

RP 168(A)

PRELIMINARY REPORT ON THE WETETNAGAMI LAKE AREA, ABITIBI COUNTY

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DEPARTMENT OF MINES AND MARITIME FISHERIES
BUREAU OF MINES
Division of Geological Surveys

PRELIMINARY REPORT
ON THE
WETETNAGAMI LAKE AREA
ABITIBI COUNTY
by
R. B. Graham

QUEBEC
1942

THE WETETNAGAMI LAKE AREA

ABITIBI COUNTY

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INTRODUCTION

The Wetetnagami Lake area, examined by the writer during the summer months of 1941, is about fifty-five miles northeast of Senneterre, on the Canadian National railway. It comprises about 300 square miles and includes, from west to east, the townships of Labrie, Moquin, and Souart. The northern boundaries of these townships, as well as forming the northern limit of the map-area, mark the dividing line between Abitibi county and Abitibi territory, which lies to the north. Latitude 49°00' north crosses the map-area a little more than half a mile south of its northern boundary.

The area is most easily accessible by air from Senneterre. By canoe, the best route is from Forsythe to lac aux Canards. Forsythe is some forty miles east along the railway from Senneterre.

Within the map-area, except for a few northerly trending water-courses, canoe routes are lacking, and travel, particularly in an east-west direction, is rendered difficult by the extensive portaging that is required.

The general relief of the country is low. Few hills rise more than 150 feet above the

numerous lakes that dot the area. Deposits of sand and boulders of glacial origin cover much of the central portion of the area, and muskeg much of the eastern portion. East of Wetetnagami lake, the forest growth is thick, but to the west the country has been left desolate by an extensive forest fire. Around the western shore of Wetetnagami lake, second growth makes travelling on foot difficult, but elsewhere in the burned section there is little such growth and travelling is facilitated.

GENERAL GEOLOGY

The bed-rock exposed within the area is all of Precambrian age. Outcrops are more numerous in Labrie township than elsewhere, due in part to the fact that exposures in that section of the area were swept clean by the forest fire. All around the shore of Wetetnagami lake, exposures are abundant, but in the eastern part of Moquin and in Souart township outcrops are few and poorly exposed.

The rocks encountered are volcanics of Keewatin type, with interbedded sedimentary rocks, some minor intrusives which are believed to be of the same general age as the volcanics, later granitic intrusives, and diabase dykes. Although the age relationships of these rocks have been more or less definitely established, the following table must be regarded as provisional.

Table of Formations

Glacial and Recent	Clay, sand, gravel, boulders
<u>Major unconformity</u>	
Basic dykes	Diabase
<u>Intrusive contact</u>	
Granitic rocks	Pink granite, quartz porphyry, pegmatite, aplite Grey granite Biotite granite gneiss Gneissic hornblende granite or diorite
<u>Intrusive contact</u>	
Keewatin (?)	Hornblende schist, am- phibolite, altered gab- bro, andesite, basalt, tuff, agglomerate, hornblende-feldspar gneiss, biotite-feld- spar gneiss

Keewatin (?)

Included under this heading are rocks of volcanic and sedimentary origin which resemble rocks that elsewhere have been classified as Keewatin in age. Because of this resemblance, and for lack of proof to the contrary, the rocks to be described in this section are considered as being Keewatin. Some basic intrusive rocks associated with them are probably of the same general age.

The most prominent development of Keewatin rocks forms the western continuation of a zone

of similar rocks mapped by Milner (1) in the south half of the Barry Lake area. Where it enters the present map-area, at the eastern boundary of Souart township, this zone is about seven miles wide. Three to five miles farther west, it is almost cut-off by a granite intrusion, but a narrow band along the northern margin of the zone continues northwestward from Lapointe lake for a distance of twelve miles, through the northwest quarter of Souart township to a point two miles east of Wetetnagami river, or midway across and just south of the northern boundary of Moquin township. This narrow, northwestward prolongation is about half a mile wide for most of its length.

