

# S 014

EXPLORATION AND DEVELOPMENT IN THE AMOS-DUVERNY-BARRAUTE AREA, NORTHWESTERN QUEBEC

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Text of an address to the  
Prospectors and Developers  
Association, March, 1951.

Exploration and Development  
in the Amos-Duverny-Barraute Area, \*  
Northwestern Quebec,

by

W. Weber.

The first prospectors invaded this area in Northwestern Quebec shortly after the turn of the century. The earliest records of exploration are linked with the arrival of the railroad and the expediency of wartime demands during World War I. With the later discovery of the more lucrative prospecting areas in the Rouyn-Noranda, Malartic and Val d'Or regions, Amos became merely the jumping-off point for many of the pioneers of northwestern Quebec. For several brief periods, namely the 1935-1939 and 1944-1947 periods, the district once more regained the limelight only to be cast aside as new discoveries in Chibougamau, Bachelor Lake, Wedding Lake, and other more northern points undermined the confidence of all but a few hardy optimists.

Now the cycle once again appears complete and the Amos district like the perennial bridesmaid is finally knocking at the church door as a bride. The discovery of silver-zinc-lead mineralization in Barraute township and more recent copper-zinc-silver mineralization in Dalquier and Duverny townships has captured the attention of the mining fraternity. This initial interest touched off a staking rush which has covered almost 175 square miles and has resulted in a 25% increase in the number of claims recorded at Amos during the past six months as compared with the same period, one year ago. The amazing success of several ventures in their region has encouraged many extensive and widespread programmes of exploration. The active area includes the townships of Landrienne, La Morandière, Castagnier, Figuery, Pearn, Courville, Piedmont, Carpentier, Montgay, Rochebaucourt, Dalquier, Duverny and Barraute townships; a group of adjoining townships covering a belt 20 miles across and situated approximately 30 miles north of the Malartic-Val d'Or region.

At present, there are at least 26 mining companies active or with plans of exploration ready for the spring season, in the Amos-Barraute region. It would appear that the area will enjoy an unprecedented popularity in the coming season. In addition, if (a small word with a big meaning) some remedy should be found for the ills of the gold industry, the revitalization of numerous promising gold prospects would make 1951, the one in this as well as other parts of northwestern Quebec.

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\* Presented with the permission of the Deputy Minister, Quebec Department of Mines.

## GENERAL GEOLOGY

The general geology of the Amos-Duverny-Barraute area is similar to the remainder of the mining district of northwestern Quebec. All the consolidated rocks are of Precambrian age. The oldest rocks are the Keewatin-type volcanic rocks, probably the equivalent of the Malartic Group of Gunning and Ambrose or the Menojevis Group of Norman. These rocks account for over 85 per cent of the exposures and include siliceous, intermediate and sub-siliceous lava flows, breccia, agglomerate and a variety of tuffs. No Keewatin or Temiscamian-type sediments are exposed within the area mapped but less than  $\frac{1}{2}$  mile to the north, Temiscamian-type sediments have been observed in the vicinity of Castagnier Lake.

For purpose of discussion, the Keewatin-type volcanic rocks are subdivided into three sequences; the dominantly basic lavas and minor pyroclastics flanking the Soma anticline; the heterogeneous bands of siliceous, intermediate and basic volcanic rocks within the core of the Duverny syncline, and the bands of basic volcanic rocks interbedded with a prominent band of siliceous lavas, pyroclastic and sedimentary volcanic rocks on either limb of the Amos anticline.

The volcanic rocks forming the Duverny synclinal basin are the younger of the exposed Archean volcanic rocks. The Amos antioclinal and Soma anticlinal sequences are considered to be equivalent and similar, except for the band of siliceous lavas, pyroclastic and sedimentary volcanic rocks, which are well developed and exposed in the northern part of Barraute township.

The volcanic rocks have been intruded by a variety of igneous rocks, principally peridotite, gabbro, diorite, diabase, quartz diorite, granodiorite, porphyry and granite. Lenticular or tabular, sills or pseudo-sills of quartz diorite, diorite, gabbro and amphibolite and their metaphases occur within the basic volcanic rocks. To a lesser degree, rhyolite porphyry, quartz porphyry and feldspar porphyry are found within the siliceous volcanic rocks. In part, these rocks appear to be intrusive and in other instances, a direct relationship to the enclosing lavas seems more likely.

