous minor Bolton and triangular Ctenodonta glenna Bolton, X1. 8 feet below upper contact, Wentworth Street-Sherman Avenue section, Hamilton. Hypotype, GSC No. 20490.

FIG. 10. Cleidophorous major Bolton. Left valve, X1. Same locality as Fig. 9, 9 feet below upper contact. Holotype, GSC No. 11597.

FIG. 11. Modiolopsis kelsonensis Williams. Right valve, X2. Same locality as Fig. 9, 3 feet below upper contact. Hypotype, GSC No. 20491.

FIG. 12. Cleidophorus minor Bolton. Left valve, X1. Same locality as Fig. 9, 2 1/2 feet below upper contact. Holotype, GSC No. 11595.

FIG. 13. Ctenodonta cabotensis Bolton. Right valve showing hinge dentition, X2. 12 feet below upper contact, Albion Falls. Hypotype, GSC No. 20492.

FIG. 14. Cleidophorus wentworthensis Bolton. Left valve, X1. Same locality as Fig. 9, 8-9 feet below upper contact. Holotype, GSC No. 11596.

FIG. 22. Cleidophorus albionensis Bolton. Left valve, X1. 12 feet below upper contact, Albion Falls. Holotype, GSC No. 11594.

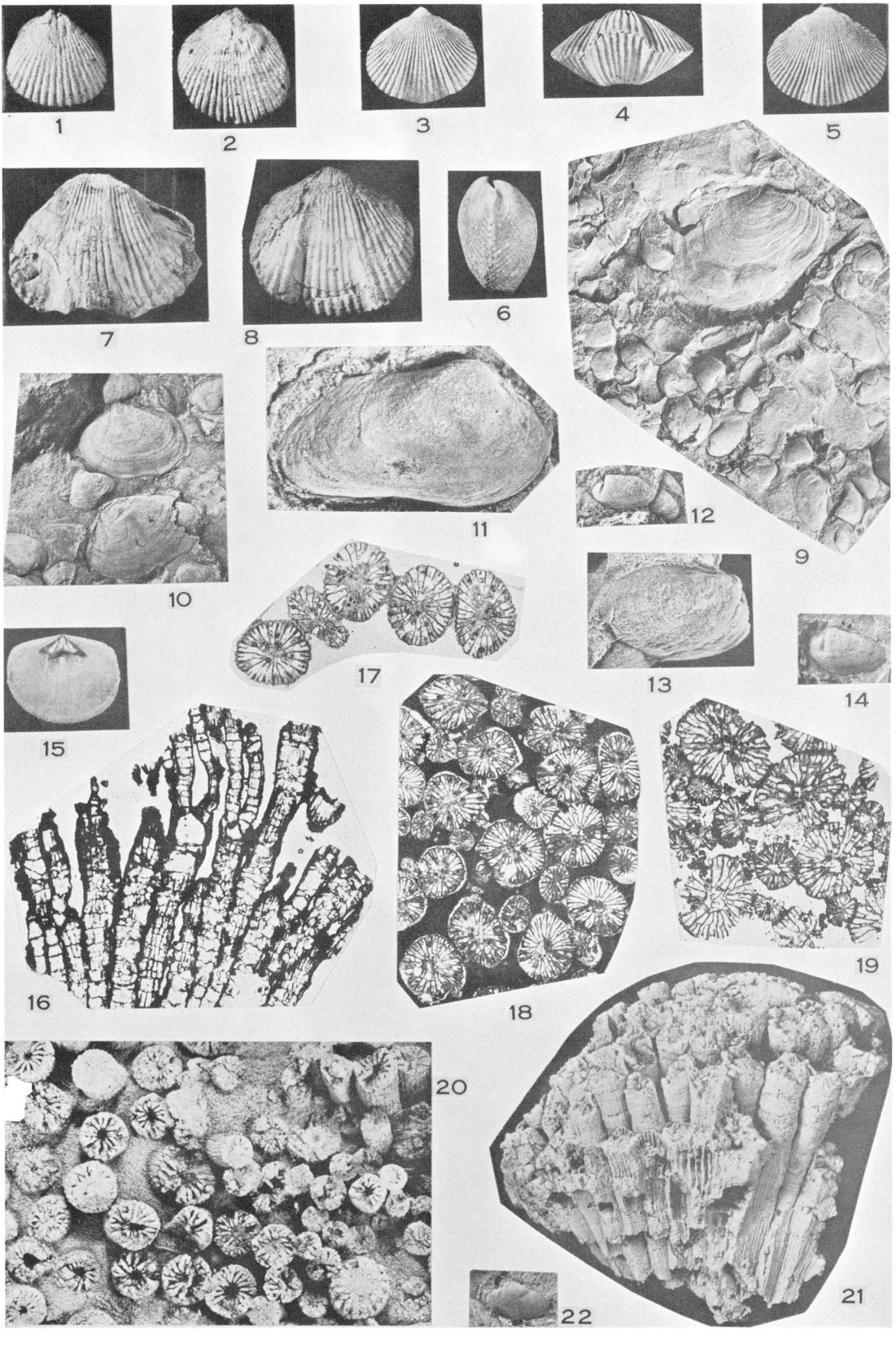
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PLATE III

Cabot Head Formation

FIG. 1. Phaenopora constellata Hall and Helopora fragilis Hall, X1. Red beds, Grimsby equivalent, railroad cut at Limehouse. Hypotype, GSC No. 17964.

FIGS. 5,6,15. 'Atrypa parksi' Williams. Brachial, pedicle and side views, X1. Credit Forks. Hypotype, GSC No. 17953 (see Pl. I, figs. 2-4).

Grimsby Formation

FIG. 4. Trilobite incomplete cephalon and thorax, Acaste (?) sp., X4. DeCew Falls. Fig. spec., GSC No. 20496.

Thorold Formation

FIG. 11. Arthrophycus alleghaniensis (Harlan). X$\frac{1}{2}$. Grimsby. Hypotype, GSC No. 17963 (also in Grimsby Formation).

Reynales Formation

FIG. 2. Bythocypris sp. Right (?) lateral view, X16. Old quarry, Nelson, east of Waterdown. Fig. spec., GSC No. 17108.

FIG. 3. Leiocyamus? spec. Left lateral view, X16. Same locality as Fig. 2. Fig. spec., GSC No. 17102.

FIG. 7. Arcuaria sp. Left lateral view, X16. Grimsby Beach escarpment road. Fig. spec., GSC No. 17107.

FIG. 8. Aparchites sp. Left lateral view, X16. Same locality as Fig. 2. Fig. spec., GSC No. 17109.

FIGS. 9-10. "Ctenobolbina" sp. Left and right lateral views, X16. Same locality as Fig. 2. Fig. specs., GSC Nos. 17105, a.

FIG. 12. Stricklandia canadensis Billings. Brachial view, X1. Near Thorold. Hypotype, GSC No. 17972.

FIGS. 16-17. Pentameroides sp. Pedicle and brachial views, X1. Thorold. Fig. spec., GSC No. 17973 (see Pl. V, fig. 2).

Irondequoit Formation

FIGS. 13-14. Eoplectodonta transversalis (Sowerby). Pedicle exterior and brachial septal views, X2. DeCew Falls. Hypotypes, GSC Nos. 20497, 20498 (also in Rochester and Lockport-Amabel Formations).

Dyer Bay Formation

FIG. 18. Leperditia sp. associated with Bolbineossia punctata (Ulrich and Bassler) and Zygobolba williamsi Ulrich and Bassler, X2. Creek section at Colpoy village. Fig. spec. GSC No. 20499.

FIG. 19. Virgiana decussata (Whiteaves). Typical steinkern preservation, X1. Road along East Range-Con. A boundary, Gordon tp., 0.6 mile east of Gore Bay-Poplar road, Manitoulin Island. Hypotype, GSC No. 20500.

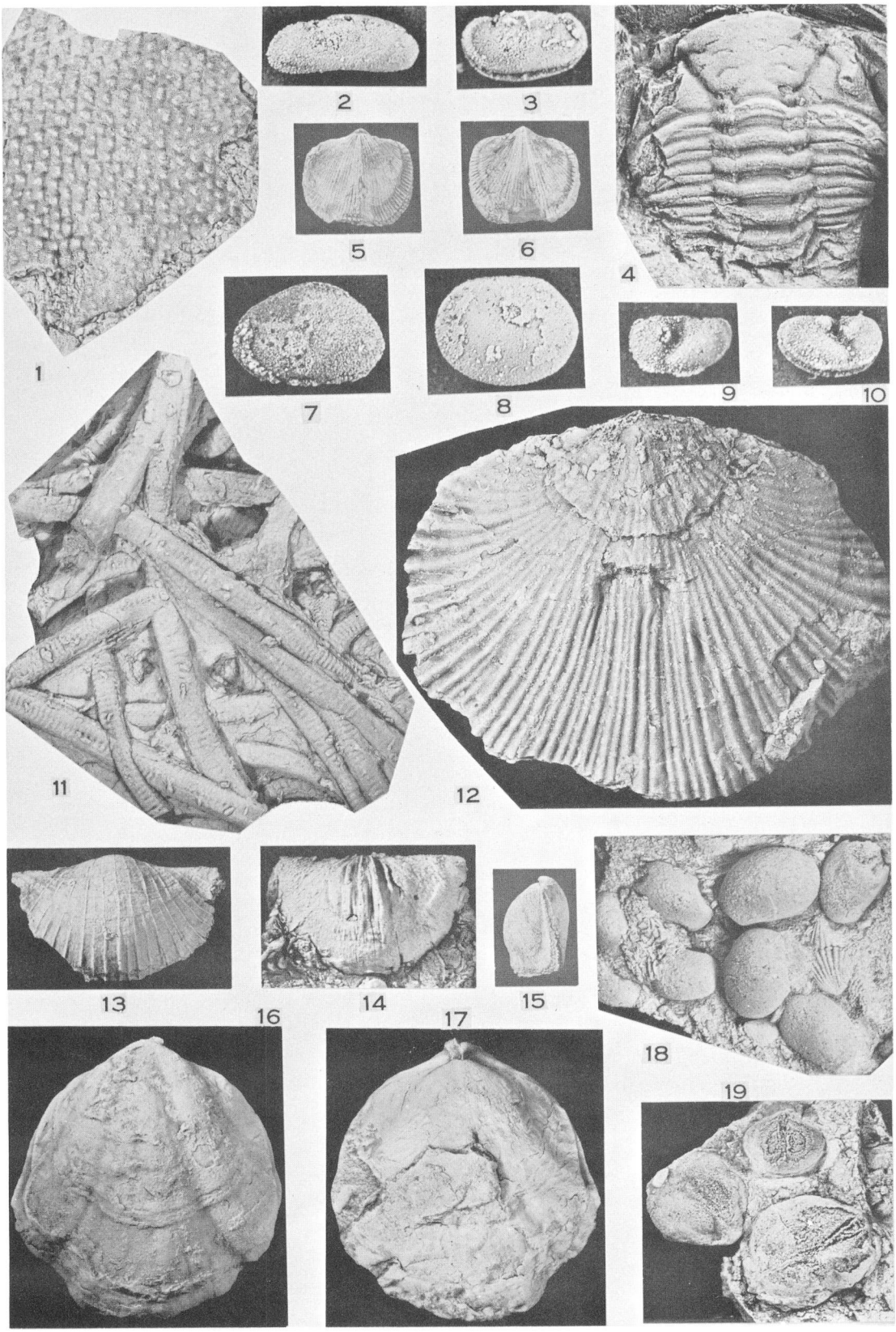
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PLATE IV

Dyer Bay Formation

FIGS. 2,7, 8, 10. Zygobolba williamsi Ulrich and Bassler.

FIGS. 2, 10. Male right and female left valves, X16. Jacksons Cove, Bruce Peninsula. Hypotypes, GSC Nos. 20502, a.

FIGS. 7-8. Female right and left valves, X16. Rocky Bay, 3 miles west of Cabot Head, Bruce Peninsula. Hypotypes, GSC Nos. 20507, 20508.

Wingfield Formation

FIGS. 3-4. Zygobolba williamsi Ulrich and Bassler. Female right and male left valves, X16. Basal beds, same locality as Figs. 7, 8. Hypotypes, GSC Nos. 20503, 20504.

FIG. 9. Herrmannina sp. Lateral view of a right valve, X3. East shore MacRae Cove, south end of Meldrum Bay, Manitoulin Island. Fig. spec. GSC No. 20509.

FIG. 11. Aparchites (?) sp. Lateral view of a right valve, X3. Same locality as Fig. 9. Fig. spec., GSC No. 20510.

St. Edmund Formation

FIG. 1. Stegerhynchus (?) winiskensis (Whiteaves). Brachial view, X2. Gore Bay-Poplar road, 4.4 miles south of main highway, Manitoulin Island. Hypotype, GSC No. 20501 (see Pl. XVIII, figs. 6, 13).

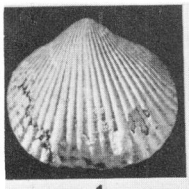
FIG. 15. Carcinosoma libertyi Copeland and Bolton. Reverse impression, X1. Foot of escarpment west of Wolsely Lake causeway, west of Gore Bay, Manitoulin Island. Holotype, GSC No. 13984a.

Fossil Hill Formation

FIG. 5. Syringopora verticillata Goldfuss. Side view, X2. Ridge section at corner of lot 15, cons. VIII-IX boundary, Carnarvon tp., south of Lake Mindemoya, Manitoulin Island. Hypotype, GSC No. 20505.

FIG. 6. Alveolites undosus Miller. Surface view, X2. Ridge at southern edge of Sandfield, Manitoulin Island. Hypotype, GSC No. 20506 (see Pl. VIII, fig. 6).

FIGS. 12-14. Acanthohalysites encrustans (Buehler). Transverse and longitudinal sections, X4, distal surface view, X1. Ridges along con. VIII-IX road, Carnarvon tp., 1/2 mile east of main highway and shore section northwest bay of Martin Lake, north of Providence Bay, Manitoulin Island. Hypotypes, GSC Nos. 20511, 20512 (see Pl. V, fig. 5).



