

RP 255(A)

PRELIMINARY REPORT ON LA MORANDIERE AND PARTS OF DUVERNY, LANDRIENNE AND BARRAUTE TOWNSHIPS, ABITIBI-EAST COUNTY

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DEPARTMENT OF MINES
MINERAL DEPOSITS BRANCH

PRELIMINARY REPORT
ON
LA MORANDIÈRE AND PARTS OF DUVERNY,
LANDRIENNE, AND BARRAUTE TOWNSHIPS
ABITIBI-EAST COUNTY

BY
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Preliminary Report on La Morandière,

and Parts of Duverny,

Landrienne and Barraute Townships,

Abitibi-East County,

by

W. W. Weber.

La Morandière, Duverny, Landrienne, and Barraute townships are located in northwestern Quebec. The common corner-post of the four townships is 15 miles due east of the town of Amos.

The area, mapped in 1950, comprises the east half of Duverny township, ranges I to IX, the whole of La Morandière township exclusive of range X, the northeast quarter of Landrienne township, and the northwest quarter of Barraute township. The total area is approximately 185 square miles.

The area is accessible from the Amos-Senneterre and the Amos-Val d'Or highways and the numerous colonization roads leading off these main roads. The transcontinental line of the Canadian National Railways crosses the southwestern corner of the area in Landrienne township. The nearest shipping centres are Amos and Barraute. The Laflamme river flows northward through the eastern half of La Morandière township. There are small lakes in the eastern parts of Duverny and Landrienne townships and in La Morandière township.

The relief within the area does not exceed 250 feet. The mean height above sea level is approximately 1050 feet. Adjacent to the roads, the flat plain-like former lake bottom has been cleared for farmland, particularly in ranges VI and VII, Barraute township, and ranges III to IX, La Morandière township. The eastern part of Duverny township and the southern part of La Morandière township and the northern part of Barraute township are unsuited to colonization. The eastern part of Duverny township is covered by extensive esker and moraine deposits. There are extensive rock exposures along the La Morandière-Barraute township line, over a width of almost two miles. Elsewhere, rock outcrops occupy less than 2 per cent of the surface.

The mapping, on a scale of 1 inch equals 1000 feet, is based entirely upon aerial photography. The topographic control and base map were supplied by the Survey Division of the Department of Lands and Forests and the Draughting and Cartography Branch of the Quebec Department of Mines. Original survey lines in some parts of the area are difficult to follow. In the regions of outcrop, these lines have been recut to facilitate the control of the mapping.

The area mapped includes part of the Duverny sheets (1)*(2). It adjoins the Fiedmont area (5) to the south; the previous work (4) (5) completed by the author on the west; the Rochebaucourt sheet (6) on the east and the Castagnier area (7) on the north.

General Geology

All the consolidated rocks of the area are of Precambrian age. The oldest rocks in the district are Keewatin-type volcanic rocks, probably the equivalent of the Gunning's Malartic (8) or Norman's Kenojevis (9) group. These rocks account for over 95 per cent of the rock exposures and comprise siliceous, intermediate and sub-siliceous lava flows, breccia, agglomerate, and a variety of tuffs. No Keewatin nor Temiscamian-type sediments are exposed in the area mapped. However, less than $\frac{1}{2}$ mile to the north, Temiscamian-type sediments have been observed in the vicinity of Castagnier lake.

There are no large granitic masses within the area mapped. The Duverny granite (5) and Claverly albite granodiorite (4) extend into the western part of the area. The most common intrusive rocks are small, lenticular or tabular, sill-like bodies of quartz diorite, gabbro and diabase. These rocks in general appear to cut across the volcanic flows. However, many occurrences of similar rocks are conformable to the lavas and have the same composition; this suggests they are pseudo-sills contemporaneous with the flows.

The Landrienne gabbro-peridotite complex (5) is an example of one of the earliest basic intrusive rocks in the area. Its boundaries have been revised following recent geomagnetic surveying.

The Goldvue quartz diorite (4) extends into the present map-area. To the east, there is a change in composition from the typical quartz-diorite-diabase to a diorite-gabbro phase.

