

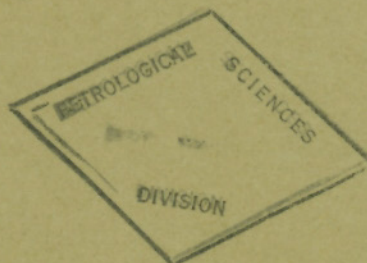
GEOLOGICAL
SURVEY
OF
CANADA

DEPARTMENT OF MINES
AND TECHNICAL SURVEYS

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PAPER 62-4



ILLUSTRATIONS OF CANADIAN FOSSILS
DEVONIAN OF WESTERN CANADA

Invertebrates-D. J. McLaren, A. W. Norris

Plants- D. C. McGregor



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ILLUSTRATIONS OF CANADIAN FOSSILS
DEVONIAN OF WESTERN CANADA

This booklet is the first in a series of illustrations of Canadian fossils designed primarily to assist the general geologist who may lack a specialized knowledge of palaeontology. It has arisen largely as the result of requests made by field officers of the Geological Survey of Canada.

These plates are not intended to be a contribution to palaeontological literature. In the legends, however, a special attempt is made to give as detailed information as is known on the stratigraphic and geographic provenance of each specimen figured, thereby making a real contribution to the recorded empirical range of the species illustrated. Such information will remain independent of changes in opinion on correlation, or in local stratigraphic terminology. Many descriptive reports on Western Canadian faunas continue to be published without this all-important information.

An open nomenclature has frequently been adopted for species, and occasionally for genera. To names in "quotes" and cf. identifications are added species whose trivial name is indicated by means of a letter of the alphabet. Such letter names are consistent with those employed for the same species in the Index Collections, and in internal fossil reports of the Geological Survey.

No specific reference is made to previous work. The interested worker can easily familiarize himself with the most important faunal studies in a region from several bibliographies, especially the "Annotated Bibliography of the Geology of the Sedimentary Basin of Alberta and of Adjacent Parts of British Columbia and Northwest Territories, 1845-1955" published by the Alberta Society of Petroleum Geologists, and the annual "Bibliography of North American Geology" published by the U.S. Geological Survey. It is impossible, however, to ignore the names of certain workers responsible for the description and illustration of Devonian fossils; these include F.B. Meek, J.F. Whiteaves, E.M. Kindle, P.S. Warren, Stanley Smith, C.R. Stelck, C.H. Crickmay, H. McCammon, and A. Lenz.

Species are grouped by formation or by geographic region. Neither local stratigraphic succession nor correlation is indicated. Formation names are used whenever possible. Here again, a worker must acquaint himself with the usage of such names by reference to standard bibliographies; of special use is the "Lexicon of Geologic Names in the Western Canada Sedimentary Basin and Arctic Archipelago" published by the Alberta Society of Petroleum Geologists, 1960. The ages of the stratigraphic names used in the plate legends in terms of European Stages are tentatively assigned as follows:

UPPER DEVONIAN

Famennian Stage: Alexo and Palliser Formations—Alberta
Rocky Mountains.

Frasnian Stage: Peace Point, Firebag, Calumet, and Moberly Members of Waterways Formation—northeastern Alberta; Flume, Maligne, Perdrix, Cairn, Southesk and Mount Hawk Formations—Alberta Rocky Mountains; Escarpment and lower Members of the Hay River Formation, Twin Falls, Redknife and Kakisa Formations—Upper Mackenzie region; Imperial Formation—Lower Mackenzie region.

Frasnian or Givetian Stages: Kee Scarp Formation—Lower Mackenzie Basin.

MIDDLE DEVONIAN

Givetian Stage: Lower Manitoban Formation—Northern Manitoba; La Butte, Pine Point, Sulphur Point and Presqu'ile Formations—Upper Mackenzie region; Hare Indian, "Ramparts Limestone", "Beavertail Limestone"—Lower Mackenzie Basin; Unnamed Middle Devonian unit—British Columbia Rockies.

Givetian and/or Eifelian Stages: McDame Group—Northern British Columbia; Nahanni Formation—Upper Mackenzie Basin; Hume Formation—Central Mackenzie region.

Eifelian Stage: Middle Devonian Limestone unit—Central Yukon Territory.

UPPER SILURIAN OR LOWER DEVONIAN

Upper part of map-unit 5 of Douglas and Norris (1961, GSC Paper 60-19)—Virginia Falls area.

All types and figured specimens are stored with the type collections of the Geological Survey of Canada in Ottawa, where they may be examined at any time. Plates I to VII and XI to XV have been prepared by McLaren; Plates VIII to X by Norris; and Plate XVI by McGregor.

Devonian Plants

Very few Devonian megafossil plants have been reported from Western Canada. Those that have been found are not of well-known genera or species, and are insufficiently described to be of use as guide fossils.

This paucity of records from Western Canada may persist in the future. However, if plants of this period are found there, they may well be of the types figured on Plate XVI. Plants figured on Plate XVI, figures 1, 3, and 4, are from Eastern Canada but they are widely distributed in the northern hemisphere.

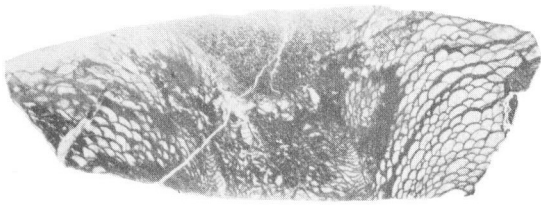
PLATES

PLATE I

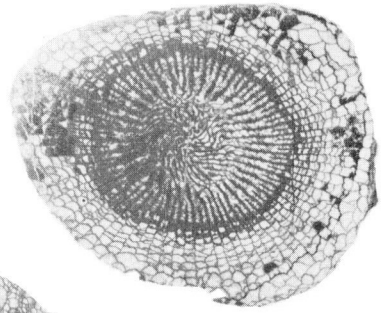
(Except where otherwise stated, all figures are natural size.)

CORALS FROM EARLY MIDDLE DEVONIAN, CENTRAL YUKON

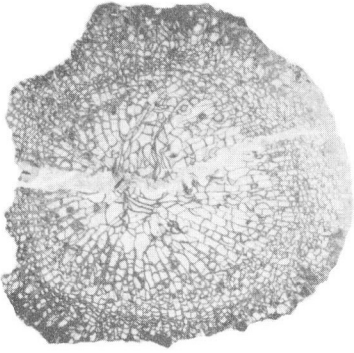
- FIGS. 1, 2. Dohmophyllum sp. A: transverse and longitudinal sections of GSC No. 16533 a, b. Middle Devonian Limestone Unit; Hart River, Yukon Territory, lat. 65° 26'N, long. 137° 07'W, GSC loc. 37077. Collector L.H. Green, 1958.
- FIGS. 3, 4. Digonophyllum sp. A: transverse and longitudinal sections of GSC No. 16534 a, b. Same horizon and locality as above.
- FIGS. 5, 6. Hexagonaria sp. H: transverse and longitudinal sections of GSC No. 16551 a, b, X2. Middle Devonian Limestone Unit; Hart River, Yukon Territory, lat. 65° 21'N, long. 137° 03'W, GSC loc. 37081. Collector L.H. Green, 1958.
- FIGS. 7, 8. Stringophyllum (Neospongophyllum?) sp. J: transverse and longitudinal sections of GSC No. 16535 a, b, X2. Same horizon and locality as figs. 5 and 6.



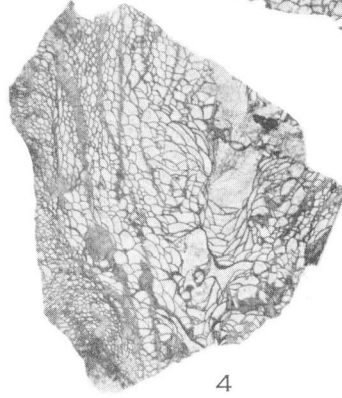
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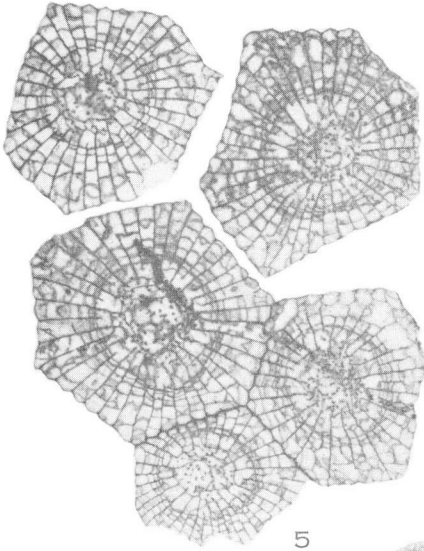
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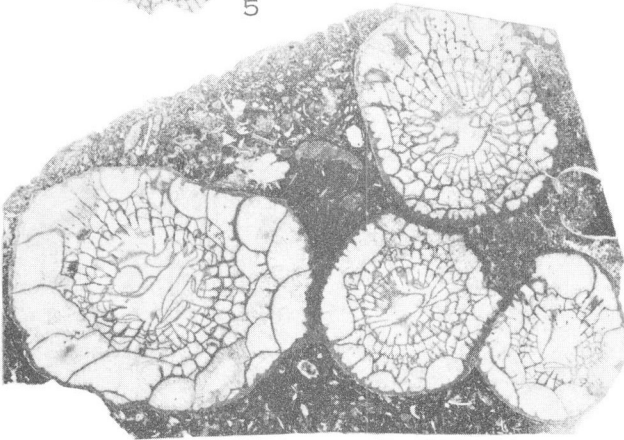
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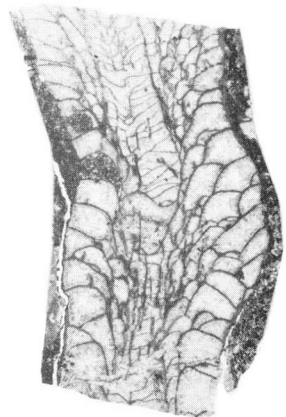
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PLATE II

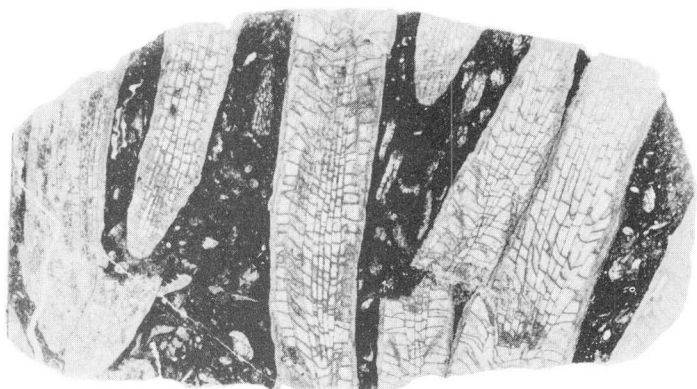
(All figures are magnified x 2.)

NAHANNI FORMATION CORALS

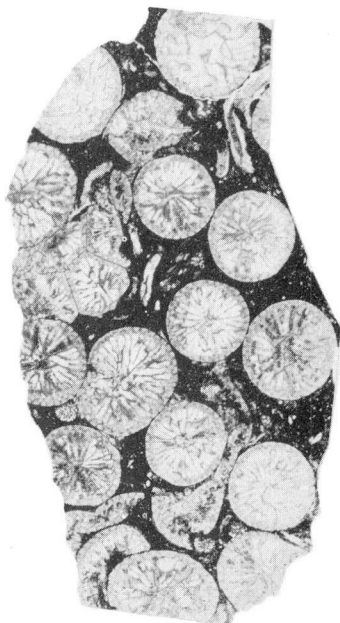
FIGS. 1, 2. Dendrostella rhenana (Frech): transverse and longitudinal sections of hypotype GSC No. 16553 a, b. Nahanni Formation; 600 feet above the base of the limestone; Nahanni Range, south of Little Doctor Lake, District of Mackenzie, GSC loc. 32125.

FIGS. 3, 4. Hexagonaria sp. A: transverse and longitudinal sections of GSC No. 16550 a, b. Nahanni Formation; mountain north of Bluefish Lake, Nahanni Range, District of Mackenzie, GSC loc. 22024.

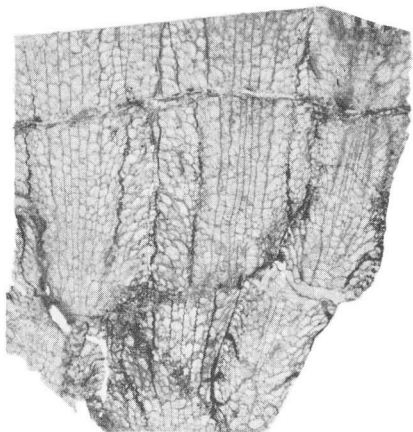
FIGS. 5, 6. Utaratuia laevigata Crickmay: transverse and longitudinal sections of hypotype GSC No. 16541 a, b. Nahanni Formation, 300 feet below top; Nahanni Range south of Little Doctor Lake, District of Mackenzie, GSC loc. 32124.



