# RP 194(A)

Preliminary report on Belleterre map-area (sheet no 1), Guillet township, Témiscamingue county

Documents complémentaires

*Additional Files*

Licence

*License*



Énergie et Ressources naturelles
Québec

PROVINCE OF QUEBEC, CANADA

DEPARTMENT OF MINES

BUREAU OF MINERAL DEPOSITS

# PRELIMINARY REPORT

# ON

# BELLETERRE MAP-AREA (SHEET No 1)

# GUILLET TOWNSHIP,

# TÉMISCAMINGUE COUNTY

BY

P. E. AUGER


QUEBEC
1946

P. R. No. 194

# TABLE OF CONTENTS

# BELLETERRE MAP - AREA (Sheet No. 1)

Guillet Township, Témiscamingue County

by P. E. Auger

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

During the field season of 1945, the geology of a southwestern portion of the northwest sixth of Guillet township, Témiscamingue county, was mapped by the writer.

The area studied is in the form of an almost perfect square whose western boundary is the Guillet-Blondeau township line extending northward for a distance of 7,800 feet from east-west range-line VIII-IX, which range-line, stretching for 8,000 feet, also constitutes its southern limits. It is in the Belleterre area and is easily accessible by motor road from either Ville-Marie or Laverlochère - the latter being the village nearest the map-area which is served by the Canadian Pacific railway.

Prior to the present survey, various mining companies had systematically explored most of the area and set up a series of parallel, north-south picket lines at 200-foot intervals. These lines have been made use of by the writer and all outcrops mentioned in this report were located in relation to them.

The area is completely covered by claims held by mining companies or by individual prospectors.

## G E N E R A L  G E O L O G Y

Precambrian formations underlie the whole area. These rocks are covered by a thin mantle of glacial débris, yet there are very few visible outcrops owing to the relief being very low and the débris spread evenly on the surface. Since the beginning of prospecting activity in the area, a very large amount of trenching, stripping, and diamond drilling has been done, and, at the present time, except in low ground and in swamps, there are no large areas in which the rock has not been partially exposed.

## T A B L E  O F  F O R M A T I O N S

| | | |
|---|---|---|
| Quaternary | | Stream and swamp deposits<br>Sand and gravel |
| Precambrian | Intrusives | Lamprophyre<br>Feldspar porphyry<br>Granite<br>Diorite<br>Serpentine |
| | Keewatin-type | Diorite<br>Andesite, basalt, breccia<br>Chlorite schist. tuffs |

## KEEWATIN - TYPE VOLCANICS:

The major part of the map-area is underlain by volcanic rocks of Keewatin type. Most of these are basic to intermediate lavas having the composition of basalt and andesite. These volcanic rocks are usually massive, slightly schisted in places, and, in most of the area, they show very little amygdaloidal, pillow, flow, or brecciated structures. Chlorite-schist is present in a few places, especially in the vicinity of the shear zones. Several bands of siliceous tuff have been traced for some distance, chiefly in the northern half of the map-area. These are usually narrow (from one to fifty feet) and they are light-coloured, almost white, with a very fine banding which shows an intense crumpling within the tuff bands. In numerous places, this banding is due to the presence of narrow layers, rich in magnetite, which is referred to as "iron formation" by most prospectors and geologists in the field. These tuff bands serve as good horizon-markers and aid in tracing the structure of the formations in the area. They are also of importance to the prospector and the geologist because numerous gold-bearing quartz veins are associated with them.

## I N T R U S I V E S

Intrusive rocks of diverse types are abundant throughout the area. The most common type is diorite, though serpentine, granite, feldspar porphyry, and lamprophyre have been recognized at many places.

## S E R P E N T I N E

There is a mass of serpentine rock occupy-

ing most of the southern part of the map-area. It forms almost all the outcrops within a distance of approximately 700 feet north from the line between ranges VIII and IX, and it has been intersected in diamond-drill holes. The exposures at the surface are very few and offer little opportunity to study the genetic relationship of this rock to neighbouring formations. The rock is dark and massive with the fracturing and weathering usually characteristic of serpentine. In thin section, it appears to contain a very high percentage of serpentine with additional altered minerals. If the rock is the result of an alteration of peridotite or some other basic igneous rock, there is no trace of the original minerals visible in the thin sections examined.

