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PRELIMINARY GEOLOGICAL REPORT ON CHAUDIERE AREA

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Énergie et Ressources naturelles
Québec

PRELIMINARY GEOLOGICAL REPORT

ON

CHAUDIERE AREA, BEAUCE CO.

QUEBEC

BY

P. H. LACHANCE

EXPLORATION DEPARTMENT, CANADIAN JOHNS-MANVILLE CO. LTD.

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Maps Accompanying Report

Five Geological maps. Scale: 1 in.= 400 ft. as follows:-

Map Sheet No. 1 - Range Premier Southwest, Seigniory Rigaud-Vaudreuil.
Map Sheet No. 2 - Range Premier Northeast and Range St. Charles
Map Sheet No. 3 - Range St. Gaspard and Range "A".
Map Sheet No. 4 - Range St. Corinne Northwest
Map Sheet No. 5 - Range St. Jean, St. Joseph Township.

GENERAL STATEMENT

The area described in this report is a part of the "serpentine belt" that goes through the Eastern Townships of Quebec and comprises a total of 3,440 acres in the Seigniory Rigaud Vaudreuil.

The field work was done in the summer of 1952 from the 5th of June to the 21st of October.

J. Stephenson worked as assistant from 11th of June to the 13th of September. From the latter date, P. Belisle, R. Vincent and J. N. Poulin worked as assistants in the order mentioned. All gave valuable assistance to the writer.

PROCEDURE

General geology was done at first to determine the extent of the serpentine rocks. Traverses were run at approximately every quarter mile, by pace and compass and also using air photos to locate the outcrops more accurately. MacKay's geological map proved very useful in saving time for the location of outcrops.

After the cutting of the magnetometer survey lines, these were used for the drawing of the base maps and accurate location of the outcrops where the lines covered the claims. Detailed geology was done from these cut lines.

PREVIOUS WORK

A geological survey of the greater part of the area covered by this report was done by B. R. MacKay when he surveyed and geologized the Beauceville

Map Area. (1). Range Ste. Marie and St. Jean in St. Joseph Township, Range "A" and the Northeast part of Range Ste. Corinne Northwest, were not covered in his survey of 1916-17-18.

C. Tolman did the geology of R. Ste. Corinne Northwest and part of Range "A" in 1935, and it is shown on the map of the Lake Etchemin Area. (2).

B. T. Denis reports on three showings of serpentinized peridotite, where test pits and shafts were dug, in his report of "Asbestos Occurrences in Southern Quebec". (3). These three showings are located in the Beauceville Area near the Des Plantes River.

From verbal reports of the personnel of the John Breakey Co., the Bell Asbestos Company did some work in Range St. Jean on a serpentinized peridotite outcrop containing asbestos. This work consists of one shaft 25 feet deep, one 3' x 3' trench, 175 feet long, another trench 3' x 3', 40 feet long and 7 shallow test pits.

Test pits and shallow trenches are found at most of the outcrops of serpentinite throughout the area.

Recently, Golden Age Ltd. has been drilling on lots 300 - 301, Range Premier Northeast and Range St. Charles. These lots are mentioned because they are enclosed by the claims surveyed in this report.

(1) Memoir 127, Beauceville Map Area - G.S.C.

(2) Lake Etchemin Area, T. C. Toleman - G.S.C. - Map No. 395A

(3) Annual Report of the Quebec Bureau of Mines, 1930, Part D.

LOCATION AND ACCESS

The area held under M.R. by Canadian Johns-Manville Co. Ltd. is located for the greater part in the St. Francois Parish, Seigniory Rigaud Vaudreuil, Beauce Co. Eleven lots are located in St. Joseph Township, Beaver Co. adjoining Range A of the Seigniory Rigaud Vaudreuil.

The first part is divided by the Chaudiere river. On the west side of this river, most of the area is on the south side of the St. Victor river. The area on the east side of the Chaudiere river is also divided by a river, the river Des Plantes.

