

# RP 478(A)

PRELIMINARY REPORT ON REMIGNY - VILLARS AREA, ROUYN-NORANDA AND TEMISCAMINGUE COUNTIES

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PROVINCE OF QUEBEC, CANADA

DEPARTMENT OF NATURAL RESOURCES

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PRELIMINARY REPORT

ON

RÉMIGNY-VILLARS AREA

ROUYN-NORANDA AND TÉMISCAMINGUE COUNTIES

BY

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QUEBEC  
1962

Preliminary Report

on

Rémigny-Villars Area\*

Rouyn-Noranda and Témiscamingue Counties

by

Jean-Y. Chagnon

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INTRODUCTION

The Rémigny-Villars area, mapped during the summer of 1961, occupies some 360 square miles. It is bounded by latitudes 47°30' and 48°00' and longitudes 79°00' and 79°15'. It covers parts of Villars, Guérin and Baby townships in Témiscamingue county, and parts of the townships of Desandrouins, Caire, Rémigny and Beaumesnil in Rouyn-Noranda county. In addition, the work started in 1960 in the Brodeur-Basserode area, immediately to the east, was completed.

Highways 46 and 46A, between Ville-Marie and Rouyn, run parallel to and just outside of the western boundary of the map-area. Secondary roads leading from these main highways to many different localities or to the principal lakes give access to all parts of the area. The northern portion of the Brodeur-Basserode area (Chagnon, 1961) could be reached only by water, via Caron lake and a private road going as far as Roger lake.

The forests are still the main natural resources of the area, although their value has considerably diminished over the past few years as a result of intensive exploitation and numerous fires. Some cultivated land was noted north of Rollet and in the vicinity of Rémigny.

Topographically, the area has an undulating surface with an average elevation of about 1,500 feet. The local relief may be as much as 400 feet, but averages around 200 feet. In many places, the bedrock is covered with a layer of clay or sand, the thickness of which varies with the local relief.

Drainage of the area is in a southerly direction, through Barrière, Rémigny and Beaumesnil lakes and thence through

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Translated from the French.

Des Quinze lake to the Ottawa River system.

GENERAL GEOLOGY

The consolidated rocks of the area are all Precambrian in age. The oldest are the fine-grained hornblende gneisses and schists that outcrop in the southwest corner. Biotite gneisses and schists, with intercalated lenses of amphibolite, form fairly continuous bands in the northern part of the area. East of Des Quinze lake, a band of quartzofeldspathic gneiss, one and one-half miles wide, trends northeast across the area. Igneous rocks, including diorites, massive equigranular or porphyritic syenites and various types of granite, cut the biotite gneisses and schists. The microcline-oligoclase granite, accompanied by dykes and other small bodies of pegmatite and aplite, occupies almost all of the central part of the area. Diabase and gabbro are the youngest rocks in the area. They have formed dykes with a north-south to north-northeast trend.

Glacial and fluvioglacial deposits are widespread in the central and southern parts of the region, especially in areas of low relief.

TABLE OF FORMATIONS

Pleistocene and Recent	Clay, sand and gravel	
Precambrian	Diabase and gabbro Pyroxene-biotite rock Pegmatite and aplite, pegmatitic granite Microcline-oligoclase granite Diorite Granitic gneiss Hornblende granite, porphyritic hornblende granite Hornblende syenite, porphyritic hornblende syenite Nodular hornblende syenite	
	Pontiac Group	Biotite gneisses and schists Quartzofeldspathic gneiss Amphibolite
	Hornblende gneisses and schists	

PRECAMBRIAN

Hornblende Gneisses and Schists

A band of fine-grained hornblende gneisses and schists, with a general north-northwest trend, was observed near the southwest corner of the area. Narrow dykes of porphyritic granite cut the rocks of this band.

The hornblende gneisses are usually very fine grained and have a glassy appearance. Except for a massive medium-grained variety, these gneisses show a good foliation, due mainly to the parallel orientation of the hornblende grains. The rock is dark green to black on both the fresh and weathered surfaces and, where weakly foliated, displays a sub-conchoidal fracture. The schists are characterized by a stronger foliation, parallel to the long axis of the crystals of hornblende.

These gneisses and schists are made up essentially of hornblende, feldspar and quartz. The latter two minerals are easily visible on the weathered surface. Disseminated pyrite is generally present in small amounts.

Pontiac Group

Amphibolite

Lenticular bodies of amphibolite are associated with the biotite schists, especially in the northwestern corner of the area. A few exposures were also noted to the south, both on the west shore of Des Quinze lake and to the east of this lake. These lenses of amphibolite are oriented parallel to the schistosity of the enclosing rocks. They range in width from a few feet to 2,000 feet and in length from 500 feet to 2 miles.