Apart from the large mass of serpentine discussed in the preceding paragraph, there is a smaller mass of similar rock in the eastern half of claim R-43187. The smaller mass does not crop out at the surface, but was found in three drill holes.

D I O R I T E:

There are numerous bodies of diorite in the region. This rock occurs in the form of dykes and lenticular masses which may vary in size from a few feet to 600 feet or more in width and extend for several thousand feet in length. This diorite is similar to the 'older gabbro' quartz diorite found elsewhere in the various mining districts of Abitibi and Témiscamingue counties. In several places, diorite bodies follow the general structure and are interbedded with the flows of volcanic rocks to such a degree that it is possible part of the diorite may be a coarse phase of the volcanic rocks. In a few places, this coarse diorite has been found to pass gradually

into a typical andesitic lava flow. At other places, continuous tuff bands, parallel to the regional structure, are found enclosed in diorite. These observations suggest that, in part at least, the diorite in this region is of volcanic origin.

G R A N I T E:

In the northwestern corner of the map-area, in the vicinity of Taché lake, there is a mass of granite which is a tongue extending southward from the larger body underlying the northern part of Guillet township. East of the southernmost bay of Taché lake, the rock is a massive granite containing a large amount of quartz. At the south end of this bay, an igneous intrusion occurs in the form of porphyritic dykes which probably are apophyses from the main body of intrusive rock.

F E L D S P A P P O R P H Y R Y:

Dykes of feldspar porphyry cut the volcanic rocks at numerous places in the map-area. Most of these porphyries are light-grey in colour and medium to fine in grain. The phenocrysts are sodic feldspar in a groundmass of feldspar and quartz, with a little mica.

The feldspar porphyry dykes seem to be related in some way with the quartz veins. At several places on the surface and underground at the Belleterre mine, the porphyry dykes are found to accompany the veins. At two places, in claims R-43192 and R-43191, respectively, small quartz veins were found to grade into feldspar porphyry dykes along the strike.