Access to this area is by the highway No. 23-28. From the town of Beauceville West, on the west side of the Chaudiere, a good dirt and gravel road following the river gives access to the east side of the lots under claim. A farm road on lot 1486 (L. Grondin) goes to within 1000 feet of the southwest boundary of the area. From the Sherbrooke highway, leading out of Beauceville West, 2 miles from the town, a dirt road going northwest follows the dividing line between Range Premier Southwest and Range St. Joseph, and gives access to the southwest boundary.

From the town of Beauceville East, east side of the Chaudiere, running northwest for approximately 3½ miles, is a main highway which goes through the area under claim.

A dirt road is found 2½ miles from Beauceville going northwest along highway No. 23-28. This road goes northeast to range Ste. Corinne Northwest. 1½ miles from the highway, another dirt road turns off the first one and goes northwest, nearly parallel to the highway, to the first lots on range St. Charles.

Apart from these roads, many winter haulage trails are found on the east side of the Chaudiere and give access to most of the lots under claim.

TOPOGRAPHY AND DRAINAGE

On the west side of the Chaudiere river, the land is flat from the gravel road to the edge of the river, and constitutes some of the richest farm land for that area. On the west side of the road, the ground rises to a height of 350' in a steady gradient above the Chaudiere. The same gradient is found on the north side of the area.

The St. Victor river drains the northern slope of the area and joins the Chaudiere a few miles north. On the east side of this western group of claims, the drainage is by way of the Chaudiere river itself.

East of the Chaudiere river the highest elevation is in Range Ste. Corinne. At 2½ miles from the highway along the dirt road going northeast to Ste. Corinne Northwest, the ground flattens out on both sides of the Southeast Branch. Another flat piece of land is found northeast of the junction of the Des Plantes and Southeast Branch. From the Chaudiere river bank to highway No. 23-28 the land is flat and makes good cultevating land.

Two rivers, the Southeast Branch and the Der Plantes river drain the area. The Des Plantes is the most important of the two, it runs through the whole length of the area east of the Chaudiere. The Southeast Branch joins the Des Plantes about 2½ miles northeast of the highway. There are a few minor creeks found in the depressions joining the Des Plantes. Two falls are found in this river before it joins the

Chaudiere. The highest is roughly 1½ miles northeast from highway No. 23-28. It is 80' high. The other one is half a mile northeast from this same highway and has a drop of 20'.

River terraces are found on both sides of the Eastern Branch and are composed of gravel and silty sand. Boulders and gravel are found in the beds of the rivers, especially at the joining of the Eastern Branch and the Des Plantes River where the gravel has been used for roads.

Glacial drift covers most of the highlands and the slopes of the rivers' valleys.

GENERAL GEOLOGY

Strata ranging from Cambrian (?) to Devonian (?) are found in the area. Two series of rocks, the Caldwell series and the Beauceville series occur throughout the region. Intruded along the fault zone between the Beauceville and Caldwell series, and in the Beauceville series itself in the vicinity of the faulted zone, there occurs a group of igneous rocks ranging in composition from acidic to ultrabasic types.

The Caldwell series is of Cambrian (?) Age according to H. C. Cooke (1) and R. R. MacKay. They are composed mostly of sedimentary rocks with some volcanics. The sediments are impure to pure quartzites, greywakes and slates. The volcanics are tuffs and agglomerates.

The Beauceville series placed in the Devonas by the same two authors is composed also of sedimentary and volcanic rocks. The sediments vary

from shales to slates and conglomerates. The volcanic rocks include acid tuffs, agglomerates and rhyolite flows.

The Serpentine series (MacKay) comprises the intrusives varying in composition from dunites and peridotites through pyroxenites, gabbros, and diorites to granites and aplites.

The greater part of the area is underlain by the Beauceville Series. It is only in the northwest part that the Caldwell series is found.

