

RP 322(A)

PRELIMINARY REPORT ON THE ANVILLE - DROUET AREA, ABITIBI-EAST COUNTY

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PRELIMINARY REPORT

ON THE

ANVILLE - DROUET AREA

ABITIBI-EAST COUNTY

BY

J. H. REMICK



QUEBEC
1956

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INTRODUCTION

The Anville-Drouet area, which was geologically mapped during the summer of 1955, is in Abitibi-East county, about 285 miles north of Hull and about 40 miles southwest of Chibougamau village. It is bounded by longitudes 75°00' and 75°15' and by latitudes 49°30' and 49°45', and comprises about 200 square miles. It includes about three-quarters of Drouet township, about one-half of Anville, Brochant and Lescure, and small portions of Dolomieu and Daubrée townships.

The area to the east was mapped by Lyall in 1952 (1), that to the north by Beach in 1937 (2), and the one to the south by Deland in 1954 (3).

Several aviation companies located near Chibougamau along the Chibougamau-St. Félicien highway provide good transportation into the area, the flight distance being about 35 miles. Numerous lakes provide suitable landing surfaces for float-planes. From Chibougamau, Dickson lake is accessible by canoe via Doré, Merrill, Muscocho, L'Eau Jaune, and Presqu'île lakes, and Obatogamau river. This route involves three portages of between one and two miles each. As mentioned by Lyall (1), "Lac Presqu'île can also be reached by road since a branch road runs from mile 138.7 on the Chibougamau highway to the Opemisca property, a distance of some 22 miles. This mining property is connected with lac Presqu'île, 5 miles to the south, by a bulldozed road that has been in use for some time and is suitable for travel by trucks and jeeps."

Several canoe-routes and a number of cut lines within the map-area afford fairly easy access to most parts.

- (1) Lyall, H.B., Preliminary Report on the Brongniart-Lescure Area, Abitibi-East County; Que. Dept. Mines, P.R. No. 285 (1953).
- (2) Beach, H.H., Michwacho Lake, Abitibi Territory, Quebec; Geol. Surv. Can., Map 623A (1941).
- (3) Deland, A.N., Preliminary Report on Gradis-Machault Area, Abitibi-East County; Que. Dept. Mines, P.R. No. 312 (1955).
- (4) Lyall, H.B., op.cit.

PHYSICAL FEATURES

The area is generally flat and the land surface is covered by many small swampy areas interspersed with thickly wooded patches. A belt, three to four miles wide, and covered by silt, sand and gravel, some of which forms esker-like ridges, commences in the northeast corner of the map-area and runs southwest past the northwest shore of Mann lake and thence out of the map-area, giving a local hilly relief to this part of the area.

The map-area has a general elevation of about 1,100 feet above sea-level, but a few hills of granite or lava rise 100 to 300 feet above the lake levels. The highest points in the area are a few hills just south of MacIntosh lake rising 200 to 300 feet above the lake level.

The southeastern third of the area is drained southward to Doda lake and thence westward through Opawica river into the Waswanipi-Nottaway system which eventually empties into James bay. The northwestern part drains northward to Obatogamau river and thence westward via Chibougamau river to join that system some 35 miles distant.

GENERAL GEOLOGY

All the consolidated rocks of the area are of Precambrian age and resemble similar rocks found in adjoining areas. Keewatin-type lavas and basic intrusives underlie a belt about two miles wide along the southern boundary of the map-area and also crop out in a small patch in the extreme northeast corner of the area. Granite and associated intrusives underlie more than three-quarters of the map-area and crop out throughout most of the country between the two belts of Keewatin-type rocks. Two small lenses of amphibole schist and gneiss with minor biotite schist and gneiss, considered to be roof pendants of recrystallized lava, are included in the granite mass in the northern part of the area. The rocks underlying a narrow belt along the central part of the northern boundary and a four-mile-long lens south of Mann lake are shown separately on the accompanying map. They consist of a variety of rock types - including lavas, schists, gneisses, basic intrusives, granites and pegmatite - in units too small to be mapped individually at the present scale, and are termed "undifferentiated" in this report.

Keewatin (?)

Altered lavas

Metamorphosed lavas occur in an east-west belt along the southern boundary of the map-area and also underlie a small patch in the extreme northeast corner. They are found also as scattered outcrops with intruded granite in the very northern part of the area. Shearing and recrystallization due to metamorphism have largely obliterated primary structures in these lavas.