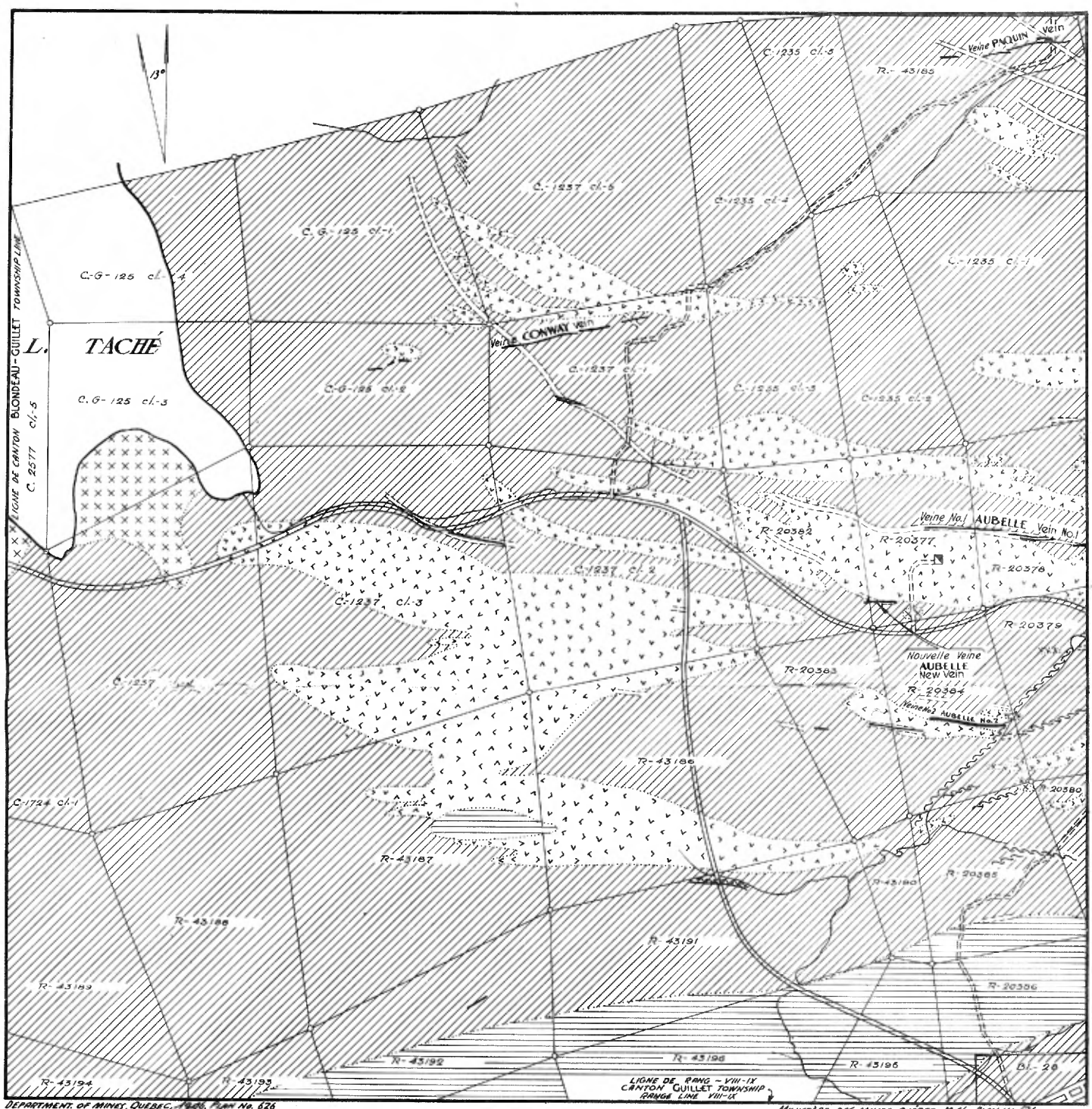
L A M P R O P H Y R E:

Lamprophyre dykes cut all the other forma-

tions in the map-area. The lamprophyre is made up, for the most part, of large flakes of biotite with variable proportions of hornblende, quartz, and feldspar. At a few places, these dykes contain rounded boulders of granite varying in size from a fraction of an inch to ten inches in diameter.

## S T R U C T U R E

The geological structure found within the limits of the map-area may be described as being part of the southern limb of a major anticlinal fold which overlies the granitic mass in the northern portion of Guillet and the southern part of Devlin township. The axis of this major anticline is east-west and, in all probability, plunges toward the east. Within the boundary of the map-area, the bands of tuff are good horizon-markers making it possible to follow the structure at the surface and in drill holes. They indicate that the southern limb of the major anticline forms a minor anticline having a north-south axis which pitches toward the south. The eastern limb of the minor anticline strikes east-west at the eastern boundary of the map-area(except near the northern boundary where the structure is north-west). Eastward,on Belleterre ground beyond the limits of the map-area, the strike of the formation of the eastern limb of the fold swings to the north-east; as the limb is traced across the map-area, starting from the eastern boundary, the strike swings progressively northward until it becomes N.60° to 45°W., and it seems to be directed straight into the contact of the granitic mass to the north. In the central part of claim C-G-125, cl.,l. the structure is north-south and, in places, even a little east of north. Unfor-




DEPARTMENT OF MINES, QUEBEC, 1946. PLAN No. 826

MINISTÈRE DES MINES, QUEBEC 1946. PLAN No. 826

## LEGEND - LÉGENDE

- Veins — *Veines*
- Granite and feldspar porphyry — *Granite et porphyre à feldspath*
- Diorite — *Diorite*
- Serpentine — *Serpentine*
- Intermediate and basic volcanics — *Roches volcaniques basiques et neutres*
- Pyroclastic sediments mostly silicified tuff — *Sediments pyroclastiques surtout tuf silicifié*
- Fault and shear zone — *Faille et zone de laminage*
- Approximate geological boundary — *Contacts géologiques approximatifs*
- AUBELLE shaft — *Puits de la Mine AUBELLE*