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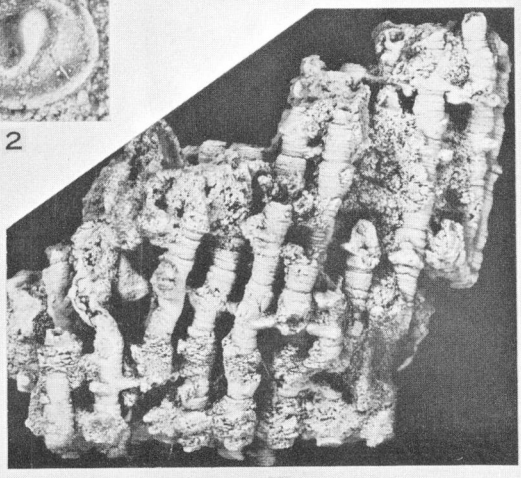

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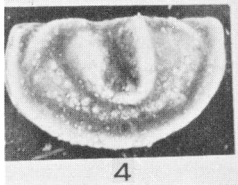

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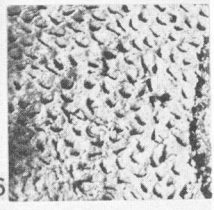

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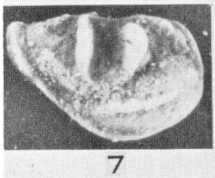

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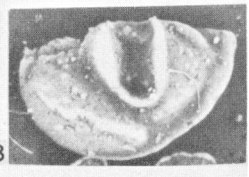

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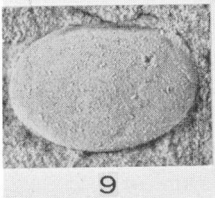

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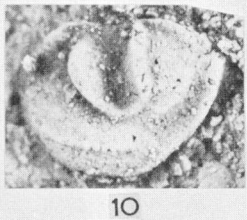

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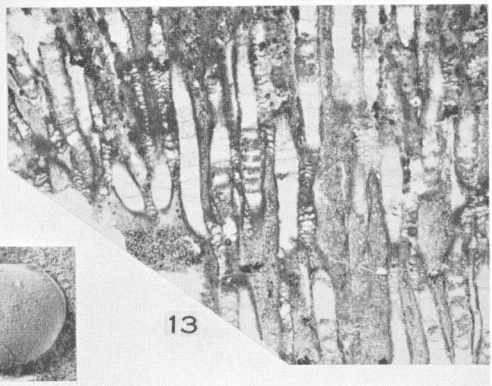

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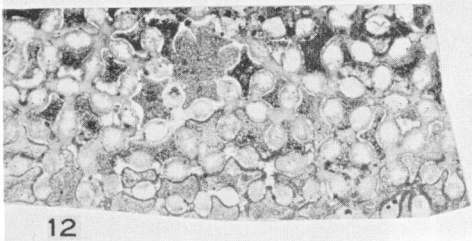

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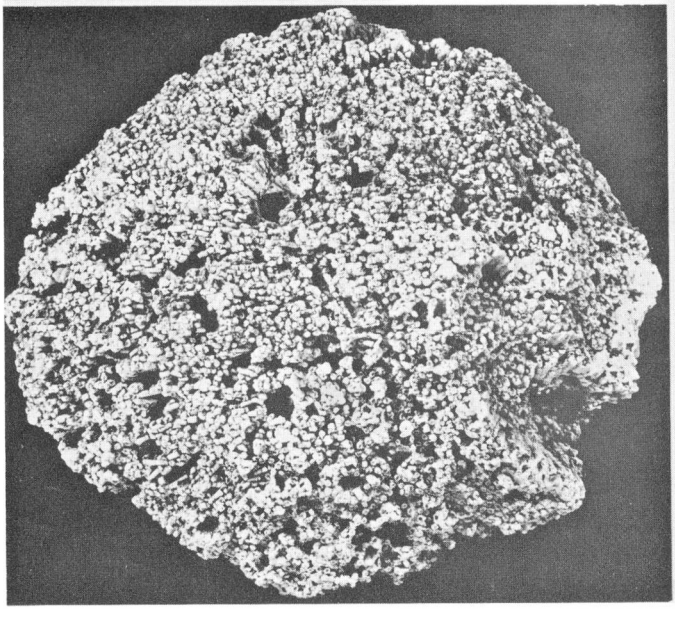

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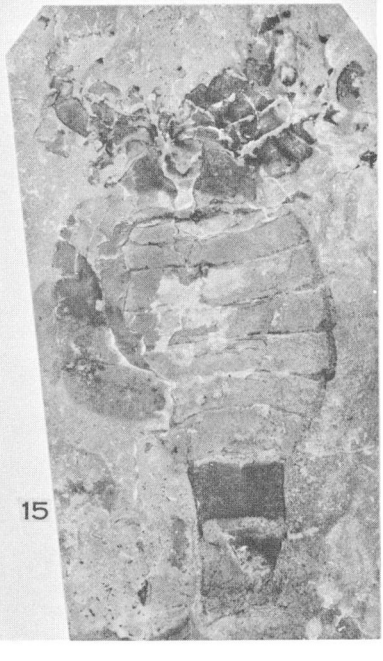

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PLATE V

Fossil Hill Formation

FIGS. 1,3. *Pentamerus* sp. Brachial views, X1. Barrow Bay, Bruce Peninsula and road-cut northeast of The Slash, lot 5, con. XIII, Assiginack tp., Manitoulin Island. Fig. specs., GSC Nos. 20513, 20515.

FIG. 2. *Pentameroides* sp. Brachial view, X1. Road exposure 0.6 mile east of Snowville, northwest of Tehkummah, Manitoulin Island. Fig. spec., GSC No. 20514 (see Pl. III, figs. 16, 17; Pl. XIII, fig. 13).

FIG. 4 *Kionelasma spongaxis* (Rominger). X2. East-central Otter Lake, south of West Bay village, Manitoulin Island. Hypotype, GSC No. 20516.

FIG. 5 *Acanthohalysites encrustans* (Buehler). Part of a colony, surface view, X2. Top of plateau at end of Sandfield-Tehkummah tps. boundary road, lots 3-4, con. I, Sandfield tp., southeast of Sandfield, Manitoulin Island. Hypotype, GSC No. 20517 (see Pl. IV, figs. 7-9).

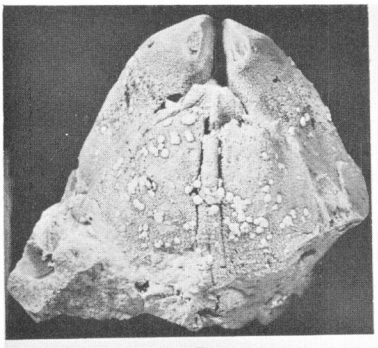
FIGS. 6-8. *Eospirifer radiatus* (Sowerby). Side, brachial, and pedicle views, X1. 0.1 mile north of Manitowaning-South Baymouth road on Lake Manitou road; corner of Manitowaning-South Baymouth and The Slash roads; and 0.6 mile east of Snowville, Manitoulin Island. Hypotypes, GSC Nos. 20518-20520 (see Pl. XII, fig. 14).

FIG. 9. *Dinophyllum* (?) *umbonata* (Rominger). X1. Manitowaning-South Baymouth highway 1 mile west of Fossil Hill at junction of south road, Manitoulin Island. Hypotype, GSC No. 20521.

FIG. 10. *Ptychophyllum stokesi* Edwards and Haime. X1. Road section 1/2 mile east of church, east of Elizabeth Bay, Manitoulin Island. Hypotype, GSC No. 20522.

FIG. 11. *Halysites labyrinthicus* (Goldfuss). View of distal surface of part of a colony, X1. 0.3 mile south of Manitowaning-South Baymouth highway, lot 9, con. I, Assiginack tp., Manitoulin Island. Hypotype, GSC No. 20523.

FIG. 12. *Catenipora huronensis* (Teichert). Surface view, X1. Northeast of Bothwell Corners east of Owen Sound. Hypotype, GSC No. 20524.



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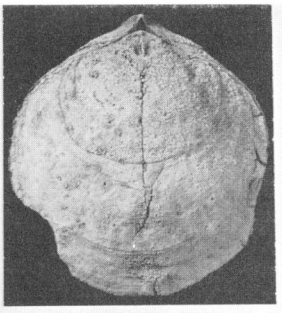

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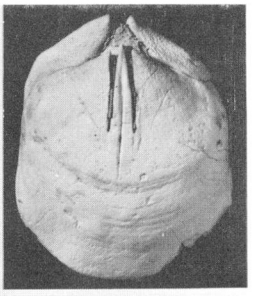

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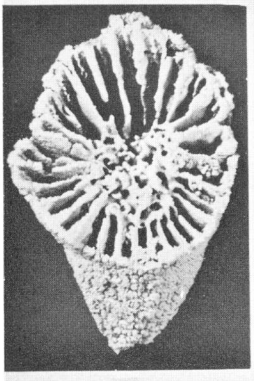

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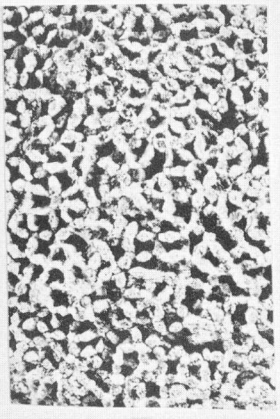

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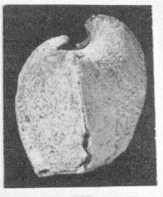

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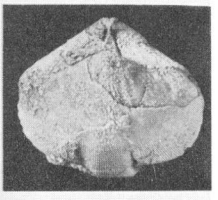

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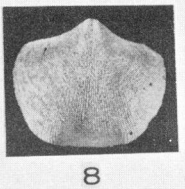

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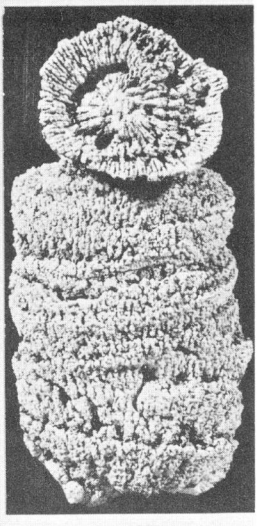

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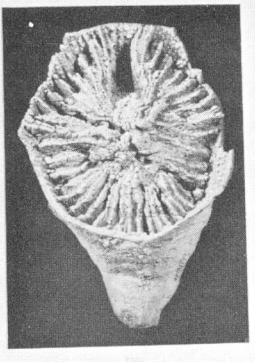

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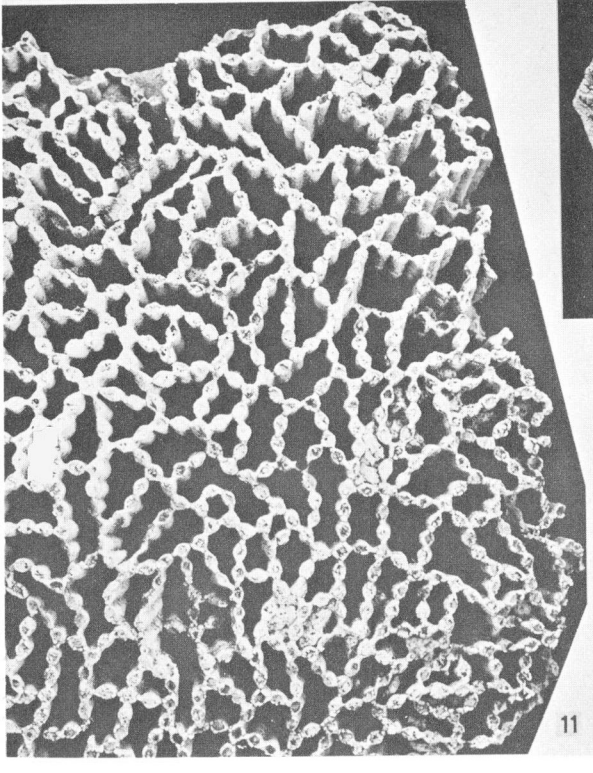

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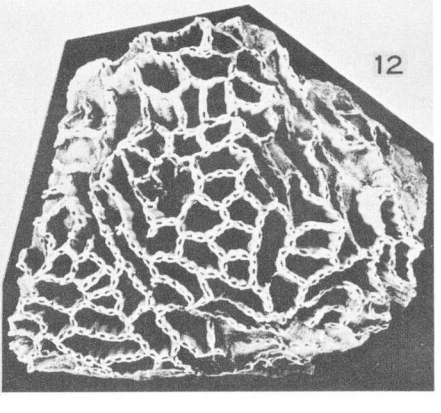

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PLATE VI

Fossil Hill Formation

FIGS. 1, 13, 14. Plicostricklandia castellana (White).

FIG. 1. Brachial view, X1. On plateau west of 'Isaiah Hunter Farm, New England', Manitoulin Island. Hypotype, GSC No. 20525.

FIG. 13-14. Posterior and pedicle views, X1. 1/2 mile north of The Slash, Manitoulin Island. Hypotype, GSC No. 20533.

FIGS. 2,3,6,9, 11. Plicostricklandia manitouensis (Williams).

FIGS. 2-3. Pedicle and side views, X1. Plateau east of Sandfield, Manitoulin Island. Syntype, GSC No. 5126.

FIGS. 6, 9. Pedicle and brachial views, X1. At least 35 feet above base of section at end of Sandfield-Tehkummah tps. boundary road, lots 3-4, con. I, Sandfield tp., southeast of Sandfield, Manitoulin Island. Hypotypes, GSC Nos. 20527, 20530.

FIG. 11. Brachial view showing muscle field, X2. Corner of Manitowaning-South Baymouth and The Slash roads, Manitoulin Island. Hypotype, GSC No. 20531.

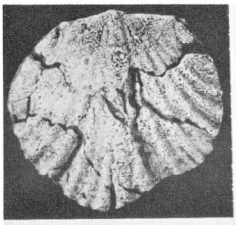
FIGS. 4,5,10. Microcardinalia pyriformis (Savage). Posterior, brachial and side views, X1. First road-cut west of junction of road to Cooks Dock, northeast of Silverwater, Manitoulin Island. Hypotype, GSC No. 20526.

FIGS. 7-8. Homoeospira apriniformis Hall. Pedicle (brachial interior pushed up), X2, and brachial, X1, views. Same locality as Fig. 6 and second ridge on trail east of Gore Bay-Poplar road, 4 1/2 miles south of main highway, Manitoulin Island. Hypotypes, GSC Nos. 20528, 20529.

FIG. 12. Favosites favosus (Goldfuss). Surface view, X1. Road section 1/2 mile east of church, east of Elizabeth Bay, Manitoulin Island. Hypotype, GSC No. 20532 (see Pl. VIII, figs. 1, 5).

FIG. 15. Arachnophyllum mammillare (Owen). X1. Corner on road boundary con. XIV-XV, lot 9, Assiginack tp., Manitoulin Island. Hypotype, GSC No. 20534.

FIG. 16. Favosites sp. Surface view of colony with 3 mm diameter corallites; most abundant throughout the Ontario Peninsula, X1. Escarpment section Squire road west of Inglis Falls road, outskirts of Owen Sound. Fig. spec., GSC No. 20535.



