STRATIGRAPHIC RECONNAISSANCE OF LOWER PALEOZOIC ROCKS, EASTERN DEVON ISLAND, ARCTIC ARCHIPELAGO

Project 680015

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Introduction

This report provides preliminary results of a reconnaissance stratigraphic study of the eastern part of Devon Island east of 87°W, an area of about 26 000 km^2 (10 000 sq. miles) (see Fig. 42.1). Field work along the coasts was carried out during April and May of 1968 and 1969 using dog sleds, motor toboggans, and aircraft for support. The stratigraphic sections were measured during the summer months (June to August) from camps established by aircraft.

Eastern Devon Island forms part of the elevated eastern edge of the Canadian Arctic Archipelago. The eastern extremity of the island is a mountainous area underlain by Precambrian crystalline rocks whereas, to the west, a dissected plateau is underlain mainly by flat-lying Paleozoic beds. Ice-cover is widespread.

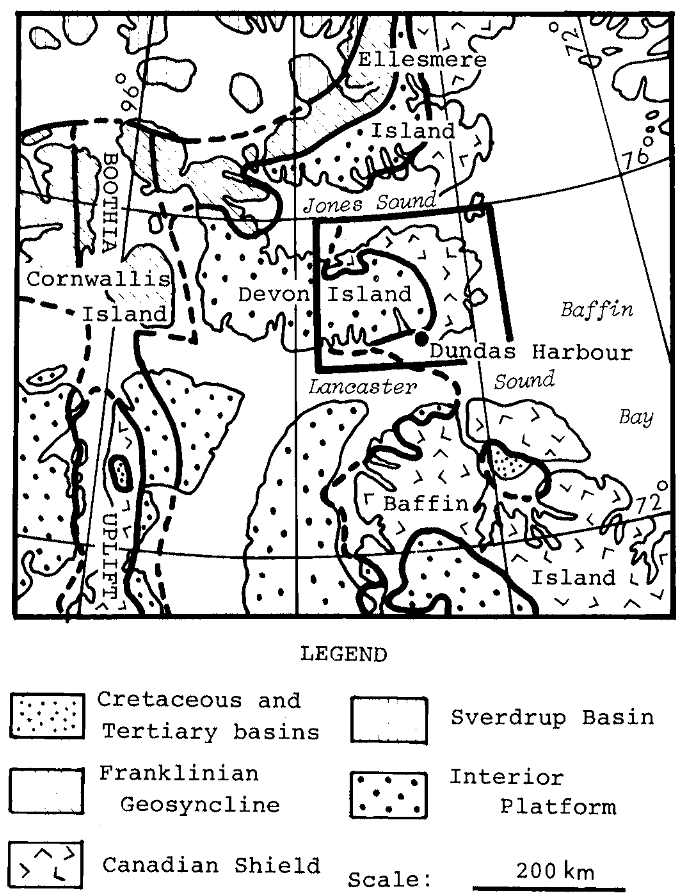

Figure 42.1. Stratigraphic-structural provinces of the eastern part of the Canadian Arctic Archipelago.

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Previous Geological Work

The earliest geological observations on (the then-called) North Devon Island were made in 1824 by Dr. Neill, the ship's doctor on W.E. Parry's third voyage to the Arctic Archipelago. Further data were obtained during Leopold M'Clintock's voyage in the **Fox** in 1858. The information from these voyages, mainly of the coast between Philpotts Island and Cape Warrender, were incorporated in Haughton's geological appendix to M'Clintock's published account (see Haughton, 1859). A.P. Low, of the Geological Survey of Canada, described the geological and physiographic features of the south-eastern part of the island after cruising the south coast in the **Neptune** in 1904, and landing at Cuming Inlet (Low, 1906). Other descriptions were provided by L.J. Weeks (1927, p. 137) of the Survey, who accompanied the **CGS Arctic** in 1925 on her annual cruise to the eastern parts of the Archipelago.

D.B. Wales, R.P. Nickelsen, and V.E. Kurtz collected Middle Cambrian fossils near Dundas Harbour in 1948 and 1949 and measured the local Paleozoic section (Wales, 1949; Kurtz et al., 1952). Dundas Harbour was visited briefly in 1950 by V.K. Prest, of the Geological Survey of Canada, who collected Precambrian rocks and measured the heights of beach terraces (Prest, 1952). D.A. Nichols (1936) earlier had published notes on shell remains from these raised beaches.