# RÉGION DE BELLETERRE AREA

SHEET No 1 — FEUILLET No. 1

0 500 1000 1500
feet pieds

GEOLOGY BY P. E. AUGER 1945 — GÉOLOGIE PAR P.E. AUGER

tunately, most of the area along the contact of the granitic mass if occupied by low ground and swamps, but a few determinations made by previous workers indicate that the beds at this place again assume an attitude parallel to the contact. It is possible, therefore, that there is a definite drag-fold in the western limb of the anticline on the Paquin, Conway, and Ortona properties. In the southern half of the map-area, the structure is approximately east-west and does not seem to have been affected by this local folding visible closer to the granite contact.

Faults and shear zones are numerous throughout the entire map-area. Some shear zones strike about east-west and certain veins, which Dr.E.G. Bishop terms "shear veins" (1), are related to some of these zones. Moreover, there are other shear zones and some large faults, probably post-ore in origin, having a northeast direction similar to the Gains-Moor fault, which has been traced from the northwest corner of claim R-20384 to the northeast corner of claim R-20379. In addition to these, some still smaller faults, with north-south trend, are visible at the surface displacing the veins over short distances.

## E C O N O M I C  G E O L O G Y

There is no mine in operation within the limits of the map-area. The Belleterre Quebec mine situated to the east of the map-area is the only one operating in the district. There are, however, numerous mining properties and prospects

(1) E.G. Bishop, Personal communication.

which are still in the development stage. The deposits are of the quartz-free-gold type with very little sulphides. The gold-bearing quartz is white or grey and usually very fine-grained. The veins are found in the tuff, in the lavas, or in the diorites.

A U B E L L E  M I N E S, Limited:

The claims held by the Company are numbered R-20377-86, inclusive. The eastern boundary of the map-area traverses the claim-group.

There are three principal veins on the property. Vein No. 1 is situated about 600 feet north of the Belleterre-Ville-Marie highway. It strikes east-west and dips steeply south. The vein has been traced at the surface for a distance of over 1,000 feet and found to have widths varying from a few feet to ten feet. This vein is composed of quartz, well banded in places and containing small amounts of pyrite and chalcopyrite. Toward its western end, a series of drill holes has indicated the presence of an interesting ore shoot which will be explored and developed within a few months by underground workings from a shaft that the Company is sinking near the centre of claim R-20377. The vein follows a shear zone cutting diorite, tuff, basic to intermediate volcanics, porphyry, and lamprophyre.

Vein No. 2, directly south of vein No.1 and about 700 feet south of the Belleterre-Ville-Marie highway, strikes east-west and dips steeply south to vertical. It has been traced at the surface in trenches and underground by drill holes for a distance of more than 1,000 feet and found to have a maximum width of 9 feet. At 400 feet west of its western end, there is a vein uncovered in a few trenches which may be the westward extension

of vein No.2. Vein No.2. is terminated at its eastern extremity by the Gains-Moor fault. It is found in diorite and in volcanic rock with some lamprophyre dykes and tuff bands. This vein follows a series of parallel shear zones which are, in turn, parallel to the structure indicated by the tuff bands at this place. The quartz is of the white and blue type with a certain amount of sulphides. The vein, especially toward its eastern end, is very rusty and composed, for the most part, of quartz interbanded with silicified tuff bands. At the time of the writer's visit, the Company was drilling this vein and its true value was not yet known.

Another vein, designated as the New vein, exists south of the western end of vein No.1. Its location is about 200 feet north of the Ville-Marie highway. It was traced at the surface for a distance of 450 feet and found to have a width varying from a few inches to 5 feet. This vein is composed of bluish quartz and, in places, contains a high percentage of pyrite and some chalcopyrite. It strikes east-west and dips steeply south occupying a shear zone which intersects, and probably displaces slightly, the tuff bands, especially at the western end of the vein where the structure swings to the northwest. Along most of the vein length, the shear parallels the tuff bands and, at some points, part of the vein is in the silicified tuff band itself. This vein is located mostly in basic volcanic tuff and lamprophyre dykes and is separated from vein No. 1 by a mass of diorite. In this locality also are large dykes of porphyry that were uncovered during construction of the road which is about 100 feet east of the eastern end of the vein and leads to the new Aubelle shaft.

