

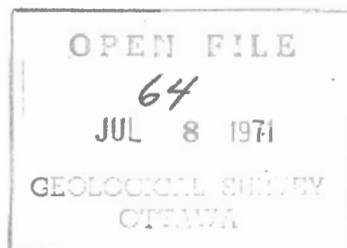
PRELIMINARY NOTES ON LOWER PALEOZOIC GEOLOGY ,  
FOX E BASIN, NORTHEASTERN MELVILLE PENINSULA,  
AND PARTS OF NORTHERN AND CENTRAL BAFFIN ISLAND

by H.P. Trethin

Geological Survey of Canada,  
Institute of Sedimentary and Petroleum Geology  
3303, 33rd Street NW, Calgary 44, Alberta

(Open File Report)

Submitted July, <sup>5</sup>7, 1971



This document was produced  
by scanning the original publication.

Ce document est le produit d'une  
numérisation par balayage  
de la publication originale.

## ABSTRACT

This is a preliminary compilation of data obtained during field work in 1968. The report contains; (1) geological summaries both on the regional and local scale; (2) relevant field notes; (3) fossil identifications by B.S. Norford, C.S. Barnes, A.J. Boucot, and M.J. Copeland; and (4) preliminary descriptions of hand specimens, polished sections, and thin sections. The location of the 64 localities visited is expressed in terms of the NTS grid and of UTM coordinates.

The report (151 pp.) is accompanied by the following illustrations:

- 1 regional structural sketch map
- 5 regional index maps
- 1 correlation chart
- 10 location maps (scale 1:250,000) of NTS 36 N; 37 A,B,C,D,F,G  
47 A,D,E
- 2 preliminary maps, lower Paleozoic geology, NTS 47 A,D

CONTENTS

	page
Introduction.....	1
Part I: Summary of the regional geology.....	2
Stratigraphy.....	2
Structural geology.....	8
Petroleum geology.....	9
Part II: Data on the geology of individual areas.....	11
Preface.....	11
Prince Charles Island (NTS 36 N; 37 A,B).....	12
Foley Island (NTS 37 A).....	26
Baird Peninsula (NTS 37 B,D).....	38
Bray Island (NTS 37 C).....	40
Rowley and Koch Islands, general statement (NTS 37 C).....	41
Rowley Island (NTS 37 C).....	42
Koch Island (NTS 37 C).....	49
Islands in Steensby Inlet (NTS 37 C).....	57
Jens Munk Island (NTS 37 C and 47 D).....	61
Steensby Peninsula (NTS 37 F).....	67
Inuktorfik Lake region (NTS 37 G).....	84
Roche Bay, Melville Peninsula (NTS 47 A).....	105
Quilliam Bay, Melville Peninsula (NTS 47 D).....	114
Igloodik Island (NTS 47 D).....	131
Neergard Lake (NTS 47 E).....	140
Erichsen Lake (NTS 47 E).....	141
Brodeur Peninsula (NTS 48 C).....	146
Palynological analyses of sediments of the Turner Cliffs Formation.....	152
References cited.....	153

ILLUSTRATIONS

Structural sketch map.....page 8

Index map for location maps and geographic names (separate)

Index map for Admiralty Group "

Index map for Ship Point Formation "

Index map for upper Middle and Upper Ordovician "

Index map for Silurian "

Tentative correlation chart "

Location maps , scale 1:250,000 for

NTS 36 N "

37 A "

37 B "

37 C, D "

37 F "

37 G "

47 A "

47 D "

47 E "

Geology of lower Paleozoic rocks NTS 47 A "

(scale 1:250,000) 47 D "



## INTRODUCTION

The first geological investigations in the project area were carried out by the Fifth Thule Expedition (Teichert, 1937), Burns (1952), Blackadar (1958 a,b; 1963), and Haywood (1967).

A special study of the lower Paleozoic geology was made by the writer <sup>(1969b)</sup> in 1968, using a Piper Super Cub airplane on balloon tires chartered from Bradley Air Services Ltd. The party of three was based at Igloolik.

A total of 64 localities, extending from northern Brodeur Peninsula to southern Prince Charles Island, were visited, and the writer camped at seventeen of these. Some work was also done from the DEW stations on Rowley Island and at Longstaff Bluff, central western Baffin Island.

For hospitality and technical help, the party is indebted to the staff of the DEW stations and to the following officers of the Department of Indian Affairs and Northern Development; H. Bartels; J.B. Haining; D. Nygard; W. Paterson; and J. Wamiwang. Pilot Hemby contributed to the success of the field work by his competent and willing performance, often under difficult weather conditions.

This report is a very preliminary presentation of the most important information obtained. It has been compiled hastily, in order to make the data available to a petroleum company operating in the region in the summer of 1971, and it has neither been critically read nor edited.

The report consists of two parts of unequal length. Part I gives a brief summary of the regional stratigraphy, structural geology, and petroleum geology. Part II contains field notes, fossil identifications, preliminary descriptions of hand specimens, polished sections and thin sections from individual areas, along with brief summaries of the local geology.

The fossil identifications were made by the following persons:  
macrofossils-- B.S. Norford; conodonts -- C.R. Barnes; ostracods-- M.J. Copeland.  
A.J. Boucot advised on some Silurian brachiopods.

PART I: SUMMARY OF THE REGIONAL GEOLOGY

=====

STRATIGRAPHY

Four major stratigraphic units are recognized in the report area:

- (4) Lower Silurian (Llandoveryian) dolomitic limestone, dolomite, and minor breccia correlative with upper parts of the Baillarge Formation and lower parts of the Cape Crauford Formation. These two formations, established in northwestern Baffin Island (Trettin, 1969), cannot be distinguished in the present area.
- (3) upper Middle and Upper Ordovician dolomitic limestones correlative with the Ordovician part of Member B of the Baillarge Formation
- (2) Dolomites and minor amounts of sandstone assigned to the upper Lower and lower Middle Ordovician Ship Point Formation
- (1) Sandstones and dolomites assigned to the Cambrian (?) Admiralty Group.

ADMIRALTY GROUP

The Admiralty Group, erected by Lemon and Blackadar (Blackadar, 1956; Lemon and Blackadar, 1963), and redefined by Trettin (1969<sup>a</sup>) comprises the Gallery and Turner Cliffs Formations. It is the oldest known Paleozoic unit in northern Baffin Island <sup>and</sup> rests unconformably on Precambrian rocks of various types and ages. The group has not yielded diagnostic fossils and its age is uncertain. It is tentatively correlated with the upper Lower and Middle Cambrian Rabbit Point, Bear Point, and Ooyegah Formations of Dundas Harbour, Devon Island (Kurtz, McNair, and Wales, 1952). The Admiralty Group was deposited in a west-plunging basin centred in northern Borden Peninsula, known as the Admiralty Basin.

Gallery Formation

The Gallery Formation, the type section of which is located on the west coast of Admiralty Inlet (Lemon and Blackadar, 1954), consists mainly of quartzose sandstone with only small amounts of siltstone, conglomerate, breccia, shale, and dolomite. In northwestern Baffin Island, measured thicknesses range up to 1,125 feet. The unit appears to be of nonmarine, mainly fluvial origin.

The depositing currents flowed into the Admiralty Basin from the northwest and south (see Trettin, 1969<sup>a</sup>, Fig. 3).

In the report area, the formation has been recognized only in the region northwest of Inuktorfik Lake (sections 14 and 15). At section 14, it consists of a minimum of 24 feet of light gray and red weathering sandstone. The paleocurrent directions are to the north.

#### Turner Cliffs Formation

The type section of the Turner Cliffs Formation also is on the west coast of Admiralty Inlet. The formation consists of two lithological assemblages that alternate throughout the stratigraphic section: (1) recessive weathering dolomites, and less abundant shales and flat-pebble conglomerates; and (2) quartzose and dolomitic sandstones that are moderately resistant to weathering. The thicknesses measured in northwestern Baffin Island range up to 1,085 feet. Unidiagnostic linguloid brachiopods, stromatolites, and trace fossils are the only faunas known. The formation is inferred to have been deposited in very shallow marine, probably predominantly intertidal environments.

Studies in the report area indicate that the Turner Cliffs Formation is more extensive than recognized during the 1963 reconnaissance work. The formation not only underlies the Inuktorfik Lake region (NTS 37 F, SW) where it was expected, but also parts of Steensby <sup>Peninsula</sup> and Erichsen Lake areas (NTS 37 F, 47 E). The isopachs shown in Fig. 4 of Trettin, 1969<sup>a</sup>, therefore will have to be swung to the south along the eastern margin of the area shown, and GSC Map 1242 A (Blackader, Davison, and Trettin, 1968) will have to be corrected.

The thickness of the Turner Cliffs Formation is 139 or 163 feet at section 14, and between 306 and 334 feet at section 18 (Inuktorfik Lake region). Section 14 is relatively well exposed and has been studied in some detail.

At Quilliam Bay (loc. 33, Melville Peninsula), a poorly exposed unit, about 40 feet thick, that appears to be rich in quartz sandstone occurs stratigraphically between the typical Ship Point Formation and the Precambrian basement. It is possible that this unit represents the Admiralty

Group; and if so, probably the Turner Cliffs Formation, because that formation is more extensive than the Gallery. The strata may also be related to the basal Paleozoic sandstone unit on Simpson Peninsula (Heywood, 1967; map-unit 18), which is known to be Ordovician or older but has not yet been dated precisely.

#### DISCONFORMITY BETWEEN THE SHIP POINT AND TURNER CLIFFS FORMATIONS

From regional correlations it is inferred that the Turner Cliffs and Ship Point Formations probably are separated by a hiatus that involves parts of Cambrian and Early Ordovician time. This postulated disconformity is difficult to find at individual sections because the upper Turner Cliffs and lower Ship Point Formations are similar and because both were deposited in shallow water so that many bedding planes could represent stratigraphic breaks. Some lithological evidence for a possible disconformity, however, was seen at section 14 (unit 14) where breccia with caliche-type structures occurs; and at section 27 (Steensby Peninsula, N) where a similar breccia is represented.

#### SHIP POINT FORMATION

The type section of the Ship Point Formation was established by R.R.H. Lemon on the east coast of Admiralty Inlet (Lemon and Blackader, 1954). The formation consists mainly of dolomite with some dolomitic flat-pebble conglomerates and quartzose and dolomitic sandstones. It contains a rare but diagnostic fauna which consists of conodonts, brachiopods, trilobites, and gastropods, in addition to undiagnostic echinoderm columnals, bryozoans, stromatolites, and trace fossils. Graptolites have been found only on eastern Jens Munk Island (loc. 54). The inferred depositional environments range from shallow subtidal to intratidal. At the type section, the formation is reported to be between 850 and 900 feet thick, which is the maximum thickness known.

The Ship Point Formation is the most widely exposed rock unit of the present report area and undoubtedly covered the entire region. The thickness decreases from a maximum of about 440 feet at section 15 (Inĳtorfik Lake) to a minimum of about 240 feet at Foley Island in a southerly direction.

The lithology of the unit is relatively monotonous both laterally and vertically with the following minor deviations:

(1) Sandstone and sandy dolomite are more abundant in the lower part of the formation than in the upper.

(2) The uppermost beds are intensely burrowed and commonly more resistant to weathering as a result of the burrowing. On Igloolik Island, for example, the burrowed beds form a massive, cliff-forming unit (unit 5 of sections 1-7 and 37) that caps two buttes adjacent to the settlement of Igloolik.

The oldest fossils found in the Ship Point Formation in the report area are late Early Ordovician (Arenigian) in age and include graptolites from Jens Munk Island (loc. 54), gastropods from Steensby Inlet (loc. 30), and *brachiopods* and conodonts from Foley Island (loc. 45). Conodonts of Llanvirnian (earliest Middle Ordovician) age have been collected from loc. 29 in Steensby Inlet, and conodonts of Chazyan (Llanvirnian to Llandeilian --early Middle Ordovician) age from Igloolik Island (loc. 5).

#### DISCONFORMITY BETWEEN THE BAILLARGE AND SHIP POINT FORMATIONS

A disconformity between the two units is inferred from:

-- the absence of Member A of the Baillarge Formation in the present area and the lack of any indication that this is due to a facies change

--the intensely burrowed state of the uppermost strata of the Ship Point Formation wherever exposed (e.g. Igloolik Island; Steensby Pen, loc. 26; Foley Island, loc. 45; Quilliam Bay, loc. 34)

--the occurrence of quartz cobbles up to 8 cm in the uppermost strata of the Ship Point Formation at loc. 50 on Igloolik Island

--the occurrence of caliche-type structures in the uppermost strata

at locality 26 on Steensby Peninsula.

It is possible that the Middle Ordovician part of the Formation has been removed from Foley Island, where late Early Ordovician brachiopods occur 37 feet below the top of the formation (C-2843).

#### UPPER MIDDLE AND UPPER ORDOVICIAN DOLOMITIC LIMESTONES

The upper Middle and Upper Ordovician are represented by limestones that are rather uniform over wide regions. The limestones are cryptocrystalline, fossiliferous, and dolomitic. The fossils are mud-supported and occur both in situ and as bioclastic debris. The dolomite occurs partly as isolated crystals throughout the limestone, and concentrated in stringers and tube-like bodies. These tubes probably represent original borings. The limestone is bleached in these tubes and thus commonly has a mottled overall appearance. Most limestones are resistant and cliff-forming, but some are recessive weathering.

The following three faunas have been distinguished by B.S. Norford:

- (3) A Richmondian fauna represented by a collection from NE Rowley Island (loc. 20)
- (2) A lower Arctic Ordovician fauna, comparable to that of the Red River Formation and Bad Cache Rapids Group of Manitoba. It occurs at Igloolik (loc. 51) and Roche Bay (locs. 35, 36), and on Koch Island (loc. 23), Bray Island (loc. 46) and Baird Peninsula (loc. 49). This fauna is tentatively assigned to the late Middle Ordovician (Eden and Maysville stages).
- (1) A Middle Ordovician fauna with the possible age range Chazyan to Barneveldian; it occurs on Foley Island, less than 10 feet above the base of the limestone succession. From regional correlations it would appear that this fauna is probably not older than Barneveld or Wilderness.

The dolomitic limestones of the report area are similar to the predominant rock type of Member B of the Baillarge Formation, and probably correlative with the Ordovician part of that unit. In the present notes they are therefore referred to as "Baillarge Formation". It must be emphasized, however, that Member A of the Baillarge Formation is absent, and that the Silurian strata of the present area are somewhat different from the Baillarge Formation. Therefore, in the final report on this project, the term Baillarge Formation

will probably be replaced by an informal term.

The strata represent an extensive marine transgression and probably were deposited mainly in subtidal shelf environments.

## SILURIAN

Silurian strata are limited to the central parts of Foxe Basin where they occur on southern Rowley Island, Prince Charles Island, and, apparently also in the Spicer Islands (see Burns, 1952, p. 12). The strata are mainly dolomitic limestones and dolomites, with some breccia and <sup>and coralline</sup> sandy limestone on southern Rowley Islands. The unit is relatively rich in fossils, particularly in corals, brachiopods, and ostracods.

Two faunas are distinguished by B.S. Norford in the present collections from Prince Charles Island: (1) a middle Llandoveryian fauna represented by the collection from loc. 43, and (2) a late Llandoveryian fauna represented by the collection from loc. 38. The collection from loc. 42 contains fossils of both faunas.

The collection from loc. 24 on southern Rowley Island is assigned to the early or middle Llandoveryian by A.J. Boucot.

The strata containing Early and Middle Llandoveryian faunas are correlative with upper parts of the Beillarge Formation, and those containing late Llandoveryian fossils, with the Cape Crauford Formation. The two units, however, cannot be distinguished in the present area, and the overall lithology is slightly different.

The depositional environments of the Silurian strata probably were somewhat shallower than <sup>those of the upper Middle and Upper</sup> Ordovician units and may have ranged from sub-tidal to supratidal. Models of gypsum crystals occur in some beds.

A gentle regional dip towards the centre of Foxe Basin is apparent from the fact that Silurian strata are limited to the central part of the basin, and that the strata on Koch<sup>and</sup> Rowley Islands ascend in age in a southeasterly direction, while those on Baird Peninsula ascend in age in a southwesterly direction (Fig. 1).

The lower Paleozoic strata are mostly undisturbed, but are bounded by faults in the eastern and western parts of the area investigated. On Melville Peninsula, they are bounded on the west by extensive, curving, normal faults that step down to the east, and a similar fault is probably present on eastern Jens Munk Island. At the foot of Baird Peninsula, on the other hand, the lower Paleozoic outcrops are limited on the east by a lineament that may represent a normal fault with the opposite sense of movement.

These observations suggest that Foxe Basin is a graben-like depression of post-Early Silurian age. It may furthermore be speculated that the faulting occurred in the Early Tertiary, concomitantly with the opening of Baffin Bay.



Fig.1 Structural sketch map



### Porosity

The porosity conditions throughout the stratigraphic column may be summarized as follows:

Silurian: fair to good intercrystalline and vuggy porosity in some dolomites

upper Middle and Upper Ordovician Baillarge -type limestones: fracture porosity only

Ship Point Formation: poor to fair intercrystalline porosity in most strata; high porosity in lenses of friable quartz sandstone such as unit 13, loc. 33 (Quilliam Bay)

Admiralty Group: high porosity in friable quartz sandstones of Gallery and Turner Cliffs Formation

### Potential source rocks

Bituminous shales do not seem to be present in the report area and the only potential source rocks present are carbonates.

The Admiralty Group and Ship Point Formation do not contain appreciable amounts of organic matter because they seem to have been deposited in very shallow water under generally oxidizing conditions. The upper Middle and Upper Ordovician Baillarge-type limestones, however, probably contain a low, but sufficient proportion of organic matter present mainly as submicroscopic, cloudy inclusions within the carbonate crystals. The same holds for some of the Silurian dolomitic limestones. A single occurrence of a carbonate rock relatively rich in organic carbon was noted on northeastern Prince Charles Island (loc. 44) <sup>where a</sup> dolomite contains as much as 5.8% of organic carbon.

### Potential traps

Possible structural traps are difficult to recognize by surface geology because of the generally poor exposure.

Combined stratigraphic and structural traps may be present in areas where porous units terminate against normal faults.

Potential stratigraphic traps are probably present but difficult to predict in the subsurface. They may be formed by Silurian dolomites that are surrounded by strata of lesser porosity; by lenses of quartz sandstone within the Ship Point Formation; and by sandy units of the Admiralty Group that pinch out.

## PART II: DATA ON THE GEOLOGY OF INDIVIDUAL AREAS

### PREFACE

The various areas are discussed approximately in the order of increasing NTS numbers , with some minor deviations.

The stratigraphic sections give the field notes only and have not yet been written up in systematic form. The field notes emphasize land form , gross lithology, major primary structures , etc.; in the final report, they will be combined with the descriptions of typical rock specimens that follow the field notes and fossil identifications .

### Terms used to indicate the size ranges of carbonate crystals:

The grades distinguished correspond to the Wentworth scale, and the nomenclature used has been adapted from Leighton and Pendexter (1962) and Drummond (1963). In this nomenclature, carbonate grains of sand size are described in terms of sand grades (i.e. as fine, medium, coarse, etc.), those of silt size are termed microcrystalline, and those of clay size, cryptocrystalline. Although the so-called cryptocrystalline grains are visible in thin section under the highest power objective, the term cryptocrystalline seems justified as optical tests cannot be made on these crystals.

2-1 mm.....	very coarsely crystalline
1-0.5 mm.....	coarsely crystalline
0.5-0.25 mm.....	medium crystalline
0.25-0.12 mm.....	finely crystalline
0.12-0.06 mm .....	very finely crystalline
0.06-0.004 mm .....	microcrystalline
0.06-0.03 mm.....	coarsely microcrystalline
0.03-0.004 mm .....	finely microcrystalline
0.004 mm or less.....	cryptocrystalline

Concerning the preliminary descriptions given, it should be noted that in thin section the argillaceous material generally is masked by the carbonates. Insoluble-residue and x-ray diffraction analyses, therefore will be made in order to determine the <sup>Percentage</sup> and composition of this material.

## PRINCE CHARLES ISLAND

General Statement

Prince Charles is the largest island in Foxe Basin and straddles four (1:250,000) topographic map-areas. The total relief is in the order of 200 feet and the local relief considerably less than 100 feet. Exposures generally comprise not more than about 3 feet of stratigraphic section.

Three types of terrain may be distinguished : (1) extensive areas that are light colored on air photographs and flat; they are underlain by carbonate bedrock which is weathered more or less in place; (2) extensive areas that are dark colored and flat; they are covered with vegetation and underlain by recessive weathering (fissile) lower Paleozoic strata; (3) areas characterized by light colored ridges etc.; these are constructional Pleistocene and Recent deposits.

Four selected areas, referred to as Prince Charles Island NE, NW, Centre W and SW were visited and the following brief summary is based on notes, fossils and rock specimens from them.

The bedding attitude in all four areas seems to be practically horizontal on the local scale, but a regional dip component to the south is apparent from the fact that fossils collected in the NW are slightly older than fossils collected in the SW at about the same elevation (compare C-2835 and 2829).

The lithology consists everywhere of original limestones that have been dolomitized to varying degrees. The three areas on the west side are richly fossiliferous, but the area in the northeast has not yielded diagnostic fossils. The carbonate rocks represent a variety of primary structures that are indicative of shallow marine to perhaps supra- or intratidal conditions. Diagnostic features encountered include domal stromatolites, edgewise conglomerate, and molds of gypsum crystals.

The diagnostic fossils collected in the present investigation are all Silurian and range from Middle to Late Llandoveryan in age. It is possible, however, that Upper Ordovician strata are present as well as Burns found drift of Receptaculites and of an Upper Ordovician graptolite (1952, pp. 6-7).

It appears that these strata are correlative both with parts of the Baillarge Formation and of the Cape Crauford Formation of northwestern Baffin Island, but it does not seem possible to distinguish these two units in the present area as extensive solution breccias have not been recognized.

## PRINCE CHARLES ISLAND, SW

Field Nos .: Tm-68-38a, ,b ,b2,b3

NTS: 36 NMap: Prince Charles Island (1:250,000)UTM : zone 18W

item	Northing	Easting
38a	7465800	444600
38b	7465600	441800
38b2	7464750	442000
38b3	7464200N	442200

Vertical air photos: A 16014 -96,97

Field code for flight line: AF 2

Summary

This area is underlain by broken, and disturbed (by frost heaving) bedrock weathering in place. It is covered with numerous, irregular and very shallow ponds. Areas that are dark on air photographs have a thin layer of soil with vegetation.

The fossils and rock specimens collected probably came from a narrow stratigraphic interval ( a few feet thick?) as there is hardly any relief. The rocks represent original cryptocrystalline limestones with locally abundant fossils and some pellets and intraclasts. The limestone has been partly replaced by euhedral microcrystalline dolomite which pervades the rocks in an irregular fashion. Chert occurs in one specimen (38a-spec. 2).

The fossils appear to be of late Llandoveryan age (see C-2829,2830)

## PRINCE CHARLES ISLAND ,CENTRE W

Field Nos.: Tm-68-39a,b; 40

NTS: 36 NMap: Prince Charles Island (1:250,000)UTM: zone 18 W

item	Northing	Easting
39a	7524200	429300
39b	7524200	428500
40	7524700	43370

Vertical air photos: A 16019-37,38  
A 16296-15,16

Field code for flight lines: CH 3,4

Summary

Bedrock weathered in place is exposed both at localities 39 and 40. The strata are more or less calcareous dolomite, apparently formed by replacement of limestones. Brachiopods and gastropods were seen at 39a; and brachiopods, corals ,gastropods are fairly common in some strata at locality 40. Stromatolites , 2-3inches high, occurred both at localities 39b and 40, and edgewise flat-pebble conglomerate at 40.

Current-transported, rounded debris , perhaps representing eskers, was noted at locality 39b where raised beaches are indicated on the topographic map.

PRINCE CHARLES ISLAND, NW

Field Nos.: Tm-68- 41, 42, 43

NTS: 37 B

Map: Spicer Islands (1:250,000)

UTM: zone 18 W

item	Northing	Easting
41	7556250	443400
42	7555600	444700
43	7555900	446300
43b	7555800	445700

Vertical air photos: A 16014-114,115,116

Field code for flight lines: CH 6

#### Summary

A few feet of bedrock were encountered at stations 41, 42, and 43 each, and bedrock weathering in place at station 43b. Stations 42 and 43 occur on a ridge, station 43 occurs in the bed of a creek adjacent to the ridge, and the relief between these stations is more than a few tens and less than 100 feet. The bedding attitude probably is nearly horizontal, and the stratigraphic interval represented in the same order of magnitude as the local relief. This is supported by the fossil collections. C-2835 from station 43 contains the Middle Llandoveryan index fossil Virgiana decussata, and C-2834 from station 42 both Virgiana decussata and the index fossil Multisolenia tortuosa Fritz which usually is indicative of a late Llandoveryan age. The rocks are variably dolomitized limestones with fairly abundant brachiopod, ostracod, and coralline faunas and common pelletoidal grains. A specimen collected from loc. 43b is environmentally significant in that it has vugs that have the outlines of leached gypsum crystals.



