GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 13 SE AND PART OF 3 SW

Overlaps Map 53-16, "Central Labrador Coast"

LEGEND

PROTEROZOIC PALAEOZOIC

CAMBRIAN
LOWER CAMBRIAN

- Cm / O12 — Labrador 'Series': arkose, conglomerate; basalt
- 11 — DOUBLE MER SANDSTONE: coarse dark red pebbly arkosic sandstone
- 10 — Gilbert conglomerate; red pebble conglomerate
- 9 — Gabbro dykes, in part diabasic; relations to 7 not known
- 8 — Quartz and quartz-feldspar veins

ARCHAEAN

ANORTHOSITE SUITE (5-7)

- 7 — Gabbro; includes some anorthositic gabbro and diorite
- 6 — Anorthosite; some anorthositic gabbro; includes minor gabbro, monzonite and granodiorite
- 5 — Monzonite and granodiorite; includes some syenite and syenodiorite; minor gabbro, anorthositic gabbro, and anorthosite
- 4 — Granite to granodiorite, massive to poorly foliated, porphyritic in part; includes some granitic gneiss and minor syenite
- 3 — Granitic gneiss, banded gneiss, porphyroblastic in part; includes minor amounts of 4 and 2
- 2 — Paragneiss; minor quartzite and limy beds; includes minor amounts of 3
- 1 — Intermediate to basic gneiss; includes some massive amphibolite

Geological boundary (defined, approximate, gradational)
Limit of geological mapping
Bedding, tops known (inclined, vertical)
Gneissosity, schistosity (horizontal, inclined, vertical, dip unknown)
Fault (approximate, assumed)
Bedrock trends (from air photographs)
Lineaments (from air photographs)
Glacial striae (direction of ice-movement unknown)
Mineral occurrence (chalcopyrite, cp; mica, mi; pyrite, py; pyrrhotite, po) ×py

Geology by K. E. Eade, 1961

Cartography by the Geological Survey of Canada, 1962

Lighthouse
Stream (approximate)
Fall and rapids
Marsh
Sand
Height in feet above mean sea-level

Base-map by the Surveys and Mapping Branch, 1958

Mean magnetic declination 32° 36' West decreasing 3.8' annually. Readings vary from 31° 10'W. in the SW corner to 33° 58'W. in the NE corner of the map-area.

INDEX MAP

Unmapped.
Few or no outcrops

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MAP 22-1962
GEOLOGY
BATTLE HARBOUR-CARTWRIGHT
COAST OF LABRADOR
NEWFOUNDLAND

Scale: One Inch to Eight Miles = 1/506,880
Miles
8 4 0 8 16 24

DESCRIPTIVE NOTES

The geological reconnaissance of the area in 1961 was based on observations made near lakeshores from spot landings with a fixed-wing aircraft, supplemented by scattered ground traverses. Previous reconnaissance mapping of much of the area by British Newfoundland Exploration Company Limited[1] was available as a guide, and information from this work was incorporated in localities where no observations were made during the present survey. Information on the region bordering the coast was obtained from previously published reports by Christie[2], Christie et al.[3], Douglas[4], and Kranck[5], as no re-examination was made.

The Mealy Mountains, underlain by anorthosite, rise to at least 3,700 feet and are the highest part of the area. Elsewhere relief is moderate, with only local hills, commonly of gabbro. Flat swampy terrain characterizes the central part. Combined coniferous and deciduous forest covers all of the region except for a narrow coastal belt, the Mealy Mountains, and a few other prominent hills. Large tracts of forest, however, have been burnt.

The intermediate to basic gneiss (1) consists primarily of plagioclase and hornblende, with the minerals concentrated in light and dark bands. Garnet is an abundant accessory mineral. Some quartz is present in the intermediate variety. Foliation may be absent, resulting in massive amphibolite. Rocks of this unit may differ in origin; some result from regional metamorphism of old basic rocks or carbonate-rich bands, others from metamorphism accompanying emplacement of anorthosite-suite rocks.

