

RP 313(A)

Preliminary report on Bailloquet area, Saguenay county

Documents complémentaires

Additional Files



Licence



Licence

Cette première page a été ajoutée
au document et ne fait pas partie du
rapport tel que soumis par les auteurs.

Énergie et Ressources
naturelles

Québec 

P. R. No. 313

PROVINCE OF QUEBEC, CANADA
DEPARTMENT OF MINES
GEOLOGICAL SURVEYS BRANCH

PRELIMINARY REPORT
ON
BAILLOQUET AREA
SAGUENAY COUNTY

BY

M. A. KLUGMAN



QUEBEC
1955

P. R. No. 313

PRELIMINARY REPORTonBAILLOQUET AREASAGUENAY COUNTY

BY

M.A. Klugman

INTRODUCTION

The Bailloquet area was mapped by the writer during the summer of 1954. It is bounded on the south by the gulf of St. Lawrence and extends inland for about 16 miles to latitude $50^{\circ}30'$, and is bounded on the east and west by longitudes $64^{\circ}55'$ and $65^{\circ}15'$ respectively. The map-area includes all of Bailloquet township and parts of Touzel and Coopman townships, as well as a three-mile-wide strip along the northern border that has not been subdivided. In all, it covers about 220 square miles. The western boundary is 50 miles east of Seven Islands (Sept-Iles), a town on the north shore of the St. Lawrence, 325 miles below Quebec City.

The area is most easily reached by sea-plane, from a base at lac des Rapides, near Seven Islands. The only lakes within the area suitable for landing of larger sea-planes are Des Eudistes in the northwestern corner of the area and Touzel in the southeast. Landings can also be made on Vibert, Trevor and Fortin lakes by smaller sea-planes. All of these lakes lie within the eastern half of the map-area. Water landings along the coast can be undertaken at high tide in the mouths of Manitou and Shelldrake rivers, in the west and east respectively.

The area also may be reached by fishing boat from Moisie, a small village at the mouth of Moisie river, about twelve miles east of Seven Islands, and also from the villages of Rivière au Tonnerre and Shelldrake, seven miles and one mile east of the area, respectively. Good anchorages are found at the mouths of Manitou, Aux Graines, Chaloupe and Shelldrake rivers.

Travel within the northern half of the area is not easy, but a number of good portages facilitate access to the southern part. Three major rivers flow southward across the map-area: the Manitou in the extreme west, the Chaloupe in the centre and the Shelldrake in the extreme east. Manitou and Shelldrake rivers are both navigable by canoe along the greater part of their lengths within the map-area, and where not, good portages link the navigable sections. Chaloupe river has a steep gradient with many waterfalls and rapids, and at no time is it suitable for navigation. All three rivers flow over steep falls into deep gorges near the coast, but on Manitou and Shelldrake rivers these falls are skirted by well used portages. An excellent portage runs from the sea, at a point near the mouth of Manitou river, northward to Des Eudistes lake in the western part of the map-area. It is from twelve to twenty feet wide, and most of the creeks along its route are spanned by bridges. Another excellent portage

starts four miles from the coast on the east bank of Sheldrake river and runs northward, parallel to the river, for five miles, where it again joins the river. This portage was cut to avoid the dangerous narrow gorge in which the river runs along this stretch. A good portage runs along the coast, between Sheldrake and the mouth of Manitou river, joining the small fishing village of La Chaloupe to these points. Besides these portages, a number of hunter's trails traverse the southern section of the map-area.

The map-area is a dissected peneplain modified locally by lithologic and structural controls. The topography is most rugged in the northern part, particularly in the northwest sector where elevations above sea-level range from 400 to 2,000 feet and where the local relief over distances of half a mile is seldom less than 1,000 feet. This rugged terrain, mostly underlain by anorthositic rocks, extends southward to within four miles of the coast where it flattens out considerably.

The four-mile-wide coastal belt has gently rolling topography and a local relief generally less than 300 feet. Well stratified Champlain sea deposits mantle a large part of this belt and produce flat and swampy land, especially near Touzel lake and La Chaloupe. The underlying bedrock protrudes here and there and has a topographic expression controlled mainly by gneissic structure and jointing parallel to this structure.

GENERAL GEOLOGY

All the consolidated rocks of the map-area are of Precambrian age. Listed in order of abundance, they are: anorthositic and gabbroic rocks, syenitic rocks, paragneisses, granitic intrusives, hornblende and garnetiferous hornblende gneisses, migmatites, dioritic intrusives, and various minor intrusions.

The following table of formations is compiled from field relationships. Where contact features were not observed, age relationships have been resolved, as far as possible, from the comparative degree of deformation and metamorphism of the various lithologic units.

