

# RP 516(A)

PRELIMINARY REPORT, GEOLOGY OF THE SOUTHEAST QUARTER OF CLERICY TOWNSHIP, ROUYN-NORANDA COUNTY

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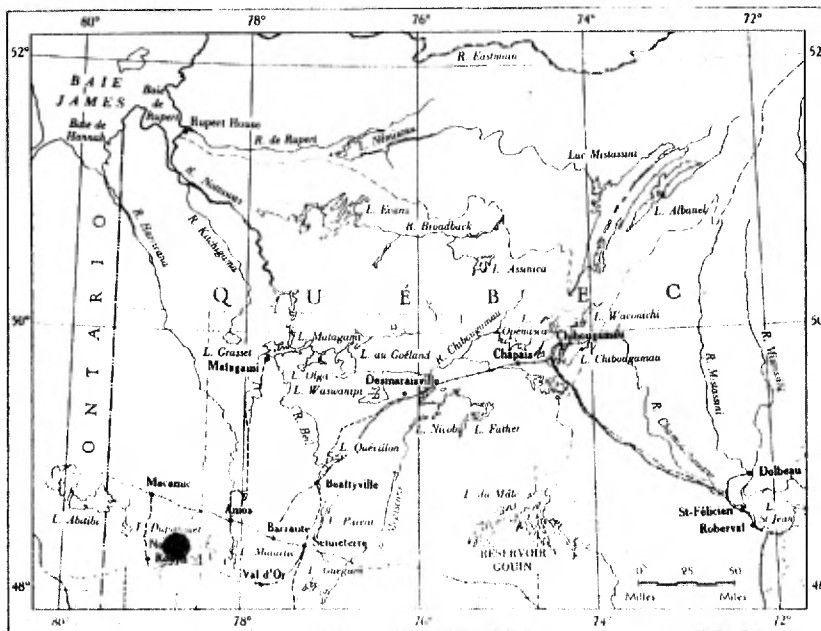
Geology  
of the  
**Southeast Quarter of Cléricy Township**

