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PRELIMINARY REPORT ON LA TUQUE AREA (EAST HALF), LAVIOLETTE COUNTY

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PROVINCE OF QUEBEC, CANADA

DEPARTMENT OF MINES

GEOLOGICAL SURVEYS BRANCH

PRELIMINARY REPORT

ON

LA TUQUE AREA (EAST HALF)

LAVIOLETTE COUNTY

BY

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PRELIMINARY REPORT

on

LA TUQUE AREA (EAST HALF)

LAVIOLETTE COUNTY

by

Marcel Tiphane

INTRODUCTION

The area described in this report was geologically mapped during the summer of 1953. It is bounded by latitudes 47°15' and 47°30', and extends from longitude 72°30' westward to St. Maurice river, just west of longitude 72°45'. It comprises approximately 240 square miles and includes all of Malhiot township, and parts of Bourgeois, Charest, Pothier, and Carignan townships.

The town of La Tuque, in the northwest part of the area, is on a line of the Canadian National Railways and is 131 miles from Quebec and 176 miles from Montreal. It can also be reached by highway No. 19 from Three Rivers, 105 miles to the south.

Highway 19 follows St. Maurice river and the western boundary of the area. Gravel roads on both sides of Bostonnais river provide access to the northwest part of the area. All other roads in the map-area are private. The abandoned railway route from La Tuque to Linton Junction (twelve miles east of the map-area) is now gravelled and maintained as a road by the Canadian International Paper Company. A branch of this road runs northward to Lockhart lake in Charest township, and another passes east of Wayagamack lake and reaches Thomas lake in the south-central part of the map-area.

The La Tuque map-area is in the Laurentian uplands and is hilly with a maximum relief of about 900 feet. Local relief is between 400 and 500 feet. The centre of the area, north of Wayagamack lake, is a sand plain with but few hills of rock. The rugged area is made up of hills which commonly have steep south-facing scarps and gentle north-facing slopes. Exceptions are found along St. Maurice river, where west-facing river-cut scarps occur.

Lakes and creeks are numerous. Most of the area is drained by St. Maurice river, either directly or through Wayagamack lake or Bostonnais river. The southeast section of the area drains southward through Mekinac lake and river to the St. Maurice.

GENERAL GEOLOGY

The bedrock of the area is Precambrian. Layered gneisses with biotite or both minerals are the local representations of the Grenville series, and these paragneisses have been intimately injected by granitic material. Coarse-grained grey granite crops out as two large masses, which are probably sill-like. A coarse-grained pink granite, possibly a stock, crops out on Wayagamack lake.

Table of Formations

Pleistocene and Recent	Sand, gravel, bouldery gravel, some bedded clay
Precambrian	Pegmatites
	Coarse-grained, pink, hornblende granite
	Grey granite
	Medium-grained, pink granite
	Grenville Series ? - Paragneisses with hornblende or biotite (or both)

Precambrian

Paragneisses with Biotite or Hornblende

Some typical members of the Grenville series, notably quartzites and limestones, do not occur in the La Tuque area. Dark-coloured gneisses with biotite or hornblende or both are considered to be the local representation of the Grenville series. These paragneisses are commonly medium-grained and are of diverse compositions so that their appearance is different from place to place. The gneissic structure is apparent in that layers richer in the dark minerals alternate with lighter-coloured layers. Biotite and hornblende have their greater dimensions in the plane of the layers.

The dominant light-coloured mineral is feldspar, but some varieties of the gneiss have as much as 20 per cent of quartz. Garnet is found in a few exposures of the gneiss.

The gneisses have been much injected by pink granite, lit-par-lit fashion. In a few places, porphyroblasts or augen of pink feldspar have formed outside the injections of pink granite and show that some metasomatism took place.

Pink Granite

The pinkish granite commonly is medium-grained but pegmatitic facies occur. It consists essentially of quartz and pink and white feldspar. Hornblende is present in some places. Pegmatites of this composition are found. The largest is a dyke or sill in Carignan township on the east shore of a lake two miles northwest of Carignan lake.