The rock is generally coarse grained, though medium-grained varieties were noted, and it has a dark green to black fresh surface. It is composed of at least 65% hornblende, with some white plagioclase and quartz. In a few places, narrow bands containing small concentrations of magnetite were observed. These bands have maximum thicknesses of one-half inch. Where the amphibolites have been intruded by pegmatite, crystals of hornblende up to 2 inches long have been developed in the amphibolite adjacent to the contacts.

Quartzofeldspathic Gneiss

Numerous outcrops of quartzofeldspathic gneiss were observed east of Des Quinze lake, where this rock-type forms a northeast trending band about one and one-half miles wide. A few exposures of this gneiss were also mapped to the west of Des Quinze lake, north of Angliers. The rock is commonly observed to be in contact with bands of biotite gneisses and schists, and appears to

be associated with these latter rocks.

The quartzofeldspathic gneiss is fine grained, with a grey to pink fresh surface and a whitish weathered surface. The rock is characterized by a fine banding, which accentuates the thin biotite-rich layers. These biotite-rich layers, which are about 1/16 of an inch thick, alternate with bands consisting mainly of quartz and feldspar and ranging in thickness from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch. On the average, the gneiss is composed of about 35 per cent quartz, 50 per cent pink feldspar and between 2 and 15 per cent biotite.

Although generally gneissic, this rock becomes schistose in places in the north part of the area, close to the contact with the microcline-oligoclase granite. In fact, the position of this contact is quite hard to define, owing to the intimate intercalation of the two types of rock.

### Biotite Gneisses and Schists

These rocks are abundant in the northern part of the area, as well as in a few isolated occurrences in the central and southern parts. In the field, the principal bands of these rocks are expressed as ridges, aligned parallel to the structural trend of the enclosing rocks. The biotite gneisses and schists are fine grained and grey. In places, they are finely banded and display thin biotite-rich layers alternating with layers rich in quartz and feldspar that have an average thickness of  $\frac{1}{4}$  inch. These rocks contain approximately equal quantities of quartz, feldspar and biotite with, here and there, small amounts of hornblende or disseminated pyrite.

In the central part of the area, the biotite gneisses and schists have been intruded by microcline-oligoclase granite. Numerous partly assimilated inclusions of gneiss and schist were noted in the invading rock. Granite and pegmatite are intimately mixed with the biotite gneiss in many places.

## Igneous Rocks

### Nodular Hornblende Syenite

A nodular variety of syenite is exposed on either side of the central part of Rémigny lake, southeast of Rollet. The rock outcrops over areas having lengths of up to one mile and widths averaging 1,000 feet.

This medium-grained syenite displays a green, fresh surface, with brownish alteration. The nodules show up well on the weathered surface, but are difficult to discern on the fresh surface. These nodules, which are made up of feldspar with a small amount of hornblende, are enclosed in a groundmass consisting of approximately equal amounts of hornblende and feldspar. In one exposure, however, nodules containing considerable hornblende and

pyroxene are enclosed in an essentially feldspathic groundmass. In general, the nodules are roughly cylindrical and are less than one inch across.

#### Hornblende Syenite, Porphyritic Hornblende Syenite

Several bodies of hornblende syenite are exposed in the area, especially in the northern part. These bodies are almost circular and range in diameter from 1,000 feet to about two miles. Generally, the smaller bodies outcrop in the centre of the area and at the eastern boundary of the north part of the Brodeur-Basserode area.

The syenite is a medium- to coarse-grained, dark-coloured rock, made up of green hornblende (30 per cent), pink feldspar (60 per cent) and biotite. The porphyritic facies displays crystals of feldspar, up to one inch long, in a groundmass of feldspar, hornblende and biotite.

The rock is generally quite massive. In places, however, a parallel alignment of the idiomorphic feldspar crystals imparts a lination to the rock which is plainly visible on the weathered surface.

At a few localities, the syenite is cut by dykes of pegmatite and of granite and contains numerous inclusions of biotite schist. Several occurrences were noted in which the syenite appears to grade into the granite.

#### Hornblende Granite, Porphyritic Hornblende Granite

The hornblende granite is most extensively exposed on either side of both Rémigny lake and Des Quinze lake. This rock also occurs near the western boundary of the area, where it forms large bodies, and in the central part, where it forms small irregular masses or is in isolated outcrops.

This rock is medium grained, with a pale grey weathered surface and a spotted white and dark green fresh surface. It is made up mainly of white feldspar, with 20 per cent hornblende, between 2 and 5 per cent biotite and from 5 to 15 per cent quartz. In places, magnetite is the predominant accessory mineral. The granite is generally massive, though a gneissosity is evident in places, as in the southern part of the area. This gneissic structure is mainly due to an alignment of the hornblende crystals.