Localities at Burnett Inlet, on the south coast, and others between Sverdrup Inlet and Cape Sparbo, on the north coast, were visited by B.F. Glenister and E.F. Roots during the Geological Survey of Canada's "Operation Franklin" in 1955 (Fortier et al., 1963, p. 179-194). Stratigraphic sections were measured and the basement rocks were examined. In 1960, the Arctic Institute of North America established, under the leadership of S. Apollonio, a scientific research station near Cape Skogn. Geological studies were done by J.W. Cowie and A. Ormiston (Cowie, 1961). Glacial, periglacial, and beach studies have been carried out by other researchers in following years.

Dr. J.W. Cowie, of the University of Bristol, accompanied the author in 1968 in the measuring of stratigraphic sections at Cuming Inlet.

Stratigraphy of Lower Paleozoic Rocks

The Paleozoic rocks described in this report form a little-disturbed veneer that is dissected to expose the older, Precambrian rocks in certain valleys and fiords. Paleozoic rocks form a structurally conformable succession that strikes generally north-south and dips at a very gentle angle to the west. The border of the Paleozoic region is much indented and marked by scattered outliers of bedded rocks.

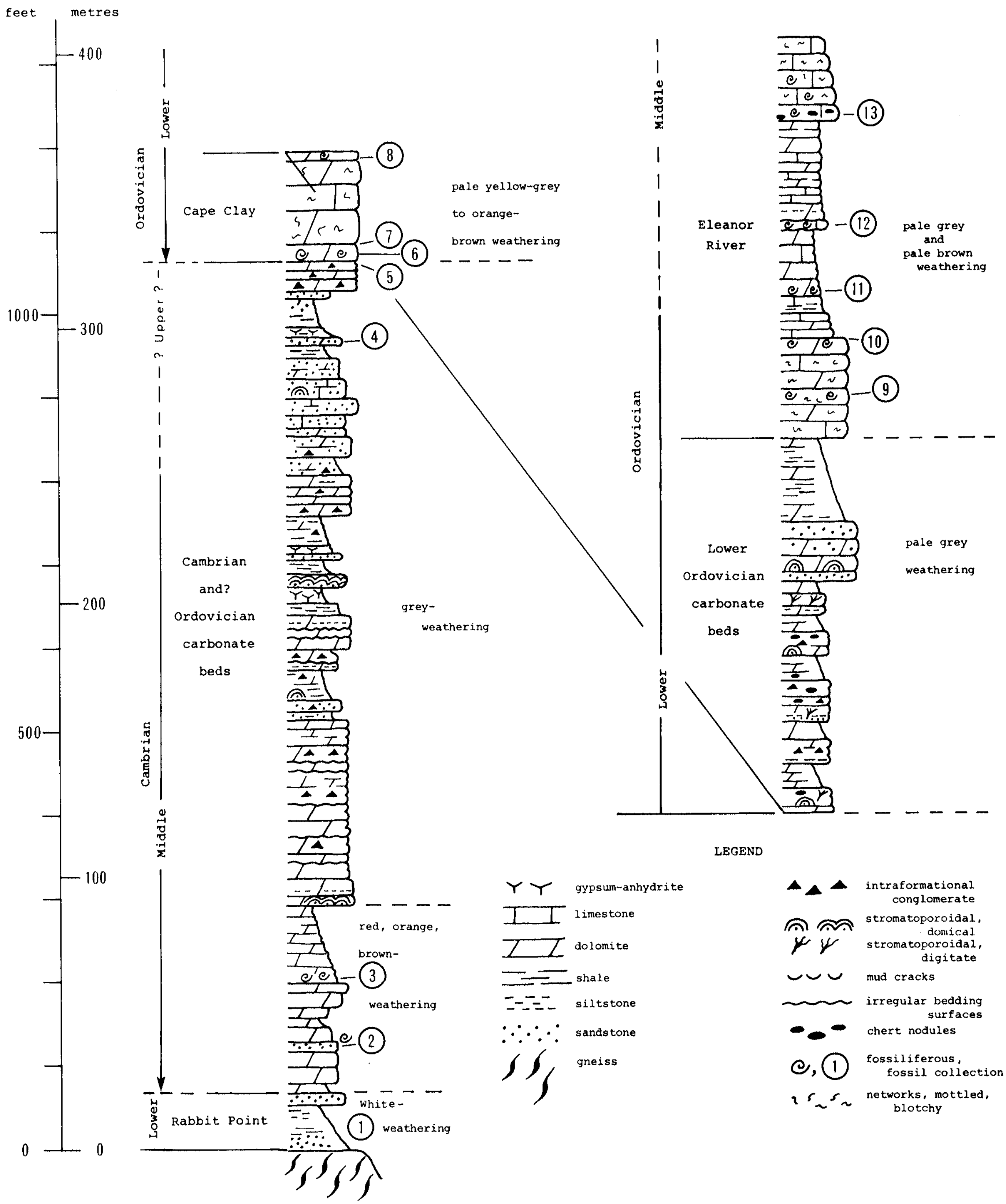

Figure 42.2. Graphic representation of composite stratigraphic section, lower Paleozoic rocks of eastern Devon Island.

