PROVISIONAL EDITION

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

LEGEND

CENOZOIC

QUATERNARY

- **Q** — Drift and unconsolidated sediments

PALAEOZOIC

ORDOVICIAN AND SILURIAN
LATE MIDDLE ORDOVICIAN TO MIDDLE SILURIAN
BRODEUR GROUP

- **OSbr** — *BAILLARGE AND CAPE CRAUFORD FORMATIONS UNDIVIDED: dolomitic limestone, calcareous dolomite, both partly brecciated and partly silty; minor calcareous and dolomitic shale, dolomite, and brecciated limestone*
- **OSba** — *BAILLARGE FORMATION: dolomitic limestone partly shaly; minor shale, calcareous and dolomitic, dolomite; a little brecciated limestone*

ORDOVICIAN
MIDDLE AND (?) LOWER ORDOVICIAN

- **Osp** — *SHIP POINT FORMATION: dolomite, in part silty, sandy, shaly; dolomitic intraformational conglomerate*

CAMBRIAN AND/OR ORDOVICIAN
CAMBRIAN AND/OR EARLY LOWER ORDOVICIAN

- **€Otc** — *TURNER CLIFFS FORMATION: dolomite, shaly, silty, sandy, pure; quartzose sandstone, in part dolomitic; dolomitic intraformational conglomerate; minor siltstone, shale, mostly dolomitic*
- **€Oga** — *GALLERY FORMATION: quartzose sandstone; minor siltstone, conglomerate, shale*

ADMIRALTY GROUP
- **€Oad** — *Gallery and Turner Cliffs Formations undivided*

PROTEROZOIC

HELIKIAN

- **Hg** — *Gabbro diabase*

ULUKSAN GROUP (Hab *to* Hvb)

- **Hvb** — *VICTOR BAY FORMATION: dolomite, minor shale, edgewise conglomerate*
- **Hsc** — *SOCIETY CLIFFS FORMATION: dolomite*
- **Hff** — *FABRICIUS FIORD FORMATION: quartzite; shale, conglomerate*
- **Hab** — *ARCTIC BAY FORMATION: calcareous shale; dolomite*

EQALULIK GROUP (Hna *and* Has)

- **Has** — *ADAMS SOUND FORMATION: quartzite; minor shale and conglomerate*
- **Hna** — *NAUYAT FORMATION: andesite and basalt flows; agglomerate, tuff*

APHEBIAN

- **A** — *Granitic and gneissic rocks; Agr, granite gneiss, in part massive; Amg, migmatite; Ars, rusty, garnet-sillimanite schists; Amf, mafic-rich gneissic rocks; Abd, banded gneisses*

Geological boundary (defined, approximate, assumed)
Bedding, tops known (inclined)
Gneissossity (inclined, vertical, dip unknown)
Fault (defined, approximate assumed)
Structural trend (in part from air photographs)
Fossil locality — F
Locality (K-Ar age determination in millions of years) — 1590 A
Mineral occurrence (hematite) — hem ×

Geology of Precambrian rocks by R.G. Blackadar and W.L. Davison, 1963
Geology of Palaeozoic rocks by H.P. Trettin, 1963