East of Rémigny lake and in the centre of the area, the granite displays a porphyritic texture. Idiomorphic crystals of feldspar, from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in length, make up as much as 40 per cent of the rock in these localities.

The hornblende granite is intruded by numerous dykes and irregular masses of microcline-oligoclase granite, as well as by pegmatite.

### Granite Gneiss

The granite gneiss mass extends beyond the present map-area. It is exposed in an arcuate zone bounded on the west and north by hornblende gneiss and quartzofeldspathic gneiss. Within this zone, numerous ridges lie parallel to the gneissic structure of the underlying rock.

The granite gneiss is medium grained, with a pale grey, fresh and weathered surface. It is made up of about 25 per cent quartz, 60 per cent pink feldspar and 5 per cent biotite, with a small amount of hornblende and, in places, magnetite. The mafics are fairly evenly distributed through the felsic portion. The gneissic structure of the rock is accentuated by a rough alignment of the biotite flakes.

### Diorite

Three outcrops of diorite about a mile west of Caire lake are believed to belong to the same small intrusive body. The rock is massive and medium grained, with a dark green fresh surface and a rough, dark grey weathered surface. It is composed of about 45 per cent green hornblende and 40 per cent plagioclase, with some potash feldspar and at least 2 per cent quartz.

The diorite is associated with the microcline-oligoclase granite and is probably a calcic facies of the latter rock.

### Microcline-oligoclase Granite

Microcline-oligoclase granite outcrops over most of the central part of the map-area and small, isolated bodies occur both north and south of the area.

The rock is massive, equigranular and generally medium grained, though both fine- and coarse-grained varieties have been noted. It has a pink fresh surface, altering to pale grey, and is composed essentially of 20 to 30 per cent quartz, 5 per cent biotite and/or muscovite and 60 to 70 per cent feldspars. The feldspars are made up of variable proportions of microcline and sodic plagioclase. Accessory minerals include magnetite, sphene and apatite.

The microcline-oligoclase granite is accompanied by numerous dykes and irregular masses of pegmatite and aplite. For example, a large amount of associated pegmatite was noted to the southeast of Beaumesnil lake. In addition, several inclusions or remnants of both biotite gneiss or schist and hornblende granite are incorporated within this microcline-oligoclase granite.

### Pegmatite and Aplite, Pegmatite Granite

These rocks generally occur as massive dykes, lenses,



sills and irregular bodies, intimately mixed with the microcline-oligoclase granite in the central part of the area. The pegmatite is a coarse-grained rock which, in places, displays crystals up to 6 inches across. The aplite has a granular texture and is generally fine-grained. The pegmatitic granite appears to be simply a coarser facies of the microcline-oligoclase granite.

The principal minerals of these rocks are quartz (30 per cent), microcline and perthite (50 per cent), biotite and/or muscovite (5-10 per cent) and plagioclase (2-5 per cent). Accessory minerals include magnetite, apatite, garnet and beryl. Micrographic intergrowths of quartz and potash feldspar are common. The quartz is generally the milky variety, but may also be colourless. Flakes of muscovite, up to 6 inches across, were observed in places.

### Pyroxene-biotite Rock

Two outcrops of a rock made up mainly of pyroxene and biotite were observed near Rémigny lake, about  $4\frac{1}{2}$  miles north of Rémigny.

This rock is medium grained and green. The distinctive unevenness of the weathered surface appears to be due to differential weathering of certain of the constituent minerals.

The rock is composed of about 50 per cent pyroxene and 20 per cent biotite, with approximately equal amounts of hornblende, calcite and chlorite. The relative age of this rock-type could not be determined.

### Diabase and Gabbro

Diabase and gabbro are believed to be the youngest of the consolidated rocks in the area. The several outcrops observed are believed to represent a series of related dykes.

In the northern part of the area, these dykes trend north-northeast, except for a few localities where the trend varies from north to N.10°W. In the south, four general trend directions were observed: north, north-northeast, northeast and northwest. The dykes range in thickness from a few inches to 400 feet and have maximum observed lengths of up to one mile.

The diabase displays an ophitic texture and is generally medium grained. The margins of some of the dykes, however, may be quite fine grained, whereas the central part of the thicker dykes is commonly coarse grained,

In the northwestern corner of the area, rounded phenocrysts of feldspar, averaging  $\frac{1}{2}$  inch across, are sparsely distributed through a large diabase dyke. At Angliers, where the railway crosses the road, rounded phenocrysts of yellowish feldspar, from  $\frac{1}{4}$  to 1 inch across, were observed in an outcrop of porphyritic rock. These phenocrysts are clearly outlined in a dark granular

matrix of feldspar and hornblende. A similar rock is exposed about one and one-half miles to the east, near Des Quinze lake. Here, the matrix is very rich in hornblende and displays a gneissic structure.

