Thomas Frisch

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BYLOT ISLAND MAP-AREA, DISTRICT OF FRANKLIN

G.D. JACKSON
A. DAVIDSON

1975

Energy, Mines and Resources Canada
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Abstract

Highly deformed granulite and amphibolite facies Aphebian and Archean rocks underlie most of the map-area, and occupy a northwest-plunging synformal structure. The rocks are mainly banded migmatites that surround a U-shaped monzocharnockite pluton named the Bylot Batholith. The last major orogenic activity to affect these rocks is attributed to the Hudsonian Orogeny.

At least 8000 feet of Neohelikian(?) platform strata, possibly some lower Paleozoic strata, and at least 3500 of Cretaceous-Eocene strata were deposited in the North Baffin Rift Zone. Most of the Cretaceous-Eocene strata represent a molasse sequence laid down in a paralic environment. The emplacement of the 700 m.y. old Franklin diabase dykes is related to block faulting, accompanied by folding, that occurred periodically from Helikian time, probably to the present.

The Neohelikian(?) strata are considered worthy of at least preliminary prospecting for base metals. Coal has been reported from the Cretaceous-Eocene strata.

Résumé

De la leptynite et de l'amphibolite très déformées et un faciès de roches aphébiennes et archéennes sont sous-jacents à la plus grande partie de la région couverte par la coupure de carte et se trouvent dans une structure de forme synclinale qui plonge vers le nord-ouest. Les roches sont en grande partie des migmatites ruboanées qui entourent un pluton de monzocharnockite en forme de U appelé batholithe de Bylot. On considère que la phase tectonique hudsonienne est le dernier grand mouvement orogénique qui ait affecté ces roches.

Les sédiments qui se sont déposés dans l'aire de fracture de North Baffin se composent d'au moins 8000 pieds de couches horizontales du Néohélikien(?), possiblement de quelques unes des couches inférieures du Paléozoique et d'au moins 3500 pieds de couches du Crétacé et de l'Eocène. La plupart des couches du Crétacé et de l'Eocène proviennent d'une succession de molasse qui s'est déposée dans un milieu paralique. La mise en place des dykes doléritiques Franklin qui date de 700 millions d'années est reliée à la formation de failles par bloc accompagnée de plissements qui se seraient produits de temps à autre depuis l'Hélikien et probablement jusqu'à nos jours.

On considère que les couches néohélikiennes(?) justifient au moins une prospection préliminaire pour y trouver des métaux communs. On a trouvé du charbon dans les couches du Crétacé et de l'Eocène.

Frontispiece. Looking east across Byam Martin Mountains, Bylot Island, EMR Photo T240-L-12. Note gneissic banding in upper left corner; Helikian strata in foreground; unconformities between gneisses and Helikian strata and Eclipse Group in right centre between two lobate glaciers; and piedmont glacier in upper right corner.

INTRODUCTION

The southern border of this map-area is about 21 miles north of the settlement of Pond Inlet and 300 miles north-northeast of Hall Beach. The western border is about 85 miles east of Arctic Bay and 270 miles east-southeast of Resolute. Scheduled air flights link these settlements with one another and southern Canada. Light aircraft are available for charter the year round at Resolute and during the summer months at Hall Beach.

Each settlement includes a school, at least one mission, and a Hudson's Bay Company Store. Private and commercial radio facilities are also available. Nearly all Innuit now live permanently in the various settlements with only a few camps maintained elsewhere for any extended period.

The waterways surrounding Bylot Island are generally navigable by ocean-going vessels from late July until October.

The map-area is part of the region examined on Operation Bylot, a helicopter-supported bedrock reconnaissance project carried on in 1968 (Jackson, 1969) that included Bylot Island and that part of Baffin Island north of latitude 69° and east of longitude 80°. The present map and report are based on 6 man-days of helicopter supported traversing which was augmented by airphoto interpretation. It incorporates data obtained by W. L. Davidson who traversed by dog team in 1954 and by helicopter in 1963. Locations of traverse lines are shown approximately on Figure 1. The map-legend is more detailed than usual and these notes, which are not intended to be comprehensive, have been utilized to emphasize selected geological features.

Most of the map-area is mountainous and forms part of the Davis Highlands. The Byam Martin Mountains trend northwesterly across Bylot Island and the higher peaks range from 5,000 to over 6,500 feet in elevation. The Highlands here are mostly ice-covered and the bedrock, much of which is deeply weathered, is exposed in a myriad of jagged nunataks, arêtes, côls, tors, and cirques which appear like islands in a white sea. Innumerable glaciers flow outward from the backbone of the Byam Martin Mountains; some of the larger ones are classic examples of valley glaciers with associated moraines and outwash plains (sandurs). Streams are short and most are glacier-fed; many flow in flat-floored