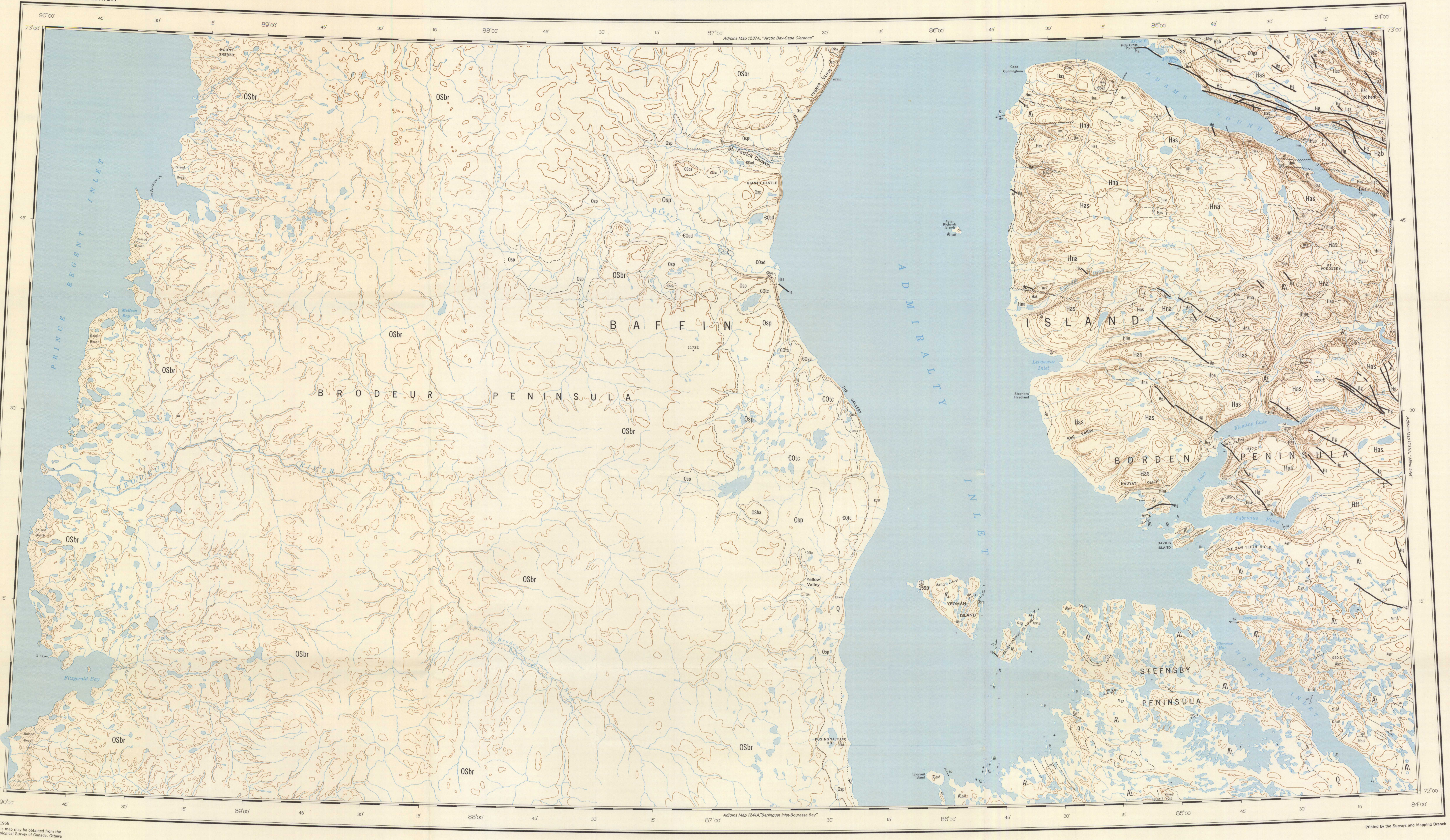
Geological cartography by the Geological Survey of Canada, 1967

Horizontal control point
Intermittent stream
Dry river bed with channel
Foreshore flats
Reef, rock or small island
Contours (interval 200 feet)
Height in feet above mean sea-level — 1173+

Base-map: "Moffet Inlet" sheet compiled and drawn by the Surveys and Mapping Branch, 1965; portion of "Fitzgerald Bay" sheet compiled and drawn by the Surveys and Mapping Branch, 1964, with modifications to the contours by the Geological Survey of Canada, 1967

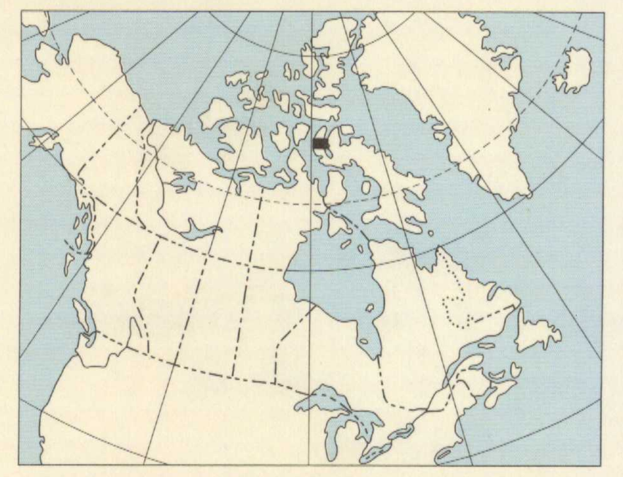
Geographical names subject to revision

Magnetic declination 1967 varies from 61°00' westerly at centre of west edge to 70°45' westerly at centre of east edge. Mean annual change, decreasing 50.0'