The metalava outcrops in the southern belt that are very near or on the southern boundary of the map-area are a highly schistose, thinly sheeted, light green rock best described as chlorite schist. To the

east and west of Paul lake the lavas (formerly of andesitic and basaltic composition) have been recrystallized to a fine-grained, bluish-green amphibole-feldspar schist showing very fine amphibole needles parallel to the schistosity. A few outcrops show one-quarter inch feldspar phenocrysts which are now elongated, and a few other exposures have elongated calcite amygdules of similar size. The lavas west of Paul lake contain numerous quartz lenses, about half an inch long, parallel to the schistosity. Also in this district, barren fractured quartz veinlets are found both parallel and oblique to the schistosity of the lavas.

A few outcrops of metarhyolite were observed south of Paul lake, near the southern boundary of the map-area. The rock is fine-grained, highly schistose, thinly sheeted, creamy-white and rich in talc.

A massive, very fine-grained, siliceous lava having small quartz phenocrysts was found on the north shore of Cavan lake and also to the west of this lake. The rock is light green on its fresh surface, but weathers chalky white. It is near metarhyolite in composition, but has been only slightly metamorphosed compared to the other metalavas.

Table of Formations

CENOZOIC	Recent and Pleistocene	Till, silt, sand, gravel, boulders
Great unconformity		
PRECAMBRIAN		Diabase
	Intrusive contact	
		Biotite granite, gneissic biotite granite, hornblende granite, muscovite granite, pegmatite, aplite
	Intrusive contact	
	Keewatin (?)	Diabase, diorite, gabbro, amphibolite Amphibole schist and gneiss, biotite schist and gneiss Basalt, andesite, rhyolite

Amphibole schist and gneiss, biotite schist and gneiss

Amphibole schist and gneiss, consisting of amphibole needles and feldspar, is found around Bossé lake and also to the east of Beauchesne lake. Small xenolithic masses of these rocks, 20 to 300 feet in diameter, are found enclosed by hornblende and biotite granite in the lens of undifferentiated rocks south of Mann lake.

The amphibole schist is very similar to the recrystallized lava in the southern part of the area, but is somewhat coarser grained and tends to show thin gneissic layers rich in either feldspar or amphibole. The rock is bluish-green on the fresh surface, but weathers chalky white with fine lines of black amphibole needles.

A few outcrops of biotite schist and gneiss occur associated with the amphibole schist and gneiss south of Mann lake and near Beauchesne lake.

Around Beauchesne lake the biotite gneiss is a highly feldspathic rock having about 15-20 per cent biotite and flat, elliptical, half-inch lenses of amphibole needles oriented parallel to the schistosity.

A single outcrop of biotite schist was found in the lens of undifferentiated rocks south of Mann lake. The rock breaks easily along the schistosity planes and has a good sheen on these surfaces due to the alignment of biotite flakes.

It is probable that all these rocks are only more highly metamorphosed facies of the altered lavas.

Diabase, diorite, gabbro, amphibolite

Sill-like bodies of altered diabase ranging in thickness from a few feet to 1,000 feet are found in the northern and southern parts of the area intrusive into the lavas. This rock is generally massive, fine- to medium-grained, and consists of about equal amounts of hornblende and feldspar, the latter slightly predominating. The fresh surface is dark green to black. The weathered surface is rough due to the weathering out of the feldspar. In places schistosity is seen in the diabase near its contact with altered lava. Since the rock shows of diabasic texture and occurs in small sill-like bodies generally parallel to the schistosity of the lavas, the writer prefers to call this rock diabase rather than diorite or gabbro.

A few outcrops of altered diorite and gabbro are found in the granite north of Obatogamau river and in the lens of undifferentiated rocks south of Mann lake. The rock is dark bluish-green, medium-grained, rather massive and consists of amphibole and plagioclase, the latter predominating. The exposures of these rocks appear to be small or large xenolithic blocks enveloped by granite.

A single large outcrop of amphibolite is found on the southwest shore of Mann lake. This rock consists entirely of unoriented amphibole crystals from one-quarter to half an inch long. The weathered surface is dark green and very pitted. Dykes and veinlets of hornblende granite cut the amphibolite.

Granites and Associated Intrusives

Biotite granite

Biotite granite of rather uniform appearance and composition underlies about three-quarters of the map-area. The rock is medium-grained, massive to slightly gneissic, and consists of about 25-30 per cent quartz, 10-15 per cent biotite, and white feldspar. Most of the feldspar is plagioclase which tends to be in rectangular grains, some up to one-quarter of an inch in size. The biotite flakes usually show a faint to marked alignment. A few outcrops contain porphyritic eyes of biotite consisting of booklets of biotite from one-eighth to one-quarter inch in diameter.