PRINCE CHARLES ISLAND, NE

Field Nos.: Tm-68-44,44b,44c

NTS: 37 A

Map: Foley Island (1:250,00)

UTM: zone 18 W

item	Northing	Easting
44	7550300	480250
44b	7552000	478750
44c	7551500	479400

Summary

Two types of terrain are visible on air photo A 16014-61: a light colored terrain that consists of carbonate bedrock, and bedrock weathered in situ; and a dark colored terrain that is covered by vegetation and probably underlain by the organic-rich, fissile limestone described below as unit (4). The attitude probably is nearly horizontal, and the local stratigraphic section not more than about 5 feet thick. The following section is a composite based on traverse notes. The rocks examined were unfossiliferous (except for stromatolites). The collections made (C-2836 ,2837) are rounded drift and may not be related to the local stratigraphy



## Report by B.S.Norford (D-S 6 BSN 1969)

GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2829	Tm-68-38a Prince Charles Is. SW	bryozoan, ostracod, clam, gastropods, stromatoporoid, trilobite, undetermined brachiopods  <u>Catenipora</u> sp. <u>Favosites</u> sp. <u>Multisolenia tortuosa</u> Fritz <u>Palaeofavosites</u> sp. <u>Glassia</u> cf. <u>G. variabilis</u> Whiteaves age: Silurian, probably Late Llandovery
C-2830	Tm-68-38b Prince Charles Is. SW	echinoderm debris, bryozoan, ostracod, gastropod, solitary coral, trilobites <u>Catenipora</u> sp. ? <u>Eostropheodonta</u> sp. ? <u>Pentamerus</u> sp. age: Silurian, probably Late Llandovery
C-2831	Tm-68-39a Prince Charles Is. Centre W	gastropod ? <u>Eostropheodonta</u> sp. age: probably Silurian, probably Llandovery
C-2832	Tm-68-40 Prince Charles Is. Centre W	ostracod gastropod <u>Propora</u> sp. undetermined brachiopods age: Middle Ordovician to Late Silurian
C-2835	Tm-68-43 Prince Charles Is. NW; topographically lowest coll. from that area	indeterminate brachiopods <u>Virgiana decussata</u> (Whiteaves) age: Silurian, Middle Llandovery
C-2834	Tm-68-42 Prince Charles Isl. NW	stromatoporoid <u>Favosites</u> sp. <u>Multisolenia tortuosa</u> Fritz <u>Palaeofavosites</u> sp. <u>Virgiana decussata</u> (Whiteaves) age: Silurian, Middle Llandovery

Rept. by B.S.Norford, ctd.		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2833	Tm-68-41 Prince Charles Is. NW	straight cephalopod gastropod indeterminate and pentamerid brachiopods <u>Eostropheodonta</u> sp. age: Silurian, probably Llandovery
C-2836	Tm-68-44b Prince Charles Is. NE ; <u>drift</u>	<u>Palaeofavosites</u> sp. age: Late Ordovician to Late Silurian
C-2837	Tm-68-44c Prince Charles Is. NE; <u>drift</u>	<u>Palaeofavosites</u> sp. age: Late Ordovician to Late Silurian

Report by M.J.Copeland (MP-6-1969-MJC)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2829	Tm-68-38a Prince Charles Is., SW	Trilobites: <u>Encrinurus</u> sp. "Acernespis" sp. Ostracoda: leperditiid indet. <u>Herrmannina</u> sp. <u>Apatobolbina</u> sp.  age: "This appears to be an early Middle Silurian assemblage" (in North American terms, i.e. probably late Llandoveryan -- B.S.Norford)"with similarity to those from lower Clinton strata of North America."
C-2832	Tm-68-40 Prince Charles Isl., Centre W	Ostracoda: leperditiid indet.

Description of hand specimens and polished and thin sections

Prince Charles Island, SW

- 38b      Hand spec. and polished section almost identical with  
           38a-spec. 2  
           Thin section  
           Limestone, cryptocrystalline, fossiliferous (ostracods, brachiopod  
           shells, etc.) partly replaced by dispersed microcrystalline dolomite  
           ; now forms pseudo-breccia, due to partial replacement
- 38b-2    Hand specimen  
           Parting 0.7 cm, irregular upper and lower surface; abundant  
           brachiopods, one gastropod; weathering very pale orange.
- Polished section  
           Grayish orange; brachs. lie in bedding plane and cause  
           the relief observed.
- 38b-3    Hand specimen  
           Parting 2.5 cm; brachiopod; weathering yellowish gray
- Polished section  
           Grayish orange; very vague internal lamination

Prince Charles Island, Centre W

- 39      Hand specimen  
           Parting about 3 cm; massive; grayish yellow weathering  
           mould of a pentamerid weathered out; traces of a coral ??  
           Polished section  
           grayish orange to very pale orange, mottled remnants of  
           a very thin lamination in parts of the section
- Thin section  
           Some patches are largely euhedral microcrystalline dolomite,  
           others mixtures of microcrystalline dolomite with crypto- to  
           finely microcrystalline calcite; one large echinoderm  
           columnal
- 40      Hand specimen  
           Parting 1.8 cm, weathering very pale orange; small brachiopods  
           abundant
- Polished section  
           Pale to grayish orange, , discontinuous, slightly wavy lamination
- Thin section  
           Highly vuggy thin section; calcite seems to have been leached  
           by the staining ; only microcrystalline euhedral dolomite is left.

40-1

Hand specimen

Parting 1.7 cm; weathering very pale orange.

Polished section

Grayish orange to pale yellowish brown; discontinuous thin laminations; 0.5 to 1.5 mm long; mostly horizontal, in part slightly inclined vuggy porosity on sawed spec. , vugs less than 1 mm.

Thin section

Highly vuggy--calcite may be leached-- ; composed mainly of euhedral microcrystalline dolomite

40-2

Hand specimen

Parting 2.8 cm; weathering pale orange and light gray

Polished section

Finely comminuted shell fragments and echinoderm columnals in matrix of sparry calcite

40-3

Hand specimen

Parting 5 cm. deeply weathered; very pale orange weathering

Polished section

blotchy internal structure; some areas are dark yellowish orange , others grayish orange

Thin section

Mainly dolomite, euhedral, very fine crystalline

40-4

Hand specimen

Parting 6 cm; very pale to grayish orange weathering

Polished section

Flat-pebble conglomerate; pebbles 1mm to 2.5 cm long, straight; mostly internally thinly laminated; lying horizontally, slightly , or steeply inclined

Fragments composed of coarsely microcrystalline to very fine crystalline dolomite; matrix composed of clearer, slightly coarser (coarsely microcrystalline to finely crystalline) dolomite; vuggy.

Prince Charles Is., SW or Centre W

The field notes state that the specimens from loc. 39a were originally mislabelled 38a and that they should be corrected. The correction probably has been made, but I am not certain. The following 3 specimens , then , may be from either locality. In both cases they would be Llandoveryan in age.

38a Hand spec.  
spec.1 Parting 3cm., internal strat. very vague and disturbed  
Weathering very pale orange ;vuggy weathering

Polished section

grayish orange to dark yellowish orange; a strongly disrupted lamination is visible

Thin section

Limestone, cryptocrystalline, fossiliferous ,pallatal, w. intraclasts, grains mud-supported; partly replaced by dolomite, euhedral, coarsely microcrystalline to very fine crystalline

38a Hand spec.  
spec.2 Massive, very pale orange to grayish orange weathering

Polished section

blotchy structure; irregularly shaped blotches are one to a few cm in diameter and differ in color; colors are:  
(1) very pale orange ; (2) grayish orange; (3) pale yellowish brown, finely comminuted shell debris dispersed through the rock (frags. one to a few mm. in length)

Thin section

Limestone, cryptocrystalline, fossiliferous, (brachiopods, ostracods, gastropods, echinoderm columnals, etc. ); grains mud-supported; minor chertification; minor amounts of euhedral dolomite, scattered

38a Hand spec.  
spec.3 Parting 1.5 -2 cm., internally massive; vugs developed where fossils present; weathering color very pale orange; internally blotchy; mostly pale yellowish brown with some patches of very pale orange; brachiopods scattered through the rock.

Polished section

Mainly pale yellowish brown with wavy stringers, about 5mm to 1cm thick that are grayish orange.

Thin section

Mostly dolomite, very fine crystalline, euhedral; calcite only interstitial; some echinoderm columnals.

Prince Charles Island, NW

41-1 Hand spec.  
Light gray weathering, parting 4cm or thicker.

Polished section

Grayish orange to pale yellowish brown; mottled; shells of ostracods.

Thin section

Intraclastic texture; intraclasts are cemented by what appears to be secondary sparry calcite partly replaced by euhedral microcrystalline to very fine crystalline dolomite; intraclasts up to 7 mm; some are compound grains including diverse shell debris and ~~apollatox~~ grains in cryptocrystalline matrix; others are just shell fragments with adherent matrix; most common seem to be ostracods, also echinoderm columnals.

41-2 Hand spec. and polished section similar to spec. 41-1; thin section shows what appears to be a coral cross-section

42 Hand specimen  
Very pale orange to grayish orange weathering; parting about 5 cm.

Polished section

Patches, irregular in size and shape, of grayish orange rock in matrix of very pale orange rock; very pale orange matrix, on closer inspection, consists of very fine replacement brachiopods; replacement apparently by calcite, not dolomite, but this would require thin section to determine; ostracod shells common (10 %  $\pm$ ).

43 Hand specimen  
Very pale orange weathering with many small vugs; parting 4.2 cm

Polished section

Dark yellowish orange, mottled; some fragments in the order of 5 mm in diameter are apparent in somewhat darker matrix.

Thin section

This is a pseudobryozoa formed by dolomite replacement. Fragments with irregular outlines about 0.5 to 5 mm in diameter are surrounded by microcrystalline euhedral dolomite that is clearer. The fragments themselves are cryptocrystalline limestone; some pelletoidal structures are visible.

43b Hand specimen  
Light gray to pale orange gray weathering; parting 4 cm; laminated

Thin section

Polished section

Grayish orange; laminated to thinly laminated; lamination partly vague and somewhat undulating; very fine vugs

Thin section

Cryptocrystalline to finely microcrystalline limestone; lamination due to vertical variation in content of carbonaceous impurities; Some vugs have the outline of gypsum crystals.

Prince Charles Island, NE

44-1 Hand spec. and polished section  
Weathers very pale orange; parting 1cm. Polished surface very pale orange to grayish orange, laminated to thinly laminated; some lamination discontinuous.

44-2 Hand specimen  
Very pale orange to light gray weathering with faint laminations, some of which weather vuggy.

Polished section

Moderate yellowish brown, homogeneous, but with vuggy layers.

Thin section

Crystal size is cryptocrystalline to predominantly finely microcrystalline. Many crystals are euhedral rhombs suggesting that they are dolomite, but it is difficult to distinguish dolomite and calcite. Presumably a mixture of finely microcrystalline dolomite and crypto- to finely microcrystalline calcite; x-ray test required.



44-3 Hand specimen

About 4 cm thick, not bounded by parting, irregular in outline, internally massive with vugs up to 8 mm.

Polished section

Shows brecciated texture. Pale to dark brown fragments with irregular outline in a pale orange, vuggy weathering matrix. Vugs show outlines of gypsum (?) crystals.

Thin section

Fragments are cryptocrystalline limestone with dispersed microcrystalline dolomite; matrix consists of coarser and clearer calcite and dolomite that are microcrystalline to medium crystalline.

44-4 Hand specimen

Grayish yellow to yellowish gray weathering; lamination; structure domal; diameter of dome 6-7 cm; probably stromatolite.

Polished section

Mainly grayish yellow but also yellowish gray, in part thinly laminated; domal structure not as well visible as in hand specimen

Thin section

Laminae of cryptocrystalline calcite and interspersed dolomite that are clouded by submicroscopic organic matter alternate with layers composed of clearer dolomite and calcite that are coarser, commonly fine crystalline.

44c-1 Hand specimen

Light gray weathering, medium dark gray on fresh surface, fissile.

Thin section

Cryptocrystalline limestone with scattered microcrystalline dolomite crystals and interlaminated carbonaceous matter.

44c-2 Hand specimen

Light gray to light brownish gray weathering, pinkish gray to light brownish gray in section, fissile

Thin section

Dolomite, coarsely microcrystalline to fine crystalline

Organic content of specimen Im-68-44c-1

L.R. Snowden reports: 5.77% organic carbon

The sample collected was too small for studies of the organic chemistry

## FOLEY ISLAND

Field No. : Tm-68-45, 45a

NTS: 37AMap: Foley Island (1:250,000)UTM: zone 18 W

item	Northing	Easting
Precambrian outcrop (45a)	7619500	498500
fossil coll. C-2674	7617750	497400
fossil coll. C-2840	7616750	498500

Vertical air photos: A 16226-25,26,27,28,29  
section is mainly on 26,27

Field code for flight line: AF 2

Summary

Precambrian basement rocks are exposed on tidal flats on the NE side of the island. They are separated from the overlying Ship Point Fm. by a covered interval of only about 11 feet. The Ship Point Formation is approximately 240 feet thick. Its lithology is rather monotonous and only the upper few feet (unit 18) represent a sub-unit that is of regional extent. The Ship Point Formation consists almost entirely of dolomite with only a minor proportion of thinly interstratified sandstone. The dolomite ranges in crystal size mainly from coarsely microcrystalline to fine crystalline and generally contains minor proportions of quartz silt or very fine to fine grained sand, which is either laminated or floating. The stratification generally is vague, and commonly disturbed by boring animals. Where preserved, it is thinly laminated to thin-bedded, and generally horizontal. Flat-pebble conglomerates and some domal stromatolites also are present. Fossiliferous beds occur at several levels; gastropods, echinoderm columnals, brachiopods

,and orthocone cephalopods are common. The upper few feet , intensely disturbed probably by organic activity, but possibly also by Ordovician weathering, are similar to the same interval on Igloolik Island and elsewhere. The formation probably is separated from the overlying Baillarge Formation by a disconformity. Of the Baillarge Formation, only the lower 35 feet or so are preserved. This unit consists of cryptocrystalline to microcrystalline limestone with fairly abundant (mud-supported) fossils. It is partly dolomitized, and the dolomite occurs mainly in stringers and tubes that may represent original borings. Minor amounts of quartz silt and sand also are present. At least the lower 200 feet of the Ship Point Formation are Arenigian in age

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
21	<u>Baillarge Formation</u> Talus of limestone, dolomitic, as in unit 20; weathering more or less in place. Topographic bench mark at 274'.	28	274	2839 2840		
20	Limestone, dolomitic, fossiliferous, cliff-forming, parting thickness about 2 cm; sponges common, also small brachiopods, broken trilobites, and echinoderm frags. ( <u>Receptaculites</u> and <u>Maclurites</u> not observed)	5	246	2838	246 243	246 243
19	<u>Baillarge and/or Ship Point Fm.</u> Talus of dolomitic limestone from above	4	241			
18	<u>Ship Point Fm.</u> Dolomite, strongly bioturbated; few small brachiopods; partings 2-8"	3	237	2844	237	237
17	Dolomite, present as talus in place, parting about 2cm	32	234		202- 234	
16	Dolomite, parting about 1 ft., some cherty flat-pebble conglomerate; bioturbation; echinoderms and delicate brachiopods.	7	202	2843	202 201	
15	Moderately steep slope, covered with talus of dolomite; levels at 158 ft., then rises again; 180-181 ft. outcrop, parting 2cm- 8", then again talus.	62	195		181 135	
14	Cliff of dolomite, parting 2cm-3"	5	133			
13	First level, then gently rising slope, covered with talus of dolomite as below	14	128			
12	Ledge-forming unit of dolomite, parting 2cm-3"	1.5	114			
11	Moderately steep slope; relatively pure dolomite, parting 2"-3", with chert and silicified fossils (including echinoderm columnals and orthocones); interbedded with slightly more recessive, yellowish weathering dolomite, parting 1-2cm.	17.5	112.5	2842	100 98	

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
10	Dolomite, parting 4", sandy, cliff-forming; some domal stromatolites (93.5-95) Dolomite, parting 1-2 cm., recessive weathering (91-93.5)	1.5 2.5	95		95	
9	Covered with talus of dolomite	7	91			
8	Dolomite, parting 1-1 cm, partly laminated, mostly sandy, cliff-forming; fossiliferous with gastropods, echinoderm columnals, linguloid shells.	8	84	2841 2674	91 80	
7	Dolomite interbedded with dolomitic and quartzose sandstone, partly laminated, parting 1-4 cm	2	76		74	
6	Steep slope, covered with talus	35	74			
5	Covered with dolomite talus and vegetation; gentle rise 31-34' , then flat.	9	39			
4	Dolomite, parting 1-2 cm; 27-28': parting 1', but internal lams. present	8	30		30 27.5	
3	Covered with vegetation and talus of dolomite	3	22			
2	Dolomite, parting about 1', sandy, lebanessupren present, but not common; plain surface on top of this unit	8	19		19	
1	Flat covered mainly with talus of dolomite, but also with some erratics	11	11			
Tm-66 -45a	Outcrop of pegmatite occurs on tidal flats on NE side of Foley Island, just south of unnamed small island that lies S of Anderson Island. Between this outcrop and base of section are tidal and shore flats covered mainly with boulders of granitic and metamorphic rocks. This area looks like Precambrian terrain on air photos. Base of section is placed where dolomite talus becomes strongly predominant. This line is not well defined and has confidence limits of plus or minus 5 ft. vertically.				Tm-68 -45a	

Report by B.S.Norford (O-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2839	Baillarge Fm., unit 21 of section, talus, about 20-40 ft. above base	echinoderm, sponge and trilobite debris orthid brachiopod age: Palaeozoic
C-2840	Baillarge Fm., unit 21 of section, talus almost in place, about 15 feet above base of fm.	echinoderm debris indeterminate bryozoan, straight cephalopod, brachiopod and trilobite ? <u>Hesperorthis</u> sp. asaphid trilobite ? <u>Cybeloides</u> sp. ? <u>Pliomerops</u> sp. age: probably Middle Ordovician, Chazy to Barneveld
C-2838	Baillarge Fm., unit 20 of section, in place	echinoderm debris straight cephalopod <u>Labyrinthites</u> ( <u>Labyrinthites</u> ) <u>chidlensis</u> Lambe age: Middle or Late Ordovician, probably late Middle Ordovician
C-2844	Ship Point Fm., unit 18 of section, 237 feet above base	fragmentary brachiopod age: Phanerozoic
C-2843	Ship Point Fm., unit 16 of section, 200 ft. above base	undetermined brachiopod <u>Diparelasma</u> sp. <u>Tritoechia</u> 2 spp. age: Early Ordovician, Late Canadian
C-2842	Ship Point Fm., unit 11 of section, 105 ft. above base	straight cephalopod <u>Ceratopea</u> aff. <u>C. keithi</u> Ulrich age: Early Ordovician, Middle or Late Canadian
C-2841	Ship Point Fm., unit 8 of section, 83 feet above base	indeterminate high spired gastropod age: Phanerozoic

Report on condonts by C.R. Barnes      06-1970-CRB

GSC Loc. No. C-2674

Sample No. TM-68-45

Locality: Foley Island, NW side of Anderson bluff NTS 37A

Horizon: 83 ft.

The 1775 gm. sample yielded the following conodonts:

<u>Species</u>	<u>No. of specimens</u>
<u>Acontiodus?</u> sp.	1
<u>Drepanodus homocurvatus</u> Lindström	15
<u>D. pandus</u> (Branson and Mehl)	1
<u>D. subarcuatus</u> Furnish	9
<u>D. suberectus</u> (Branson and Mehl)	2
<u>Oepikodus gradratus</u> (Graves and Ellison)	5
<u>Oistodus delta</u> Lindström	15
<u>Scolopodus cornutiformis</u> Branson and Mehl	5
<u>S. emarginatus</u> Barnes and Tuke	1
<u>S. gracilis</u> Ethington and Clark	2
<u>S. multicostatus</u> Barnes and Tuke	2
<u>S. quadraplicatus</u> Branson and Mehl	53
<u>S. n. sp.</u> (same as in GSC Loc. No. C-2673)	3
<u>Ulrichodina prima</u> Furnish	2
Fibrous conodont (erismoid)	1
<b>TOTAL</b>	<b>117</b>

Remarks:

This fauna includes some elements found in the other sample (C-2673) from the Ship Point Formation. Most of the other elements, however, indicate an older age. The dominance by scolopodids is common in upper Canadian strata and characterizes Fauna D of Ethington and Clark (Geol. Soc. Amer., Mem 127, in press) which they report from the Fillmore Formation of Utah and Nevada. The presence of Oepikodus, a characteristic element of their Fauna E from the Ninemile Formation in Nevada, may indicate equivalence more with the upper part of the Fillmore Formation. Dominance by similar scolopodids was found in the fauna from the St. George Formation of northern Newfoundland (Barnes and Tuke, Geol. Surv. Can., Bull. 187). St. George fauna was of lower Arenigian age, correlated with Zone G of a Lower Ordovician reference section in Utah (eg. Ross, U. S. Geol. Surv. Prof. Paper 593-M, 1968; Hintze et al. Geol. Soc. Amer., Spec. Paper 115, p98 (abs.)).

The Ship Point fauna in this sample is thus of Arenigian age, probably equivalent to Zone G of the Canadian sequence in Utah and Nevada.

  
C. R. Barnes

Dept. of Earth Sciences  
University of Waterloo  
Waterloo, Ontario  
November 5, 1970

Description of polished and thin-sections

Baillarge Fm.

246-1      Thin section

(246')

unit 20

Limestone, cryptocrystalline, fossiliferous; fossils mud-supported; slightly dolomitic, silty, argillaceous

Fossils: estim. 10-20%; brach. shells, echinoderm columnals, etc.

Quartz: estim. 5%, silt, floating

Dolomite: esti. 3% or less; euhedral, partly zoned; mainly cs. microcrystalline and v.f. crystalline; concentrated in stringers

Argillaceous matter: prob. less than 2%

246-2

(246')

unit 20

Polished section

Limestone as 246-1

Color: between pale yellowish brown (10YR 6/2) and dark yellowish brown (10 YR 4/2)

Structure: fragments with rounded, irregular, swirly outlines, in part more than 5cm long, rel. dark colored surrounded by matrix, lighter colored

246-3

(246')

Hand spec.

Weathers light grey (N 7); echinoderm columnals (?)

243

(243')

unit 20

Polished section

Fossiliferous cryptocrystalline limestone with tubes of dolomite and dolomitic limestone

Color of original rock: pale yellowish brown (10 YR 6/2) to dark yellowish brown (10 YR 4/2)

Tubes: yellowish gray (5 Y 7/2)

A typical tube is about 5 cm long, (or more), up to about 0.7 cm thick, slightly bent and rounded at the end. It is interpreted as an original boring, probably enlarged by diagenetic action.

The rock is criss-crossed by such tubes and reduced in cross-section to an agglomeration of fragments of various sizes and shapes, mostly with rounded outlines. The fragments within this polished section range from one millimeter to several centimeters in length.



Ship Point Fm.

237      Polished section  
 (237')      Highly disturbed dolomite.  
 unit 18

Original rock is yellowish gray (5Y 7/2) to light olive gray. It is broken into innumerable fragments of irregular, rounded "swirly" outlines that mostly range in length from about 2mm to 2cm.

Between the fragments there is greyish red purple weathering dolomite with abundant wisps of black original organic material. A typical "wisp" is 0.6 mm long and very narrow. Many of these "wisps" are somewhat bent.

The disturbed structure of the rock may be due to intense borigh.

The disturbed interval is overlain by an undisturbed layer of yellowish gray to light olive gray dolomite. A protuberance, about 3mm deep, extends from the undisturbed into the disturbed rock

Thin section

Fragments composed mainly of dolomite, cs. microcrystalline; interstitial material of dolomite, cs. microcrystalline to v.f. crystalline.

The "wisps" are opaque; straight or bent. Opaque matter also occurs in a more irregular fashion in crystal interstices.

200-234      Polished section  
 (intv.      Color: light olive gray (5Y 6/1) to yellowish gray (5Y 7/2);  
 200-234'      laminated to thinly laminated; strata from fraction of one  
 talus)      mm to 7 mm thick, horizontal mainly; partly truncated  
 unit 17      by internal "disconformities"; partly disrupted into  
                  "flat-pebble microconglomerate" with frags. 2-3 mm long  
                  long

Thin section

Dolomite, f. to cs. microcrystalline, euhedral.

Less than 1% of floating quartz silt.

Small amount of argillaceous matter.

202      Polished section  
 (202')      Disturbed dolomite  
 unit 16      Irregularly-shaped fragments, 2mm to 1cm long, pale yellowish brown (10 YR 6/2) to yellowish gray (5Y 7/2) in slightly lighter colored matrix, about yellowish gray (5Y 7/2); streaks of pale brown matter, a few to about 5 mm long, less than one mm thick, are slightly wavy but subparallel with bedding

Thin section

dolomite in fragments v.f. crystalline, euhedral; in interstices f. crystalline

trace amounts of silt-size quartz.

201      Polished section  
 (201') Dolomitic flat-pebble conglomerate  
 unit 16

Fragments are mainly yellowish gray (5Y 7/2), but partly dusky yellow (5 Y 6/4). Several flat-pebbles have rims, a few hundred microns in thickness that are pale red purple (5 RP 6/2) to grayish red purple (5 RP 4/2).  
 Matrix is mainly yellowish gray (5 Y 7/2).

Flat-pebbles are from a few mm to several cm in length, parallel to subparallel with bedding.

Thin section  
 Dolomite in flat-pebbles cs. microcrystalline; in interstices mainly f. crystalline.

Not more than 1% of quartz sand and silt; sand subrounded.

Small amounts of bioclastic material, probably mainly echinoderm columnals.