Published, 1968
Copies of this map may be obtained from the Director, Geological Survey of Canada, Ottawa

Printed by the Surveys and Mapping Branch



INDEX MAP

MAP 1238A

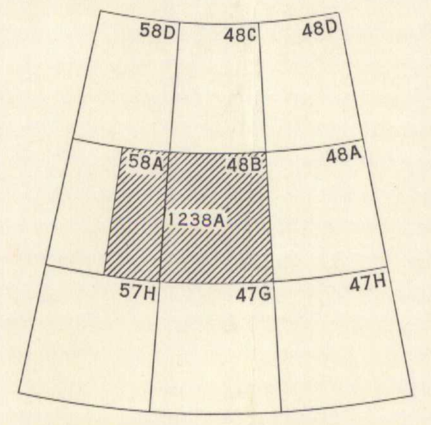
GEOLOGY

MOFFET INLET - FITZGERALD BAY

DISTRICT OF FRANKLIN

Scale 1:253,440
1 inch to 4 miles

Miles 4 0 4 8 12 Miles
Kilometres 6 0 6 12 18 Kilometres



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE
MOFFET INLET-FITZGERALD BAY
DISTRICT OF FRANKLIN

DESCRIPTIVE NOTES

The northern border of this map-area is about 3 miles south of the settlement of Arctic Bay and is thus 220 miles southeast of Resolute and 300 miles north of Hall Beach. Commercial air services are available at both the latter settlements and in recent years light aircraft, available for charter, have been based at Resolute during most of the year. Arctic Bay settlement comprises a Hudson's Bay Company store and a school. Private-commercial radio facilities are available. Although the Anglican mission on the east side of Moffet Inlet has been vacant since 1947 the buildings are still in reasonable repair.

At present (1966) few Eskimo live permanently in Arctic Bay settlement and several camps are to be found along the shores of Admiralty Inlet.

Admiralty Inlet and Adams Sound are generally navigable by ocean-going ships from late July until September.

The area is part of Jones-Lancaster Plateau and elevations exceed 3,000 feet near the small snowfield southwest of the head of Adams Sound. West of Admiralty Inlet elevations decrease gradually from about 1,200 feet in the north to about 800 feet. Steensby Peninsula and the area east of Moffet Inlet and south of Fabricius Fiord is more rugged, but the plateau surface is still recognizable.

The stratigraphic succession in this map-area was first described by Lemon and Blackadar[1] and most of the formational names derive from their study.

An age determination from the west shore of Yeoman Island (K-Ar 524) of 1590 my. previously quoted[1] suggests an Aphebian age for the crystalline complex. Dark grey biotite-hornblende-quartz-feldspar gneisses are common in the southern part of the map-area. Here and there these are interlayered with pink or pale grey quartz-feldspar granitic gneiss resulting in a well-banded succession (Abd). Along the eastern shore of Yeoman Island rusty, fissile, well-banded, schistose garnet-sillimanite-quartz-feldspar gneiss (Ars) outcrops. Restricted occurrences of similar rusty rocks are found on Steensby Peninsula. Granitic gneiss (Agr), compositionally quartz diorite, is more common between Adams Sound and Fabricius Fiord, but there too mafic-rich rocks are common.