As for the age of the series, MacKay makes this introductory statement: *

> "The Beauceville map-area lies on the southeastern limb of the Sutton Mountain anticline and representatives of most of the sedimentary and igneous rock formations of the Appalachian Mountain Province are found within its borders. Over 95% of the area is underlain by sedimentary and volcanic rocks believed to range in age from Cambrian to Devonian. The Devonian beds are the only ones which have yielded abundant fossils and whose age is definitely known. Two small brachiopods were obtained from the underlying Beauceville series but the species were underterminable. The state of development of these forms, the physical characteristics of the series, and its relationship to the overlying Devonian beds combine in placing it in the Ordovician. The rocks which are designated as the Caldwell series bear a structural relationship to the Beauceville series, indicating that they are older. From their physical characteristics they are correlated with sediments of Cambrian Age.
>
> The various deep-seated igneous bodies which underlie the remaining part of the area are differentiates of the one main intrusive. The differentiation probably took place before the magma was intruded. The exact age of the intrusion cannot be determined, but it occurred sometime after the faulting which brought the Beauceville in contact with the Caldwell. On the other hand, the Devonian sediments of the area are not known to be intruded by igneous rocks."

* Ibid - MacKay - p.16 para. 4.

TABLE OF FORMATIONS

BY

B. R. MACKAY

ERA	PERIOD	SERIES	DESCRIPTION
Quarternary	Recent and Pleistocene		Sedimentary and interbedded volcanics. Alluvial deposits (gravel, sand and silt) Marine and glacial lake deposits (Stratified clay and sand. Fluvio-glacial deposits (eskers). Glacial deposits (ground moraine)
		UNCONFORMITY	
Cenezoic	Tertiary		Alluvial deposits (stream gravels, in places cemented, oxidized clay, decomposed bedrock.)
		UNCONFORMITY	
	Devonian	Famine Series	Shale, slate, limestone, and conglomerate.
		UNCONFORMITY	
Palaeozoic?	Ordovician?	Beauceville Series	Sediments - slates, impure quartzites, conglomerates. Volcanics - acid tuffs, rhyolite flows, agglomerates
		FAULTED CONTACT	
	Cambrian?	Caldwell Series	Sediments - Impure to pure quartzites, slates, Volcanics - red and green slates, ellipsoidal greenstones, agglomerates, tuffs, marbles
Igneous Rocks:			
	Devonian?	Serpentine Series	Diabase dykes - fine-grained granite. Dunite, gabbro Pyroxenite (partly serpentinized) Peridotite, dunite (in places wholly serpentinized.).

NOTE: No FAMINE SERIES found in area comprised in this report.

DESCRIPTION OF FORMATIONS

CALDWELL SERIES

Sedimentary Rocks:

The rocks found outcropping that belong to the Caldwell are greywackes and impure quartzites interbedded with slates.

The greywackes weather from a dirty grey colour to brownish grey. On the fresh surface the colour is grey, tinted violet, in two outcrops. The groundmass varies from argillaceous to siliceous. Well rounded quartz grains from 0.5 mm. to 5 mm. are found, forming up to 70% of the rock. When the bigger grains are found to be more abundant than the smaller ones, the rock is a grit. These rocks have a marked schistosity, in general with a fair amount of mica on the schistose faces. Chlorite was found in one outcrop.

The impure quartzites weather to a white and dirty grey colour. The fresh surface shows a grey colour. Argillaceous material is found in the groundmass varying in amount in the different outcrops. These quartzites pass gradually into the greywacke, no sharp contacts have been found.

The slates are black, red and green. The weathered surface is grey for the black slates, grey and green for the green, and red for the red slates. Only one outcrop showing these interbedded quartzites and shales has been found at 1300 feet from B.L. 3A following line 28 ∠ 00. They have a perfect slaty cleavage and are so fine grained that with the hand lenses no grains are visible.

