

RP 240(A)

PRELIMINARY REPORT ON BEETZ LAKE AREA (WESTERN PART), SAGUENAY COUNTY

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PROVINCE OF QUEBEC, CANADA
DEPARTMENT OF MINES
GEOLOGICAL SURVEYS BRANCH

PRELIMINARY REPORT

ON

BEEZ LAKE AREA (WESTERN HALF)

SAGUENAY COUNTY

BY

P. E. GRENIER



QUEBEC
1950

BEEZ LAKE AREA (Western Half)

SAGUENAY COUNTY

by P.E. Grenier

I N T R O D U C T I O N

This area, which was mapped during the summer of 1949, is bounded by latitudes $50^{\circ}30' N.$ and $50^{\circ}45' N.$ and by longitudes $62^{\circ}45' W.$ and $63^{\circ}00' W.$ Its southwestern corner is approximately 33 miles northeast of Havre-St-Pierre, which is on the north shore of St. Lawrence river, 400 miles below Quebec.

Havre-St-Pierre may be reached either by boat or by airplane. From there, seaplanes are the best means of transportation into the map-area, which has numerous lakes suitable for landing.

From Baie Johan Beetz, a small fishing village 40 miles east of Havre-St-Pierre, there are three canoe routes into the area. The first one follows Piashtibaie river, locally known as "Rivière de la Grande Baie", because it enters the deep Quétachou bay, three miles east of Johan Beetz. This route crosses several lakes, amongst which are Bellenger and Napoléon lakes, and reaches Beetz lake, shaped like a "V" opening northward, the northwestern arm of which occupies the southeastern corner of the map-area. Along the 18 miles between Quétachou bay and Beetz lake, there are sixteen portages, most of them very short. Piashtibaie river however is difficult to ascend in the spring because of swift current.

A second route is Petite Rivière Piashti, which meets the Gulf of St. Lawrence at Baie Johan Beetz. The one mile stretch between Salé lake and Baie Johan Beetz is difficult to pass at low tide because of the shallow river bed which is strewn with boulders. Three miles north of Baie Johan Beetz, a steep portage must be used to pass a 200-foot falls in the river. Northward, the route crosses Petit Lac Piashti and enters Grand Lac Piashti, which is in the southern part of the area.

The third route, with which the writer is little acquainted, is by way of Corneille river, which enters the Gulf of St. Lawrence four miles west of Baie Johan Beetz. This route gives access to the northwestern part of the area.

Canoe travel within the map-area is relatively easy because of lakes and streams. Portages are numerous but generally short.

Translated from the French.

DESCRIPTION OF THE AREA

The area is generally very rugged, except in its northwestern part. Steep and continuous ridges, which trend north-northwest, alternate with narrow valleys. The ridges are of gabbro or of quartzite intruded by sills of gabbro; the valleys have been cut in quartzite. The northwestern part of the area, about 80 square miles in extent, is a high plateau somewhat swampy, and underlain mostly by granite. The Pleistocene ice sheets, which moved southward, that is, almost parallel to the trends of the ridges of gabbro, eroded the quartzite more than the gabbro and also carried away much of the overburden. As a consequence, the highest hills are usually bare and the drift is thin and patchy in the valleys.

All the drainage is toward the Gulf of St. Lawrence, by rivers in three main basins. The area is thus divided in three irregular belts trending approximately north-south. The easternmost belt is three and a half miles wide in its northern part and has an average width of two miles on the south. The western belt, the width of which similarly decreases southward from four miles to three-quarters of a mile, is drained by Corneille river, which is west of the area described in this report. The central belt drains by way of Grand Lac Piashti, to Petit Lac Piashti and the river of the same name.

GENERAL GEOLOGY

Two-fifths of the area is underlain by granite. Besides the main body, in the northwestern part, there is a smaller one, 8 square miles in extent, in the southwestern part of the area. The granite includes masses of quartzite and gabbro. The rest of the area is underlain by rocks of sedimentary origin and by gabbro dykes or sills in equal proportion. All of these rocks are considered to be Precambrian.