The paragneiss unit (2) consists of well-banded gneiss, meta-quartzite, lime-rich beds consisting of carbonates or calc-silicates, and minor conglomerate. Relict bedding is visible in some places in the gneiss and quartzite. Just west of Sandwich Bay, rocks of this unit consist of banded quartz-rich gneisses, meta-quartzite, and minor conglomerate. West of St. Lewis Inlet and Alexis Bay, in the southern part of the area, both meta-quartzite and carbonate-rich bands occur in well-banded gneiss. In the northern part of the area, east of Lake Melville, dark biotite-rich or hornblendic bands are prominent in the banded paragneiss.

Granitic gneiss (3) is gradational into paragneiss (2) and includes heterogeneous banded or veined gneisses and more homogeneous granitoid gneisses, all with good foliation. Most commonly the rocks are of granodiorite composition, but in places they are granite or quartz monzonite. Biotite is the common mafic mineral, with hornblende less abundant. The unit includes the 'Domino' gneiss described by Douglas[4] and Kranck[5]. The epidote-amphibolite facies of metamorphism is normal for most rocks of this unit except to the east and southeast of the Mealy Mountains anorthosite mass. There, the gneisses in normal (i.e. unfaulted) contact with the anorthosite-suite rocks contain abundant garnet and pyroxene, characteristic greenish plagioclase, and biotite, indicating that metamorphism has reached the granulite facies.

The massive to poorly foliated granite to granodiorite (4) grades into the granitic gneiss (3). It is porphyritic in part, normally pink, and with dark inclusions or schlieren and minor pegmatite segregations. It is rarely completely massive. Biotite and hornblende are equally abundant, occurring either singly or together. The large mass in the extreme south of the area differs slightly as it contains few inclusions, has little associated pegmatite, and parts of it range to monzonite in composition.

The monzonite-granodiorite (5), anorthosite (6), and gabbro (7) are considered to be related in origin and hence are grouped together as the anorthosite suite. Although rocks with a wide range of composition are included within unit 5 (gabbro, diorite, anorthosite, monzonite, syenite, granodiorite, and quartz monzonite), monzonite and granodiorite are most abundant. Typically, the plagioclase of these rocks has a greasy lustre and a greenish tinge, and quartz, if present, is dark grey to black. Mafic minerals, normally pyroxene (either augite or hypersthene), are scarce, but the coloured quartz makes the rocks dark. The large area of these rocks south of Lake Melville has a gradational contact with the anorthosite mass.

The anorthosite (6) consists primarily of plagioclase, which varies in composition from andesine to labradorite. The combined pyroxene and titaniferous magnetite content is from 2 to 15%, and where the latter is the case the rock is considered an anorthositic gabbro. The rock is dark grey to black, medium to coarse grained and jointed. Parts of the large anorthosite mass are in bands that are slightly finer or coarser in grain size.

The small gabbro bodies (7) associated with the large mass of anorthosite-suite rocks south of Lake Melville appear to be restricted to the margins of the mass. In the eastern part of the area are large bodies of gabbro, such as the one extending northwest from White Bear Bay. This is a composite body and, although medium-grained dark green gabbro predominates, in different parts of the body it is diorite, gabbro, anorthosite, or pyroxenite. At the margins, amphibolite is commonly developed; this is cut by small granitic stringers, apparently formed during the regional metamorphism. Other masses of unit 7 have fresh gabbro in the contact zone, indicating that all gabbro bodies may not be of the same age.

The large quartz and quartz-feldspar veins (8) are restricted to the south-eastern part of the area where they are emplaced in the granite (4). The granite contains little other pegmatitic material. The largest vein observed is 150 feet wide, with obscured margins. Commonly the veins consist wholly of fine-grained glassy quartz but in some places plagioclase feldspar forms up to 20% of the rock. The veins have been strongly sheared, resulting in breccia or mylonite, and then stained red with hematite.

The gabbro dykes (9) in the northeastern part of the area show some diabasic texture. These are the largest observed dykes and have a maximum width of 125 feet. A number of smaller short dykes are reported along the coast. These may be related to the gabbro (7), as small discontinuous gabbro dykes cut the main anorthosite mass (6) of the Mealy Mountains.