ROUYN-NORANDA COUNTY

PRELIMINARY REPORT

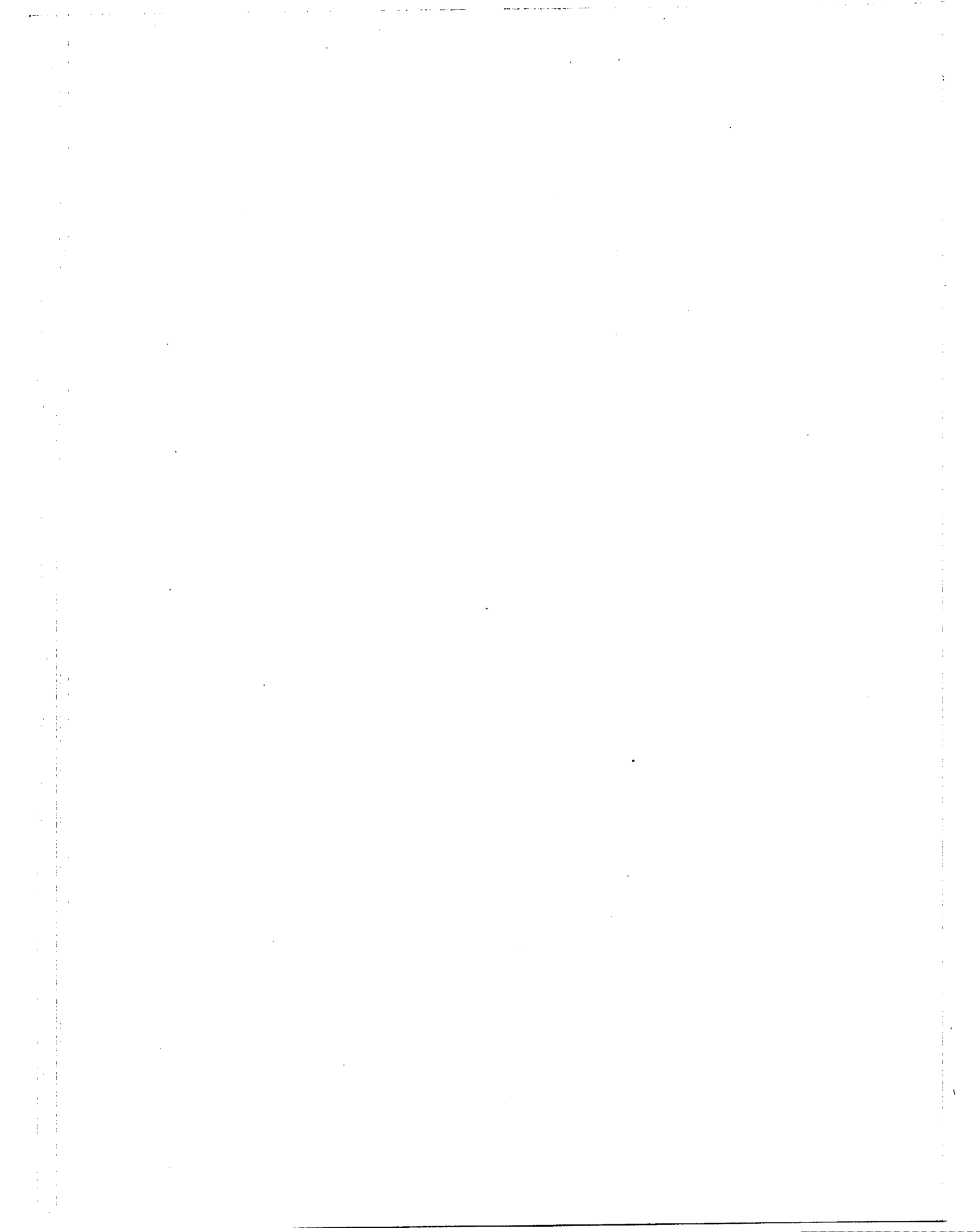
by

Roger Arbour



QUEBEC

1964



QUEBEC DEPARTMENT OF NATURAL RESOURCES

RENÉ LÉVESQUE, MINISTER

P.-E. AUGER, DEPUTY MINISTER

MINERAL DEPOSITS SERVICE

PAUL-E. GRENIER, CHIEF

GEOLOGY  
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ROUYN-NORANDA COUNTY

PRELIMINARY REPORT

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PRELIMINARY REPORT

on the

SOUTHEAST QUARTER OF CLÉRICY TOWNSHIP

ROUYN-NORANDA COUNTY\*

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INTRODUCTION

The southeast quarter of Cléricy township, situated in Rouyn-Noranda county, is located approximately 15 miles northeast of the city of Rouyn. Covering 25 square miles, the area lies between latitudes 48°17'15" and 48°21'38" and longitudes 78°39'00" and 78°45'30".

Easy access to the map-area is provided by the highway joining Rouyn and D'Alembert village and extending to the Dufresnoy-Cléricy township line. A secondary road, accessible in summer, connects the southeast corner of the area to Highway 59, a distance of about 4.5 miles.

Mapping was carried out during the summer of 1962 at the scale of 1,000 feet to the inch. Vertical aerial photographs, enlarged to the same scale, were used for this work.

TOPOGRAPHY

The area presents a rather gentle terrane. The highest hills parallel the regional structure and are located in the western part of range I; they rise between 100 and 200 feet above the surrounding ground.

Clay deposits and swamps cover a large part of the map-area; the eastern half of the area is especially barren of rock outcrops.

The eastern ends of ranges I and II are covered by a sand deposit which represents the western limit of a two-mile-wide sand and gravel ridge that crosses La Pause township in a north-south direction.

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\* Translated from the French.

The area is drained by Cléricy river and Talbot brook, both of which flow northward into Parfouru lake.

GENERAL GEOLOGY

Rocks of the area are all of Precambrian age. The oldest members are represented by a belt of sedimentaries in the northeast corner of the area. These sedimentary rocks form part of the Kewagama group\*. The bedrock over most of the area is composed of andesitic, basaltic and dacitic flows belonging to the Blake River group.

Gabbro, granite and syenite, as well as more recent diabase dykes, cut the volcanic and sedimentary rocks.

TABLE OF FORMATIONS

Quaternary	Recent and Pleistocene	Clay, silt, sand
Upper Precambrian	Keewatin-type Intrusives	Diabase
Lower Precambrian	Post-Keewatin-type Intrusives	Lamprophyre Feldspathic porphyry Gabbro Granite Porphyritic syenite
	Blake River Group	Metabasalt Metarhyolite Metadacite Meta-andesite
	Kewagama Group	Greywacke

\* J.W. Ambrose - Cléricy and LaPause Area; Geol. Surv. Can. Mem 233, 1941.