One bed of red and green slates has a width of 100' at 15 ∠ 00 on L-28 ∠ 00. It has the form of a lense and irregular contacts. Other small lenses are found, ending abruptly in the quartzite. More evidence

would be needed to say whether it is faulted or is an intraformational conglomerate. The red slates change to the green coloured ones at the contacts with the quartzite.

The dip of the bedding as observed in two places indicates that the beds are overturned close to the contact with the Beauceville Series.

BEAUCEVILLE SERIES

1. Sedimentary rocks:

Black shales and conglomerates are found on the southern end of the area.

A. The shales weather to a light to a medium grey colour. On fresh surface the predominant colour is black. They are very fine grained. Some are graphites and pyritization is present in a few outcrops. The schistosity or slaty cleavage is not too well developed. The rock may crumble in small flakes or break in thin sheets of unequal size. On the west side of the Chaudiere, 200 feet south from the B.L.-1 along line 35 $\not$ 00, an outcrop of shales is conglomeratic in places. There is only a small amount of conglomerate about three feet in diameter in an exposure 20 feet long by 5 feet wide. The pebbles are of granite rock, and as these shales are in contact with a conglomerate of granite boulders, it suggests evidence that the shales overly the conglomerate.

B. The conglomerates are found on the northern side of the shales. From the dirt road on range Ste. Corinne the shales grade into the conglomerate with no definite contact. The groundmass in this part is shaly with the inclusions varying in size as well as in composition. Pebbles,

cobbles and a few boulders of sandstones are found; only pebbles and cobbles of shales are present. On the west side of the Chaudiere, the conglomerates are of two kinds. To the south, they are very similar to the ones found in Range Ste. Corinne. North of this first conglomerate, the inclusions of a granitic rock are the most abundant. Particular interest is attached to the conglomerate found 160 feet south of D.L.-1 on line 35 + 00, as the boulders of granitic rock are of great dimensions; one with well defined boundaries measured 5 feet by 2.5 feet.

These last conglomerates are found in faulted contact with coarse pyroxenite in two places and have pebbles of gneissic rock, greenstone and other rock not identified. Further study of thin sections will prove very useful in establishing the relationships of these rocks in contact with one another.

2. The volcanic rocks encountered were of three types. Agglomerates, (?), tuffs and greenstones.

A. The agglomerate (?) groundmass is of variable composition. The predominant type shows quartz, feldspars and ferro-magnesians such as hornblende, mica and possibly augite. The inclusions consists of sub-angular to angular layered rock; the layers or beds are quartz alternating with very fine dark rock. The layers vary in thickness from 1/64" to ¼". Some of these inclusions are 16 inches long by 14 inches wide. The other inclusions are pure quartz varying in size from ¼" to 4" in diameter. The finest showing of these inclusions is found at the big falls on the Des Plantes River.

Some outcrops will show a greater amount of dark minerals in grapes and disseminated through the groundmass.

One outcrop has abundant biotite and could easily be mistaken for a biotite rich granite if the inclusions were not present. The definite origin of this type of rock has not been ascertained; more study is needed on thin sections before the writer can give the appropriate name to this formation. Agglomerate is a tentative field name due to the presence of two spindles found at the falls.

The thickness of this formation is approximately one mile and it is found only on the east side of the Chaudiere River.

B. The tuffs are found at the small falls on the Des Plantes River and along the highway No. 23-28. They consist of volcanic dust and ashes. On the weathered surface, they show a lineation which strongly suggests bedding. The colour is of a light brown to grey on the weathered surface, it is rusty in spots. The fresh surface colour is grey. The coarser particles and fragments are feldspars and quartz. The apparent lineation is caused by a layered structure. The layers are milky quartz and dark material alternating. The fragments cut through the layers or beds and are angular to sub-angular.