The Nauyat Formation, originally named the Volcanic Member of the Eqalulik Group[1], comprises relatively unaltered basic flows, massive basaltic rocks and amygdaloidal basalts. Interbedded light-coloured bands such as those along the north side of Adams Sound and 7½ miles north of the mouth of Eqalulik River, may be tuffs. Along the upper reaches of Eqalulik River the thickness of the formation appears to approach 2,000 feet. In an area centred around 72°45' north and 85°00' west, interbedded quartzite and volcanic rocks are reported and 8 miles southeast of Cape Cunningham similar interbeds can be seen near the coast. The relationship between Nauyat and Adams Sound Formations may be more complicated than originally postulated[1,2].

The Adams Sound Formation, originally the Quartzite Member of the Eqalulik Group[1], is a multicoloured succession of very pale orange, dark yellowish orange to dark reddish brown silica-cemented quartzites. Although gentle warping introduces complications thicknesses probably exceed 4,000 feet.

A gradational contact separates the Adams Sound Formation from the Arctic Bay Formation, a succession of black, fissile argillaceous limestones and calcareous shales whose thickness may exceed 2,000 feet.

Fabricius Fiord Formation, a succession of black shales, siltstones, quartzitic sandstones, and minor conglomerate overlies the Adams Sound Formation conformably and has a thickness of 5,430 feet at the type section just east of the eastern border of the map-area. Near the type section it appears to grade into the Arctic Bay Formation.

A massive cliff-forming dolomite, the Society Cliffs Formation, conformably overlies the Arctic Bay Formation in the northeastern corner of the map-area and is in turn overlain conformably by a succession of dark to pale grey, medium-to coarse-grained dolomite, chert, edgewise conglomerate and interbedded dark grey limestone and mudstone. This sequence is the Victor Bay Formation.

Gabbro dykes cut all strata older than the Gallery Formation. Some of the northwest-trending dykes exceed 500 feet in thickness, and in a few granophyre has formed near the centre.

Extensive malachite staining of the Adams Sound Formation near Johnston Harbour and elsewhere along Adams Sound is due to finely disseminated chalcopyrite. Small amounts of pyrrhotite occur near the margins of gabbro dykes on Saneruarsuk Islands. A knob of massive hematite occurs in the Society Cliffs Formation in the northeastern corner of the map-area.

The lower Palaeozoic strata rest unconformably on the Precambrian rocks.

The Admiralty Group[1,3], comprising the predominantly fluviatile Gallery Formation[1], and the predominantly intertidal Turner Cliffs Formation is Cambrian and/or early Lower Ordovician. The Gallery Formation is possibly correlative with the late Lower Cambrian Rabbit Point Formation, and the Turner Cliffs Formation with the Middle Cambrian Bear Point and Ooyagah Formations of Dundas Harbour, Devon Island[4], and with Middle Cambrian strata on Boothia Peninsula and Somerset Island[5], but diagnostic fossils are lacking. The Gallery Formation consists mainly of quartzose sandstone showing trough- and high-angle planar cross lamination, with less siltstone, conglomerate, and shale. The formation weathers light grey and red. The Turner Cliffs Formation is composed of two alternating assemblages of rock types: 1) finely microcrystalline dolomite, which is mostly shaly, silty, or sandy, and commonly forms ripple-marks and flat-pebble conglomerates, and associated dolomitic siltstone and shale; 2) pure and dolomitic quartz sandstones commonly showing cross-lamination, as in the Gallery Formation. The Turner Cliffs weathers generally in light hues of grey, green, and orange. The only fossils known, besides abundant worm markings and few stromatolites, are linguloid brachiopods, mainly Lingulella s. s. The Admiralty Group was deposited in a basin, the axis of which plunges across central Borden Peninsula in an easterly or southeasterly direction. Moffet Inlet map-area lies on the central western and southwestern sides of that basin, and the thickness of both formations decreases in westerly and southerly directions. Measured sections of the Gallery Formation, which shows pronounced local variations in thickness, range between 550 and 65 feet, and those of the Turner Cliffs Formation between 580 and 316 feet. Crossbedding attitudes indicate that in the Moffet Inlet area the currents that deposited the Gallery sands came from northwesterly, westerly, and southerly directions.