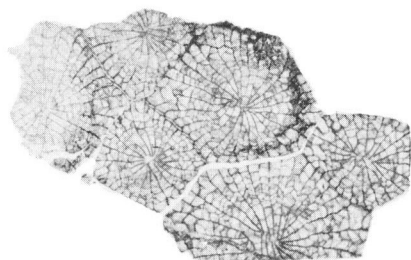
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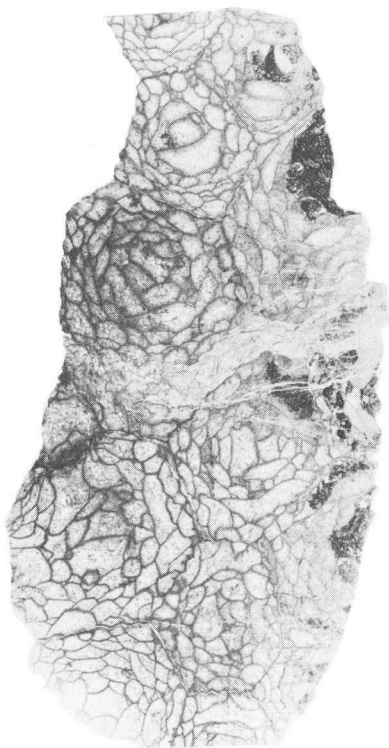
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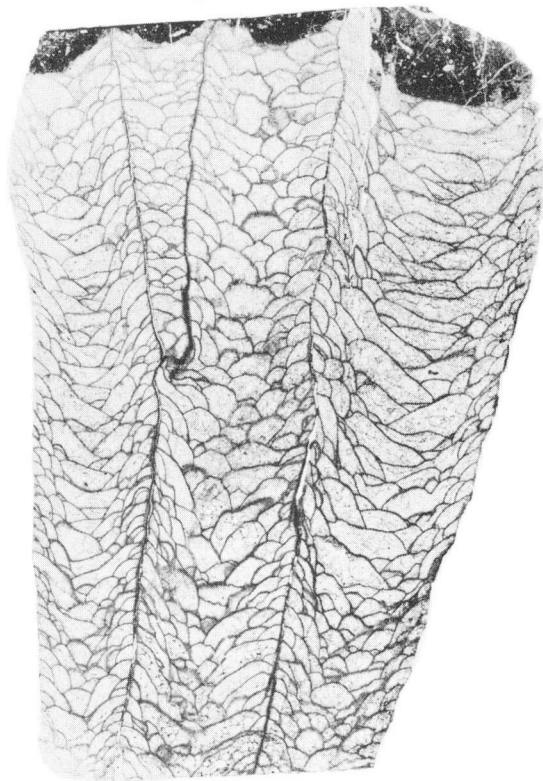
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PLATE III

(All figures are magnified x 2.)

MISCELLANEOUS MIDDLE DEVONIAN CORALS

FIGS. 1-4. Digonophyllum rectum (Meek): three transverse and one longitudinal section of hypotype GSC No. 16529 a-d. Hume Formation, upper few feet; Anderson River, District of Mackenzie, (approx.) lat. 68° 31'N, long. 127° 20'W, GSC loc. 37318.

FIGS. 5, 6. Australophyllum hyperbolicum (Crickmay): transverse and longitudinal sections of hypotype GSC No. 16539 a, b. Well-bedded limestone in McDame Group; elevation 4,400 feet on south-facing ridge, 7 1/2 miles northwest of French River bridge, McDame map-area, B.C., GSC loc. 32420. Collector H. Gabrielse, 1957.

The species is widespread in the Northern Rockies and Mackenzie Mountains in the Nahanni and Hume Formations.

FIGS. 7, 8. Coenites sp. C: transverse and longitudinal sections of GSC No. 16549 a, b. Upper beds of Pine Point Formation; 5 miles north of Sulphur Bay, Great Slave Lake, District of Mackenzie, GSC loc. 33576. Collector A.W. Norris, 1957.

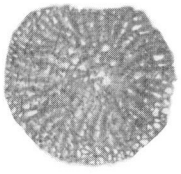
The species occurs widely in the upper part of the Middle Devonian throughout the Mackenzie River region.

FIGS. 9, 10. Thamnopora sp. F (= "Favosites polymorpha Goldfuss" of Meek, 1867): transverse and longitudinal sections of GSC No. 16545 a, b. Middle part of Presqu'ile Formation; northeast side of Presqu'ile Point, south shore of Great Slave Lake, District of Mackenzie, GSC loc. 31098. Collector A.W. Norris, 1957.

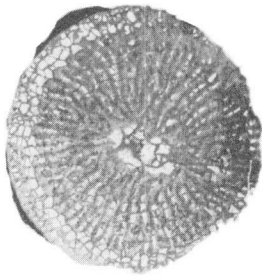
The species is widespread in the upper part of the Middle Devonian in the Mackenzie River region.

FIGS. 11, 12. Favosites sp. C: transverse and longitudinal sections of GSC No. 16544 a, b. Unnamed Middle Devonian Unit, 240 feet below top; mountainside west of Clearwater Creek, Pine Pass map-area, B.C., lat. 55° 47'N, long. 123° 14'W, GSC loc. 42167. Collector J.E. Muller, 1960.

The species is common in the late Middle Devonian rocks in Western Canada. The genus Favosites ranges from the Upper Ordovician to the Middle Devonian, but is unknown in later rocks.



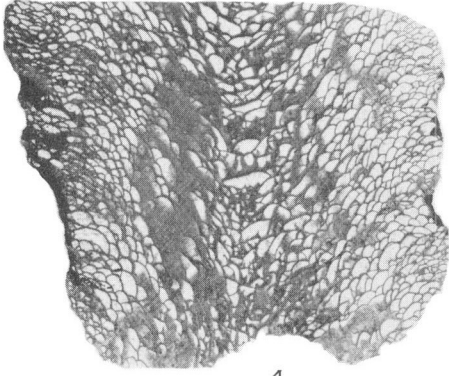
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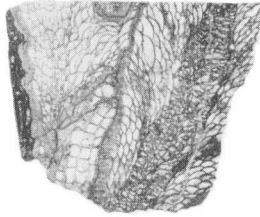
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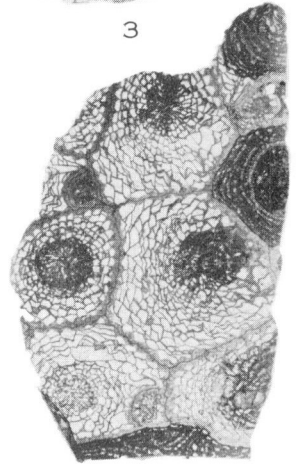
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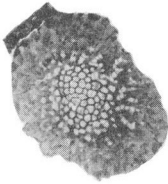
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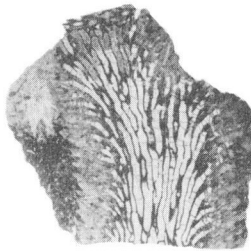
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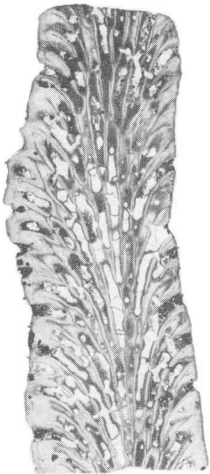
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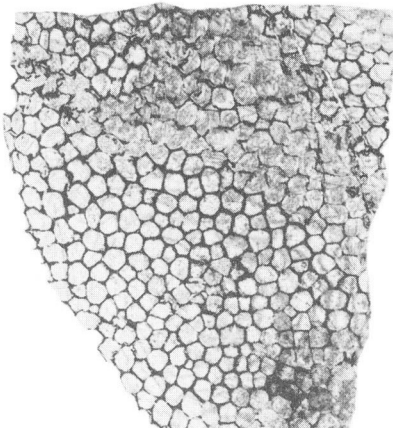
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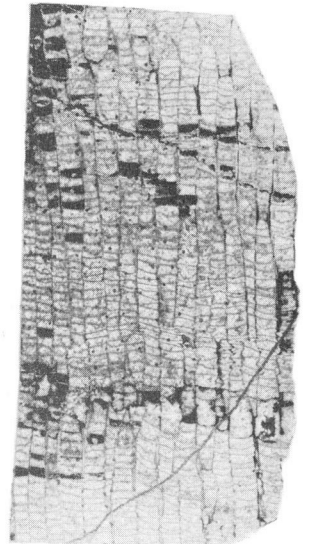
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PLATE IV

(Except where otherwise stated, all figures are natural size.)

LATE MIDDLE DEVONIAN CORALS

FIGS. 1-4. Keriophyllum sp. F: three transverse and one longitudinal section of GSC No. 16528 a-d. Middle Presqu'ile Formation; northeast side of Presqu'ile Point, south shore of Great Slave Lake, District of Mackenzie, GSC loc. 31098. Collector A.W. Norris, 1957.

FIGS. 5, 6. Grypophyllum cf. G. gracile Wedekind: transverse and longitudinal sections of GSC No. 16532 a, b, X2. Kee Scarp Formation; west end of Cleaver Mountain, 2 miles north of Mackenzie River, west of Oscar Creek, District of Mackenzie, GSC loc. 39617.

The species is widespread in the late Middle Devonian rocks of the Mackenzie River region.

UPPER DEVONIAN CORALS FROM HAY RIVER

FIGS. 7, 8. Alveolites sp. D: two sections of GSC No. 16546 a, b, X2. Escarpment Member of the Hay River Formation, 160 feet from top; Hay River, left bank, at Mile 29 on the Mackenzie Highway, District of Mackenzie, GSC loc. 30517. Collector D.J. McLaren, 1957.

This species is also illustrated on fig. 23, Plate XII.

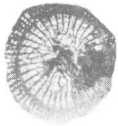
FIGS. 9, 10. Macgeea proteus Smith: transverse and longitudinal sections of hypotype GSC No. 16540 a, b, X2. Escarpment Member of the Hay River Formation, 33 feet down; Louise Falls, Hay River, District of Mackenzie, GSC loc. 30440. Collector D.J. McLaren, 1957.

The genus Macgeea is restricted to the early Upper Devonian.

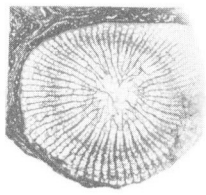
FIGS. 11-13. Tabulophyllum mcconnelli (Whiteaves): two transverse and one longitudinal section of hypotype GSC No. 16531 a-c. Basal bed of Escarpment Member of the Hay River Formation; Hay River at Mile 26 on the Mackenzie Highway, District of Mackenzie, GSC loc. 31262. Collector P. Harker, 1957.

FIGS. 14, 15. Charactophyllum cf. C. nanum (Hall and Whitfield): transverse and longitudinal sections of GSC No. 16527 a, b, X2. Same horizon and locality as figs. 11-13.

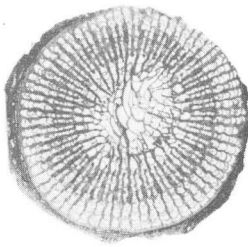
FIGS. 16, 17. Hexagonaria bompasi (Smith): transverse and longitudinal sections of hypotype GSC No. 16552 a, b. Twin Falls Formation, 164 feet above the base; Hay River, left bank, 3 1/2 miles upstream from Alexandra Falls, District of Mackenzie, GSC loc. 30394. Collector D.J. McLaren, 1957.



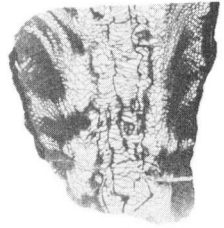
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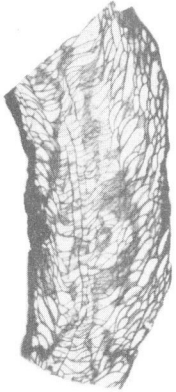
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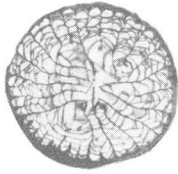
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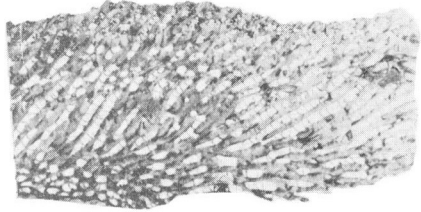
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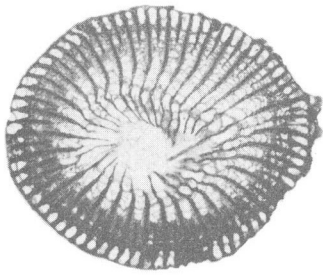
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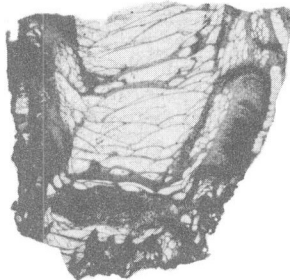
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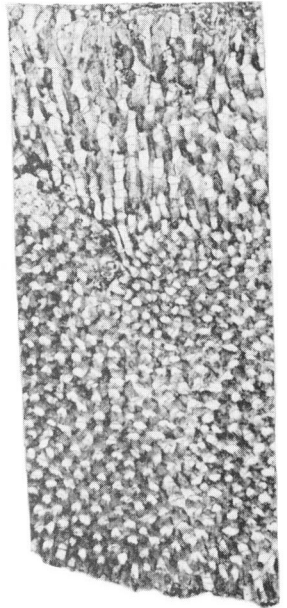
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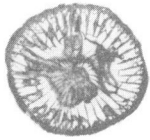
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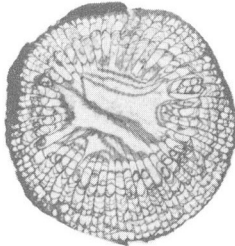
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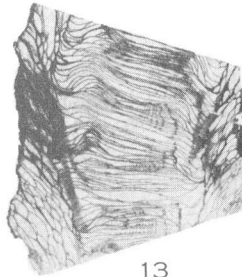
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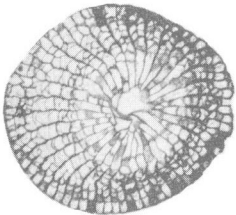
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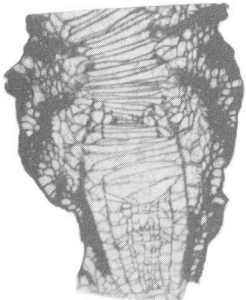
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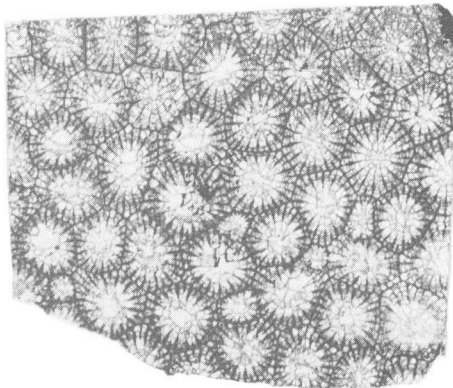
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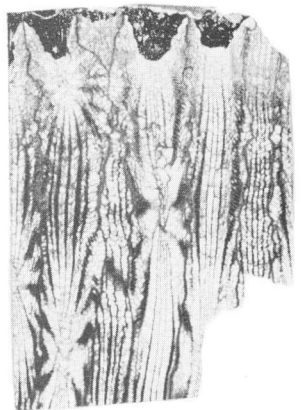
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PLATE V

(Except where otherwise stated, all figures are natural size.)