C. Volcanic greenstones are very restricted in the area. They are very fine grained rocks. The weathered surface is green and the same as the fresh surface. The observations made on these outcrops were rapid and no attempt was made to classify them in a definite category in the field. One outcrop is shown in contact with the gabbro on B.L.-4. No contact was seen as the overburden and growth are heavy. A diabase is a possibility.

IGNEOUS ROCKS

A. The granite outcrops are numerous on the west side of the Chaudiere where they are intrusives in the serpentinite-peridotite. The weathered surface colour is of a grey-white which is the same colour as found on the fresh surface. The texture varies from medium grained, coarse grained to porphyritic.

Mapped as granite as well are quartz syenites, grano-diorites and quartz-diorites.

The composition is quartz, orthoclase and plagioclase feldspars, hornblende, biotite in small amounts and white mica.

On the east side of the Chaudiere the granites are coarse grained and have the same composition. The weathered surface is speckled brown due to the weathering of the mica.

B. Gabbro is found outcropping on the east side of the Chaudiere on line 8 + 00 of B.L.-4. The weathered surface is grey for the fine grained variety and light brown for the porphyritic gabbro.

It is in contact with the pyroxenite found on the same outcrop. The porphyritic gabbro is composed of plagioclase feldspars and pyroxenes. The size of the crystals of pyroxenes is 5/8 of an inch and larger, although the average is 3/8 of an inch. The feldspars average the same size as the pyroxenes. Although the overburden prevented the observations for a gradual contact, the writer is confident that there exists a good example of a differention. The pyroxenite changes to a porphyritic gabbro which in turn grades into a coarse gabbro to end finally into a medium and fine grained gabbro.

One lense of serpentinized pyroxenite is found isolated in the outcrop to the south of the base line. Other lenses of aplitic rock are distributed over the northeastern part. They end abruptly in the gabbro and have small dikes or fingers which probably served as feeders for these lenses.

C. Pyroxenites are found outcropping at the surface in three places. Two to the west of the Chaudiere and one on the east side where the gabbro occurs.

The first two are coarse-grained pyroxenite with a light green colour on the weathered surface and a darker green on fresh surfaces. The first one on L-28 ∠ 00 south of B.L.-1 shows a well defined contact with a conglomerate, the strike of the contact being N 45°E. It is a faulted contact and the conglomerate has a light green colour and is slightly metamorphosed. The other pyroxenite is also in contact with a conglomerate but the contact is not so well defined. The direction marked as N 4°E is subject to changes.

The pyroxenite on the E side of the Chaudiere is on L-8 ∠ 00 of B.L. 4. It is coarse-grained and weathers to a light green colour. On fresh surface the colour is of darker green. It passes gradually to a porphyritic gabbro towards the W.

These three outcrops are similar in crystal size, being $\frac{1}{4}$" and over. They are partly serpentinized towards the edges away from the contacts.

D. Peridotite serpentinized or Serpentinites.

The serpentinites outcrop at the surface throughout the greater part of the area. Two types were encountered, the medium and dark coloured serpentinite.

The medium serpentinized peridotite is a fine grained rock containing very few remnants of pyroxenes. Magnetite is present disseminated throughout the rock. No veins of magnetite were found near the fibre veins found on the surface. Sheaving and slip planes are found in all outcrops. The biggest shear zone is found on the St. Victor River where its maximum observed width is 220 feet. Small boulders of serpentinite are enclosed by the sheared rock presenting the aspect of a conglomerate. Thread veins of cross-fibre are found in this outcrop and very little slip fibre.

All the outcrops on the west side of the Chaudiere have been found to contain cross-fibre veins up to 1/16 of an inch. The outcrop in contact with the granite at 5 + 50 feet west of L-16 + 00 contained 5 veins of 1/16" in two inches width paralleling one another. Here also we find some slip serpentine well polished giving a glassy surface indicating movement along slip planes but no definite direction observed.

On the east side of the Chaudiere, serpentinite is found on the lines of baseline 3-A. It is the medium type and contains veins of apple green serpentine, fish scales, slip serpentine and dissiminated magnetite. Cross fibre is found in thread veins.