181      Polished section  
 (181') Dolomite, yellowish gray (5 Y 7/2); vague horizontal lamination;  
 unit 15 possibly some low-angle cross-lamination; a few layers with oolites.

Thin section  
 Microcrystalline to fine crystalline, mainly v.f. crystalline dolomite, euhedral, commonly zoned.

Oolites, some with a nucleus of chalcedony.

Some large dolomite crystals include smaller dolomite crystals.

135      Polished section  
 (135') Disturbed dolomite.  
 unit 15 Slightly deformed and disrupted layers of yellowish gray dolomite (5Y 7/2) embedded in matrix of pale yellowish brown (10 YR 6/2) to dark yellowish brown (10 YR 4/2) dolomite with some streaks of dark yellowish brown (10 YR 4/2) matter.  
 Streaks are 2 cm or more in length and a fraction to about one mm in width.

Thin section  
 Dolomite in fragments is euhedral, microcrystalline to very fine crystalline.  
 Interstitial dolomite mainly fine to medium crystalline;  
 Minor amounts of bioclastic material (echinoderm columnals; gastropods ?)

- 100      Polished section  
 (100') Dolomite, thinly laminated  
 unit 11 Laminae are alternately yellowish gray (5Y 7/2), and a lighter yellowish gray (5 Y 8/1). In between there are discontinuous very thin streaks, a few mm in length, that are pale red purple

Thin section

Dolomite is euhedral and ranges from f. microcrystalline to v.f. crystalline; most commonly cs. microcrystalline

Lamination due to vertical variation in silt-sized quartz, which comprises perhaps 60% of the quartzose laminae, and associated minor amounts of muscovite;

Lamination is also related to vertical variation in content of sub-microscopic, dusty impurities (organic ?) in the dolomite

- 98      Polished section  
 (98') Disturbed dolomite.  
 unit 11

Irregularly shaped fragments with rounded, defined to vague outlines, from a few mm to about 2 cm in length; partly showing vague internal lamination; color between yellowish gray (5 Y 7/2) and light olive gray (5 Y 6/1) .

Two types of interstitial material: blobs of structureless dolomite, yellowish gray (5 Y 7/2); and interstitial pale red purple (5 RP 6/2) material.

Structure is probably due to bioturbation (boring).

- 95      Polished section  
 (95') Dolomite, yellowish gray (5 Y 7/2); thinly bedded,  
 unit 10 (1-2cm) ;bedding vague; contains prob. as much as 10% of quartz, ranging up to coarse grained, and well rounded; poorly sorted, floating; and some unidentified bioclastic material.

- 91      Polished section  
 (top of Same rock-type as spec. 135  
 unit 8?)

- 80      Polished section  
 (80') Lower part consists of homogeneous dolomite, yellowish gray  
 unit 8 (5 Y 7/2) , about 1.5 cm thick.

This is overlain with sharp, possibly erosional contact, by 3 cm of pale yellowish brown (10 YR 6/2) dolomite that contains much bioclastic material--mainly of arinite grade, but with some fragments up to 4 mm long. Becomes finer at the top and is overlain by dark yellowish brown stringers (10 YR 4/2) that show a ripple mark.

Thin section

The dolomite in the lower layer is microcrystalline to very fine crystalline; that in the overlying layer variable, but mainly very fine crystalline (always euhedral).

In the upper layer dolomitized bioclastic material derived from echinoderms, gastropods.

In the upper layer, dolomitized bioclastic material, derived from echinoderms, gastropods, etc. The cementing dolomite is partly very clear and probably has replaced original sparry calcite.

Considerably less than 1% of quartz silt.

74  
(74.5°)  
unit 7

Polished section

Similar to 135 and 91.

Dolomite, yellowish gray (5 Y 7/2); moderate yellowish brown (10 YR 5/4), and dark yellowish brown (10 YR 4/2); laminated (2mm) to thinly bedded (1.5 cm).

Bedding somewhat disrupted, but most fragments are horizontal or only slightly inclined. Some ripples, not pronounced.

The 1.5 cm layer is mottled with spots 1 mm or less in diameter a bit darker in color than the matrix.

Dark layers are sandstone, quartzose, dolomitic, fine grained; quartz is well rounded

30  
(30°)  
unit 4

Polished section

Dolomite with burrowed structure.

The rock consists mainly of "sausages" a few mm to one cm long also, just blobs that are yellowish gray (5 Y 7/2) and set in a pale to dark yellowish brown matrix.

Sausages may be fecal.

Thin section

Dolomite microcrystalline to v.f. crystalline, mainly coarsely microcrystalline.

Less than 1% quartz silt.

27.5  
(27.5°)  
unit 4

Polished section

Dolomite, yellowish gray (5 Y 7/2) in part thinly laminated; lamination vague and in part discontinuous

Thin section

Dolomite coarsely microcrystalline; less than 1% of quartz silt

19  
(19°)  
unit 2

Polished section

Dolomite, yellowish gray (5Y 7/2), Bedding vague; oval internal structures (intraclasts?), 4 mm diameter

Thin sections (3)

Dolomite crystal size ranges from coarsely microcrystalline to coarse crystalline; mainly finely crystalline

Quartz: in two thin sections less than 1% of silt;  
in one thin section perhaps 5% of sand and silt  
ranging up to medium-grained. Quartz is partly  
subrounded, partly euhedral (overgrowths in optical  
continuity)

Precambrian

Station Im-66-45a

Polished section

Mainly gray quartz , some feldspar

Thin section

Microcline , quartz, microcline-perthite; minor muscovite  
texture: microcline up to 1.3 mm; abraded, rounded.

## BAIRD PENINSULA AND AREA ADJACENT ON THE EAST

Field Nos. : Tm-68-47,48,49

NTS: 37 A, B, DMaps: Foley Island, Spicer Islands, Gillian Lake (1:250,000)UTM: zone 18W

item	Northing	Easting
47	7675600	475300
48	7661200	480700
49	7620000	445000

Vertical air photographs:

47,48: A 16296- 97,98,99      Field code: BI-3  
 49: A 16012-50,51          Field code: BP-2

Summary

At station 47 (S-tip of small island at foot of Baird Pen.) an estimated 10 feet of outcropping Ship Point fm. (specimen) are overlain by another 15 feet or so of Ship Point fm. weathered in place. The uppermost beds are resistant to weathering and show the intense bioturbation typical of the Ship Point fm. in the entire Foxe Basin region. The Ship Point fm. is succeeded by an estimated 10 feet of Baillarge limestone present as rubble.

At station 48 just east of the foot of Baird Peninsula large slabs of sandy dolomite (parting thickness 1-2 feet) with some internal lamination are present as talus weathered in place. They form the easternmost exposures of the unit. It appears that the narrower (bottle neck) part of Baird Peninsula on the west also is underlain by Ship Point fm. This area was only briefly examined from the air and exposure is poor.

At station 49 on the southwest side of Baird Peninsula about 10 feet of typical Baillarge Formation is exposed. The rock is a richly fossiliferous cryptocrystalline limestone with dolomitic mottling, parting in layers 1-2 cm thick. Hemispherical corallites of chain corals (Manipora ?) are growing in situ. The Baillarge Formation underlies all of Baird Peninsula west of the bottle neck.

Report by B.S.Norford (D-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2846	Tm-68-49 Southeast side of Baird Peninsula, outcrop	echinoderm debris solitary coral indeterminate gastropod <u>Maclurites</u> sp. <u>Receptaculites</u> sp. <u>Catenipora</u> sp. <u>Calapoecia</u> sp. <u>Foerstephyllum</u> sp. age: late Middle or Late Ordovician, probably late Middle

Description of hand specimens and polished and thin sections

Foot of Baird Peninsula (Ship Point Fm.)

47

Hand specimen

Yellowish gray weathering; parting 2.5 v cm.

Polished section

Yellowish gray to dusky yellow; discontinuous laminations up to 2.5 cm long; also irregular blebs; in part slightly darker than matrix, in part grayish orange.

Thin section

Dolomite microcrystalline, euhedral; yellowish weathering streaks are opaque and probably goethite, limonite, etc.

48

Hand specimen

Very pale orange to grayish orange weathering; parting 6 cm

Polished section

Very pale to grayish orange; thin lamination in part preserved, in part strongly disturbed, wavy; probably due to bioturbation.

Thin section

Dolomite, microcrystalline to very fine crystalline, with minor proportion of floating silt and very fine sand grains of quartz;

## BRAY ISLAND

Field No.: Tm -68-46

NTS: 37 CMap: Koch IslandUTM: zone 18 WNorthing  
7684800Easting  
406600Vertical air photos:

A-16012-90,91

Field code for flight line: B-3

Summary

At loc. 46, in the crack-bed, there are exposed about 10 feet of outcrop of cryptocrystalline limestone, parting 1-2 cm, and mottled with dolomite. The limestone is rich in broken fossil fragments; Receptaculites and corals are most common; also present are broken trilobites and brachiopod shells and large orthocones. The bedrock is overlain by several tens of feet of limestone gravel. The phenoclasts are one to a few inches (3 to 10 cm) in diameter, and partly rounded. Intact large corals, including favositids, etc. are present.

Seen from the aircraft, most of Bray Island appears gray in tone, where not covered by lakes or vegetation. This color is typical of the limestones of the Baillarge Formation and it is supposed that most or all of the island is underlain by that unit.

Report by B.S. Norford ( U-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2845	Tm-68-46	straight cephalopods <u>Receptaculites</u> sp. <u>Calapoecia</u> cf. <u>C. coxi</u> Bassler <u>Coccoseris</u> cf. <u>C. astomata</u> Flower <u>Palaeophyllum</u> sp. <u>Propora</u> sp. <u>Trabeculites maculatus</u> Flower age: late Middle Ordovician



## ROWLEY AND KOCH ISLANDS

General statement

These two islands are difficult to map because they are covered with extensive Recent beach and lagoon complexes and probably also with some till. The present evidence indicates that Lower Ordovician to Lower Silurian strata are present and that the age of the rocks ascends in a southerly direction.

Precambrian basement is exposed on Maneetok, a very small island on the NW-side of Koch Island.

The Ship Point Formation underlies most of the northwestern half of Koch Island. It shows the typical dolomitic lithology. Gastropods found at loc. 21 were not diagnostic.

Dolomitic limestone with the Red River fauna (referred to as Baillarge Formation) underlies the southeastern half of Koch Island and the northern part of Rowley Island. Diagnostic fossils were collected at two localities (loc. 23 on Koch Island, and 20 on Rowley Island).

The southern part of Rowley Island is underlain by strata of Early to Middle Landoverian age (fossil coll. from loc. 24). These strata include dolomitic limestone, dolomite, and breccia. The breccia resembles the solution breccias in the slightly younger Cape Crauford Formation of northwestern Baffin Island, but the mode of origin of the poorly exposed breccia on Rowley Island has not been established with certainty. It is also interesting to note that specimens from southern Rowley Island (air strip) are in part rather sandy.

Field No: Tm-68- 20a,b,c

NTS: 37 CMap: Koch IslandUTM: zone 17 W

item	Northing	Easting
20a	7698400	606800
20b	7697800	606800
(fossils) 20c	7697400	607300

Vertical air photos: A -16013,12,13

Field code for flight line: RK-2

From field notes:

Traverse was from 20 a to 20b and south to the fossil loc.  
 Talus seems to represent mainly bedrock weathered in place, particularly  
 at the fossil locality. The lithology is the typical Baillarge limestone :  
 light gray weathering, cryptocrystalline, with dolomitic tubes etc.

Report by B.S.Norford (D-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2813	Tm-68-20 c Baillarge Formation	echinoderm debris straight cephalopod <u>Catenipora</u> sp. <u>Palaeofavosites</u> sp. <u>Protrochiscolithus</u> sp. age: Late Ordovician

ROWLEY ISLAND, FIFE PT.

Field No: Tm-68-19

NTS: 37 C

Map: Koch Island

UTM: zone 17 W

item	Northing	Easting
dolomite ,etc.	7677900	585500
breccia	7678500	585400

Vertical air photos: A- 16012-157,158

Field code for flight line: RK 3 B

From field notes

" South of Fife Point there are about 12 feet of outcrop of highly dolomitized , massive limestone with some stroms." (stromatolites?). This limestone is overlain by intensely yellowish weathering dolomite, a few feet thick" (specs. 19-4 and 19-14 ?)

At Fife Point on the beach there is outcrop of breccia, a few feet thick ,with fragments up to about 10 cm (specs. 19-1,2,3). This breccia is overlain by dolomite and underlain by limestone, cryptocrystalline, red-brown weathering, dolomitic (spec. 19-5 ?),

19-1 Hand specimen

About 2 cm thick, very pale orange weathering and fresh;  
breccia; fragments angular to rounded, 2mm to 3 cm

Thin section

Fragments are original cryptocrystalline to finely microcrystalline limestone, extensively replaced by dolomite, microcrystalline to fine crystalline;  
matrix consists of dolomite and sparry calcite

19-2 Hand specimen, polished section

Pale yellowish gray, stratification not apparent;  
breccia, fragments up to about 1.5 cm  
polished section is also pale yellowish gray; frags. slightly darker; outlines often poorly defined; fade into groundmass

Thin section

Original rock seems to have been cryptocrystalline; appears to have undergone grain growth, but original texture still very well apparent; [brecciation may be pseudobrecciation due to recrystallization (?)] (incomplete); grains are now mostly microcrystalline to very fine crystalline; dolomite content appears to be low

19-3 Hand specimen and polished section

Similar to 19-2; etching reveals low percentage of fine crystalline dolomite

19-4 Hand specimen

Pale yellowish orange to grayish orange weathering; parting about 2.5 cm

Polished section

Vague thin lamination; appears to be mixture of dolomite, finely microcrystalline, and calcite, finely microcrystalline and/or cryptocrystalline;  
veinlets (?) of clear quartz, one-two mm long, parallel with the stratification

19-14 Hand specimen

(14' Parting 3cm; yellowish gray weathering; vugs up to 3mm  
above in upper part of specimen  
sea)

Polished section

Yellowish gray; stratification vague, seems to be laminated, and laminations are wavy; appears to be rather pure dolomite, microcrystalline (thin sect. reqd.)

19-21\* Hand specimen

(21' Parting 2 cm; very pale orange  
above  
sea)

Polished section

Grayish orange; lamination very vague, prob. horizontal

Thin section

Quartz and oolites or coated grains in matrix of microcrystalline dolomite; grains generally do not touch;  
-quartz: fine to coarse grained, mostly rounded

-oolites or coated grains: many have nucleus of quartz, surrounded by dolomite, microcrystalline, then relatively <sup>thin</sup> shell of calcite, cryptocrystalline; some shells have up to about 5 layers; some oolites have no quartz and core of calcite, cryptocrystalline and others of dolomite, microcrystalline; diameter of oolites or coated grains: 0.4 to 1.2 mm; at least one grain shows radial structure in addition to concentric structure

19-5

Polished section

Parting 8 mm; horizontally laminated, pale yellowish brown; light red weathering adjacent to microstylolites; seems to be limestone, cryptocrystalline with scattered dolomite, microcrystalline

\*

It should be checked if spec. 19-21 was not perhaps mislabelled and belongs to loc. 21. Cut thin section, compare with specs from locs. 21 and 24.

ROWLEY ISLAND , AIRSTRIP

Field No.: Tm-68-24

NTS: 37 C

Map: Koch Island (1:250,000)

UTM: zone 17 W

Northing

Easting

7663000

576000

Vertical air photos: A 16012- 160,161

Field code for flight line: RK 3B

From field notes

Angular talus, coarse and uniform in composition, brought up by bulldozer ; is probably in place. Consists of cryptocrystalline limestone with abundant brachiopods. Fragment of favositid coral is from intact colony , a few hundred feet to the E, probably not far from source.

Report by B.S.Norford ( D-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2819	Tm-68-24	<p>indeterminate brachiopods  pentamerid and spiriferid brachiopods  stromatoporoid  solitary coral  <u>Palaeofavosites</u> sp.  age: Silurian</p>
From informal report by A.J. Boucot ( Misc. AJB / 1971) of April,11,1971		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2819	Tm-6824	<p>smooth virgianid of "<u>Pentamerus</u>"  <u>borealis</u> type</p> <p>new, strongly plicate virgianid</p> <p>possible plicate virgianid</p> <p>clorindid of Ashgill-Llandovery aspect</p> <p>strophonellid fragment</p> <p>age: Silurian, pre-Late Llandovery,  i.e. Lower-Middle Llandovery</p> <p>comments:Material is fragmentary, and it  would be worth while collecting  more for description, but such  description might not refine  age determination.  Collection is roughly equivalent  to collections from northern  Baffin Island containing plicate  pentamerids originally identified  (by Bolton) as <u>Rhipidium</u> ; they  are ,in fact, <u>Virgiana</u></p> <p>[Note: the collections referred to  occur in the upper part of the  Baillarge Formation .]</p>

24-1

Hand specimen

4 cm thick (parting ?); pale yellowish brown limestone, dense, about 3 cm thick, underlain and overlain by layers of dolomite each about 5 mm thick.

Polished section

Limestone is laminated to thinly laminated, dolomite cuts across stratification in detail, but is crudely stratiform in gross aspect; laminae differ in darkness; some are more grayish orange, the bulk is more pale yellowish brown.

Thin section

Pellets, and shelly debris (brachiopods, echinoderms, ostracods) in matrix of crypto-to microcrystalline calcite; partial replacement by microcrystalline to fine crystalline dolomite.

24-2

Hand specimen

Grayish orange weathering; parting 0.5 to 1.5 cm;

Polished section

Abundant quartz sand, poorly sorted, very fine to coarse grained, commonly rounded; and very pale orange or yellowish gray fragments (intraclasts ?) of cryptocrystalline or finely microcrystalline limestone, one to a few cms in length in matrix of reddish, yellowish, and brownish weathering crypto or finely microcrystalline calcite. (Thin sect. and x-ray reqd.)  
; some oolites or coated grains, in part with quartz nuclei



MANETOK (small island on NW-side of Koch Isld.)

Field No: Tm-68-32

NTS: 37 C

Map: Koch Island

UTM: zone 17 W

Northing

Easting

7738000

593600

Vertical air photos

Field code for flight line:

Field notes

This small island has outcrop of metamorphic Precambrian rocks, that are partly dark colored and partly light colored. Structural trend parallel with NE-coast of island.

Landing with the Piper Cub was not possible

KOCH ISLAND, CENTRE NW

Field Nos: Tm-68-21a,b,28

UTM: 37 C

Map: Koch Island (1:250,000)

UTM: zone 17 W

item	Northing	Easting
Tm-68-21a	7729000	587800
21b	7727700	597200
28	7723500	593900

Air photos

Tm-68-21a,b:	A 16043-28,29	Field code for flight line:RK 3A
28 :	A 16043- 54, 53,55	" " " " " : RK 4A

Field notes

Tm-68-21a,b: Talus of Ship Point Formation; mostly dolomite ; minor fault-pegble conglomerate; gastropod debris; minimum thickness at least 100 feet (see specs. 21a-1,2,4;21b-1,2) and fossils C-2814) .Talus (in place) of Ship Point Formation extends along coast from 28 through 21 to 32b (air obs.)

Tm-68-28 : air reconnaissance and air photo interpretation suggested that the cliffs here are covered with light gray talus overlying darker, orange talus, and that the Ship Point-Baillarge contact might be exposed here. Ground observation does not support this interpretation. The light gray talus does not represent bedrock weathering in place. (See spec. 28).

Report by B.S.Norford (O-S 6 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2814	Tm-68-21a Ship Point Formation	indeterminate high-spired gastropod age: Phanerozoic

Ship Point Formation21a-1 Hand specimen

Parting 4.2 cm; very pale orange to grayish orange weathering

Polished section

Dolomite, microcrystalline to fine crystalline with gastropod shell debris and with blob 2x 2 cm of quartz sand, fine to coarse grained, rounded, poorly sorted, in dolomitic matrix

21a-2 Hand specimen

Parting about 4.5 cm; dark lichen coating

Vuggy weathering; vugs are up to 4 mm across and limited to certain laminae

Polished section

Very pale orange to grayish orange; laminated to thinly laminated, but stratification is vague; gastropod shell debris; vugs are in interior of shells; dolomite microcrystalline to fine crystalline with minor amounts of scattered fine to medium-grained quartz

21a-4 Hand specimen

Parting about 4 cm; yellowish gray weathering

Polished section

Yellowish gray; internal stratification not apparent; mostly dolomite, microcrystalline to medium crystalline; some bioclastic debris (gastropods ?) and intraclasts up to a few mm long with red, oxidized rims

21b-1 Hand specimen

Parting 4 cm; grayish orange weathering

Polished section

Laminated, mostly horizontal, with some dune-type cross-lamination; most laminae are between grayish orange and pale yellowish brown, some are grayish orange

Thin section

Dolomite, microcrystalline, with very minor amounts of floating quartz silt

21b-2 Hand specimen

Grayish orange to yellowish gray; 0.8 mm parting; laminated; probably composed of nearly pure dolomite, microcrystalline

28 Hand specimen

Parting 3 cm; yellowish gray weathering

Polished section

grayish orange with rusty weathering narrow streaks

Thin section

Dolomite, mostly finely microcrystalline, with trace amounts of floating quartz silt

KOCH ISLAND, NE

Field Nos.: Tm-68-22

NTS: 37 C

Map: Koch Island (1:250,00)

UTM: zone 18 W

item	Northing	Easting
22	7729500	386500

Vertical air photographs: A 16013-20,21

Field code for flight line: RK-2

Field notes

Near coast line mainly Baillarge -type limestone (fossiliferous, cryptocrystalline, slightly dolomitic; see spec. 22-1) .Higher up on the beaches, there is much talus of yellowish to orange gray weathering dolomite. Uncertain whether this is talus (more or or less in place) of overlying Silurian ~~stata~~ or just drift of the Ship Point Formation (22-2)

Beillarge Formation22-1 Hand specimen

Very light to light gray weathering; parting about 3 cm; parting planes curved, irregular; fossil debris and; mottled with irregular blobs that weather yellowish gray

Polished section

Fairly abundant, relatively fine hash of trilobite debris, echinoderm columnals, etc.

Thin section

Matrix is cryptocrystalline limestone; fossils mud-supported; very minor amounts of scattered microcrystalline dolomite;

Ship Point Formation (?) --or Silurian (??)22-2 Hand specimen

Parting 3.5 cm; yellowish gray weathering generally; some layers orange gray; thinly laminated and partly cross-laminated

Polished section

Dolomite, microcrystalline to fine crystalline; some layers have unidentified reddish weathering specs (thin section reqd.)

KOCH ISLAND, SW

Field No.: Tm-68-23

NTS: 37 C

Map: Koch Island (1:250,000)

UTM: zone 17 W

Northing

7713200

Easting

5852

Vertical air photos: A-m 16043-56,57

Field code for flight line: RK-4A

### Field Notes

The lower part of the section, exposed between about 15 feet above sea level and a broad ledge that has a pond (visible on air photo, but not shown on the map) are dolomites characterized by common burrows, some lamination, and some brecciation (23-1,2,3,4,23a).

The upper part consists of densely packed limestone rubble, probably bedrock weathering in place. The lithology (23-5 and 23b) and fossils (C-2818) are indicative of the Baillarge Formation

Report by B.S.Norford (D-S 6 19 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2817	Tm-68-23 F-3 Baillarge Formation	<u>Maclurites</u> sp. <u>Receptaculites</u> sp. age: Middle or Late Ordovician
C-2818	Tm-68-23 F-4 Baillarge Formation	<u>Propora</u> sp. age: Middle Ordovician to Late Late Silurian, probably late Middle Ordovician

# Ship Point Formation

23-1

## Hand specimen

Parting about 4.5 cm; vuggy weathering; mottled light olive gray and yellowish gray; internally breccia (or pseudobreccia, due to partial dolomitization); possible burrows

## Polished section

Pale yellowish brown to dark yellowish brown

## Thin section

Largely dolomite, microcrystalline with some dolomite very fine to fine crystalline, and only minor amounts of floating quartz silt

23-2

## Hand specimen

Parting 2.3 cm; grayish orange weathering

## Polished section

grayish orange to pale yellowish brown; cross-sections of burrows, a few mm in diameter; prob. composed mainly or entirely of dolomite,

23-3

## Hand specimen

Parting 3cm, yellowish gray weathering burrows, up to about 1 cm long, 1mm in diameter on bedding plane; internally mottled

## Polished section

Pale yellowish brown, mottled with grayish orange, distinctly bioturbated; mainly dolomite, microcrystalline to very fine crystalline

23-4

## Hand specimen

2.5 cm thick (parting); yellowish gray to grayish orange weathering;

## Polished section

Laminated to thinly laminated; disturbed, but horizontal

## Polished section

Laminated to thinly laminated; horizontal, somewhat disturbed; composed mainly of dolomite, microcrystalline

23a

## Hand specimen

2.5 cm thick; between grayish orange and pale yellowish brown weathering

## Polished section

Mainly pale yellowish brown, vaguely to distinctly laminated; some laminae are grayish orange; grayish orange discolorations along irregular cracks about perpendicular to bedding; probably mainly dolomite, microcrystalline to very fine crystalline

Baillarge Formation

23-5

Hand specimen

Parting 2.5 cm; yellowish gray weathering; burrows up to 1.5 cm long and 1 mm in diameter on bedding plane; strong fiss in HCl

Polished section

Probably mainly limestone, cryptocrystalline, perhaps with a little dolomite, microcrystalline to fine crystalline; burrows in cross-section; matrix between burrows shows some red (oxidation)

23b

Hand specimen

Parting 2 cm; parting planes curved; weathering light gray with mottling of yellowish to light olive gray

Polished section

Light olive gray; swirly texture; fine fossil debris, mainly trilobites ?