The Paleozoic, bedded rocks include sandstone, dolomite, limestone, intraformational conglomerate, and gypsum. The units range in age from Early Cambrian to Middle Ordovician.

The stratigraphy of the Lower Paleozoic rocks, as presented here, is based on several measured sections at localities on both the south and north coasts of the island. The sections studied by Kurtz et al. (1952) at Dundas Harbour, although referred to in the text, were not visited by the author. This report is preliminary in nature and the correlation of units is tentative.

Cambrian

Lower and Middle Cambrian

The Precambrian crystalline rocks of eastern Devon Island are overlain unconformably by a thin- to medium-bedded sequence of carbonate and clastic rocks in which are found, near Dundas Harbour, fossils of Early and Middle Cambrian age. The Lower Cambrian beds described here are assigned to the Rabbit Point Formation of Kurtz et al. (1952). Overlying beds appear to be correlative with the Bear Point and Ooyahgah formations of the same authors. The uppermost thin beds, here considered to be probably Middle Cambrian, form a basal member of the Ordovician Mingo River Formation of Kurtz et al. (1952).

Rabbit Point Formation. A basal sandstone unit, the Rabbit Point Formation (Kurtz et al., 1952), is widespread but in places rather thin or perhaps absent. At the type section, west of Dundas Harbour (Fig. 42.3, loc. 4), the unit is 26.5 m (85 ft.) thick and consists of calcareous, medium to fine grained sandstone, in part glauconitic. **Olenellus** and linguloid brachiopods (1)[1] were collected by Kurtz and Wales 7.6 m (25 ft.) above the base. At Cuming Inlet, about 80 km (50 miles) to the west (Fig. 42.3, loc. 6), about 21 m (70 ft.) of white-weathering, medium and fine grained sandstone with green shale beds were measured. At Burnett Inlet, 32 km (20 miles) west of Cuming Inlet (Fig. 42.3, loc. 7), Glenister (1963, p. 181) noted about 14 m (45 ft.) of quartzose sandstone, coarse at the base and medium grained upward.

The Rabbit Point Formation appears much reduced in thickness at locality 3 (Fig. 42.3), 24 km (15 miles) northwest of the type locality, where a basal sandstone bed about 1.5 m (5 ft.) thick is present and overlain by a dolomitic limestone bed. The overlying 15 m (50 ft.) of strata are covered but there is no evidence in the talus that sandstone is present.

Basal sandstones of the Rabbit Point Formation are more prominent on the north coast of Devon Island, where Glenister (1963, p. 186, 187) measured an incompletely exposed section of sandstone about 60 m (200 ft.) thick (Fig. 42.3, loc. 1).

Undivided Bear Point-Ooyahgah Formations. Conformably overlying the Rabbit Point Formation is a sequence consisting mainly of thin-bedded dolomite and dolomitic limestone with minor amounts of sandstone and shaly to silty carbonate. The thin bedded carbonate sequence forms rubbly slopes, in many places interrupted in the lower part by lines of small cliffs due to more resistant dolomite beds. The beds are characterized by variable lithology but have a uniform thickness of about 300 m (1000 ft.).

The Middle Cambrian sequence described here is presumed to comprise mainly the Bear Point and the Ooyahgah formations of Kurtz et al. (1952), but it includes also about 12 m (40 ft.) of beds assigned by them to the Mingo River Formation. The Middle Cambrian sequence is treated as a unit because a mappable contact separating the formations was not evident in the field. The difficulty in separating the Bear Point and Ooyahgah formations may have been due to the reconnaissance nature of the recent field work, but it is suspected that division is not practical outside the type area.

The Middle Cambrian carbonate beds include mainly grey to yellow-grey, thin-to medium-bedded, fine grained dolomite, limy dolomite, and dolomitic limestone, and shaly to silty dolomite. Sandstone, commonly limy or dolomitic, forms 10 to 20 per cent of the section, and intraformational conglomerate forms an abundant and conspicuous component of the unit. Locally conspicuous, mainly in the middle part of the unit, are stromatolitic beds variously with digitate and domal or layered forms. Thin gypsum-anhydrite or gypsiferous shale strata occur locally in the middle and upper parts of the section. Sandstone and sandy beds occur generally as medium or thick beds in the upper half of the unit. In addition, one or two thin sandstone beds occur locally within about 30 m (100 ft.) of the base. A prominent sandstone member is widely distributed in the upper part of the Middle Cambrian carbonate beds (Fig. 42.3).

