PRELIMINARY SERIES

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

13 C

LEGEND

PROTEROZOIC

HADRYNIAN(?)

7 DOUBLE MER FORMATION: conglomerate, arkose, sandstone, shale

6 Gabbro dykes, diabasic in part; 6a, pyroxenite; relations to 4, 5 not known

HELIKIAN

ANORTHOSITE SUITE (4-5)

5 Syenite-monzonite series: undivided. Includes minor amounts of 1, 4; 5a, syenite; 5b, monzonite; 5c, quartz monzonite

4 Anorthosite series: undivided. Includes minor amounts of 1, 5; 4a, anorthosite; 4b, gabbro; 4c, diorite

3 Granite to granodiorite, massive to poorly foliated, porphyritic in part; gradational with 1, 2

2 Gneisses derived mainly from sedimentary rocks. Grey, with relict bedding preserved as dark and light bands

1 Quartzo-feldspathic gneisses, undivided. Usually pink, with well-defined foliation; may in part be of sedimentary origin. Includes various banded and veined gneisses; 1a, garnetiferous biotite-hornblende gneiss; 1b, amphibolite gneiss; 1c, porphyroblastic gneiss

Rock outcrops (examined on ground, observed from air) . . . . . 1x, x

Geological boundary (approximate, gradational) . . . . . ~

Boundary of sand, clay, muskeg . . . . . ~

Bedding, tops known (horizontal, inclined) . . . . . +/

Gneissosity, schistosity (inclined, vertical, dip unknown) . . . . . /

Fault (approximate, assumed) . . . . . ~~~

Lineaments (from air photographs) . . . . . ~

Joint (inclined, vertical, horizontal) . . . . . /

Drumlinoid ridges (direction of ice-movement known, unknown) . . . . . /

Locality (K-Ar age determination in million of years) . . . . . .847 my

Mineral occurrence (pyrite, py; magnetite, mag; pyrrhotite, po) . . . . . py

Geology by I. M. Stevenson, 1965

Various private company reports and maps related to the area were made available by A. P. Beavan, British Newfoundland Corporation Ltd. Unpublished aeromagnetic maps were provided by the officers of Canadian Javelin Ltd.

Geological cartography by the Geological Survey of Canada, 1967

Base-map compiled and drawn by the Surveys and Mapping Branch, 1965

Magnetic declination 1967 varies from 30°58' westerly at centre of west edge to 31°37' westerly at centre of east edge. Mean annual change: 3.9' easterly

All elevations in feet above mean sea-level

INDEX MAP

Published 1967, the Centennial of Canadian Confederation

1867 1967

MAP 6-1967

GEOLOGY

MINIPI LAKE

NEWFOUNDLAND

Scale 1:253,440

1 inch to 4 miles

Miles 4 0 4 8 12 Miles

Kilometres 6 0 6 12 18 Kilometres

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

Printed by the Surveys and Mapping Branch

DESCRIPTIVE NOTES

The area may be reached by float-equipped aircraft operating out of Goose Bay seaplane base, about 65 miles northeast of the centre of the map-area.

The entire area is drift-covered and thickly treed, and outcrop, particularly in low-lying areas, is scarce or non-existent. Many lakes are too shallow for operating float-equipped, fixed-wing aircraft and hence much of the area is accessible only by helicopter or arduous ground traverse. A few of the larger rivers are navigable but the majority of the fast-flowing streams are impassable by canoe. Outcrop is best exposed in the valleys of the latter and on the thinly-treed crests of some of the hills. Aeromagnetic coverage was available for only a small portion of the area near Kenamu River. As a result, because of the thick drift, contacts are for the most part inferred.

Criteria of glaciation are everywhere abundant. Outwash plains, composed of sand and clay, occupy many of the larger stream valleys; extensive drumlin fields of indurated gravel and clay are prominent in the west, south, and northeast portions of the map-area; and thick ablation moraine consisting of clay, gravel, and boulders covers much of the low-lying, poorly drained, inter-stream areas. Extensive areas of the latter are muskegs impassable by foot. Although many of the more prominent hills are ice-rounded, most glacial striae have been obliterated by weathering. Eskers, most of which follow no prescribed direction, occur throughout the area.

Relief is moderate, with resistant rock types locally forming rounded hills, rising a few hundreds of feet above the surrounding terrain. In general, rocks of the anorthosite suite (4-5) are more prominent than those of the gneisses and granites (1-3) that have a more subdued topography. The area has an average elevation of about 1,300 feet above sea level, varying from a recorded maximum of 1,983 feet near the west central part to less than 100 feet near Gull Lake, where the surface of Churchill River lies some 1,500 feet below the level of the adjacent plateau to the south.

The quartzo-feldspathic gneisses (1) include various banded and veined gneisses of both sedimentary and igneous origin. Normally they are pink, with well-defined layers of mafic material. Foliation is generally well pronounced, but locally it may be so faint that only from the air is the banding apparent. Biotite is normally abundant and hornblende may also be present. Only rarely does garnet occur (1a) and the majority of the gneisses of unit 1 lie in the epidote-amphibolite metamorphic facies. Locally, the gneisses may contain numerous angular inclusions of basic material, and may be classed as amphibolite gneiss (1b). South of Petit Mecatina River the gneiss is noticeably porphyritic, with porphyroblasts of feldspar 2 inches or more long (1c).