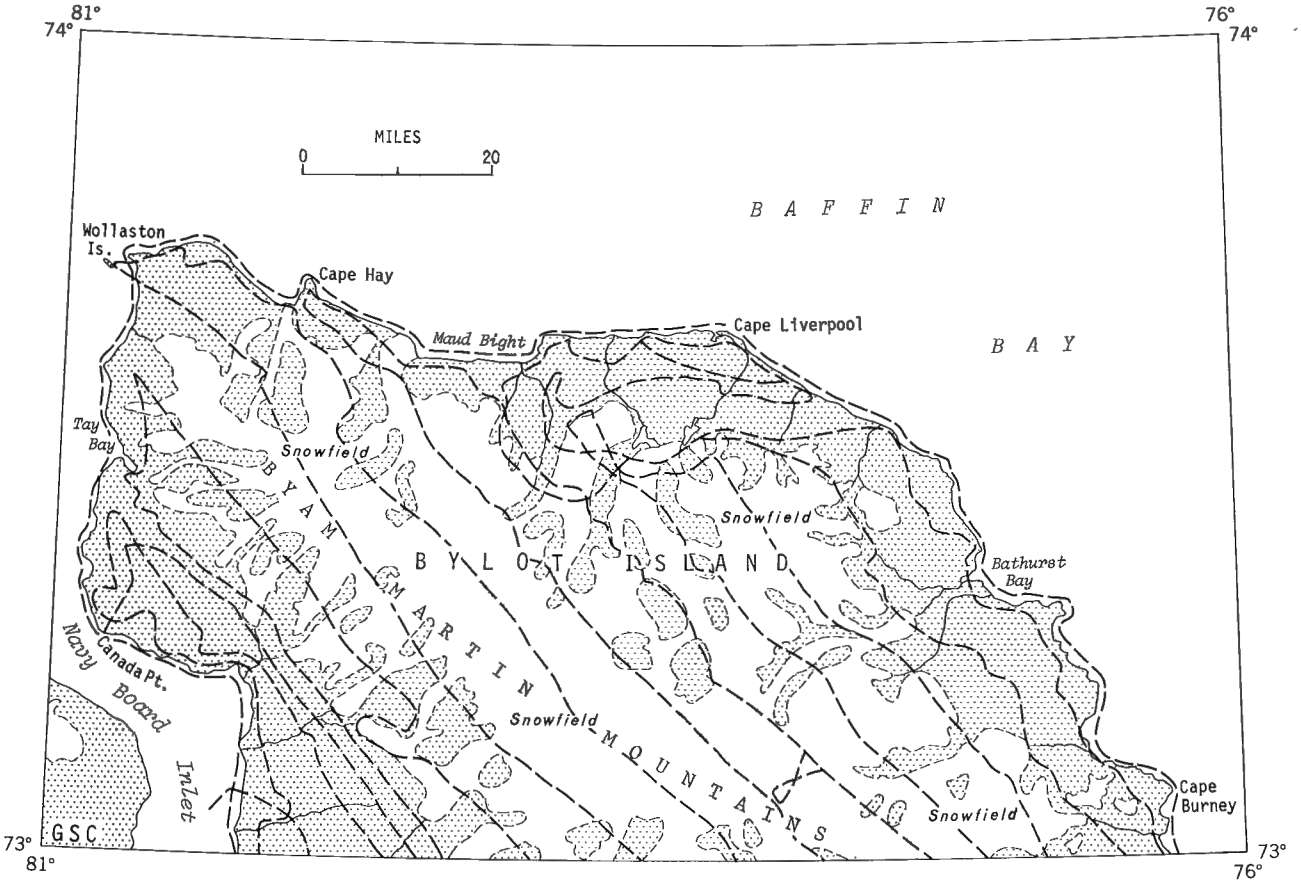

Figure 1. Generalized position of traverse lines, Bylot Island map-area, District of Franklin.

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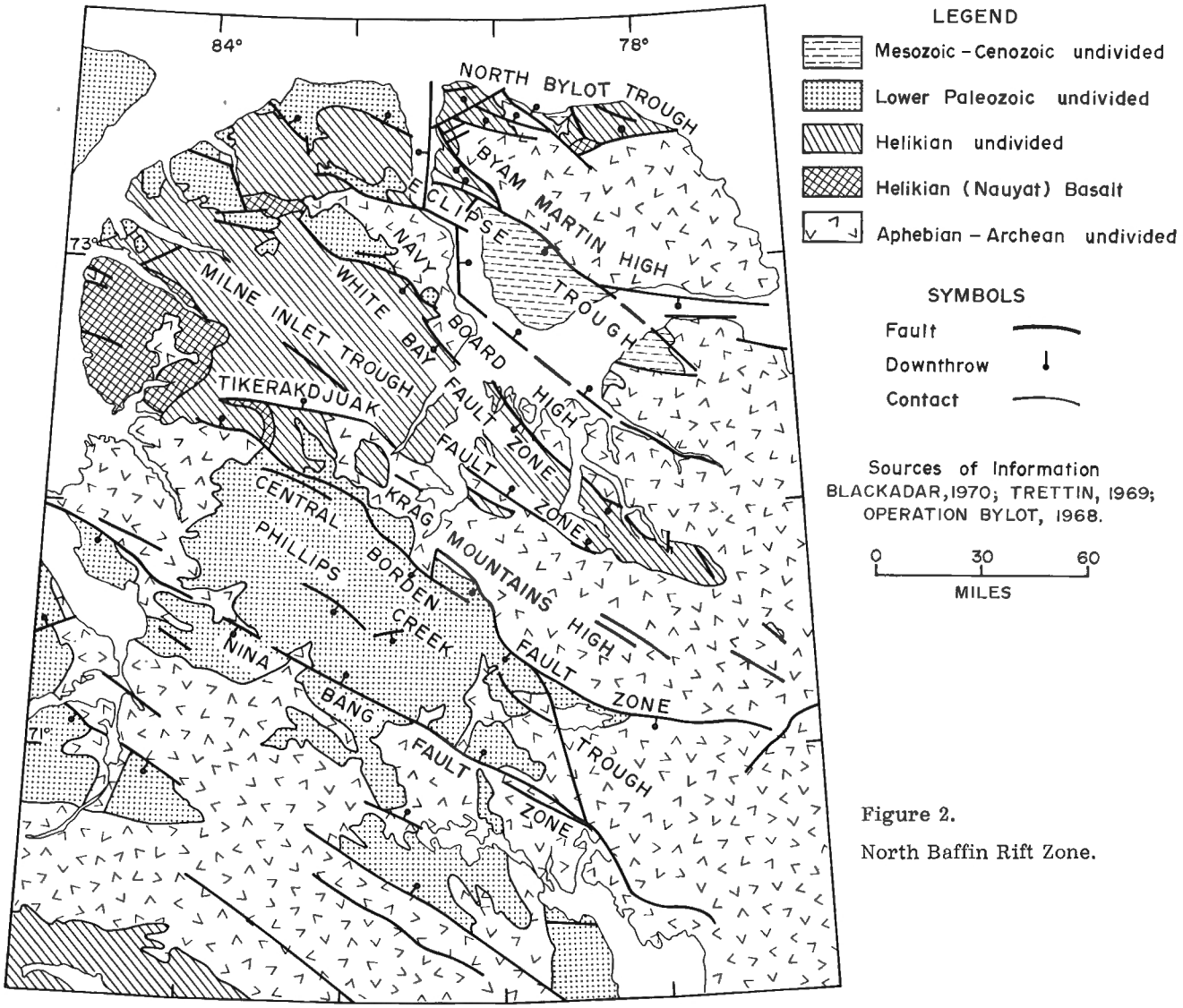