The granite along the southwest arm of Dickson lake and for several miles to the south is somewhat altered, the rock now consisting of quartz, salmon-pink plagioclase, and chlorite. In addition, minor amounts of magnetite, fluorite, and pyrite are found disseminated through the rock of some outcrops. Thin fractures filled with pink feldspar are very numerous and epidote-filled fractures are common. Along the south shore of this western arm of Dickson lake, specularite-filled fractures occur in a two-foot-wide zone of close jointing and fracturing, and are also seen in a few other outcrops just to the south. Near the specularite fracture zone, euhedral quartz crystals about one-eighth inch long fill flat, thin fractures in vug-like fashion. Several small fractures containing some calcite are found nearby.

Hornblende granite

Hornblende granite seems to be closely associated with outcrops of metamorphosed basic rocks. In many places it veins or includes xenoliths of amphibole schist and gneiss. The exposures of hornblende granite are too small to be shown separately on the accompanying map.

The hornblende granite is a massive, medium-grained rock consisting of hornblende, quartz and white plagioclase feldspar. The rock has an almost porphyritic appearance due to the occurrence of plagioclase in rectangular grains from one-eighth to one-quarter of an inch in size.

Muscovite granite

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Muscovite granite associated with the biotite granite in the northern part of the map-area, especially in the districts north of Palms and Beauchesne lakes.

The rock consists of 5-15 per cent muscovite, 20-30 per cent quartz, and white feldspar. Grains of magnetite and tiny pink garnets are common accessories. Weathering of the magnetite appears to have coloured some of the feldspar and quartz pink along cleavage planes and fractures. The muscovite is usually coarse-grained and oriented, giving the rock a schistose aspect, whereas the feldspar and quartz are fine-grained and sugary in appearance.

The muscovite granite appears to grade into muscovite pegmatite. In a few places the muscovite granite encloses masses of biotite granite.

Pegmatite and aplite

Dykes and small masses of pegmatite and aplite are common throughout the interior of the granitic mass. These rocks consist predominantly of quartz and white feldspar, but in places contain accessory garnet and magnetite. Oxidation products of the magnetite may colour the feldspar pink. In places large flakes of biotite or booklets of muscovite are present in small amount. Masses and veinlets of quartz are found both in the pegmatites and cutting them. Here and there the quartz contains booklets of muscovite one-quarter inch thick and one inch long as fracture fillings. No zoning was noted in the pegmatites.

Diabase dykes

Several diabase dykes from a few feet to 90 feet wide were noted in the map-area. They show a coarsening of grain size from a fine-grained chilled border zone to a coarse-grained centre. In the narrower dykes of only a few feet, feldspar in laths about one-eighth inch long is the only mineral identifiable in hand-specimen. The larger dykes found on Mann lake and southwest of that lake show slender feldspar needles up to one-quarter inch long and accessory sulphides. The weathered surface of the dykes is usually light rusty-brown.

Pleistocene and Recent

Unconsolidated glacial deposits of silt, sand, gravel, boulders, and till cover most of the map-area. Very small, winding, esker-like ridges are common in the area, but are difficult to trace for any distance. A band, three to four miles wide, of alternating small esker-like ridges and flat plains runs southwestward from Cavan lake past the north shore of Mann lake and continues beyond the western limit of the map-area.

Glacial striae have an average strike of N.35°E.

STRUCTURAL GEOLOGY

The schistosity in the metalavas of the southern part of the map-area strikes slightly south of east and dips steeply north. The granite shows a faint to well marked gneissose structure that strikes northwesterly except in the central part of the map-area where, in places, it strikes nearly north.

Jointing in the granite is widespread. Many of the joints dip vertically or steeply. The dominant directions of jointing are about northeast and northwest. The most prominent jointing occurs along the southwest arm of Dickson lake.

ECONOMIC GEOLOGY

Small amounts of pyrite and chalcopyrite are found disseminated in some of the altered diabase in the southern and northern parts of the map-area and also in fractures in some of the lavas around and west of Cavan lake.

Mention has already been made of a specularite-filled fracture zone in altered granite along the southern shore of the southwest arm of Dickson lake. Pyrite and, in places, magnetite occur as minor accessories in this granite.

Just south of MacIntosh lake, fluorite is found to be a constant accessory in a nearly mafic-free, pink granite.

Angular slabby blocks containing from 30 to 75 per cent magnetite are found along the southern shoreline of Chrissie lake.