A large number of small dykes intrude the volcanic rocks. These include quartz porphyry, feldspar porphyry, "rhyolite", diorite, lamprophyre and fine grained "andesite". Numerous fine-grained to medium-grained "andesite" and lamprophyre dykes occur as narrow conformable intrusions or as feeder dykes, traceable to a lava flow.

In addition to the common quartz porphyry and felsophyre dykes associated with the siliceous lavas, there are two small bodies of quartz porphyre outcropping in the synclinal trough in La Morandière township.

The basic Keweenaw-type dykes are the youngest intrusive rocks known in the district. There are examples within the map-area of the two main sets common in northwestern Quebec. These are the northerly and the north-easterly trending olivine gabbro and diabase intrusions.

* Numbered references are listed at end of report.

Table of Formations

Era	Period	
Cenozoic	Recent	Stream and swamp deposits
	Pleistocene	Till, sand gravel, boulder and varved clays, lacustrine deposits
Proterozoic	Keweenawan-type	Olivine gabbro, diabase
Archean	Late Algomian-type	Aplite, lamprophyre dykes Quartz veins
	Algomian-type	Duvernoy granite Claverny albite granite, granodiorite
	Algomian-type (?)	Quartz porphyry, feldspar porphyry, diorite porphyry
	Post-Keewatin-type	Landrienne peridotite Quartz porphyry, feldspar porphyry Landrienne quartz diorite, gabbro, diabase, amphibolite
	Keewatin-type (?)	Diorite, gabbro, diabase and metaphases Sills and pseudo-sills
Keewatin-type	<p style="text-align: center;"><u>Duvernoy Syncline Sequence</u></p> <p>Siliceous volcanic rocks, largely brecciated rhyolite trachyte, siliceous tuffs and agglomerate with minor more basic intercalations.</p> <p>Basic lavas</p> <p>Heterogeneous assemblage of siliceous to intermediate intercalated volcanic rocks</p> <p style="text-align: center;"><u>Amos and Soma Anticline Sequence</u></p> <p>Basic volcanic rocks with numerous coarse-grained sill-like bodies. Siliceous volcanic rocks, largely tuff, breccia and agglomerate with minor interbedded intermediate lavas occur within these basic lavas on either flank of the Amos Anticline</p>	

Keewatin-type Volcanic Rocks

For purposes of discussion, the Keewatin-type volcanic rocks are subdivided into three subdivisions, two of which, the Amos and Soma Anticline Sequence, are considered to be equivalent: the dominantly basic lavas and minor pyroclastics flanking the Soma Anticline; the heterogeneous bands of siliceous, intermediate and sub-siliceous volcanic rocks outlining the Duverny synclinal structure in the central sector; and the basic flows, interbedded with a prominent band of siliceous pyroclastic and sedimentary volcanic rocks on either limb of the Amos Anticline in the south. The volcanic rocks in the core of the Duverny syncline are considered to be the youngest of the exposed Archean volcanic rocks. The sequence in the northern sector is considered to be approximately equivalent to that of the southern sector except for the band of siliceous volcanic rocks which appear well defined in Barraute township.

The Soma Anticline Sequence

The Soma anticlinal structure has been traced through discontinuous exposures from the northwest corner of the map sheet southeasterly to the eastern limits of the map in the central part of range V, La Morandière township.

On the flanks of this structure, a sequence of basic volcanic rocks, estimated to have a thickness between 12,000 and 16,000 feet, underlies the greater part of the northern sector. The apparent thickness of this band, as well as the other bands in the central region is variable owing to interbedding and lensing, the thickening evident about the nose of the plunging synclinal structure, and the changing attitude. In the eastern part of La Morandière township, the northern sequence of basic lavas expands about the nose of the plunging syncline to join with the similar sequence in the southern sector.

Pillowed basaltic lavas, interbedded with medium to coarse-grained "dioritic andesites" or massive gabbroic lavas and prominent bands of basic agglomerate, occur in the vicinity of the axial plane on the Soma-Duverny property in the eastern part of Duverny township. Flow breccia zones, usually narrow and confined to the upper portions of the thinner pillow lavas, are common. Amphibolitization and carbonatization have destroyed much of the original character of the lavas adjacent to the Soma gabbroic mass and also in the vicinity of the shear zones crossing the property of Soma Duverny Gold Mines, Limited.