Gradational with unit 1 is a distinct light grey gneiss that locally approaches a meta-quartzite in appearance and is of undoubted sedimentary origin. Relict bedding is well preserved in the form of alternate light and dark bands of quartz-feldspar and biotite respectively.

Massive, slightly foliated pink granite (3) grades into the older gneisses (1, 2) and in many instances the two rock types are indistinguishable. The granite, composed of coarse, pink feldspar, quartz, biotite, and/or hornblende may have numerous basic inclusions. Pegmatitic phases of this unit intrude the gneisses of units 1, 2 throughout the area at random.

The anorthosite suite (4-5) consists of a differentiated complex of mafic and salic rocks that for descriptive purposes have been divided into an anorthosite series (4) and a syenite-monzonite series (5). These rocks form a westward extension of the Mealy Mountain massif described by Eade[1]. Anorthosite (4a) is typically coarse grained, mauve coloured, and composed mainly of labradorite with accessory hypersthene and minor ilmenite. Only a few such outcrops with the peculiar chatoyant labradorite were recognized, and the major rock types exposed in this unit consist of gabbro (4b) and associated diorite (4c). All three rock types are gradational with each other.

The syenite-monzonite series (5) is a complex group of closely related salic differentiates with the compositions of syenite, monzonite, quartz monzonite, and perhaps granite where sufficient quartz occurs. These rocks, particularly the monzonitic varieties have a distinctive resinous, greenish lustre on fresh surface and weather a dull rusty brown to a depth of several inches. The presence of garnets and pyroxene in these rocks is indicative of the granulite facies of metamorphism. Contacts between the anorthosite series (4) and the syenite-monzonite series (5) are gradational, and it is believed that the latter forms a border phase of the former. No contacts between the anorthosite suite (4-5) and older rocks were located because of the extensive drift mantle, but in adjacent areas to the north and east the anorthositic rocks are intrusive. The areal distribution of the various rock types in units 4, 5 is complex, and complicated by poor exposure, but there is a tendency for single types to predominate in given areas. These rocks are probably equivalent in age to the Michikamau Lake anorthosites, which are of Helikian age (1400 m.y.)[2].

Gabbroic dykes (6), many with ophitic texture, cut the rocks of units 1-5 indiscriminately. Locally, the dykes may be mono-mineralic (6a). The age of the gabbroic intrusions is unknown, but they may be related to a late stage of the anorthositic emplacement.

The youngest rocks in the area are flat-lying to gently dipping conglomerate, arkose, sandstone and shale of the Double Mer Formation (7). They have been preserved, presumably as a down-faulted block, in the valley of the Kenamu River. They are similar to the rocks previously described by Low[3] and Kindle[4].

Glacial deposits have effectively obliterated most evidence of structural deformation in the area. The north-trending lineaments in the north-central part of the area are either faults or joints, but ground examinations offered proof of neither. These lineaments, prominent on air photographs, are much less conspicuous on the ground and appear as drift-filled valleys in which the bedrock along the walls is not exposed. Horizon markers are lacking, and where slickensides and other faulting phenomena were recognized, the faults were too minute to be mapped on the present scale. Those areas underlain by the anorthositic suite of rocks have been but little folded but the gneisses of units 1 and 2 are locally highly contorted and in places overturned.

No mineralization of economic importance was recognized in the area. The gabbro and diorite (4b, 4c) contain considerable titaniferous magnetite but known segregations to date are too small to be of importance. The beach sands along many of the lake shores, particularly those of Lake Minipi, contain lenses of titaniferous magnetite several inches thick that has weathered out of the surrounding rocks. Pyrite and minor pyrrhotite are present in many of the gabbroic dykes and also at a few places in the gneisses along minor shear zones and associated with pegmatites.

The thick cover of second growth spruce that covers much of the area, particularly that adjacent to Churchill River, may be of considerable future economic importance as a source of pulpwood.

[1] Eade, K. E.: Battle-Harbour Cartwright; Geol. Surv. Can., Map 22-1962.

[2] Emslie, R. F.: In Age Determinations and Geological Studies, Part I, Isotopic Ages, Report 5, p. 113; Geol. Surv., Can., Paper 64-17, (1965).

[3] Low, A. P.: Report on explorations in the Labrador Peninsula along the Eastmain, Koksoak, Hamilton, Manicouagan and portions of other rivers in 1892-93-94-95; Geol. Surv. Can., Sum. Rept. 1895, vol. 8, pt. L. (1896).

[4] Kindle, E. M.: Geography and geology of Lake Melville district, Labrador Peninsula; Geol. Surv. Can., Mem. 141 (1924).

MAP 6-1967
MINIPI LAKE
NEWFOUNDLAND
13 C