### KEWAGAMA GROUP

Sedimentary rocks of the Kewagama group outcrop in the northeast corner of the area. They represent the southern limit of the "Cléricy sedimentary belt" as defined by Ambrose.

The sedimentary rocks within the map-area consist chiefly of argillaceous and arenaceous greywacke. The best outcrops are found along the road that goes across lots 45 and 47 of range V and form also a rocky point on the east shore of Parfouru lake. Beds strike between N.20<sup>OW</sup>. and N.45<sup>OW</sup>. and dip from 50° to 80° to the southwest. On the point in Parfouru lake, a well-developed bedding can be seen and, in beds 1 foot to 3 feet thick, a graded transition between the coarse-grained base and the fine-grained top is evident.

### BLAKE RIVER GROUP

Volcanic rocks of the Blake River group constitute more than 80 per cent of the bedrock in the area. These rocks are slightly metamorphosed to the green schist facies. Among these, meta-andesites are by far the most abundant, followed by metadacites and metabasalts. The distinction in the field between the various volcanic rocks was based on their weathering characteristics, the colour of their fresh surfaces and hardness. In doubtful cases double symbols such as V4(V6), V6(V4) and V6(V7) have been used on the map.

#### Meta-andesite

Meta-andesite is the most common variety of lavas in the area. It is particularly abundant in the west half of range I and on lots 34 to 42 of ranges IV and V:

Outcrops on lots 35, 36 and 37 of range V represent the most common type of andesitic lava in the area. Massive, pillowed and brecciated varieties of andesite are present. In general the pillows are well preserved and their greater dimension ranges between 1 foot and 3 feet. Where flows are schistose, pillows are elongated and flattened. The general strike of the flows is N.70<sup>OW</sup>.; they dip steeply to the southwest and also face in this same direction.

Pillowed andesitic flows somewhat different from the rest of the assemblage were noted on lots 46, 47, 51 and 52 of range I. The colour of the rock is dark grey to greenish grey. The pillows are approximately 4 feet long and 1 foot wide and contain numerous small acicular crystals of amphibole; these do not seem to be confined to the periphery of pillows but they are particularly well outlined within the light green pillow-rinds developed on the outer margin of pillows.

A few bands of porphyritic meta-andesite were noted close to the line common to ranges IV and V on lots 37 to 42. This variety of lava is particularly well exposed on lot 42 of range V, 100 to 700 feet north of the southern limit of the lot. The rock is composed of idiomorphic plagioclase crystals 0.1 to 1.0 inch in diameter. The groundmass is dark brown in colour and fine



to medium grained. It is composed mostly of chlorite and amphibole. White-weathering phenocrysts may constitute up to 70 per cent of the total volume of the rock.

The massive variety is medium to coarse grained. It weathers uniformly to produce a rather soft surface which is green or reddish brown in colour. Coarse, dark green amphibole or pyroxene grains give a mottled appearance to the rock.

Brecciated andesitic flows are numerous but discontinuous. A particular characteristic displayed by these breccias concerns the arrangement of fragments in parallel rows; the dimensions of the fragments may range from 6 to 20 inches in length, are fine grained and olive-green in colour and are almost solely composed of quartz and epidote. Many of these fragments stand out on outcrops, because of their resistance to weathering.

A carbonatized meta-andesite band, measuring more than a mile in strike length, is located close to the line separating ranges I and II, east of Cléricy lake. Another strongly carbonatized band was noted on lots 33, 34 and 35 of range IV.

#### Metadacite

The metadacite is a fine-grained and massive rock. On fresh surface it is grey to light green, whereas its altered surface is light grey. Hardness and colour were the two criteria used in the field for identification. Pillow structures are particularly well preserved in this variety of lava, a fact that facilitates top determinations. Most of the pillows are oval shaped. Typical metadacite flows are well exposed on lots 37 and 38 of range III, about 1,500 feet south of the road.