Carbonatization is also evident in the northern limits of the outcrops in lot 14, range VIII, and in the vicinity of the prospects in lots 4, 9 and 19, range VII, all in La Morandière township.

Throughout ranges VII and VIII, La Morandière township, the exposed rocks are almost entirely pillowed basaltic lavas. A single band of basic agglomerate of mappable width outcrops on the northern flank of the exposures in the south half of lot 20, range VIII, La Morandière township.

Along the southern flank of the anticline rock outcrops are sparse. In Duverny township, pillowed basaltic lavas, interbedded with nar-

row, fine-grained, massive, basic lavas extend across lots 32 to 36, range VII, on the Southvue property. With the exception of the sheared flow-breccia top in the main prospect on lot 32 and pillow agglomerate exposed in lot 34 of the same range, fragmental rocks are rare. To the east on the Mildale property, on lots 50 to 52, ranges V and VI, Duvernoy township, a similar series of pillowed and massive basic lavas is exposed. However, here, the lavas have been penetrated by, and are underlain by, an irregular gabbroic mass. This intrusive mass is exposed only on the west side of the main outcrop in lot 50, range V, but the drill-hole intersections in this lot and the highly amphibolitized lavas occurring on the north side of the outcrop in lot 52 indicate that this gabbro probably underlies and interpenetrates the basic volcanics over a considerable area.

A band of siliceous volcanic rocks with an apparent thickness of about 3000 feet is assumed to cross the northeast quarter of the area. This band consists mainly of brecciated rhyolites and dacites, dacite agglomerate and porphyritic siliceous lavas. Exposures are very limited within the area mapped. To the north of the map-area, these siliceous volcanic rocks are strongly sheared along the contact with the sediments exposed on the shores of Castagnier lake. Within the map-area, the siliceous volcanics appear to be overlain by basic volcanic rocks of considerable thickness. These basic lavas are exposed beyond the limits of the map sheet to the north of the road along the IX-X range-line in lots 42 to 44, range X, La Morandière. Hence, it would appear that an unconformity exists along the contact between the volcanic rocks and the sediments that outcrop in the vicinity of Castagnier lake, despite the fact that the trend of the two formations is nearly parallel on either side of the fault zone at Castagnier lake.

The Amos Anticline Sequence

The Amos anticlinal axis crosses the southern part of the area through ranges VIII in Landrienne and Barraute township. At the eastern boundary of the map, the axial plane is curved sharply southward due to the drag in the volcanic formation in the vicinity of shearing and cross-faulting within the Laflamme river basin.

The volcanic rocks of the Amos anticline are considered to be equivalent to those of the Soma anticline. The average thickness of the southern sequence on either limb of the fold lies between 13,000 and 15,000 feet—possibly slightly greater than the northern sequence. The southern bands of volcanics within this grouping extend from the contact zone between the intermediate and the basic volcanic rocks which crosses ranges I in Duvernoy and La Morandière townships, to the south boundary of the map.

There is one striking dissimilarity in the volcanic bands adjacent to the Amos anticline in comparison with those adjacent to the Soma anticline. On either flank of the Amos anticline, there is a band of siliceous volcanic rocks some 3000 to 4000 feet in thickness. This band is intercalated with the basic lavas in the southern sector but is not exposed adjacent to the Soma anticline in the northern sector. In Duvernoy and Landrienne townships, outcrops in the vicinity of the anticlinal structure are almost totally confined to the western margin of the map sheet. The remainder of the area is heavily drift-covered.

Scattered exposures of basic lavas outcrop throughout lots 32 to 48, range I, Duvernoy township, and lots 38 to 44, range X, Landrienne township. This band, mainly pillowed basic lavas, is a continuation of the good exposures to the west in range X and part of range IX, Landrienne, and range I, Duvernoy township. This sequence of basaltic lavas is unbroken except for an area of agglomerate pillow lava in lots 32 to 35, range I, Duvernoy. Adjacent to the contact between the siliceous and the intermediate volcanic bands in lots 52 to 39, range IX, and part of range X, Landrienne township, narrow bands of diorite and rhyolite lavas, cherty banded tuffs and breccia are interbedded with the basic lavas. The entire zone is intruded by numerous quartz porphyry dykes and dykelets trending, for the most part, parallel to the regional strike.