UPPER DEVONIAN CORALS FROM HAY RIVER (cont.)

FIGS. 1, 2. Hexagonaria reticulata (Smith): transverse and longitudinal sections of hypotype GSC No. 16548 a, b, X2. Highest beds of Twin Falls Formation; right bank of Hay River, one mile downstream from Grumbler Rapid, District of Mackenzie, GSC loc. 30444. Collector D.J. McLaren, 1957.

FIGS. 3-5. Mictophyllum modicum Smith: two transverse and one longitudinal section of hypotype GSC No. 16526 a-c, X2. Highest beds of Twin Falls Formation; right bank of Hay River, one mile upstream from Grumbler Rapid, District of Mackenzie, GSC loc. 30442. Collector D.J. McLaren, 1957.

Other Hay River corals are figured on Plate XII.

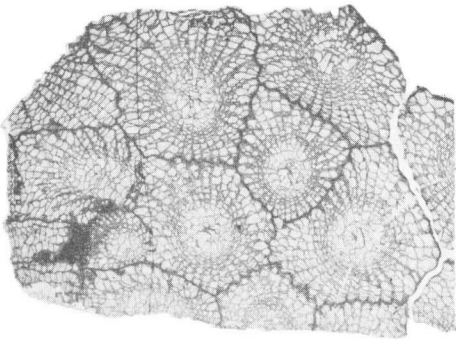
CORALS FROM THE MOUNT HAWK AND SOUTHESK FORMATIONS

FIGS. 6, 7. Ptychophyllum? kindlei Smith: transverse and longitudinal sections of hypotype GSC No. 16530 a, b. Southesk Formation, about 400 feet below top; Bosche Range, one mile south of Moosehorn Lakes, Alberta Rocky Mountains, GSC loc. 40182. Collector E.W. Mountjoy, 1959.

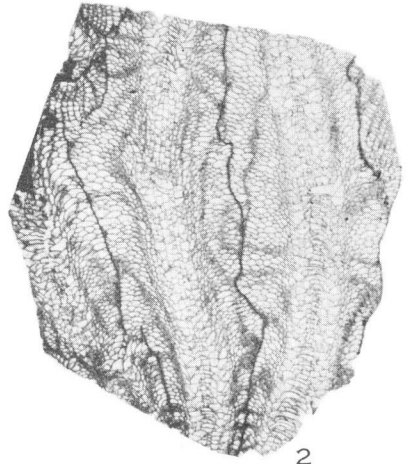
See Pl. VII, figs. 7, 8. The species is also widespread in the Kakisa Formation of the Upper Mackenzie region.

FIGS. 8, 9. Syringopora sp. B: transverse and longitudinal sections of GSC No. 16547 a, b, X2. Southesk Formation, about 100 feet below top; southeast side of mountain, 2 miles northwest of Mt. Kephala, Boule Range, Alberta Rocky Mountains, GSC loc. 42112. Collector E.W. Mountjoy, 1960.

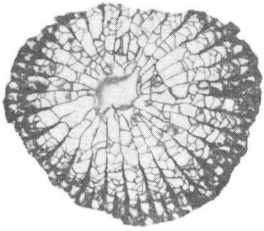
This species is a widespread marker for the upper part of the Southesk Formation in the Jasper region.



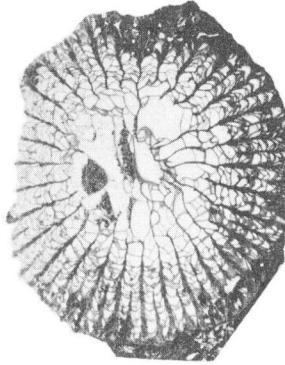
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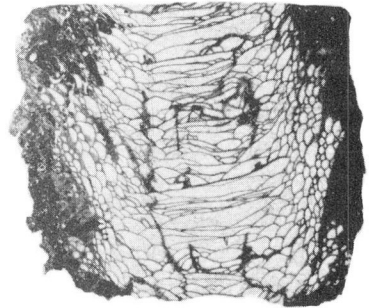
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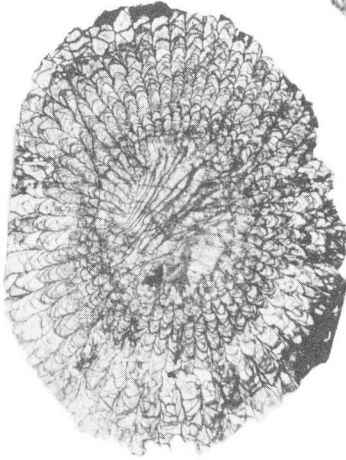
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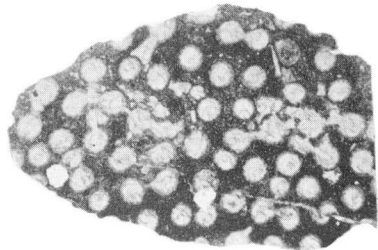
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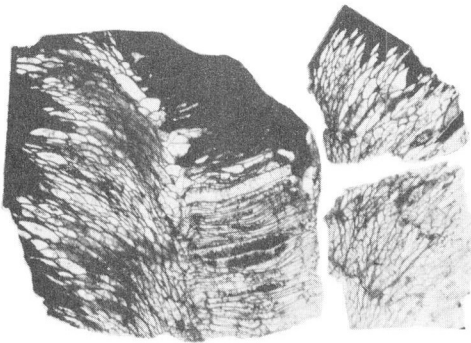
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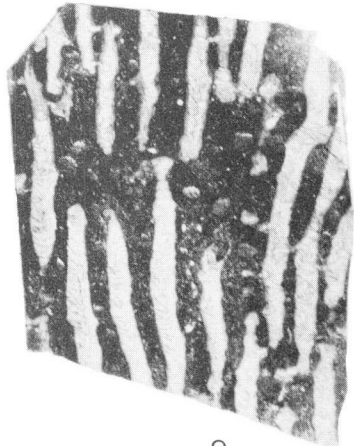
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PLATE VI

(Except where otherwise stated, all figures are natural size.)

MOUNT HAWK AND SOUTHESK CORALS (cont.)

FIGS. 1, 2. Phillipsastraea nevadensis magna (Stumm): transverse and longitudinal sections of hypotype GSC No. 13827 a, b, X2. Argillaceous Limestone Member, Mount Hawk Formation (Unit 27 in McLaren, GSC Bull. 35, 1955, p. 56); Job Creek, eastern fault block, Alberta Rocky Mountains, GSC loc. 24187. Collector D.J. McLaren, 1953.

FIGS. 3, 4. Phillipsastraea cf. P. woodmani (White): transverse and longitudinal sections of GSC No. 13828 a, b, X1.5. From 830 feet above base of outcrop section, Mount Hawk Formation; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19904. Collector D.J. McLaren, 1951.

FIGS. 5, 6. Acinophyllum camselli (Smith): transverse and longitudinal sections of hypotype GSC No. 13829 a, b, X2. Mount Hawk Formation, 210 feet above base; North Ram River Gap, north side, Front Range, Alberta Rocky Mountains, GSC loc. 24190. Collector D.J. McLaren, 1952.

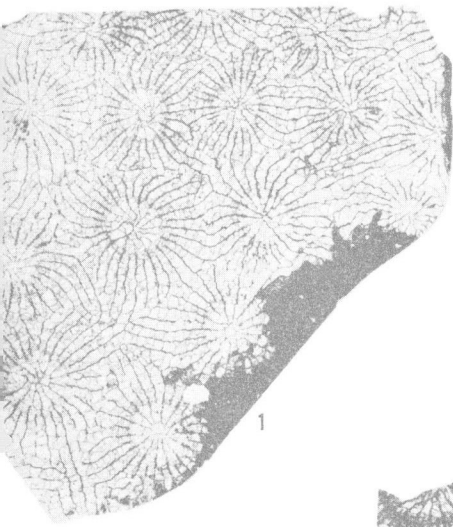
This species occurs in the upper beds of the Redknife Formation between Hay and Trout Rivers, District of Mackenzie.

FIG. 7. Coenites? sp. and Thamnopora sp.: GSC No. 13830, Mount Hawk Formation, 170 feet above base; North Ram River Gap, north side, Front Range, Alberta Rocky Mountains, GSC loc. 24188. Collector D.J. McLaren, 1952.

FIG. 8. Amphipora sp.: thin section of rock containing many specimens, GSC No. 13831, X3. Southesk Formation, 605 feet below top; south end of the Ancient Wall, Jasper National Park, Alberta Rocky Mountains, GSC No. 47645. Collector D.J. McLaren, 1951.

Amphipora is widespread in Middle and Upper Devonian limestones throughout Western Canada.

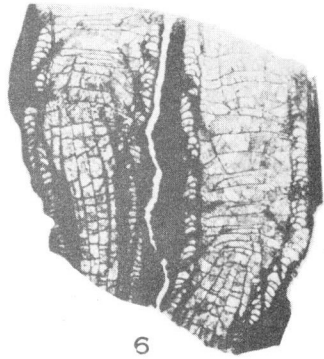
Another Mount Hawk coral is figured on Pl. XI, figs. 28, 29.



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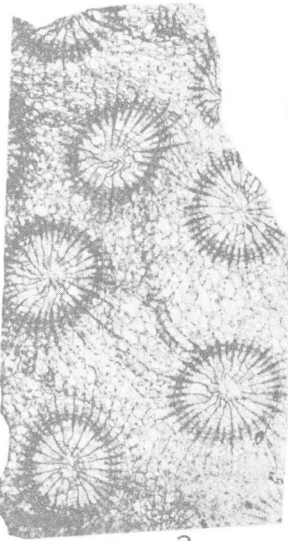
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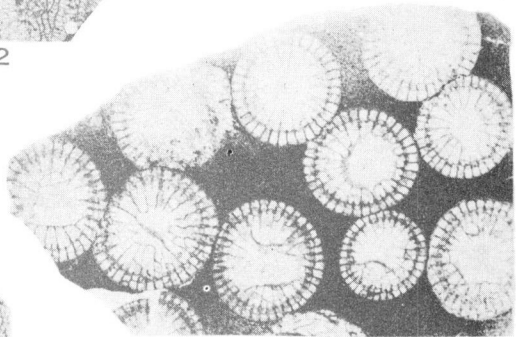
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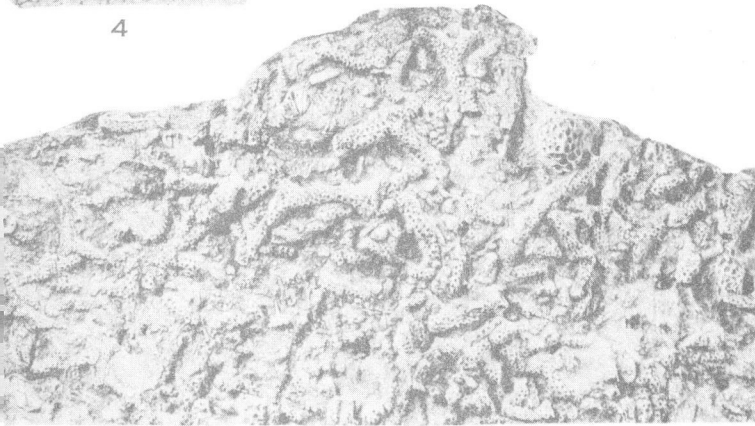
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PLATE VII

(Except where otherwise stated, all figures are natural size.)

CORALS FROM THE KAKISA FORMATION

FIGS. 1, 2. Phillipsastraea vesiculosa Smith; transverse and longitudinal sections of hypotype GSC No. 16538 a, b, X2. Kakisa Formation, in bioherm, 60 feet down from top; Trout River, left bank, 500 yards upstream from Whittaker (the Main) Falls, District of Mackenzie, GSC loc. 30612. Collector D.J. McLaren, 1957.

The species also occurs high in the Southesk Formation in the northern part of the Alberta Rocky Mountains.

FIGS. 3, 4. Hexagonaria caurus Smith; transverse and longitudinal section of hypotype GSC No. 16536 a, b, X2. Same horizon and locality as the preceding specimen.

FIGS. 5, 6. "Phillipsastraea exigua Lambe" of Smith 1945; transverse and longitudinal sections of hypotype GSC No. 16537 a, b. Same horizon and locality as the preceding specimens.

This species, which differs from the stratigraphically earlier "Phillipsastraea Verrilli var. exiguum Lambe", is widespread in the Kakisa Formation, and occurs high in the Southesk Formation, in the Alberta Rocky Mountains.

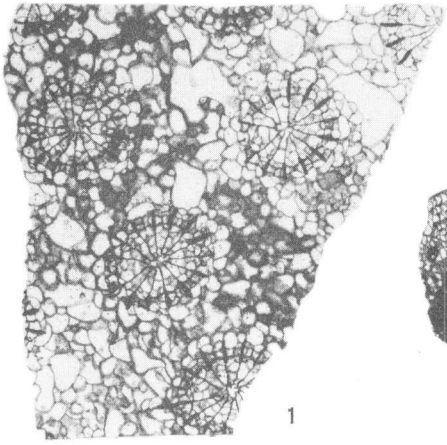
FIGS. 7, 8. Ptychophyllum? kindlei Smith; transverse and longitudinal sections of hypotype GSC No. 16554 a, b. Upper part of Kakisa Formation; Bouvier River, District of Mackenzie, GSC loc. 35602.

See also Pl. V, figs. 6, 7.