For the most part, the rocks of this zone are hornblende schists, of volcanic origin. At Lapointe lake, they are intruded by a body of coarse amphibolite, which extends northeast from the lake for a length of one and a half miles and a width of one mile. This amphibolite is probably an altered gabbro which, although showing intrusive relations with the surrounding schists, is about of the same general age as them. Northeast of this intrusive body, the Keewatin rocks are more massive than elsewhere in the map-area; they represent volcanic flows, ranging in composition from andesite to basalt.

Along and just within the southern margin of this zone of Keewatin rocks, there is a belt in which biotite-feldspar gneiss and hornblende-biotite-feldspar gneiss predominate. This belt, which is in the southeast corner of the map-area, is half a mile to one mile wide and extends southwestward for six miles from the eastern boundary of Souart township to lac aux Canards. In general, the banding in the gneiss is well defined and differences in grain size are clearly apparent across the strike of the formation. These features suggest that the gneiss is of sedimentary origin.

(1) Milner, R.L., Que. Bur. Mines, P.R. 143, 1939.

Rocks of Keewatin type are also found occupying a narrow northwesterly trending zone which, with a width of 200 to 1,000 feet, extends for about seven miles from the southern boundary of the map-area, in the southwestern part of Souart township, to a point four miles west and two and a half miles north of the southeast corner of Moquin township. The rocks here are hornblende schist. They may continue southeastward beyond the limits of the map-area and represent a continuation of the larger zone of similar rocks which have been described above.

The only other extensive development of Keewatin-type rocks in the area is in the west-central part of Labrie township. It is the southeastward continuation of a belt of similar rocks mapped by Longley (1) in the adjacent Tonnancour-Holmes area. At the western boundary of the present map-area, the belt is a mile and a half wide. It maintains this width in its southeastward course for two and a half miles, almost as far as Provisions lake, beyond which it narrows abruptly and finally tapers out just short of Liar lake, three miles farther southeast.

From the western boundary of the area to near Provisions lake, the northern part of this belt, for about half its total width, consists of hornblende schists, and the southern half of well-banded tuffs with some agglomerate. As the belt tapers southeastward from Provisions lake, it consists entirely of the latter rocks. There is a small patch of the tuffs at the northern margin of the belt at the point where it suddenly narrows three-quarters of a mile northwest of Provisions lake.

(1) Longley, W.W., Preliminary Report on Tonnancour-Holmes Area, Abitibi County; Que. Bur. Mines, P.R. 157, 1940.

There are small patches of hornblende schist in various other parts of the map-area. Four of these are sufficiently large to be shown on the accompanying map, as follows: (1) about two miles west of the southern end of lac de la Ligne, in the northwestern corner of the map-area; (2) about half a mile northwest of the most northwestern tip of Wetetnagami lake; (3) on a small island in the middle of this lake; and (4) about half a mile northeast of Lavallée lake, in the east-central part of Moquin township.

Granitic Intrusives

Apart from the Keewatin-type rocks described above, the whole of the map-area is underlain by later granitic intrusive rocks. Of these intrusives, biotite granite gneiss is the most widespread, occupying much of almost every section of the map-area. This gneiss presents great uniformity in character in that part of the area west and south of Wetetnagami lake, but elsewhere the composition is variable.

Intruding this biotite gneiss are stocks of massive, pink, acidic granite. The largest of these extends south and southeast from the northeastern corner of Labrie township across Wetetnagami lake to the southwestern part of Moquin township, having a length within the map-area of about eleven miles and a width, for the most part, of about three miles. Two other masses of similar rock, but of smaller dimension, have been mapped in the central and east-central parts of Moquin township, two miles and five miles, respectively, east of the outlet of Wetetnagami lake. The easternmost of these two bodies forms the eastern shore of Lavallée lake and extends southeast from there. Several small masses of the pink granite, a quarter to half a mile in diameter, occur in Labrie township. One of these is a little more than half a mile west of Jules lake;

another is half a mile or so north of the eastern end of Liar lake; and a third is just south of Provisions lake. The southwestern corner of Labrie township over an area of about four square miles is also occupied by this granite, which extends west and southwest for an unknown distance beyond the map-area.

