RP 380(A)

PRELIMINARY REPORT ON MONT WRIGHT AREA, SAGUENAY ELECTORAL DISTRICT

Documents complémentaires

Additional Files

Licence

License

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. 380

PROVINCE OF QUEBEC, CANADA

DEPARTMENT OF MINES

HON. W. M. COTTINGHAM, MINISTER

GEOLOGICAL SURVEYS BRANCH

PRELIMINARY REPORT

ON

MOUNT WRIGHT AREA

SAGUENAY ELECTORAL DISTRICT

BY

DANIEL L. MURPHY

QUEBEC
1959

P. R. NO. 380

PRELIMINARY REPORT

on

MOUNT WRIGHT AREA

SAGUENAY ELECTORAL DISTRICT

by

Daniel L. Murphy

INTRODUCTION

Mount Wright area, investigated during the summer of 1958, encompasses approximately 180 square miles. It is bounded by longitudes 67°15' and 67°30'W. and latitudes 52°30' and 52°45'N. and lies 180 miles north-northwest of Sept-Iles. In terms of projected townships, it includes most of St-Castin, major portions of Gueslis, Hauteville and parts of Raimbault and Normanville. The area of investigation adjoins the Tuttle Lake area*

Following the late spring breakup and prior to the early fall freezeup this area may be reached most easily by hydroplane from Sept-Iles. However, access may also be gained by laborious canoe and portage travel up the Moisie or St-Marguerite River systems. Except for the Pekans river which flows diagonally across the area from northwest to southeast, canoe travel within the area is restricted as the large lakes are interconnected by small, shallow streams.

The topography of the area is strongly influenced by the bedrock. From northeast to southwest three distinct topographic divisions may be recognized: the Mt. Wright range, the lowlands of the Pekans River basin, and the gently undulating uplands of the southwest third of the quadrangle. The Mt. Wright range rises 800 feet or more above the adjacent Pekans River valley and is the most prominent landmark in the region. The range consists of resistant quartzite and specularite-rich quartzite (iron formation) flanked by less resistant schists, gneisses, and local occurrences of amphibolite. The Pekans River lowlands are underlain by a schist-gneiss complex, largely covered by glacial and fluvial deposits. Southwest of the Pekans valley the topography is similar to that near the Mt. Wright range but on a much reduced scale. In places, resistant hills of quartzite or quartz-rich iron formation impart a rolling character to the land surface. Elevated sand beaches are marginal to many of the lakes.

---

* Phillips, L.S., Preliminary Report on Tuttle Lake Area: Que. Dept. of Mines, P.R. No.377, 1958.

GENERAL GEOLOGY

Pleistocene and Recent deposits consisting of sand, clay, gravel and erratic boulders cover the bedrock in over 60 per cent of the area. However, except for the Pekans River valley, this cover is relatively thin. Eskers, kame terraces, and other glacial features are common.

All the consolidated rocks of the area are of Precambrian age. In order of abundance they are: paragneiss, paraschist and granulite (?); metasedimentary iron formation, marble and quartzite; basic meta-igneous rocks; and granite pegmatite.

Table of Formations

Recent and Pleistocene	Morainic deposits; eskers; elevated beaches, and alluvial deposits	
Precambrien	Acid igneous rocks	Granite pegmatites
	Basic meta-igneous rocks	Meta-gabbro, meta-diabase, and amphibolite
	Iron Formation	Muscovite-quartz schist Oxide iron formation Conglomerate Silicate iron formation Quartzite Marble
	Paragneisses and Paraschists	Biotite and /or hornblende gneiss, mica schist, biotite and/or hornblende schist, migmatite, and granite gneiss

PRECAMBRIAN

Paragneisses and Paraschists

The most abundant rocks in the area are paragneisses and paraschists and, for the most part, these appear to form the oldest group. However, some of the indicated structures in the southern part of the area suggest that a part of this group (or similar rocks of younger age) overlies the iron formation.

Most of the gneiss has a distinct banded appearance reflecting its sedimentary origin. The individual bands or layers vary in thickness from a fraction of an inch to several feet. In the western portion of the area, the paragneiss has been permeated by pink feldspar and quartz. Locally such injection has been intense enough to transform the paragneiss into granitic gneiss. Mica paraschists varying from a few feet to 100 feet are randomly distributed throughout the gneiss.

The paragneiss may be subdivided on the basis of the type of mafic constituent present. A biotite-hornblende variety is the most common type. It is medium- to coarse-grained, dark grey to greenish grey on fresh surface, and weathers to a rusty brown. Commonly, the biotite-hornblende gneiss is intercalated with relatively pure plagioclase-quartz bands. Biotite gneiss is usually finer grained and more garnetiferous than the biotite-hornblende type. Furthermore, this variety is locally massive. Pure hornblende gneiss is rare and forms relatively thin layers within biotite-hornblende paragneiss. All three types consist of up to 30 per cent hornblende and/or biotite, 50 per cent or more plagioclase, quartz (usually less than 10 per cent) and variable amounts of garnet.