The outcrops on lots 37 to 39, adjacent to the range line separating ranges IX and X, Landrienne township, are thinly bedded siliceous, intermediate and basic lavas and pyroclastics with small tuff bands of a siliceous character. This sequence extends southward into lots 35 to 38 on the outcrops flanking the diabase dyke in range IX, Landrienne. To the south, the proportion of more siliceous volcanic rocks increases, and adjacent to the range line separation ranges VIII and IX, Landrienne township, at the western margin of the map sheet, the small scattered exposures are entirely massive and porphyritic rhyolite lavas, rhyolite tuffs, and breccia. The entire section, including the transitional zone, has been included within a band of siliceous volcanic rocks which are assumed to cross range IX, Landrienne, and to join with similar rock types exposed in the same range, Barraute township.

The axial plane of the Amos anticline lies within an area of altered and sheared pillowed basic lavas, which are exposed only in lots 34 to 36, range VIII, Landrienne township. These lavas are also assumed to extend easterly into Barraute township.

Likewise, a band of siliceous volcanic rocks on the south limb of the Amos anticline has been assumed to cross the southern part of range VII in the eastern part of Landrienne township, thus connecting the Barraute and western Landrienne exposures. The only outcroppings in the eastern part of Landrienne township are situated on lot 61, range VIII. Here, as in the northern band at the western margin of the map sheet, the sequence consists of scattered outcropping of narrow andesite and coarse-grained gabbroic flows within the siliceous lavas and pyroclastic rocks. There are no exposures in the southern or uppermost part of this band, in which the rhyolite and fragmental lavas are best developed to the east in Barraute township. The mineralized shear zones in the Barraute area lie in the uppermost part of the band.

The entire southern part of the map sheet, ranges VI and VII, Landrienne township, is assumed to be underlain by basic volcanic rocks, a repetition by folding of the rock types exposed in range I, Duvernoy township, and range X, Landrienne township. Two outcrops on lots 31 and 33, range VI, are the only exposures in the eastern part of Landrienne township. Pillowed basaltic lavas occur in both exposures, though on lot 33 (south half a pillow lava contacts, on the south, a conformable massive medium-grained gabbroic lava. It is possible that the exposures of siliceous volcanic rocks in the western part of range VI, Landrienne, (beyond the map-area) and the lenticular band of siliceous to intermediate volcanics outcropping in lots 17 to 22,

range VI, Barraute township, may be continuous, but, in the absence of outcrops or drilling information in the intervening space, this possibility has not been confirmed.

In Barraute township, where exposures are more widespread, the volcanic bands adjacent to the Amos anticline have been mapped in greater detail. On the north flank of the structure in the western part of range I, La Morandière township, and range X, Barraute township, the exposed basic volcanics constitute an almost continuous sequence. Basaltic pillow lavas, in many instances more than 300 feet thick, are the commonest rock type. Massive, greenish-grey, medium to coarse-grained ("diorite andesite" are intercalated within the pillowed flows. These intrusive-like flows are difficult to distinguish from the tabular or lenticular gabbroic sills. The sills in general are uniformly coarse grained, the grain size being of the order of 3 to 5 mm. The "dioritic andesites" tend to be diabasic in fabric, with manifold textural changes. It is often possible to trace a "dioritic andesite" into fine-grained massive or even pillowed phases.

In the northwest quarter of Barraute township, the Amos anticline lies within a band of basic lavas, flanked by siliceous volcanic rocks on either limb of the structure. Outcrops of the basic lavas are sparse and are limited to lots 15, 16, 23, and 24, range VIII, and the northern parts of lots 20 to 24, range VII, Barraute township. The entire sequence adjacent to the Amos anticline is mildly to moderately sheared, but zones of intense schistosity occur within selected bands. It is possible in most instances to recognize flow structures. The tuffaceous zones are schistose and difficult to define. Massive, fine-grained, basic lavas and basic tuffs are the common rock types.