A pillowed dacitic flow located on lots 35, 36 and 37 of range V constitutes a remarkable horizon marker. Pillows at this locality may attain 8 feet in length and 1 foot to 2 feet in thickness. Some are oval in shape but most forms are even more elongated. Varioles are very abundant and are concentrated in bands parallel to pillow margins. These bands, from  $\frac{1}{4}$  inch to 2 or 3 inches in thickness, are not limited to the margins of pillows but are in places found a few inches from the pillow centres. The concentration of varioles varies considerably in each of the bands.

#### Metarhyolite

Metarhyolite is comparatively scarce in the area and only five or six small-sized flows were noted. The rock is compact and light to dark grey. The white to greyish white weathered surface makes its identification easy, particularly on lot 40, range III, 300 feet south of the road, where a rather deformed and sheared metarhyolite band is clearly cut by a gabbro intrusion.

#### Metabasalt

Rocks of a darker colour than that of a normal meta-andesite have been mapped as metabasalt. These are generally schistose and dark green to black in colour. Small blue quartz grains and elongated epidote patches can be seen in some of the massive outcrops of metabasalt.

Amygdaloidal structures are common, especially in the two metabasalt bands on lots 35 to 40 of range III. Quartz or calcite amygdules are flattened and elongated, and their white colour contrasts with the dark green to black of the groundmass.

The composite symbol 'V6(V7)' was used on the map to indicate the few places where the distinction between the highly chloritized meta-andesite and metabasalt was difficult to make.

#### POST-KEEWATIN-TYPE INTRUSIVE ROCKS

##### Porphyritic Syenite

A few small massive porphyritic syenite outcrops were noted on lot 40, range V, about 900 feet south of the road. Idiomorphic pink-coloured, white-weathering feldspar crystals are enclosed in a medium-grained, dark green groundmass composed mainly of amphibole. The feldspar phenocrysts measure from 1/8 to 1/2 of an inch in length and constitute up to 30 per cent of the total volume of the rock.

##### Granite

A small granite mass was seen on lots 35 and 36, range IV. This granitic rock is sheared and contains epidote and chlorite. The western end of the intrusion is carbonatized and its weathered surface is rusty. On the whole; the rock is medium grained and the feldspar appears to be more or less altered. It is cut by an olivine diabase dyke.

A second granite mass outcrops on lot 44 of range III. The rock is massive, medium grained and rather grey in colour. The quartz is pale blue in colour and more abundant in this rock than in the granite mass described in the preceding paragraph.

##### Gabbro

Numerous isolated gabbro masses were noted in the area. Those on lots 50, 52 and 55, range III, and on lot 49, range V, differ from the others in that they contain more feldspar and that, locally, their composition is closer to that of diorite than to gabbro. Pegmatitic phases are rather common.

A series of bosses distributed in a north-south direction crosses ranges III and IV, between lots 38 to 41. The rock is massive, medium to coarse grained and, locally, diabasic in texture. Its weathered surface is chocolate brown. Epidote patches are common.

##### Feldspathic Porphyry

Two small porphyry dykes cut lavas in the southern part of lot 42, range V. These are about 3 feet wide and are composed of feldspar phenocrysts 0.1 of an inch long enclosed in a fine-grained, light grey groundmass.

### Lamprophyre

Three lamprophyre dykes were found in the area. One is close to the road on lot 58, range V. It is a coarse-grained lamprophyre made up of large biotite flakes which constitute up to 70 per cent of the rock.

Another lamprophyre dyke crosses lots 33 and 34 of range IV in a N.45°W. direction. The rock is either massive or sheared. Red-coloured feldspar grains are in contrast with the rest of the dark green rock, and give rise to a dyke rock of mottled appearance. Locally this dyke grades into a mica lamprophyre similar to the one previously described.

### KEEWATIN-TYPE INTRUSIVE ROCKS

#### Diabase

Two varieties of diabase are found in the area. The first variety consists of an olivine diabase dyke. The dyke occurs in the northwest corner of the area, has an average width of about 250 feet and strikes in a direction N.35°E. The rock is massive, medium to coarse grained, greyish on its weathered surface and greenish grey on its fresh surface.

The second variety of diabase is represented by a series of dykes in which the rock shows an ophitic texture, particularly on its weathered surface. These dykes outcrop on each range and strike virtually north-south. Dips are very close to the vertical and dyke widths range from 5 to 100 feet. The rock is massive, and it is dark green on fresh surface. The weathered layer is about 0.1 inch thick and its lower limit is very clearly defined.