Figure 2.

North Baffin Rift Zone.

valleys and are highly braided throughout much of their length.

GENERAL GEOLOGY

A complex of highly deformed and metamorphosed crystalline rocks underlies most of the map-area (map-units sv to Avm). The regional metamorphism is mainly granulite facies although amphibolite facies rocks form an extensive belt along the southwest side of the Byam Martin Mountains and a small area in northeast Bylot Island. Most of the rock of the complex is thought to be Aphebian in age, but some, especially parts of mg, may be Archean. A K-Ar age of 1660 m.y. obtained for phlogopite from metamorphosed pyroxenite is similar to other K-Ar ages from the general region (Wanless, 1970). It is concluded therefore that the Hudsonian Orogeny was the last major orogenic event in this area, and was responsible for most of the metamorphism and deformation observed in the crystalline rocks.

Metamorphosed sedimentary and volcanic rocks (sv) predominate in only a few areas (for example at Cape Burney) but large areas within the distinctly banded gneisses (mg) along the western side of the Byam Martin Mountains may also be largely metasedimentary.

About two thirds of the complex is composed of variously banded gneisses (mg) most of which are migmatites and hybrid rocks. The bands range from less than one inch to over 100 feet thick and have contrasting compositions. The quartzofeldspathic bands are chiefly metamorphosed sediments, granitoid rocks of uncertain origin and irregular masses, veins and tabular bodies of later granite and pegmatite that have either been intruded or formed in place by granitization and metasomatism. Many of these later granitic bodies resemble the monzocharnockite and quartz monzonite of units ck and gr .

The mafic-rich bands and streaks are mostly biotite-hornblende and pyroxene gneisses which probably include both metamorphosed sedimentary and volcanic rocks. Amphibolite and pyroxenite bands are com-

monly present; some of which are metamorphosed dykes and sills.

Small amounts of late massive granite, pegmatite and aplite occur in veins, dykes, and sills that cut across the granitic layers described above. One small area, Avm , consists of migmatites of mg containing 20 per cent or more of these late intrusions.

Monzocharnockite (hypersthene-quartz monzonite) (map-unit ck) forms a U-shaped pluton 1,000 square miles in extent and called the Bylot Batholith. Small bodies of similar rock outcrop at Cape Hay and elsewhere. Dykes and sills of ck also occur in the migmatite (mg). This rock is relatively uniform although locally it ranges from charnockite (hypersthene granite) to enderbite (hypersthene quartz diorite). Minor anorthositic (an) and mangeritic (ma) rocks may also be genetically related to monzocharnockite. Minor xenoliths, schlieren, and migmatized phases of various rock types are common in ck .

The monzocharnockite is intensely deformed, is characterized by lenticular quartz and fine- to medium-grained stretched feldspar augens up to 6 inches long, and is intersected by innumerable, very closely spaced shear planes. Locally the deformed rock grades into undeformed massive to faintly foliated porphyritic monzocharnockite. In some places this massive rock appears to have resulted from later crystallization and obliteration of most deformational structures, while in others it may be relict patches of undeformed but metamorphosed intrusive rock.

Several small areas in northern and western Bylot Island are composed of foliated quartz monzonite (gr). Some of these rocks, especially southeast of Maud Bight, resemble the monzocharnockite of the Bylot Batholith and may be co-genetic. The quartz monzonite is highly deformed but appears to be less highly metamorphosed.

