CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

PRELIMINARY SERIES

SHEETS 37 AND 47 (PARTS OF)

LEGEND

CENOZOIC

RECENT

7 — Undivided surficial deposits; 7a, drift, in places showing fluted and drumlinoid forms; 7b, predominantly raised beaches

PALAEOZOIC

ORDOVICIAN AND/OR SILURIAN

6 — Limestone, argillaceous limestone, shale

PROTEROZOIC AND/OR PALAEOZOIC

CAMBRIAN OR EARLIER

5 — Gabbro dykes

ARCHAEAN(?)

4 — Undivided granitic rocks; 4a, granite; 4b, granitic gneiss; 4c, hybrid gneiss

3 — 3a, quartzite, grit, conglomerate; 3b, micaceous quartzite, biotite schist, garnet-biotite schist

2 — Amphibolite schist, micaceous quartzite, massive magnetite, banded iron-formation

1 — Quartzite

Rock outcrop x
Geological boundary (approximate, assumed) .....
Limit of geological mapping .....
Bedding (inclined, vertical) .....
Schistosity (inclined, vertical) .....
Glacial striae (direction of movement known, unknown) .....
Drumlinoid ridges .....
Crag and tail hills .....
Esker .....
Fossil locality ..... (F)
Marine shell locality ..... (S)
Raised beach ..... (B)

Geology by R. G. Blackadar, 1956 and 1957

Braided stream .....
Rapids .....
Tidal flat .....
Cliff .....
Height in feet above mean sea-level 720

Approximate magnetic declination, 60° 10' West

Cartography by Geological Cartography Unit, 1958

Geographical names subject to revision

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario

In response to public demand for earlier publication, Preliminary Series maps are now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be clearer to read if all or some of the map-units are hand-coloured.

INDEX MAP

BAFFIN ISLAND

FOXE BASIN

FURY AND HECLA STRAIT

Adjoins Map 3-1958, "Fury and Hecla Strait"

PUBLISHED, 1958
COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

PRINTED BY THE SURVEYS AND MAPPING BRANCH

MAP 4-1958

FOXE BASIN NORTH

DISTRICT OF FRANKLIN

NORTHWEST TERRITORIES

Scale: One Inch to Eight Miles = 1/506,880

Miles 8 4 0 8 16 24

4-1958

DESCRIPTIVE NOTES

The map-area is accessible by air and sea, although the latter means of transportation is confined to a short period lasting from late August to early October. Freeze-up takes place about October 10 and by early November the thickness of the ice in most lakes and in the sea adjacent to the coasts permits landings by light ski-equipped aircraft. Such aircraft has been used in this region from early November until mid-June, although the short period of daylight in mid-winter months limits flying. Landings with heavier ski-equipped aircraft have generally been confined to the spring months. Although the break-up of the sea ice is late and Foxe Basin is never completely free from drifting ice, the abundance of large lakes makes most parts of the area relatively accessible to float-equipped aircraft from mid-July to freeze-up. Raised beaches (7b), which characterize extensive areas such as Igloolik Island, Siorarsuk Peninsula, Jens Munk Island, and the west coast of Steensby Inlet, have been used for landings by small wheel-equipped aircraft. The Hudson's Bay Company trading post at Igloolik is equipped with radio, and additional facilities are available some miles to the south.

Those parts of the district underlain by Palaeozoic sedimentary rocks (which are generally obscured by raised beaches) are low, usually sparsely covered with vegetation, studded with innumerable small lakes and ponds, and on their seaward sides surrounded by extensive tidal flats and shoal water. In contrast, most areas underlain by Precambrian rocks are rugged, rise steeply from the sea to heights of from 300 to 1,500 feet, and support a relatively luxuriant flora. A high drift-covered limestone plateau characterizes the west coast of Steensby Inlet and is in marked contrast to the low Precambrian terrain at the head of that inlet.

The entire area appears to have been glaciated and, except where obscured by features developed during recent marine submergence, drift is widespread. Most obvious is drumlinoid and fluted topography, a striking example of which is found between Murray-Maxwell Bay and Erichsen Lake. Crag and tail structures and glacial striae are also widespread. The evidence supplied by these features suggests a complex glacial history for the area.

Well defined raised beaches, thought to be of marine origin, have been observed at elevations up to 400 feet. On Igloolik Island a radiocarbon dating of 1,750 B.C. ± 300 years is given for archaeological material taken from a beach 51 metres above present sea-level[1]. This suggests a rate of emergence of about 4.5 feet a century.

Three groups of sedimentary rocks of probable Precambrian age outcrop in this map-area.

Three small rocky reefs of quartzite (1) outcrop between Igloolik and Neerlonakto Islands. These are believed to be part of the sedimentary-volcanic assemblage that outcrops north of Richards Bay and which is discussed in the notes on the adjoining area[2].

Rocks of unit 2 outcrop south of Isortoq Fiord, on the east side of Foxe Basin. Sills of granite are abundant within the group and granite outcrops both north and south of the succession. Some assimilation of the original sedimentary rocks has taken place and this has resulted in the formation of banded granitic and hornblende gneisses which extend for several hundreds of feet beyond the mapped contact. A sill of diorite that outcrops vertically above a massive magnetite band is probably responsible for its coarse-grained texture. The lateral extent of the assemblage is unknown; rocks similar to those mapped near the coast were observed near the head of Isortoq Fiord and a study of air photographs suggests that the group outcrops continuously for at least 20 miles along strike.