The band of siliceous volcanic rocks on the north flank of the Amos anticline is poorly exposed in lots 19 and 20, range IX. Massive fine-grained and porphyritic rhyolites are interbedded with thin rhyodacite and dacite flows, rhyolite breccia, and cherty and graphitic siliceous tuffs. The exposed rocks are sheared parallel to the bedding. Beyond the map-area, in lots 36 to 41, a drilling cross section and additional outcrop give further information on this sequence. The sequence of the lavas in lot 41, range VIII, Barraute township, is similar to the above sequence in lots 19 and 20, range IX. According to information furnished by Matico Mines Ltd., the drilling in lot 36, north and south of the range-line separating ranges VII and VIII, Barraute township, encountered a sequence of siliceous volcanic rocks. This section commences in the central part of lot 36, at a point 1,500 feet north of the VII-VIII range-line and extends due south to a point in range VI, 2,030 feet south of the range-line. The horizontal projection, as built up by Wm. Duff Wagner, engineer in charge of the Matico drilling in 1946, is as follows:

D.D.H. No: 2

0' - 150'	150' of tuffs, breccias and interbedded rhyolites.
150' - 450'	300' of dark grey, finely bedded siliceous tuffs containing pyrite and pyrrhotite.
450' - 675'	225' of light colored banded tuffs and breccias.
675' - 875'	No drilling. Probably light coloured tuffs and breccias.

D.D.H. No. 3 and 7

875'-1319'	444' of light-coloured tuffs and breccias.
1319'-1809'	490' of rhyolite, in part sheared.
1809'-1830'	21' of pyritized rhyolite breccia.
1830'-1894'	64' of sheared rhyolite.
1894'-2004'	110' of rhyolite breccia.
2004'-2026'	22' of rhyolite.
2026'-2045'	19' of granodiorite intrusive (?)
2045'-2057'	12' of rhyolite.

D.D.H. No 4 (incomplete)

2057'-2140'	183' of rhyolite intruded by granodiorite.
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D.D.H. No: 5 and 6

2140'-3070'	850' of rhyolite.
3070'-3255'	185' of acid tuffs with interbedded dark tuffs. At 3090-3095 - graphitic zone, possibly a fault.
3255'-3530'	275' of rhyolite intruded by gabbro dyke at 3355'-3368'. Shearing from 3510' to the end of the hole at 3530'.

D.D.H. No. 1, 1,320 feet east of No. 5, was drilled its entire length in granodiorite. Also Hole No. 8, 685 feet east of No. 3, bottomed in granodiorite. On the basis of these results, a small intrusive stock, interpenetrating the volcanics and opening to the east, has been assumed to underlie the northeastern part of the Matico property in range VIII, Barraute township.

A similar band of siliceous volcanic rocks occurs on the south flank of the Anos anticline. Exposures within the map sheet are limited to range VII, Barraute township.

In lots 10 to 22, range VII, Barraute township, siliceous lavas and sedimentary and pyroclastic volcanic rocks are interbedded with andesite flows in the lower or northernmost part of this band. Fragmental rock types are less common than in the southern part of this sequence. Shearing of mild intensity is univorsally present in the exposures and in several instances,

notably adjacent to the VII-VIII range-line in lots 13, 21, and 22, the rocks have been converted to sericitic and chloritic schists. Dacitic and rhyodacitic lava flows enclosed within pillowed andesites outcrop in the northern part of lots 20 to 22, range VII, Barraute township.

In the southern half of the band, exposed in lots 10 to 21, 29 and 30, range VII, Barraute township, the volcanic rocks are almost entirely siliceous. In addition, the rocks are largely pyroclastic or tuffaceous, in part strongly sheared and altered to sericitic schists. Massive, fine-grained and porphyritic rhyolite lavas occur interbedded with rhyolite tuff, breccia, agglomerate and local lenses of dacite, dacite agglomerate and tuffs. Dacite and rhyolite agglomerate, cherty and dark graphitic well-banded tuffs and rhyolite breccia are the predominant rock types. Carbonatization is evident in the vicinity of the mineralization on the Frebert, Pershcourt and Barvue properties. On the 29-30 lot-line, a narrow porphyritic trachyrhyolite, possibly an intrusive feldspar porphyry, lies parallel to the trend of the rhyolite breccia to the north and the interbedded, sheared rhyolite, rhyodacite and siliceous fragmental lavas to the south. The sheared and schistose rhyolite tuffs and breccia are the host rocks for the known occurrences of base-metal mineralization.