Most of the crystalline complex is part of a huge synformal arcuate structure that has a regional plunge of about 25 degrees to the northwest; it is outlined by foliations and lineations, the shape of the Bylot Batholith and by the granulite facies isograds. The Bylot Batholith is probably an anorogenic or early synorogenic sheet-like intrusion emplaced in Aphebian (Jackson and Taylor, 1972) or possibly late Archean time. The pluton has undergone intense deformation and penecontemporaneous prograde metamorphism during the Hudsonian Orogeny, and may also have undergone a prior deformation. It now appears to occur along the axial zone of a refolded anticline whose extremities plunge northwest. The western limb of the arcuate structure described above is highly sheared and is probably tightly folded with overturning to the southwest. Many of the synforms and antiforms shown on the map probably represent relatively open flexures on limbs of overturned or recumbent folds.

Extensive uplift and erosion followed the Hudsonian Orogeny and preceded the deposition of the Eqalulik (HNA, HAS) and Uluksan (HAB, HSC , HVB) Groups in (Neo?) Helikian time. These rocks have a maximum thickness of about 8,000 ft. (2,440 m.). Estimated average thicknesses of individual map-units are: Nauyat Fm. - 300 ft. (90 m), Adams Sound Fm. - 1,600 ft. (490 m), Adams Sound Lower Member - 900 ft. (270 m), Adams Sound Upper Member - 950 ft. (290 m), Arctic Bay Fm. - 1,700 ft. (520 m), Society Cliffs Fm. - 1,900 ft. (580 m), Victor Bay - Society Cliffs - 1,400 ft. (430 m), Victor Bay Fm. - 850 ft. (250 m). These formational names were proposed by Lemon and Blackadar (1963) for the Admiralty Inlet area, and are applicable here also. Contacts between the formations have not been studied closely.

The Helikian sediments were deposited mainly in a platform environment, and both sediments being supplied, and the depositional environment varied in response to periodic block faulting which has occurred from Helikian time to perhaps the present. Within the North Baffin Rift Zone basalts of the basal Nauyat Formation were extruded mainly along the major fault zones (Fig. 2). One chemical analysis (Blackadar, 1970) suggests that the flow is alkalic in composition.

South of Maud Bight the Nauyat Formation comprises at least two concordant basalt layers interbedded with red clastics that are stratigraphically equivalent to the lower member of the Adams Sound Formation.

Most of the Adams Sound Formation is a red bed sequence (HAS-L, HAS-U, HAS1) that both rims and occurs as cappings on the Byam Martin High which was a source of sediments in Adams Sound time. The lower member (HAS-L) is probably a fluvial deposit whereas the upper member (HAS-U) may be largely a shallow platform deposit of reworked fluvial sediments with minor intertidal shales. The Strathcona Sound and Elwin formations are composed of similar rocks, therefore many of the cappings in the Byam Martin Mountains were not positively correlated with the Adams Sound Formation.

The Adams Sound Formation farther from the Byam Martin High is largely light coloured, relatively clean quartz sandstone (HAS2). This may have been deposited in a shallow platform environment farther from the source area than was the red bed sequence of the upper Adams Sound.

The Arctic Bay Formation seems conformable with the Adams Sound Formation; it grades upward from interbedded sandstone, siltstone and shale in the basal part, to interbedded clastics and carbonates, and then mainly carbonates in the upper part. The carbonate sequence seems poorly developed in the North Bylot Trough (Fig. 2). The Arctic Bay Formation was deposited in a shallow platform environment in which initial clastic deposition gave way gradually to carbonate deposition as the source of clastic detritus was eroded down, and as small adjustments occurred between the major fault blocks. The small capping of sandy dolomite 6 miles north of Tay Bay may be lower Paleozoic rather than Arctic Bay Formation as shown.

The Society Cliffs Formation seems conformable with the underlying Arctic Bay Formation and to have been deposited in a shallow carbonate platform environment, although there is an abrupt change from the buff to brown weathering dolomites of the Arctic Bay Formation to the grey Society Cliffs dolomites. Lenses of varicoloured shales, and red shales with associated gypsum beds represent deposition in evaporitic tidal flat and lagoonal environments.