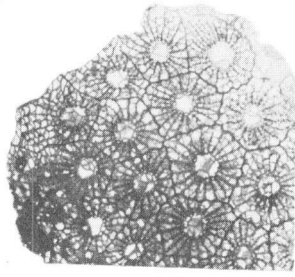
FIGS. 9, 10. Thamnophyllum tructense (McLaren); transverse and longitudinal sections of hypotype GSC No. 16542 a, b, X2. Upper part of Kakisa Formation; Redknife River, District of Mackenzie, GSC loc. 17494.

The species is widespread in the Upper Mackenzie region and in the middle and upper parts of the Mount Hawk and Southesk Formations in the Alberta Rocky Mountains.

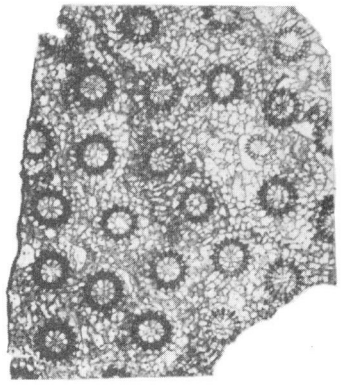
FIGS. 11, 12. Acinophyllum sp. D; transverse and longitudinal sections of GSC No. 16543 a, b, X2. Kakisa Formation, 65 feet below top; Middle Kakisa River, District of Mackenzie, GSC loc. 30541. Collector D.J. McLaren, 1957.



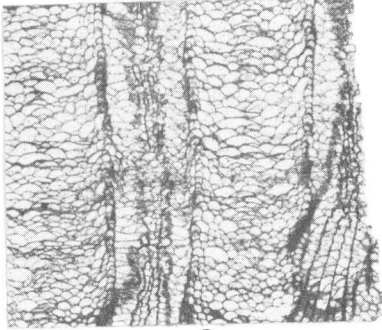
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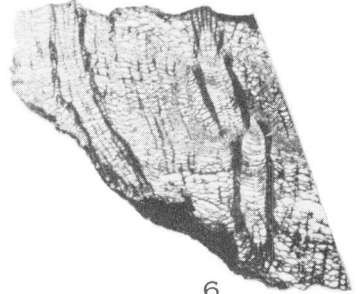
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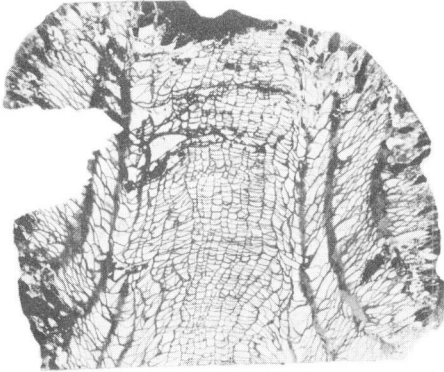
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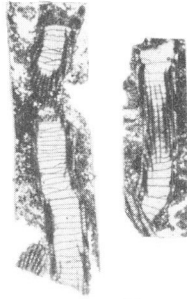
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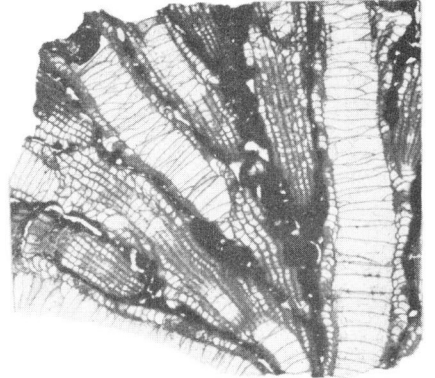
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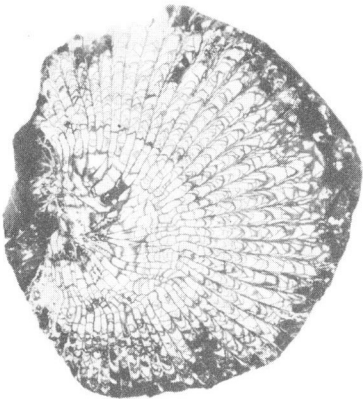
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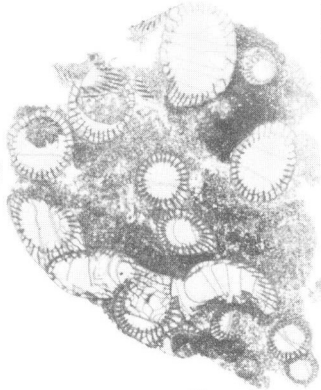
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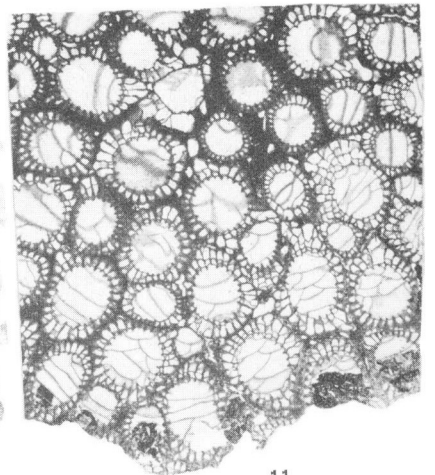
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PLATE VIII

(Except where otherwise stated, all figures are natural size.)

UPPER SILURIAN OR LOWER DEVONIAN BRACHIOPODS

FIGS. 1-3. Gypidula sp.: dorsal, side, and anterior views of GSC No. 16688. Upper part of Map-unit 5 of Douglas and Norris (1961, GSC Paper 60-19), 490 feet from top; west slope of Cathedral Mountain, Virginia Falls area, District of Mackenzie. Collector A.W. Norris, 1957.

FIGS. 4-6. Atrypa sp.: ventral, side, and anterior views of GSC No. 16689. Same horizon and locality as above.

FIGS. 7-9. "Camarotoechia" sp.: ventral, side, and posterior views of GSC No. 16690. Same horizon and locality as above.

HUME FORMATION

FIGS. 10-12. Atrypa arctica Warren: dorsal, side, and anterior views of hypotype GSC No. 16691. Presumably from upper Hume Formation about 40 feet below a Leiorhynchus castanea (Meek) coquina bed; Gayna River about 9 miles from mouth, District of Mackenzie, GSC loc. 10972. Collector T. Fitzgerald, Peel Plateau Exploration Ltd., 1954.

FIGS. 13-15. Atrypa cf. A. asperanta Crickmay: ventral, side, and anterior views of GSC No. 16692. Presumably from the Hume Formation; Anderson River, 38 miles east of junction with Carnwath River, District of Mackenzie, GSC loc. 41060. Collector R. deWit, 1959.

FIGS. 16-18. Spinatrypa borealis (Warren): ventral, side, and anterior views of hypotype GSC No. 16693. Presumably from the Hume Formation; Anderson River near mouth of Simpson Creek, District of Mackenzie, GSC loc. 45465. University of Alberta, toptype No. D150.

FIGS. 19-21. Spinatrypa coriacea Crickmay: dorsal, side, and posterior views of hypotype GSC No. 16694. Presumably from upper Hume Formation about 40 feet below a Leiorhynchus castanea (Meek) coquina bed; Gayna River about 9 miles from mouth. Collector T. Fitzgerald, Peel Plateau Exploration Ltd., 1954.

FIGS. 22-24. Carinata dysmorphostota (Crickmay): ventral, side, and posterior views of hypotype GSC No. 16695. Same horizon and locality as figs. 19-21.

FIGS. 25-27. Spinatrypa lata (Warren): ventral, side, and anterior views of hypotype GSC No. 16696. Presumably from Hume Formation; Anderson River, near mouth of Simpson Creek, District of Mackenzie, GSC loc. 45464. University of Alberta, toptype No. D153.

FIGS. 28-30. Warrenella cf. W. kirki (Merriam): ventral, side, and posterior views of GSC No. 16697. Hume Formation; Anderson River, 68° 28'N, 127° 04'W, District of Mackenzie, GSC loc. 41319. Collector A.E.H. Pedder, Triad Oil Company Ltd., 1959.

FIGS. 31-33. Plectospirifer? compactus (Meek): ventral, side, and anterior views of hypotype GSC No. 16698. Presumably from Hume Formation ("Lower Ramparts"); Carnwath River, District of Mackenzie, GSC loc. 37337. Collector J.C. Sproule and Associates, 1958.

HARE INDIAN FORMATION

FIGS. 34-36. Cassidirostrum pedderi McLaren: dorsal, side, and anterior views of paratype D, GSC No. 15354. Calcareous shale and shaly limestone in the lowest 15 feet of the Hare Indian Formation; Anderson River, between lat. 68° 28'N, and 68° 32'N, and long. 127° 04'W and 127° 24'W, District of Mackenzie, GSC loc. 41319. Collector A.E.H. Pedder, Triad Oil Company Ltd., 1959.

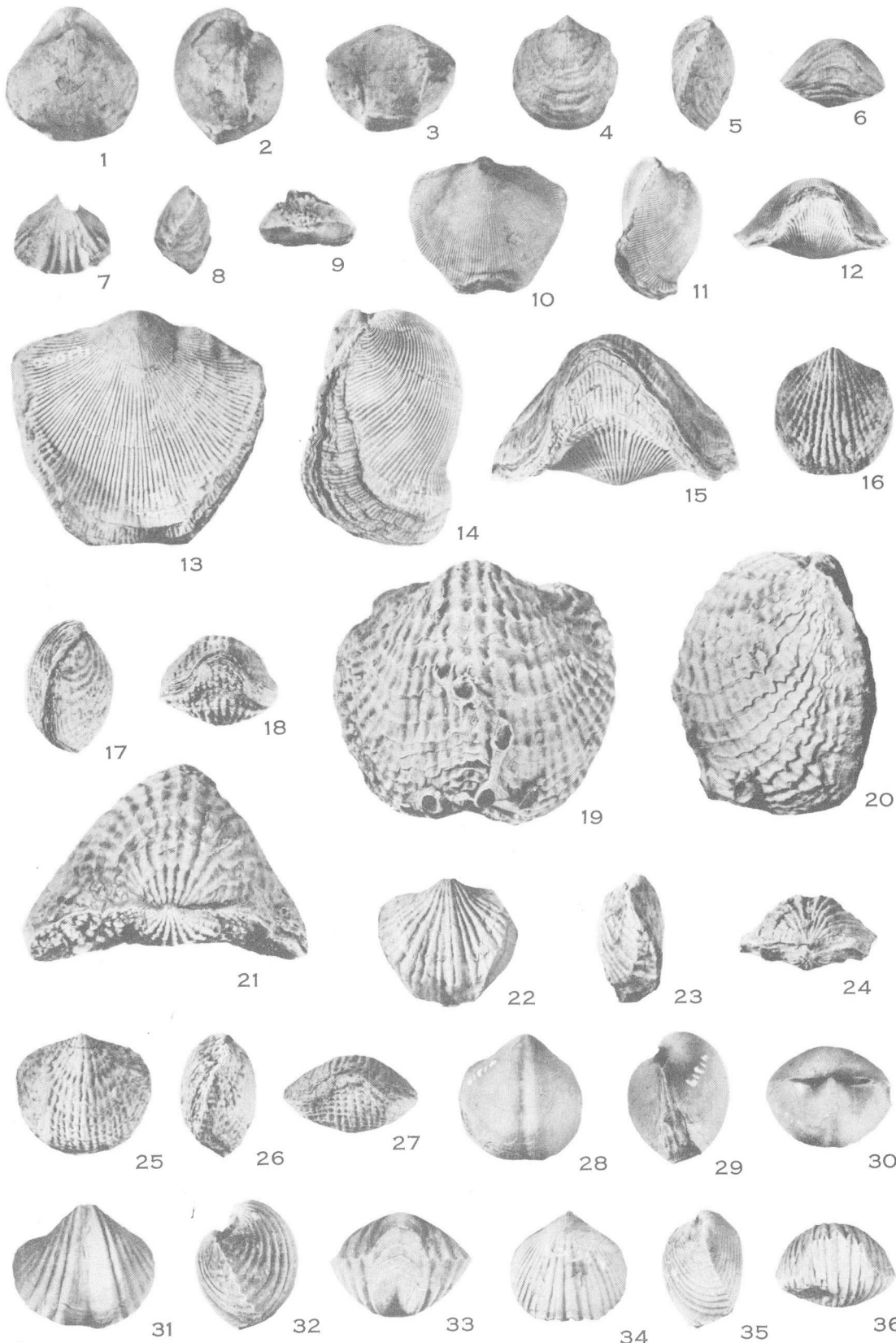


PLATE VIII

PLATE IX

(Except where otherwise stated, all figures are natural size.)

HARE INDIAN FORMATION (cont.)

- FIGS. 1-3. Leiorhynchus castanea (Meek): ventral, side, and anterior views of hypotype C, GSC No. 15360. Calcareous shale and shaly limestone in the lowest 15 feet of the Hare Indian Formation; Anderson River, between lat. 68° 28'N and 68° 32'N, and long. 127° 04'W and 127° 24'W, District of Mackenzie, GSC loc. 41319. Collector A.E.H. Pedder, Triad Oil Company Ltd., 1959.
See also figs. 16-18 of this plate.

"RAMPARTS LIMESTONE"

- FIGS. 4-6. Rensselandia laevis (Meek): dorsal, side, and anterior views of hypotype GSC No. 16699. About 40 to 60 feet above base of Ramparts Formation at type section; the Ramparts, Mackenzie River, District of Mackenzie, GSC loc. 3969. Collector R.G. McConnell, 1885.

"BEAVERTAIL LIMESTONE"

- FIGS. 7-9. Hadorrhynchia sandersoni (Warren): dorsal, side, and anterior views. Occurring in Cyrtina panda Meek fauna of the "Beavertail Formation"; Carcajou rock, below Normal Wells, District of Mackenzie (Warren and Stelck, 1956, explanation to Pl. VIII). Syntype, University of Alberta Dv 853-1.
See also figs. 10-12 of this plate.

- FIGS. 10-12. Hadorrhynchia sandersoni (Warren): dorsal, side, and anterior views of hypotype D, GSC No. 15334. Bituminous shale and limestone member of the Pine Point Formation; Dawson Landing wharf area, south shore of Great Slave Lake, District of Mackenzie, GSC loc. 31068. Collector A.W. Norris, 1957.