The Middle and (?) Lower Ordovician Ship Point Formation[1] overlies the Turner Cliffs Formation, the contact being probably a disconformity that may represent a major hiatus involving the Upper Cambrian. The formation consists mainly of fine crystalline to predominantly microcrystalline dolomite. Vaguely stratified, thick-bedded units of nearly pure dolomite alternate with well-stratified, thin-bedded to laminated, shaly, silty, and sandy dolomite, partly with worm borings, ripple-marks, and flat-pebble conglomerates. The formation weathers in shades of light grey. At the type section on Baillarge Bay, the formation has yielded early Middle Ordovician fossils[1]. Late Lower Ordovician (Arenigian) graptolites found by Blackadar[6] on Jens Munk Island (Foxe Basin) are believed to have come from the lower part of the formation. In the present map-area, on the west coast of Admiralty Inlet, the thickness of the formation probably is between 500 and 600 feet.

The Ship Point Formation is overlain by the Brodeur Group, which comprises the Baillarge Formation and the Cape Crauford Formation. In Navy Board Inlet map-area a disconformable relationship between the Ship Point Formation and the Baillarge has been inferred from anomalously low thicknesses, and a red-weathering solution zone at the top of the Ship Point. This disconformity probably extends into the present area, but the only evidence there is the abrupt lithological change at the contact.

Member A of the Baillarge Formation, which is probably late Middle Ordovician in age, is characterized by recessive slopes and medium to dark grey talus. It is composed of thinly stratified mixtures of shale, microcrystalline limestone, and microcrystalline, penecontemporaneous dolomite. The upper member, B, which ranges in age from Late Ordovician to Niagaran, consists mainly of cryptocrystalline, dark reddish brown limestone, which is partly replaced by microcrystalline to very fine crystalline dolomite. Vaguely stratified, highly resistant units of pure carbonate rock are interbedded with thinly stratified, argillaceous units, which form ledges and plateaux.

The outcrops of the Baillarge Formation shown near the east coast of Brodeur Peninsula represent member A and the lower part of member B, which contains the Arctic Ordovician fauna.

The Niagaran (Middle Silurian) Cape Crauford Formation is well exposed on northern Brodeur Peninsula, where it has been studied in detail[7]. In the present area exposure is generally poor, so that the Cape Crauford Formation could not be separated, on the map, from the Baillarge. Along the west coast of Brodeur Peninsula, the Cape Crauford Formation is represented mainly by intermittent cliffs and ledges of solution breccia, assigned to member A. Outcrops of member B, which consists predominantly of recessive, light orange-weathering dolomite, have been observed only between McBean Bay and the northwestern extremity of the map-area.

On the east coast of Admiralty Inlet, the Palaeozoic strata are nearly horizontal. On Brodeur Peninsula they form an extensive, arcuate homocline, which in the present map-area dips gently to the west.

[1] Lemon, R. R. H., and Blackadar, R. G.: Admiralty Inlet area, Baffin Island, District of Franklin; Geol. Surv. Can., Mem. 328 (1963).

[2] Blackadar, R. G.: Geological reconnaissance of the Precambrian of northwestern Baffin Island, Northwest Territories; Geol. Surv. Can., Paper 64-42 (1965).

[3] Trettin, H. P.: Lower Palaeozoic sediments of northwestern Baffin Island, District of Franklin; Geol. Surv. Can., Paper 64-47 (1965).

[4] Kurtz, V. E., McNair, A. H., and Wales, D. B.: Stratigraphy of the Dundas Harbour area, Devon Island, Arctic Archipelago; Amer. Jour. Sci., vol. 250, pp. 636-655 (1952).

[5] Christie, R. L.: "The Palaeozoic rocks" in Geological reconnaissance, Boothia Peninsula, and Somerset, King William, and Prince of Wales Islands, District of Franklin (by R. G. Blackadar and R. L. Christie); Geol. Surv. Can., Paper 63-19, pt. 2

[6] Blackadar, R. G.: 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 (1963).

[7] Trettin, H. P.: Middle Ordovician to Middle Silurian carbonate cycle, Brodeur Peninsula, northwestern Baffin Island; Bull. Can. Petrol. Geol., vol. 13, pp. 155-180 (1965).

N.W.T. Moffet Inlet - Fitzgerald Bay
1:253,440 or 1inch to 4miles
Map 1238A

C.2

1238 A