### RECENT AND PLEISTOCENE

Vast areas of low terrane are covered by lacustrine clay and swamps. This is particularly the case in the east half of range II where no outcrops could be found. The shores of Parfouru lake are flat and muddy; at its south end there occurs a swampy zone measuring about one square mile in area.

The eastern limit of range I, II and III is covered by a clean sand deposit whose limits have been indicated on the map with the aid of aerial photographs.

Glacial striae were noted in six or seven localities; they strike N.10° to 20°W.

### STRUCTURE

#### Folds

The volcanic formations of the Blake River group, and the sedimentary rocks of the Kewagama group as well, have a general strike varying from N.30°W. in the northern part of the area to N.80°W. in its southern part. A few flows striking N.60°E. and located west of Parfouru lake in range I represent exceptions to this general statement.

All the volcanic horizons dip steeply to the south; about 95 per cent of the tops face south.

The main structure outlined in the area is an overturned anticline. The trace of its axial plane, striking N.60°W., crosses lots 35 to 40 of range III. It is the only locality in the area in which tops of the beds face north.

### Schistosity, Faults

A large proportion of the volcanic rocks in the area is schistose. Schistosity is in general parallel to the strike of flows. Zones of intense shearing are marked by a development of chlorite and carbonate schist. Such zones are particularly abundant on range I.

A fault striking N.75°W. and showing an apparent 700-foot separation is present across lots 35 and 36 of range V. The presence of this fault is shown principally by an offset of the marker horizon of pillowed and variolitic dacitic lava.

The northeast-trending Davidson Creek fault that crosses the northwest quarter of Joannès township would appear to extend into Cléricy lake located within this map-area. In effect, outcrops on the southwest shore of the lake are strongly sheared, brecciated and locally carbonatized. Moreover, there is a change in the strike direction and in the composition of flows from one shore to the other.

On ranges III and IV, the discontinuity of certain dacitic and basaltic flows, as well as the unusual direction of schistosity, suggests the presence of three other faults striking N.30°E.

### ECONOMIC GEOLOGY

No large-scale or detailed prospecting or exploration has been carried out in the area. Pyrite is commonly disseminated in the andesitic lavas but all outcrops in which pyrite mineralization is present in larger than normal amounts have been recorded on the map. These occurrences are found on lots 44 to 49, range I, and on lots 33, 34 and 35, range IV.

The pyritized rock is generally fine grained, light coloured and strongly carbonatized. It is characterized principally by its rusty-coloured weathered surface, measuring up to  $\frac{1}{2}$  inch in thickness, and by its numerous cross-cutting quartz veins. The presence of old trenches in the area of these carbonatized zones indicates that most of these outcrops were visited and prospected in the past.

### Anaconda American Brass Limited

During the summer of 1962, Anaconda American Brass was the only company holding a group of claims in the area, this being the one on lots 32 to 39, range IV.

The main mineralization located at the north end of a strongly-

altered andesitic lava outcrop in the central part of lot 36 consists of pyrrhotite. The tenor and extent of the mineralized zone had not yet been determined when the present study was undertaken, but a more detailed examination was being made.

During the summer of 1962, the company carried out geophysical and geological surveys on its property.

#### J.-L. Viau Claims \*

The J.-L. Viau claims cover lots 42 to 48 of range I, Cléricy township. The first gold discovery on this property was made in 1924, and, since that time, several companies have carried out exploration work on the property. Kitchener Rouyn Mining Co. in 1929, Bouchard-Cléricy Gold Mines Limited in 1935, and Korich Mining Co. Limited in 1960 each completed a programme of diamond drilling. Bouchard-Cléricy Gold Mines Limited also sank a shaft to a depth of 100 feet and completed 100 feet of lateral workings. The shaft is situated on the northern part of lot 44, about 1,100 feet south of range-line I-II and 175 feet west of the line separating lots 44 and 45.

In this area are found zones of sheared, carbonatized, and pyritized andesite; these strike roughly east-west and are cut by numerous quartz veins or veinlets. It has been reported that visible gold is present but that assay results indicate an erratic distribution of gold values.

\*

B.M.Q. 1929, Part A, pp. 124-126  
1930, Part B, pp. 30-35  
1934, Part A, pp. 87-88  
1935, Part A, pp. 52-53  
1936, Part A, p. 56-57

G.S. Can. Mem. 233, p. 31