(Only those rocks exhibiting evidence of intrusion have been differentiated from the volcanics on this present compilation map).

A sill-like complex of gabbro-porphyry-peridotite has intruded the basic volcanics in the northern part of Figury township. This sequence of mainly basic igneous rocks is believed to be one of the oldest intrusions in the region and is the only example of a gabbro-peridotite association. There are numerous examples of the simple type of quartz diorite, gabbro, amphibolite intrusives but the age relationships are all limited to a post-Keewatin classification.

The major granitic intrusions are the Dalquier, Duverny and Claverny stocks. (Indicate). The Dalquier and Duverny granites are an identical microcline-bearing sodic granite with more basic marginal phases and amphibolitic borders and inclusions. The Claverny albite granodiorite is a highly altered sodic intrusive with similar more basic marginal phases.

Post-granite intrusive rocks are limited in areal extent. There are a large number of lamprophyre and aplite dykes and a few pegmatitic intrusions to be found in the Dalquier and Duvernay granite masses. The scarcity of pegmatitic intrusions is a notable fact considering the abnormal proportion of this rock type in the border zone of the La Corne batholith, some ten miles to the south of the map-area. A dyke of quartz-albite porphyry with a width ranging from 28 to 40 feet and with a known length of over 1 mile, intrudes the core of the Duvernay stock (Indicate). A small mass of quartz gabbro intrudes the Dalquier granite on the Kayrand property in range VI, Dalquier township. The late Precambrian diabase dykes cut this small mass.

The late Precambrian or Keweenawan-type dykes are the youngest intrusive rocks in the region and in general follow the two distinct directions characteristic of northwestern Quebec. The northeasterly set of dykes are larger, continuous, occasionally sinuous in plan, and often occur in an echelon arrangement or possibly in some instances offset in a right hand movement. The northerly set of dykes are narrow, poorly exposed, discontinuous and occasionally have a small left hand displacement or change of strike in the vicinity of strong schist zones parallel to the regional trend. The rock types are olivine gabbro, gabbro and diabase.

## STRUCTURE

### FOLDING

The axes of three major isoclinal folds cross the Amos-Barraute area; the Amos anticline, the Duvernay syncline and the Soma anticline.

The Duvernay syncline has the more pronounced effect upon the geology. This structure has vertical or near vertical attitude on either limb. The Soma anticline has no apparent plunge. The dips on either limb of this structure average between 65-75 degrees with only rare local evidence of overturning. The Amos anticline in the south appears to be saddle-shaped in the eastern part of Figuery township. A plunge is not noticeable in either the eastern or western parts of the map-area. The structure is overturned and the degree of overturn increases towards the east and southern boundaries of the map-area. The observed maximum overturn is approximately 35° in the southern parts of range VI, Barraute township. In this sector, the attitude of the structure has been further complicated by the drag folding along an assumed fault zone in the Laflamme river basin at the eastern limits of the present mapping.

For the most part, the sheared and schistose zones within the volcanic rocks parallel the regional trend. Those associated with the major folding tend to be narrow, local and discontinuous. There are several through-going or continuous zones of shearing and schisting, notably the Jay Copper and Barvue examples, which are traceable for lengths up to 5 miles. These post-folding zones of movement extend over widths up to 1000 feet. The schistosity is more intense in the vicinity of the zone of disturbance along the northeasterly faults and, hence, they are assumed to have originated as a result of subsidiary movement along pre-existing zones of weakness parallel

to the bedding. In view of their location parallel to the regional trend, it is not possible to estimate the sense or amount of the displacement.

North and west of the Duvernoy stock, there are several northwesterly shears and faults; the main examples are the Fontana-Marcotte shear, the Duway shear and the Newport fault. (Indicate). These faults and shear zones appear to be complimentary to the northeasterly faults. Movement has occurred on the Fontana-Marcotte shear zone as late as post-granodiorite and in this as well as the Duway and Newport examples, the displacement of latest record is right hand.