Table of Formations

Cenozoic (Pleistocene and Recent)	Clay, sand, gravel, erratics
Precambrian	Pink biotite granite, medium to coarse grained, porphyritic in places Pegmatite
	Intrusive contact
	Gabbro dykes and sills
	Intrusive contact
	Grey, fine-grained quartzite, quartzose mica schists, lenses of shale

Sedimentary Rocks

The oldest rocks in the area are metamorphosed sediments, which crop out in bands one-quarter to one mile wide and are separated by gabbro sills. Both sedimentary rocks and sills strike north-northwesterly.

The dominant sedimentary rock is a grey, fine-grained, and thick-bedded quartzite. A coarse, impure quartzite also outcrops in places. Thin dark-coloured beds, rich in iron oxides, are abundant in the fine-grained quartzite, and in places they show cross-bedding. Thin beds of a medium-grained, quartzose mica schist are commonly interstratified with the quartzite, but the amount of mica schist is small compared to the quartzite. Northeast of "Deuxième lac de la Cabane Neuve" small inclusions of shale occur parallel to the bedding in quartzite. Two hematite-rich layers, four and two inches thick respectively, were found in the quartzite at two places.

Rocks Intruding the Sedimentary Formations

Gabbro.- The oldest intrusive rock in the area is a gabbro. It is younger than the quartzite and cuts across or more commonly spreads between quartzite beds to form sills, which crop out as bands from 100 feet to half a mile wide and from one mile to 14 miles long in the area and some of them extend beyond the area mapped. The gabbro is older than the granite. Several dykes have been seen to extend from the larger granite masses into the gabbro, and inclusions of gabbro have been found within the granite.

The gabbro has a high specific gravity, a dark colour and a fine to coarse grain. An ophitic to sub-ophitic texture is easily seen on the weathered surfaces of the coarser grained facies, where the feldspar has turned white. The rock is variable in composition, but much of it is very rich in mafic constituents. Some of the more feldspathic facies might be termed "anorthosite gabbro". North of Paquet lake, the feldspar in the gabbro is slightly pink. Secondary hornblende is the most abundant ferromagnesian mineral. Iron oxides in varying amounts are present in practically all exposures, and in a few places well developed pyrite octahedra have been noted.

Granite.- A pink biotite granite underlies about 80 square miles of the north-western part of the map-area and extends beyond its northern and western limits. Some exposures of granite were found also in the southwestern part of the area.

The most common type of granite is massive, pink, biotitic, generally coarse but in places medium-grained. Some facies are porphyritic, with pink feldspar phenocrysts. The amount of biotite is small generally. Large inclusions of gabbro and of quartzite have been found in the granite. Variations in colour and composition within the granite bodies have been attributed to contamination by wall rock.

Granite dykes in gabbro and quartzite are rather common at the margins of the granite mass but are scarce away from it. Similarly, the few pegmatite dykes of the area occur close to the granite.

STRUCTURAL GEOLOGY

The influence of the structure of the region is clearly seen in the topography. Ridges and lakes trend parallel to the sedimentary rocks and to the gabbro sills. The granitic terrane has a low relief, without pronounced ridges. The gabbro sills and the bedding in the quartzite strike in general south-south-east, but the structure is irregular near Grand Lac Piashti. In the northeastern part of the area, strikes are S.15°E. To the south, the strikes swing to S.25°E. In the western part of the area, strikes are parallel to contact with the granite.

Dips are variable. East of lakes Beetz, de l'Est and la Baguette dips are generally to the east at 35° to 85°. West of the same lakes, dips to the west, of less than 75°, are the most common.