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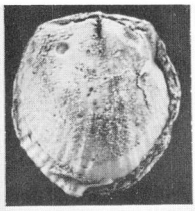

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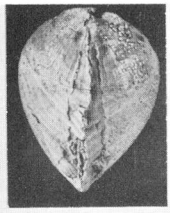

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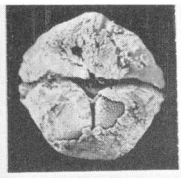

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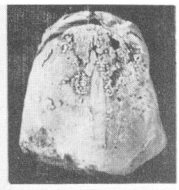

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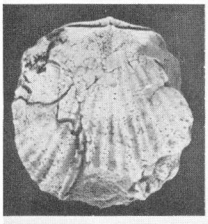

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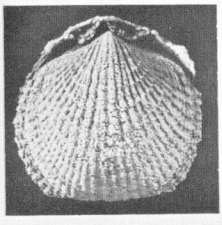

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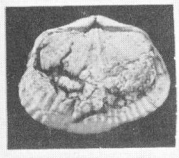

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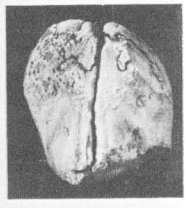

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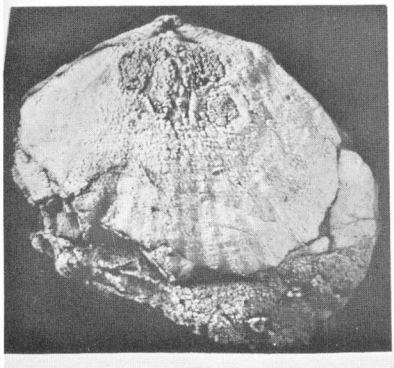

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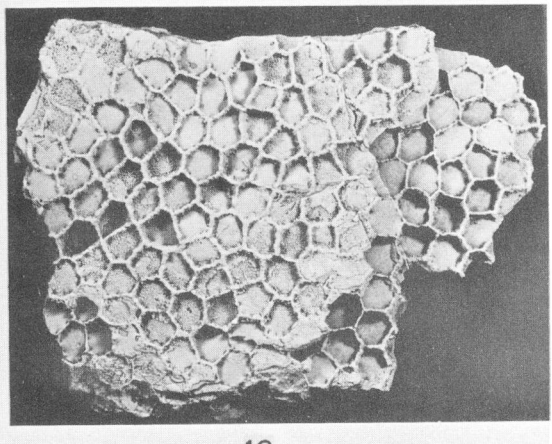

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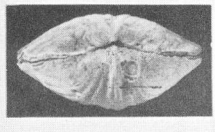

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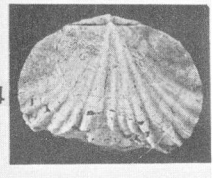

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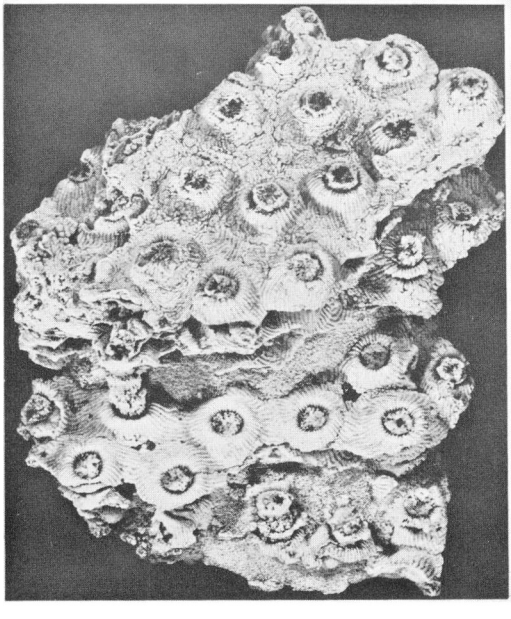

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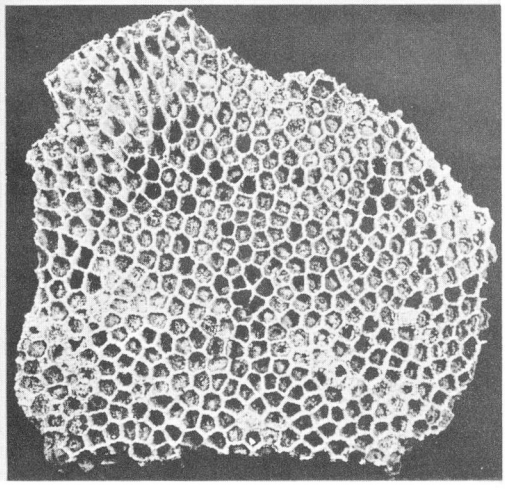

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PLATE VII

Fossil Hill Formation

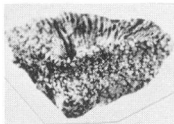
FIGS. 1,2,4. Goniophyllum pyramidale (Hisinger). Side and inclined views, X1, calyx view, X2. Southeast corner and upper section at junction of Manitowaning-South Baymouth and The Slash roads, lot 4, con. II, Assiginack tp., Manitoulin Island. Hypotypes, GSC Nos. 11065, 20536, 20538.

FIG. 3. Romingerella major (Rominger). Surface view of part of a colony, X4. Corner of Windfall Lake and Big Lake roads, northwest of Sandfield, Manitoulin Island. Hypotype, GSC No. 20537.

FIG. 5. Michelinoceras oberon (Billings). X 3/4. 20 inches below upper contact, Scotts Falls, tributary of Nottawasaga River northeast of Orangeville. Hypotype, GSC No. 20539.

FIG. 6. Huronia sp. cf. H. obliqua Stokes. Siphuncle fragment, slightly squashed, showing radial canal openings of the siphonal vascular system, X1. Plateau west of 'Isaiah Hunter Farm, New England', Manitoulin Island. Hypotype, GSC No. 20540.

FIGS. 7-8. Leurocycloceras (?) orangevillense Bolton. X1. 22 and 17 inches below upper contact, same locality as Fig. 5. Hypotype, GSC No. 20541; paratype, GSC No. 11069.



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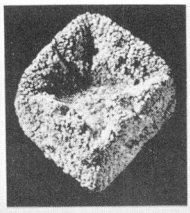

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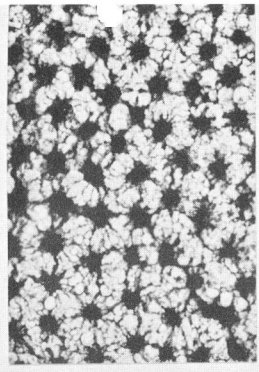

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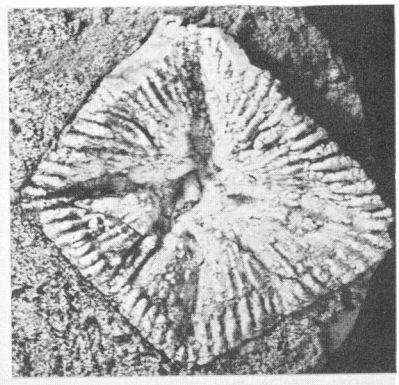

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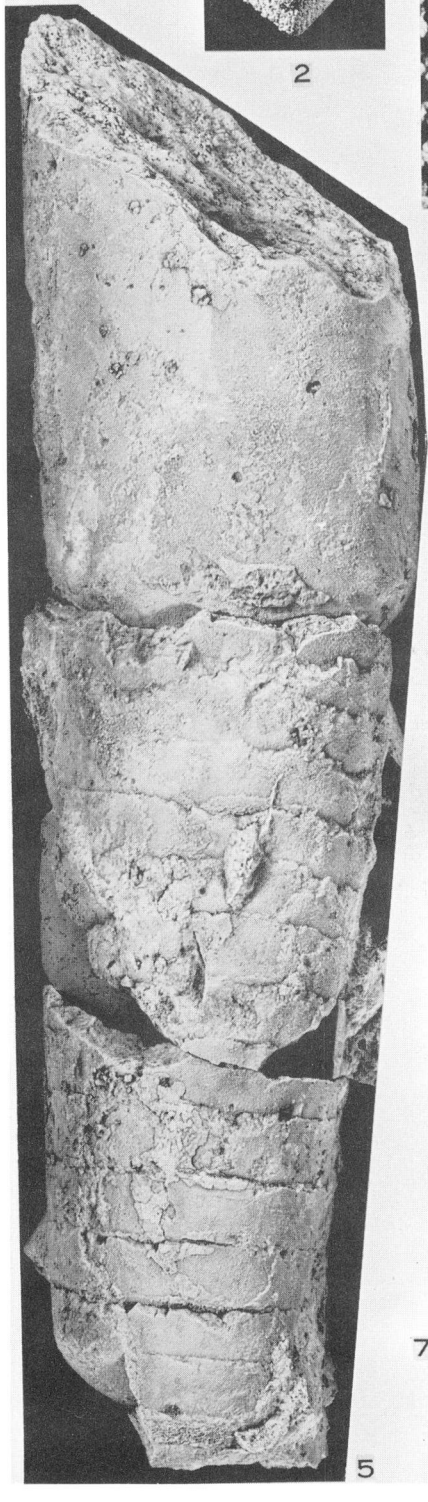

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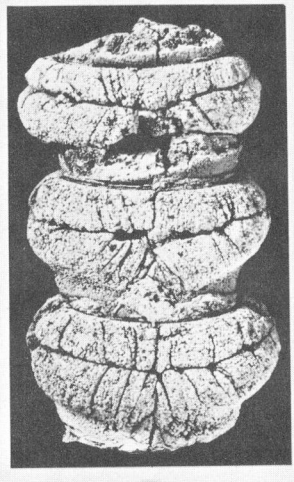

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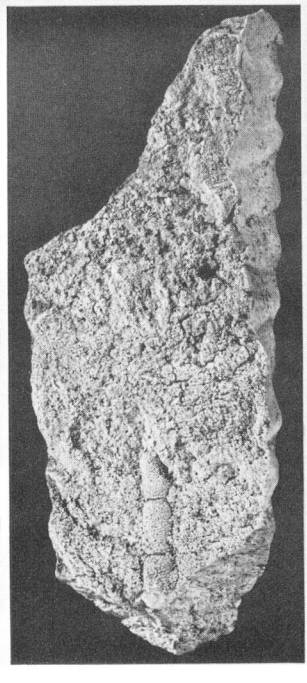

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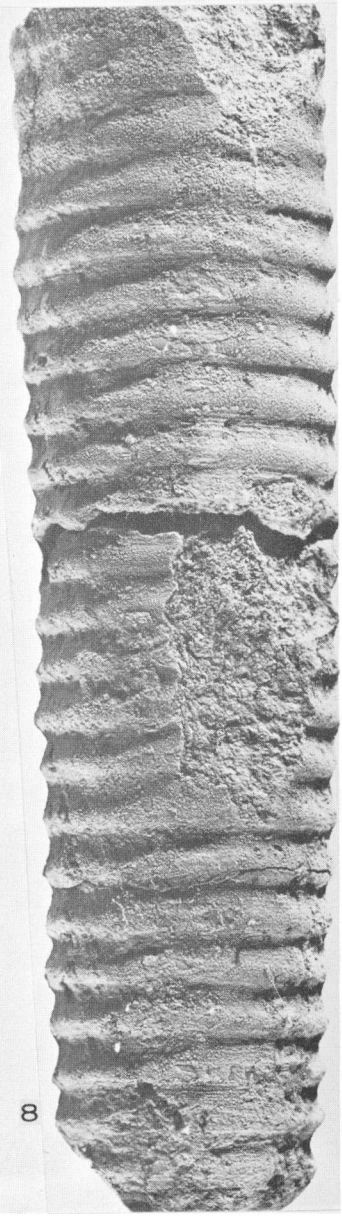

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PLATE VIII

Fossil Hill Formation

FIGS. 1, 5. Favosites favosus (Goldfuss). Side and surface views, X1. Corner on road boundary con. XIV-XV, lot 9, Assiginack tp., Manitoulin Island. Hypotype, GSC No. 20542 (see Pl. VI, fig. 12).

FIGS. 2-3. Cystiphyllum niagarense (Hall). Side and calyx views, X1 and X2. Road exposures 3/4 mile east of Snowville, northwest of Tehkummah, Manitoulin Island. Hypotypes, GSC Nos. 20543, 20544.

FIG. 4. Favosites sp. Surface view showing 'marginal pits' and associated septal traces, X4. Ridge in Long Bay Lodge area, southwest bay of Manitou Lake, Manitoulin Island. Fig. spec., GSC No. 20545.

FIG. 6. Alveolites undosus Miller. Surface view of a large colony, X1. Big Lake-Sandfield road, southeast of Big Lake, lots 15-16, con. VI-VII, Sandfield tp., Manitoulin Island. Hypotype, GSC No. 20546 (see Pl. IV, fig. 6).

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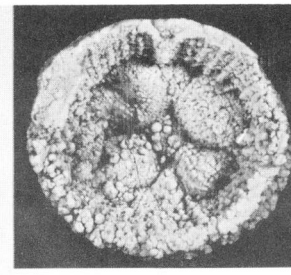

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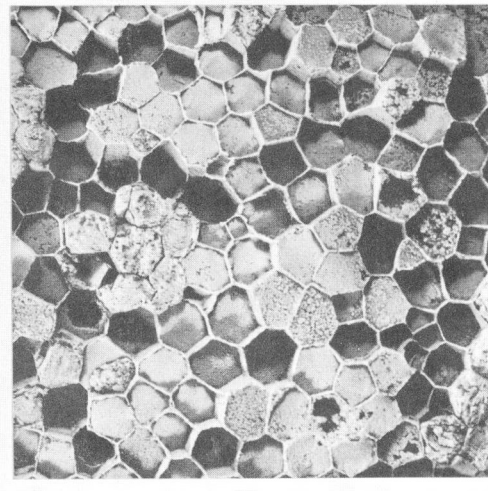

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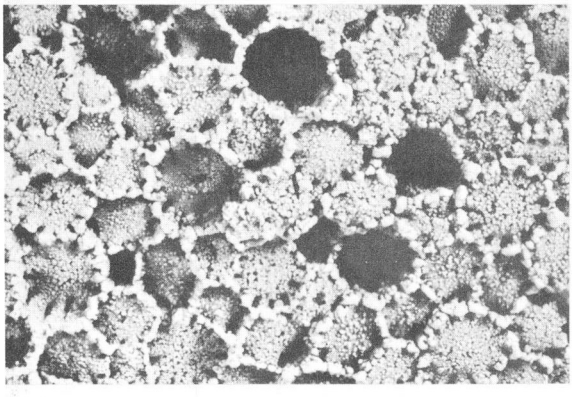

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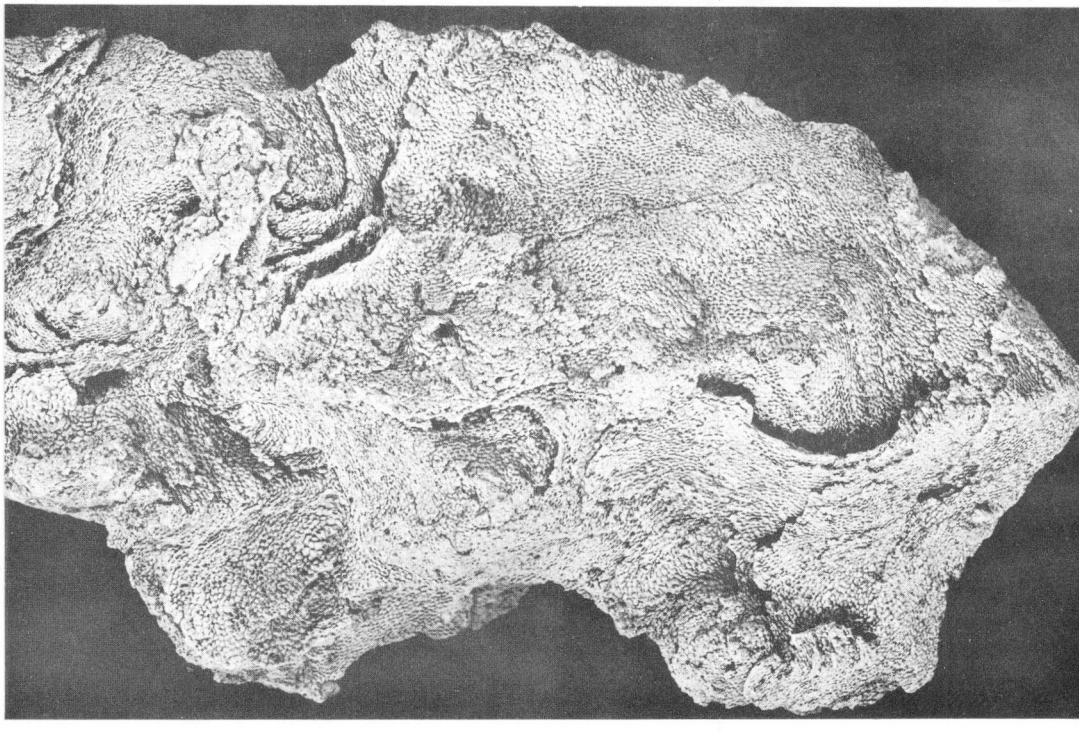

PLATE IX

Fossil Hill Formation

FIG. 1. Arachnophyllum striatum (D'Orbigny). Surface view, X1. 0.3 mile south of Manitowaning-South Baymouth road, lot 9, con. I, Assiginack tp., Manitoulin Island. Hypotype, GSC No. 20547.