A third group of Precambrian sedimentary rocks (3) outcrops in the vicinity of Eqe Bay, 16 miles southeast of unit 2. West of Harbour Bay, this succession comprises pale yellowish brown to pale pink or grey quartzite, grit, and conglomerate (3a). Pebbles in the conglomerate include quartzite, red jasper, and chert. On the west side of Harbour Bay these rocks are succeeded by a considerable thickness of dark greenish grey to greenish black micaceous quartzite (3b). East of Grant-Suttie Bay the contact of unit 3 with granite (4) is sharp, the change from granite to sedimentary rock taking place within 3 feet, but on the east side of the assemblage, north of Eqe Bay, the sedimentary rocks have been altered to garnet-biotite schists, biotite schists, and bands of quartz amphibolite. This zone is about 2,000 feet wide. East of the contact, banded granitic and biotite gneisses predominate for several miles but gradually become less gneissic until along the eastern arm of Eqe Bay the bedrock is structureless. No granitic intrusions are present within unit 3. Iron-formation is of minor importance but a small band was seen near the centre of the succession, west of the west arm of Eqe Bay.

The bulk of the Precambrian rocks in the map-area are granitic and from the evidence of unit 2, and unit 1 in the adjoining area[2], it is probable that much of this rock is intrusive and is younger than the sedimentary units described so far. However, well defined gneissic zones occur, such as that northwest of Rowley River, where biotite-garnet gneiss, rusty gneiss, and granitic gneiss outcrop extensively and are, in places, schistose in appearance. Such areas are cut by many veins and dykes of quartz-feldspar pegmatite. In addition to these extensive gneissic or schistose bands, discontinuous lenses of biotite schist or amphibolite are common within the massive granitic areas. The granitic rocks may consist of quartz and feldspar only or may also contain biotite and/or hornblende. The overall colour varies from light grey to moderate orange-pink.

Basic intrusive rocks (5) are rarer in this area than in the Fury and Hecla Strait region to the west. However, those mapped conform in strike to the prevailing northwesterly direction of "Diabase Series"[3] rocks throughout this part of the Arctic.

In general, the Palaeozoic strata (6) are unfossiliferous and comprise limestone, argillaceous limestone, and dark grey shales. Outcrops are rare and although extensive areas are probably underlain by these rocks, in most cases they are mantled by raised beaches of slabby limestone or argillaceous limestone, and are shown as such on the map. Here and there outcrops may be observed when the tide is low and in most cases a gentle easterly or southerly dip prevails. A collection of graptolites from outcrops of argillaceous limestone at "Nerlevetok" on the east coast of Jens Munk Island according to R. Thorsteinsson is suggestive of an Early Ordovician age. A collection of poorly preserved gastropods from "Ungmarajuk" Island north of Koch Island is, according to G. W. Sinclair typical of the "Arctic Red River" fauna.

The rocks of units 2 and 3 trend east-northeast. Gneissic structure in granitic rocks trends in various directions and although a northwesterly strike prevails in places, no overall structural trend is suggested by the data available at present. The Palaeozoic rocks are characterized by low angles of dip and in many places are apparently flat-lying.

In the adjoining Fury and Hecla area, rocks similar to units 1, 2, and 3 are intruded by granite, which in turn is overlain unconformably by sandstone deemed from its lithological similarity to the Eqalulik group[4] to be of Proterozoic and/or Early Cambrian age. Thus it is possible that in this map-area units 1, 2, and 3 are Archaean in age. Similarities between the basic dykes (5) and the dykes reported from the Fury and Hecla Strait and Admiralty Inlet regions suggest that all may be similar in age. In the latter region the dykes were found to cut formations of Proterozoic and/or Early Cambrian age and to be overlain by Ordovician or earlier formations.

Unit 2, in the area south of Isortoq Fiord, contains bands of iron-formation and magnetite of unknown extent. One band of massive magnetite is 90 feet thick and a unit of banded iron-formation seen has a similar thickness. In addition, extensive bands of quartzite containing up to 40 per cent magnetite and bands of grünerite with 25 per cent magnetite are present. An analysis of a specimen of the massive magnetite made by W. L. Chase, Mines Branch, Department of Mines and Technical Surveys, gave the following results: Fe, 69.10%; Mn, 0.04%; P, 0.018%; Ti, 0.06%.

[1] Meldgaard, J.: Personal Communication, Analysis from Radiocarbon Dating Laboratory, Nationalmuseet VIII Dept., Copenhagen, Denmark, Analysis no. K 505.

[2] Blackadar, R. G.: Fury and Hecla Strait; Geol. Surv., Canada, P. S. Map 3-1958.

[3] Fortier, Y. O.: Geology and Economic Minerals of Canada, 4th ed., p. 417; Geol. Surv., Canada, 1957.

[4] Blackadar, R. G.: Geological Reconnaissance of Admiralty Inlet, Baffin Island; Geol. Surv., Canada, Paper 55-6, 1956.

MAP 4-1958
FOXE BASIN NORTH
NORTHWEST TERRITORIES