The northeasterly faults such as the Wendell, Soma and Laflamme examples are the prominent cross faults. They appear to be a part of a late Precambrian structural disturbance. Movements of latest record on these faults are both right and left-hand. The maximum apparent displacement known has occurred along the most westerly of the Wendell faults and is approximately 1100 feet. It has been assumed that the Laflamme river fault is one of this type. Drag-folding of the volcanic bands in ranges VI and VII, Barraute, suggest a right-hand movement of presently unknown displacement. The relationship of this fault to the Barvue-Perchcourt zinc-silver zone is as yet merely an assumption but in view of these facts: (1) lead-zinc-silver mineralization occurs adjacent to the diabase dyke in range VII on the Frebert property; (2) one set of these late Precambrian dykes closely follows the northeasterly fault fractures, it seems reasonable to assume a close relationship between the northeasterly faults and the mineralization.

### Economic Geology

Numerous discoveries of precious and base metal mineralization have been made in the Amos-Duvernoy-Barraute district during the past 30 years. These prospects and at present particularly the base metal occurrences, warrant further investigation in the light of present economic conditions.

During the mapping of this region, it has been noted that most of the occurrences of base metal mineralization are located near or within schistose zones, particularly the bedding shear zones; that the host rocks are predominantly siliceous fragmental or tuffaceous volcanic rocks. On the other hand, the gold mineralization occurs within a variety of host rocks, usually heavily carbonatized; associated with quartz rather than the carbonate; and within quartz-filled tension fractures in a northerly plane. As a result of experience also, it would appear the gold and the copper-lead-silver-zinc mineralization are separate introductions and only rarely do they occur together in significant amounts in the same mineralized zone.

During the coming season, the entire Amos-Duvernoy-Barraute district will be re-examined and re-prospected. The search would be well directed towards the location of gossan-stained and carbonatized areas in any rock type but particularly the siliceous volcanic rocks. Any persistent assays, no matter how low grade, should encourage a second look. In this regard, allow me to read the assay results of the Department of Mines survey party upon a gossan-stained rhyolite breccia less than 25 feet from the assay boundary of the overburden-covered Barvue ore zone - Zn, 1.28%, Cu, .05%.

1.47%, 2.14%, 2.26%, 0.10%, 1.25%, 0.00%, 0.53%. A large part of the gossan-stained areas are pyrite-pyrrhotite mineralization barren of zinc, silver, lead or copper mineralization but it requires assays in the majority of cases to confirm or disprove suspicions. (Indicate areas of gossan and possibilities Figuery-Dalquier, Duverny).

### Mining Properties

#### Dalquier Township

(To save time reference will be made to various preliminary publications available from the Department of Mines at Quebec regarding previous work, ground held, etc.) New Formaque Mines Ltd., P.R. 246 - Preliminary Report on Parts of Dalquier and Figuery Townships.

During the past season and presently continuing, this company has undertaken to explore by diamond drilling surface occurrences of copper-zinc lenses, pods and filaments in a wide-spread pyrite-pyrrhotite envelope known to extend for a distance of 2500 feet along strike and across a width of 200 feet.

The diamond drilling (as illustrated in this slide) has been at 200-foot intervals with closer drilling in the two areas of significant mineralization adjacent to the old Jay Copper and North Country shaft zones. The richest intersections, in hole 16, assayed 5% Cu. over 6 feet and the widest intersection, 15 feet, in hole 7, assayed trace in gold, 1 oz. per ton in silver and 1.23% Cu. The occurrence of values along the entire zone has encouraged this company to consider a large-scale programme, particularly to continue to the west of the last hole #16, in the vicinity of the North Country shaft.

S. Kelly and W. Sutton are directing the present programme.

#### Duverny township

##### New Goldvue Mines

Reports covering the work previous to the past summer include P.R. #200, P.R. #135 and P.R. #246.