Several fossil collections were obtained by Kurtz and Wales from thin carbonate beds equivalent to beds described here. The early collections (Kurtz et al., 1952) were made west of Dundas Harbour but, in spite of careful search by J.W. Cowie in 1960 and by Cowie and Christie in 1968, similar collections were not found outside the type locality, although linguloid brachiopods were found at two horizons (2, 3) at Cuming Inlet. Evidently conditions for preservation – perhaps less dolomitization – were more favourable in the Dundas Harbour region than elsewhere.

Middle Cambrian **Paterina** was collected (4) in the type section of the Ooyahgah Formation, from shale beds a few tens of feet below fossiliferous Lower Ordovician beds and it appears, therefore, that Upper Cambrian beds are missing from the section.

Ordovician

Lower Ordovician

Cape Clay Formation. The thin-bedded dolomite, limestone, intraformational conglomerate, and sandstone of Middle Cambrian age are overlain conformably by distinctive thick-bedded dolomite, here assigned to the Cape Clay Formation. The Cape Clay Formation was defined by Koch (1929a, p. 14; 1929b, p. 230) in Washington Land, Greenland, where it conformably overlies the Cass Fiord Formation.

[1] Fossiliferous horizons are identified on Figure 42.2 by appropriate circled numbers.

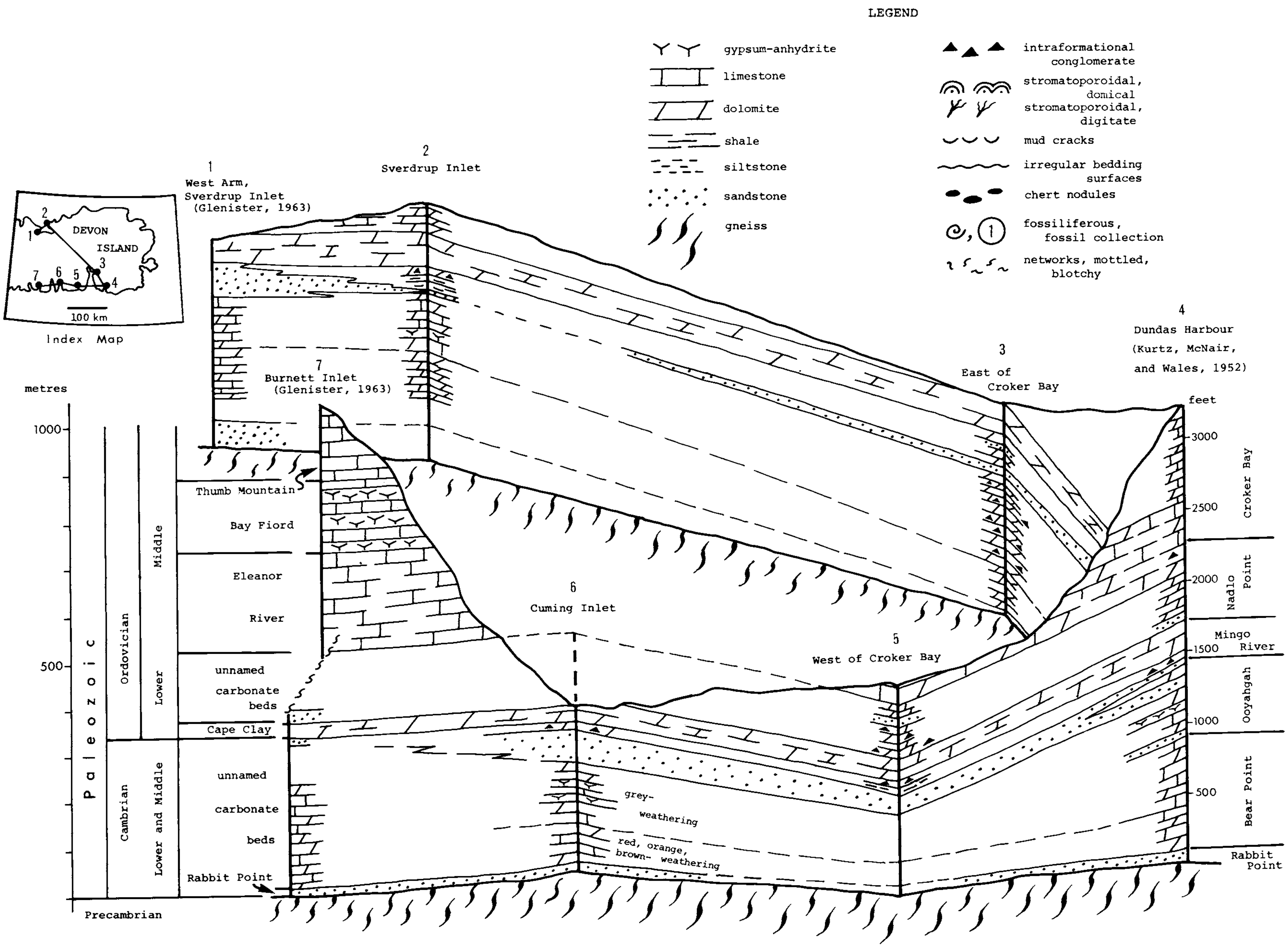

Figure 42.3. Fence diagram showing lower Paleozoic formations of eastern Devon Island.

Table 42.1

Table of Formations

Era	Period or Epoch		Formations: This paper	Formations: Kurtz, McNair, and Wales, 1952	Lithology Thickness: feet (metres)
Cenozoic	Quaternary to Recent				Till, gravel, sand, alluvium
Paleozoic	Ordovician	M	Cornwallis Gp.	Croker Bay	Limestone, gypsum-anhydrite 750 (230)
		M / L	Eleanor River	Croker Bay / Nadlo Point	Limestone, dolomite, intraformational conglomerate 700 (210)
		L	carbonate beds	Nadlo Point	Dolomite, dolomitic limestone, intraformational conglomerate, sandstone 400 (120)
		L	Cape Clay	Mingo River	Dolomite, dolomitic limestone 120-230 (37-70)
	Cambrian	U	disconformity	disconformity	Dolomite, dolomitic limestone, intraformational conglomerate, sandstone, shale, gypsum-anhydrite 1000 (300)
		M	carbonate beds	Ooyahgah	
		M		Bear Point	
		L	Rabbit Point	Rabbit Point	Sandstone, shale 10-87 (3-26)
n o n c o n f o r m i t y					
Precambrian					Diabase (dykes)
					Gneiss, granitoid gneiss; quartz-feldspar-biotite gneiss, garnetiferous gneiss, quartz-feldspar-garnet rock; pegmatite