FIGS. 2, 3, 5. Favosites hispidus Rominger.

FIG. 2. Side view showing abundant mural pores and tabulae, X4. Ridge in Long Bay Lodge area, southwest bay of Lake Manitou, Manitoulin Island. Hypotype, GSC No. 20548.

FIGS. 3, 5. Surface views showing 'marginal pits' and associated septal traces, X2. Road exposures 3/4 mile east of Snowville, northwest of Tehkummah, Manitoulin Island. Hypotypes, GSC Nos. 20549, 20551.

FIG. 4. Arachnophyllum pentagonum (Goldfuss). Surface view, X1. Same locality as Fig. 2. Hypotype, GSC No. 20550.

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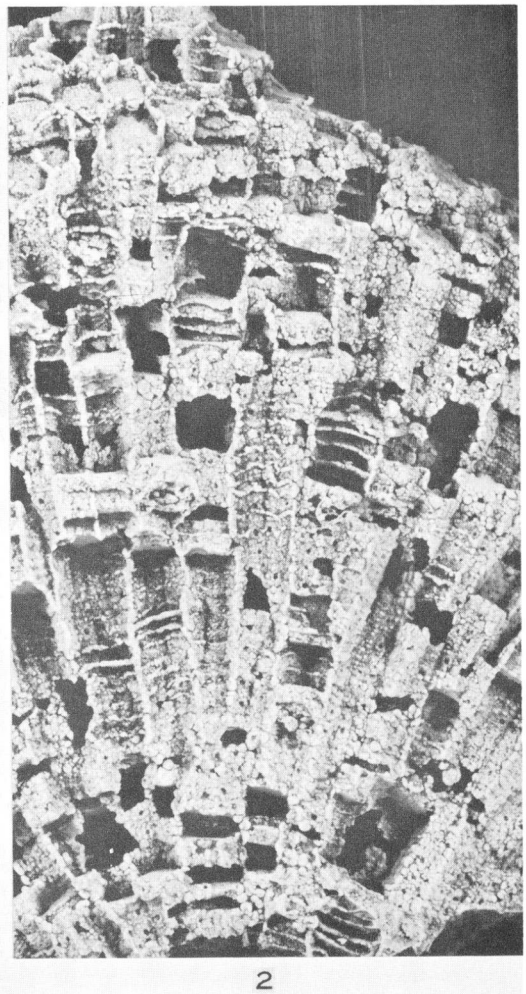

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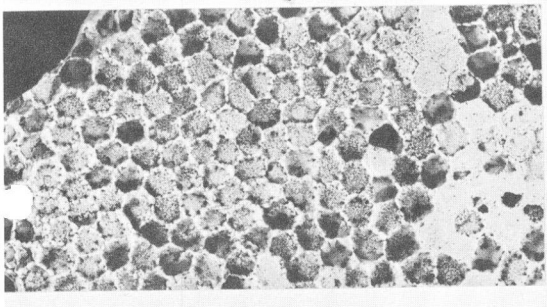

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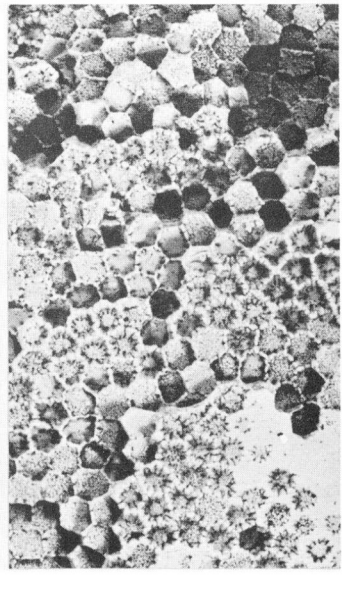

PLATE X

Rochester Formation

FIGS. 1, 7, 8. Caryocrinites ornatus Say. Oral, basal and posterior views of theca, X1. Grimsby. Hypotype, GSC No. 2656d (also in Wiarton Member, Amabel Formation).

FIGS. 2-3. Callocystites canadensis (Billings). Left-posterior and right-anterior views of theca, X1. Grimsby. Holotype, GSC No. 2655.

FIGS. 4-5. Callocystites jewetti Hall. Right and anterior views of theca, X1. Grimsby. Hypotype, GSC No. 2657.

FIG. 6. Lecanocrinus macropetalus Hall. X1. 29 feet above base of formation, DeCew Falls. Hypotype, GSC No. 20552.

FIG. 9. Calceocrinus chrysalis (Hall). Lateral view, X2. Same locality as Fig. 6. Hypotype, GSC No. 20553.

FIG. 10. Eucalyptocrinites caelatus (Hall). X1. Grimsby. Hypotype, GSC No. 2661.

FIGS. 11, 17. Resserella elegantula (Dalman). Pedicle and brachial views, X2. 15 feet above base of formation, DeCew Falls. Hypotype, GSC No. 20554 (also in Wiarton Member, Amabel Formation).

FIGS. 12, 27. Striispirifer niagarensis (Conrad). Brachial and pedicle views, X1. First road cutting the escarpment west of Grimsby and near Thorold. Hypotypes, GSC Nos. 20555, 2689.

FIG. 13. Dictyonella corallifera (Hall). Brachial view, X1. Near Thorold. Hypotype, GSC No. 17966.

FIG. 14. Paraechmina spinosa (Hall). Lateral view of a right valve, X15. 30-35 feet above base of formation, DeCew Falls. Hypotype, GSC No. 15192.

FIG. 15. Paraechmina abnormis (Ulrich). Lateral view of a left valve, X15. 15-30 feet above base of formation, DeCew Falls. Hypotype, GSC No. 15193c.

FIG. 16. Dizygopleura symmetrica (Hall). Left lateral view of a male carapace, X15. 40-45 feet above base of formation, DeCew Falls. Hypotype, GSC No. 15196b (also in Eramosa Member, Lockport Formation).

FIG. 18. Whitfieldella nitida (Hall). Brachial view, X2. DeCew Falls. Hypotype, GSC No. 20556 (see Pl. XII, figs. 6, 15).

FIG. 19. Conularia niagarensis Hall. X1. Rochester, New York, U.S.A. Hypotype, GSC No. 20557.

FIG. 20. Stephanocrinus angulatus Conrad. Anterior view of theca, X1. Grimsby. Hypotype, GSC No. 2664.

FIGS. 21-22. Naticonema niagarense (Hall). Abapertural and apical views, X1. 44-50 feet above base of formation, DeCew Falls. Hypotype, GSC No. 20558.

FIG. 23. Eoplectodonta transversalis (Sowerby). Pedicle view, X1. DeCew Falls. Hypotype, GSC No. 20559 (see Pl. III, figs. 13, 14).

FIG. 24. Chilidiopsis subplana (Conrad). Pedicle view, X2. Same locality as Fig. 6. Hypotype, GSC No. 20560 (left valve of Paraechmina spinosa (Hall) to left of beak).

FIGS. 25-26. Dicoelosia acutilobus (Ringueberg). Pedicle and brachial views, X5. 4 1/2-6 feet above base of formation, DeCew Falls. Hypotype, GSC No. 17965.

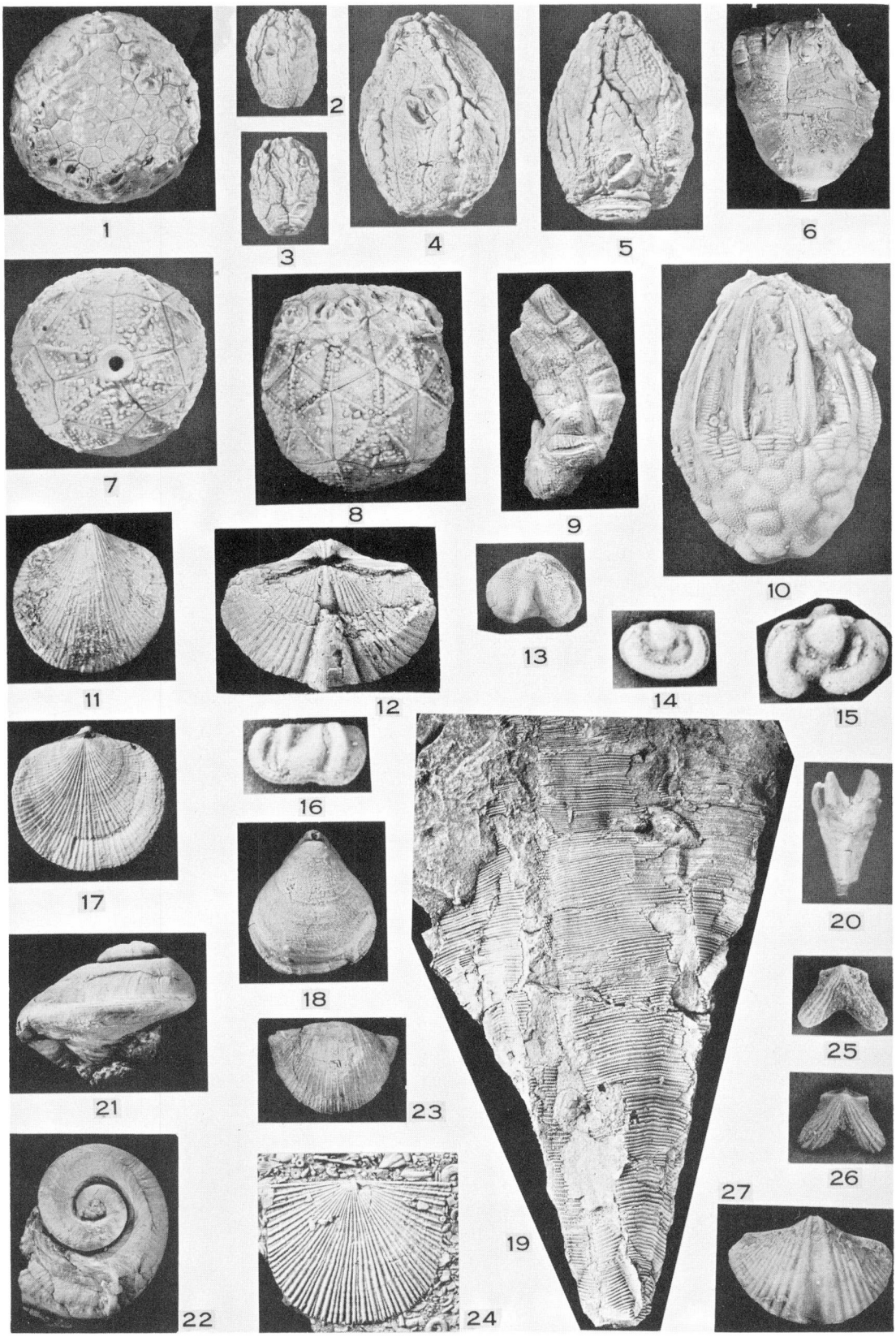
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PLATE XI

Rochester Formation

FIGS. 1-2. "Trematospira" camura (Hall). Brachial and pedicle views, X3. Basal 5-15 feet, DeCew Falls. Hypotypes, GSC Nos. 20561, 20562.

FIGS. 3,9. Hallopora elegantula (Hall). Longitudinal and tangential sections, X23. 44 and 22 feet above base of formation, DeCew Falls. Hypotypes, GSC Nos. 20563, 20566.

FIG. 4. Reticulograptus polymorphus (Gurley). X1. 3 feet above base of formation, Albion Falls, Hamilton region. Hypotype, GSC No. 17968.

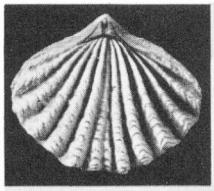
FIG. 5. 'Leptaena rhomboidalis' (Wilckens). Brachial interior view, X1. 29 feet above base of formation, DeCew Falls. Hypotype, GSC No. 20564.

FIG. 6. "Ctenobolbina" punctata Ulrich. Lateral view of left valve, X15. 10-13 feet above base of formation, access road, Sir Adam Beck-Niagara generating station, Niagara Falls. Hypotype, GSC No. 15195a.

FIG. 7. Trematopora tuberculosa Hall. Longitudinal section showing typical beaded mesopores, X23. DeCew Falls. Hypotype, GSC No. 20565.

FIGS. 8,11. Cheilotrypa ostiolata (Hall). Tangential and longitudinal sections, X25 and X10. DeCew Falls. Hypotype, GSC No. 20431.

FIG. 10. Clathropora frondosa Hall and Fenestella sp. X1. Grimsby (?). Hypotype, GSC No. 17967.