Thin section

Limestone cryptocrystalline, fossiliferous, fossils mud-supported with phps. 50 % scattered dolomite rhombs



## ISLANDS IN STEENSBY INLET

Field Nos.: Tm-68-29,30,31

NTS: 37 CMap: Koch Island (1:250,000)UTM: zone 17 W

item	Northing	Easting
Tm-68-29		
NE end of traverse	7751200	611800
SW end of traverse	7750600	611300
Tm-68-30		
(fossil loc.)	7752100	608300
Tm-68-31	7764200	605500

Vertical air photos

Tm 68-29,30: A 16043-33,34

Field code frp flight line: RK 3A

Summary

The islands in Steensby Inlet are all underlain by the Ship Point Formation, which is composed of dolomite, dolomitic flat-pebble conglomerate, etc. (see description of specs.) . A fossil locality discovered by Blackadar (GSC Paper 62-35, 1963, p. 16) was re-collected. It yielded Early Ordovician gastropods (loc. Tm-68-30). Rocks from the island adjacent on the east (loc. 29) yielded a distinct conodont fauna of Whiterock (early Llanvirn) age. Dolites, replaced by chert, with perfectly preserved internal structure occur at locality 29 (spec. 29-5).

Report by B.S.Norford (D-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2821	Tm-68-30 (peninsula on SW-side of island)	echinoderm fragments indeterminate high spired gastropod <u>Ophileta</u> ( <u>Ophileta</u> ) sp. age: Early Ordovician (Canadian)

Report on conodonts from the Ship Point Formation, Baffin Island area, collected by H. F. Trettin.

"The relevant parts of any manuscript prepared for publication that paraphrase or quote from this report should be referred to the Paleontology Section, Ottawa, for possible revision".

GSC Loc. No. C-2673

Sample No. TM-68-29-6

Elongate Island, N. of Koch Island

The 885 gm. sample yielded the following conodonts:

<u>Species</u>	<u>No. of specimens</u>
<u>Drepanodus homocurvatus</u> Lindström	18
<u>D. subarcuatus</u> Furnish	28
<u>D. suberectus</u> (Branson and Mehl)	2
<u>Multioistodus</u> sp.	2
<u>Oepikodus quadratus</u> (Graves and Ellison)	5
<u>Oistodus</u> sp. cf. <u>O. delta</u> Lindström	7
<u>O.</u> sp. cf. <u>O. inclinatus</u> Branson and Mehl	4
<u>O.</u> sp. cf. <u>O. linguatus bilongatus</u> Harris	21
<u>O. longiramis</u> Lindström	2
<u>O. multicorrugatus</u> Harris	24
<u>O. pseudomulticorrugatus</u> Mound	24
<u>O. scalenocarinatus</u> Mound	14
<u>O. spp.</u>	22
<u>Scolopodus emarginatus</u> Barnes and Tuke	7
<u>S. gracilis</u> Ethington and Clark	78
<u>S. n. sp.</u>	20
<u>Ulrichodina</u> sp. cf. <u>U. prima</u> Furnish	4
N. gen. A (of Sweet, Ethington and Barnes, <u>in press</u> )	16
N. gen. B (of Sweet, Ethington and Barnes, <u>in press</u> )	10
N. gen. 1 n. sp. 1	2
TOTAL	310

Remarks: The fauna contains elements from Faunas 1 and 2 of Sweet, Ethington and Barnes (Geol. Soc. Amer. Mem 127, in press). Oepikodus quadratus, Oistodus longiramis, N. gen. A, and N. gen. B are indicative of Fauna 1, but the presence of Oistodus multicorrugatus, O. pseudomulticorrugatus, and O. scalenocarinatus, is indicative of Fauna 2. Fauna 1 is known from strata on which the basal Whiterock Stage is based and both Faunas 1 and 2 occur in the lower part of the Antelope Valley Formation, Manitou Range, Nevada. The age of the fauna from the Ship Point Formation is Whiterockian (lower Llarvirian).

The fauna is closely comparable to an undescribed collection of Barnes from the upper Eleanor River Formation of Hawker Bay, Devon Island.

- 29-1     Hand specimen  
Grayish orange weathering; parting about 4 cm
- Polished section  
Grayish orange to pale yellowish brown; thinly laminated; lam. is horizontal
- Thin section  
Dolomite, very fine crystalline
- 29-2     Hand specimen  
Very pale orange to grayish orange weathering; parting about 3 cm
- Polished section  
Grayish orange to pale yellowish brown; thinly laminated; lamination mostly horizontal to slightly inclined, in part slightly wavy
- Thin section  
Dolomite, microcrystalline; lamination related to vertical variations in submicroscopic cloudy impurities (within the dolomite crystals)
- 29-3     Hand specimen  
Light olive gray weathering; parting 1.2 cm; parting surface wavy
- Polished section  
Light gray
- Thin section  
Mainly dolomite, microcrystalline; small amounts of silt and very fine grained sand of quartz and feldspar; perhaps a little cryptocrystalline calcite
- 29-4     Hand specimen  
Yellowish gray weathering; parting thickness 2 cm; burrows, up to 4 cm long, 1-2 mm wide, straight or curving, on bedding plane
- Polished section  
Grayish orange to yellowish gray; vague horizontal lamination; dolomite, microcrystalline to fine crystalline; slightly calcareous
- 29-5     Hand specimen  
Parting 3 cm; very pale orange weathering
- Polished section  
Pale yellowish brown to grayish orange; vague horizontal lamination; oolites common; some multiple oolites or coated grains
- Thin section  
Dolomite is microcrystalline to fine crystalline; oolites consist (or have been replaced by) chert, and are cemented by fibrous chalc-dony
- 29-6     Hand specimen  
Parting 2.2 cm; very pale orange weathering; burrows on bedding plane; 1.5 cm long; 2 mm wide

Polished section

Very pale and dark yellowish orange; an original lamination seems to have been strongly disrupted by burrowing; rock resembles unit 5 at Igloolik; mainly dolomite, microcrystalline, probably with some quartz and calcite

30-1

Hand specimen

Light olive gray weathering; parting 3.2 cm

Polished section

Light olive gray; discontinuous laminations in part of the specimen

Thin section

Dolomite, microcrystalline; small amounts of quartz silt

30-2

Hand specimen

Parting 6 cm; very pale to grayish orange

Polished section and hand specimen

Flat pebble conglomerate pebbles from a few mm to 5.5 cm long; mostly horizontal, but inclined up to 45°; most have moderate to dark yellowish brown (oxidized) rims; edges are rounded

Thin section

Fragments are dolomite, finely microcrystalline with perhaps 10% quartz silt; matrix is dolomite very fine to fine crystalline, with very fine grained quartz sand; matrix dolomite is clearer than dolomite in fragments, <sup>quartz</sup> subrounded to subangular (replacement)

31- 1

Hand specimen

3.2 cm parting; very pale orange to yellowish gray weathering

Polished section

Mainly light olive gray; vague, slightly wavy and discontinuous lamination

Thin section

Microcrystalline to fine crystalline; minor amounts of silt and very fine grained sand of quartz and minor feldspar; a little muscovite

31-2

Hand specimen

Parting 3.2 cm; light gray to olive gray weathering; small echinoderm columnals

Polished section

Light olive gray to brownish gray; vague, discontinuous, horizontal lamination; echinoderm columnals; a little quartz; otherwise mainly dolomite, microcrystalline to fine crystalline

## JENS MUNK ISLAND

### General Statement

Most of Jens Munk Island is underlain by the Ship Point Formation, which is covered, here and there, with basal parts of the Baillarge Formation.

The two units are very difficult to distinguish on air photographs, but can readily be distinguished from aircraft by their colors: the Ship Point Formation weathers in shades of orange gray, and the Baillarge light gray. late Lower Ordovician (Arenigian) graptolites, collected by Blackadar at the western extremity of the island probably occur in the lower part of the Ship Point Formation.

The western and southwestern extremity are underlain by Precambrian basement rocks, and it seems that they are separated from the lower Paleozoic outcrop areas by a (normal ?) fault.

JENS MUNK ISLAND, W

Field Nos: Tm-68-52a,b;53a,b

NTS: 47 D

Map: Igloolik (1:250,000)

UTM: zone 17 W

item	Northing	Easting
52a	7721700	527400
52b	7724750	529000
53a	7725100	532200
53b	7728200	530100

Vertical air photos : A 16088- 57,58,59

Field code for flight line: BAS -1

From field notes

52a,b: Light colored areas on air photo; these are till composed mainly of Paleozoic carbonates, but also including Precambrian rocks. The bedrock in the general area is Precambrian.

53a: Here talus (bedrock weathered in place) of lowermost part of Baillarge Formation and uppermost Ship Point Formation. Ship Point Formation: dolomite, microcrystalline with common burrows, flat-pebble conglomerate. Baillarge Formation: Limestone, parting 1-2 cm, light gray weathering, fresh surfaces brownish, cryptocrystalline. Fossils generally not common, except for a disc-shaped sponge (?) (and some trilobite and cephalopod debris--see C-2848).

53b: Beaches here composed of limestone rubble typical of the Baillarge Formation; Receptaculites present (C-2849).

Report by B.S.Norford ( D-S 6 BSN 1969 )		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2848	Tm-68-53a Baillarge Formation	?cephalopod indeterminate trilobite age: Palaeozoic
C-2849	Tm-68-53b ,Baillarge Formation	<u>Receptaculites</u> sp. age: Middle Ordovician to Middle Devonian

### Baillarge Formation

53a-1

#### Hand specimen

Parting 1.5 cm; light gray to grayish yellow weathering; parting surface irregular, wavy

#### Polished section

Yellowish gray; limestone, dense (cryptocrystalline or very fine microcrystalline) with mud-supported fossil debris (echinoderm columnals, trilobite appendages; brachiopod shells (?) and scattered microcrystalline to very fine crystalline dolomite rhombs

53a-2

#### Hand specimen

Parting 2.7 cm; very light to light gray weathering

#### Polished section

yellowish gray; limestone, dense, with mud-supported fossil-debris (echinoderm columnals, gastropods, etc.); scattered microcrystalline dolomite

### Ship Point

53a-3

#### Hand specimen

Parting 4 cm; pale olive with lines and spaces of grayish orange

#### Polished section

Appears to be about 60% microcrystalline dolomite with 40% (or less) calcite

#### Thin section

Dolomite, microcrystalline to very fine crystalline with perhaps 30% interstitial cryptocrystalline calcite and trace amounts of silt and very fine grained sand of quartz

JENS MUNK ISLAND, E

Field Nos: Tm-68-54a,b

NTS: 37 C

Map: Koch Island

UTM: zone 17 W

item	Northing	Easting
54a	7734900	562750
54b	7732800	564200

Vertical air photos:

A -16089-55,56

Field code for flight line: ST-4

Notes

54a: This locality was visited because here Blackadar (GSC Paper 62-35,1963,p. 16-17) had found graptolites identified by Thorsteinsson as extensiform didymograptids of Early Ordovician (Arenigian) age. The foreshore flats were visited at low tide and were found to be underlain by laminated dolomite (54a-1), in part somewhat argillaceous (?-54a-2), and commonly with trace fossils (53a-3,4). The bank above the tidal flats is underlain by similar dolomite and shaly dolomite (specs. 5,6 ?). Graptolites were not found, and the typical dark gray shale that normally is the host of graptolites is not present.

The strata at loc. 54a that presumably contained the graptolites are comparable to both the Ship Point Formation and the Turner Cliffs Formation. Assignment to the Ship Point is favoured for the following reasons: (1) The lithology of the topographically higher beaches is definitely characteristic of the Ship Point Formation. (2) Normally shaly layers occur between the top of Turner Cliffs and the lower Ship Point. Such beds do not seem to be present. (3) The Arenigian age of the graptolites coincides with the age of several



other fossil collections from the Ship Point Formation, whereas all available evidence suggests that the Turner Cliffs Formation is Cambrian.

54b: In this vicinity there may be exposed 30 to 50 feet of bedrock weathering in place, exposed on former beaches. The lithology is typical of the Ship Point Formation.

54a-1 Hand specimen

Parting 10 cm; yellowish gray weathering

Polished section

laminated to thinly laminated; lamination is horizontal and continuous or wavy and discontinuous

thin section

Dolomite, microcrystalline with trace amounts of quartz silt; lamination due to vertical variation in concentration of dust-like inclusions.

54a-2 Hand specimen

Parting 5 mm; parting surfaces are shaly, fissile; light olive gray weathering

Polished section

Light olive gray, thinly laminated; flaser lamination of very small scale

Thin section

Only microcrystalline to fine crystalline dolomite shows and trace amounts of phyllosilicates; clay probably is present but masked by the carbonate (insoluble residue and x-ray analysis reqd.)

54a-3 Hand specimen

Parting 1.5 cm; upper surface (or lower ?) weathers yellowish gray and has burrows on bedding planes; lower (or upper) brownish gray to yellowish gray

Polished section

Pale yellowish brown, thinly laminated, bioturbated

Thin section

Dolomite, microcrystalline to very fine crystalline; scattered silt and very fine grained sand of quartz

54a-4 Hand specimen

Parting 1.7 cm; yellowish gray weathering; unidentified trace fossils (tracks, burrows) on surface

Polished section

Thinly laminated; lamination horizontal to slightly inclined

Thin section

Dolomite, microcrystalline with trace amounts of quartz silt

54a-5

Hand specimen

Parting 3 cm; weathering pale olive; one surface is rough  
(trace fossils ??)

Polished section

Pale olive to yellowish gray; bioturbation

Thin section

Mainly dolomite, microcrystalline; parts are relatively fine and cloudy, others slightly coarser and clearer; a few per cent of floating silt and very fine grained sand of quartz... phyllosilicates should be present but are probably masked by the carbonate (x-ray and insd. res. analysis reqd.) Finely microcrystalline or cryptocryst. calcite may also be present

54a-6

Hand specimen

Parting 2 cm; yellowish gray coating on light olive gray

Polished section

light olive gray; thinly laminated; horizontal lamination

Thin section

Dolomite, microcrystalline to finely microcrystalline;  
trace amounts of quartz silt

# STEENSBY PENINSULA

## General statement

Three formations are exposed on Steensby Peninsula , as follows:

### (1) Baillarge Formation:

dolomitic limestone with an Arctic Ordovician fauna;  
minimum thickness at section 25: 24<sup>3</sup> feet

thickness at locality 26 ,from photogrammetry and topographic map:  
approximately 120 to 140 feet

fossil collection at loc. 25

### (2) Ship Point Formation

- dolomite, minor sandy dolomite and dolomitic sandstone

minimum thickness at photogrammetric section 26: 330 feet  
actual thickness may be 20 to 40 feet thicker

description of upper middle part: detailed section at loc. 25

description of uppermost strata: loc. 26

### (3) Turner Cliffs Formation

exposed are only quartzose, dolomitic, and oolitic sandstones;  
covered intervals may include dolomite

minimum thickness at loc. 27: 66 feet ;base not exposed

description: section at loc. 27.

## Notable features:

Caliche-type features and strata similar to those at Igloolik occur in the uppermost part of the Ship Point Formation at loc. 26.

The elusive, disconformable contact between the Turner Cliffs Formation and Ship Point Formation may be exposed at locality 27. There, a brecciated, and apparently leached interval with chalcedony crusts appears at the top of the predominantly sandy succession and base of predominantly dolomitic succession.

Well preserved stromatolites occur in the Ship Point Formation about 1 mile south of loc. 25.

STEENSBY , SW

Field No.: Tm-68-25

NIS: 37 F

Map: Steensby Inlet ( 1:250,000)

UTM: zone 17 W

item	Northing	Easting
centre, Ship Point Fm	7781250	559750
fossils, Baillarge Fm.	7781250	560000

Vertical air photos: A 16089-65,66

Field code for flight line: ST-4

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section present -day erosion surface					
	<u>Baillarge Formation</u>					
14	Limestone, cryptocrystalline, containing fairly abundant fossils, mud-supported, and some trace fossils; slightly dolomitic; parting 1-2 cm; resistant, cliff-forming unit	16	212	2820	14	
13	Limestone, similar to unit 14, but parting 1 cm to 8 cm	7	196	2820	13	
	<u>Ship Point and/or Baillarge Formation</u>					
12	Covered, steep slope	89	189			
	<u>Ship Point Formation</u>					
11	Gentle, grassy slope; at 100 ft. slope becomes steeper and talus coming in from above	26	100			
10	Gentle slope covered with talus of dolomite, laminated, parting 2-3 cm	12	74		12 11	
9	Dolomite, parting 0.3- 1 cm; trace fossils common (spec. 9); unit ascends in 4 steps, uppermost few feet form ledge (spec. 10); here parting mostly 2-3 cm, broad ledge at 62 ft.	16	62		10 9	
8	Talus in place, dolomite; more recessive weathering than underlying and overlying intervals	11	46		8	
7	Dolomite, parting 1-2 cm; cliff-forming unit; lighter in color than units 1-6	4	35		7	
6	Talus, probably in place, of dolomite, parting 1-3 cm with vague internal laminations	7	31		6	
5	Five step-like ledges formed by dolomite, parting 5-8 cm, each about 8 to 15 cm thick (spec. 3); separated by laminated dolomite, parting 1-2 cm; some beds have trace fossils; chert nodules common; about 1 mile S in this interval (20-23 ft.) there occur domal stromatolites about 30 cm in diameter; 5 to 8 cm high	12	24		3	
4	Grass-covered	5	12			x-25

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
3	Dolomite, laminated, parting about 2 cm	3	7		2	
2	Covered with grass and moss	2	4			
1	Talus of dolomite, laminated; angular talus forms beach  Base of section: vegetation-covered flats	2	2		1	

## Report by B.S. Norford (D-S 6 BSN 1969)

GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2820	Im-68-25 Baillarge Formation units 13 and 14 of section	ostracod straight cephalopods <u>Maclurites</u> sp. <u>Receptaculites</u> sp. <u>Grewingkia</u> sp. <u>Calapoecia</u> sp. undetermined coral indeterminate and strophomenid brachiopods  <u>Resserella</u> sp. <u>Rhynchotrema</u> sp. <u>Thaerodonta</u> sp. undetermined trilobites ? <u>Calyptaulax</u> sp. ? <u>Remipyga</u> sp. age: late Middle Ordovician

## Report by M.J. Copeland (MP-6-1969-MJC)

GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2820	as above	Ostracoda: leperditid  age: Paleozoic --too poorly preserved for specific identification

Baillarge Formation

14            Hand specimen  
 (196-        Parting 2 cm; pale olive  
 212 ft.)  
 unit 14      Polished section  
 Light olive gray; limestone cryptocrystalline (or finely microcrystalline), fossiliferous, fossils (mainly trilobite appendages) mud-supported; scattered microcrystalline dolomite; a few blobs of pyrite

13            Hand specimen  
 (189-        Parting 2.5 cm ; yellowish gray to moderate yellow weathering;  
 196 ft.)      fresh surface pale yellowish brown with irregular bobs, a few  
 unit 13      mm to 1.5 cm across, that are pale yellowish orange;

Polished section  
 Limestone cryptocrystalline or microcrystalline with mud-supported fossils, mainly trilobite appendages; echinoderm columnals, perhaps some ostracods; scattered rhombs of dolomite, mostly very fine crystalline are most abundant in the yellow patches; pale yellowish brown

Thin section  
 Calcite is cryptocrystalline; dolomite microcrystalline to fine crystalline, mainly very fine crystalline

Ship Point Formation

12            Hand specimen  
 (62-        Parting 4 cm; internal stratification 1 cm to 1 mm; very pale orange  
 74 ft.)      to grayish orange weathering and fresh; seems to be composed of  
 talus,       rather pure microcrystalline dolomite; a few dark "wisps" several  
 unit 10      mm long and very narrow, may be pyritized original organic matter;  
 but if so, the pyrite itself would be altered

11            Hand specimen  
 (62-        Parting about 1 cm, vaguely defined internal lamination; weathering  
 74 ft.)      grayish orange to very pale orange; grayish orange to pale  
 talus,       yellowish brown; seems to be composed of rather pure microcrystalline  
 unit 10      dolomite with a little pyrite

10            Hand specimen  
 (45-        Parting 1 cm, very pale orange to grayish orange weathering;  
 62 ft.)      mold of vertical burrow, about 8 mm deep, 2 mm wide  
 unit 9

Polished section  
 Yellowish gray; composed mainly of microcrystalline dolomite with a few streaks of pyrite (pyritized organic matter?)  
 .2mm long and less, very narrow

9            Hand specimen  
 (45-        Parting 7 mm; pale olive to pale greenish yellow weathering;  
 62 ft.)      burrows, rather straight and crossing each other on bedding  
 unit 9       plane; 6cm or more long, 3mm wide; also 1 cm long, 2mm wide, slightly  
 curved; fragment of poorly preserved gastropod shell ?

Polished section

Wavy and disrupted lamination; one lamina is finer in crystal size and greener; the other a little coarser and clear; also streaks of pyrite

Thin section

Uniform and pure microcrystalline dolomite

8

Hand specimen

(35-

Parting 1 cm; very pale orange to grayish orange weathering

46 ft.)

unit 8

Polished section

Very pale orange to yellowish gray; microcrystalline dolomite; a few, poorly preserved gastropod shells; red and black weathering patches may represent altered pyrite

7

Hand specimen

(31-

Parting about 2 cm ; weathering very pale

35 ft.)

unit 7

Polished section

Very pale orange; no internal stratification; mainly microcrystalline dolomite; a few dark and reddish weathering spots and streaks may be altered pyrite (pyritized organic matter ?)

6

Hand specimen

(24-

Parting 2.5 cm; very pale orange to grayish orange weathering

31 ft.)

unit 6

Polished section

Pale yellowish brown to very pale orange; original lamination is disturbed; dolomite microcrystalline to very fine crystalline; laminae differ in crystal size; minor amounts of flating quartz silt and very fine sand probably present

3

Hand specimen

(12-

Parting 8 cm; weathering grayish orange pink

24 ft.)

unit 5

Polished section

Partly regular lamination; partly intraformational brecciation; flat-pebbles up to 2.5 cm long mostly horizontal but partly inclined; they and the ordinary laminae are pale yellowish brown; The infilling is very pale yellowish; also present some shell debris; a circular cross-section, 1cm in diameter, without shell-wall visible, either represents burrow (too regular ?) or cast of gastropod interior (more likely)

Thin section

Infilling consists of relatively clear, microcrystalline to very fine crystalline dolomite; brownish areas are predominantly microcrystalline, cloudy dolomite; some shells may represent ostracods

x-25

Hand specimen and polished section

(1 mile

Very pale orange weathering, very fine but irregular, crinkly laminations, alternating pale orange and pale yellowish brown from shallow domes, typically about 2 cm in diameter, with relief on individual laminae about 0.5 cm (unquestionably stromatolites)

to S,

25 ft.

above

base; in

unit 5



Thin section

Composed of microcrystalline dolomite which is cloudy (with submicroscopic organic (?) inclusions) in the darker layers, and clear in the lighter ones

2  
(4-  
7 ft.)  
unit 3

Hand specimen

Parting about 2.5 cm; weathering yellowish gray

Polished section

Thinly laminated to laminated; laminae are alternately pale yellowish brown to grayish orange; some are continuous, others discontinuous and irregular in shape

Thin section

Dolomite, microcrystalline; laminae differ in content of submicroscopic impurities within carbonate crystals

1  
(0-  
2 ft.)  
unit 1

Hand specimen

Parting 3.2 cm; very pale orange to pale yellowish brown weathering

Polished section

Similar to spec. (2), above; thinly laminated to laminated; laminae are alternately pale yellowish brown and pale yellowish brown to grayish orange; most are continuous, but some are discontinuous and somewhat irregular in shape

## STEENSBY CENTRE

Field Nos.: Tm 68-26a,b,c

NTS: 37 FMap: Steensby Inlet 37 FUTM: zone 17 W

item	Northing	Easting
base,photogramm. section of Ship Point Fm	7798800	567750
26a,b approximate upper contact Ship Point Fm.	7792200	568000

Vertical air photos: A 16089- 69,68,67

Field code for flight line: ST-4

Summary

The uppermost part of the Ship Point Formation, which is concealed at loc. 25, is exposed at loc. 26. There laminated m dolomite, and dolomitic flat-pebble conglomerate with caliche-type structure (spec. 26-4) is overlain by a covered interval of about 15 feet, in turn overlain by dolomitic flat-pebble conglomerate with a fairly abundant (though poorly preserved) shelly fauna (26b). The rocks were considered as basal Baillarge Formation in the field, but are now considered as possibly uppermost Ship Point Formation (comparable to unit 5 at Igl olik) after lab. examination of the rock specimens. If so, the base of the Baillarge Formation should occur not more than 10 or 20 feet above these strata. (Rock specimens forwarded to C.R. Barnes for conodont analysis).

The section of the Ship Point Formation beneath loc. 26 is too far stretched out to be measured on the ground. Photogrammetric analysis indicates that the attitude of the strata is horizontal and that the thickness is about 330 feet.

This is a minimum thickness ,which covers only that part exposed as bedrock or talus in place. Beneath this area, which is very light grey on air photos, there is a covered interval of about 20 feet in stratigraphic thickness, bounded on the north by an east-west striking lineament.