The thick-bedded dolomite, here called the Cape Clay Formation, and the uppermost few tens of feet of the thin-bedded sequence were named the Mingo River Formation by Kurtz et al. (1952). The unity of the formation presumably was based on the cliff-forming character of both the uppermost thin beds and the thick-bedded dolomite, and on the presence, in certain thin beds, of **Symphysurina** and **Dendrograptus** (5). **Hystricurus**? **nudis** was found (7) in the lowermost part of the thick-bedded member, and an early Ordovician age was assigned to the formation. The boundary between units is placed, in this report (as noted),at the base of the thick-bedded part of the Mingo River Formation. The reasons are:

1. The upper part of the Mingo River Formation is a distinctive, thick-bedded dolomite and limy dolomite unit that may be correlative with the Cape Clay Formation of Northwest Greenland and central Ellesmere Island (as noted by Kurtz et al., 1952, p. 653; see also Christie, 1967, p. 38-40);

2. The interbedded carbonate and intraformational conglomerate evidently are not present everywhere beneath the thick-bedded part of the Mingo River Formation; at some localities, sandstone directly underlies the thick-bedded unit. In any case, the lower beds are lithologically similar to the underlying beds and are in marked contrast to the overlying thick-bedded unit; it seems preferable, therefore, to place the formational boundary at a distinctive and widely distributed lithological break.

Only a few tens of feet separate fossiliferous beds assigned a Middle Cambrian age from those of Early Ordovician age in the type section of Kurtz et al. and it appears probable, as noted by those authors, that Upper Cambrian beds are absent. The disconformity representing this hiatus is presumed, in the present report, to lie at the base of the thick beds of the Cape Clay Formation. Kurtz et al. (1952, p. 652), on the other hand, place the disconformity beneath the lower, thin-bedded part of their Mingo River Formation (see Table 42.1).

The Cape Clay Formation of Devon Island is very thick bedded, finely to coarsely crystalline, grey to brown dolomite and dolomitic limestone characteristically weathering to yellow-brown, red-brown, or orange, with distinctive lighter patches of irregular or amoeboid form. The weathered surface may be scoriaceous. Parts or all of the unit, especially where coarsely crystalline, are vuggy to cavernous. The Cape Clay is identified easily, even from a distance, because of its cliff-forming nature and distinctive colours; the lower beds are commonly darker and brownish, and the upper, yellow-white weathering. Kurtz et al. (1952, p. 645) described the unit (the upper part of the Mingo River Formation, 53.6 m (176 ft.) thick) as follows: "brownish grey, . . . fine-grained, massive, weathers yellowish brown. Broad light coloured bands, discernible from a distance, occur in the middle part of the unit".

