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PRELIMINARY REPORT ON THE MAZARIN AREA, ABITIBI-EAST COUNTY

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PRELIMINARY REPORT

ON THE

MAZARIN AREA

ABITIBI-EAST COUNTY

BY

MARCEL TIPHANE



QUEBEC
1950

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INTRODUCTION

Location and Means of Access

The Mazarin Area, mapped for the greater part during the summer of 1949, is in Abitibi-East county, between latitudes 49°00' and 49°15' North and longitudes 78°00' and 78°20' West. An area of 70 square miles, east of Harricana river, was mapped by the writer in 1948 and has been included on the map accompanying this report.

The Whole area comprises about 280 square miles. It includes the eastern parts of Mazarin and Dalet townships, most of Glandelet and Maizerets, and narrow strips of Desboues and Miniac townships.

Aeroplane transportation into the area may conveniently be obtained from Gold Belt Air Service, at Amos, a town situated on the Quebec-Cochrane line of the Canadian National Railways and on Harricana river. Within the map-area, seaplanes can be landed only on Harricana river, some 40 to 56 miles from their base.

A road, 22 miles long, which can be travelled by motor car or truck, links Amos to range X of Béarn township. From there a recently-opened tractor road reaches the mouth of Berry river on the Harricana, a point nine miles farther. The Harricana is navigable from here to Octave river in the southern part of the area, except for one portage, 100 feet long, in range II of Glandelet township. In the eastern part of the area, Harricana river provides an excellent canoe route. The southwestern part is accessible by way of Octave river, and the northern part, by way of Gale river. The latter, however, has several rapids in its lower stretch. Tanshell and Miller creeks are navigable by canoe only at high water and for short distances.

The central and western parts of the area may be reached by back-packing along the Mazarin-Glandelet township-line or along the north-south centre-lines of Mazarin and Dalet. All township and range lines within the area have been cut and surveyed since 1945 and are still in fair condition, with the exception of range lines VIII, IX, and X of

Mazarin township, which were out in winter and are not serviceable. The eastern half of Mazarin and a small area in western Glandelet were burnt over in 1944, and walking through these sections is difficult.

Topography

The Mazarin area is part of the clay belt that extends westward beyond the Quebec-Ontario boundary. The thickness of the clay is variable, but, in general, it is greater in Maizerets and Glandelet than in the western townships. In the latter are several groups of hills, the most prominent of which are the Douaumont hills in Dalet township. They trend northeasterly and rise more than 300 feet above Harricana river. The Baldwin hills in the eastern part of range VI of Mazarin and the western part of ranges VII and VIII of Glandelet are about 250 feet above the Harricana. All other hills in the area are less than 200 feet above the river.

Lakes are few, small, and shallow, and their shores are swampy. The largest one, in ranges II and III of Dalet, is half a mile long and less than one-quarter of a mile wide.

GENERAL GEOLOGY

Part of the area is flat and swampy, and is typical clay-belt country. The rest is somewhat more rugged, and bedrock protrudes in more places through the clay and till cover. The boundary between these two physiographic divisions trends north-south and follows approximately the boundary line that separates Dalet from Maizerets, and Mazarin from Glandelet townships.

All the consolidated rocks exposed are Precambrian in age and mostly - about 85 per cent - of Keewatin-type. The sequence, from youngest to oldest, is as follows:

Acidic intrusives: biotite-hornblende granite, dykes and veins.

Basic intrusives: peridotite, gabbro, some diorite.

Volcanic and sedimentary rocks: andesite and basalt, some bedded tuffs and chert.

Keewatin

Volcanic and Sedimentary Rocks

Most of the area is underlain by Keewatin-type rocks. They are andesitic and basaltic lavas, with some basic tuffs, agglomerates, bedded chert, and a few acidic lavas.

Except in a few places, the volcanics that are exposed west of Harricana river are massive, whereas those that occur east of the river are generally schistose (1). West of the Harricana, the volcanics are dark green or grey, and medium - to fine-grained. In some places they are porphyritic, with feldspar phenocrysts up to one-quarter of an inch in length. A few beds of fragmental rocks or agglomerates, containing fragments up to three or four inches long, were encountered. The fragments are pale in colour and more acidic than the matrix which seems basaltic. Five or six exposures of pillow lavas also were noted.

In the northwestern part of the area, there are a few thin bands of very dark tuff interstratified with the lava flows.

A few exposures of an acidic volcanic rock were seen in Mazarin township. It is a pale grey lava of trachytic type, generally massive and fine-grained, and occurs intercalated between basic volcanics.

There are some chert bands up to twenty feet thick in Dalet and Mazarin townships. The best exposures are found in the Baldwin hills, particularly in range VII of Glandelet, near the Mazarin-Glandelet boundary. Their colour varies from white to black, and individual beds are as much as two inches thick. The beds are parallel to the schistosity of the adjacent volcanics.