Nearly everywhere, the contact zones between the pink granite and the biotite granite gneiss contain both of these rock types, too much intermingled to permit their being shown separately on the accompanying map. These zones of mixing range in width from a few feet up to more than a mile.

A small body of quartz porphyry, half a mile or less in diameter, is exposed all around the lake Peninsula in the northwestern part of Moquin township, two miles north of the outlet of Wetetnagami lake. It cuts the biotite granite gneiss and is possibly a facies of the pink granite intrusive, from which it has not been separated on the accompanying map.

A body of generally gneissic, hornblende granite or diorite, about five miles long and one mile wide, extends northwesterly across the southwest arm of Wetetnagami lake. It is almost completely surrounded by the pink granite and is intruded by the pink granite as well as by the biotite granite gneiss.

An irregular body of grey, acidic granite occupies an area of about three square miles near the northeastern corner of Souart township. Its relations with the surrounding biotite granite gneiss are not known with certainty. A small body of similar grey granite intrudes Keewatin greenstones half a mile northwest of Lapointe lake.

Throughout all those parts of the map-area underlain by the various granitic rocks that

have been described, there are abundant, small dykes and stringers of pegmatite and aplite.

Diabase Dykes.

A dyke of diabase, 90 to 125 feet wide, has been traced for a length of nine miles in a direction 15 to 20 degrees east of north across almost the entire north-south width of the map-area. The dyke enters the area at its southern boundary, about $1\frac{1}{2}$ miles west of Wetetnagami lake. Continuing northward, for the most part about half a mile west of and paralleling the main body of the lake, it meets and crosses the northwest arm of the lake and is traceable to a point about $1\frac{1}{4}$ miles south of the northern boundary of the map-area.

A smaller dyke of diabase is exposed at the north end of the lake, in the very southwest corner of the area and west of the north end of the Castongay lake. It is 80 to 100 feet wide and, trending 25 to 30 degrees north of east, is traceable in this direction for about three-quarters of a mile. Other, smaller dykes of similar rock were observed in the eastern and southern parts of Labrie township.

STRUCTURE

The regional strike of the Keewatin belts within the map-area is slightly north of west, although there are minor deviations from this. The greenstones in the southeast corner of Souart township trend southwest. A small greenstone remnant northwest of the northwest arm of Wetetnagami lake trends 15° west of north.

Dips in the greenstones of Souart township are generally from 60° to 65° to the south. In Labrie township, dips are to the north and from 50° to vertical. Where the dip is steep, reversals in direction are not uncommon.

Because of extensive granitic intrusion, relatively little greenstone is left in the area. Due to this and to the scarcity of exposures, there is insufficient evidence to work out the structural pattern. As closely as can be determined, contacts between the several formations within the Keewatin group of rocks are conformable, except, of course, where intrusive relations are shown.

ECONOMIC GEOLOGY

No claims have been staked in the area, nor were any signs of prospecting observed during the summer's work. The difficulty of travel is a discouragement to the prospector.

As has been noted, by far the greater part of the map-area is underlain by granite. Wherever examined, this granite showed nothing of interest to the prospector. Some disseminated pyrite was observed in the rock exposed on the east shore of lac aux Canards just north of the southern boundary of Souart township, and along the west shore of Wetetnagami lake just north of the southern boundary of Labrie township.

Numerous pegmatite dykes were examined and were found to consist generally of quartz and feldspar only. The relatively small size of the dykes would preclude their exploitation as a commercial source of quartz or feldspar.

Quartz veins in the greenstone are not common and most of those examined were found to be barren. Quartz veins containing pyrite were observed just west of the southern end of Lapointe lake, in Souart township, and the greenstone in their vicinity contains disseminated pyrite. This would seem to be the most favourable location for prospecting in the map-area.