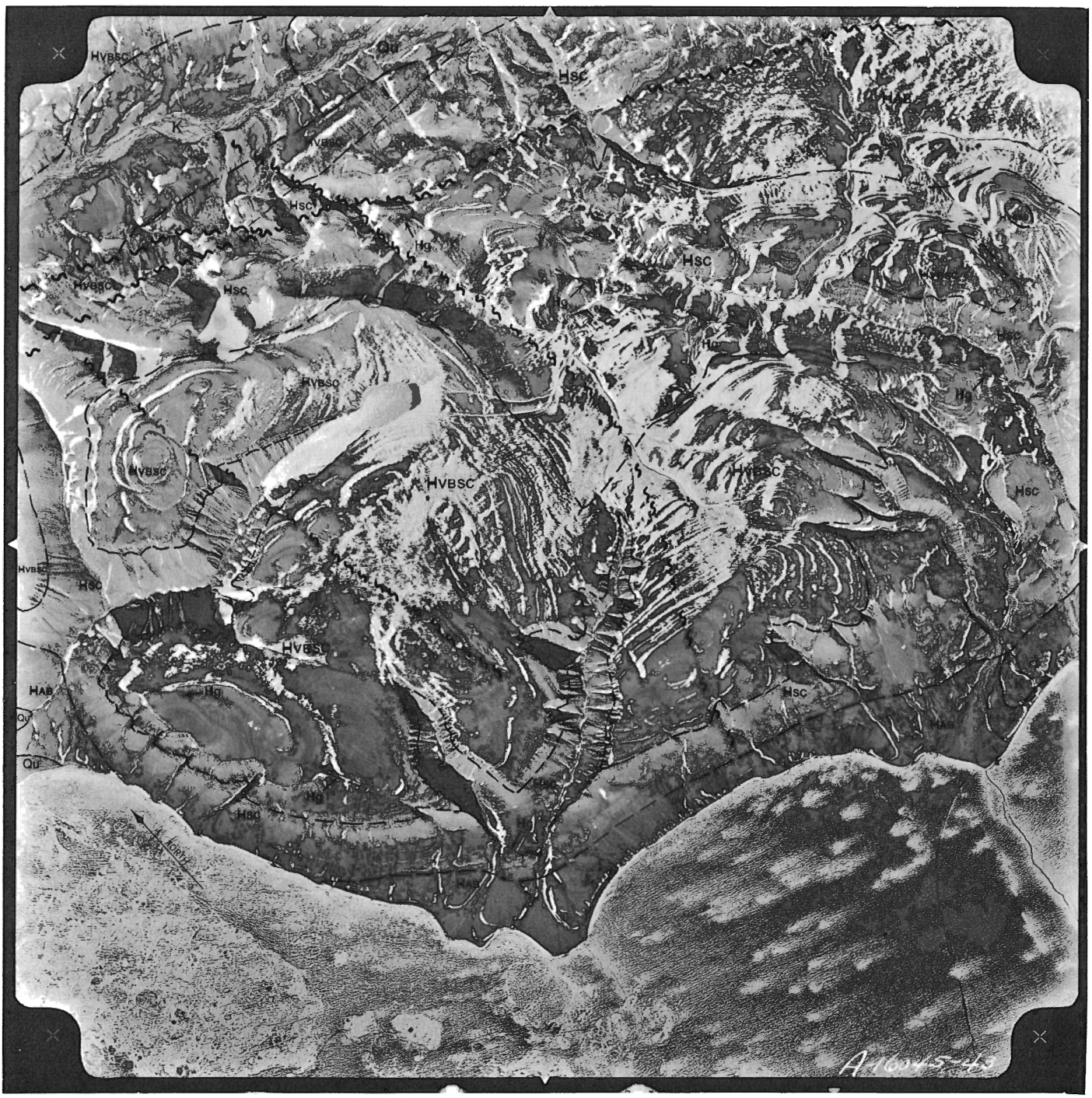

Figure 3. Helikian strata Western Bylot Island. EMR Photo A16045-43. See map legend for meanings of symbols.

Figure 4.

Byam Martin Mountains; 73°23'N, 79°48'W. Photo by S. L. Blusson. GSC 202616

Figure 5.

Horizontal layered gneisses, northwestern Bylot Island. 73°30'N, 79°58'W. Photo by S. L. Blusson. GSC 202617

Edgewise conglomerates and breccias are present in most areas underlain by the Victor Bay Formation, and are abundant in northern Bylot Island where most of the upper part of the formation may be absent. These coarse clastics reflect periods when broad areas of the depositional platform were upwarped above wave base and eroded. The abrupt change in lithology, and increase in the proportion of clastic material, particularly in the lower part of the Victor Bay Formation (Blackadar, 1970), suggested that a disconformity may separate it from the underlying Society Cliffs Formation.

Within the Eclipse Trough the Society Cliffs Formation appears to be overlain conformably by a red bed sequence composed mainly of clastics with minor interbedded carbonates (Hvbsc). These strata resemble the lower Strathcona Sound Formation to the west (Blackadar, 1968). If this is correct an unconformity must separate the Society Cliffs and Strathcona Sound Formations. Because of the apparently conformable relationships, however, these strata are here considered to be mainly equivalent to the Victor Bay Formation but may include some Society Cliffs strata (Hvbsc). These strata are interpreted as fluvial deposits that interfinger with platform carbonates to

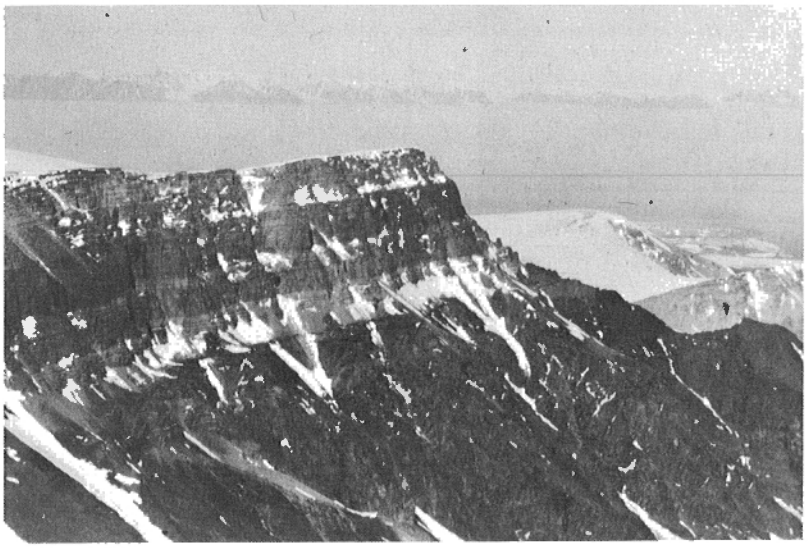

Figure 6. Lower and upper members of Adams Sound Formation unconformably overlying banded gneisses. 73°37'N, 80°13'W. Shows section described in Appendix 1. Photo by S.L. Blusson. GSC 202621

the west, and are probably related to uplift of the Byam Martin High.