The paraschists consist principally of coarse-grained biotite with lesser amounts of sericite, muscovite and quartz. Along Pekans river and in the immediate vicinity of Mt. Wright many of them contain up to 10 per cent kyanite.

Quartzo-feldspathic gneiss (granulite?) occurs as small pods and lens-like bodies throughout the gneiss complex. It is fine- to coarse-grained, white to light grey in color and contains over 90 per cent quartz and feldspar. Muscovite is present in amounts up to 10 per cent; biotite is local and in accessory quantities.

Small, widely scattered lenses of impure marble and quartzite occur within the gneiss complex. Some of these occurrences may represent infolded segments of the overlying quartzite and marble, whereas others are probably indigenous to the complex.

Iron Formation

The term "iron formation" as used in this report refers to all the iron-rich rocks regardless of their economic significance and includes the underlying marble and quartzite. These latter two rock types have been grouped with the iron formation because of their apparent genetic relationship.

Marble

The marble and quartzite appear to be comparable time-rock units although the basal portion of the former is probably older than that of the latter. The marble represents an original offshore carbonate rock, whereas the quartzite is a former nearshore sandstone. Fresh light grey to white marble weathers to various shades of brown and grey. It consists of three components which are distributed in bands. This distribution is evidenced by the rough weathered surface where quartz and silicate form minute ridges and where carbonate occupies the intervening depressions. The carbonate portion is medium- to coarse-grained and predominantly dolomitic, although minor amounts of ankerite(?) are common. Silica occurs either as fine- to medium-grained grey quartz or in medium- to coarse-grained metamorphic silicate minerals such as tremolite, actinolite and diopside(?). The quartz bands vary from a fraction of an inch to 5 inches thick. Silicate layers generally occur at the contact of the carbonate and quartz portions. The thickness of these layers varies inversely with the thickness of the quartz bands. Locally, replacement of quartz by silicates has been nearly complete and only relic cores of quartz remain. The relative proportions of carbonate to quartz and silicate varies; however, the former generally comprises 35 to 50 per cent of the unit. The thickness of the marble changes considerably throughout the area. Along the crests and in the troughs of folds it is common to find thicknesses in excess of 1,000 feet, whereas, along the flanks, the marble thins to 100 feet or less.

Quartzite

The quartzite is medium-grained and light grey to colourless. Muscovite and specular hematite impurities are common. Extensive occurrences of quartzite were observed at only two localities within the area. The south-east flank of the Mt. Wright structure consists chiefly of quartzite. Here, the quartzite is muscovite-rich near the base, relatively pure in its central portion and both muscovite- and specularite-bearing at the contact with the overlying iron-rich rocks. The other important occurrence is about one-half mile south of Esker lake where there is a lens of quartzite within the iron formation. At this locality the quartzite contains much finely disseminated specular hematite.

Iron Formation

The iron formation proper consists of an oxide facies and a silicate facies that appear to be, in part, of the same age. The oxide portion represents the original shallow water ferruginous sediments and the silicate portion represents the original deeper water iron-rich sediments. The uppermost portion of the oxide iron formation seems to overlie the highest silicate rocks, representing a gradual regression of the sea during late iron formation time.

The oxide facies is medium- to coarse-grained and consists of grey to colourless quartz with variable amounts of specular hematite and/or magnetite. Where the oxide iron formation is associated with the quartzite, specularite is the dominant iron mineral. Magnetite is the important and, in some cases, the only iron-bearing component where the oxide facies grades into the silicate portion. Specularite-rich iron formation is well exposed at Mt. Wright. At this locality the iron oxide comprises 30 to 40 per cent of the formation. South of Esker lake the specularite iron formation contains roughly 10 to 20 per cent iron. A good example of the mixed oxide facies (specularite and magnetite) was observed one-half mile northwest of North Gull lake, where it occurs as a large lens within the silicate facies. Relatively pure magnetite-quartz iron formation is present as small pods in the silicate rocks along the south shore of Gull lake.

The silicate facies contains principally quartz, iron-bearing silicates such as grunerite, actinolite and hypersthene (?), and carbonate (siderite and ankerite). Locally, magnetite is accessory. The components of the silicate iron formation occur as bands which probably represent the original beds of the primary sedimentary rocks. A typical specimen of this rock is medium- to coarse-grained and contains layers of grey quartz alternating with layers of a brown-weathering mixture of iron silicates and carbonates. The percentage of quartz varies throughout the formation. However, in general the quartz-rich portions comprise at least 50 per cent of the silicate facies.