On line 20 + 00 at 200' north, one outcrop of black to blue green serpentinite is found which contains carbonate veinlets. Slip serpentine, fish scales, magnetite and thread veins of cross-fibre are present.

On the same line but 175 feet west of the precedent outcrop, another outcrop of black serpentinite is found. An old pit 15 feet by

15 feet has exposed the bedrock. Many apple green veins of serpentine are found with no regular trend. Shear planes striking N 25° E with a vertical dip to a width of about 1 foot observed. Lenslike veins of cross fibre 1/16 of an inch and thread veins.

In range St. Jean, many test pits and three trenches are found which have exposed the bedrock. The serpentinite is the medium type. At the shaft at 10 + 00 on line 8 + 00 west of the line, the serpentinite shows a peculiar texture. The groundmass is pale green and contains black patches dissiminated throughout, giving the rock a mottled appearance. Also there is another texture with the same groundmass containing small crystals of pyroxenes with their long axis parallel, giving the rock a lineated structure. These were seen in the float around the shaft.

A vein of cross fibre 1/4 inch was found as well as veins of 1/16" and thread veins in the float. Thread veins of cross fibre were also found in some of the pits and trenches.

A small amount of slip fibre was found in the float around the shaft.

It is to be noted that mica was present in the serpentinite taken out of the shaft, with a small amount of pyroxenes. No major shear zone observed although slip serpentine is found.

In range Ste. Corinne, outcrops of serpentinite occur. The ones on lots 21 to 24 are of the medium type and thread veins are found. The one outcrop nearest to the road is complex. Limestone faulted and containing patches of serpentinized rocks is on the south side.

On the north side the rock is a serpentinite cut by carbonate veins. No detailed geology was done on this outcrop.

The other outcrops on lots one to twelve in range Ste. Corinne Northwest are of the dark type. On line 8 + 00 at 22 + 90 N the serpentinite is highly sheared at the contact. The shears give the weathered surface a lineated structure.

Many veins of serpentine are found but have no definite direction. No traces of cross fibre were found.

On line 4 + 00 at 22 + 25 feet north, the same type of rock outcrops at the surface and shearing occurs in strike with the other outcrop. The general strike of the sheared zone is N 21° E. The dip differs however from one place to the other, at the first outcrop the dip is 72° E while it is 72° W at the present outcrop. No magnetite was detected by the magnet at this outcrop.

All the outcrops found in this part of the area are poorly exposed and much information is lacking due to the poor exposures. The difference in the dips of the last two outcrops might not be as high when the outcrop on line 8 + 00 is well stripped to expose the contact.

STRUCTURE

The general trend of the rock formations varies between N 35° E and N 45° E. In the Caldwell Series, the schistosity varies from N 30° E to N 45° E locally but in general the trend is closer to N 40° E for the part of the series found in the area.

The Beauceville Series show the same trend for the schistosity in the shales and slates.

The serpentine rocks appear to be lenses following the general trend of the rock formation they intrude. Only at one place on the west side of the Chaudiere River does the serpentine rocks show discordance with the structure of the area, where the serpentine rocks outcrop to the northeast of the granite if the outcrop forms part of the lense to the south.

Many small faults are found throughout the area indicating movement both in the Caldwell and the Beauceville Series. No evidence of the faulted contact between these two series has been found in the area but the writer visited the falls on the St. Victor River where the contact is clearly visible and can be followed for one hundred feet. A dike of quartz, two feet wide, is found at the contact. The strike of the faulted contact is N 43° E at these falls and dips 84° NW.

Jointing is found in the granites and the volcanics. No definite system has been found. Folding is found in the shales of the Beauceville Series.

The volcanic outcrops have a dome shape with smooth surfaces. A few glacial striaes are found indicating the action of the glaciation in rounding and polishing these more resistant formations.