See also figs. 7-9 of this plate.

PINE POINT FORMATION

- FIGS. 13-15. Leiorhynchus sp. I: dorsal, side, and anterior views of GSC No. 15342. Bituminous shale and limestone member of the Pine Point Formation; 0.5 mile west of Pine Point, south shore of Great Slave Lake, District of Mackenzie, GSC loc. 5675. Collectors E.M. Kindle and E.J. Whittaker, 1917.

- FIGS. 16-18. Leiorhynchus castanea (Meek): dorsal, side, and anterior views of hypotype Q, GSC No. 15374. Same horizon and locality as figs. 13-15.

See also figs. 1-3 of this plate.

- FIG. 19. Emanuella meristoides (Meek): dorsal view of a large specimen, hypotype GSC No. 16700. Bituminous shale and limestone member of the Pine Point Formation; west tip of McKay Island, near Pine Point on south side of Great Slave Lake, District of Mackenzie, GSC loc. 31515. Collector W.B. Brady, 1957.

- FIGS. 20-22. Emanuella meristoides (Meek): ventral, side, and anterior views of a smaller specimen, hypotype GSC No. 16701. Same horizon and locality as fig. 19.

- FIGS. 23-25. Warrenella cf. W. franklini (Meek): ventral, side, and anterior views of GSC No. 16702. Brown limestone member of the Pine Point Formation; 1.7 miles south of Dawson Landing wharf, south side of Great Slave Lake, District of Mackenzie, GSC loc. 19267. Collector R. deWit, 1951.

LA BUTTE FORMATION

- FIG. 26. Tentaculites sp.: Numerous specimens embedded in limestone matrix X10, GSC No. 16703. La Butte Formation of the Elk Point Group, 8 feet above base of formation; west bank of Slave River close to mouth of Murdock Creek, opposite La Butte, Alberta, GSC loc. 31094. Collector A.W. Norris, 1957.

SULPHUR POINT FORMATION

- FIGS. 27-30. Hypothyridina cameroni Warren: dorsal, side, anterior, and posterior views of syntype Dv 849, University of Alberta. Sulphur Point Formation; Presqu'île Point, south shore of Great Slave Lake, District of Mackenzie.

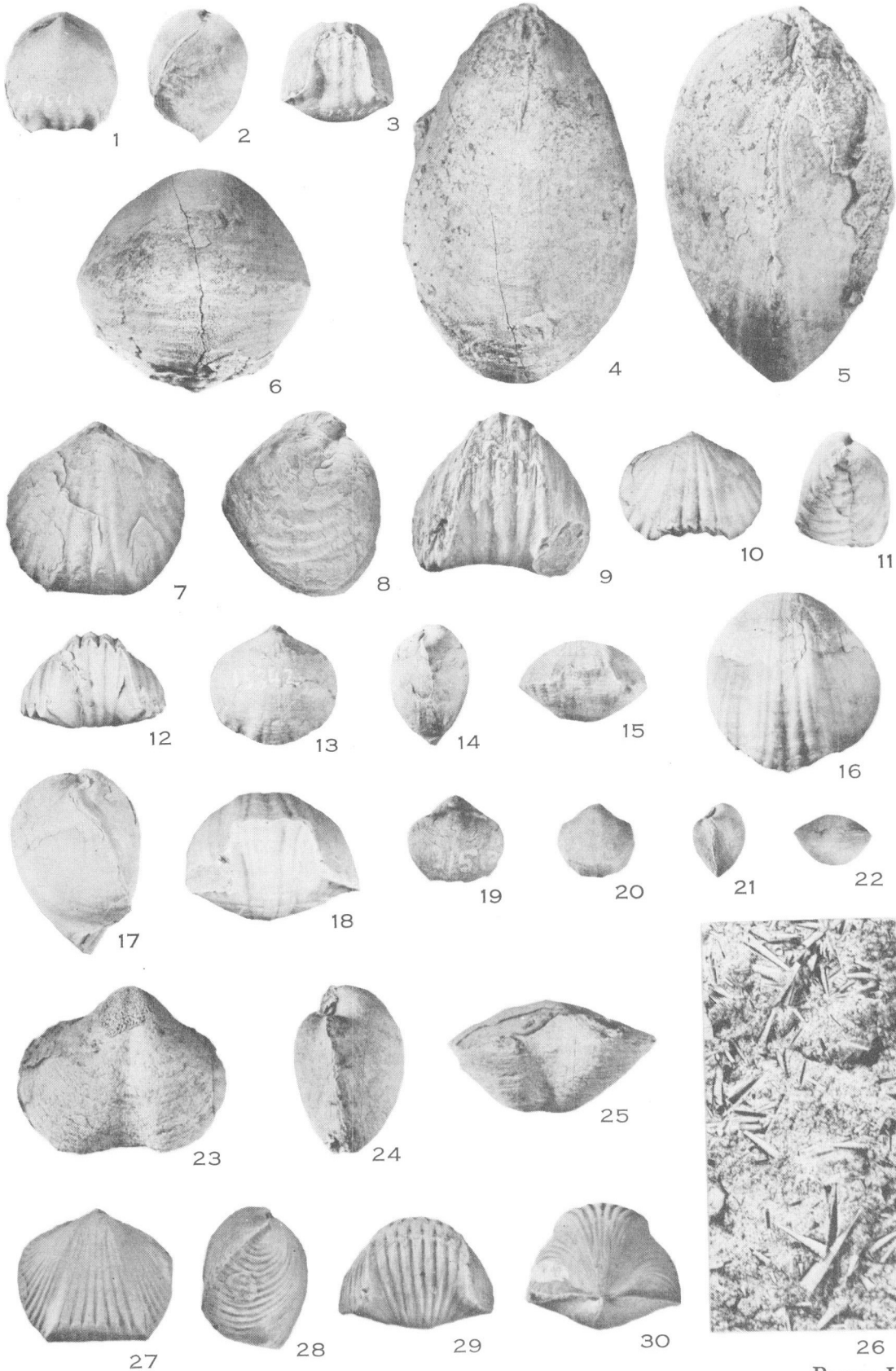


PLATE IX

PLATE X

(Except where otherwise stated, all figures are natural size.)

SULPHUR POINT FORMATION (cont.)

FIGS. 1-3. *Cyrtina* sp.: ventral, side, and anterior views of GSC No. 16704. Sulphur Point Formation; east side of Presqu'île Point, south shore of Great Slave Lake, District of Mackenzie, GSC loc. 5668. Collectors E.M. Kindle and E.J. Whittaker, 1917.

FIGS. 4-5. *Stringocephalus* sp.: posterior and side views of an incomplete specimen, GSC No. 16705. Same locality and horizon as above.

UNNAMED MIDDLE DEVONIAN UNIT

FIGS. 6-8. *Lazutkinia* sp.: dorsal, side, and anterior views of GSC No. 16706. Unnamed Middle Devonian beds; east side of Peace River immediately south of the mouth of Bernard Creek, Halfway River map-area, B.C., GSC loc. 39947. Collector E.J.W. Irish, 1959.

This form is associated with *Stringocephalus* sp. at the above locality.

LOWER MANITOBAN FORMATION

FIG. 9. *Mastigospira alata* (Whiteaves): plan view of a nearly complete specimen, cotype GSC No. 4099, a. Presumably from lower Manitoban Formation; north side of North Manitou Island, Lake Winnipegosis, Manitoba. Collector J.B. Tyrrell (No. 50), 1889.

This species is commonly associated with *Stringocephalus* in the Middle Devonian of Western Canada.

SULPHUR POINT FORMATION (cont.)

FIGS. 10-11. *Emanuella* sp. F: dorsal view, and same view X2 of GSC No. 16707. Sulphur Point Formation; 0.8 mile north of Burnt Point on northwest shore of Great Slave Lake, District of Mackenzie, GSC loc. 31016. Collector A.W. Norris, 1957.

This form also occurs in the overlying Slave Point Formation.

PEACE POINT MEMBER OF THE WATERWAYS FORMATION

FIGS. 12-14. *Ladogioides pax* McLaren: ventral, side, and anterior views of paratype D, GSC No. 15220. Peace Point Member of the Waterways Formation, near base of green shale overlying the Slave Point Formation; Gypsum Cliffs, north bank of Peace River, opposite mid-point of island just below Boyer Rapids, northern Alberta, GSC loc. 29441. Collector A.W. Norris, 1956.

The genus *Ladogioides* is a zone fossil for the base of the Upper Devonian Series. See also Pl. XI, figs. 1-3.

FIGS. 15-17. *Leiorhynchus* sp.: dorsal, side, and anterior views of GSC No. 14917. Peace Point Member of the Waterways Formation; Gypsum Cliffs, north bank of Peace River 1.1 miles east-northeast of the east end of island just below Boyer Rapids, northern Alberta, GSC loc. 29228. Collector A.W. Norris, 1956.

FIGS. 18-20. *Eleutherokomma impennis* Crickmay: ventral, side, and posterior views of hypotype GSC No. 16708. Peace Point Member of the Waterways Formation; Gypsum Cliffs, north bank of Peace River, 5 miles east of the east end of island just below Boyer Rapids, northern Alberta, GSC loc. 29154. Collector A.W. Norris, 1956.

FIREBAG MEMBER OF THE WATERWAYS FORMATION

FIGS. 21-23. *Cyrtina billingsi* Meek: ventral, side, and posterior views of hypotype GSC No. 16709. Firebag Member of the Waterways Formation; east bank of Athabasca River at Mile 63.5, about 14 feet above river level, GSC loc. 29214. Collector A.W. Norris, 1956.

CALUMET MEMBER OF THE WATERWAYS FORMATION

FIGS. 24-26. "*Pugnoidea*" sp. E: ventral, side, and posterior views of GSC No. 16710. Calumet Member of the Waterways Formation; west bank of Athabasca River at Mile 56.5, about 4.5 feet above river level, northeastern Alberta, GSC loc. 29239. Collector A.W. Norris, 1956.

FIGS. 27-30. *Spinocyrtia* cf. *S. euryteines* (Owen): ventral, dorsal, posterior, and side views of GSC No. 16711. Calumet Member of the Waterways Formation; north bank of Clearwater River 7.3 miles (air distance) above junction with Christina River, northeastern Alberta, GSC loc. 35536. Collector R. deWit, 1951.

MOBERLY MEMBER OF THE WATERWAYS FORMATION

FIGS. 31-33. *Stropheodonta* sp.: ventral, side, and posterior views of GSC No. 16712. Moberly Member of the Waterways Formation; east bank of Athabasca River at Mile 26.6, northeastern Alberta, GSC loc. 29451. Collector A.W. Norris, 1956.

FIGS. 34-36. *Athyris vittata* var. *randalia* Stainbrook, of Warren and Stelck (1956): ventral, side, and posterior views of hypotype GSC No. 16713. Moberly Member of the Waterways Formation; west bank of Athabasca River opposite Tar Island and Mile 22, northeastern Alberta, GSC loc. 29382. Collector A.W. Norris, 1956.

FIGS. 37-39. *Allanaria allani* (Warren): ventral, side, and posterior views of hypotype GSC No. 16714. Moberly Member of the Waterways Formation; north bank of Athabasca River opposite Moberly Rapids, northeastern Alberta, GSC loc. 35525. Collector H.D. Curry, Shell Oil Company, 1945.

See also Pl. XI, figs. 14-17.

FIG. 40. *Eleutherokomma* cf. *E. hamiltoni* Crickmay: ventral view of specimen embedded in matrix, GSC No. 16715. Moberly Member of the Waterways Formation; west bank of Athabasca River about Mile 35.5, just above river level, GSC loc. 29212. Collector A.W. Norris, 1956.

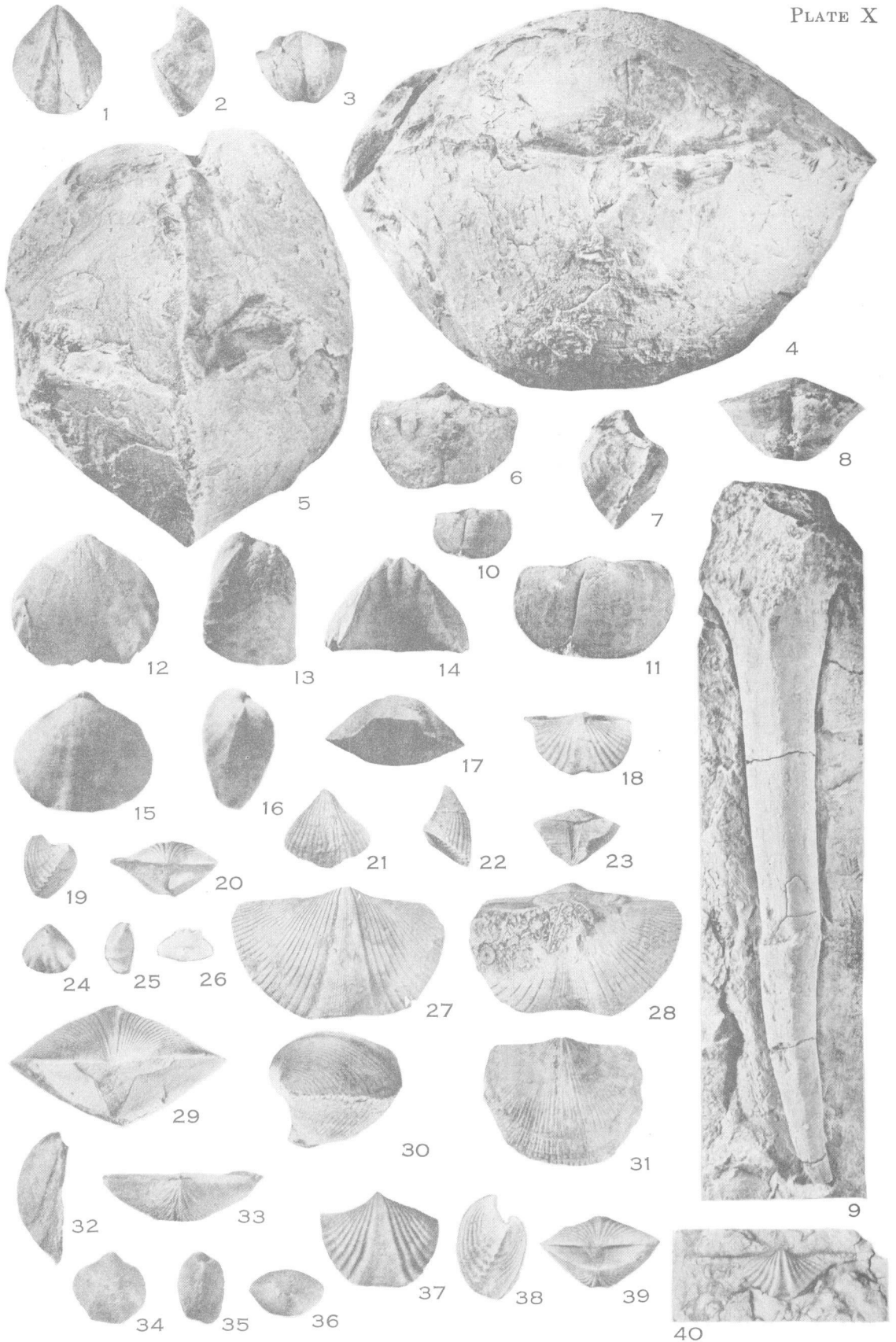


PLATE XI

(Except where otherwise stated, all figures are natural size.)