During the past season, the company has been engaged in a shaft deepening operation. On the 725-foot level, a cross cut to the south east following a fault plane, entered strongly carbonatized diorite, 200 feet from the shaft. A series of quartz flats are visible in the walls of the cross cut. The gently dipping and flat-lying veins from 3" to 15" in width have been cut by a second series of vertical veins and stringers. The company reports that a 25-foot length in this cross cut is good-grade ore. Exploration is continuing at present on the 725-foot level. The cross cut to the southeast is continuing to follow the northeasterly fault to a junction with the main east-west fault. This main east-west fault is the point of origin of the quartz-filled vertical tension fractures which have proven to be the best gold-bearing veins, i.e., the Stevenson, Almond, Pavilion, etc., on the 350-foot level.

During the coming season, it is planned to open two new levels between the 350- and 725-foot levels.

L.M. Dumulon is in charge of the operations.

Southvue Mines Ltd.

This company holds a group of claims totalling 600 acres, lots 31 to 36, range VII, Duverny.

In lot 32, a narrow shear zone in a brecciated andesitic flow top is exposed for a length of 300 feet. Several pits on the eastern end expose a zone of pyrite-pyrrhotite-chalcopyrite replacement in the breccia across a width of 2 to 12 feet.

During the 1949 season, a geophysical survey followed by 3000 feet of diamond drilling was completed on the property.

In the past few weeks, the drilling has been resumed and at present, an interesting intersection has been encountered in D.D.H. #7 to the west of the surface showing. A 18-foot section assayed 1.22% copper, 0.40 ozs. per ton silver, and 0.005 ozs. per ton gold.

G. Dumont is directing the drilling programme and P. Dumont is resident engineer.

Mompas Mines Ltd.

Ref.: P.R. #228.

This company has just resumed their exploration after several years dormancy. The present programme involves a deep drilling test along the 1100 feet of known mineralized length on the Mompas shear zone. The copper-zinc-silver mineralization occurs in a sheared siliceous agglomerate and breccia.

The drilling programme has just commenced following rehabilitation of the camps.

Ivar Christiansen is resident engineer on the property.

Landrienne and Duverny Townships

Wendell Mineral Products

(A brief diversion to an industrial mineral project in Abitibi).

This company is currently readying for the production of roofing granules, a large deposit of very pure rhyolite located in lots 9, 10 and 11, range I, Duverny township.

During the past summer, a road providing access to the deposit has been built. In addition, the preliminary opening for the quarrying operation has been made upon the rhyolite outcrop. (Slide). This outcrop contains over 405,000 tons of material suitable for granules above the level of the surrounding terrain and in excess of 2,500,000 tons to a feasible depth of 200 feet in an open pit operation. This is sufficient to meet the needs of the projected 200-ton mill for some 45 years.

Mill construction commenced late in August, 1950, and at present is in an advanced state with production scheduled for the end of March on delivery of power from the new transmission line to Amos, (Mill pictures).

Carl Eggert of Kilnorn Engineering is in charge of mill construction. L. M. Lafon is resident manager for the company, and G. Demers has the quarrying contract.

#### Barraute Township

##### Caur-Bar

This property, under the control of Bouzan Gold Mines Ltd., is located in range VIII.

The Company has recently commenced a cross-sectional diamond drilling programme as the initial step in its exploration.

#### Citra-Lartic

This property, also located in range VIII directly north of Pershcourt, has recently completed a geophysical survey and plans to drill the recommended anomalies present on the property.

#### Matico Mines Ltd.

This company holds ground in ranges VII and VIII. A previous exploration programme in 1946 consisted mainly of cross-sectional drilling in the northern part of VII and southern part of range VIII.

Through an arrangement with Jellicoe Mines (1939) Ltd., a drilling programme has been started on the southern part of the property in range VII. It has been initiated in the hope of finding the faulted east side continuation of the Barvue shear zone and mineralization.

J. McClusky is resident engineer.

#### Quebec Diversified

This company holds ground in ranges V and VII.

The company has completed a single exploratory drill hole across a narrow ravine believed to be the site of a northerly fault possibly a branch of the Laflamme river fault.

Exploration will continue in the spring.

Bar-el-Duz

This property, under the control of Marbenor Malartio, is presently initiating a diamond drilling campaign in lot II, range VII to test surface indications of copper zinc mineralization beyond the nose of the gabbro mass and also to intersect the geophysically indicated extension of the Frebert shear zone, a probable continuation of the Barvue-Pershcourt zone. This zone closely follows the contact of the gabbro mass and is well indicated on the resistivity survey completed on the property.