Few field observations were made in the area shown as undivided Victor Bay - Arctic Bay (HVBAB). Strata here are similar to strata in the eastern part of the North Bylot Trough.

The gentle folding of the Helikian rocks about northwest-trending axes is related to the block faulting. Dips are generally steepest along the northeast sides of the grabens which are the zones of greatest vertical displacement. The fault blocks were from time to time tilted downward, mainly toward the northeast, resulting in vertical movements of at least one and a half miles. Solution breccias within the Arctic Bay, Society Cliffs, and Victor Bay Formations may be related to the block faulting.

Late Precambrian diabase dykes (Hg) intrude all of the other Precambrian rocks in the map-area and locally are intensely jointed. They are part of a huge swarm of dykes, called the Franklin Dykes, that extends in a giant arc from Great Bear Lake to Baffin Island and northern Quebec (Fahrig et al., 1971). The age of these dykes is about 700 m.y. and they are considered here to be considerably younger than the Nauyat volcanics and to have been emplaced during a period of renewed block faulting that occurred subsequent to the main folding of the Helikian strata.

Stratigraphic classification of the Phanerozoic strata is based almost entirely on palynological studies, mainly by W.S. Hopkins Jr. (reports: K-2WSH-1969, K-6WSH-1969, K-20-WSH-1972, T-02-WSH-1973) and also by D.C. McGregor (reports: Fl. 4-59/60-DCM, Fl-9-1972-DCM); both of the Geological Survey of Canada. The lower Paleozoic age of strata west of Maud Bight is in doubt. About 40 feet (12 m) of strata are exposed at the fossil locality shown on the map.

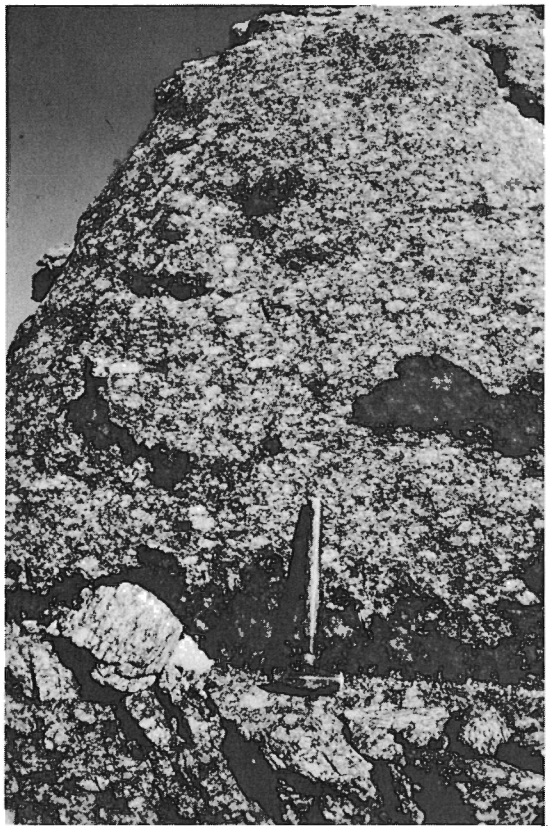

Figure 7. Feldsparphyric Monzocharnockite, central Bylot Island. 73°12'N, 78°20'W. Photo by G.D. Jackson. GSC 202622

The Eclipse Group is well exposed along the shores of Eclipse Sound, after which it is named. Palynological work on the group indicates an Early to Late Cretaceous age for K, Paleocene-Eocene age for KT_1 and T, and a Late Cretaceous-Eocene age for KT_2. The apparently anomalous age of KT_2 may reflect a paucity of definitive palynomorphs because of the relatively coarse clastic nature of this formation, or may reflect errors in mapping and interpretation. Dark grey to black carbonaceous beds, carbonaceous plant remains, and chips of dark shale and coal occur in all four formations of the Eclipse Group. The later suggest the presence of local unconformities. The average thickness of the group is estimated to be about 3,500* feet (1,070 m). Estimated thicknesses of individual formations are: T - 400 ft. + (120 m +), KT_2 - 700 ft. to 1,100 ft. (210 m - 340 m), KT_1 - 900 ft. to 1,200 ft. (270 m - 370 m), K - 100 ft. to 1,100 ft. (30 m - 270 m).

*B. Clarke (pers. comm.) of Shell Oil Ltd. examined these strata in 1973. He concluded that at least 6,000 feet of these strata are present and that the section may thin westward.

Map-unit K may represent a beach or an uplifted shallow platform deposit with associated swampy depressions in which the coal was deposited. Lenses of relatively clean sandstone may occur in map-units KT1 to T as well. Units KT1 to T probably represent rapid erosion and deposition, of a thin molasse sequence in a paralic environment, in response to renewed faulting in the North Baffin Rift Zone. Facies variations may be complex. Unit T was probably deposited in a restricted or landlocked basin and reflects either a wearing down of the source area or subsidence due to faulting. Eclipse Group strata are very gently warped about northwesterly trending axes. As with the Helikian strata steepest dips occur along the northeast margin of the Eclipse Trough.