There are numerous other veins on the Au-

belle property, but they are small or only partly uncovered in a few trenches. It is, therefore, impossible to estimate their real value.

C O N W A Y  G O L D  M I N E S, Limited:

This property is north of the Aubelle ground and extends from the western to the eastern boundary of the map-area. There are three principal veins on the property.

One vein is in the northern half of claim C-1237, cl. 1; another occurs in the southern half of the same claim; and a third is found in the northern half of claim C.G. 125, cl.2.

The first vein mentioned above is the most important of the property. It was traced at the surface for a distance totalling more than 1,000 feet. It strikes slightly north of east and dips steeply to the south. The width of the vein varies from a few inches to four feet and it is almost everywhere a clean-cut vein with sharp walls on both sides.

The vein is composed of white and blue quartz containing a small amount of sulphides, mostly pyrite with some chalcopyrite, galena, and sphalerite. It once occupied a shear zone along which there is evidence to indicate that the north wall has moved westward with respect to the south wall. The wall rock is composed of basic volcanic rock and a few tuff bands. The structure in this part of the property is definitely oriented toward the northwest and transected by the shear in which the vein is located.

Approximately 500 feet south of the large vein just referred to, another vein is exposed at the surface in the southern half of the same claim, C-1237, cl.1. It is much smaller than the

first, being about 300 feet long at the surface, and it strikes a little north of west. This vein follows a strong shear zone which seems to be parallel to a wide, irregular band of tuff interbedded with the basic volcanics in this area. The vein is likewise very irregular and, in most places, becomes a series of quartz veins or lenses injected along the accompanying structure over widths ranging from two to fifteen feet. This zone contains a high percentage of sulphides consisting, for the most part, of fine-grained pyrite. Here, again, the vein is associated with lamprophyre dykes.

In claim C.G.-125, cl.2, 600 feet west of the western end of the vein mentioned firstly, there is another vein which may be on the continuation of the same fracture. This vein is only about 300 feet long. It strikes approximately east-west but is very irregular and lense-shaped with a maximum width of 2.5 feet. It dips steeply to the south and intersects basic volcanics which show good banding and, in places, definite schistosity striking a little east of north. Moreover, this vein is intersected by a lamprophyre and a porphyry dyke. It was in this vein also that surface work and diamond drilling indicated good values in gold.

P A Q U I N  G O L D  M I N E S, Limited:

The Paquin Gold Mines property is composed of two claim-groups: one group composed of several claims in the southwestern corner of the map-area between the Aubelle property and the western boundary of the map-area, and a second consisting of one claim in the northeast corner of the map-area. In the southwestern group there are a few small veins cropping out at the

surface, but, judging from the available exposures, none of these seem to be of economic importance. In the northeastern claim there is one vein-zone, known as the "Paquin" vein and made up of a group of overlapping veins, which appears to be closely related to a band of silicified tuff which crosses the area in a southeasterly direction.

This latter vein has been opened up at the surface for a length of 1,000 feet over widths of from one to six feet. It is composed of white and bluish quartz containing small amounts of pyrite, chalcopyrite, galena, and sphalerite. From its western end, the vein follows a shear zone with an east-west strike for a distance of about 650 feet, where it fades out. A second starts a few feet to the north of the preceding vein and extends eastwardly for another 180 feet where it, in turn, pinches out. At this point, another vein starts 16 feet to the north and continues toward the east for 70 feet where it intersects a southeast -striking tuff band and curves to the southeast for a distance of 25 to 30 feet to continue again towards the east. This vein also intersects basic volcanics and diorite, as well as tuffs, and it is accompanied by a dyke of lamprophyre. Good values in gold have been found in this Paquin vein.