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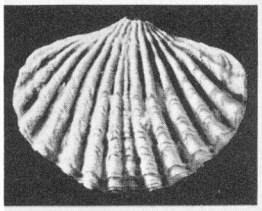

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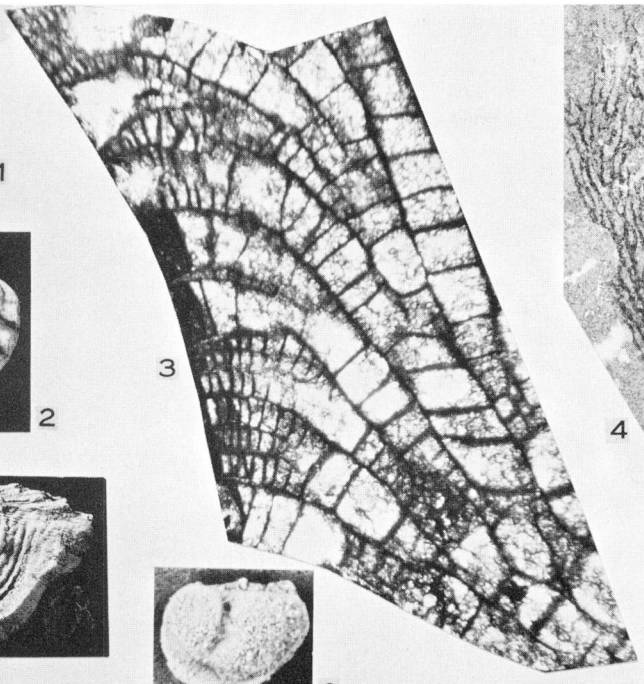

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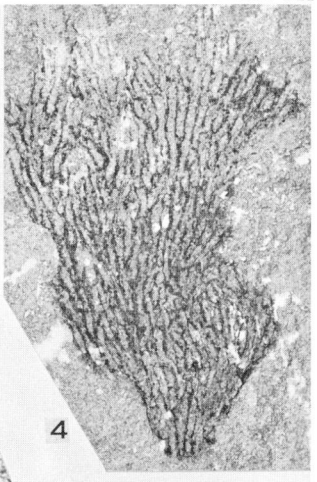

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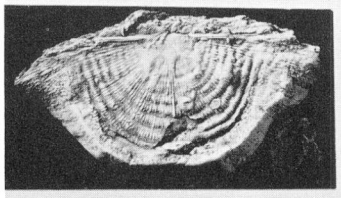

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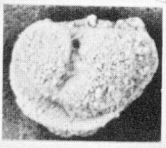

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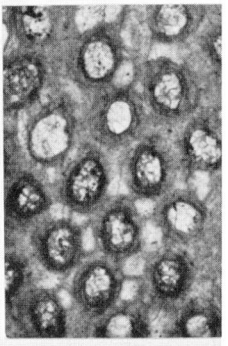

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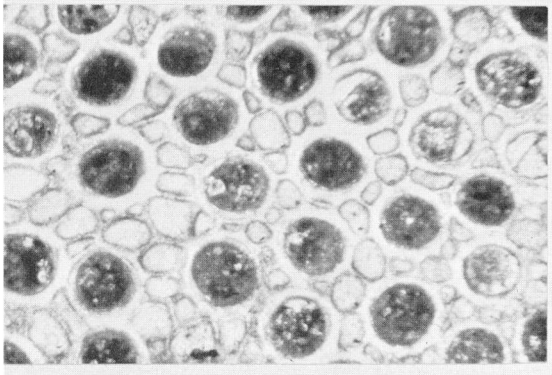

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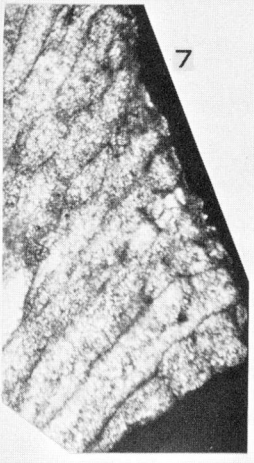

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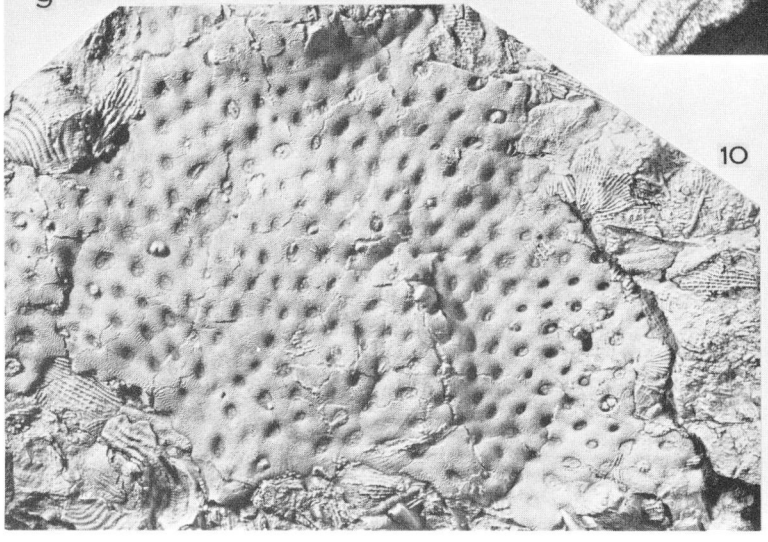

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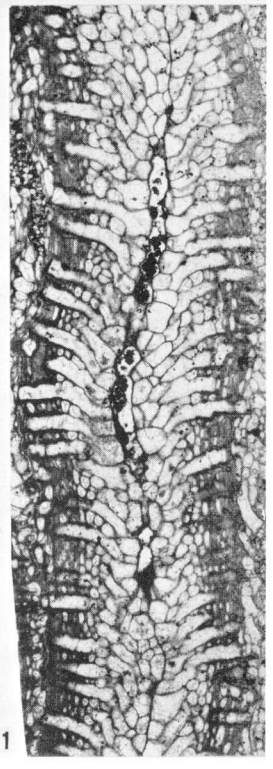

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PLATE XII

Rochester Formation

FIG. 4. Dalmanites limulurus (Dalman). Nearly complete specimen, X2. DeCew Falls. Hypotype, GSC No. 20568.

FIGS. 11,16. Trimerus delphinocephalus (Green). Cephalon and pygidium, X4. 30 feet above base of formation, DeCew Falls. Hypotypes, GSC Nos. 20573, 20576.

Lockport Formation

FIGS. 1,3. Palaeophyllum multicaule (Hall). Tangential and longitudinal sections, X4. 'Upper Lockport', Battle's old cement quarry, Thorold. Hypotype, GSC No. 17092.

FIG. 2 Stegerhynchus indianensis (Hall). Brachial view, X1. Eramosa Member, old quarry at Dundas. Hypotype, GSC No. 20567.

FIG. 5. Encrinurus ornatus Hall and Whitfield. Pygidium, X2. Same locality as Fig. 2. Hypotype, GSC No. 20569.

FIGS. 7,10. Cheirurus niagarensis (Hall). Pygidium and cephalon, X1. East gorge, Grimsby. Hypotypes, GSC Nos. 17970, 17969.

FIG. 8. 'Reticularia' bicostata (Vanuxem), pedicle valve, and pygidia of Encrinurus ornatus Hall and Whitfield, X1. Same locality as Fig. 2. Hypotype, GSC No. 20571.

FIG. 9. 'Cyathophyllum' thoroldense Lambe. Side view, X1. Eramosa Member, A. Cope and Sons Limited quarry, lots 27-28, con. VI, Saltfleet tp. south of Stoney Creek. Hypotype, GSC No. 20572.

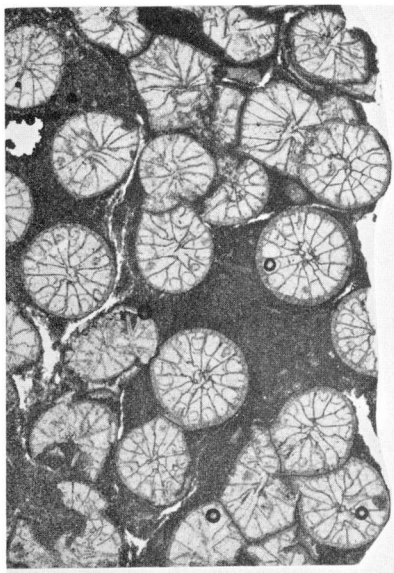
FIG. 12. Dictyonema sp. cf. D. expansum Spencer. X1. Hamilton area. Hypotype, GSC No. 20574.

FIG. 13. Scutellum acamus (Hall). Pygidium, X1. East gorge, Grimsby. Hypotype, GSC No. 17971 (see Pl. XIV, fig. 4).

FIG. 14. Eospirifer radiatus (Sowerby). Pedicle view, X1. Thorold area. Hypotype, GSC No. 2689c (see Pl. V, figs. 6-8).

Amabel Formation

FIGS. 6,15. Whitfieldella nitida (Hall). Brachial and pedicle views, X2. Eramosa Member, east of Parkhead. Hypotypes, GSC Nos. 20570, 20575 (see Pl. X, fig. 18).



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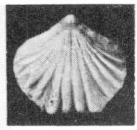

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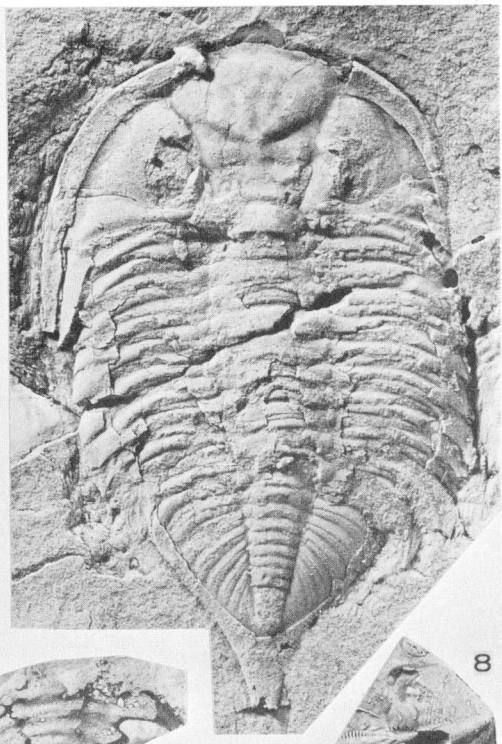

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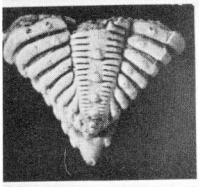

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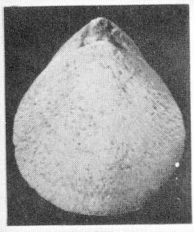

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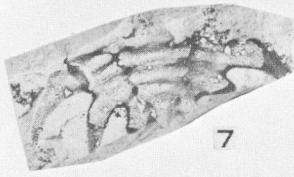

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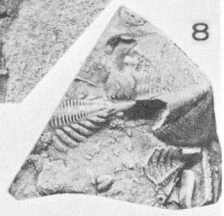

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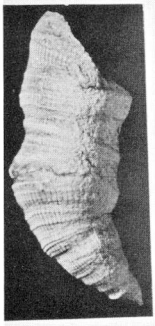

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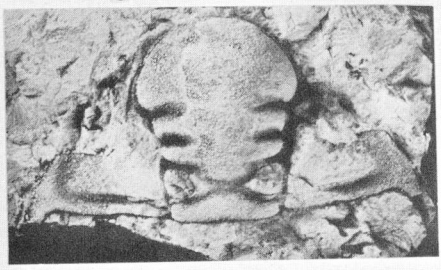

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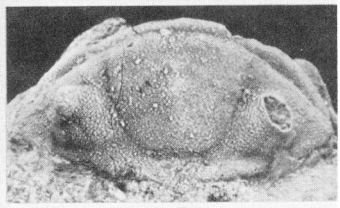

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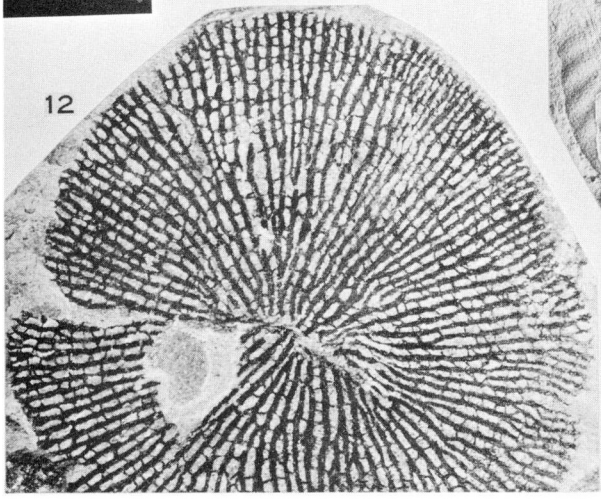

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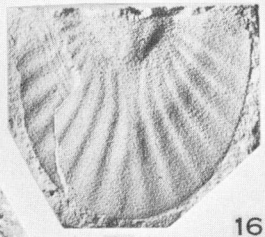

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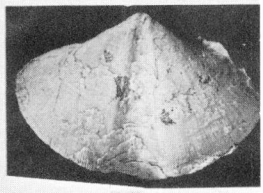

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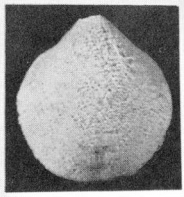

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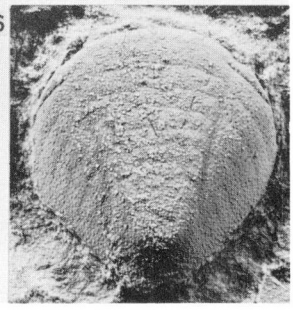

PLATE XIII

Wiarton Member, Amabel Formation

FIGS. 1,5. Siphonocrinus pentagonus Wachsmuth and Springer. Right lateral views showing long anal tube and some plate outlines, X1. Colpoy Bay-Adamsville road, 4.6 miles northwest of Colpoy village and south of Lions Head village, Bruce Peninsula. Hypotypes, GSC Nos. 20577, 11064.

FIGS. 2-3. Macropleura eudora (Hall). Side and brachial views, X1. 20 inches below top of road-cut at Wiarton. Hypotype, GSC No. 20578.

FIGS. 4,6,7. Camerella wiartonensis Bolton. Brachial and two pedicle views, X1. Upper 3 feet of road-cut at Wiarton and road-cut opposite radio tower on Owen Sound-Chatsworth Highway 6-10. Holotype, GSC No. 11592; hypotypes, GSC Nos. 20579, 20580.

FIGS. 8-9. Cyrtina extensa Bolton. Brachial and posterior views, X1. 1.5 feet below top of road-cut at Wiarton. Holotype, GSC No. 11593.

FIG. 10. Dolerorthis flabellites (Foerste). Brachial view, X1. Road-cut at top of escarpment due north of Kemble. Hypotype, GSC No. 20581.

FIG. 11. Whitfieldella hyale (Billings). Pedicle view, X1. Road-cut 1 1/4 miles south of Adamsville, Bruce Peninsula. Hypotype, GSC No. 20582 (typically a Guelph form).

FIG. 12. Subulites (Cyrtospira) ventricosus Hall. Abapertural view, X1. Owen Sound-Chatsworth Highway 6-10, 1/4 mile north of Rockford road. Hypotype, GSC No. 20583.

FIG. 13. Pentameroides subrectus (Hall and Clarke). Brachial view, X1. Road exposure inland from lighthouse, west end of Manitoulin Island. Hypotype, GSC No. 20584 (see Pl. III, figs. 16, 17; Pl. V, fig. 2).

FIG. 14. Goniophora speciosa Hall. Left valve, X2. Purple Valley road just east of Colpoy village-Adamsville road, Bruce Peninsula. Hypotype, GSC No. 20585.

FIG. 15. Strophostylus (?) elevatus (Hall). Abapertural view, X1. Same locality as Figs. 8, 9. Hypotype, GSC No. 11073.

FIG. 16. Holopea guelphensis Billings. Abapertural view, X1. Same locality as Figs. 8, 9. Hypotype, GSC No. 11076 (see Pl. XVI, figs. 8, 9).

FIG. 17. Cypricardinia arata Hall. Left valve, X2. Road-cut 1.3 miles northwest of Adamsville, Bruce Peninsula. Hypotype, GSC No. 20586 (see Pl. XVI, fig. 5).

FIG. 18. Grimsbyoceras (?) orodes (Billings). X1. Same locality as Fig. 14. Hypotype, GSC No. 20587.