No mineral concentrations of present economic interest were recognized. Veinlets and small amounts of disseminated magnetite occur locally in map-unit mg of the crystalline complex, and as much as 10 per cent disseminated magnetite was observed about 25 miles (42 km) northwest of Mount Thule. A small amount of malachite stain was seen about 5 miles (8 km) farther to the northwest.

Some of the black shale within the lower member of the Adams Sound Formation south of Cape Hay appears to be bituminous. Thin beds of siderite occur in the lower part of the Arctic Bay Formation south of Maud Bight, and thin gypsum beds occur at various horizons in the Society Cliffs Formation of northern and western Bylot Island. A large sphalerite-galena-silver deposit in the Society Cliffs Formation east of Arctic Bay has been examined extensively by Texas Gulf Inc. Exploratory work by King Resources Ltd. in recent years has located several sphalerite and/or galena showings, mainly within the Society Cliffs Formation of the Milne Inlet Trough.

According to Kirkham (1971) stratiform copper deposits in sedimentary rocks are commonly found in sediments deposited in nearshore or marginal marine environments, where marine beds overlie continental red beds, and in sediments of the beginning of marine transgression following a long period of continental transgression. The Arctic Bay Formation contains these features and thus should provide interesting prospecting ground.

Thin beds of coal have been reported east-southeast of Canada Point and from the vicinity of Cape Hay (Bernier, 1912; McMillan, 1910; Tremblay, 1921). Most of the known coal is in map-unit K and may be largely of sub-bituminous grade. Greywacke of map-unit KT3 has an oily appearance and a slight petroliferous odour at one locality south of Maud Bight. A suite of samples from the Eclipse Group was submitted by the senior author to Aquitaine Co. of Canada for hydrocarbon studies. The conclusions reached were that the organic matter contained in the samples studied shows little evidence of giving forth large quantities of liquid hydrocarbons, and that this group must be buried much deeper if one hopes to find commercial quantities of hydrocarbons (Artu et al., 1971).

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APPENDIX 1

GENERALIZED SECTION OF ADAMS SOUND FORMATION

(Modified from notes by S. L. Blusson)

Location: 9 miles south-southwest from Cape Hay; 73°37' north latitude, 80°12' west longitude.

Unit	Overlain by ice and snow Lithology	Thickness (feet)	Height above base (feet)
UPPER MEMBER			
5	Sandstone with some intercalated siltstone; buff, laminated to thickbedded; grades downward into laminated to thin-bedded creamy buff pure uniform quartzite	500	1361
LOWER MEMBER			
4	Sandstone; dull reddish brown, thin-bedded; some beds contain disseminated coarse sand grains; parting at one-foot intervals; ripple-marks with ½-1 inch wave lengths are common; intruded by diabase dike	650	861
3	Siltstone, sandstone, and argillite in upper half; fissile shale and slate with reddish-brown sandstone chips in lower half; black recessive unit with a bituminous look in some places and mudcracks in others	50	211
2	Sandstone; brilliant red-bed sequence; laminated to medium-bedded	160	161
1	Fault gouge or regolith; greenish-grey and red; contains some quartz vein fragments	1	1

Underlying rocks are rusty-weathering dark greenish-grey gneisses containing some quartzite and mica schist.

APPENDIX II

IDENTIFICATION OF MICROFOSSILS FROM POSSIBLE PALEOZOIC STRATA

G. S. C. loc. 8440 - field no. JD-170/2-68, north coast Bylot Island; 73°41'N, 79°43'W.

(a) From Reports K-6WSH 1969, K-20-WSH-1972 by W. S. Hopkins Jr.

Abundant inapertunate pollen grains, probably from the family(s) Taxodiaceae-Cupressaceae... "the general appearance of the organic residue, plus the degree of carbonization, suggests a Paleozoic age for this sample".

(b) From Report F1-9-1972-DCM by D. C. McGregor

Abundant leiosphaerid acritarchs, and rare small, smooth, trilete spores; both of very simple structure, abundant fine plant debris. The assemblage is not Precambrian but could be any age from the Silurian upwards. Absence of any complex fossil structures suggests an early Paleozoic age, possibly Silurian.

G. S. C. loc. 8441 - field no. JD-170/3, north coast Bylot Island, 73°41'N, 79°43'W - same station as G. S. C. 8440.

From Report F1-9-1972-DCM by D. C. McGregor

Abundant palynomorphs similar to G. S. C. 8440 above. However a bisaccate pollen grain of probably Jurassic or Early Cretaceous age was seen in one slide. In structure, colour, and preservation it resembles specimens from Kootenay samples run a few weeks earlier. Contamination could also have occurred at the collecting site. Lack of more specimens suggests it is a contaminant rather than being indigenous to the sample.

APPENDIX III

IDENTIFICATION OF MICROFOSSILS FROM ECLIPSE GROUP

(Compiled from the following reports by W. S. Hopkins Jr.: K-2WSH-1969, K-6WSH-1969, K-20WSH-1972, T-02-WSH-1973).

Unit T

G. S. C. loc. C-22467 - field no. DA-67-63, southwest Bylot Island; 73°01'N, 79°51'W; from 80-foot section within lowermost 150 feet of unit K4.

