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DEPARTMENT OF MINES AND TECHNICAL SURVEYS

LAC BAZIL, QUEBEC

(23J W½)

(Report and Map 47-1962)

I. M. Stevenson

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The geological reconnaissance mapping of the area was carried out in August 1961, using two helicopters. A fan-shaped system of traverses was flown, radiating from Schefferville, Que., with individual flight lines spaced not more than 6 miles apart.

Many of the valleys and lower slopes are drift covered and thickly treed with tamarack and black spruce. Bedrock is well exposed only on the hills and steeper slopes. The present work was strictly of a reconnaissance nature, but practically all the rocks encountered were similar to those described by Eade[2], Frarey[3], and Duffell[1], from adjacent areas to the west, east, and south respectively.

The greater part of the map-area is underlain by Archaean rocks of unit 1, consisting of fine- to medium-grained, grey-green, banded, garnetiferous, pyroxene-bearing, biotite-quartz-feldspar gneiss, characterized by a granular, foliated texture. The garnets, and to a lesser extent pyroxene, commonly occur as poikiloblastic anhedra. Biotite is dispersed at random throughout the rock. The pyroxene is normally hypersthene with minor clinopyroxene (augite-diopside). Zoned plagioclase (An_{10} - An_{40}) is the most abundant mineral, with a lesser amount of orthoclase and rarely microcline. Microscopically, the rock displays a porphyroblastic granular texture. The quartz is slightly strained but no evidence of cataclasis was observed. Perthite was noted in a few specimens. That these rocks have been subjected to retrogressive metamorphism is indicated by the alteration of pyroxene to uralite, chlorite, and zoisite; the alteration of hornblende and biotite to chlorite; and the alteration of the feldspars to clay and sericite. The feldspars have also been extensively saussuritized.

Massive granitoid rocks (2), ranging in composition from granite to quartz diorite, form a distinctive unit. They are medium to coarse grained, grey-green, and may locally be porphyritic with large crystals of plagioclase and orthoclase. Garnets, where present, have a poikiloblastic texture with a sieve-like structure of included quartz and feldspar. Reddish brown biotite occurs in clots or segregations throughout the rock. The plagioclase ranges in composition from sodic oligoclase to a plagioclase with a composition of An_{40}. It is everywhere zoned, commonly myrmekitic, and rarely anti-perthitic. The potash feldspar is mainly orthoclase, but microcline is present in lesser amounts. The quartz is slightly strained. Pyroxene, in the rocks of this unit, is characterized by scattered anhedra that show varied degrees of alteration toward uralite, epidote, and zoisite. Hornblende, partly altered to chlorite, is a minor constituent. Muscovite was noted in a few sections, but nowhere in conjunction with pyroxene.

The rocks of units 1 and 2, each retaining its own textural elements, are in places interbanded to form a distinctive map-unit (3).

The massive granites and granodiorites of unit 4 are locally foliated. These rocks are medium to coarse grained, light pink to light grey, and commonly porphyritic. The distinctive greasy, olive-green lustre of units 1, 2, and 3 is lacking. The plagioclase, varying in composition from An_{10} to An_{50}, is normally zoned. Orthoclase and microcline are present in approximately equal amounts. Perthite is a common constituent. The quartz is only slightly strained, with no evidence of cataclasis. Red-brown biotite, hypersthene, and garnet are present in variable amounts. Alteration effects, indicative of retrogressive metamorphism, are similar to those of units 1, 2, and 3.

Northwest-trending rocks in the northeast corner of the map-area form part of the Knob Lake Group (5-9) previously described by Frarey[3] and Harrison[4]. Because of their economic importance they have been thoroughly examined by the Iron Ore Company of Canada[6], who very kindly made their information available to the Geological Survey.

The Attikamagen Formation (5) consists of an assemblage of shale, slate, and dolomite unconformably overlying the granitic rocks. Minor amounts of quartzite and chert may be present. The argillaceous rocks in this formation are similar in appearance and lithology to those of the Menihek Formation (9) and the two cannot everywhere be separated.

The Denault Formation and the younger Fleming Formation have been included as a single rock unit for ease of mapping. The Denault dolomite may be massive or well bedded and generally breaks with a conchoidal fracture. Crossbedding and grain gradation are prominent features. Chert and flint are almost invariably associated with the dolomite. The dolomite weathers to a characteristic yellowish brown colour, but the fresh surface is mostly cream or white. The Fleming Formation consists of chert and chert breccia. It is a fragmental rock made up of angular pieces of chert in a fine- to medium-grained massive quartzite matrix. Because of its unique lithology it forms an excellent horizon marker. Individual chert fragments vary from 1/2 inch to 18 inches in diameter. The rock does not normally show bedding.

The Wishart Formation (7) lies in a gradational contact with the underlying Fleming Formation, and the transition between the two types normally occurs within a few feet. Typically, the Wishart Formation is a well-bedded to massive, pure, hard, white, medium- to coarse-grained quartzite composed of rounded glassy grains of quartz. Locally, lenses of greywacke and arkose may be present in the quartzite, as well as small amounts of chert and slate.

Overlying the Wishart quartzite is a narrow but persistent band of brown-weathering black slate known as the Ruth Formation. Because of its high iron content (more than 10%) it has been combined with the Sokoman Formation to form unit 8. Together they form all the iron-formation in the map-area.

The Sokoman Formation is composed of the following minerals: chert, hematite, quartz, jasper, magnetite, siderite, hydrous iron oxides, and iron-aluminum silicates. Each of these minerals may occur as relatively pure lenses or they may be intermingled to form a massive iron-formation. The chief types of iron-formation are: massive chert-hematite-magnetite, banded chert-siderite, banded silicate-carbonate, jaspilite, massive chert-siderite-iron oxide, magnetic greywacke and slate, and jasper conglomerate.

The Sokoman and Ruth Formations are normally overlain by the Menihek Formation, consisting of greywacke, carbonaceous shale and slate, and local lenses of dolomite and chert.

South-striking diabase dykes (10) cut the Proterozoic rocks near the northern margin of the map-area.

Major folds, as well as numerous minor folds, are present throughout the area, but lack of information makes accurate determination of the structure impossible. The general trend of the rocks is northwest, with local variations. Several domes have been outlined from aerial photographs. The more prominent linear fractures in the area are readily recognized from air photographs, and may be either faults or joints. A major southeast-striking fault runs from Lac LaBorde to Howells River, causing considerable displacement of the Proterozoic "trough" rocks.

The entire area has been extensively glaciated. Observations on the pleistocene of this region have been published elsewhere[5].

No mineralization of interest was noted except for the iron-formation in the northeast corner of the area. The latter has been thoroughly examined by the Iron Ore Company of Canada[6].

[1]Duffell, S., and Roach, R. A.: Mount Wright Area, Quebec-Newfoundland, Geol. Surv., Canada, Map 6-1959 (1959).

[2]Eade, K. E.: Nichicun-Kaniapiskau Area, New Quebec; Geol. Surv., Canada, Map 56-1959 (1960).

[3]Frarey, M. J.: Menihek Lakes, Newfoundland and Quebec; Geol. Surv., Canada, Map 1087A (1961).

[4]Harrison, J.M.: The Quebec-Labrador Iron Belt, Quebec and Newfoundland; Geol. Surv., Canada, Paper 52-20 (1952).

[5]Henderson, E.P.: A Glacial Study of Central Quebec-Labrador; Geol. Surv., Canada, Bull. 50 (1959).

[6]Iron Ore Company of Canada: Unpublished maps and descriptive reports.

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