BRACHIOPODS FROM THE FLUME, MALIGNÉ, AND CAIRN FORMATIONS

FIGS. 1, 2. Ladogioides kakwaensis (McLaren): anterior and side views of hypotype GSC No. 13819. "Flume Formation", 186 to 205 feet above base of Devonian section; below saddle at northeast end of mountains on the northwest side of Kakwa Lake, B.C., GSC loc. 35100. Collector D.J. McLaren, 1952.

FIG. 3. Ladogioides kakwaensis (McLaren): posterior view of GSC holotype No. 11246. Cairn Formation, 44 to 66 feet above base; southeast end of Ancient Wall, Jasper Park, Alberta, GSC loc. 19971. Collector D.J. McLaren, 1951.

The genus Ladogioides is a zone fossil for the base of the Upper Devonian Series. See also Pl. X, figs. 12-14.

FIGS. 4-7. Calvinaria variabilis athabascensis (Kindle): dorsal, anterior, posterior, and side views of hypotype GSC No. 11232. Maligné Formation, upper few feet; near highway, Morro Peak, Jasper Park, Alberta, GSC loc. 16541. Collector R. deWit, 1948.

FIGS. 8-10. Calvinaria variabilis athabascensis (Kindle): dorsal, anterior, and side views of hypotype GSC No. 13820. Same horizon and locality as previous specimen.

The subspecies is a zone fossil for rocks of equivalent age over much of Western Canada.

FIGS. 11-13. Atrypa multicostellata Kottlowski: dorsal, anterior, and side views of hypotype GSC No. 10903. Maligné Formation, 34 feet below top; Morro Peak, Jasper Park, Alberta.

FIGS. 14-16. Allanaria allani (Warren): ventral, posterior, and side views of a silicified pedicle valve, hypotype GSC No. 13821. Flume Formation, lowest beds (Unit 1 in McLaren, 1955, p. 50); ridge between Beaver and Medicine Lakes, Jasper Park, Alberta, GSC loc. 19615. Collector D.J. McLaren, 1951.

FIG. 17. Allanaria allani (Warren): view of silicified brachial valve, hypotype GSC No. 13822. Same horizon and locality as preceding specimen.

See also Pl. X, figs. 37-39.

FIGS. 18-20. Allanaria minutilla Crickmay: dorsal, anterior, and side views of hypotype GSC No. 13823, X3. Maligné Formation; east of Esplanade Mountains, Jasper Park, Alberta. Collector R. deWit, 1948.

FIGS. 21-24. Emanuella sp.: dorsal, anterior, and side views X2, and dorsal view X1, of GSC No. 13824. Maligné Formation, highest bed; ridge between Beaver and Medicine Lakes, Jasper Park, Alberta, GSC loc. 19609.

The genus Emanuella is rare in Upper Devonian rocks.

FIGS. 25-27. Athyris sp.: dorsal, anterior, and side views of GSC No. 13825. Cairn Formation, 120 feet above base; southeast end of Ancient Wall, Jasper Park, Alberta, GSC loc. 20012. Collector D.J. McLaren, 1951.

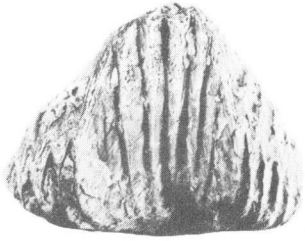
The genus Athyris is unknown in Western Canada between beds of this age (earliest Upper Devonian) and late Upper Devonian strata (e.g. Upper Alexo, Palliser, Trout River Formations, etc.).

MOUNT HAWK CORALS

FIGS. 28-29. Phillipsastraea cincta Smith; transverse and longitudinal sections of hypotype GSC No. 13826 a, b, X2. Mount Hawk Formation, 55 feet down from top; northeastern spur of Cardinal Mountain, Alberta Rocky Mountains, GSC loc. 24398. Collector D.J. McLaren, 1953.

This species is common in the Kakisa Formation in the Upper Mackenzie River region.

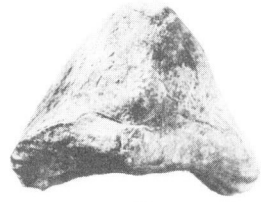
For other Mount Hawk Corals see Pls. V and VI.



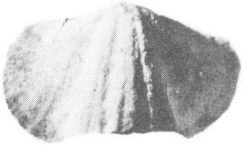
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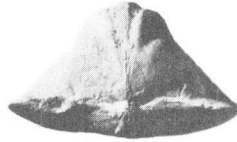
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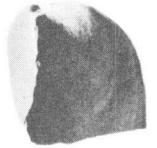
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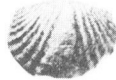
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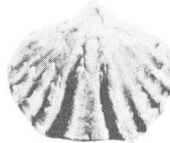
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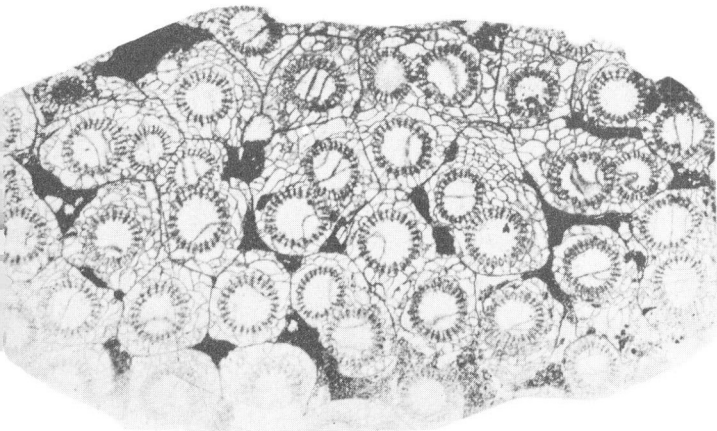
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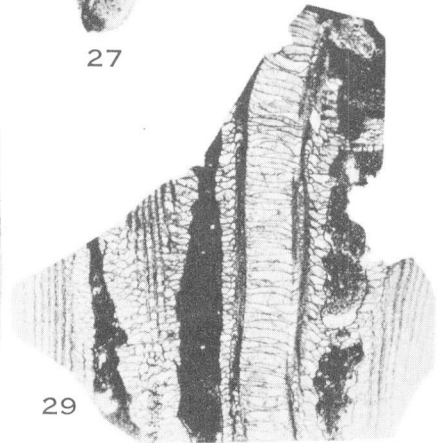
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PLATE XII

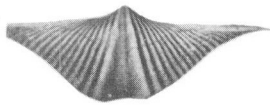
(Except where otherwise stated, all figures are natural size.)

FOSSILS FROM THE HAY RIVER REGION

- FIGS. 1-3. Eleutherokomma reidfordi Crickmay: dorsal, ventral, and side views of hypotype GSC No. 16559. Hay River Formation, lower member, about 220 feet above base of outcrop section; Hay River, left bank, between Mile 15 and 16 on Mackenzie Highway, District of Mackenzie, GSC loc. 31279. Collector P. Harker, 1957.
- FIG. 4. Nervostrophia vestita Crickmay: interior of ventral valve of hypotype GSC No. 16564. Escarpment Member of Hay River Formation, basal beds; one third of a mile east of junction of Mills Lake Road with Mackenzie Highway, 24 miles above mouth of Hay River, District of Mackenzie, GSC loc. 31262. Collector P. Harker, 1957.
- FIGS. 5, 6. Nervostrophia vestita Crickmay: ventral and posterior views of hypotype GSC No. 16560. Same horizon and locality as previous specimen.
- FIGS. 7-9. Cyrtospirifer thalattodoxa Crickmay: dorsal, anterior, and side views of hypotype GSC No. 16563. Basal beds of Escarpment Member of Hay River Formation; Hay River, left bank, near Mile 26 on Mackenzie Highway, District of Mackenzie, GSC loc. 31262. Collector P. Harker, 1957.
- The genus Cyrtospirifer occurs only in the Upper Devonian. This species is one of the earliest in Western Canada.
- FIGS. 10-12. Warrenella sp. A: dorsal, ventral, and anterior views of GSC No. 16558. Twin Falls Formation; Lower Kakisa River, one mile upstream from road bridge, District of Mackenzie, GSC loc. 30539. Collector D.J. McLaren, 1957.
- FIGS. 13-16. Theodossia keenei (Crickmay): dorsal, anterior, and side views X1, and detail of sulcus X3, of hypotype GSC No. 16561. Kakisa Formation; Birch River, 7 miles upstream from junction with Liard River, District of Mackenzie, GSC loc. 21983.
- FIGS. 17-20. Theodossia scopulerum (Crickmay): dorsal, anterior, and side views, and detail of fold X3, of hypotype GSC No. 16562. Upper beds of Kakisa Formation; Coral (or Upper) Falls on Trout River, District of Mackenzie, GSC loc. 17504.
- FIG. 21. Cyrtopsis sp.: view of fossils and moulds in green ferruginous sandstone matrix; GSC No. 16555. "Imperial Sandstone"; 6 miles below junction of Ram and North Nahanni Rivers, District of Mackenzie, GSC loc. 26732.
- FIG. 22. Coenites sp. D: fossil in argillaceous limestone, GSC No. 16556. Limestone bed in Escarpment Member of the Hay River Formation, 160 feet below top; Hay River, left bank, at Mile 29 on the Mackenzie Highway, District of Mackenzie, GSC loc. 30517. Collector D.J. McLaren, 1957.
- FIG. 23. Alveolites sp. D: view of corallum, GSC No. 16557. Same horizon and locality as preceding species. The internal structure of this species is figured on Pl. IV, figs. 7 and 8.



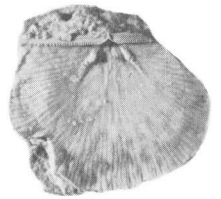
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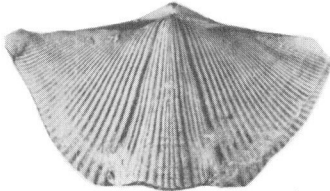
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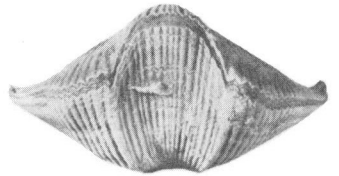
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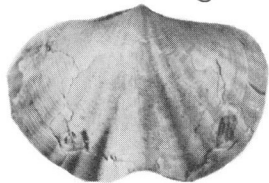
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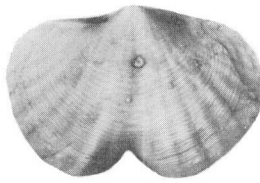
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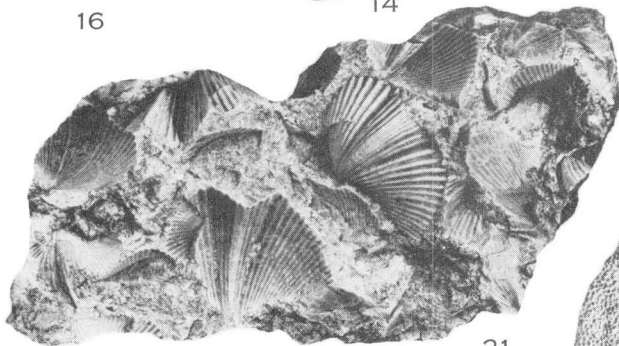
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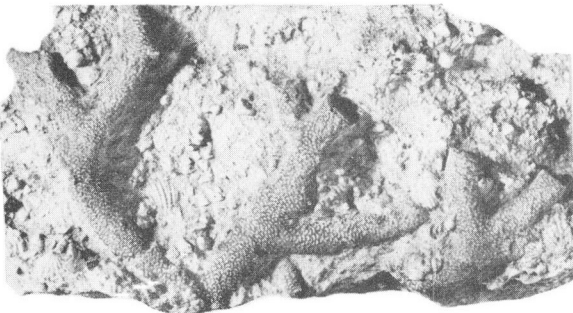
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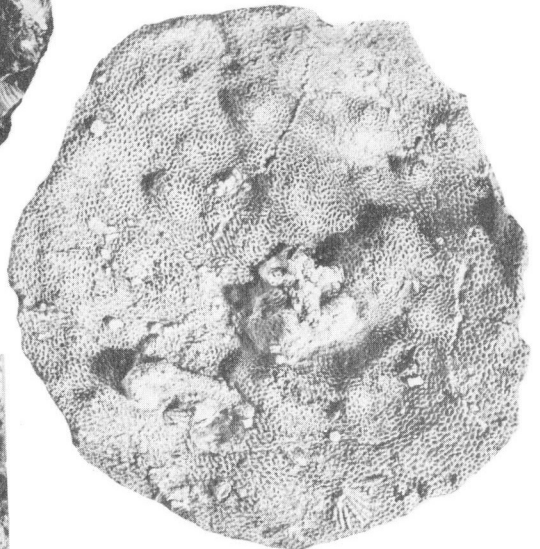
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PLATE XIII

(Except where otherwise stated, all figures are natural size.)