Ship Point or Baillarge Formation (originally labelled Baillarge)

- 26-  
0 to 6      Hand specimens and polished sections  
Parting thickness 2.5 to 4.5 cm;  
yellowish gray to dark yellowish orange weathering;  
fresh surfaces have hues of yellowish gray; moderate yellowish  
brown, and grayish orange;  
dolomitic flat-pebble conglomerate with fairly abundant skeletal  
debris of: trilobite appendages, echinoderm columnals, bryozoans  
and possibly ostracods; irregular burrows present on some specimens

Thin sections

flat-pebbles are dolomite, microcrystalline, cloudy;  
interstices dolomite microcrystalline to fine crystalline, predomi-  
nantly very fine crystalline; some stringers of silt and very fine  
grained sand of quartz and minor feldspar (incl. microcline)

Ship Point Formation, uppermost (?) beds at loc. 26

- 26-1      Hand specimen  
Parting 1.5 cm; yellowish gray weathering

Polished section

Mostly pale yellowish brown with very thin laminae of grayish orange;  
microcrystalline dolomite with innumerable tiny red specs;  
thinly laminated

- 26-2      Polished section  
Cross-section of a 4.8 cm-thick bed with caliche-type features.  
Flat-pebbles are up to 2.5 cm long; partly straight, partly curved;  
mostly horizontal, but partly inclined; some are thinly laminated;  
"matrix" consists of complex, winding, commonly concentric aggregates  
of caliche crusts; reddish weathering flat-pebbles have numerous red specs,  
20 microns or so across

- 26-3      Hand specimen  
Parting 2.5 cm; weathering yellowish gray

Polished section

Light olive gray to light brownish gray; thinly laminated

Thin sections

Seems to be a mixture of cryptocrystalline calcite, finely microcry-  
stalline dolomite, and quartz silt; thinly laminated  
(x-ray reqd.)

- 26-4      Hand spec. and polished section  
2 layers of 2 cm thickness each  
The lower is a "sandstone to fine pebble conglomerate" made up  
of carbonate clasts that are ellipsoidal; between them  
are caliche-type structures similar to those in spec. 2,  
but the texture is not so clearly apparent. Most fragments have  
tiny red spots; in the upper part (or lower -- tops not marked)  
the same type of fragments are embedded in a matrix that appears  
to consist of finely microcrystalline dolomite and/or calcite  
(thin section required)

## STEENSBY NORTH

Field No.: Tm-68-27

NTS: 37 FMap: Steensby Inlet (1:250,000)UTM: zone 17 W

item	Northing	Easting
base of section	7801500	558300
top of section	7801250	560300

Vertical air photos:

A 16089-68,69

Field code for flight line: ST 4

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	<u>Ship Point Formation</u>					
16	Dolomitic flat-pebble conglomerate	1	101			
15	Dolomite, parting 1-3cm	11	100		92	
14	Slope; lower part (say 67-77 ft) covered with vegetation; upper part with talus similar to and probably derived from cliffs above	22	89			
13	Recessive weathering (nearly flat) interval, underlain by sandstone, dolomitic, parting 1-3 cm, poorly bedded; burrows on bedding plane  --disconformable contact (?)--  <u>Turner Cliffs Formation (?)</u>	1	67		66.5	
12	Cliff of dolomite, parting 1-8 cm, in part internally laminated; brecciated; looks as if leached; concentric crusts of chalcedony	3	66		65; "64- 67"	
11	Covered; gentle slope	2	63			
10	Gentle slope; sandstone, dolomitic, oolitic, parting 1-3 cm, small stromatolites; hemispheres about 8 cm in diameter	6	61		58	
9	Mostly talus in place; sandstone, dolomitic and oolitic, and dolomite, sandy; parting 1-30 cm; some horizontal lamination, some cross-lamination (small scale); some intra-formational brecciation	8	55		53	
8	Covered slope, gentle	3	47			
7	Sandstone quartzose; and sandstone quartzose, dolomitic and oolitic; interbedded	6	44		43 38	
6	Covered; very gentle rise	5	38			
5	Cliff-forming unit of dolomite, sandy, parting 1-2 cm with stromatolites; hemispheres up to about 8 cm in diameter; at 33 feet; ledge about 100 ft. wide	7	33			

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
4	Covered slope	12	26			
3	Sandstone quartzose, and sandstone dolomitic-quartzose-collitic interbedded; bedding mostly vague; parting 0.5 cm - 30 cm; partly cross-laminated, cross bedded units 15-30 cm; fine to coarse-grained; ripples 5-8 cm high, about 30 cm wide; at 14' : extensive plateau	9	14		11 10 7	
2	Covered, flat	2.5	5			
1	Sandstone, quartzose and dolomitic, fine to coarse grained, some cross-lamination at high angles; cross-bedded units about 15 cm thick	2.5	2.5		1	

Ship Point Formation

- 92 Hand specimen  
 (92 ft.) Parting 1.6 cm; yellowish gray weathering  
 unit 15
- Polished section  
 Light olive gray; discontinuous laminations; very thin, dark streaks, about 2mm long;  
 rock seems to be composed of rather pure microcrystalline dolomite; streaks are reddish in reflected light (uncertain what they are -- perhaps altered organic material ?)

- 66.5 Hand specimen  
 (66.5 ft.) Parting 3 cm; yellowish gray to grayish orange weathering;  
 unit 13 burrows, about 3 mm diameter, 5 cm or more long, cross-wise on bedding plane
- Polished section  
 Yellowish gray; quartz sand, medium grained, rounded, and a few flat-pebbles, up to 5 mm in diameter in abundant matrix of dolomite, microcrystalline to very fine crystalline, perhaps with a little calcite; (thin section and x-ray reqd.)

Turner Cliffs Formation (?)

- 65 Hand specimen  
 (65 ft.) Parting 5 cm; grayish orange to pale yellowish brown weathering;  
 unit 12 vuggy weathering; vugs generally less than 1mm
- Polished section  
 Pale yellowish brown; brecciated; fragments from less than 1 mm to about 1 cm in diameter; cemented by clear to pale orange dolomite
- Thin section  
 dolomite, very fine to fine crystalline; patches of cloudy dolomite surrounded by matrix of clear dolomite

- 64-67 Hand specimen  
 (64-66 ft.) As 65; brecciated; fragments of a set of concentric crusts of chalcedony on one spec.  
 unit 12
- Polished section  
 Pale to dark yellowish brown areas engulfed by grayish orange areas; crude hemispherical structure with diameter of 6 cm or so
- Thin section  
 Dolomite; very fine to fine crystalline; very minor amounts of floating quartz, fine to medium grained, rounded but partly replaced by carbonate and then subangular; patches of cloudy dolomite surrounded by patches of clear dolomite



- 58 Hand specimen  
(58 ft.) Parting about 4-5 cm ; grayish orange weathering; very vague lamination  
unit 10 Thin section  
-Quartz (estim. abt. 30%), very fine to very coarse grained, generally rounded, poorly sorted  
-Dolites (very coarse sand grade), showing both radiating and concentric structure (50%) ; composed mainly of dolomite, but probably including some cryptocrystalline calcite  
-cement of clear dolomite (about 20%), fine crystalline
- 53 Hand specimen  
(53 ft.) Parting 3 cm; very pale orange to grayish orange weathering  
unit 9 Polished section  
Grayish orange to pale yellowish brown, vague and somewhat discontinuous lamination  
Thin section  
-Quartz (about 50%), very fine to very coarse grained ; poorly sorted; rounded to subangular  
  
-coated carbonate grains (about 25%) , very fine to fine grained, round to ellipsoidal ,composed of microcrystalline dolomite, with slightly darker (cloudy) rims, about 20 microns thick  
  
-dolomite ,microcrystalline to fine crystalline (25%), possibly with minor amounts of cryptocrystalline calcite ; some stringers of fine crystalline dolomite look like veins
- 43 Hand specimen  
(43 ft.) Parting 1.3 cm; grayish orange weathering  
unit 7 Thin section  
-Quartz (estim. abt. 40%), very fine to coarse grained, rounded, poorly sorted  
- dolites and coated grains (estim. 45%) round to ellipsoidal, medium to coarse sand grade, composed of microcrystalline dolomite  
- clear dolomite (estim. 15%) microcrystalline to very fine crystalline  
cement
- 38 Hand specimen  
(38 ft.) Parting about 5 cm; weathered surface covered with lichen; fresh  
unit 7 very light gray to yellowish gray  
Thin section  
Lower (or upper) part of thin section is quartz sandstone, medium grained, poorly sorted, quartz -cemented;  
Upper (or lower) part medium to coarse grained, poorly sorted, cemented both by calcite and dolomite  
quartz is rounded beneath overgrowths in optical continuity
- 11 Hand specimen  
(11 ft.) Parting 2.5 cm; weathered surface lichen-covered; fresh yellowish  
unit 3 gray; medium -grained; quartz partly rounded, partly with overgrowths; cemented in part by calcite (dolomite present ? ; thin-section and x-ray required)

10 Hand specimen  
(10 ft.) Parting 2.5 cm; yellowish gray weathering  
unit 3

Polished section

Yellowish gray to light olive gray

- Quartz (estim. 30%) , medium to very coarse grained , poorly sorted, subangular to rounded
- oolites and coated grains (estim. 45%) ,flat, ellipsoidal, to rounded; probably composed mainly of microcrystalline dolomite with some calcite
- matrix of clear microcrystalline dolomite, phps. with some calcite

Thin section

- Quartz: very fine to very coarse grained, mostly medium grained mostly rounded, but partly replaced by dolomite and then angular
- Oolites and coated grains: some are distinctly oolites with several concentric, round shells; others are ellipsoidal; many are compound ; i.e. one shell enclosing several others that are not concentric, and some are joined; this looks like shelly material, but I doubt that it is skeletal

7 Hand specimen  
(7 ft.) Sandstone; parting 2.5 cm; very light gray;  
unit 3 weathered surface has dark brown coating;

thinly laminated; lamination partly horizontal, partly inclined at low angles; medium to very coarse grained; moderately well sorted; friable; probably weakly cemented by silica; some layers may have slight amounts of carbonate  
(thin -section and x-ray reqd.)

1 Hand specimen  
(1 ft.) Parting 5 cm; grayish orange weathering; very pale orange on  
unit 1 fresh surface; vaguely defined internal lamination;  
quartz, mostly medium-grained sand, rounded (abt. 70%)  
in matrix of dolomite, microcrystalline and calcite  
(thin-section and x-ray reqd.)

STEENSBY S

Field No: Tm-68-'64

NTS: 37 C

Map: Koch Island (1:250,000)

UTM: zone 17 W

Northing  
7727700

Easting  
597200

Vertical air photos: Tm- A -16089-61,62

Field code for flight line: St-4

Notes

The plains to the south here are probably underlain by Precambrian, which is not exposed. The hills most likely are underlain by Paleozoic strata, but are covered entirely with Pelistocene or Recent sand and gravel. This locality was visited to check whether the sand was not, perhaps, derived from underlying (a Admiralty Group) sandstone, but this does not seem to be the case

6.5 MILES NE OF INUKTORFIK LAKE

Field No.: Tm-68-14

NTS: 37 G

Map: Icebound Lake (1:250,000)

UTM: zone 17 W

Northing  
7908400

Easting  
542200

Vertical air photographs:

A 16264-19,20

Field code for flight line: ST-7

Summary

This is the best exposed section of the Admiralty Group examined during the entire 1968 field season. It may be summarized as follows

Gallery Formation  
sandstones.....22 feet

Gallery Formation (?)  
sandstone and covered intervals.....24 "  
46

Turner Cliffs Formation  
dolomite, pure and sandy; sandstone, quartzose and  
dolomitic, rarely glauconitic; related flat-pebble  
conglomerates;  
upper contact tentatively placed at 185 feet .....139 "

Ship Point Formation  
Dolomite, pure, silty, sandy, stromatolitic; dolomitic  
flat-pebble conglomerate; top not exposed.....34 " +

From regional correlations it has been inferred that the Turner Cliffs and Ship Point Formations are separated by a disconformity and that the corresponding hiatus comprises parts of Cambrian and Early Ordovician time. This disconformity is generally difficult to detect in the field because the uppermost Turner Cliffs Formation and the lowermost Ship Point Formation are similar. At the present section, there are indications of a disconformity within unit 14, where breccias with caliche-type structures occur. The breccias are overlain by stromatolites.

Tm-68-14a

Paleocurrent determinations in the Gallery FormationUTM: zone 17 WNorthing  
7908300Easting  
542700

## Adjusted readings:

3° azimuth  
 358  
 347  
 347  
 345  
 353  
 42  
 28  
 332  
 343  
 343  
330

n=12

Mean: 354°

These readings represent the axes of scoop-shaped troughs.

Sediment transport was to the north.

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
11	Covered; lower part recessive weathering, upper part steeper	29	146			
10	Sandstone, quartzose, cross-laminated; cross-bedding is planar, concave up, and of trough-type; troughs up to about 2 ft. long	2	117		116	
9	Covered, recessive	3.5	115			
8	Sandstone, quartzose, as below	0.5	111.5		107	
	Sandstone, dolomitic to dolomite, sandy, pale pink to buff weathering; sand is about medium grained; cross-laminated, as below	2.0	111			
	Sandstone, quartzose, light gray, fine- to medium grained, cross-laminated as below	0.5	109			
	Sandstone, dolomitic, and dolomite, sandy, cross-laminated, mostly trough-type, fine- to medium grained	3.5	108.5			
	Sandstone, quartzose, cross-laminated, mostly in troughs up to about 2 feet long; also horizontal lamination; a few beds weather yellowish; a few pale dusky red weathering patches	13	105		104	
7	Covered, recessive weathering; talus 49-62 ft. contains dolomite, thinly laminated, sandy and silty; also dolomitic flat-pebble conglomerate; minor laminations of dolomite sandy or sandstone dolomitic, fine grained, almost certainly in place; (also present sandstone, dolomitic and glauconitic, see spec. 55)	43	92		63 50- 62' 55	
	<u>Gallery (or Turner Cliffs ?) Formation</u>					
6	Sandstone, fine to coarse grained; mostly trough-cross-laminated, troughs up to 3 feet long; also planar and concave up cross-lamination	8	49		46 45	
5	Covered, recessive; may be underlain by Gallery-type sandstone, but this is not certain	17	41			

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section: extensive plateau					
	<u>Ship Point Formation</u>					
19	Recessive weathering interval; some talus of dolomite, parting 1-2 cm; silty, sandy, and slightly argillaceous (?);	6	220		220	
18	Covered, more recessive than interval 18, similar lithology	4	214			
17	Ledge of dolomite, parting 0.5 to 12 cm, in part internally laminated	4	210		208	
16	Talus of dolomite, parting 1-2 cm	12	206		197	
15	Dolomite, microcrystalline and dolomitic flat-pebble conglomerate; more recessive weathering than unit 14, less sandy; internally laminated	3	194		194	
	<u>Transition from Turner Cliffs to Ship Point Formation</u> (Field notes state that if contact is a disconformity, it probably lies within this unit; examination of specimens suggests disconformity may lie at 185 feet)					
14	Dolomite sandy, parting in units 1cm-15 cm, some with internal lamination; minor dolomitic flat-pebble conglomerate; also stromatolites; breccias	11	191		188 185 184 183 182 181	
13	Covered, recessive weathering	5	180			
12	Talus, more or less in place of: --sandstone, quartzose; planar and trough cross-laminated, ripple marks on bedding planes (estim. about 20%) --dolomite, sandy, and cross-laminated as ss. above -- flat-pebble conglomerate of sandy dolomite	29	175		168 166 158 143? 142?	

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	<u>Gallery Formation</u>					
4	Sandstone, mostly light gray ,but with rare patches of of dusky red; lower part shows horizontal, upper part trough-cross-lamination	4	24		22	
3	Covered, recessive weathering	2	20			
2	Same sandstone as unit 1, but parting parallel to bedding more pronounced; recessive weathering	4	18		17	
1	Sandstone, generally yellowish gray , but with patches of faint dusky red here and there, particularly in the interval 3-8 ft.; about medium-grained, cross-laminated; troughs a few inches to about 1.5 feet long; minor horizontal lamination; parting parallel with bedding not pronounced; bluff-forming unit	14	14		10 8	
	Base of section: grass-covered slope, probably underlain by Precambrian crystalline rocks					



Ship Point Formation

220      Hand specimen  
 (220')    Very pale orange to grayish orange weathering (coating)  
 unit 19    ;parting 1 cm

Polished section

Between grayish orange and pale brown

Thin section

Dolomite, finely microcrystalline to microcrystalline, perhaps with some cryptocrystalline calcite (x-ray reqd.) and silt and very fine grained sand of quartz; also silt of quartz; laminae differ in concentration of cloudy, sub-microscopic impurities; one lamina is sandstone, very fine grained, dolomitic; trace amounts of clay (chlorite, muscovite-illite) are probably also present

208      Hand specimen  
 (208')    Parting about 5 cm; weathering very pale orange to grayish orange  
 unit 17

Polished section

Pale yellowish brown with streaks of grayish orange; bedding very vague and irregular; lighter colored elliptical to circular blobs (burrows?)

Thin section

Rather uniform dolomite, microcrystalline to very fine crystalline, with only trace amounts of floating quartz silt and perhaps a little calcite

197      Hand specimen  
 (197')    Parting 3 cm; very pale orange weathering  
 unit 16

Polished section

Yellowish gray to pale yellowish brown; bedding vague, undulating, swirly; thin streaks of red and black weathering material (altered pyrite ??)

Thin section

Dolomite, microcrystalline to very fine crystalline; bedding apparent  
 (1) from concentration of cloudy impurities within dolomite crystals;  
 (2) slight variations in grain size; some opaque streaks

194      Hand specimen  
 (194')    Parting 4 cm; grayish orange weathering; top 1 cm vuggy weathering  
 unit 15

Polished section

Grayish orange to yellowish gray  
 Thin laminations, in part truncated; mainly microcrystalline to fine crystalline dolomite with streaks of rusty weathering pyrite; vugs are molds of an unknown mineral --perhaps gypsum?

Transition from Turner Cliffs to Ship Point Formation (?)

188 Hand specimen

(188') Parting 6 cm; very pale orange to grayish orange weathering  
unit 14

Polished section

Between pale orange and grayish orange; in part thinly laminated;  
dolomite microcrystalline with a few rusty weathering streaks

185 Hand specimen and plished section

(185') Very pale orange weathering;  
unit 14 Laminae of dolomite describe hemispherical stromatolite (?); up to  
5 cm in diameter; 2.8 cm high; internally much disrupted

Thin section

Dolomite, finely microcrystalline to fine crystalline; trace amounts  
of floating quartz silt; possibly some cryptocrystalline calcite

184 Hand specimen and polished section

(184') Grayish orange weathering; multicolored; grayish orange, moderate  
unit 14 yellowish brown, etc. fresh;  
strongly brecciated; fragments 1-2 cm, angular to somewhat rounded,  
of dolomite microcrystalline to fine crystalline; matrix consists  
in part of sandstone, quartzose, coarse grained, dolomite-cemented

183 Hand specimen and polished section

(183') Breccia, composed of fragments up to 4 cm with irregular outlines;  
unit 14 fragments are grayish orange, internally laminated with irregular,  
somewhat concentric structure (looks like caliche); matrix consists  
of sandstone, poorly sorted, very fine to very coarse grained,  
silica-cemented (large thin section requested)

182 Hand specimen

(182') Parting 3 cm ; grayish orange weathering  
unit 14

Polished section, thin section

Rock consists of several layers, a few mm to about 1 cm thick;  
mostly horizontally interstratified, but quartz sandstone is  
discontinuous, lensing, and wavy;

(1) oolites, coated grains(?) and quartz sand in matrix of microcry-  
stalline dolomite

-oolites, partly simple and entirely dolomitic; partly with a nucleus  
of quartz; partly multiple with several grains of quartz inside,  
coarse sand grade;

-quartz: mostly enclosed, or partially enclosed by oolites, but  
some grains are free; poorly sorted, fine to very coarse grained,  
rounded

(2) poorly sorted, rounded quartz, ranging from silt to coarse sand  
in abundant matrix of dolomite,

(3) quartz sandstone, poorly sorted, grains ranging from fine to  
coarse, mostly medium grained, quartz cemented with only a little  
interstitial dolomite

- 181 Hand specimen  
 (181') Grayish orange to pale pink weathering; very pale orange to  
 unit 14 pale pink fresh; stratification disturbed, probably due to  
 bioturbation (burrowing);  
 sandstone; quartz sand, poorly sorted fine to coarse, mainly  
 medium grained, in abundant matrix of dolomite, microcrystalline to  
 fine crystalline

Turner Cliffs Formation

- 168 Hand specimen  
 (168') Grayish orange to pale pink weathering; parting abt. 9 cm  
 unit 12

Polished section

Breccia, flat-pebbles and fragments with irregular outlines, up  
 to about 2.3 cm in diameter, mostly pale yellowish brown, composed  
 of dolomite, finely microcrystalline to microcrystalline, embedded  
 in matrix of dolomitic sandstone; quartz sand poorly sorted,  
 very fine to very coarse grained, mostly rounded, in abundant matrix  
 of microcrystalline dolomite

- 166 Hand specimen  
 (166') Parting 4cm; grayish orange weathering  
 unit 12

Polished section

In part regular horizontal stratification; in part bracciation  
 (bioturbation);  
 regularly stratified interval is sandstone; quartz sand  
 fine to coarse, mostly medium grained, poorly sorted, rounded,  
 in abundant matrix of dolomite;  
 brecciated interval has fragments of dolomite, thinly laminated,  
 microcrystalline to fine crystalline, perhaps slightly calcareous;  
 lamination is disturbed

- 158 Hand specimen  
 (158') Parting 5 cm; weathering grayish orange  
 unit 12

Polished section

Flat-pebble conglomerate; pebbles a few mm to 1.5 cm long, relatively  
 thin; partly horizontal, partly inclined, moderately to steeply;  
 flat-pebbles composed of dolomite, microcrystalline to fine crystalline;  
 matrix consists of dolomitic quartz sandstone; quartz sand very fine  
 to very coarse grained, mostly medium grained, rounded, cemented by  
 dolomite, microcrystalline

- 143 Hand specimen  
 (143') Parting 5 cm; weathering grayish orange  
 ??)

- phps. Polished section  
 drift Stratification not apparent;  
 fr. sandstone, quartzose, fine grained, well sorted, friable,  
 unit 12 perhaps some dolomite cementation

- 142 Hand specimen  
 (142') Parting 3 cm; very pale orange weathering  
 ??)

- phps. Polished section  
 drift Grayish orange;  
 fr. quartz sand, very fine to medium grained, and a few intraclasts of  
 unit 12 dolomite, laminated, reddish, a few mm long; in matrix of dolomite,  
 microcrystalline

- 116      Hand specimen  
 (116') Parting 2.5 cm; grayish orange weathering; grayish yellow fresh;  
 unit 10 sandstone, quartzose, friable; fine to medium grained, moderately  
 well sorted, rounded;  
 bedding vague; partly laminated
- 107      Polished section  
 (107') Moderate yellowish brown to grayish orange;  
 unit 8 sandstone, fine to medium grained, laminated (lamination vague)  
 moderately well sorted, rounded to subrounded; cemented by  
 microcrystalline dolomite
- 104      Hand specimen  
 (104') Parting 3 cm; very light gray, friable  
 unit 8
- Thin section  
 Quartz sandstone; medium grained, moderately poorly sorted;  
 rounded to subrounded; weak silica cementation; trace amounts  
 of feldspar (some microcline)
- 63      Hand specimen  
 (63') Yellowish gray to pale pink; some high-angle trough cross-  
 unit 7 stratification at small scale
- Polished section  
 Quartz sand, fine to coarse, mostly medium grained, poorly sorted,  
 subrounded to subangular, in abundant matrix of microcrystalline dolo-  
 mite; appears to be bioturbated
- 50-62      Hand specimen  
 (50 to Parting 1 cm; weathering between yellowish gray and light olive  
 62') gray; polishes  
 unit 7
- Polished section  
 Light olive gray, thinly laminated
- Thin section  
 Dolomite, microcrystalline, with interlaminated quartz sandstone,  
 fine grained, containing a little feldspar and glauconite (?) with  
 dolomitic matrix; quartz is angular and partly pseudomorphous after  
 dolomite
- 55      Hand specimen  
 (55') Parting 2 cm; light olive gray weathering  
 unit 7
- Polished section  
 Laminated to thinly laminated; lamination regular and mostly  
 horizontal, but also showing some low-angle cross-stratification;  
 sandstone, quartzose, rich in glauconite; quartz and glauconite  
 very fine grained, well sorted; dolomite microcrystalline and  
 interstitial; some authigenic pyrite (coarse crystalline)

Gallery Formation (?)

- 46      Hand specimen  
 (46')    Parting 2.5 cm; yellowish gray; laminated and showing some  
 unit 6    low-angle cross-stratification; friable  
           composed of mostly coarse grained quartz, with some fine  
           and medium grained quartz
- 45      Hand specimen  
 (45')    Sandstone, medium grained, friable, yellowish gray, moderately  
 unit 6    well sorted, very weak silica cementation (?)