The Cape Clay Formation is 37 to 70 m (120-230 ft.) thick in measured sections on Devon Island.

Poorly preserved orthocerid cephalopod fossils may be found at most localities in the Cape Clay Formation. In addition, **Hystricurus** was collected (7) by Kurtz and Wales near Dundas Harbour, and Glenister obtained **Goniotrema**? sp., **Eotomaria** sp., **Ophileta** sp., **Cyrtocerina** sp., and "cf. **Piloceras** sp." south of the west arm of Sverdrup Inlet (Fig. 42.1, loc. 1). **Ophileta** and **Hystricurus** were among fossils identified by Foerste (1921) and Poulsen (1946) in collections from the Cape Clay Formation at Bache Peninsula (Ellesmere Island) and Northwest Greenland; an "Upper Ozarkian" (Early Canadian) age was assigned.

Orthocerid cephalopod fossils were collected (6, 8) at most Cape Clay localities visited during recent field work. Fossils were obtained (8) from the uppermost part of the unit west of Croker Bay (Fig. 42.3, loc. 5); these are reported by E.L. Yochelson as follows (GSC loc. C-3305):

echinoderm plates
fragment of brachiopod or pelecypod indet.
?mollusk fragment with prominent spiral ornament
?**Priscochiton** sp. indet.
gastropod indet. aff. **Loxoplocus (Lophospira)**
?**Bridgeina** or **Helicotoma**
lenticular gastropod genus indet. (step-like umbilicus)
macluritid gastropod indet.
?macluritid gastropod indet. (very low whorls)
gastropod indet. aff. **Trochonema** sp.
high-spired gastropod indet. (possibly two genera)
cephalopod indet.

Regarding the age, Yochelson remarks as follows: "The ?**Bridgeina** is known from early Early Ordovician. The macluritid could be into Early Ordovician or Middle Ordovician. The possible **Trochonema** could be Middle Ordovician".

The evidence described above supports the assignment of the fossiliferous unit of Devon Island to the Cape Clay Formation, and of an Early Ordovician age to the beds.

Kurtz and Wales describe (as noted earlier), in their type section of the Mingo River Formation, about 4.5 m (15 ft.) of greenish grey calcareous shale and interbedded brownish limestone immediately beneath the upper, massive dolomite unit. **Symphysurina** and **Dendrograptus gracilis**? were collected (5) from the middle of these beds. A green shale bed, 20 cm (8 in.) thick, but not fossiliferous, was noted by Christie in a section at locality 5, about 50 km (30 miles) west of Kurtz and Wales' locality. At no other section studied on Devon Island were these shale beds seen. Possibly the shale and associated limestone should be considered as discontinuous basal beds of the Cape Clay Formation.

Unnamed Lower Ordovician carbonate beds. Conformably overlying the Cape Clay Formation is a sequence of thin-bedded dolomite, dolomitic intraformational conglomerate, and lesser amounts of dolomitic sandstone about 120 m (400 ft.) thick. This unit evidently is present everywhere in eastern Devon Island but usually forms greyish talus slopes between prominent cliffs formed by the underlying and overlying, relatively resistant, brown-weathering units. This unnamed map-unit is presumed to be equivalent to the lower part (about two-thirds) of the Nadlo Point Formation of Kurtz et al. (1952).

A complete section of the unnamed carbonate beds was examined by the writer at only one locality: that west of Croker Bay (loc. 5). There, the unit consists of about 90 m (300 ft.) of thin-bedded, fine grained, pale brown weathering dolomite and dolomite intraformational conglomerate overlain by about 21 m (70 ft.) of medium-bedded, white-grey weathering, dolomitic sandstone and about 30 m (100 ft.) of talus-covered, greenish grey, slaty carbonate, probably argillaceous dolomite. The lower dolomites are silty to sandy, and contain abundant dark grey chert nodules. Both digitate and domal stromatolites are abundant in the lower two-thirds of the unit.

Beds similar to those described above were examined by Kurtz and Wales at the type section of the Nadlo Point Formation. There, the basal 14 m (47 ft.) of the unit are greenish grey, glauconitic, calcareous sandstone. The sandstone is overlain by about 46 m (150 ft.) of mainly brownish grey, silty dolomitic limestone, above which is a covered interval of 46 m (150 ft.).

A sequence of about 60 m (200 ft.) of the lower beds was examined east of Sverdrup Inlet, on the north coast of the island (Fig. 42.3, loc. 2). These beds are thin- to medium-bedded, fine grained dolomite and, when weathered, have a hard, silvery grey surface. Some greenish shaly beds are present, but few intraformational conglomerates were observed.