To the south of the siliceous volcanic rocks, a belt of basic volcanic rocks extends across range VI and the southern part of range VII, Barraute township. The exposures, concentrated mainly in lots 15 to 25, ranges VI and VII, Barraute township, are predominantly pillowed basalts with local extrusive gabbroic and "diioritic andesite" pseudo-sills. A narrow lenticular mass of mainly intermediate volcanic rocks is enclosed within the basic lavas. Pillowed dacites and andesites and several prominent bands of basic tuff and agglomerate occur in this enclosure. At the eastern boundary of the sheet on lots 30 and 31, range VI, the lavas are andesites, in part pillowed and in part massive and porphyritic. They are cut by two small quartz porphyry dykes and interbedded with narrow bands of basic tuff. The unusual feature of this outcrop is the sharp change of strike ($N.8^{\circ} W.$) compared with $N.60^{\circ} W.$ in the more westerly exposures, one and one-half miles distant.

The Duvernoy Syncline Sequence

The Duvernoy syncline crosses the central part of the sheet. The trend of the axis is $S.80^{\circ} E.$ The structure has an apparent shallow plunge to the west. Consequently, the siliceous volcanic rocks exposed in lots 31 to 47, range II and III, are the youngest known volcanic rocks within the area mapped.

Exposures of these siliceous rocks occur across a width of approximately $\frac{1}{2}$ mile on either limb of the fold. The average thickness is about 3,000 feet, but, in the eastern part of Duvernoy township, the thickness approaches 4,000 feet as the band warps about the nose of the plunging syncline. A narrow zone of dacite and rhyodacite lavas occur within the predominantly siliceous volcanic rocks about the margin of the Duvernoy granite at the western margin of the map sheet. The rhyolite and trachyte lavas, largely brecciated and mildly sheared in the plane of the synclinal axis are the main rock type. The pyroclastics, particularly the distinctive tuffaceous and cherty agglomerate bands, and the lacy, mesh-weathering, brecciated zones are the only means of tracing the trend. Occasionally, vague epidotic wisps, re-

sembling deformed margins of pillow structures, occur in some of the trachytic phases. Massive or porphyritic rhyolite flows are rarely preserved.

An elongated U-shaped area of basic volcanics underlies the above siliceous volcanic rocks. This belt of uncertain thickness encloses the synclinal axis from lot 54, range III, Duvernoy township, eastward to lot 33, range II, La Morandière township. The shape of the area underlain by these basic rocks sharply reflects the attitude of the plunging syncline.

The rocks of this band are mainly basaltic with intercalations of andesitic lavas common near the zone of contact with the underlying band of siliceous to intermediate lavas. Fine-grained massive and pillowed lavas are the common rock types. Several local bands of basic agglomerate are good horizon markers in lots 3 to 7, range III; and lots 6 and 7, range II, La Morandière township. The massive, coarse-grained "dioritic andesites" and less common gabbroic flows are irregular and discontinuous but appear to be entirely extrusive in origin.

Outcrops within the band of siliceous to intermediate volcanic rocks underlying the above basic rocks are sparse, being limited to lots 31 to 36, range II, Duvernoy township, lots 16 to 19, range I, La Morandière township, on the south flank and lots 61 and 62, adjacent to the III-IV range-line, Duvernoy township, lots 1 to 9, 15 and 18, range IV, and lots 31 to 34, range III, La Morandière township, on the north limb of the syncline.

Pillowed and porphyritic dacites predominate. Minor rhyodacite, rhyolite and andesite occur intercalated within these flows. Fragmental lavas in the exposed areas are mainly of the flow breccia type and are of minor significance. In the eastern part of Duvernoy township, variolitic and massive porphyritic dacite lavas occupy an area of equal extent to the pillowed dacites.