Gallery Formation

- 22      Hand specimen  
 (22')    Sandstone, yellowish gray, friable; stratification poorly apparent;  
 unit 4    medium grained, moderately well sorted; mostly rounded, partly  
           subrounded to subangular
- 17      Hand specimen  
 (17')    Sandstone, yellowish gray, laminated to thinly laminated,  
 unit 2    friable; some low-angle cross-stratification; mostly medium-  
           grained, moderately well sorted, partly rounded
- 10      Hand specimen  
 (10')    Grayish orange to grayish orange pink weathering;  
 unit 1    grayish orange fresh
- Thin section  
           Sandstone, quartzose, calcareous and dolomitic;  
           quartz sand is fine to coarse, mostly medium-grained,  
           poorly sorted, rounded to subangular, embedded in fairly  
           abundant very fine to fine crystalline dolomite, perhaps with  
           some calcite
- 8        Hand specimen  
 (8')    Quartz sandstone, yellowish gray, friable; lamination vaguely  
 unit 1    apparent; mostly medium grained, moderately well sorted,  
           partly rounded; some overgrowths

14 MILES NE OF INUKTORFIK LAKE

Field Nos: 15a,b,c,d, 16

NTS: 37 G

Map: Icebound Lake (1:250,000)

UTM : zone 17 W

item	Northing	Easting
15a base Gallery Fm	7918750	548250
15b top Turner Cliffs Fm.	7917900	548200
15d alternative section Gallery and Turner Cliffs	7918200	549200
16 base, Baillarge Formation	7915900	547500

Air photos:

A 16264- 17,18

Field code for flight line: ST-7

Summary

The stratigraphic sections in this area are poorly exposed and have not been sampled, as section 14 was sampled in detail.

Two sections of the Gallery and Turner Cliffs Formations combined were measured as follows:

Loc. 15a: 152 feet

Loc. 15d 175 feet

The two units could not be separated clearly because of lack of outcrop. The minimum thickness of the Gallery Formation at loc. 15a is 22 feet.

A complete stratigraphic section of the Ship Point Formation (located between locs. Im-68-15b and 16 ) is about 440 feet thick according to a photogrammetric determinations .

An unusual structural feature is a slight northwesterly dip ( about 1° 35' according to photogrammetry); ,which appears to be related to a major fault zone that has elevated the Precambrian terrain on the east.

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section is plateau surface					
	<u>Baillarge Formation</u>					
9	Limestone, cryptocrystalline, stringers of dolomite; fossiliferous, <u>Receptaculites</u> common; parting 0.5 to 15 cm, commonly 1-2 cm	20				
8	<u>Ship Rint Formation</u> Present as talus mostly; dolomite, in part sandy, silty; dolomitic flat-pebble conglomerate, etc.	440*				
	*determination by photogrammetry; dip 1° 35' NW					
	<u>Turner Cliffs Formation</u>					
	Top of Turner Cliffs Formation marked by ledge with small lakes					
7	Dolomite sandy, or sandstone, dolomitic, cross-laminated (sets about 1 ft. thick); dolomitic and sandy flat-pebble conglomerate	2	152			
6	Dolomite, light gray, light gray-buff weathering, massive, microcrystalline	6	150			
5	Dolomite sandy and sandstone, dolomitic, buff weathering; interbedded with sandstone, light gray, quartzose; both showing cross-lam.; in upper one foot intraformational breccia	8	144			
	<u>Turner Cliffs and/or Gallery Formation</u>					
4	Covered with grass, recessive	8	136			
3	Steeper slope, covered with talus of sandstone and sandy dolomite	56	128			
2	Covered, recessive	10	72			
1	Knoll, generally covered, but upper 20 feet are sandstone, light gray, cross-bedded; at 70 feet: break in slope	67	67			
	Base of section are vegetation-covered flats, probably underlain by Precambrian					

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section is top of Turner Cliffs Fm.					
	<u>Turner Cliffs Formation (?)</u>					
5	Ledge of sandstone, dolomitic and and dolomite, sandy, parting 1-15 cm; probably same unit as unit 7 in section 15 a-b	5	175			
4	First gentle, then steeper slope; talus and some outcrop of sandstone, light gray, quartzose, and sandstone, dolomitic	63	170			
3	Steep slope; about 4 ft. of sandstone, light gray, cross-bedded in uppermost part; dolomite, yellowish weathering, argillaceous (?) in lower part as talus more or less in place	63	107			
	<u>Turner Cliffs and/or Gallery Formation</u>					
2	Covered interval, laterally extensive	2	24			
	<u>Gallery Formation (?)</u>					
1	Knoll of sandstone, light gray, quartzose, friable, talus, mostly in place	22	22			
	<u>Base of section</u>					
	Base of section are vegetation-covered flats, probably underlain by Precambrian					

Baillarge FormationIm-68- Hand specimen

16 Parting 2 cm; yellowish gray to grayish yellow weathering

Polished section

Pale yellowish brown with irregular blobs, up to 1cm across that are grayish orange;

Limestone, cryptocrystalline; fossils mud-supported (echinoderm columnals, trilobite appendages; small amounts of scattered microcrystalline dolomite, particularly in the orange blobs



NORTH OF PATLOCK LAKE

Field No.: Im-68-17

NTS: 37 G

Map: Icebound Lake (1:250,000)

UTM: zone 17 W

Northing

Easting

7895000

547300

Vertical air photos:

A -16264-22,23

Field code for flight line: SI-7

Summary

This section was examined rapidly and was not sampled. Four ledge-forming sandstones were observed in the section, and a fifth subsequently from the air, that are separated by covered intervals. These sandstones represent the Admiralty Group, which has a minimum thickness of about 200 feet. The Gallery and Turner Cliffs Formations could not be distinguished.

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	<u>Admiralty Group</u>  Measured section ends at foot of another relatively steep slope that leads up to a higher terrace. It was assumed in the field that this terrace represents the base of the Ship Point Formation, but air observation (confirmed by photo interpretation of the canyon north of the section) indicates that this terrace also is underlain by sandstone (of the Turner Cliffs Formation). So the Admiralty Group here is more than 1 200 feet thick.					
8	No outcrop; gentle slope becoming a broad ledge; break at about 177 ft.	23	190			
7	Talus, probably in situ, of sandstone, quartzose	1	167			
6	Moderately steeply inclined slope; soil above unit 5 is reddish; probably underlain by red beds	91	166			
5	Sandstone, quartzose, light gray to yellowish gray weathering	7	75			
4	Covered, moderately steep slope	38	68			
3	Sandstone, quartzose, light gray, laminated	10	30			
2	Covered, moderately steep slope	15	20			
1	Sandstone, quartzose, light gray, laminated	5	5			
	Base of section are vegetation-covered valley flats, probably underlain by Precambrian crystalline rocks					

## SOUTH OF INUKTORFIK LAKE

Field No.: Tm-68-18

NTS: 37 GMap: Icebound Lake (1:250,000)UTM: zone 17 W

Northing

Easting

7883700

540900

Vertical air photos:

A -16264-24,25

Field code for flight line: SI-7

Summary

This section is located on a butte due south of Inuktorfik Lake. Outcrop is poor and , generally limited to sandy units ,which are visible on the air photographs.

The lower 306 feet of the section are assigned to the Turner Cliffs Formation for the following reason: Unit 2, the lowest exposed reddish sandstone contains linguloid brachiopods. Such brachiopods have been found at several localities in the Turner Cliffs Formation, but never in the Gallery Formation. The Gallery Formation, therefore, is believed to be less than 17 feet thick or absent.

The upper part (about 60 feet) is assigned to the Ship Point Formation, which is incompletely represented. The contact between the two units is not exposed; unit 17, however (299-306 feet) is characteristic of the uppermost strata of the Turner Cliffs Formation (breccia).

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section is top of butte					
	<u>Ship Point Formation</u>					
22	Covered, gentle rise	14	394			
21	Covered with talus of dolomite, sandy and sandstone, dolomitic; first nearly flat, then gentle rise	30	380		24-1, 2	
20	Gentle rise, less steep than below; at 350 feet extensive ledge with talus of sandy and stromatolitic dolomite--seems to be characteristic of lower part of Ship Point fm.	16	350		23?	
	<u>Ship Point and/or Turner Cliffs Formations</u>					
19	Gentle rise, covered with till	16	334			
18	Broad ledge, covered with till	12	318			
	<u>Turner Cliffs Formation</u>					
17	Outcrop of dolomite, sandy and sandstone, quartzose, dolomitic; horizontal and trough-cross-lamination; minor dolomitic flat-pebble conglomerate and sandy breccia	7	306		20	
16	Steeper slope, drift-covered	29	299			
15	Broad ledge, lower 2 feet with talus of dolomitic flat-pebble conglomerate and dolomite	20	270		13 12	
14	Narrow ledge, then moderately steep rise	17	250			
13	Cliff of sandstone, quartzose, slightly dolomitic, cross-lamination at high angles; sets about 1' thick; also flat-abble conglomerate with pebbles several inches long; sandstone mostly medium grained	4	233		11	
12	Covered, steep slope	18.5	229			
11	Steep cliffs, mostly sandstone, quartzose, light gray, friable, cross-laminated, cross-bedding at high angles and of large scale; minor interbeds of sandstone, dolomitic and quartzose; and dolomite, sandy; in upper few feet, sandstone, weathers in nodules (ellipsoidal) a few mm to a few cm in diameter	19.5	210.5		10 9 8 6 5	

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
10	Steeper slope, snow-covered	11	191			
9	Broad ledge, gently rising, drift-covered	12	180			
8	Steeper slope, vegetation-covered	5	168			
7	Cliff of sandstone, fine to very coarse-grained, cross-laminated; cross-bedding at high angles and sets up to 30 cm thick	4	163		4	
6	Covered, slope, a little steeper than below	4	159			
5	Broad ledge, gently rising, drift-covered	13	155			
4	Steeper rise, covered with vegetation and till	98	142			
3	Gentle rise, vegetation-covered	8	44			
2	Sandstone, light gray and moderate red, very fine to very coarse grained, mostly cross-laminated; planar and trough cross-bedding at high angles; cross-bedded units up to 60 cm thick; linguloid brachiopods collected probably in this unit by W.C.Morgan	19	36	2812	3 2 1	
1	Rise, vegetation-covered  Base of section are vegetation-covered flats, probably underlain by Precambrian crystalline rocks	17	17			

Report by B.S. Norford (O-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2812	Tm-68-18 prob. from Turner Cliffs Fm., unit 2 of measured section;	fragments of inarticulate brachiopods  age: Phanerozoic (collected by W.C. Morgan)

### Ship Point Formation

- 24-1 Hand specimen  
(350 Parting 4 cm ; grayish orange weathering  
-380')  
talus, Polished section  
unit Very pale orange to pale pink; bedding vague;  
21 horizontal, thin;  
dolomite, microcrystalline to fine crystalline;  
overlain by lens of quartz sandstone, showing  
small-scale ripple lamination; poorly sorted,  
fine to coarse grained quartz sand in dolomitic  
matrix
- 24-2 Hand specimen  
as Parting 5 cm; grayish orange pink weathering; laminated  
above (crudely);  
quartz sand, fine to coarse grained, poorly sorted;  
also intraclasts of dolomite, pale greenish yellow;  
in matrix of dolomite, mostly microcrystalline  
(thin section reqd.); calcite also seems to be present
- 23 Hand specimen  
(prob. Parting 4 cm; laminated (lamination poor);  
334- gently curving; diameter <sup>the</sup> in order of 10 cm  
350')  
unit Polished section  
20 Dolomite, microcrystalline to fine crystalline with scattered  
lenses of quartz, poorly sorted, very fine to coarse grained  
sand; partly rounded

### Turner Cliffs Formation

- 20 Hand specimen  
(299- Yellowish gray to grayish orange weathering breccia  
306')  
unit 17 Polished section  
Fragments up to 2.5 cm; outlines partly well defined, angular,  
partly vague; fragments are dolomite microcrystalline to very  
fine crystalline; some with minor amounts of very fine grained  
quartz sand; matrix sandstone, mostly fine grained, but containing  
grains up to coarse grained; silica cemented (?) (thin sect. reqd.)  
some calcite must be present
- 13 Hand specimen  
(250- Parting 1 cm; grayish orange weathering  
270')  
unit Polished section  
15 Very pale orange; thinly laminated

Thin section

Dolomite, microcrystalline, in part finely microcrystalline;  
minor cryptocrystalline calcite (?)

12 Hand specimen

(250-270')  
unit 15 Flat-pebble conglomerate; fragments about 1 mm to 1 cm, partly horizontal partly inclined to vertical; flat-pebbles composed of dolomite, microcrystalline; matrix dolomitic, slightly calcareous and sandy; quartz sand very fine to medium grained; rounded, poorly sorted

11 Hand specimen

(229-233')  
unit 13 8.5 cm thick; vague internal lamination, horizontal; yellowish gray

13 Thin section

Sandstone; quartz grains are fine to coarse grained and poorly sorted; mostly rounded  
minor amounts of interstitial dolomite, very fine to fine grained; some cementation by dolomite, some by silica

10 Hand specimen

(191-210.5')  
unit 11 Sandstone, quartzose, light gray to yellowish gray, friable, medium-grained, moderately well sorted, rounded, with slight amounts of interstitial dolomite, microcrystalline; sandstone weathers in nodules

9 Hand specimen

(191-210.9')  
unit 11 Sandstone, quartzose, light gray to light yellowish gray, friable, vaguely laminated and possibly bioturbated, fine-grained, moderately poorly sorted, rounded, slightly dolomitic

8 Hand specimen

(191-210.5')  
unit 11 Yellowish gray to grayish orange weathering; friable; fresh light gray to yellowish gray; poorly bedded, weathering in nodules, 3.5-6 cm diameter

Thin section

Very fine to coarse grained, average about fine-to medium grained, moderately poorly sorted; interstitial very fine crystalline dolomite

6 Hand specimen

(191-210.5')  
unit 11 Parting 1 cm; grayish yellow to grayish orange weathering

Polished section

Vague thin lamination; composed of dolomite, finely microcrystalline, with poorly sorted quartz, very fine to coarse grained, mostly rounded (estim. 15%)

5 Hand specimen

(191-210.5')  
unit 11 Parting 5 mm; grayish yellow to yellowish gray; thinly laminated

Thin section

Dolomite, finely microcrystalline, with interstitial cryptocrystalline calcite (?); 2% or less of scattered quartz sand, very fine to medium grained, poorly sorted; partly rounded; partly replaced by carbonate or euhedral

- 4      Hand specimen  
 (159-      Sandstone, light gray to yellowish gray, quartzose, friable,  
 163')      laminated to thinly laminated;  
 unit 7      laminae range in grain size from fine to coarse grained
- 3      Hand specimen  
 (17-      Parting 2.8 cm; weathering grayish orange pink; stratification  
 36')      very vague, may be laminated  
 unit 2
- Thin section  
      Quartz sand, <sup>state</sup> fine to very coarse grained, poorly sorted;  
      rounded to subrounded; small amounts of feldspar and interstitial  
      muscovite
- 2      Hand specimen  
 (17-      Sandstone, friable, moderate red weathering; cross-lamination  
 36')      vaguely apparent  
 unit 2
- Thin section  
      Fine to very coarse grained, poorly sorted; subrounded to  
      subangular; largely quartz, interstitial ore; a little feldspar  
      some quartz is vein quartz
- 1      Hand specimen  
 (17-      Moderate red weathering; moderate reddish orange fresh;  
 36')      horizontally laminated; lamination vague  
 unit 2
- Thin section  
      Mostly quartz sand, fine to very coarse, mostly medium grained,  
      poorly sorted; mostly common quartz, a little vein quartz;  
      rounded to subrounded beneath overgrowths; opaque "iron ore"  
      present interstitially; heavy minerals inc. zircon



## PENINSULA SOUTH OF ROCHE BAY, MELVILLE PENINSULA

General statement

A stratigraphic section comprising parts of the Ship Point and Baillarge Formations was measured (and fossils and lithological specimens were collected) at loc. 35, in the western part of the peninsula (Roche Bay West), and fossils were collected at loc. 36 ("Roche Bay East")

The section at loc. 35 may be summarized as follows:

	<u>feet</u>
Ship Point Formation	
base not exposed, determination by photogrammetry.....	130 (+)
Covered interval underlain by	
Ship Point and/or Baillarge Fm.:.....	31
Baillarge Formation.....	69

The exposures of the Ship Point Formation are poor and diagnostic fossils have not been found in the unit. The fossils in the Baillarge Formation represent the Arctic Ordovician Red River fauna of supposed late Middle Ordovician age.

The structure is characterized by north-trending normal faults with relative down-drop of the eastern blocks.

ROCHE BAY , WEST

Field No.: Tm-68-35

NTS: 47 A

Map: Hall Lake (1:250,000)

UTM: zone 17 W

item	Northing	Easting
centre, Ship Point Fm.	7583400	441800
fossils, Baillarge Fm	7582600	441750

Vertical air photos: A 15741-6,7

Field code for flight line: M-68

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	<u>Baillarge Formation</u>					
9	Rubble of limestone; fragments 2-3 cm thick	7				
8	Scattered outcrop of limestone as below, parting 1-3 cm (Limestone, cryptocrystalline, fossiliferous with dolomitic stringers and tubes)	7			148	
7	Covered with talus of limestone from above	8				
6	Cliffs of limestone, parting 1-cm; fossiliferous, cryptocrystalline, mottled with dolomite; <u>Maclurites</u> and <u>Receptaculites</u> common	9		2826		
5	Covered with talus from overlying strata	24				
4	Limestone as before, parting 1-2cm; more recessive, more argillaceous (?) (offset)	1				
3	Cliffs of limestone, cryptocrystalline, mottled with dolomite, parting 1-15 cm; trace fossils on bedding planes; broken bioclastic debris	13			93	
	<u>Ship Point end/or Baillarge Formation</u>					
2	Steep, scree-covered slope	31				
	<u>Ship Point Formation</u>					
1	Dolomite, mostly microcrystalline, parting 1-8 cm; some flat-pebble conglomerates; → approximately 12-16' above base: large slabs, weathering in place of dolomitic sandstone and sandy dolomite at 36' approximately echinoderm columnals  Base of section is gentle slope, about 90' above sea level, vegetation-covered	130*			56 48 28  16 15 14	
	* photogrammetric determination; approximate heights to sample locations were measured by Jacob staff					

Report by B.S.Norford ( D-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2826	Tm-68-35 Baillarge Form. unit 6A of section 0 to 3 feet above base of unit	echinoderm debris ostracod straight cephalopods <u>Maclurites</u> sp. <u>Receptaculites</u> sp. indeterminate brachiopods <u>Rhynchotrema</u> sp. <u>Thaerodonta</u> sp. ? <u>Iliaenus</u> sp. age: Middle or Late Ordovician
Report by M.J.Copeland (MP-6-1969-MJC)		
C-2826	Same as for C-2826 above	Ostracoda: " <u>Bythocroris</u> " sp. leperditiid indet. age: Paleozoic-- too poorly preserved for more specific identification

148      Polished section

3' ab.      Pale yellowish brown limestone with grayish orange tubes and  
base,      stringers rich in dolomite; bioclastic debris common, particu-  
unit 8      larly trilobite appendages

Thin section

Limestone cryptocrystalline; dolomite microcrystalline;  
trilobite remains, ostracods, bryozoans

93      Polished section

3' ab.      Limestone cryptocrystalline, rich      in fossil debris  
base,      (ostracods, trilobite appendages ,etc.) with stringers  
unit 3      of finely microcrystalline dolomite

Ship Point Fm.56      Hand specimen and polished section

abt.

3' be-      Parting about 1.5 cm; very pale orange, very pale orange  
low top,      weathering; in part thinly laminated;  
unit 1      seems to be mainly dolomite, microcrystalline

48      Hand specimen and polished section

abt.

11'      Parting 2.2 cm; very pale orange to grayish orange weathering,  
below      pale orange to pale yellowish brown fresh ;thinly laminated;  
top,      laminations in part discontinuous  
unit 1

Thin section

Dolomite, microcrystalline; trace amounts of quartz  
silt

28      Hand specimen and polished section

abt.

28'      Parting 1.5 cm; very pale orange to grayish orange, fresh  
or more      and weathering; faint internal laminations; seems to be mainly  
above base,      dolomite, microcrystalline  
unit 1

16      Hand specimen

16'

or more      Parting about 4 cm; yellowish gray, yellowish gray weathering;  
above base,      vaguely laminated; bioturbated;  
unit 1      sandstone, fine to very fine grained, friable; possibly  
slightly dolomitic

15      Hand specimen and polished section

abt.

15'

or more      Very pale orange ; pale yellowish brown to very pale orange  
above base,      on fresh surface; vague lamination disturbed by vertical  
unit 1      burrows; about 50% dolomite, microcrystalline; 50% quartz  
silt and very fine grained sand

14

about

14'

or more

above base,

unit 1

Hand specimen

Parting 2.5 cm; very pale orange weathering

Polished section

Very pale orange and pale yellowish brown, probably bioturbated

Thin section

Estim. 50% dolomite, microcrystalline;

50% quartz, mainly silt;

trace amounts of feldspar and muscovite;

dolomite and quartz thoroughly mixed;

quartz partly pseudomorphous after dolomite

ROCHE BAY, EAST

Field No.: Tm-68- 36

NTS: 47 A

Map : Hall Lake (1:250,000)

UTM: zone 17 W

Northing  
7583600

Easting  
445800

Air photos: A 15741-66,67

Field code for flight line: M 5b

From field notes

Here two sets of cliffs ,separated by a recessive interval as in the section, 35. The upper cliffs have a rich and varied fauna (C-2827).

Specimens

Two specimens, 36b from lower cliffs , and 36 -269 presumably from upper cliffs , are similar and comparable to the typical Baillarge Formation lithology (thin sections and polished sections preset). They are a cryptocrystalline limestone with mud-supported fossil debris and stringers or tubes composed both of cryptocrystalline calcite and microcrystalline dolomite.

## Report by B.S. Norford (O-S 6 BSN 1969 )

GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2827	Tm-68-36 from upper cliffs	echinoderm debris bryozoans ostracod straight cephalopods <u>Maclurites</u> sp. <u>Receptaculites</u> sp. ? <u>Grewingia</u> sp. <u>Catenipora</u> sp. indeterminate brachiopods and trilobites ? <u>Austinella</u> sp. <u>Resserella</u> cf. <u>R. sillimani</u> (Roy) ? <u>Thaerodonta</u> sp. <u>Dolichoharpes</u> sp. ? <u>Illaenus</u> sp. <u>Remipyga</u> sp. age: late Middle Ordovician

## Report by M.J. Copeland (MP-6-1969-MJC)

C-2827	as above	Ostracoda: leperditiid indet. age: Paleozoic -- too poorly preserved for specific identifica- tion
--------	----------	---



## HALL BEACH

Field No.: Tm-68-63

NTS: 47 AMap: Hall Lake (1:250,000)UTM: zone 17 WNorthing  
7631500Easting  
490100Air photos: A 15747-109,110 (confidential)

Field code for flight line: M 1B

From field notes

Outcrop occurs at mouth of small creek , a few hundred feet NW of the Hall Beach Eskimo settlement.

Limestone, cryptocrystalline , partly dolomitized , parting irregularly 1-3 cm; in part slightly argillaceous (?), greenish weathering; rich in broken fossils. Most abundant Receptaculites probably in situ ; also small brachio-pods, corals, trilobites gastropods, Maclurites, colonial corals.

Fossil collection 1 is from outcrop; 2 drift from raised beach.

Beaches composed of uniform, somewhat rounded limestone rubble.

Polished section Tm-68-63

Limestone , pale yellowish brown, prob. cryptocrystalline, with mud-supported bioclastic debris; extensively replaced by microcrystalline dolomite and transformed into a pseudobracchia (by replacement).

## QUILLIAM BAY , MELVILLE PENINSULA

General statement

In the Quilliam Bay area, there is exposed a stratigraphic section that extends from the Precambrian crystalline basement to the upper Middle or Upper Ordovician. The section, however, is not continuous, but consists of two parts that are separated by a belt of overburden about 2 miles wide. This belt divides the lower part of the Ship Point Formation from the upper part. A photogrammetric investigation showed that the strata are flat-lying and that the covered interval does not contain a measurable thickness of strata. Marker beds, unfortunately, are lacking, and the relationship between the top of section 33 and base of 34 is somewhat uncertain.

The composite section may be summarized as follows:

## Loc. 34

Baillarge Formation.....	94	feet
Ship Point Fm. (upper parts).....	176	"

## Loc. 33

Ship Point Fm. (lower parts).....	111	"
Admiralty Group /and or Ship Point Fm.....	40	"

The Baillarge Formation has the same lithology here as in other parts of the region; it is a fossiliferous cryptocrystalline limestone with dolomitic mottling.

The upper two units of the Ship Point Formation (units 9 and 10 at loc. 34) are comparable to units 4 and 5 at Igloolik. The uppermost unit is recessive, and the second from the top resistant and intensely burrowed. The 140 feet of strata beneath the burrowed unit are slightly different from the typical developments of the Ship Point Formation in that they are somewhat calcareous.

A notable feature of the lower part of the Ship Point Formation at loc. 33 is the presence of sandstone lenses, one of which is several feet thick.

The strata assigned to the "Admiralty Group and/or Ship Point Formation" are characterized by talus of light gray sand and a few feet of outcrop of sandstone. They either represent a sandy basal facies of the Ship Point Formation or equivalents of the Gallery and Turner Cliffs Formations.

Gastropods collected from the Ship Point Formation at loc. 34 were undiagnostic. The Baillarge Formation has not been collected systematically, but there can be no doubt that it has the same age as at Igloolik and Hall Beach.

The first part of these notes deals with the section at loc. 34, the second with the section at loc. 33, and the third with some traverse observations.