BRACHIOPODS FROM THE MOUNT HAWK FORMATION

FIGS. 1, 2. "Grunewaldtia" americana Stainbrook: dorsal view X2, and side view, of hypotype GSC No. 13809. Argillaceous limestone member, Mount Hawk Formation; northeast shoulder of Roche Miette, Jasper Park, Alberta, GSC loc. 18163. Collector D.J. McLaren, 1949.

FIGS. 3-6. Cyrtospirifer sp.: ventral, anterior, posterior, and side views of GSC No. 13810. Argillaceous limestone member, Mount Hawk Formation (Unit 26 in McLaren, GSC Bull. 35, 1955, p. 56); Job Creek, eastern fault block, Alberta Rocky Mountains, GSC loc. 24176. Collector D.J. McLaren, 1953.

FIGS. 7-10. Indospirifer orestes (Hall & Whitfield): dorsal, ventral, anterior, and side views of hypotype GSC No. 13811. Grey calcareous mudstone and limestone member, Mount Hawk Formation (Unit 24 in McLaren, GSC Bull. 35, 1955, p. 56); Job Creek, eastern fault block, Alberta Rocky Mountains, GSC loc. 24179. Collector D.J. McLaren, 1953.

FIGS. 11-14. "Tenticospirifer" cyrtinaformis (Hall and Whitfield): dorsal, anterior, posterior, and side views of hypotype GSC 13812. Lower part of Mount Hawk Formation; south branch of north fork of Hummingbird Creek, Alberta Rocky Mountains, GSC loc. 18894. Collector R. deWit, 1951.

FIGS. 15-18. Thomasaria rockymontana (Warren): dorsal, anterior, posterior, and side views of hypotype GSC No. 13813. Argillaceous limestone member, Mount Hawk Formation; North Saskatchewan River Gap, north side, Brazeau Range, Alberta Rocky Mountains, GSC loc. 18089. Collector D.J. McLaren, 1949.

This species has also been collected from the Fort Simpson Formation, District of Mackenzie.

FIGS. 19-21. Cyrtina cf. C. inulta Stainbrook: dorsal, anterior, and posterior views of GSC No. 13814, X3. Mount Hawk Formation, 170 feet above base; North Ram River Gap, north side, Front Range, Alberta Rocky Mountains, GSC loc. 24188. Collector D.J. McLaren, 1952.

(Mount Hawk continued on Plate XIV.)

BRACHIOPODS FROM THE PERDRIX FORMATION

FIGS. 22-24. Leiorhynchus carya Crickmay: dorsal, anterior, and side views of hypotype GSC 11248 (holotype of Calvinaria? inelegans McLaren). Perdrix Formation, 170 feet above base of outcrop section; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19888. Collector D.J. McLaren, 1951.

This is the latest occurrence of the genus Leiorhynchus s.s. known in Western Canada.

FIGS. 25-27. Calvinaria variabilis insculpta (McLaren): dorsal, anterior, and side views of holotype GSC No. 11245. Perdrix Formation, 25 feet above base of outcrop section; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19908. Collector D.J. McLaren, 1951.

The subspecies is a zone fossil for rocks of equivalent age over much of the Alberta sedimentary basin.

FIGS. 28-30. Eleutherokomma cf. E. reidfordi Crickmay: dorsal and anterior views of GSC No. 13815, and internal posterior view of GSC No. 13816. Perdrix Formation, 100 feet above base of outcrop section; North Saskatchewan River Gap, north side, Brazeau Range, Alberta Rocky Mountains, GSC loc. 18104. Collector D.J. McLaren, 1949.

FIGS. 31-36. Warrenella nevadensis (Walcott): dorsal, anterior, and side views of hypotype GSC No. 13817; dorsal, anterior, and side views of hypotype GSC No. 13818. Same horizon and locality as Leiorhynchus carya (see above, figs. 22-24).

The species ranges up into the lower part of the Mount Hawk Formation.

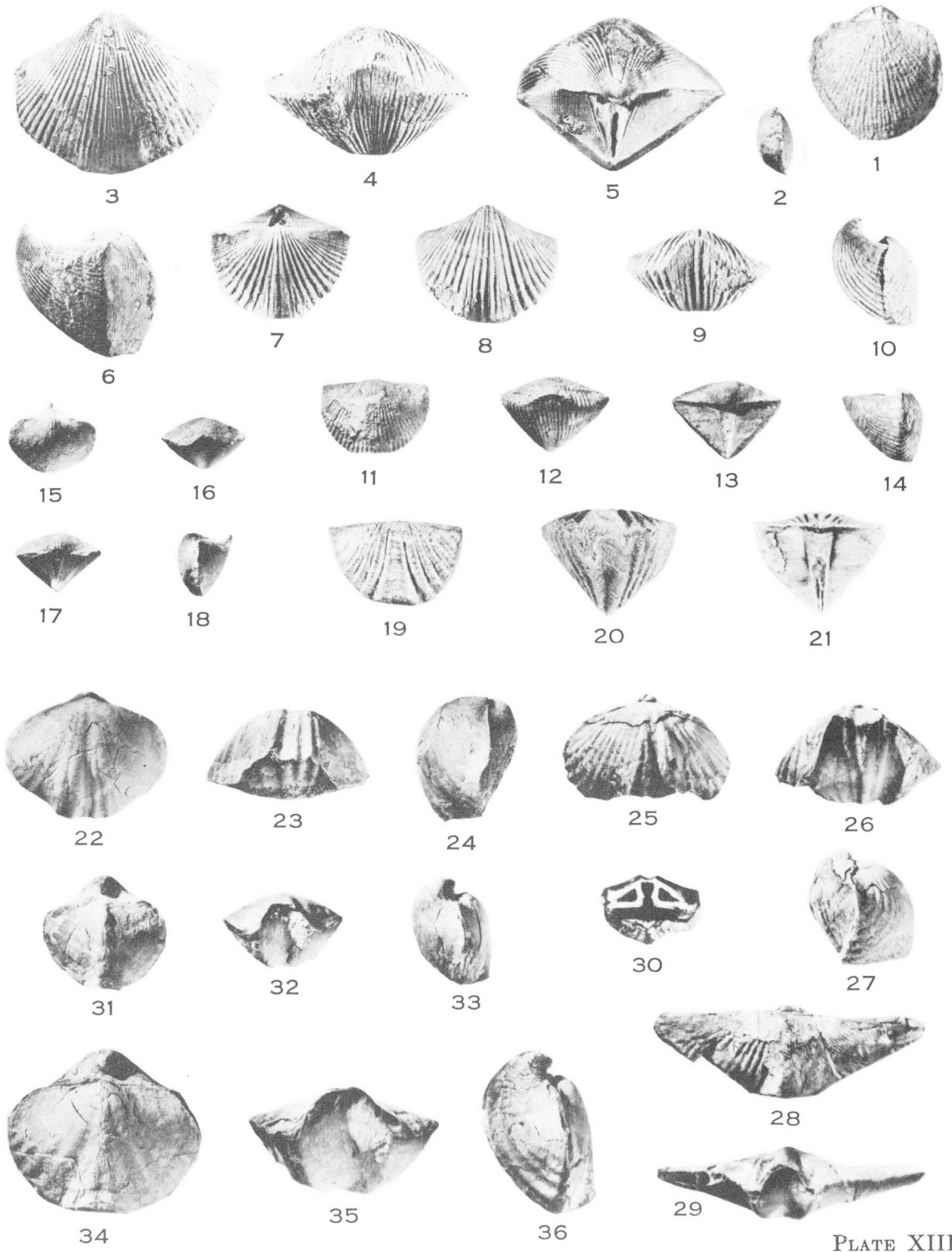


PLATE XIII

PLATE XIV

(Except where otherwise stated, all figures are natural size.)

MOUNT HAWK BRACHIOPODS (cont.)

FIGS. 1, 2. Schizophoria sp.: anterior and side views of GSC No. 13803. Mount Hawk Formation, 170 feet above base; North Ram River Gap, north side, Front Range, Alberta Rocky Mountains, GSC loc. 24188. Collector D.J. McLaren, 1952.

FIGS. 3, 4. Douvillinaria sp.: dorsal and ventral views of GSC No. 13804, X2. Same horizon and locality as preceding specimens.

FIG. 5. Productella sp. N: ventral view of GSC No. 13805, X2. Grey calcareous mudstone and limestone member, Mount Hawk Formation (Unit 24 in McLaren, GSC Bull. 35, 1955, p. 56); Job Creek, eastern fault block, Alberta Rocky Mountains, GSC loc. 24179. Collector D.J. McLaren, 1953.

This species also occurs in the Twin Falls Formation, District of Mackenzie.

FIG. 6. Devonoproductus vulgaris Stainbrook: ventral view of hypotype GSC No. 13806, X2. Same horizon and locality as preceding specimen.

FIGS. 7-9. Hypothyridina sp. B: dorsal, anterior, and side views of GSC No. 13807. Mount Hawk Formation, about 600 feet above base; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19924. Collector D.J. McLaren, 1951.

FIGS. 10-12. Hypothyridina emmonsi (Hall and Whitfield): dorsal, anterior, and side views of hypotype GSC No. 13808. Mount Hawk Formation, about 160 feet above base; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19926. Collector D.J. McLaren, 1951.

The genus Hypothyridina ranges from latest Middle Devonian throughout the early Upper Devonian, in Western Canada.

FIGS. 13-15. Calvinaria albertensis albertensis (Warren): dorsal, anterior, and side views of hypotype GSC No. 11237. Argillaceous limestone member of Mount Hawk Formation, about 410 feet above base; northeast flank of Roche Miette, Jasper Park, Alberta, GSC loc. 18163. Collector D.J. McLaren, 1949.

This subspecies is a zone fossil for rocks of equivalent age over much of the Alberta sedimentary basin. Other subspecies of C. albertensis occur in the Escarpment Member of the Hay River Formation on Hay River, and in the Upper Devonian shales in the Root River area, District of Mackenzie.

FIGS. 16-18. Atrypa sp. J: dorsal, anterior, and side views of GSC No. 12274. Mount Hawk Formation, 205 feet above base of exposed section; south end of Idlewilde Mountain, Clearwater River, Alberta Rocky Mountains, GSC loc. 18052. Collector D.J. McLaren, 1949.

FIGS. 19-21. Atrypa sp. K: ventral, anterior, and side views of GSC No. 10921. Southesk Formation, grey mudstone and limestone member (Unit 22 in McLaren, GSC Bull. 35, 1955, p. 53); headwaters of Job Creek, Alberta Rocky Mountains, GSC loc. 37799. Collector D.J. McLaren, 1953.

FIGS. 22-24. Atrypa sp. L: ventral, anterior, and side views of GSC No. 10923. Same horizon and locality as preceding specimen.

FIGS. 25-27. Atrypa sp. M: ventral, anterior, and side views of GSC No. 10944. Mount Hawk Formation, upper 40 feet; north side of road, Shunda Creek Gap, near Nordegg, Alberta, GSC loc. 24194. Collector R.J.W. Douglas, 1953.

The genus Atrypa does not occur in Western Canada higher than the early Upper Devonian.

Continued on Plate XV.

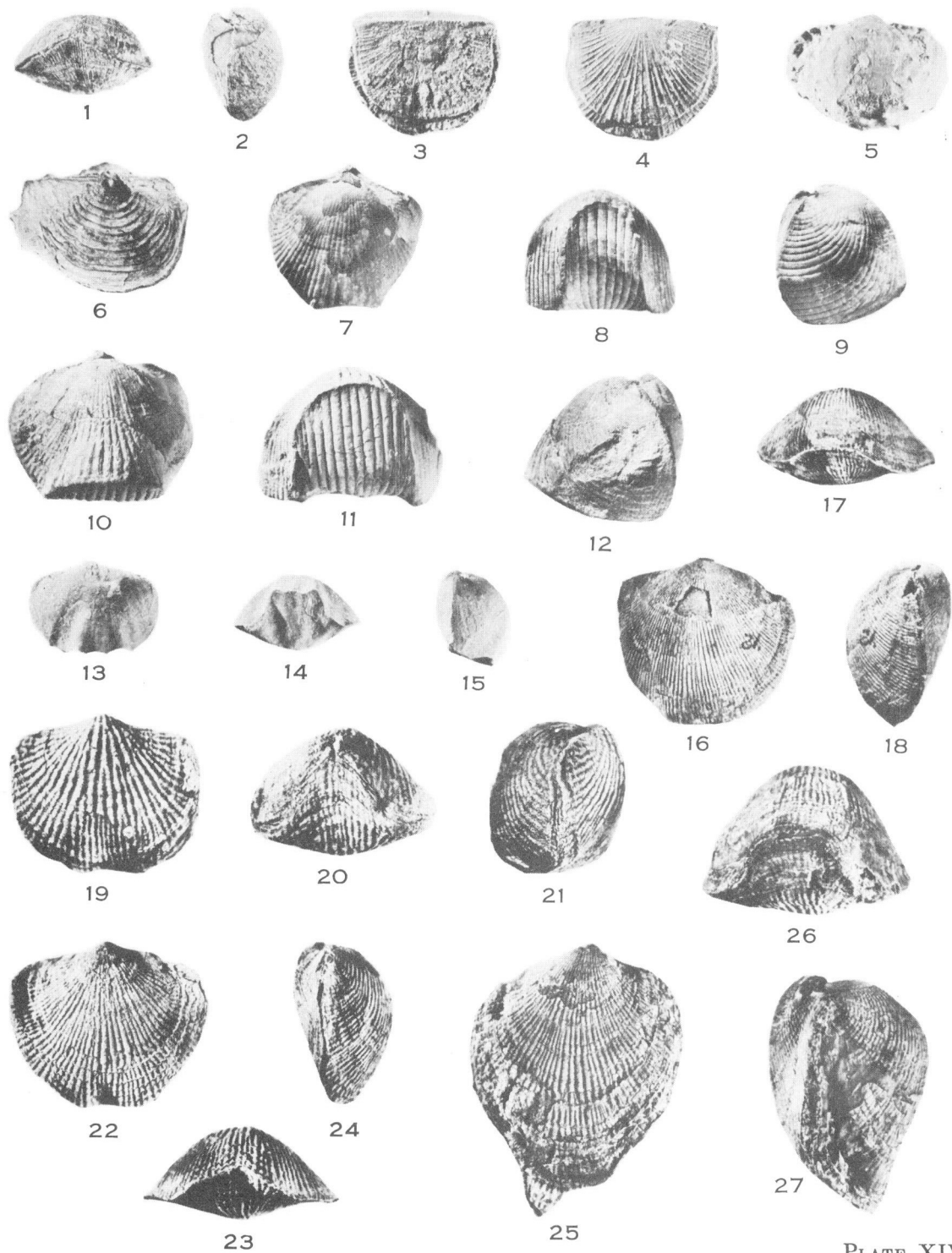


PLATE XIV

PLATE XV

(All figures are natural size.)