No fossils have been collected from the unnamed carbonate unit overlying the Cape Clay Formation, but its stratigraphic position clearly indicates an Early Ordovician age. The unit probably contains equivalents of the gypsiferous Baumann Fiord Formation and of the underlying beds ("map-unit 6" of Bache Peninsula region; Christie, 1967) of central Ellesmere Island (see Kerr, 1967, 1968a). Although gypsum-anhydrite may be present in some of the covered intervals on Devon Island, it was nowhere observed.

Lower and Middle Ordovician

Eleanor River Formation. A series of cliff-forming, fossiliferous, brown-weathering limestone beds, tentatively assigned to the Eleanor River Formation, conformably overlies the unnamed carbonate rocks described above. The Eleanor River Formation was defined by Thorsteinsson (1958, p. 31) on Cornwallis Island. The unit was redescribed and assigned a new reference section on Ellesmere Island by Kerr (1967, p. 103; see also Kerr, 1968a, p. 26, 80, 81).

The Eleanor River Formation is widely exposed on eastern Devon Island, where it comprises generally resistant, thick beds of pale brown weathering limestone and less resistant interbeds. The writer nowhere traversed the whole unit, but probably all or nearly all of it is represented in the section studied by Glenister (1963) at Burnett Inlet (loc. 7), where a succession of about 210 m (700 ft.) of Eleanor River beds was measured.

Included in the Eleanor River Formation in this report are the upper beds, about 76 m (250 ft.) thick, of the Nadlo Point Formation of Kurtz et al. (1952). The upper part of the Eleanor River Formation presumably is represented by lower beds of the type Croker Bay Formation.

The position of the upper boundary of the Eleanor River Formation in the section near Dundas Harbour is uncertain; if the unit described by Kurtz and Wales as forming a "structural terrace" is taken to underlie less resistant, perhaps gypsiferous beds (of the Cornwallis Group), then this would be the top of the Eleanor River Formation. A thickness approaching 180 m (600 ft.) would then be present.

The Eleanor River Formation of southeastern Devon Island (the unit was not visited elsewhere) includes thick-bedded, fine grained, grey and pale brown weathering limestone; thin-bedded, yellow-grey-weathering dolomitic limestone and intraformational conglomerate; and minor amounts of light grey weathering shaly carbonate beds. The thick-bedded limestones are characteristically marked on the weathered surface by irregular patches or an anastomosing network of a lighter brown colour, and emit a strongly petroliferous odour on breaking. Silicified fossils are abundant at numerous horizons and, in addition, siliceous networks and chert nodules occur in upper, competent beds. Bedding planes in the thin- to medium-bedded dolomitic rocks are commonly wavy and argillaceous. Numerous fossiliferous beds also are present in the less competent part of the unit.

Fossils were obtained from various levels in the interval assigned to the Eleanor River Formation on southeastern Devon Island (9-13). Some of these are reported below.

Fossil collections examined by B.S. Norford of the Geological Survey of Canada are reported as follows:

Bed about 37 m (120 ft.) above the base west of Croker Bay (GSC loc. C-3307) (10):

Ceratopea sp.
Maclurites sp.
?**Palliseria** sp.
Polytoechia sp.
Diparelasma sp.
bryozoan
echinoderm
trilobite fragment
gastropods
straight cephalopods
age: early Middle Ordovician (Whiterock) or possibly latest Early Ordovician (Canadian)

Bed about 76 m (250 ft.) above the base west of Croker Bay (GSC loc. C-3308) (12):

?**Maclurites** sp.
echinoderm debris
gastropods indet.
ostracode
trilobites undetermined
age: probably Middle Ordovician

Bed about 55 m (180 ft.) above uncertain base, west of Croker Bay (GSC loc. C-3310) (not shown in Fig. 42.2):

Ozarkispira sp.
?**Nanorthis** sp.
gastropod indet.
age: Early Ordovician, probably Middle Canadian (about late Tremadoc)

About 135 m (450 ft.) above base, west of Croker Bay (GSC loc. C-3313) (13):

Maclurites sp.
echinoderm debris
brachiopod indet.
ostracode
trilobite undet.
age: Middle Ordovician

About 200 m (650 ft.) of limestone at Burnett Inlet (loc. 7) were assigned to the Eleanor River Formation by Glenister (1963, p. 181, 182) on the basis of lithology and position below the Cornwallis Formation (Group). Fossil collections from these beds were dated provisionally by G.W. Sinclair as Middle Ordovician.

Kurtz and Wales obtained several fossil collections from the upper, resistant beds of the Nadlo Point Formation, which beds, as noted, are here included with the Eleanor River Formation (see Kurtz et al., 1952, p. 642-644). A probable late Canadian age was suggested for the beds.