## SECTION SOUTH OF QUILLIAM BAY

Field No.: Tm-68-34

NTS: 47 DMap: Igloolik (1:250,000)UTM: zone 17 W

item	Northing	Easting
Baillarge Fm. fossils	7716250	425800
Ship Point Fm.	7716750	426100

Vertical air photos: A 15735-141,142

Field code for flight line: M 8B

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	<u>Baillarge Formation</u>					
19	Ledge of same limestone as below; top of plateau	4	270			
18	Partly covered, but probably same limestone	8	266			
17	Limestone as in unit 14	6	258			
16	Covered, probably limestone as before	6	252			
15	Same limestone as unit 14 ; (cryptocrystalline, fossiliferous, with dolomitic mottling); at 234, 50 foot ledge	12	246		242	
14	Same limestone, parting about 1 cm; cliffs recede	20	234	2824		
13	Limestone as below; parting about 2 cm; <u>Receptaculites</u> in place at 210 and 212	10	214			
12	Same lith. as before; at 187' break in slope and ledge up to about 200 feet wide, talus-covered	17	204			
11	Bluff of limestone, cryptocrystalline, fossiliferous, mottled with dolomite, light gray weathering; trilobite appendages, large orthocone cephalopods, small brachiopods	11	187		185 178	
	<u>Ship Point Formation</u>					
10	Covered with talus, more recessive interval	19	176			
9	Cliff-forming unit (similar to unit 5 of Igloolik section), parting 2- 30 cm, commonly more than 6 cm; dolomite, mostly microcrystalline, partly laminated; in lower part concentric burrows common; partly brecciated and vuggy weathering	18	157		151 141 140	
8	Covered, probably same lithology as unit 7	5	139			
7	Resistant unit; beds about 30 cm thick; 10% is a dolomite, finely microcrystalline, calcareous, parting thickness 30 cm or so; hackly weathering due to internal (intraformational) brecciation (in situ flat-pebble conglom.); interbedded with a similar hackly weathering dolomite that is laminated and darker colored	10.5	134		131 128	

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
6	Cliff-forming unit; parting thickness usually more than 8 cm; in part slightly calcareous and silty (check specs.); about 30% or so is flat-pebble conglomerate, the balance laminated; laminations undulating slightly	5.5	123.5		123	
5	Dolomite; partly laminated; vuggy weathering in part with vugs parallel to stratification; stromatolites 4 inches high about 1/2 foot wide; partly brecciated; cliff-forming unit (slightly calc, and silty to sd.)	1.5	118		118 117	
4	Dolomite, microcrystalline, rel. pure, interbedded with dolomite greenish weathering, argillaceous; dolomite, pure strata are 1 to about 8 cm thick; argillaceous strata a few mm to 1 cm; polygonal mud-cracks on argillaceous dolomite	9.5	116.5		116 110	
3	Covered with talus, recessive weathering	19	107			
2	Dolomite as in unit 1, but higher proportion (perhaps 70-80% of argillaceous dolomite) parting 2-5 mm; slightly calcareous; flat-pebble conglomerate at 87' is calc.	20	88		87 86 85	
1	Excellent exposure of dolomite, commonly laminated, parting commonly 2-3 cm; partings caused by greenish argillaceous layers that commonly have black organic wisps ("furoids"); some beds with trace fossils; flat-pebble conglomerates common; some strata are slightly calcareous; gastropods at two levels; a little pyrite	68	68	2823 2822	67 15 14 11	
	Base of section is base of exposure; ties in <u>approximately</u> with section at loc. 33					

Report by B.S. Norford (O-S 6 BSN 1969)

GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2824	Im-68-34-233 to 234 Baillarge Formation (233 to 234 ') unit 14 of section	<u>Maclurites</u> sp. age: Middle or Late Ordovician
C-2823	Im-68-67 Ship Point Form. (67 ft.) unit 1 of section	indeterminate gastropod age: Phanerozoic
C-2822	Im-68-34-14 Ship Point Form. (14 ft.) unit 1 of section	indeterminate gastropod age: Phanerozoic

Description of rock specimensBaillarge Fm.

- 242      Polished section  
 (242\*)      Yellowish gray; finely comminuted fossil debris  
 unit 15      (shells) in matrix of cryptocrystalline calcite; tubes  
              enriched in microcrystalline dolomite
- 185      Polished section  
 (185\*)      Limestone, cryptocrystalline, pale yellowish brown, probably  
 unit 11      with scattered dolomite; with mud-supported skeletal debris  
              (brachiopod shells, echinoderm columnals, ostracods,  
              trilobite appendages, etc.) ; scattered patches with  
              irregular outlines, 2mm to 17 mm across, yellowish gray,  
              enriched in microcrystalline dolomite
- 178      Polished section  
 (178\*)      Similar to 185; dolomitic tube resembles burrow.  
 unit 11

Ship Point Fm.

- 151      Hand specimen  
 (151\*)      Greenish gray to yellowish gray weathering, parting 1cm; vague  
 unit 9      internal lamination; appears to be dolomite, finely microcrystalline,  
              slightly calcareous and argillaceous (?; x-ray and thin section reqd.)  
              ; some pyrite cubes, medium crystalline
- 141      Hand specimen  
 (141\*)      Parting 4.5 cm; greenish gray to yellowish gray weathering;  
 unit 9      burrowed
- Polished section  
              Light olive gray, bioturbated and containing burrows with  
              about 1 cm diameter; pyrite, medium crystalline and finer  
              occurs as isolated crystals and in small stringers that  
              may be replacements
- Thin section  
              Mainly dolomite, coarsely microcrystalline; some patches  
              clear, other cloudy; a few per cent of quartz and minor feldspar  
              , silt to fine sand grade, scattered, euhedral to subrounded.
- 140      Hand specimen  
 (140\*)      Yellowish gray to grayish orange weathering; burrowed, brecciated,  
 unit 9      vuggy weathering; vugs up to several mm in diameter.
- Polished section  
              Colors in part the same as in hand specimen, in part pale  
              red (oxidized) ; some poorly preserved shelly debris  
              ; trilobites, etc. (?); dolomite appears to be mainly microcrystal-  
              line.



131 Hand specimen and polished section

(131') Parting thickness not apparent in hand spec.; pale olive, pale  
unit 7 olive to pale greenish yellow weathering; cracks, less than  
1mm wide filled with iron sulfide (pyrite or marcasite ?);  
appears to be largely dolomite, finely microcrystalline, calcareous;  
green color due to slight proportion of clay ?

128 Hand specimen

(128') Parting 2cm; grayish yellow green; surface may represent  
unit 7 a fine flat-pebble conglomerate (?)

Polished section

Pale olive; very fine, in part discontinuous laminations

Thin section

Mixture of cryptocrystalline to very finely microcrystalline calcite  
and finely microcrystalline dolomite with probably less than 2% of  
quartz (silt and very fine grained sand). Laminations differ in  
content of dolomite and of submicroscopic impurities.

123 Hand spec.

(123') Parting 10 cm; yellowish gray weathering  
unit 6

Polished section

internally laminated; lamination in part broken up, probably  
due to burrowing; rock appears to be mixture of crypto- to finely  
microcrystalline calcite and finely microcrystalline dolomite

118 Hand spec.

(117.5') Yellowish gray weathering ; parting thickness 5 cm; laminated, laminae  
unit 5 and very thin beds separated by fine vugs

Polished section

Grayish orange; laminations partly regular, partly undulating  
and broken; layer 1-2 mm thick separated by fine vugs; composed  
mainly of dolomite microcrystalline; a little quartz sand in vugs.

117 Hand specimen

(117') Deeply weathered; brecciated internal structure; frags up to 3  
unit 5 cm, tilted up to vertical ; different sizes and  
shapes

Polished section

Rock is entirely brecciated

Thin section

Mainly dolomite, microcrystalline, probably with interstitial  
calcite; some quartz silt and possibly a little vein quartz; quartz  
appears to have been replaced in part by carbonate

116 Hand specimen

(116') Parting thickness 3.5 cm; yellowish gray to pale orange weathering;  
unit 4 thin-bedded to laminated;

Polished section

Light olive gray strata and laminae, from less than 1 mm to 7 mm thick alternate with yellowish gray strata and laminae, one to a few mm thick, that are laminated internally; there is some interfingering between the two

Thin section

Composed of:

- cryptocrystalline calcite
- microcrystalline dolomite
- quartz (silt and very fine grained sand)
- a little feldspar, inc. plagioclase
- argillaceous matter

light colored layers richer in dolomite and quartz, darker in calcite and argillaceous matter

110

(110°)

unit 4

Hand specimen

Parting 5 cm; yellowish gray to pale olive; upper surface shows polygonal mud-cracks; polygons about 1-2cm across

Polished section

Pale olive to light olive gray; internal structure vague; probably some bioturbation

Thin section

dolomite

Finely microcrystalline, probably with interstitial calcite and less than one per cent quartz silt

87

(87°)

unit 2

Hand specimen

Parting 4 cm; yellowish gray weathering; flat pebble conglomerate; vuggy weathering

Polished section

Fragments 1-2 mm thick, up to 2.5 cm long; seem to be composed of mixture of cryptocrystalline calcite and finely microcrystalline dolomite; vugs filled with clear calcite and probably some dolomite (x-ray and thin section reqd.). Lamination extremely delicate.

86

(86°)

unit 2

Hand specimen

Parting about 1 cm; yellowish gray to pale olive; surface appears to represent in situ flat-pebble conglomerate or mud-cracked stratum.

Polished section

Yellowish gray to pale olive; seems to be mixture of cryptocrystalline calcite and finely microcrystalline dolomite with small flakes of unidentified matter (micaceous mineral ?)

85

(85°)

unit 2

Polished section

yellowish gray to light olive gray; cross-section of ripple marks; set of cross-laminae about 2 cm thick; shows dune-like foreset; base is intraformational breccia; laminae are alternately yellowish gray and olive; some pyrite

Thin section

Microcrystalline dolomite, cryptocrystalline calcite, quartz and minor feldspar (silt to very fine grained sand), pyrite, trace amounts of muscovite and possibly chlorite or glauconite (the blue-green material could be carborundum intruded during the grinding). Laminæ differ in relative proportion of quartz.

67

(67')

unit 1

Hand spec.

Parting 3 cm; yellowish gray

Polished section

flat pebbles and gastropod debris; crystals of dolomite, in the order of 0.1mm long; may be pseudomorphous after gypsum.

Thin section

Mainly microcrystalline dolomite, less calcite; some laminæ rich in quartz silt; gastropod fragments; there are some indications of pseudomorphism (after gypsum?)

15

(15')

unit 1

Hand specimen

Parting 1 cm; yellowish gray to light olive gray; streaks of organic matter, black to rusty, about a few mm to 1.2 cm long, and 2mm or less wide on surface;

Polished section

Faint lamination, slightly undulating; finer dolomite interlaminated with thin lamina of a little coarser dolomite

Thin section

Most of the rock is fine to coarse microcrystalline; one lamina very fine to fine crystalline; no appreciable calcite.

14

(14')

unit 1

Hand specimen

Parting 7 cm; shaly break at base and top; large nodule of pyrite, 1.5 cm across; top weathering greenish gray to light olive gray; sides yellowish gray

Polished section

Flat pebble conglomerate, broken more or less in situ; most flat-pebbles are laminated; most parallel with bedding, but some inclined; weathering with some vugs; composed mainly of microcrystalline dolomite with interstitial calcite; also some pyrite

11

(11')

unit 1

Hand specimen

Parting 2.2 cm; yellowish gray weathering

Polished section

Yellowish gray to pale yellowish brown; dolomite, mostly very finely microcrystalline; a few streaks of pyrite; dolomite may be cemented in part by calcite

## QUILLIAM BAY SECTION

Field No.: Tm-68-33

NTS: 47 DMap: Igloolik (1:250,000)UTM: zone 17 W

item	Northing	Easting
centre of section	7710000	428200

Vertical air photos: A 15735-141,142

Field code for flight line: M 8B

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
14	Dolomite, sandy, partly cross-laminated, more grayish weathering than strata below 140 ft.; parting 1 to 10 cm; stratification poorer than in strata below 140 ft.	2.5	151		150 149	
13	Lens of sandstone; weathering in little nodules; exposure only 5' wide; probably local lens	2.5	1485		148	
12	Cliff-forming dolomite with interbedded sandstone; sandy units 1 mm to 15 cm thick, partly cross-laminated; some cross-stratification and some flat-pebble conglomerate	6	146		144 142 141	
11	Gentle slope, covered with dolomite; also some dolomitic and sandy flat-pebble conglomerate	20	140			
10	Cliff-forming dolomite, parting about 1-3 cm (silty; see spec. descript.)	6	120		117	
9	Ledge about 102 feet wide; no outcrop, but covered with dolomite, mostly parting about 1 cm	12	114			
8	Cliff-forming unit of dolomite, relatively pure; lower part parting thickness about 12 cm., upper part 1 cm	5	102		98	
7	Talus of dolomite, parting 3mm to 1 cm	14	97		85	
6	Talus of dolomite, parting 3cm to millimeters	19	83		80 72	
5	Recessive ledge, covered with talus of dolomite	8	64			
4	Slope covered with vegetation and talus from above; no sand in the talus	16	56			
	<u>Admiralty Group and/or Ship Point Formation</u>					
3	Slope with light gray sand; probably derived from underlying bedrock	10	40			
2	Outcrop of sandstone; horizontal and cross-lamination at high angles; sets about 15 cm thick	3	30		30 29	

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
1	<p>Slope covered with light gray quartz sand</p> <p>Base of section is vegetation-covered slope that corresponds approximately with top of Precambrian crystalline basement exposed a few hundred feet to the south</p>	27	27			

150      Hand specimen

(150') Parting 3.2 cm; grayish orange weathering; very pale orange  
unit 14 on fresh surface;  
composed of dol. microcrystalline to fine crystalline, mainly very  
fine to fine crystalline

149      Hand specimen

(149') Parting 13 cm; grayish orange weathering; very pale orange mostly  
unit 14 on fresh surface, but lower part is pale yellowish brown;  
profile is strongly ribbed; and small-scale planar cross-bedding  
with intermediate and high angles is vaguely apparent;  
seems to be composed mainly of fine to very fine crystalline dolomite  
with minor amounts of quartz and a little calcite (thin section  
reqd.)  
lower part contains lens of quartz, about 5 mm long, 3mm thick, rich  
in very fine grained quartz sand

(thin section reqd.)

148      Hand specimen

(148') Sandstone, friable, light gray weathering, yellowish gray on fresh  
unit 13 surface; medium grained, moderately poorly sorted; partly rounded  
, partly with overgrowths

144      Hand specimen

(144') Grayish orange weathering; very pale orange fresh  
unit 12

Thin section

Dolomite, microcrystalline to medium crystalline;  
minor amounts of floating quartz sand, very fine to fine grained  
and silt, and a little feldspar

142      Hand specimen

(142') Parting about 11 cm  
unit 12 Grayish orange weathering dolomite with interlaminated and interbedded  
dark yellowish brown weathering layers of dolomitic sandstone, very  
fine grained to siltstone;  
some sandy layers lens out; some show cross-lamination at low angles;  
surfaces slightly curved in section;  
sandy layers from 1 to 15 mm thick, dolomitic layers up to 2 cm  
thick; sandstone forms about 20% of specimen

Polished section

very pale orange to grayish orange to pale yellowish brown;  
shows delicate lamination, cross-lamination, and lensing

Thin section

Dolomite is microcrystalline to predominantly very fine crystalline;  
quartz is mostly very fine grained; partly rounded to subrounded;  
partly with euhedral overgrowths; minor amounts of microcline

141      Hand specimen

(141') Parting thickness 6 cm; grayish orange to pale yellowish brown  
unit 12 weathering; small-scale cross-stratification at high angles with  
curved surface, vaguely apparent; rusty weathering streaks.

Polished section

Yellowish gray; vague and somewhat discontinuous internal lami-  
nation in parts of specimen; streaks of pyrite strongly weathered to  
limonite

Thin section

Sandstone, fine grained; composed mainly of quartz with a little (1 % or so) feldspar (mostly microcline) and interstitial microcrystalline dolomite and (?) finely microcrystalline or cryptocrystalline calcite; well sorted; quartz is rounded beneath overgrowths in optical continuity; cemented partly by quartz, partly by carbonates.

117 Hand specimen

(117') Parting thickness 2.5 cm; yellowish gray to pale orange; remnants of a layer of quartz siltstone on upper (or lower ?) surface

Polished section

Pale yellowish brown; in part thinly laminated

Thin section

Estimate: dolomite, microcrystalline abt. 60%; quartz (mostly silt, some very fine grained sand) abt. 38%; minor feldspar, and probably a little cryptocrystalline calcite; dolomite and quartz are mixed; quartz rather angular due to overgrowths

98 Hand specimen

(98') Grayish orange weathering; parting 4.5 cm  
unit 8

Polished section

Pale yellowish brown; faint lamination; seems to be mainly dolomite, microcrystalline; perhaps with some calcite and quartz silt; streaks of pyrite (or marcasite) (thin sect. and x-ray reqd.)

85 Hand specimen

(85') Parting 5-6 mm; grayish orange weathering  
unit 7

Polished section

Pale yellowish brown to grayish orange; faint lamination

Thin section

Almost pure microcrystalline dolomite

80 Hand specimen

(80') Parting 5-7 mm; grayish orange weathering  
unit 6

Polished section

Pale olive, faintly laminated; seems to be composed largely of dolomite, microcrystalline

72 Hand specimen

(72') Parting 2 cm; weathering grayish orange with shade of pale olive  
unit 6

Polished section

Yellowish gray with shade of pale olive; some vague, discontinuous lamination

Thin section

Mostly dolomite, microcrystalline; one grain of chert, 0.2 mm



Ship Point Formation and/or Admiralty Group

- 30      Hand specimen  
 (30°)      Sandstone, yellowish gray, yellowish gray weathering; faintly  
 unit 2      cross-laminated, lamination at low angles; largely quartz;  
             medium grained, moderately well sorted; grains partly rounded,  
             partly with overgrowths (crystal faces) ; poorly cemented, friable  
             ;dolomite not clearly recognized, but may be present  
             (thin section reqd.)
- 29      Hand specimen  
 (29°)      Specimen about 3 cm thick; very light gray to yellowish gray;  
 unit 2      sandstone, distinctly cross-laminated on small scale (ripple mark)  
             ; foresets curved and relatively steeply inclined;  
             composed largely of quartz; medium grained, rounded but with  
             some overgrowths, moderately well sorted, poorly cemented,  
             friable

## TRAVERSE NOTES

Loc. Tm-68-55aUTM: zone 17 WNorthing  
7710400Easting  
402240Air photos: A 15735-141,142

Field code for flight line: M 78

"Dip here about 5° SW; this is unusual and suggestive of faulting.

Dolomite, microcrystalline, partly sandy and calcareous; parting 2-5 cm;  
some flat-pebble conglomerate; trace fossils; gastropods"

Report by B.S. Norford ( O-S 6 BSN 1969)

C-2851

indeterminate high spired gastropod  
trilobite fragment  
age: Palaeozoic

Loc. Tm-68-60Air photo: A 15736-154

Field code of flight line: M-10 B

Checked the whitish deposits overlying the Precambrian; they are Quaternary carbonate mud, and there is no Paleozoic cover in this region.

Loc. Tm-68-61Air photo: A 15735-145

Field code of flight line: M-88

Was considered in the field as a highly dolomitized basal stratum of the Baillarge Formation, but analysis of thin section indicates Ship Point Fm.

Thin section: dolomite, microcrystalline to fine crystalline; trace amounts of "floating" quartz (silt).

IGLOOLIK ISLAND

Field Nos.: Tm-68- 1,2,3,4,5,6,7  
37, 37b  
50  
51  
56a,b  
62

NTS: 47 D

Map: Igloolik (1:250,000)

UTM: zone 17 W

Most important stations

No.	item	Northing	Easting
Tm-68-1	top of Igloolik section	769300	467900
Tm-68-37	base of upper part of comp. section	7694200	465400
Tm68-5	conodonts, Ship Point Fm.	7694600	468200
Tm-68-51	invertebrates, Baillarge Fm	7692700	467400

Vertical air photos

Igloolik and W-part of island: A 15747-37,38  
Field code for flight line: M 4b , also M2b, M3b, M 4b

Summary

Igloolik Island has a relief of about 170 feet .It is underlain mainly by the Ship Point Formation ,but locally also by Ordovician strata of the Baillarge Formation ,which <sup>are</sup> best exposed in a down-dropped fault block in the western part of the island.

Two stratigraphic sections have been measured and correlated, using a cliff-forming unit near the top of the Ship Point Formation (unit 5) as a marker. That unit forms a prominent ledge directly above the settlement of Igloolik, and also underlies the grave yard ,which is located on a butte

northeast of the settlement. Those parts of the Ship Point Formation underlying the marker are not well exposed in stratigraphic section, but are represented by abundant talus. They consist mainly of microcrystalline dolomite, which is partly silty and sandy. Flat-pebble conglomerate, and cross-bedded, sandy and "oolitic" dolomite (see unit 2 of Igloolik section and station 56b) occur locally. Fossils have not been found in that part of the section.

The marker (unit 5) is an intensely burrowed and disturbed silty and sandy dolomite that locally contains brachiopods, echinoderm columnals, etc. and has yielded a diagnostic conodont fauna. It is overlain by more recessive dolomite which forms the top of the Ship Point Formation.

There can be little doubt that the Ship Point Formation is separated from the Baillarge Formation by a disconformity, although the contact itself is rarely exposed. It is interesting to note that quartz <sup>co</sup> pebbles up to 8 cm in diameter were found at locality 50 in strata that appeared to be at the very top of the Ship Point Formation. The pebbles would seem to be related to the disconformity.

The Baillarge Formation, as elsewhere, consists of cryptocrystalline limestone with mud-supported fossils, and <sup>with</sup> tubes and stringers of dolomite.

Unit 5 of the Ship Point has yielded a conodont fauna of probable early Middle Ordovician (Chazyen ?) age (see C-2620). A late Middle Ordovician fauna occurs in the Baillarge Formation (C-2847).

Stratigraphic section at loc. 37

Note: unit numbers correlate with Igloolik section (unit 5)

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section is top of land surface					
	<u>Baillarge Formation</u>					
11	Talus of limestone, dolomitic; light gray weathering	11	58			
10	Limestone, pale yellowish brown, light gray weathering, parting 1-2 cm, mottled with dolomite, fossiliferous; fragments of brachiopods	4	47			
9	Covered with talus from above	14.5	43		37?	
8	Limestone, cryptocrystalline (?)dolomitic; fossiliferous, parting one to a few cm and more regularly than unit 7; contact with 7, however is transitional and laterally at different heights	1.5	28.5		27.5	
7	Limestone, dolomitic, poorly bedded, parting 1-15 cm	2	27		25.5	
	<u>Ship Point Formation</u>					
6	Gentle, talus-covered slope; apparently underlain by pale olive, finely microcrystalline dolomite, slightly argillaceous (thin section and x-ray needed)	10	25		21	
5	Dolomite, microcrystalline, slightly silty and sandy; intensely burrowed and bioturbated; ledgeforming	11	15		15, 11	
4	Dolomite, microcrystalline, light greenish gray, probably argillaceous, regular parting 1-2 cm, recessive weathering	4	4			

Iqloolik Section

Comprises stations Im-68-1 to 7

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
5	Dolomite, cliff-forming, parting about 1cm to 15 cm., intensely burrowed and bioturbated; sparse fauna, mainly of brachiopods and echinoderms, also bryozoans; slightly silty and sandy; microcrystalline to very fine crystalline	7	144	2806 2807 2808 2620	1, 2, 3, 5, 6	
4	Steep slope, covered with talus from unit 5	18	137			
3	Gentle slope, covered with vegetation	15	119			
2	Dolomite, sandy, cross-laminated, with coated grains, moderately resistant with a few centimeters of dolomite, laminated, at the top, recessive	8	104		7	
1	Gentle slope, covered with vegetation; base of section is sea level	96	96			

Report by M.J.Copeland (MP-6-1969-MJC)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2847	Im-68-51	Ostracoda: leperditid, possibly <u>Eoleperditia</u> ?  age: too poorly preserved for specific identification -- Paleozoic.