Grey Granite

Extensive outcrops of a coarse-grained grey granite occur in the northeast and southeast parts of the map-area. The rock of the northeast mass is composed essentially of a white feldspar, quartz in varying proportions, and a mafic mineral, probably pyroxene. Garnet is found, especially in places close to the gneisses with hornblende and biotite. Near such contacts the grey granite tends to be gneissic.

The southeastern mass also has white feldspar, a dark mineral, which is either a pyroxene or an amphibole, quartz in diverse amcunts, and some biotite. Garnet was not observed in this body.

In both masses the contact with the hornblende or biotite gneisses is hard to define, inasmuch as layers of the grey granite alternate with layers of gneisses more or less injected by the pink granite.

Hornblende Granite

Along the east shore of Wayagamack lake, a few exposures of a coarse-grained hornblende granite are found. The granite is made up of quartz, a pink and white feldspar, and hornblende. Epidote formed along joints is abundant, and in one exposure the ferromagnesian minerals have been altered to chlorite. This exposure is schistose.

Pegmatites

Dykes and sills of pegmatite are abundant throughout the area and, because they are found in all the rock types described above, they are considered as the youngest rocks of the area.

In the hornblende-biotite gneisses, the pegmatites are commonly sill-like bodies parallel to the gneissic structure of the rocks. Most of them are thin.

A peculiar dyke or sill of pegmatite on the west shore of Bourgeois lake shows a good segregation of quartz and feldspars: one side of the mass has about ninety per cent quartz whereas the other has ninety per cent feldspar.

Pleistocene and Recent

The Pleistocene ice crossed the area in a south-southeast direction as shown by striae and plucking. Drumlin-like ridges are fairly numerous in the south half of the area.

As the glaciers waned, the melt water formed extensive deposits of gravel, sand, and bouldery gravel. Such deposits are especially abundant near Wayagamack lake.

The valley of St. Maurice river has been carved in the gneisses and is now partly filled with sand, gravels, and clay. The town of La Tuque is on sand. Clays, some of them lake deposits but others of doubtful origin, occur at several localities. Clays along the valley of Bostonnais river are about 550 feet above sea-level. Others, along the valley leading from St. Maurice river to Wayagamack lake, are a little more than 700 feet above sea-level.

Several terraces formed during the post-glacial stages of St. Maurice river occur in the vicinity of La Tuque. The lowest is found downstream from the dam and near the golf course and is 425 feet above sea-level (40 feet above the river). A second, on which the town is built, is 585 feet above sea-level. This terrace extends to the northern boundary of the map-area. Another terrace, on the east side of La Tuque, is about 615 feet above sea-level. A terrace built of coarse gravel is east of the last-mentioned terrace and is 675 feet above sea-level.

STRUCTURAL GEOLOGY

The gneisses have a general north-south strike and an easterly dip. The structure is irregular in a belt that crosses the map-area in an easterly direction through Wayagamack lake. It is perhaps significant that the belt of irregular structure passes between the two large masses of grey granite. Some evidence suggests that the grey granite is of stratiform habit, and the belt of confused structure may be the result of cross-folding so that one sheet-like mass of granite has been separated into two outcrops.

A fault, which strikes N.5°E. and dips 45°E., is well exposed in a rock-cut on the east side of St. Maurice river near the power-house at La Tuque. This is the only fault actually observed in the area; others may be present, but many of the linear features of the drainage, suggesting the outcrop of faults, are probably the result of etching along joints.

ECONOMIC GEOLOGY

There has been but little prospecting in the vicinity of La Tuque, and but little evidence for the presence of mineral deposits has been found.

Disseminated pyrite and magnetite occur in the gneisses, but no significant concentration of these minerals was seen.

Specimens from various parts of the map-area were tested for radioactivity but no significant concentrations were found.

Sand, gravel, and clay are abundant and distributed throughout the area.