FIG. 19. Modiolopsis rectus (Hall). Left valve, X2. Cut on Adamsville-Lions Head road, northeast of Adamsville, Bruce Peninsula. Hypotype, GSC No. 20588.

FIG. 20. Antirhynchonella fornicata (Hall). Brachial view, X1. First North-South road west of Purple Valley, 1/2 mile north of Colpoy Bay-Purple Valley main road, Bruce Peninsula. Hypotype, GSC No. 20589.

FIG. 21. Eotomaria durhamensis (Whiteaves). Abapertural view, X1. Same locality as Figs. 8, 9. Hypotype, GSC No. 11079 (see Pl. XVI, fig. 3).

FIG. 22. Lechritrochoceras desplainense (McChesney). X1. Road-cut 3.7 miles south of Edenhurst, west of Highway 6, Bruce Peninsula. Hypotype, GSC No. 20590.

FIG. 23. Modiolopsis rectus (Hall) and Cypricardinia arata (Hall). Left and right valves, X2. Same locality as Fig. 10. Hypotype, GSC No. 20591.

FIG. 24. Amphicoelia leidyi Hall. Left valve, X1. 22 inches from top of road-cut at Wiarton. Hypotype, GSC No. 20592 (see Pl. XV, fig. 12).

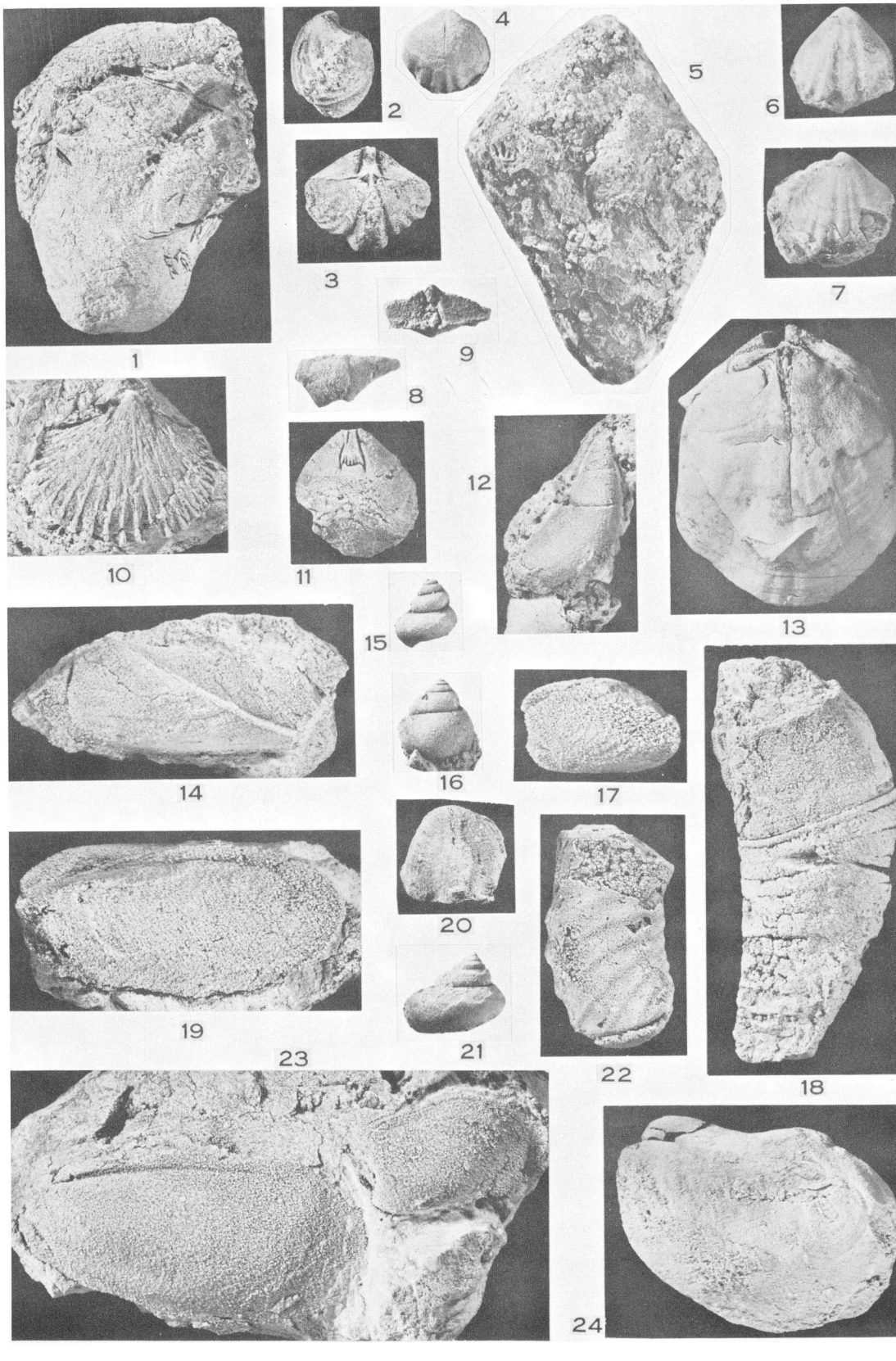
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PLATE XIV

Wiarton Member, Amabel Formation

FIGS. 1, 2, 9. 'Cyrtorizoceras' byronense Foerste.

FIGS. 1-2. Body chamber, ventral view showing hyponomic sinus and trace of siphuncle, and lateral view, venter on right, X1. Road-cut west side opposite radio tower, Owen Sound-Chatsworth Highway 6-10. Hypotype, GSC No. 20593.

FIG. 9. Lateral view, venter on right, of body chamber and a portion of the phragmocone, X1. Same locality as Figs. 1, 2. Hypotype, GSC No. 20600.

FIG. 3. Phragmoceras ontarioense Foerste. Lateral view, venter on left, of body chamber, X1. Same locality as Figs. 1, 2. Hypotype, GSC No. 20594 (originally from Guelph Formation).

FIG. 4. Scutellum acamus (Hall). Pygidium, X1. Same locality as Figs. 1, 2. Hypotype, GSC No. 20595 (see Pl. XII, fig. 13).

FIGS. 6-7. Worthenoceras sp. cf. W. exiguum Foerste. Lateral view, venter on right, of body chamber and lateral view, venter on left, of body chamber and a portion of the phragmocone, X2. Road-cut at Adamsville, Bruce Peninsula. Hypotypes, GSC Nos. 20597, 20598.

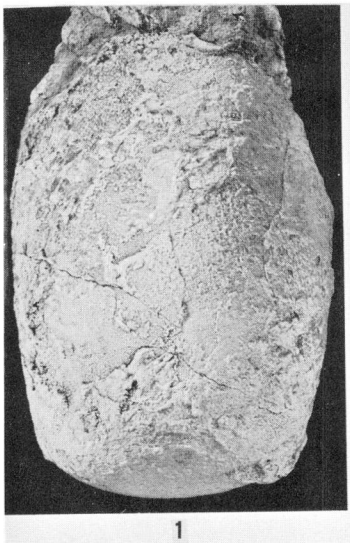
FIG. 11. Bumastus sp. cf. B. armatus (Hall). Cephalon, X1. Road-cut on East-West road northwest of Adamsville, Bruce Peninsula. Hypotype, GSC No. 20601.

FIG. 12. Bumastus ioxus (Hall). Pygidium, X2. 20 inches below top of road-cut at Wiarton. Hypotype, GSC No. 20602 (also in Rochester Formation).

Guelph Formation

FIG. 5. Amphicyrtoceras williamsi Foerste. Ventral view of body chamber showing periphractic imprint and siphuncle trace, X1. Zinc prospect 1,000 feet east of Highway 6, 3 miles northwest of Wiarton. Hypotype, GSC No. 20596.

FIGS. 8, 10, 13. Leurocycloceras brucense (Williams). Septal, dorsal and lateral, venter on left, views of a portion of a phragmocone, X1. East side of Gauley Bay west of Stokes Bay, west side of Bruce Peninsula. Hypotype, GSC No. 20599 (see Pl. XV, figs. 1-3).



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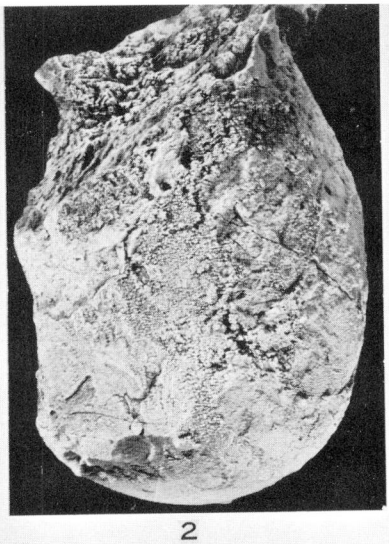

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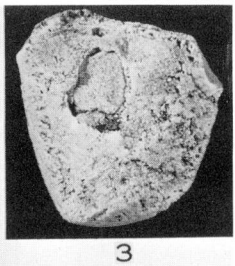

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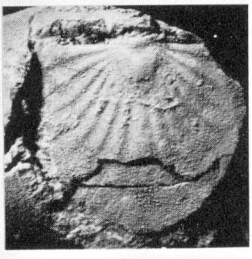

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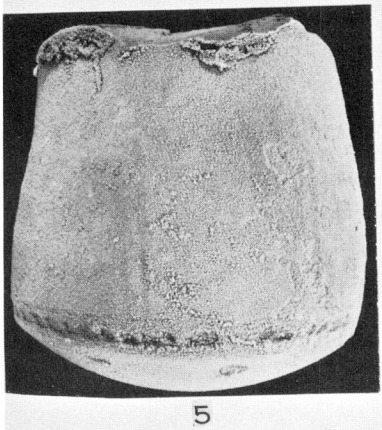

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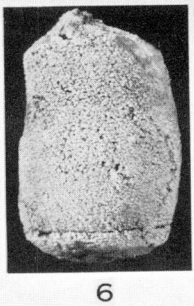

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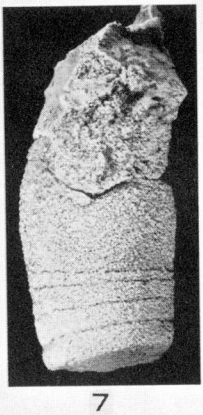

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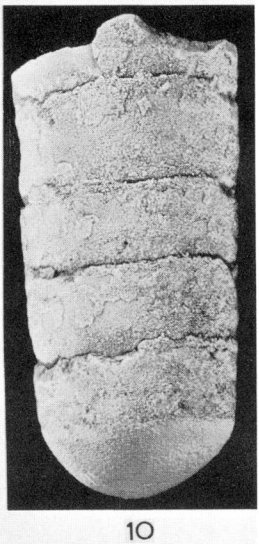

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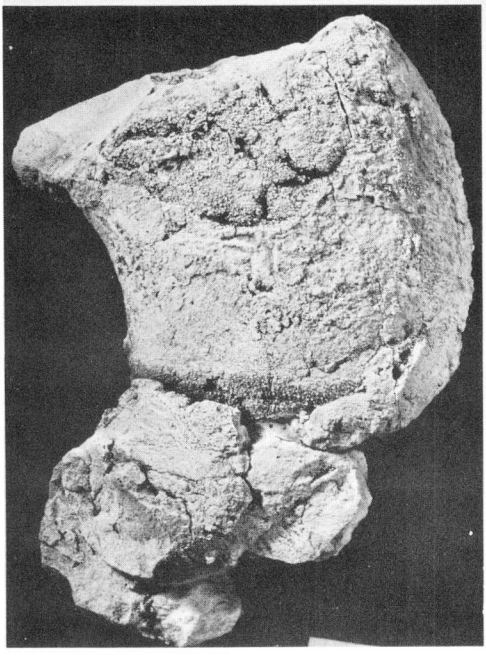

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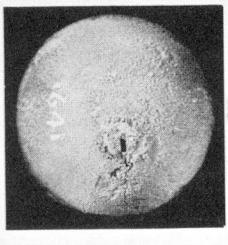

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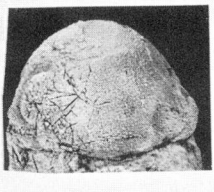

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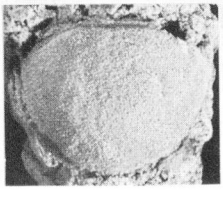

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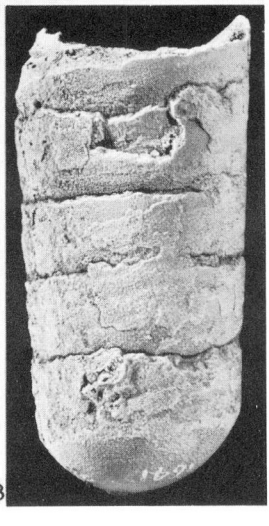

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PLATE XV

Guelph Formation

FIGS. 1-3 Leurocycloceras brucense (Williams). Lateral view, venter on right, of a portion of a phragmocone showing surface with broad, flat annulations; ventral view of a portion of a phragmocone showing single conchial furrow line; polished vertical section through siphuncle showing internal structures, X1. Baptist Harbour, lots 50-52, con. 10W, St. Edmund tp., Bruce Peninsula. Hypotypes, GSC Nos. 20603-20605 (see Pl. XIV, figs. 8, 10, 13).

FIG. 4. Bumastus aboynensis (Whiteaves). Cephalon, X1. Aboyne near Elora. Syntype, GSC No. 3016.

FIG. 5. Anaspyroceras varro (Billings). Portion of two phragmocones showing centrally located small siphuncle, X1. Zinc prospect 1,000 feet east of Highway 6, 3 miles northwest of Wiarton. Hypotype, GSC No. 20606.

FIG. 6 Michelia turretiformis (Hall). Abapertural view, X1. Durham. Hypotype, GSC No. 2890a.

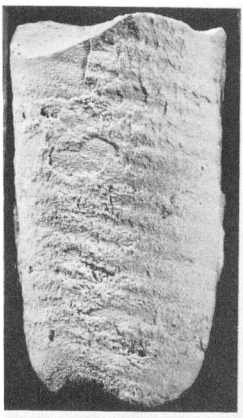
FIG. 7. Leperditia balthica var. guelphica Jones. Left valve, X3. Durham. Syntype, GSC No. 3013c (see Pl. XVI, fig. 4).

FIG. 8. Conchidium occidentalis (Hall). Side view, X1. Durham. Hypotype, GSC No. 2821.

FIGS. 9-10. Rhipidium sp. Posterior and pedicle views, X1. Road-cut 0.8 mile south of Brinkman Corners, Bruce Peninsula. Fig. spec., GSC No. 20607.

FIG. 11. Megalomus canadensis Hall. Steinkern right valve, X1. Hespeler. Hypotype, GSC No. 20608.

FIG. 12. Amphicoelia leidyi Hall. Left valve, X1. East side of road 3 miles north of Spry, west side of Bruce Peninsula. Hypotype, GSC No. 20609 (see Pl. XIII, fig. 24).