Conglomerate

A large outcrop of metamorphosed conglomerate was observed about 2½ miles north of North Gull lake. Whether the conglomerate is an intraformational type within the silicate iron formation or an extensive lithologic unit above it is not known. A similar formation has been reported from the vicinity of Lamelee lake, south of the area. The conglomerate consists of fragments of quartzite, silicate iron formation, marble and gneiss embedded in a coarse-grained matrix of garnet, carbonate, biotite, and chlorite. The fragments vary from pebble-size to ellipsoidal boulders 5 inches or more long.

Muscovite-quartz Schist

The highest stratigraphic unit of the iron formation is a fine- to coarse-grained muscovite-quartz schist. This overlies the oxide facies of the iron formation near Mt. Wright, but its relationship to the silicate facies is unknown.

Basic Meta-igneous Rocks

Meta-gabbros and meta-diabases generally occur as sill-like bodies within both the gneiss complex and the iron formation. The size of the individual bodies is quite variable. Usually they are 15 to 30 feet wide and not more than several hundred feet long. However, near the nose of the Mt. Wright structure the meta-diabase intrusions are considerably larger.

The large bodies of rock afford the best evidence of a primary igneous origin. Along the contact with the country rock the diabases and gabbros have been converted into hornblende-garnet gneisses (amphibolites). From here towards the centre of the bodies the metamorphic character grades imperceptibly into typical igneous textures and mineralogy. Most of the small intrusions are amphibolites. The gabbros and diabases are rather uniform in composition, consisting of 40 per cent pyroxene and amphibole, 55 per cent calcic plagioclase, and 5 per cent magnetite and/or ilmenite. Amphibolite compositions are more variable. Hornblende (with minor biotite) ranges from 30 to 45 per cent, plagioclase from 25 to 40 per cent, and garnet from 5 to 25 per cent. Magnetite and ilmenite are present in accessory amounts.

The contact zones of the basic meta-igneous rocks with the gneiss complex and iron formation are relatively simple from a mineralogical standpoint. Along the west shore of Gull lake, the amphibolite becomes progressively more garnetiferous as the silicate iron formation contact is approached. At the contact, the silicate rock is enriched with actinolite interwoven with stringers of magnetite. A short distance east of North Gull lake, a small garnetiferous, meta-diabase dyke cuts the marble. This was the only basic dyke observed.

Granite Pegmatites

The youngest Precambrian rocks of the area are granite pegmatites. Most of the intrusions are only several feet in diameter, and they seem to be limited to the western half of the area. The relationship of the pegmatites to the injected zones of the gneiss complex is not clear, although both seem to have similar areal distributions. The pegmatites definitely postdate the metamorphism, whereas the migmatites and granite gneisses may be either pre-metamorphic or syn-metamorphic.

STRUCTURAL GEOLOGY

The structure of the area is very complex. One of the largest and best exposed structures is the Mt. Wright syncline, a northeast-plunging fold whose axial plane dips to the northwest. In the southern portion of the area, where the bedrock is fairly well exposed, the folding is much more complex. Here, the structures have a dominant northwest trend and in many cases are overturned to the northeast. A less pronounced, and possibly older, northeast structural trend may be observed locally.

Evidence of faulting and shearing is sparse. At Mt. Wright the faults and shear zones have a general northwest trend and are nearly vertical. Elsewhere the rarity of such structures and the extensive thickening and thinning of rock units indicates that failure was principally by plastic deformation.

Joints are common throughout the area. Many are arranged in a nearly conjugate pattern with sets of northwest- and northeast-trending fractures.

Lineations arising from mineral growth or streaking and from crenulation are common in the gneisses, schists and, locally, in the oxide iron formation. Mineralogic lineations are generally perpendicular, or nearly so, to the fold axes, whereas the axes of crenulation tend to parallel those of the major structures.

ECONOMIC GEOLOGY

The iron formation of the area offers the greatest economic possibilities. The specularite-oxide facies is the most important unit, as it contains the most iron (35 per cent) and as, in many localities, weathering has rendered it friable. The magnetite-oxide facies has a very limited areal extent. Although locally the iron content in the magnetite-oxide facies may reach as much as 25 to 30 per cent, the deposits are rather small and their economic importance is problematical.

The largest claim-holder in the area is Quebec Cartier Mining Company. Its claims include a large block in the immediate vicinity of Mt. Wright and smaller groups near Duck and Dickybird lakes. Canadian Javelin Limited holds a sizeable group of claims south of Esker lake. Bellechasse Mining Corporation Ltd. has a small block of claims northwest of North Gull lake. Many smaller companies and syndicates have properties elsewhere in the area.

Although other types of metallic mineral deposits were not observed, the area should not be condemned as a possible source of non-ferrous metals. North of Mt. Wright, near Mogridge lake, some of the gabbroic intrusions contain cobalt. The western portion of the area, especially in the vicinity of granite pegmatites and injected zones, warrants further and more detailed study.