Report by B.S.Norford (O-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2847	Tm-68-51 Baillarge Formation (not from strat. section)	echinoderm debris bryozoan ostracod straight cephalopod <u>Probillingsites</u> sp. ? <u>Maclurites</u> sp. <u>Receptaculites</u> sp. <u>Grewingia</u> sp. <u>Glyptorthis</u> sp.. <u>Hesperorthis</u> sp. <u>Rhynchotrema</u> sp. <u>Thaerodonta</u> sp. ? <u>Calymene</u> sp. <u>Illaenus</u> cf. <u>I. lacertus</u> Whittington age: late Middle Ordovician
C-2806	<u>Ship Point Fm</u> <u>Iqloolik Section</u> unit 5 Tm-68-3-2	echinoderm and bryozoan fragments orthid brachiopod age: Palaeozoic, probably later than Early Ordovician
C-2807	Tm-68-3-3	echinoderm, bryozoan and trilobite fragments strophomenid brachiopod age: probably Middle or Late Ordovician
C-2808	Tm-68-5	echinoderm debris orthid brachiopod age: Palaeozoic
C-2828	Tm-68-37b <u>Ship Point Fm.</u> unit 5	orthid brachiopod age: Palaeozoic

Report on conodonts by C.R. Barnes (7-70-CRB)

GSC Loc. No.: C-2620

Field No.: Im-68-5

Locality: Igloolik section

Unit: Ship Point Formation  
unit 5 of measured section

The 1490 gm sample yielded the following conodonts:

<u>Species</u>	<u>No. of specimens</u>
<u>Belodella</u> n. sp. 1	23
<u>B.</u> n. sp. 2	50
<u>Chirognathus</u> spp.	7
<u>Chosonodina</u> n. sp.	3
<u>Dichognathus</u> sp. cf. <u>D. brevis</u> Branson and Mehl	9
<u>Drepanodus homocurvatus</u> Lindström	77
<u>D. suberectus</u>	16
<u>Erismodus</u> sp.	3
<u>Multioistodus</u> ? sp.	13
<u>O. inclinatus</u>	11
<u>Oistodus</u> sp. aff. <u>O. robustus</u> Bergström	43
<u>O.</u> n. sp.	6
<u>Oulodus</u> n. sp.	8
<u>Periodon</u> n. sp.	85
<u>Polycaulodus</u> sp.	3
<u>Scolopodus</u> sp.	2
<u>Trichonodella</u> ? sp.	26
Indet. fibrous conodonts	27
	412

Remarks:

The fauna is composed of elements that are poorly known or are new. Three main groups are present:

1. Fibrous and hyaline elements that suggest a Chazyan age.
2. The Drepanodus homocurvatus, D. suberectus, Oistodus inclinatus natural association. This ranges throughout most of the Middle and Upper Ordovician.
3. Belodella n. sp. 1, B. n. sp. 2, Periodon n. sp., and Oistodus sp. aff. O. robustus. These likely comprise part, or all, of a natural association. Belodella is extremely rare in the Ordovician, likely occurring in a limited paleotectonic belt (Barnes, Rexroad, and Miller, Geol. Soc. Amer. Mem., in preparation).

The presence of the fibrous conodonts indicates ~~in~~ Middle Ordovician age and the overall character of the remaining elements suggests an early Middle Ordovician age, possibly Chazyan.

Dept. of Earth Sciences  
University of Waterloo  
Waterloo, Ontario  
November 5, 1970

C. R. Barnes





Baillarge Fm

37a-37\*  
(37')  
unit 9      Hand specimen and polished section  
Yellowish gray weathering; parting not apparent;  
pale yellowish brown on polished surface with irregular blobs  
and stringers of grayish orange

Thin section  
Limestone cryptocrystalline, fossiliferous, fossils mud-supported;  
with tubes, stringers, etc. rich in microcrystalline to finely cry-  
stalline dolomite

37-27.5  
(27.5')  
unit 8      Polished section  
Greenish gray with finely comminuted fossil hash, mainly of trilobites.  
Fossils mud-supported. Appears to be cryptocrystalline to finely micro-  
crystalline limestone with scattered microcrystalline dolomite  
rhombs (thin section required); some microcrystalline pyrite.

37-25.5  
(25.5')  
unit 7      Polished section  
Yellowish gray to light greenish gray; mottled texture, very finely  
comminuted skeletal debris; appears to be a cryptocrystalline  
(or very finely microcrystalline) limestone with scattered microcro-  
crystalline to fine crystalline dolomite rhombs, and probably  
silt - to fine sand-sized quartz; (thin-section required)

Ship Point Formation

37-21  
(21')  
unit 6      Hand specimen and polished section  
Parting 1.5 cm; pale olive to yellowish gray weathering;  
pale olive weathering

37-15  
(15')  
unit 5      Polished section  
Very pale orange to pale yellowish brown; shows circular structures  
that appear to be cross-sections of borings; also longitudinal  
sections

Thin section  
Dolomite, microcrystalline to very fine crystalline with minor  
amounts of scattered silt and very fine sand of quartz.

37-11  
(11')  
unit 5      Hand spec. and polished section  
Intensely burrowed and bioturbated, similar to spec. 37-15;  
some fragments have grayish red purple, oxidized rims.

Thin section  
Dolomite, microcrystalline to very finely crystalline; small amounts  
of scattered silt and very fine sand of quartz; some patches are slightly  
darker than others due to submicroscopic impurities; oxidized rims are  
opaque.

---

\* Not certain if drift or outcrop; disregard in final report

Specimens from unit 5

The following is a generalized summary, based on more than 20 polished section and 10 thin sections.

Hand specimens

Weather in shades of yellowish gray and are about 1.5 to 5 cm in parting thickness. Spec. 1-4 shows a network of radiating burrows in the bedding plane with the burrows about 0.5 cm in diameter. Spec. 1-2 shows similar burrows, which, however, radiate from a single centre and are thinner (2mm). The burrows are laterally segmented by shrinkage cracks, and the segments about 12 mm long.

Polished sections

Characterized by cross-sections of burrows and highly bioturbated textures. Shelly material (mainly brachiopods) is present in spec. 1-6. Bioclastic and other fragments in that specimen have partly red, oxidized rims.

Thin sections

Composed primarily of microcrystalline to very fine crystalline, euhedral dolomite and minor amounts (a few per cent or less) of silt and very fine grained sand composed mainly of quartz with a little feldspar (some microcline). Texture is characterized by irregular patches that are slightly darker (due to submicroscopic organic (?) matter) and finer in grain size and others that are clearer and slightly coarser in grain size. Echinoderm columnals are present in some thin sections.

Specimens from unit 27-1 Hand spec. and polished section

unit 2, Yellowish gray to light brown weathering; small-scale cross-bedding; lower sets of cross-beds from a few mm to about 2 cm thick; angles up to middle about 20°; planar to slightly curved. part

Thin section

Several types of grains are set in matrix of cryptocrystalline calcite with scattered microcrystalline (always euhedral) dolomite:

- (1) Coated grains (most abundant). Generally have a nucleus of cryptocrystalline calcite or calcite plus dolomite, and rarely of quartz. Nucleus is surrounded by one or more layers of cryptocrystalline calcite. Shapes are variable; commonly flat or flat-ellipsoidal; also curved ellipsoidal, round, equiaxial, or irregular.
- (2) Quartz (5-10% estim.) with very minor feldspar (in part microcline). Fine to medium grained and subrounded.
- (3) Ellipsoidal intraclasts (?) of cryptocrystalline limestone (rare).
- (4) Unidentified skeletal matter (rare).

7-3 Hand spec. or polished section

unit 2, Yellowish gray weathering; parting about 1.8 cm. Thinly laminated; top lamination vague and slightly undulating.

Thin section

Mixture of cryptocrystalline calcite, finely microcrystalline dolomite, less quartz, and a little feldspar. Quartz is mainly silt and to lesser extent very fine grained sand. Lamination locally broken and distorted.

Specimens from other localitiesBaillarge Formation

62

Hand specimen

Parting 3 cm; weathering yellowish gray

Polished section

light olive gray; contains finely comminuted fossil hash and probably some intraclasts; some fragments have very thin purplish, oxidized rims

Thin section

Limestone, cryptocrystalline, fossiliferous, fossils mud-supported; with "tubes" containing much microcrystalline dolomite; echinoderm columnals, ostracods, trilobite appendages, etc.

Ship Point Formation37b  
unit 5Hand specimen, polished section

Yellowish gray weathering; parting 2.5 cm; poorly preserved, small brachiopods on bedding plane; polished cross-section shows burrows and is bioturbated

Thin section

Dolomite, mainly microcrystalline

56a

Hand specimen

Pale orange to yellowish gray weathering; parting thickness about 6 cm

Polished section

Very pale orange and pale yellowish brown; very thin laminations are folded (semicircular; diameter 2 cm) and also brecciated with fragments partly vertical. Semicircular structure could be a disturbed stromatolite

Thin section

Laminations are alternately finely microcrystalline (and possibly calcareous) and coarsely microcrystalline to fine crystalline dolomite; minor amounts of poorly sorted floating quartz, medium to coarse grained, rounded; an intraclast of what appears to be cryptocrystalline limestone

56b

Hand specimen

Parting 5cm; yellowish gray weathering; flat-pebble conglomerate; pebbles are up to 6 cm in diameter, poorly sorted

Polished section

Flat-pebbles from 2mm to 2m in length; parallel with bedding or slightly inclined mostly, but some are very steeply inclined; most have pale to grayish red purple oxidized rims, less than 1 mm thick. Fragments are pale yellowish brown and set in yellowish gray matrix composed mainly of quartz. Both fragments and matrix slightly calcareous.

Thin section

Fragments are dolomite, very fine crystalline, with a peculiar, felted texture, that seems anomalous (replacement of ?); matrix mainly quartz, silt to fine grained sand with some dolomite.

<sup>A</sup>  
NEERGARD LAKE  
<sup>A</sup>

Field No: Tm-68-59

NTS: 47 E

Map: Erichsen Lake (1:250,000)

UTM: zone 17

item	Northing	Easting
fossil loc.	7798700	528500

Vertical air photos: A-16088-70,71

Field code for flight line: 222

Field notes

The butte -like outcrop area is underlain by the Ship Point Formation characterized by dolomite . Beaches are raised 5-6 feet above the surface of the bedrock weathered in place. They are composed of angular talus of dolomite, have a gentle sea-ward slope, and a steeper back-slopes.

The main purpose of the landing was to check if there is any outcrop or sign of the Admiralty Group in the flats adjacent to the butte. But they are covered with talus of dolomite and many Precambrian boulders only, and neither outcrop of the Ship Point Formation, nor talus was seen.

Report by B.S.Norford ( D-S 6 BSN 1969)		
GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2852	Tm-68-57 Ship Point Fm.	indeterminate high spired gastropod straight cephalopod  age: Palaeozoic

## ERICHSEN LAKE,

Field No.: Tm-68-58 , 59

NTS: 47 EMap: Erichsen LakeUTM: zone 17 W

item	Northing	Easting
58	7835700	496750
59	7834600	494300

Vertical air photos: A -16107- 92,93

Field code for flight line: 218b

This region was visited in order to determine whether the Admiralty Group is present. The Turner Cliffs and Gallery Formations were not recognized here during the rather hasty 1963 reconnaissance, but information from the adjacent Steensby Inlet area suggested that the Gallery and/or Turner Cliffs Formations might be present. The only criterion for distinguishing between the Turner Cliffs and Ship Point Formations is the presence of extensive quartz sandstones. Such sandstone is exposed at locality 59, and the composition of the soil suggests that the Admiralty Group there may be as much as 83 feet thick. The sandstones, however, are not exposed at section 58. Comparison of section 58 with 59 suggests that the upper contact of the Admiralty Group in the former may lie within, or at the top of unit 5.

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section is near top of butte					
	<u>Ship Point and (?) Turner Cliffs Formations</u>					
10	Cliffs of dolomite (in part silty and glauconitic --see spec. 203)	4	203		203	
9	Covered, mostly with talus of dolomite; pure, sandy, silty, stromatolitic, etc.	43	199			
8	Talus and outcrop of dolomite sandy, and sandstone dolomitic ( and with oolites or coated grains --see spec. 155); cross-laminated; some intraformational flat-pebble conglomerate	6	156		155	
7	Covered with vegetation and talus	30	150			
6	Talus and some outcrop of dolomite, sandy, stromatolitic with some dolomitic and sandy flat-pebble conglomerate, parting 2-5 cm	6	120		114	
5	Covered with vegetation	47	114			
4	Talus and some outcrop of sandstone, quartzose and dolomitic, glauconitic, parting 1-3 cm; some small-scale cross-lamination at high angles	8	67		67	
3	Covered with vegetation	34	59			
2	Talus, probably in place, of dolomite, silty, parting 1 cm	9	25		25	
1	Steep slope; covered with vegetation and talus	16	16			
	Base of section are vegetation-covered flats, probably underlain by Precambrian					

- 203  
(203°)  
unit 10
- Hand specimen  
Yellowish gray weathering; parting 3 cm
- Polished section  
Yellowish gray to light olive gray; vaguely defined thin lam. in part of specimen
- Thin section  
Dolomite, microcrystalline to very fine crystalline, silty; quartz silt comprises perhaps 40% of some laminae. Also present: muscovite, glauconite (x-ray reqd.)
- 155  
(155°)  
unit 8
- Hand specimen  
Parting 4.5 cm; lichen-covered
- Polished section  
Grayish orange to pale yellowish brown with shade of pink; laminated to thinly laminated, horizontal to slightly inclined, planar;  
lamination is crude; about 50% of rock is quartz, and 50% coated grains of calcite and dolomite and carbonate matrix.
- Thin section  
Quartz sand : very fine to coarse grained, poorly sorted, mostly rounded;  
Coated grains: round to ellipsoidal, fine to coarse, mostly medium sand grade; nucleus is dark and seems to consist of both finely microcrystalline dolomite and cryptocrystalline calcite; some have a narrow, slightly darker, outer rim; then comes a rim of considerably coarser, microcrystalline dolomite
- 114  
(114.9)  
unit 6
- Hand specimen and polished section  
Stromatolitic dolomite;  
stromatolites club-shaped, generally discreet, but laterally linked at several levels; up to 8 cm wide at top; up to 5.5 cm high, but relief on individual laminae generally less than 1 cm; built of alternating dolomitic laminae and interlaminated sandy layers; interstices between clubs are predominantly sandy
- Thin section  
Dolomite is microcrystalline to very fine crystalline; quartz sand mostly fine grained, moderately well sorted; partly rounded, partly subrounded to angular because of overgrowths; minor amounts of microcline present
- 91  
(91°)  
unit 5
- Hand specimen  
Grayish orange weathering; parting 2.2 cm; vaguely laminated
- Thin section  
Mainly dolomite; mostly microcrystalline, but up to medium crystalline; perhaps 25% of quartz, silt to fine grained sand with minor feldspar;  
some echinoderm columnals ?

67  
(67')  
unit 4

Hand specimen

Parting 5 cm; massive; lichen -covered

Polished section

greenish gray--orange gray--light brownish gray;  
sandstone, quartzose, dolomitic, and glauconitic;  
quartz fine to coarse-grained, mostly medium-grained  
; poorly sorted; mostly rounded to  
"glauconite": occurs mostly as grains comparable, or slightly  
coarser than the quartz, but also as wavy wisps;  
matrix is carbonate-- apparently mainly microcrystalline  
dolomite and perhaps a little calcite  
(Thin section and x-ray reqd.)

25  
(25')  
unit 2

Hand specimen

Parting 1 cm ; light greenish gray weathering

Polished section

Light olive gray; very vague thin lamination

Thin section

Dolomite, microcrystalline to very fine crystalline; trace amounts  
of quartz silt



Locality 59

West-side of creek

Unit No.	Lithology, profile, etc.	Thickness in feet		Fossil coll.	Lithol. spec.	Analyses
		Unit	Total			
	Top of section: extensive banks					
3	Steep slope, covered with light gray sand	34	40			
2	Sandstone, light gray, quartzose, cross-laminated (note: spec. descr. says yellowish gray)	2	6		4-6	
1	Slope, covered with light gray sand	4	4			
	Base of section: creek bed					

4-6      Hand specimen

(4-6')  
unit 2      Grayish yellow, yellowish gray weathering (with dark lichen cover); sandstone, quartzose, medium-grained, moderately well sorted, friable; massive or extremely vaguely laminated; quartz sand is rounded to subangular

East side of creek:

Light gray sand covers the slopes from the creek bottom up to 83 feet; but there is no outcrop.

For air photo interpretation: the terrain covered with the sand forms rounded hills with light gray tone that have polygonal cracks.

## BROEDUR PENINSULA

Field No: Tm-68-9,10

NTS: 48 CMap: Arctic Bay (1:250,000)UTM: zone 16 X

item	Northing	Easting
Tm-68-9	8162000	550700
-10	8162300	550800

Vertical air photos:

A-16308-57,58,59

field code for flight line: 18

Notes

The two localities are both on the steep, SW-facing cliffs of the coast of Brodeur Peninsula and form part of the composite section of the Baillarge and Cape Crauford Formations described in Geol. Surv., Can., Bull. 157, pp. 33-35.

At both localities short sections were measured, searched for macrofossils, and sampled for microfossils. The base of both sections is formed by the top of the recessive weathering interval that has yielded the relatively rich Arctic Ordovician assemblage Ic (see Fig. 14 and Table I, pp. 33-35 op. cit.). The fossil identifications received indicate that the lower 108 feet of the interval between faunas Ic and II still <sup>is</sup> Eden-Maysville in age.

## Report on conodonts from loc. Tm-68-9 by C.R. Barnes

Report 05-1970- CRB

Attached are faunal lists for the conodonts obtained from each sample of the Tm-68-9 collection, i.e. GSC Loc. Nos. C-2621 to C-2642. The samples were small in amount and yields were correspondingly low; however, all samples produced conodonts and a full faunal list with total numbers of specimens is as follows:

<u>Species</u>	<u>No. of specimens</u>
<u>Acodus mutatus</u> (Branson and Mehl)	4
<u>A. n.sp.</u>	1
<u>A. sp.</u>	2
<u>Ambalodus triangularis</u> Branson and Mehl	2
<u>Amorphognathus</u> sp.	6
<u>Belodina compressa</u> (Branson and Mehl)	3
<u>B. aff. B. compressa</u> (Branson and Mehl)	2
<u>B. dispansa</u> (Glenister)	4
<u>B. grandis</u> (Stauffer)	1
<u>B. cf B. inclinata</u> (Branson and Mehl)	1
<u>B. n.sp.</u>	2
<u>B. sp.</u>	2
<u>Cordylodus robustus</u> Ethington and Furnish	4
<u>C. sp.</u>	2
<u>Cyrtionodus</u> aff. <u>C. flexuosus</u> (Branson and Mehl)	1
<u>C. sp.</u>	1
<u>Drepamodus homocurvatus</u> Lindström	12
<u>D. suberectus</u> (Branson and Mehl)	6
<u>D.? sp.</u>	1
<u>Eobelodina fornicata</u> (Stauffer)	2
<u>Keislognathus simplex</u> Ethington	1
<u>Oistodus inclinatus</u> Branson and Mehl	2
<u>O. venustus</u> Stauffer	4
<u>Ozarkodinatus tenuis</u> Branson and Mehl	1
<u>Panderodus compressus</u> (Branson and Mehl)	122
<u>P. gracilis</u> (Branson and Mehl)	302
<u>P. paderi</u> (Stauffer)	9
<u>P. sp.</u>	6
<u>Plegagnathus nelsoni</u> Ethington and Furnish	5
<u>Prioniodina furcata</u> (Hinde)	1
<u>Tetraprioniodus parvus</u> Ethington	1
<u>Trichonodella angulata</u> Sweet, Turco, Warner, and Wilkie	1
<b>TOTAL</b>	<b>514</b>

From the individual samples, it is clear that the fauna does not change appreciably through out the 108 ft. section. The following comments can thus be made in the stratigraphic position of the fauna, treating it as a whole.

The conodont fauna is dominated by panderodids, typical for the Middle and Upper Ordovician of western and northern North America. A minor component from the European province is the natural association of Amorphognathus, Ambalodus triangularis, Keislognathus simplex, and Tetraprioniodus parvus. Most of the other species represented range through the Barneveld to Richmond interval of the Ordovician.

Two species have a restricted stratigraphic range. Cordylodus robustus and Plegagnathus nelsoni have only been reported from Maysvillian and Richmondian strata. Sweet, Ethington, and Barnes (Geol. Soc. Amer. Mem. 127, in press) have demonstrated that the European elements retreated eastwards during the early Maysvillian and Richmondian. The latest time that European elements are known to be associated with Plegagnathus nelsoni is during the late Maysvillian. The total fauna is closely comparable to those described from the Gunn Member of the Stony Mountain Formation of Southern Manitoba (Ethington and Furnish, Jour. Paleontology, 1960), Shamattawa Limestone of Northern Manitoba (Ethington and Furnish, Jour. Paleontology, 1959), upper Bighorn Dolomite of Wyoming (Stone and Furnish, Jour. Paleontology, 1959) and Allen Bay Formation(?) of Hoved Island, N.W.T. (Weyant, 1968). Undescribed faunas of Barnes from Bathurst Island yield a comparable fauna (with Amorphognathus ordovicicus and Plegagnathus nelsoni) in the uppermost Thumb Mountain Formation and in the Irene Bay Formation of the Cornwallis Group. This stratigraphic interval is of late Edenian to early Maysvillian (Kerr, GSC Paper 67-27, Pt II, 1968).

In conclusion, the conodont fauna from the Brodeur Peninsular (Tm-68-9 collection) indicates a late Edenian to Maysvillian age.

*C. R. Barnes*

C. R. Barnes

Department of Earth Sciences  
University of Waterloo  
Waterloo, Ontario  
November 4, 1970  
Faunal lists attached.

Report by B.S. Norford (D-S 6 BSN 1969)

GSC loc. No.	Strat. posn. and/or location	Identification and age
C-2809	Tm-68-10 38'	large gastropod age: Phanerozoic
C-2810	Tm-68-10 62'	<u>Grewingkia</u> cf. <u>G. articum</u> (Wilson) age: late Middle or Late Ordovician, possibly late Middle Ordovician
C-2811	Tm-6810 76'	indeterminate brachiopod and trilobite <u>Catenipora</u> sp. ? <u>Plaesiomys</u> sp. age: late Middle Ordovician to Silurian, probably Ordovician

## PALYNOLOGICAL ANALYSES OF SEDIMENTS OF THE TURNER CLIFFS FORMATION

Preliminary analyses of samples from the Turner Cliffs Formation collected in 1963 suggested that acritarchs may be present. Argillaceous units of the Turner Cliffs Formation therefore were sampled in 1968 at localities 11, 12, and 13 (see Index Map). Palynomorphs, unfortunately, were not present in these samples.

Report by D.C. McGregor (F1-5-1970-DCM)

---

1. Locality: Borden Peninsula, Baffin Island, UTM zone 16; 8114200N, 560000E.

Collector's comment: From Members D1 and D2 of Turner Cliffs Fm., see GSC Paper 64-47. Field No. Tm 68-11.

Remarks: Samples with locality numbers C-2605 (D1-72 ft.), C-2606 (D2-130 ft.), and C-2607 (D2-165 ft.) were run. There were no palynomorphs.

2. Locality: Borden Peninsula, Baffin Island, UTM zone 16; 8116400N, 558800E.

Collector's comment: From Member D2 of Turner Cliffs Fm., "Shale member" of Loc. 7, Fig. 1, GSC Mem. 328. Field No. Tm 68-12.

Remarks: Samples with locality numbers C-2610 (D2b-1), C-2613 (D2b-4), C-2614 (D2b-5), and C-2616 (D2b-7) were run. No palynomorphs were found.

3. Locality: Borden Peninsula, Baffin Island, UTM zone 17; 819700N, 502300E.

Collector's comment: From Members D1, D2, and S1 of Turner Cliffs Fm., see GSC Paper 64-47, Fig. 5, Section E. Field No. Tm 68-13.

## Blackadar, R.G.

- 1958a: Fury and Hecla Strait, District of Franklin, Northwest Territories; Geol. Surv., Can., Map 3-1958
- 1958b: Foxe Basin North, District of Franklin, Northwest Territories; Geol. Surv., Can., Map 4-1958
- 1963: Additional notes to accompany Map 3-1958 (Fury and Hecla Strait map-area) and Map 4-1958 (Foxe Basin North map-area); Geol. Surv., Can., Paper 62-35

## Blackadar, R.G., Davison, W.L., and Trettin, H.P.

- 1968: Ericksen Lake; Geol. Surv., Can., Map 1242 A

## Burns, C.A.

- 1952: Geological notes on localities in James Bay, Hudson Bay, and Foxe Basin visited during an exploration cruise, 1949; including lists of collected fossils, identified by Alice E. Wilson; Geol. Surv., Can., Paper 52-25

Douglas, R.J.W., sci. ed.

- 1970: Geology and economic minerals of Canada; Geol. Surv., Can. Econ. Geol. Rept. 1

## Drummond, J.M.

- 1963: Carbonates and grade sizes; Bull. Can. Petrol. Geol., vol. 11, pp. 33-53

## Heywood, W.W.

- 1967: Geological notes northeastern District of Keewatin and southern Melville Peninsula, District of Franklin, Northwest Territories (Parts of 46, 47, 56, 57); Geol. Surv., Can., Paper 66-40

## Kurtz, V.E., McNair, A.H., and Wales, D.B.

- 1952: Stratigraphy of Dundas Harbour area, Devon Island, Arctic Archipelago; Amer. J. Sci., vol. 250, pp. 636-655

## Leighton, W.W., and Pendexter, C.

- 1962: Carbonate rock types; in Classification of carbonate rocks; Amer. Assoc. Petrol. Geol., Mem. 1, W.E. Ham, ed., pp. 33-61

## Lemon, R.R. H., and Blackadar, R.G.

- 1963: Admiralty Inlet area, Baffin Island, District of Franklin

## Teichert, C.

- 1937: Ordovician and Silurian faunas from Arctic Canada; Rept. 5th Thule Exped. 1921-24, vol. I, No. 5; Gyldendalske Boghandel, Nordisk Forlag, Copenhagen, 167 pp.

## Trettin, H.P.

- 1969 a: Lower Paleozoic sediments of northwestern Baffin Island, District of Franklin; Geol. Surv., Can., Bull. 157
- 1969 b: Geology and petroleum potential of lower Paleozoic sediments-- Foxe Basin, northeastern Melville Peninsula and parts of northern and central Baffin Island (part of 36 D, N; 37 A, B, C, D, F, G; 46 D, 47 A, D, E; 48 A, C) in Report of activities, Part A: April to October, 1968; Geol. Surv., Can., Paper 69-1, Part A, pp. 246-252