Table of Formations

Cenozoic	Recent and Pleistocene	Sand, gravel, clay, till
Unconformity		
Precambrian	Post-Grenville (?) intrusives	Basic dykes (not indicated on map) Pegmatite dykes (not indicated on map) Pink biotite granite Syenite gneiss Anorthositic and gabbroic rocks Pink biotite and augen gneisses
		Migmatites
	Grenville (?) sedimentary rocks	Paragneisses and schists of various types

Grenville (?) Sedimentary Rocks

These rocks, which are highly metamorphosed and possibly of Grenville age, underlie about one-eighth of the map-area. They occupy the northwestern corner of the area, around Des Eudistes lake, and they occur in a band which extends west-southwest across the southern part of the area. There are also some roof-pendants of these metamorphosed sedimentary rocks within the intrusive rocks of the southwestern part of the area.

The rocks in the northwestern corner of the map-area are hornblende-feldspar gneiss and garnetiferous-hornblende-feldspar gneiss. These two paragneisses, of which the garnetiferous variety is the more abundant, occur as alternating bands and lenses. They are pink to buff greyish green in colour and are fine- to medium-grained. They commonly show a fine layering and some augen structures. The rocks are composed essentially of hornblende and feldspar, with minor amounts of biotite and quartz. Garnet is a common accessory and, in the garnetiferous varieties, makes up ten to fifteen per cent of the rock. There are also narrow bands and lenses of amphibolite and of hornblende schist in these paragneisses of the northwestern corner of the map-area.

The band of sedimentary gneisses which extends across the southern part of the area is about one mile wide and may be traced for about sixteen miles from Touzel lake, on the eastern margin of the map-area, to Rivière aux Graines in the southwestern part where, apparently, it continues out to sea. The rocks of this band vary considerably in composition and include plagioclase gneiss, biotite gneiss, biotite-andesine gneiss, amphibolite, biotite schist, hornblende schist, and biotite-plagioclase-scapolite schist.

More than three-quarters of the rock in this southern band is made up of plagioclase gneiss which is composed essentially of calcic plagioclase and pyroxene. This rock is strongly gneissic, medium- to coarse-grained, and varies in colour from a light greyish blue (plagioclase-rich variety) to a dark greenish grey (pyroxene-rich variety). Commonly found within this rock are porphyroblasts of plagioclase, possibly labradorite, which, themselves up to two inches in diameter, locally occur in clusters that disrupt the gneissic structure.

The biotite paragneiss is greyish green and is fine- to medium-grained. It is highly schistose and crumbles easily on the weathered surface. The essential minerals are biotite, quartz and feldspar, with the biotite content being as high as 60 per cent of the rock in some places. Garnet and a little hornblende are common accessory minerals.

Biotite-andesine paragneisses occur as thin layers, a few inches to two feet wide, within the plagioclase gneiss. The rock is green to dark brownish green, fine- to medium-grained, and highly schistose. It consists essentially of biotite and andesine feldspar, with some hornblende. Quartz is abundant in places where this rock is close to granite intrusions.

Amphibolite is closely associated with the pyroxene-rich variety of plagioclase gneiss and forms thin layers within it. The amphibolite is probably of sedimentary origin as it shows a faint banding and a strong gneissic structure; the bands are less than a quarter of an inch thick in places.

Biotite schist, hornblende schist and biotite-plagioclase-scapolite schist are found along shear zones within the paragneisses. These zones are parallel to the layering of the paragneisses. Other minerals in these schists are epidote, garnet and chlorite.

Migmatites are found in the southwest corner of the map-area, west-northwest of Rivière aux Graines and westward along the coast from this place. The migmatites are composite rocks that have resulted from lit-par-lit injection of biotite granite into paragneisses and associated rocks. They are, in places, highly deformed and contorted. The biotite granite is also found as dykes and irregular masses in the paragneisses.

Post-Grenville (?) Intrusives

Pink Biotite and Augen Gneisses

Pink biotite gneiss and augen gneiss have been grouped together for purposes of mapping as it is difficult to differentiate between them. A small area, straddling Manitou river about four miles from the coast, is under-

lain by these gneisses. Both rocks are pink, medium- to coarse-grained, and strongly gneissic. They have similar composition and consist of feldspar, quartz and biotite, with accessory garnet and hornblende. The augen gneiss contains well developed augen of feldspar that are elongated parallel to the gneissic structure.

Anorthositic and Gabbroic Rocks

These rocks underlie three-quarters of the map-area. They vary considerably in composition from anorthosite to olivine gabbro.

The rock underlying the northern and central parts of the map-area can roughly be classed as anorthositic gabbro, although all transitions from anorthosite to gabbro are found. The rock is grey to greenish black, fine- to medium-grained and is composed of plagioclase feldspar and pyroxene. Accessory minerals are biotite, hornblende, olivine and magnetite, with a little garnet in some occurrences. Magnetite is nearly always present and makes up to ten per cent of the rock in some places.

The mass underlying the southern portion of the area is almost pure anorthosite, with everywhere less than twenty per cent pyroxene. This anorthosite is coarse- to very coarse-grained with some crystals of labradorite reaching five inches in length. It varies from white through grey and blue to mauve in the coarse-grained variety. The anorthosite along and near the coast shows prominent gneissic layering, which is parallel to the gneissic structure of the adjacent paragneisses. It grades locally into a massive and very coarse-grained variety. Ilmenite and magnetite are commonly present in varying amounts.