Table 42.2

Correlation of lower Paleozoic formations of Devon, Ellesmere, and Cornwallis Islands. Age assignments for tops and bottoms of formations follow Table 1 of Barnes, 1974.

Period		Stage: Europe	Stage: Eastern N.A.	EASTERN DEVON I. (this paper)	S.W. ELLESMERE I. J.W. Kerr, 1968b	BACHE PENINSULA R.L. Christie 1967	CORNWALLIS I. R. Thorsteinsson 1958; R. Thorsteinsson & J.W. Kerr, 1968
SILURIAN					Devon I.		Read Bay
					Douro		
					dolomite, limestor		
					Allen Bay		Allen Bay
ORDOVICIAN	U	Ashgillian	Richmond				
			Maysville		Cornwallis Gp.: Irene Bay		Cornwallis Gp.: Irene Bay
		Caradocian	Eden		Thumb Mtn.		Thumb Mtn.
	M		Barneveld				
			Wilderness	Cornwallis Group	Bay Fiord		Bay Fiord
			Porterfield				
		Llandeillian	Ashby				
		Llanvirnian	Marmor				
			Whiterock				
	L	Arenigian	Canadian	Eleanor River	Eleanor River	Eleanor River	Eleanor River
		Tremadocian		dolomite	limestone, dolomite, gypsum-anhydrite	Baumann Fiord	Baumann Fiord
						dolomite	
				Cape Clay	dolomite	Cape Clay; Cass Fiord	
CAMBRIAN	U		Trempealeauan	? dolomite, limestone, sandstone			
			Franconian				
			Dresbachian				
	M				limestone, dolomite	Cape Wood	
	L			Rabbit Point		Cape Kent; Police Post; C. Ingersoll; C. Leiper; Sverdrup	
Precambrian						? Bache Pen.; Camperdown	

The lowermost 90 m (300 ft.) of the Croker Bay Formation of Kurtz et al. comprise mainly brown, petroliferous limestone and these beds, as noted, are included here tentatively in the Eleanor River Formation[1]. **Maclurites** and **Isotelus** were obtained, for which a "Middle Ordovician or possibly early Upper Ordovician" age was assigned.

Middle and Upper Ordovician

Cornwallis Group. The Cornwallis Group was defined originally by Thorsteinsson (1958, p. 33) on Cornwallis Island as the Cornwallis Formation. The unit was redefined and raised to group status by Kerr (1967), who named three reference sections near Irene Bay on Ellesmere Island.

[1] This correlation was suggested earlier by Thorsteinsson (in Fortier et al., 1963, p. 34).

The Cornwallis Group typically comprises a basal gypsum-anhydrite and thin-bedded limestone formation, a middle, bluff-forming limestone formation, and a thin, recessive shaly limestone formation. These are named, respectively, the Bay Fiord, Thumb Mountain, and Irene Bay formations. Beds described by Glenister (1963, p. 182, 183) at Burnett Inlet clearly are assignable to the Bay Fiord and Thumb Mountain formations. The Cornwallis Group forms some of the uplands of southern Devon Island and is exposed widely west of Burnett Inlet. The group was not examined, however, by the author during the recent field work.

A section composed of light brownish grey, medium- to thin-bedded limestone about 340 m (1100 ft.) thick and containing Maclurites and Receptaculites arcticus was examined by Kurtz and Wales west of Dundas Harbour. These beds were included in the Croker Bay Formation, of Middle Ordovician age (Kurtz et al., 1952). It is suggested here tentatively that most or all of this 340 m (1115 ft.) section is correlative with the Cornwallis Group, as proposed by Thorsteinsson (in Fortier et al., 1963, p. 34).

Whether the basal, gypsiferous unit of the Cornwallis Group, the Bay Fiord Formation, is present immediately west of Dundas Harbour is uncertain. At Burnett Inlet, 100 km (60 miles) to the west (loc. 7), this formation is 160 m (530 ft.) thick and consists of thin gypsum beds alternating with limestone and shale (Glenister, 1963, p. 182). A whitish, recessive unit below resistant beds east of Croker Bay was discerned in 1969 by fieldglass and appeared to be in the correct stratigraphic position for the Cornwallis Formation.

A Middle Ordovician age is assigned to the Cornwallis beds of Burnett Inlet based on fossil collections from upper beds (Glenister, 1963, p. 182, 183). The group is known, elsewhere, to range in age from early Middle to Late Ordovician (Whiterock to early Richmondian), based on conodont biostratigraphy (see Barnes, 1974; this paper, Table 42.2).

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