BRACHIOPODS¹ FROM THE PALLISER AND ALEXO² FORMATIONS

FIGS. 1-3. *Paurorhyncha utahensis* (Kindle): dorsal, posterior, and side views of hypotype GSC No. 11210. Upper 15 feet of the Costigan Member of the Palliser Formation; Mount Coleman, Banff Park, Alberta, GSC loc. 19430. Collector J.L. Severson, 1949.

FIGS. 4-6. "*Nudirostra*" *seversoni* McLaren: dorsal, anterior, and side views of holotype GSC No. 10016. Palliser Formation, 225 feet down; Mount Coleman, Banff Park, Alberta, GSC loc. 17767. Collector J.L. Severson, 1949.

FIGS. 7-9. *Cyrtiopsis normandvillana* Crickmay: dorsal, anterior, and side views of hypotype GSC No. 13794. Palliser Formation, 470 feet below top; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19974. Collector D.J. McLaren, 1951.

The genus *Cyrtiopsis* is confined to the late Upper Devonian.

FIGS. 10-12. "*Athyris*" sp. C: dorsal, anterior, and side views of GSC No. 13795. Palliser Formation, 500 feet below top; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19961. Collector D.J. McLaren, 1951.

See comment under Pl. XI, figs. 25-27.

FIGS. 13-15. "*Camarotoechia*" *banffensis* Warren: dorsal, anterior, and side views of hypotype GSC 13796. Upper part of Palliser Formation; lower Maligne Canyon, Jasper Park, Alberta, GSC loc. 18242. Collector D.J. McLaren, 1949.

FIGS. 16-18. *Sinotectiractrum medicinale* Sartenaer: dorsal, anterior, and side views of holotype GSC No. 13797. Alexo Formation, member B (Unit 42 in McLaren, GSC Bull. 35, 1955, p. 47); Proposal Mountain, south end of Medicine Lake, Jasper Park, Alberta, GSC loc. 18241. Collector D.J. McLaren, 1949.

FIGS. 19-20. "*Productella*" sp. F: ventral and side views of GSC No. 13798. Alexo Formation, top of member B (Unit 46 in McLaren, GSC Bull. 35, 1955, p. 47); ridge between Beaver and Medicine Lakes, Jasper Park, Alberta, GSC loc. 19651. Collector D.J. McLaren, 1951.

FIGS. 21-23. *Cyrtiopsis* cf. *C. prepta* Crickmay: dorsal, anterior, and side views of GSC No. 13799. Alexo Formation, upper part of Member A; ridge between Beaver and Medicine Lakes, Jasper Park, Alberta. Collector D.J. McLaren, 1951.

FIGS. 24-26. "*Leiorhynchus*" *walcotti* Merriam: dorsal, anterior, and side views of hypotype GSC No. 13800. Lowest beds of Alexo Formation; near top of Prospect Mountain, near Mountain Peak, Alberta Rocky Mountains, GSC loc. 18262. Collector R. deWit, 1949.

BRACHIOPODS FROM THE MOUNT HAWK FORMATION

FIGS. 27-29. *Gypidula* cf. *G. cornuta* Fenton and Fenton: dorsal, anterior, and side views of GSC No. 13801. Mount Hawk Formation, about 600 feet above base; Winnifred Pass, Alberta Rocky Mountains, GSC loc. 19924. Collector D.J. McLaren, 1951.

FIG. 30. *Schuchertella* cf. *S. prava* (Hall): dorsal view of GSC No. 13802. Grey mudstone and limestone member of Southesk Formation (Unit 22 in McLaren, GSC Bull. 35, 1955, p. 53); headwaters of Job Creek, Alberta Rocky Mountains, GSC loc. 25176. Collector D.J. McLaren, 1953.

¹The names of the rhynchonelloids on this plate have been checked by Dr. Paul Sartenaer. Generic assignments shown in quotes, e.g. "*Camarotoechia*", may be modified by him in a study now in preparation.

²North of Brazeau River, beds equivalent to the Alexo Formation are the subject of a report in preparation by D.J. McLaren and E.W. Mountjoy. The unit that contains the fossils listed here as coming from the Alexo is being given a new formation name, with a type section on the south side of the creek, southeast of Mount Haultain.

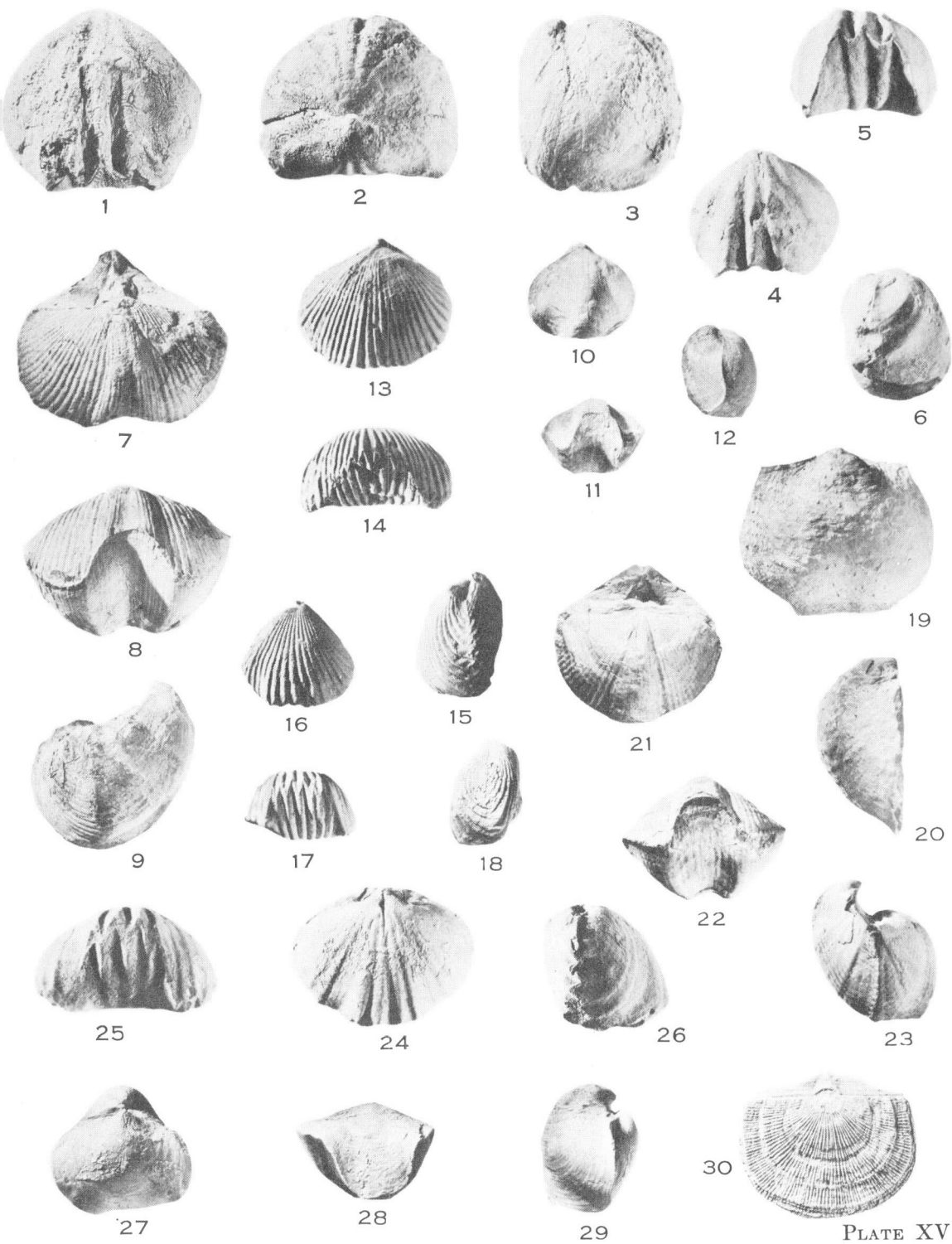


PLATE XV

PLATE XVI

(All figures are natural size.)

DEVONIAN PLANTS

FIG. 1. Psilophyton princeps var. ornatum Dawson; GSC Plant No. 13048. Battery Point Formation, Lower Devonian (Emsian); beach outcrop 200 feet east of Baie de Gaspé Hotel, D'Aiguillon, Quebec, GSC loc. 5299. Collector D.C. McGregor, 1959.

This is a Lower and Middle Devonian species occurring in North America, Europe and Asia.

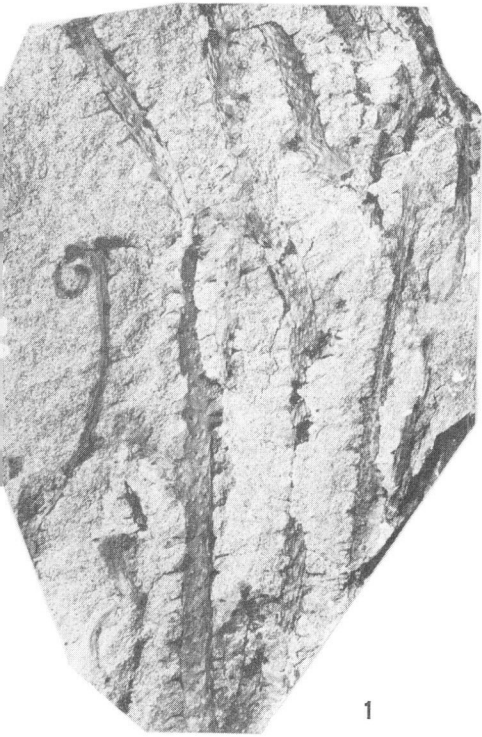
FIG. 2. Svalbardia sp.: GSC Plant No. 13047. Type section of Ghost River Formation 30 feet above unconformity; creek on west side of north branch of Ghost River, Alberta, GSC loc. 5618. Collector D.C. McGregor, 1960.

Uppermost Middle or lowermost Upper Devonian.

FIG. 3. Archaeopteris obtusa Lesquereux; GSC Plant No. 13049. Escuminac Formation, Upper Devonian; on beach 1,000 yards west of ferry landing, Escuminac Bay, Quebec, GSC loc. 5352. Collector D.C. McGregor, 1959.

The genus Archaeopteris is restricted to the Upper Devonian.

FIG. 4. Archaeopteris jacksoni Dawson; GSC Plant No. 13050. Escuminac Formation, Upper Devonian; one mile west of ferry landing, from cliff 100 feet above high tide, Escuminac Bay, Quebec, GSC loc. 5204. Collector D.C. McGregor, 1958.



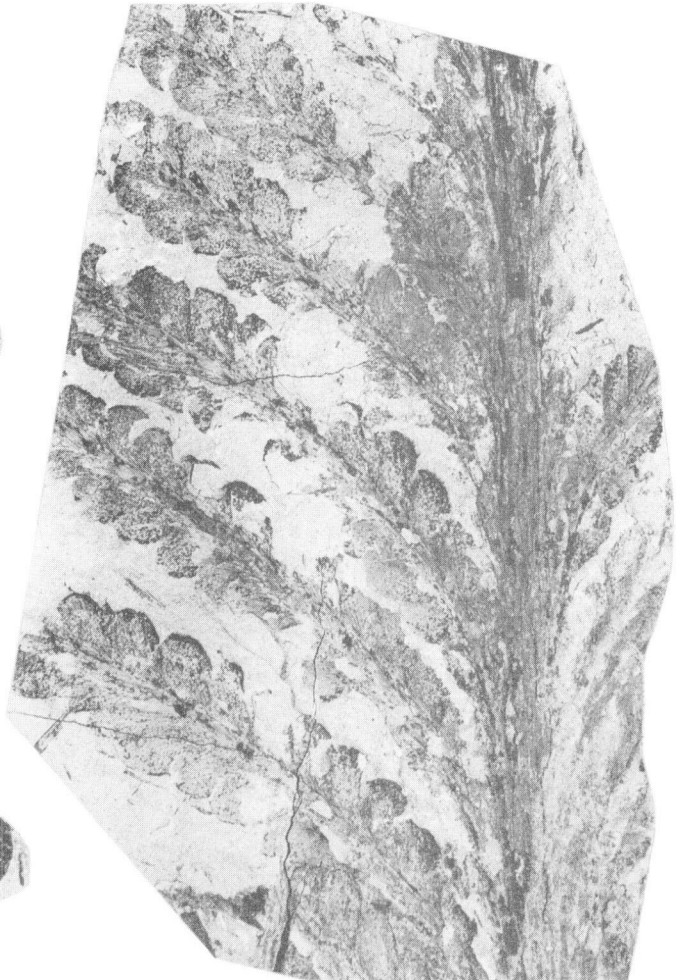
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