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MICHIKAMAU LAKE, EAST HALF QUEBEC-NEWFOUNDLAND

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(Report and Map 31-1963)

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MICHIKAMAU LAKE, EAST HALF, QUEBEC-NEWFOUNDLAND

The map-area is approximately 100 miles east-southeast of Schefferville and is most easily reached by float-equipped aircraft available from there.

The southern three-quarters of the area drains into the eastward-flowing Naskaupi and Hamilton River systems. The northern part drains into the north-flowing George River system. In the vicinity of the height-of-land, much of the area is low-lying and covered with muskeg and thick glacial drift.

As indicated by drumlins, striae, and crag-and-tail features, the direction of the last glacial ice movement was toward the east and east-southeast. A few, apparently older, striae suggest a previous northeasterly ice movement. The main eskers, formed during deglaciation, trend southeasterly and in the southern part of the map-area can be seen to cross the drumlin and striae directions at a marked angle. Boulder till blankets much of the area and good outcrops are found mainly on hilltops and along lake shores. Sand and fine gravel are the chief esker materials.

The most prominent topographic relief in the area is associated with the anorthositic complex, which forms a distinct physiographic unit, visible for many miles. Although lakes are abundant, many of them are shallow and boulder-strewn, making travel on them difficult. Most of the smaller streams are not navigable except for short distances, particularly after mid-summer when water levels drop markedly. The summits of most hills are above tree-line and elsewhere vegetation is generally sparse so that traversing on foot is not difficult.

Metasedimentary rocks and paragneiss (1) make up a poorly exposed and minor part of the bedrock assemblage. Greywacke, quartzite, and tuffaceous and pelitic rocks are exposed in the southern part of the area. Fine chlorite and micas are abundant and commonly impart a phyllitic character to the exposures. Steeply dipping to vertical foliation is commonly apparent but relict bedding is rarely identifiable. Eade (1952) shows similar rocks occurring 10 miles south of the map-area on the west shore of Michikamau Lake and suggested that they may be of Proterozoic age. Small masses of granulitic gneissic rocks associated with the western margin of the anorthositic intrusion are probably more strongly metamorphosed equivalents of the rocks to the south and appear to be products of thermal metamorphism by the intrusion.

Unit 2 consists of plagioclase and quartz bearing rocks with a mafic content (amphibole and/or biotite) of more than 20 per cent. These are in lenses and irregular masses of minor extent except in the extreme northeast corner of the area where they are exposed over a width of 8 miles across the strike of the foliation. Garnet occurs sporadically in these rocks.

Fine- to medium-grained granitic gneiss and lit-par-lit gneiss (3) with less than 20 per cent mafic minerals occur abundantly only in one broad southerly trending belt in the southern part of the area. These are feldspar-quartz-hornblende (and/or biotite) bearing rocks, commonly with schlieren or lenses rich in biotite or hornblende. In the southwestern part of this unit are a few exposures of staurolite-bearing gneiss. On the west side of unit (3) is a belt of feldspar-quartz-biotite (hornblende)- garnet gneiss (3a). This rock contains up to 10 per cent red-brown garnet, 20 per cent quartz, 25 to 50 per cent biotite (and/or hornblende), with the remainder largely plagioclase.

A large part of the map-area is underlain by fine- to medium-grained, grey to pinkish grey foliated granodiorite and granite (4). The usual mineral assemblage is feldspar (dominantly plagioclase), quartz, and hornblende and/or biotite. A consistent north to northwest-trending foliation is typical of these rocks over much of the area. Local areas, too small to be shown on the map, of banded gneiss and amphibolite occur in many places as remnants or segregations within unit 4.

The western part of a large anorthositic intrusion (5) underlies the east-central part of the area. The internal structure of the intrusion is manifested by mineralogical layering, which is best developed in the olivine anorthosite (5b), and by textural layering, which is shown by the anorthosite (5a). Igneous lamination, caused by planar orientation of tabular plagioclase crystals, is also common and parallels the layering. The layering in the main part of the intrusion shows consistent inward dips indicating a basin-like structure. The outcrops on the west shore of Michikamau Lake have east-dipping layers but with much steeper dips. Graded crystal-sorting in some of these layers, however, strongly suggests that they were formed with flatter dips than they now possess. It is probable, therefore, that a fault passing through Michikamau Lake separates the layered section on the west shore from that on the east.

Olivine anorthosite (5b) with up to 25 per cent olivine occurs in a wide zone in the border of the intrusion. "Stratigraphically" above this is a zone several thousand feet thick of anorthosite (5a) with little or no mafic content. Above the latter are alternating thick layers of olivine anorthosite and anorthosite. Plagioclase in the anorthositic rocks is fresh labradorite and occurs as grains from 1mm to crystals 10 inches across. The purer anorthosite invariably is coarser grained than the olivine-bearing variety. The olivine in the intrusion is almost

entirely fresh with only local minor serpentine and iddingsite alteration. Pyroxenes occur sporadically but are not abundant. Small magnetite-rich bands occur in several places on the west side of Michikamau Lake - these are probably titanium-bearing but the tenor has not been determined. Small amounts of red-brown biotite are present near the border of the intrusion on the west shore of Michikamau Lake.

Diorite and gabbro (6) are of minor extent. They are generally plagioclase-hornblende (and/or biotite) rocks which have suffered some degree of retrograde metamorphism. The roughly circular mass in the northwest corner of the map-area apparently represents remnants of a basic mass that has been intruded by younger granite.

Mainly massive, medium- to coarse-grained syenite (7a), granite (7b), and minor granodiorite (7c) underlie the western border and some of the central part of the map-area. The syenites and granites are commonly porphyritic with feldspar phenocrysts up to 2 inches across in a coarse-grained matrix. In the western part of the area these rocks are typically brown and in places small remnants of hypersthene can be found. The common mafic mineral, however, is a deep olive-green hornblende which, in places, can be seen to be an alteration product of hypersthene. Some red-brown biotite is usually present. The feldspars are oligoclase, microcline, orthoclase, and commonly microcline microperthite. These rocks have charnockitic affinities but retrograde metamorphism has all but destroyed the original hypersthene. According to Wynne-Edwards (1960), similar coarse granites and syenites to the west commonly carry hypersthene. The large granitic mass west of Michikamats Lake is pink to white with a mineral assemblage of microcline microperthite, oligoclase, quartz, green hornblende, and minor brown biotite. The syenite masses west and north of Michikamats Lake carry clinopyroxene as the chief mafic mineral.

A few outcrops of flat-lying conglomerate, arkose, and siltstone (8) occur near the northwest end of Lake Michikamau. The conglomerate carries abundant rounded to subrounded, chiefly granitic, boulders, cobbles and pebbles in a brick-red arkosic matrix. Arkoses with fresh feldspars and siltstones occurring in the sequence are also distinctly red. These rocks, by virtue of their undisturbed dips and lack of metamorphism, may well be Proterozoic in age.

As mentioned above, small magnetite-rich, probably Ti-bearing bands and zones occur in places in the anorthositic rocks on the west shore of Michikamau Lake. These are too small to be of economic importance in themselves but iron-titanium oxide deposits of greater extent may occur elsewhere in the intrusion.

References

Eade, K.E.
1952: Unknown River (Ossokmanvan Lake, East Half); Geol. Surv. Can., Map 52-9.

Wynne-Edwards, H.R.
1960: Michikamau Lake, West Half; Geol. Surv.Can., Map 2-1960.

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