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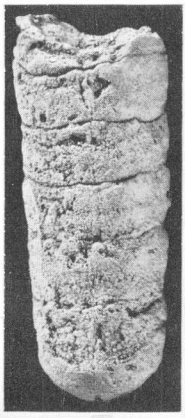

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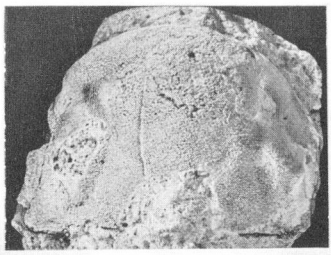

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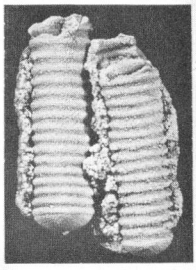

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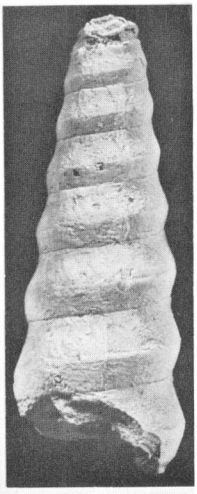

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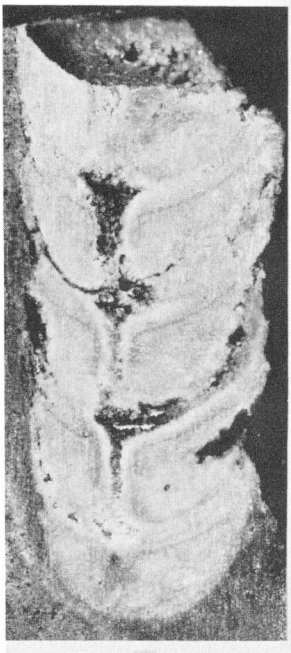

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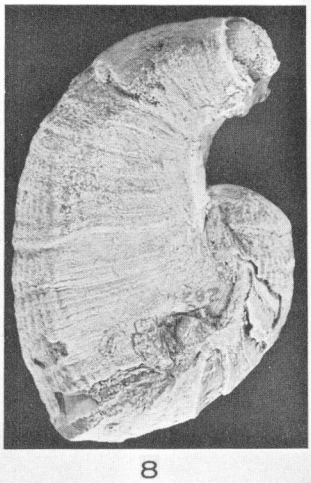

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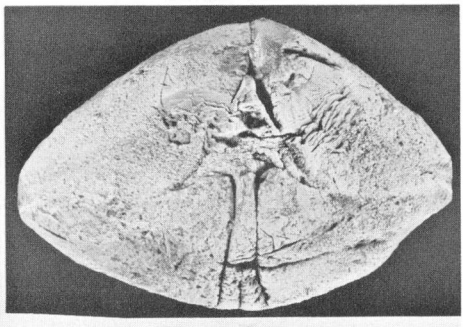

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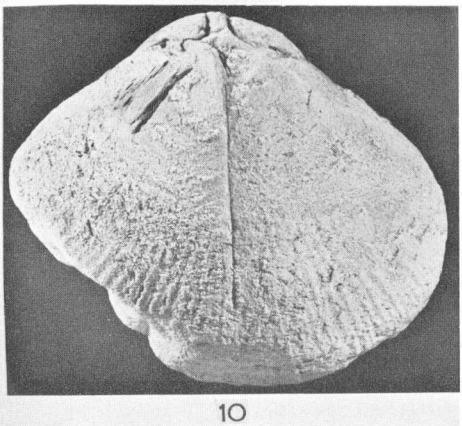

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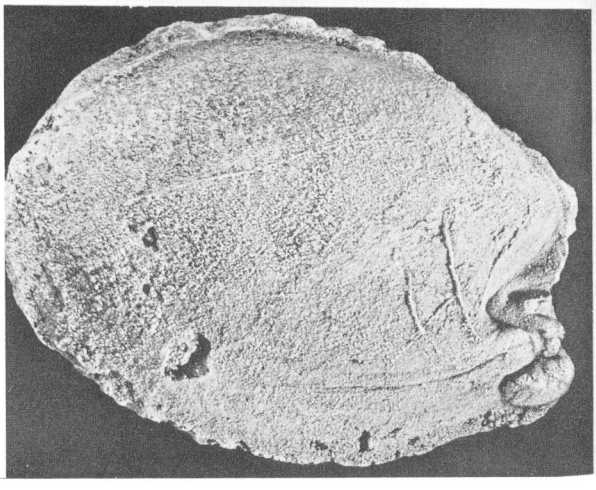

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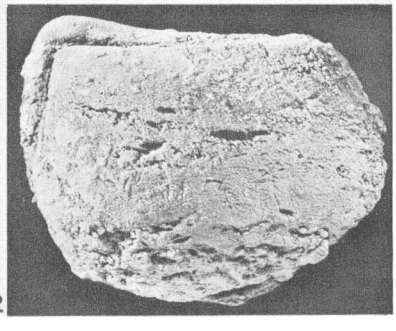

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PLATE XVI

Guelph Formation

FIGS. 1-2. Tremanotus angustata Hall. Right side and adapertural views showing row of tremata, X1. Hespeler. Hypotypes, GSC Nos. 2911, b.

FIG. 3. Eotomaria durhamensis (Whiteaves). Abapertural view, X1. Durham. Holotype, GSC No. 2868 (see Pl. XIII, fig. 21).

FIG. 4. Leperditia balthica var. guelphica Jones. Right valve, X3. Grand River, Aboyne near Elora. Hypotype, GSC No. 3014 (see Pl. XV, fig. 7).

FIG. 5. Cypricardinia arata Hall. Right valve, X2. Exposures 1/2-1 mile north of Edenhurst on first North-South road west of Highway 6, Bruce Peninsula. Hypotype, GSC No. 20610 (see Pl. XIII, fig. 17).

FIGS. 6, 15-17. Archaeoconularia n. sp. Apertural and side views of peridèrms showing fragments of the finely transverse lined shell, prominent median grooves on the faces and longitudinal furrows at the corners, X1 and X3. Zinc prospect 1,000 feet east of Highway 6, 3 miles northwest of Wiarton. Hypotypes, GSC Nos. 20611 (figs. 6, 15), 20612 (figs. 16, 17).

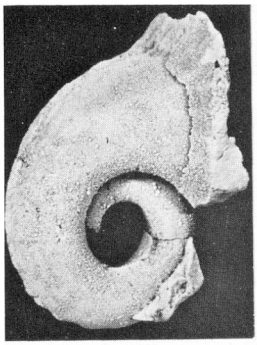
FIG. 7. Subulites compactus Whiteaves. Apertural view, X2. Elora. Hypotype, GSC No. 2840.

FIGS. 8-9 Holopea guelphensis Billings. Abapertural and apertural views, X1. Durham and Galt. Hypotype, GSC No. 2848; holotype, GSC No. 2847 (see Pl. XIII, fig. 16).

FIGS. 10, 14. Phanerotrema occidens (Hall). Abapertural and apical views, X1. Same locality as Figs. 6, 15-17. Hypotype, GSC No. 20613 (also in Wiarton Member, Amabel Formation).

FIGS. 11, 13. Leperditia phaseolus (Hisinger). Left and right valves, X3. Aboyne, near Elora and Durham. Hypotypes, GSC Nos. 3015, 3005 (holotype of L. phaseolus var. guelphica Jones).

FIG. 12. Tylopterella boylei (Whiteaves). X1. Elora. Holotype, GSC No. 2910.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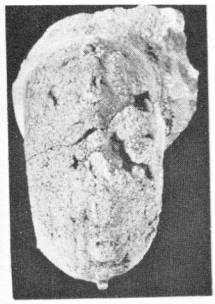
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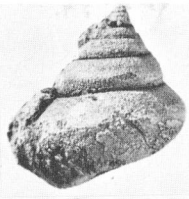
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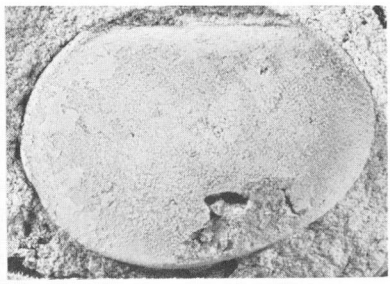
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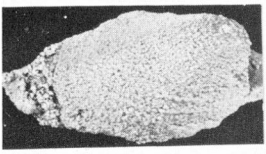
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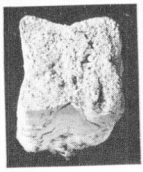
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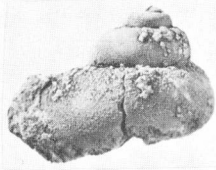
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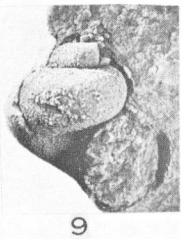
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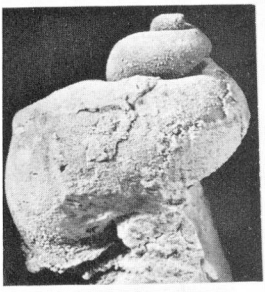
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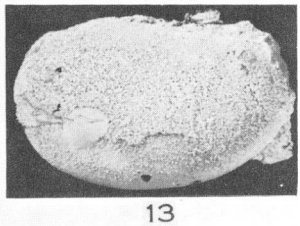
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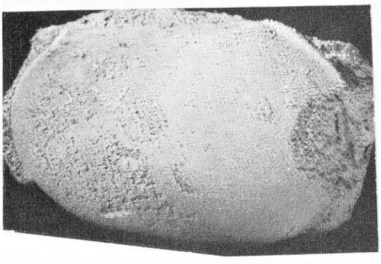

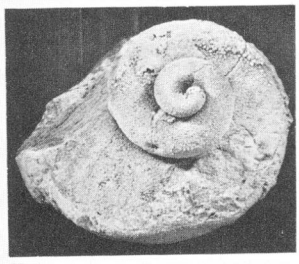
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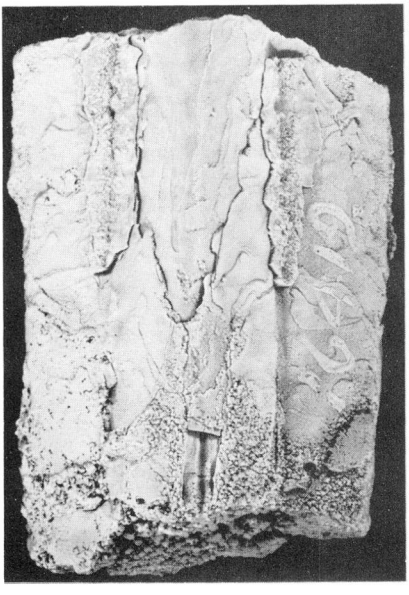
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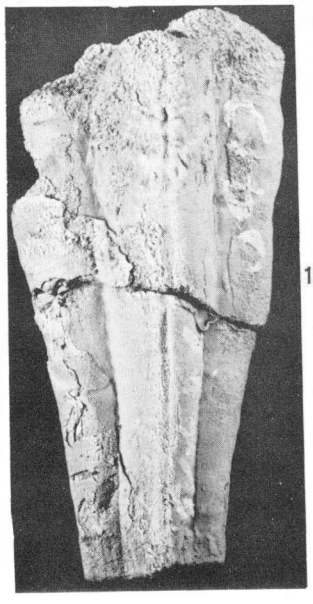
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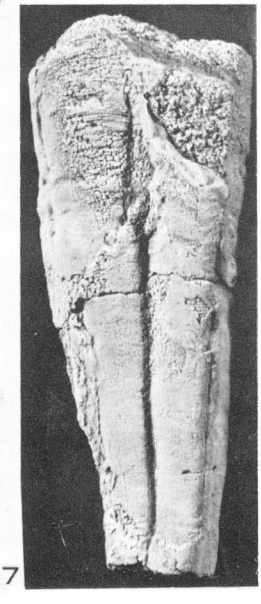
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PLATE XVII

Bertie Formation

FIGS. 1,10. Eurypterus lacustris Harlan. Ventral and dorsal views of nearly complete specimens, X1 and X 3/4. Quarry behind Ridgeway and lot 5, con. 10, Bertie tp., Welland county. Hypotypes, GSC Nos. 13995, 13985.

FIGS. 2,11. Eurypterus sp. cf. E. lacustris Harlan.. Normal preservation of prosoma, X1 and X2. Lot 5, con. 10, and lot 2, con. 13, Bertie tp., Welland county. Hypotypes, GSC Nos. 13986, 13988.

FIG. 8. Ceratiocaris acuminata Hall. X1. Rattlesnake Falls near Cayuga, Haldimand county. Hypotype, GSC No. 3231.

FIG. 9. Pterygotus cummingsi Grote and Pitt. Telson, X1. North Buffalo, New York State, U.S.A. Hypotype, GSC No. 13991.

Thornloe Formation

FIGS. 3-7. 'Atrypa' parva Hume. Anterior, pedicle, side, brachial, and posterior views, X1. Mann Island, Lake Timiskaming, Quebec. Hypotypes, GSC Nos. 20614 - 20616 (see Pl. XVIII, fig. 9).

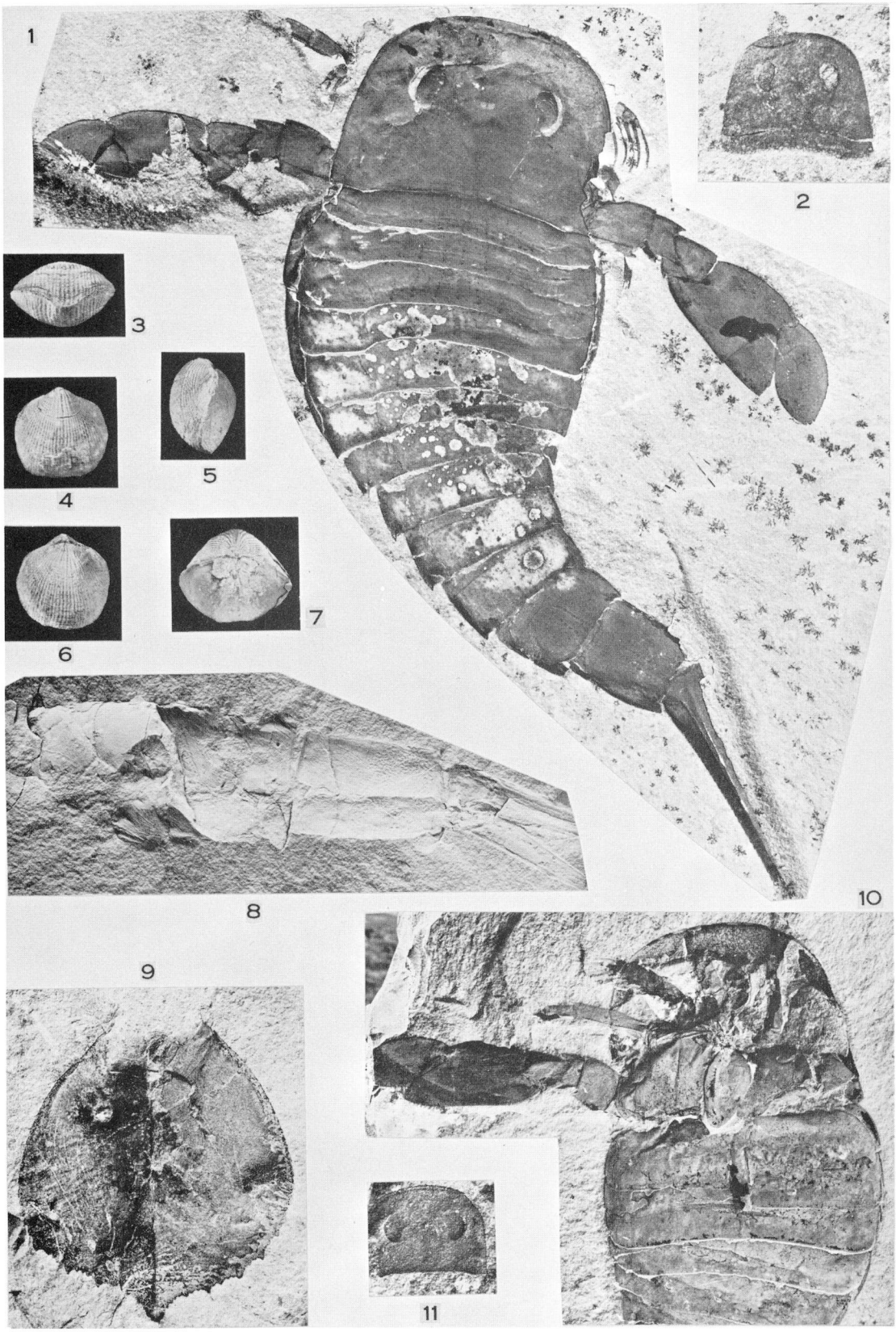
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PLATE XVIII

Thornloe Formation

FIGS. 1-2. Multisolenia tortuosa Fritz. Longitudinal and transverse sections, X4. Mann Island, Lake Timiskaming, Quebec. Hypotypes, GSC Nos. 18739, 18740.