Basic Intrusives

Although their actual boundaries were not observed, a few masses and isolated exposures of peridotite have been delineated on the map. The peridotite is black, very tough, and medium - to coarse-grained. It is serpentized and weathers brown. The largest mass, located in the eastern part of range V of Dalet township, is at least one and a quarter miles long and may join the body of similar rock in ranges I and II of the same township. The peridotite in range V is cut by serpentine veinlets trending approximately north-south. In the centres of some of these veinlets, particularly on lot 55 near the boundary line of ranges IV and V, chrysotile asbestos, in fibres one-eighth to one-quarter of an inch long, was noted. The peridotite in ranges I and II of Dalet township, although serpentized, contains no chrysotile.

Three small exposures of similar peridotite were seen in range III of Maiserets. One is in lot 37 on the east shore of Harricana river, and the other two are in lots 19 and 28, respectively. Whether these three exposures belong to the one mass or to three separate bodies of peridotite is not known.

(1) TIPHANE, M., Preliminary Report on the Chaste Map-Area, Abitibi -East County; Que. Dept. Mines, P.R. No. 219, 1948.

There may be other peridotite masses in Lazarin township, but their identification and delimitation would require further petrographic studies of the rocks in question.

Some of the basic or intermediate rocks mapped as volcanics may actually be intrusive gabbros or diorites. They are massive and coarse-grained but otherwise resemble the volcanics in all respects.

Post-Keewatin

Granite

Two bodies of granite intrude the other rocks of the area. One of them is two miles wide and extends across ranges V, VI, and VII of Dalet township in the northwestern corner of the area. It is a grey, even-grained, hornblende granite, rich in quartz. In many exposures it contains chlorite and biotite instead of hornblende. No actual contact of this granite with the volcanics was observed, although in range VII, on the south bank of Gale river, one exposure of granite is very close to an exposure of andesite.

The other body of granite, which is part of a large mass extending towards the south and southwest, forms a band one to three miles wide along the southern boundary of the map-area. The granite is porphyritic and, in most exposures, pink in colour. It contains phenocrysts, up to an inch in length, of a whitish feldspar, probably orthoclase, and about twenty per cent of quartz. As in the Dalet township granite, hornblende is the common ferromagnesian mineral, but chlorite and biotite are found in its place.

Near its contact with the volcanic rocks, the porphyritic granite is gneissic and richer in ferromagnesians. The gneissic structure is made more apparent by the stringing-out of dark minerals into thin parallel ribbons that are wrapped around the unbroken phenocrysts.

This granite mass is probably a northwestern extension of the "Bernetz gneiss" which Longley (1) has described as a biotite-quartz-diorite gneiss. Within the map-area, however, the gneissic structure is observed only in a zone less than a mile wide in the vicinity of the contact between the granite and the volcanic rocks.

Unconsolidated Sediments

The overburden is composed of sandy and silty clays so fine that they remain dispersed in the run-off waters and make all the streams

(1) Longley, W.M., Castagnier Map-Area, Abitibi-East County; Que. Dept. Mines and Geol. R. 26, 1946.

yellowish-grey and muddy. The depth of overburden is variable. Generally thin in Dalet and Mazarin townships, the clays thicken eastward and are considerable in the basin of Harricana river.

A few scattered sand deposits appear as very low mounds. The sands are not so pure as in the eskers found east of the Harricana (1).

On a few rock exposures, striae trending S.25°W. mark the direction in which the glaciers probably made their last advance.

STRUCTURAL GEOLOGY

The volcanic rocks are rather massive and their attitudes are not generally apparent. However, the strikes and dips of a few tuff and chert beds and of the schistosity in some exposures of volcanics were measured. The average strike of the sedimentary and volcanic formations changes gradually from N.75°E. in Mazarin township to N.45°E. in western Glandelet and to due north in Dalet and Mazerets townships. Dips are generally very high, either to the northwest or southeast, or vertical.

Several determinations of tops and bottoms were made by studying grain gradations and the shapes of pillows. With a few discrepancies, tops appear generally to face north and northwest.

No strong continuous shear zones are exposed in the area. Shearing was observed in only one place: on lot 38, range III of Mazarin township, near Miller creek and less than one mile north of its mouth. The shearing is less pronounced than it is along Coigny river east of the Harricana (2).

In the Baldwin hills, a bed of chert has been cut by small faults into segments that are horizontally offset by a few feet. The faults strike north-south, more or less at right angles to the trend of the formations. Joints exposed in the vicinity are parallel to the faults.

ECONOMIC GEOLOGY

In the northwestern part of the area, a few lenses and narrow veins of quartz and carbonates occur in the volcanic rocks. These lenses and veins contain some pyrite and, in places, chalcopyrite.

The peridotite in range V of Dalet township, particularly near the boundary line of ranges IV and V, is worth prospecting for chrysotile asbestos. Veinlets of serpentine, one half to two inches wide and

(1) Tiphane, M., op. cit.

(2) Tiphane, M., op. cit.

one to four feet apart, fill joints in the peridotite. In several places the centres of these veins contain chrysotile fibres one-eighth to one-quarter of an inch long. The veinlets trend north-south, parallel to the long dimension of the peridotite body. Serpentine veinlets with all possible attitudes are found in the peridotite, but only those with a north-south strike contain chrysotile. The other peridotite bodies, although serpentized in places, do not seem to contain chrysotile.