The only primary structures recognized in the quartzite are bedding and cross-bedding. Although the latter is ill-preserved as a rule, a few stratigraphic tops and bottoms have been determined. Most of the tops face eastward; a few doubtful ones face westward. The sedimentary formations lie along the projected western limb and are probably part of a syncline which, mapped north of the area, plunges south-southeast.

ECONOMIC GEOLOGY

Chalcopyrite

Chalcopyrite, in veinlets or in disseminated grains, occurs at several places in the gabbro. The main occurrences are as follows.

About one mile northeast of the southeastern end of Plat lake, on the north side of the falls in Piashtibaie river, chalcopyrite with some pyrite was found in a quartz veinlet two to two and a half inches wide cutting gabbro, 60 feet east of a quartzite contact. The quartz veinlet is crossed by a stringer of massive chalcopyrite, 1/8 inch thick, striking parallel to the gabbro quartzite contact.

Along the eastern shore of "Deuxième lac de la Cabane Neuve" a gabbro sill curves around the southeastern end of the lake, cuts across a long point and follows the shore line for a short distance at the bottom of the bay which is north of the point. In exposures of gabbro along the shore, both north and south of the point, disseminated chalcopyrite, as well as veinlets and blebs of quartz, has been found. The mineralization covers four square feet in the southernmost exposures and is less abundant along the bay.

About 8 square feet of chalcopyrite mineralization has been noted in the gabbro exposed along the eastern shore of the small elongated lake that lies just north of lac de l'Est. Pyrite, ilmenite and magnetite also occur in the same gabbro.

All the gabbro sills contain sparsely disseminated pyrite; and chalcopyrite, in all its occurrences, is associated with pyrite. These two minerals must have been carried in the same solutions.

That copper-bearing solutions circulated widely through the rocks of the region is shown by the numerous occurrences of chalcopyrite and pyrite within the map-area and in the adjacent areas (1, 2) to the north and northwest, as well as along the coast of the St. Lawrence.

The chalcopyrite and pyrite observed lie in or near the contacts between gabbro and quartzite. Perhaps such contacts were the channels along which the mineralizing solutions travelled. Prospectors would therefore be well advised to search such contacts for possible chalcopyrite bodies of economic value.

Magnetite

Magnetite is an accessory mineral in the pegmatites. In places, it forms abundant nodules as much as 1/4 inch in diameter.

Concentrations of magnetite have also been noted in the gabbro. On the eastern shore of the small narrow lake mentioned above, just north of lac de l'Est, magnetite is associated with chalcopyrite. Specimens from that locality exert a marked attraction on the compass needle. The magnetite present in the pegmatite is in small quantities. Since the pegmatites themselves are of restricted occurrence, it is improbable that large bodies of magnetite be connected with them. The possibility of large bodies of magnetite within the gabbro should be kept in mind.

Hematite

Specular hematite is found in many quartz veins within the sedimentary rocks. The mineral is in thin sheets, fills fractures in the quartz and is of mineralogical interest only.

Two beds containing about 70 per cent of hematite - the rest being fine quartz - were found within the quartzite. One of them is two inches thick and is exposed fifty feet west of a small, almost closed, bay on the western shore of lac des Iles. The other bed is four inches thick and was seen one mile east of the southern end of "Premier Lac de la Cabane Neuve". The extent of these beds is unknown; their exposed lengths are less than six feet, the rest being covered with overburden.

The existence of large hematite bodies within the map-area is improbable. Rock exposures are so numerous that, if the mineral were to be found in large masses, more than two thin beds of it would have been noticed. The amount of hematite contained in those two beds is of no economic interest. But the occurrence of "sedimentary" iron ore minerals interbedded with quartzite suggests that deposits of iron ores might be found within rocks of sedimentary origin in the neighbouring areas.

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- (1) Claveau, Jacques; G.R. No. 37, 1949, and P.R. No. 180, 1943, Quebec Dept. of Mines.
 - (2) Longley, W.W.; G.R. No. 36, 1948, and P.R. No. 184, 1944.
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