FIG. 3. Donacoceras timiskamingense Foerste. X1. Armstrong tp., 3 miles north of Earlton. Holotype, GSC No. 8043.

FIG. 4. Syringopora timiskamingensis Hume. Side view of corallum, X1. Lake Timiskaming area. Holotype, GSC No. 9103.

FIG. 5. Huroniella timiskamingensis Foerste. X1. Harley tp., 1 mile southeast of Thornloe. Holotype, GSC No. 8705.

FIG. 7. Stokesoceras sp. cf. S. engadinense Foerste. X1. Same locality as Fig. 5. Hypotype, GSC No. 8707.

FIG. 9. 'Atrypa' parva Hume. Brachial valve, X1. Same locality as Figs. 1, 2. Hypotype, GSC No. 20617 (see Pl. XVII, figs. 3-7).

FIG. 10. Megadiscosorus crassisegmentatus Foerste. X1. Same locality as Fig. 3. Holotype, GSC No. 8726.

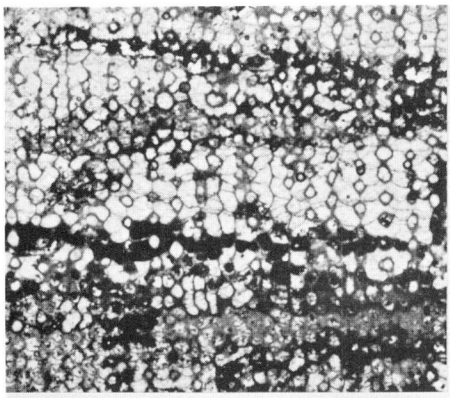
FIG. 11. Syringopora dalmanii Billings. Side view of corallum, X1. Head of Lake Timiskaming, Ontario. Holotype, GSC No. 2618.

FIG. 12. Discosorus humei Foerste. X1. Same locality as Figs. 1, 2. Syntype, GSC No. 8710.

Hudson Bay Lowlands

FIGS. 6,13. Stegerhynchus (?) winiskensis (Whiteaves). Pedicle and side views, X1 and X2. Winisk River. Syntypes, GSC Nos. 4198a, 4198 (see Pl. IV, fig. 1).

FIG. 8. Lowoceras sp. X1. Limestone rapids on Fawn branch of Severn River. Fig. spec., GSC No. 20618.



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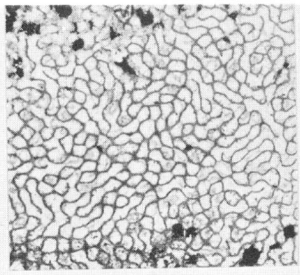

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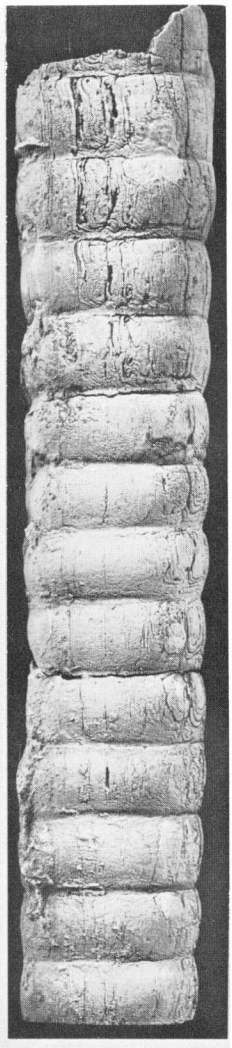

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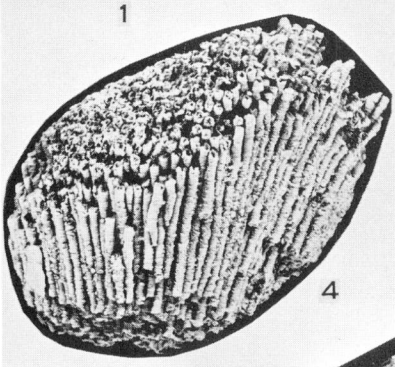

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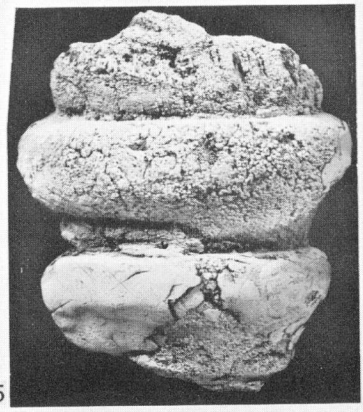

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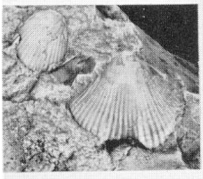

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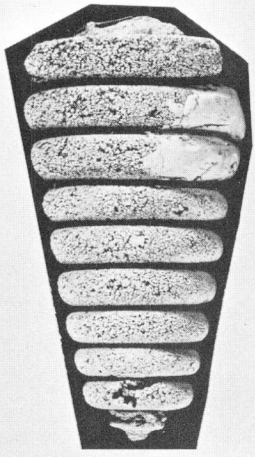

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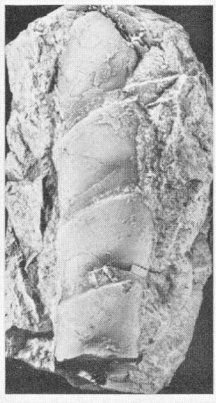

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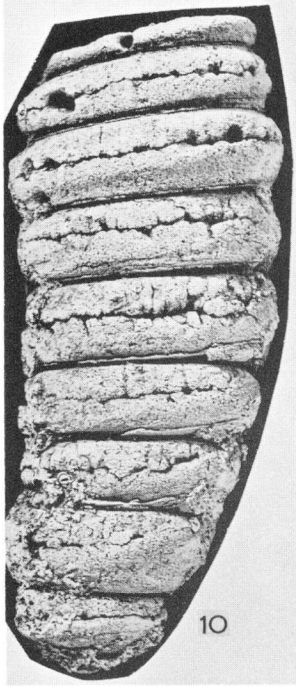

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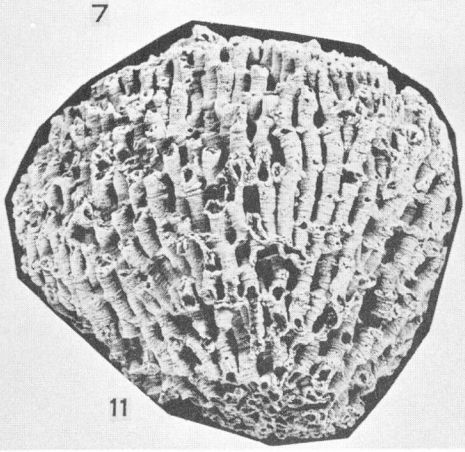

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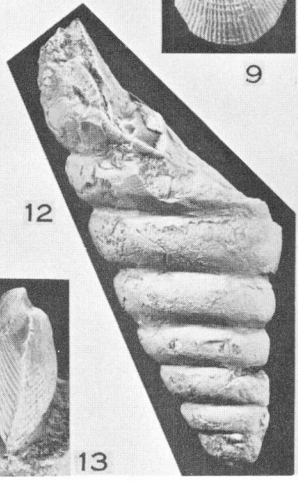

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PLATE XIX

Hudson Bay Lowlands

FIG. 1. Ambonychia septentrionalis Whiteaves. Right valve, X1. Portage road at falls, Ekwan River. Holotype, GSC No. 4428.

FIGS. 2, 9, 11. Dihogmochilina latimarginata (Jones). Left and right valves, X1. East side Lake Winnipegosis, Manitoba; Hendricks Formation, upper 5 feet of Hendricks quarry, Upper Peninsula, Michigan, U.S.A.; and Roche Rouge, Saskatchewan River, Manitoba. Hypotypes, GSC Nos. 17089, 20619, 20620 (reported from the Severn River and Ekwan River Formations-Savage and Van Tuyl, 1919, pp. 360, 363, 365).

FIG. 3. Glassia variabilis Whiteaves. Pedicle valve, X3. Winisk River. Syntype, GSC No. 4326a.

FIGS. 4, 6. Stegerhynchus (?) ekwanensis (Whiteaves). Pedicle and side views, X3. Portage at falls, Ekwan River. Holotype, GSC No. 4425.

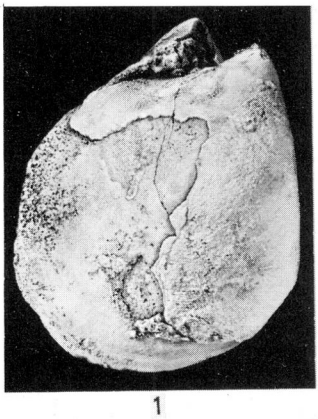
FIGS. 5, 10. Plectatrypa lowi (Whiteaves). Brachial and pedicle views, X2. Limestone rapids, Fawn River. Syntypes 4403 (on same piece of rock).

FIG. 7. Megalomphala robusta Whiteaves. X1. Same locality as Fig. 1. Syntype, GSC No. 4421a.

FIG. 8. Scutellum ekwanensis (Whiteaves). Pygidium, X1. Middle rapids below falls, Ekwan River. Syntype, GSC No. 4406.

FIG. 12. Trimerella ekwanensis Whiteaves. Pedicle valve, X1. Falls on Ekwan River. Syntype, GSC No. 4415a.

FIG. 13. Phragmoceras lineolatum Whiteaves. Lateral view, X1. Below falls, Ekwan River. Syntype, GSC No. 4404.



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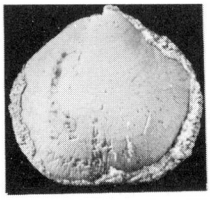

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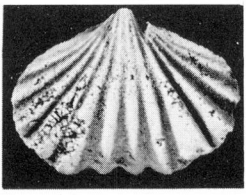

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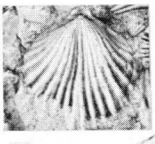

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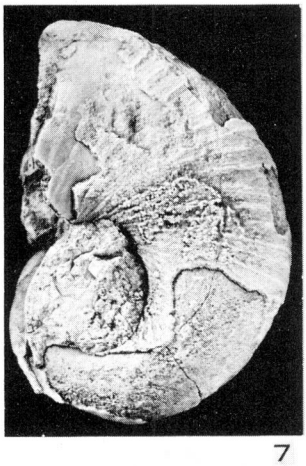

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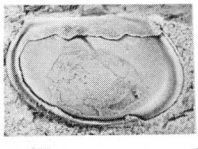

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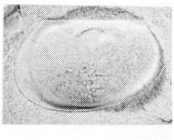

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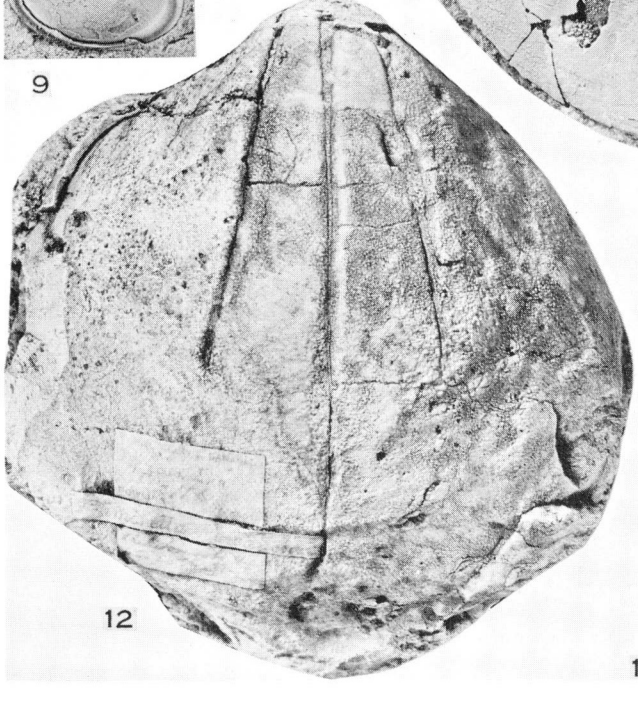

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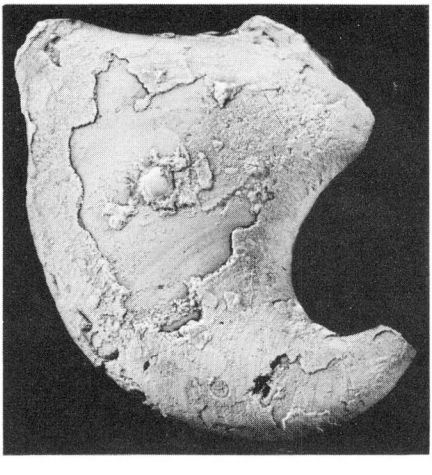

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Illustrations of Canadian Fossils

The following Geological Survey Papers have already been issued under this general title:

Devonian of Western Canada
Invertebrates - D.J. McLaren and A.W. Norris
Plants - D.C. McGregor
GSC Paper 62-4

Cambrian, Ordovician and Silurian of the Western Cordillera
- B.S. Norford
GSC Paper 62-14

Triassic of Western and Arctic Canada
- E.T. Tozer
GSC Paper 62-19

Jurassic of Western and Arctic Canada
- H. Frebold
GSC Paper 63-4

Early Lower Cretaceous (Berriasian and Valanginian) of the Canadian Western Cordillera, B.C.
- J.A. Jeletzky
GSC Paper 64-6

Lower Cretaceous marine index fossils of the Sedimentary basins of Western and Arctic Canada
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