The shearing and polished surfaces found in the serpentinite outcrop on the St. Victor River indicates faulting and considerable movement as the entire outcrop is sheared. The direction of movement is also following the general trend of the area. Other shear zones are found in many of the other serpentinite outcrops indicating movement produced after these rocks had intruded the country rocks.

All these evidences suggest that these Series have been subjected to considerable movement and faulting before and after the intrusion of the igneous rocks.

CONCLUSIONS AND RECOMMENDATION

The information gathered on the fibre-bearing rocks through the geological survey in the Beauceville area brings out two main features:

a) Traces of fibre are found in practically all of the serpentinites outcropping on the surface.

b) No large veins of cross-fibre appear on or close to the surface in these same rocks.

The best showings considering the previous statement are found in Range Premier Southwest and Range St. Jean.

The first one is close to the big granite intrusives close to line 16 + 00 and between lines 12 + 00 and 16 + 00. Many veins of 1/16 of an inch as well as thread veins were found in these outcrops of serpentinised peridotites. The presence of the granite intrusives in these basic rocks favour the formation of fibre by hydro-thermal solutions injected in the peridotites at the time of the intrusion.

The second showing is on line 8 + 00 at 10 + 00 feet north from the baseline. Here, one vein of cross-fibre $\frac{1}{4}$ inch wide was found as well as many thread veins. The presence of larger veins at the time the excavation of the shaft was made has been confirmed by the manager of the John Breakey Company who visited the showing at that time. The writer could not ascertain if such veins are present as the shaft is filled with water.

Thread veins of cross-fibre seen are free of magnetite and the fibre is semi-harsh, light green coloured, and of good flexibility.

The serpentinite rocks outcrop at the surface in irregular lenses throughout the Beauceville series and in the zone of contact between these series and the Caldwell Series.

The length of the veins of cross-fibres does not constitute showings of economical importance. However, the presence of the very high magnetic anomalies over the bodies of serpentinites suggests the possibility of deep orebodies having these poor marginal facies outcropping on the surface.

Shearing is found in variable degrees at all of the outcrops. A zone of shearing averaging 200 feet has been mapped in the St. Victor River on lines 40 ∠ 00 and 44 ∠ 00. The strike of the shearing follows the general trend of the regional structure.

On the basis of the high magnetic anomalies, the writer believes that a small exploratory drilling program should be considered to ascertain the possibility of an orebody of cross-fibre being at greater depth.

The geology of the Beauceville series offers many problems and is very complex, especially for the agglomerate (?).

The contact between the Caldwell and Beauceville is not seen in the area as the overburden is heavy as well as the growth in the eastern part of the area.

Only two types of rocks are found belonging to the Caldwell Series. Impure quartzites interbedded with slates and greywackes.

These rocks have been affected to a certain degree through metamorphism. Local faulting is found at the outcrop in the bend of the St. Victor River.

In the Beauceville Series, we find sediments interbedded with volcanics. The shales and the conglomerate to the north are believed to be free of volcanic beds for the part belonging to the area. The other conglomeratic beds next to the pyroxenites and the volcanic on the east side are of a different nature. At the present time, lack of information on the true composition of the pebbles and boulders do not permit any valuable conclusions.

Also further study of the agglomerate (?) is needed before attempting any correlation with the other formations.

The detailed geology of the north side of the Des Plantes River in Range Ste. Corinne as well as primitive lots 21 to 25 in this range has not been done. The same applies to Range Ste. Marie and part of St. Jean in St. Joseph Township.

The outcrop of conglomerate in contact with the pyroxenite south of line 40 ∠ 00 on baseline one has been stripped to find out more about the contact but has not been visited as yet since the stripping was done.

If the possibility of further work being done exists for this area, the writer would like the opportunity of completing the geology of this same area in order to be able to write a complete report.

A more detailed report will be written at a later date when more information will be available.

Submitted

Paul H. Lachance P. Eng.