#### PLEISTOCENE AND RECENT

A large part of the area is covered with sand and gravel. Clay, in places varved, was noted along the shores of Des Quinze lake. A deposit of morainic material trends east across the area and extends as far as Roger lake, in the adjoining Brodeur-Basserode area. A few small excavations that had been cut into this deposit alongside the roads crossing it to the east of Levêque lake revealed it to be made up mainly of fine sand. A south-trending esker crosses the southern part of the area, southeast of Angliers.

Glacial striae strike south and S.10°E. Ice-transported boulders of various size are distributed throughout the area.

#### STRUCTURAL GEOLOGY

The structure of the area was determined mainly through observations on the directions of foliation shown by the schists of the Pontiac group and by the hornblende gneisses and granitic gneisses. The foliation of the gneisses and schists of the Pontiac group is assumed to be parallel to the original bedding.

In the northern part of the area, the rocks of the Pontiac group generally trend east-northeast. They then curve inwards to form a broad north-plunging anticline in the northern part of the Brodeur-Basserode area. The axis of this fold trends north-northeast. To the south, the quartzofeldspathic gneisses and granitic gneisses display northeast directions of foliation and appear to belong to an anticlinal structure that also plunges to the north.

Large-scale faults are not directly evident, but their presence is suggested by the prominent rectilinear depressions observed here and there within the area. A small fault, trending north-northeast and dipping towards the west, cuts the gneissic hornblende granite and intermixed biotite schist on an island to the south of Quatre-Milles bay. The trace of this fault is marked by a shattered zone filled with calcite and chloritic schist. On the peninsula east of the island, another small fault trends northwest.

In the northern part of the area, on an island in Rémigny lake, a strongly fractured zone is accompanied by talcose chloritic schist.

The most prominent joints in the microcline-oligoclase granite generally trend north-northeast or northwest, whereas in

the hornblende granite they trend north-northwest, northeast or east. Horizontal jointing is a feature of the pegmatites.

### ECONOMIC GEOLOGY

Disseminated sulphides, predominantly iron pyrite, were observed here and there in the biotite gneisses and schists and in the hornblende gneiss. The principal localities are shown on the accompanying map, as are occurrences of beryl.

#### 1 - Beryl

Crystals of beryl, up to  $\frac{1}{4}$  inch long, were observed on lots 56 and 57, range X, of Caire township. They are sparsely disseminated through both the microcline-oligoclase granite and the pegmatite of that part of the map-area.

#### 2 - Copper and Iron

Disseminated sulphides, consisting of pyrite with a small amount of chalcopyrite, were noted on lot 31, range VII, of Desandrouins township, alongside the road between Rollet and Cloutier. They are associated with a medium-grained amphibolite and with biotite schist. A grab sample from this zone assayed 0.07 per cent copper and 9.04 per cent iron.

The mineralized zone is 5 feet wide and at least 15 feet long. The host rocks trend northeast and dip steeply towards the southeast.

#### 3 - Copper, Iron and Gold

A fracture zone containing concentrations of pyrrhotite, pyrite and chalcopyrite was observed on the eastern shore of the north end of Barrière lake, on lots 3 and 4, range X, of Caire township. The zone is up to 5 feet wide and extends for a length of over 200 feet parallel to the enclosing biotite schist. A grab sample assayed 0.10 per cent copper, 0.04 per cent zinc, 35.65 per cent iron and 0.004 ounce of gold per ton.

Some diamond drilling and trenching were subsequently done on this zone, but results do not appear to be encouraging.

The mineralized zone lies about 3,000 feet northeast of a talcose chloritic schist containing disseminated pyrite. This schist could indicate the presence of a major fault, and the mineralized zone along the Rollet-Cloutier road would thus lie along a hypothetical line marking the extension of this fault. In addition, several rusty-weathering outcrops were observed along this assumed line.

#### 4- Copper, Zinc and Iron

Copper, zinc and iron minerals were noted along the road between Angliers and Rémigny, on lots 60 and 61, range VII, of Guérin township. Here, chalcopyrite, pyrrhotite and pyrite occur discontinuously in a north trending zone with dimensions of 1,000 feet by 20 feet. The host rock is a hornblende gneiss.

A grab sample assayed 0.35 per cent copper, 0.10 per cent zinc, 32.06 per cent iron and 0.002 ounce of gold per ton.

#### Sand and Gravel

The sand and gravel deposits in the area are adequate to supply local needs.

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