The Gilbert conglomerate (10) is found only in one small outcrop area just west of Gilbert Lake. It consists of well-rounded pebbles averaging about 1/4 inch in diameter, chiefly of quartz with some of pink feldspar, in an arkosic matrix. Bedding is distinct, with grain size varying from bed to bed. All the rock is heavily hematite stained. It unconformably overlies mylonite probably derived from quartz-feldspar-mica gneiss. Beds dip steeply to vertically. The lack of metamorphism suggests a Proterozoic age for this sedimentary remnant preserved in a down-dropped fault block.

The Double Mer Sandstone (11) was not examined, but it has been described by Low[6] and Kindle[7].

The lower Cambrian Labrador "Series" (12) in the southeast corner of the area consists of approximately 50 feet of maroon arkose and pebble conglomerate capped by 12 feet of basalt. The composition and shape of the grains in the horizontally bedded arkose and conglomerate indicate they are probably derived directly from the adjacent granitic gneiss terrain, with a minimum of transportation and decomposition. Subangular pebbles, averaging 1/4 inch in diameter, are mostly of quartz and pink feldspar. Some larger pebbles, up to 1 inch in diameter, are well rounded. The overlying columnar-jointed basalt is fine grained and dark grey to black. Immediately beneath the basalt is a bed or sill, several feet thick, of coarse-grained pink feldspar, quartz, and crystalline hematite. This may be either a pegmatite sill or an arkosic bed altered by solutions from the basalt.

North from St. Lewis Inlet, in the eastern part of the area, the rocks have a prominent northwest trend and appear to form a major synclinal structure plunging southeast, dipping steeply on the south limb and gently on the north limb. The large gabbro mass is emplaced along its axis. Northwest of this structure, between it and the main mass of the anorthosite suite, the gneisses have extremely complicated structure, although only a short distance north the simple northwest trend is again characteristic. In the southern part of the area the trend of the foliated rocks appears to be governed by the granite masses, with foliation wrapped around the massive rocks.

The major fault along Gilbert River and Gilbert Bay forms a prominent lineament trending about N65°W, and similar parallel lineaments follow Alexis River, Shinneys Waters River, and the northeast coast from Porcupine Bay to Huntingdon Island; all may be the location of faults. The major fault that bounds, on the northeast, the mass of anorthosite forming the Mealy Mountains, has approximately the same trend. Within the anorthosite mass the prominent lineaments shown are visible on air photographs, and represent either a joint pattern or faulting, or a combination of both. They differ in direction from the bedrock trends in the anorthosite, which are due to banding.

Small segregations of titaniferous magnetite in the anorthosite are too small to be of economic interest. In the paragneiss (2) and granitic gneiss (3) small occurrences of pyrite and chalcopyrite were noted but none is extensive. A small inlier of paragneiss in granite, just west of Cape Bluff, is worth investigation as there, pyrite and minor chalcopyrite are present in extensive rusty zones along shears. An occurrence of mica on Paradise River was described by Douglas[4].

[1] Piloski, M. J.: Private Report and Map to British Newfoundland Exploration Company Limited (1954).
[2] Christie, A. M.: Geology of the Southern Coast of Labrador from Forteau Bay to Cape Porcupine, Newfoundland; Geol. Surv., Canada, Paper 51-13 (1951).
[3] Christie, A. M., Roscoe, S. M., and Fahrig, W. F.: Central Labrador Coast, Newfoundland; Geol. Surv., Canada, Paper 53-14 (1953).
[4] Douglas, G. V.: Notes on Localities Visited on the Labrador Coast in 1946 and 1947; Geol. Surv., Canada, Paper 53-1 (1953).
[5] Kranck, E. H.: Bedrock Geology of the Seaboard of Labrador Between Domino Run and Hopedale, Newfoundland; Geol. Surv., Canada, Bull. 26 (1953).
[6] Low, A. P.: Report on Explorations in the Labrador Peninsula along the Eastmain, Koksoak, Hamilton, Manicougan and portions of other Rivers in 1892-93-94-95; Geol. Surv., Canada, Sum. Rept. 1895, vol. 8, pt. L (1896).
[7] Kindle, E. M.: Geography and Geology of Lake Melville District, Labrador Peninsula; Geol. Surv., Canada, Mem. 141 (1924).