Syenite Gneiss

The syenite gneiss is exposed in a broad band between gabbroic anorthosite to the north and paragneisses to the south. The rock is buff to pink, medium-grained and strongly gneissic. It consists of feldspars and hornblende and contains biotite and garnet as accessories.

Pink Biotite Granite

Pink biotite granite is exposed along the coast for two miles and extends four miles inland, in the southwest corner of the map-area. The rock is medium- to coarse-grained and composed of potassic feldspar, plagioclase, quartz and biotite, with disseminated pyrite in some localities. It is usually massive, although porphyritic and slightly gneissic varieties are found.

Pegmatite Dykes

Numerous pegmatite dykes, of three separate ages, were observed. The oldest pegmatite cuts all the anorthositic rocks and is itself cut by syenite dykes. It is composed essentially of potassic and possibly sodic feldspars, and also contains a little quartz and biotite. This pegmatite is always found closely associated with ilmenite mineralization. This oldest pegmatite is cut by a second set of pegmatite dykes which are entirely composed of pink feldspar and are barren of metallic minerals. The youngest pegmatite consists of pink potassic feldspar, quartz, and small amounts of biotite and magnetite. It is found closely associated with the biotite granite and cuts all the previously described rocks.

Basic Dykes

Aphanitic to very fine-grained lamprophyre dykes cut all the other rock types in the map-area. The rock consists mainly of feldspar, amphibole and biotite. Diabase dykes are found cutting all the older major rock types but no relation to the lamprophyre dykes could be established. The diabase consists of plagioclase feldspar, augite and biotite.

Cenozoic

Unconsolidated material mantles large sections of the southern part of the map-area. The unconsolidated deposits consist of sand interbedded with a pale grey clay and layers of well rounded boulders. The beds of sand and clay vary from less than one inch to several feet in thickness. These well stratified deposits can be traced several miles inland, in the valleys of Sheldrake and Manitou rivers. On the coast near the mouth of Manitou river these deposits are more than 150 feet thick. Cross-bedding was noted at many places, particularly in the raised terraces along the coast.

Inland, adjacent to many of the rivers and streams, partially sorted till was seen.

Glacial erratics, up to ten feet in diameter, are found on many hill-tops. Glacial striae, noted inland and along the coast, indicate that the Pleistocene ice sheet moved nearly due south across the area.

STRUCTURAL GEOLOGY

The overall structure of the map-area is relatively simple.

The greater part of the area is underlain by massive gabbroic anorthosite forming a large body extending into the adjoining area to the west. The rocks of the border facies of this body are commonly gneissic and are found in the northwest corner, along the west boundary, and in the southern part of the area. The gneissic structure, as well as the pronounced layering in the anorthosite in the south, strikes parallel to the geological contacts and dips steeply.

The layering and other gneissic structures in the paragneisses of the northwest corner of the area strike N.50° E. and dip about 60° southeast. In the southern part of the area, the paragneisses strike roughly N.70° E., parallel to the structure of the adjacent syenite gneiss and gneissic anorthosite. The dips along the coast are all towards the south and vary between 45° and 90°, whereas a few miles inland and near the south margin of the main anorthosite body the dips are towards the north and are usually steep.

Minor folds are numerous in the layered anorthosite along the coast. They strike parallel to the local structural trend and are upright and generally symmetrical. The plunge of their axial lines is nearly horizontal and is towards N.30° E. or S.70° W.

Several sets of joints are found. In the main anorthosite body

the major joints strike N.30° E. or N.50° W. and dip vertical or nearly so. Two major joint sets are found in the paragneisses: one is parallel to the strike of gneissic structure and dips at the same angle, and the other is vertical and at right angle to it. A minor set of horizontal joints is also present, both in the massive anorthosite and the paragneisses.

ECONOMIC GEOLOGY

Sulphides

Very minor amounts of finely disseminated pyrite and chalcopyrite are present in the granitic rocks. These minerals also occur associated with ilmenite.

Ilmenite-Magnetite

Magnetite is a common accessory mineral in the gabbroic anorthosite underlying the northern and central sections of the map-area. In places it forms up to 10 per cent of the rock but the observed occurrences are small and scattered and are of little economic interest. The anorthosite body bordering the shore in the southern part of the area commonly contains disseminated ilmenite and magnetite, as well as small irregular lenses and numerous thin stratiform sheets of these minerals. The locations of the main concentrations are indicated on the map accompanying this report.

The ilmenite-magnetite occurrences at La Chaloupe and Cap Rond are probably deserving of more mention than the others that were seen. At La Chaloupe, the ilmenite and magnetite are in numerous layers that vary in thickness from a fraction of an inch to two feet and that can be traced, in some places, for 500 feet along their strike. A grab sample of one of the layers assayed: iron, 49.52%; sulphur, 0.08%; and titanium oxide, 16.34%. In one of the occurrences at Cap Rond, several closely spaced layers of ilmenite-magnetite make a band 44 feet wide which can be followed for 100 feet into the side of a hill. The average assay value of eight grab samples taken across this 44-foot zone is: iron, 35.84%; sulphur, 1.35%; and titanium oxide, 11.37%.