West Manitou

No plans have been announced for this company as yet.

Barmanitou

This company has completed a mutual hole on the boundary with Malbar to satisfy assessment requirements but as yet has not announced plans to explore its advantageous position in regard to the southeasterly continuation of the Barvue shear zone.

Malbar

The Malbar group of claims included ground in ranges V and VI. At present, the company is drilling a mineralized shear zone to confirm the results of earlier exploration of the 1946-47 period but this time in quest of base metal rather than gold mineralization.

Comwest

A crew is presently on the property arranging for a spring exploration programme.

Frebert Mines Ltd.

The early exploration of the 1946-48 period uncovered a mineralized shear zone north of the gabbro in lots 16 and 17, range VII. Fourteen hundred and eighty-five feet of diamond drilling tested the shear along a 500-foot length. Across an average width of 20 feet, this zone assayed between 1.45 and 2.31% zinc, and between 0.195 and 0.69 ozs. per ton silver.

An offset was located 1200 feet to the northeast during the past summer. Small lenses of sphalerite and galena in more widespread pyrite-pyrrhotite replacing a rhyolite tuff-breccia zone were opened up in surface trenches.

Golden Manitou has recently acquired an option on this property. The programme will undertake a cross-sectioning of the property and testing of the Barvue-Pershcourt-Frebert shear zone across selected sections over the entire width of the property.

The first two holes beneath the surface showing of the past summer returned assays of 1.7% Zn. across a true width of 17 feet.

Currently the scene of the drilling has shifted to the vicinity of the Pershcourt-Frebert boundary.

Golden Manitou staff is in charge of the operations.

Pershcourt-Goldfields Ltd.

(Use Pershcourt-Frebert map). Geology.

As can be readily visualized from this slide, it appears almost proven that Pershcourt has outlined on their property, the continuation of the Barvue mineralized zone.

The company at present has five diamond drills active on the property and the main significant features of this drilling are: the mineralized zinc-silver zone extends for a known length of over 1200 feet; the width of marginal low grade mineralization averages approximately 50 feet with a high grade section approximately 10 feet in width fairly consistent along the footwall of the entire length; in the deepest intersection (Feb. 15th), hole P-9, (vertical depth 600 feet), the zone has a true width of 30 feet assaying 4.35% zinc and 4.82 ozs. per ton silver with the high grade footwall zone approximately 10 feet in true width assaying 8.36% zinc and 6.44 ozs. per ton silver.

Presently, the company is drilling to intersect the zone below a depth of 1000 feet. The results of this deep drilling test will crystallize the hopes for shaft-sinking and underground development.

J.M. Thompson is resident manager and D. Giachino, resident engineer.

Barvue

(Indicate geology on map).

Barvue Mines Ltd., under the direction and control of Golden Manitou Mines Ltd., is currently proving up ore potentiality at the rate of 750,000 tons per week, and unless the unexpected occurs, the 4 diamond drills active on the property should be able to maintain this rate for a minimum of the next two months.

The significant results of the completed drilling are: the potential ore zone on this property has a confirmed length of over 1500 feet with the southeastern end open and a gap of 750 feet remaining to be tested up to the Pershcourt boundary on the northwest; the depth factor has been given a helpful boost with the intersection of hole 31 of a true width of 60 feet of ore at a vertical depth of 700 feet, and grading 5.6% zinc and 5.29 ozs. per ton silver; a recent hole number 37, on the southeast and has returned a core length from 103 feet to 358 feet - 255 feet a true width

of over 200 feet assaying 1.32 ozs. per ton silver and 3.86% zinc. These last two items will make a significant contribution to the overall grade and tonnage.

With an indicated tonnage in excess of 10,000,000 tons, the company has entered the stage of planning for production. Negotiations for power, rail spur mill and concentrator sufficient for a 4-5000 ton a day basis on an initial open pit operation are well advanced.

Andrew Robertson, general manager of Golden Manitou Hill, is directing the project. Lloyd Almond is acting in a consultant capacity and Allan Dennis is resident engineer.

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