Sphagnum spp.
Deltoidospora sp.
Cingulatisporites sp.
Miscellaneous bisaccate conifer pollen
cf. *Metasequoia* sp.
Glyptostrobus sp.
Taxodiaceae
Triporopollenites spp.
Tricolpites sp.
cf. *Alnus* sp.
cf. *Pterocarya* sp.
cf. *Carpinus* sp.
Age: indifferent preservation but suggested age is Paleocene or Eocene.

G. S. C. loc. C-22468 - field no. DA-69/3-63, southwest Bylot Island; 73°04'N, 79°55'W; near base of unit K4.

Spagnum spp.
Lycopodiacidites sp.
Lycopodium sp.
Baculatisporites sp.
Cingulatisporites sp.
Miscellaneous bisaccate conifer pollen
Glyptostrobus sp.
Taxodiaceae
Taxodium sp.
cf. *Tsuga* sp.
Tricolpites spp.
Triporopollenites spp.
Alnus sp.
cf. *Engelhardtia* sp.
Age: Paleocene or Eocene

G. S. C. loc. C-22469 - field no. DA-69/4-63, southwest Bylot Island; 73°04'N, 79°55'W - same station as G. S. C. C-22468; near base of unit K4.

Sphagnum spp.
cf. *Cyathidites* sp.
Cingulatisporites spp.
Osmunda sp.
Verrucosisporites sp.
Lycopodiacedites sp.
Lycopodium sp.
cf. Gleichenia sp.
Miscellaneous bisaccate conifer pollen
Taxodiaceae
Glyptostrobus sp.
Tsuga sp.
Triporopollenites spp.
Tricolporopollenites spp.
Alnus sp.
Age: Paleocene or Eocene

Unit KT2

G. S. C. loc. C-22457 - field no. JDC-90/6/68, southwest Bylot Island; 73°10'N, 79°40'W; near base of unit K3.

Lycopodiacedites sp.
Sphagnum spp.
Lycopodium sp.
Apiculatisporis sp.
Cyathidites sp.
Cingulatisporites sp.
Gleichenia sp.
Glyptostrobus sp.
Miscellaneous bisaccate conifer pollen
cf. Taxodiaceae
Metasequoia sp.
Triporopollenites spp.
cf. *Paraalnipollenites* sp.
? *Aquilapollenites* sp.
Pterocarya sp.
Tricolpites spp.
cf. *Salix* sp.
Alnus sp.
cf. Ericaceae
Betula sp.
Tricolporopollenites sp.
cf. *Carpinus* sp.
? Malraceae
cf. *Kurtzipites* sp.
Age: Paleocene possibly Eocene.

Unit KT1

G. S. C. loc. C-3231, 8446 - field no. JDD-131/2, southwest Bylot Island; 73°09'N, 79°52'W; near top of unit K2.

Lycopodiumsporites austroclavatidites (Cookson) Pocock 1962
? *Ischyosporites*
? Ilex sp.
cf. *Betula* sp.
cf. *Corylus* sp.
cf. *Podocarpidites* sp.
cf. *Leptolepidites* sp.
cf. *Gleicheniidites* sp.
cf. Ericaceae
Carya sp.

Alnus sp.
? *Engelhardtia* sp.
Bisaccate coniferales
Laevigatosporites sp.
Verrucosisporites sp.
Monoporate fungal spores
Retitricolpites sp.
Very few marine phytoplankton
Age: Preservation of palynomorphs is very poor and diagnostic forms absent in G. S. C. 8446. G. S. C. C-3231 appears to be largely non-marine, but may be brackish. Probably Senonian or lowermost Tertiary.

G. S. C. loc. C-22460 - field no. JDD 131/1-68, southwest Bylot Island; 73°09'N, 79°52'W; same station as G. S. C. localities C-3231, 8446; near top of unit K2.

Neoraistrickia sp.
Triporopollenites sp.
Miscellaneous bisaccate conifer pollen
Age: Upper Cretaceous or Tertiary

Unit K

G. S. C. loc. C-3228 - field no. JDD-126/2-68, west coast Baffin Island; 73°15'N, 80o21'W.

Bisaccate coniferales
Sphagnumsporites cf. *psilatus* (Ross) Pocock
Taxodiaceae
Vitreisporites pallidus (Reissinger) Nilsson
Gleicheniidites sp.
? *Eucommiidites* sp.
Tricolpites sp.
Glyptostrobus sp.
Classopollis sp.
cf. *Retitricolpites* sp.
Few unidentified marine phytoplankton
Age: Probably Cretaceous, possibly Albian - Cenomanian. Marine.

G. S. C. loc. 8445 - field no. JDD-130-68, western Bylot Island; 73°17'N, 80°19'W.

Gleicheniidites senonicus Ross 1949
Taxodiaceae - Cupressaceae
Bisaccate conifer pollen
Fungal hyphae
Age: Jurassic(?) - Cretaceous-Tertiary. Probably non-marine.

G. S. C. loc. C-22464 - field no. DA-59/2-63, western Bylot Island; 73°16'N, 80°32'W.

cf. *Cyathidites* sp.
Trilites sp.
Sphagnum spp.
Lycopodium sp.
cf. *Cleichenia* sp.
Taxodiaceae
Miscellaneous bisaccate conifer pollen
Age: Abundant organic material; but very few, and poorly preserved, palynomorphs. Possibly pre-late Cretaceous in age.

General Notes:

1) "Preservation of palynomorphs is general poor"...
2) "The number of palynomorphs is low, both in number of species and numbers of individuals".
3) "Conifer pollen is extremely rare"...