Intrusive Rocks

Keewatin (?) Metadiorite, Metadiabase and Metagabbro

Within the Archean basic lavas, there are numerous medium to coarse-grained, altered basic intrusive-like rocks. To a lesser extent, siliceous porphyritic rocks of doubtful origin occur in the flows of similar composition. The general form of these possibly intrusive rocks is tabular or lenticular, roughly conformable to the trend of the enclosing lavas. The composition and degree of alteration closely approximate that of the adjacent extrusives. As would be expected in a sheet-like intrusion, local transgression is apparent in the contact zones. Chilled edges are usually present on the margins. Variations in grain size and texture are manifold, but this is due largely to the small size of the intrusive masses. It is common in the "dioritic andesites" or metadiorite to see variations from fine-grained to medium coarse-grained and from an equigranular to a diabasic texture. The metagabbro tends to a coarse grained, equigranular rock; it is rarely possible to trace these rocks into definite flow phases.

Within the basic lavas, particularly in the uppermost beds on the flanks of the Soma and Amos anticlines and adjacent to the Duvernoy syn-

cline in the eastern part of La Morandière township, there are several interdigitated sills and pseudo-sills of "dioritic andesite", metadiabase, meta-diorite and metagabbro. In part, these lenses appear to be intrusive and have been mapped as such. In other places, it has not been possible to determine their origin. If, in the field, the evidence suggests a genetic and spatial relationship to the adjacent flows, the term "dioritic andesite" has been used to classify this type.

Post-Keewatin-type Quartz Diorite, Diorite and Gabbro.

These masses are considered to be the oldest intrusive rocks of the area. The age of the intrusion is known only as post-Keewatin. It is probable that a period of basic igneous activity preceded the granitic invasion and occurred about the time of the major folding. The main support for this hypothesis lies in the direct relationship of the contour of these masses to the structural pattern of the folded Archean formations.

Goldvue Quartz Diorite-Gabbro

In the western part of Duverny (4) township, this rock forms a lenticular mass of highly carbonatized metadiorite and metadiabase. The weathered surface is rusty grey and mineral constituents are almost indistinguishable. Slightly carbonatized rock from the underground workings of the New Goldvue mine is dark, greenish-grey and mottled; greyish white feldspar and dark greenish ferromagnesian minerals, mainly matted clusters of chlorite, form about equal proportions. The exposures of coarse metadiabase and amphibolitic gabbro on the Beauverny property are assumed to be an eastward extension of this mass. At the northern extremity of the outcrop on lot 39, range VII, Duverny township, medium-grained, reddish weathering metadiabase intrudes the pillow lavas lying to the north; on the fresh surface, this rock is deep green, speckled with greyish feldspar laths; a peculiarity of this exposure is the flat sheeting fractures filled with secondary products. To the east and south in lots 39 to 41, of the same range, the metadiabase transitionally gives way to a highly carbonatized, diorite-like rock type, very similar to that occurring on the New Goldvue property. In the south half of lot 41, of the same range, the ferromagnesian content is high due in part to amphibolitization.

Mildale Gabbro

On the Mildale property, a small gabbroic mass is exposed on the last ledge of outcrops on lot 50, range V, Duverny township. Mottled greenish-grey diorite, very similar to the New Goldvue quartz diorite, was encountered in the drilling holes. It has been assumed that the two occurrences above are phases of a single gabbroic intrusive mass. Amphibolitized lavas, devoid of flow structures, are exposed on lot 52, range V, and also in the southern part of lot 50, range VI, Duverny township. From the drilling sections and also the extent of the metamorphosed aureole, it is believed the extent of the Mildale gabbroic intrusive may be considerable.

Landrienne Quartz Diorite-Gabbro-Peridotite (5)

The outline of the Landrienne gabbro-peridotite complex has been extended into the eastern part of Landrienne township on the basis of information supplied by recent geomagnetic surveys.

The altered diorite-like mass on lot 43, and also the outcroppings of a similar quartz-bearing rock on lots 38 and 39, range IX, Landrienne township, occur within the geomagnetic anomaly that outlines the sill-like complex.

In the previous mapping, the relationship of the above to the Landrienne complex was obscured by the lack of outcrop and the presence of large masses of volcanic country rock in the diorite-gabbro. Cherty siliceous tuffs and remnants of siliceous and intermediate lavas are recognizable in these masses. The diorite in lot 43 has also been intruded by numerous small quartz porphyry dykes.

The main intrusive mass of the complex, a greenish-grey gabbro, has been described in a previous report (4). It is intruded by quartz and feldspar porphyry and multiple peridotite dykes. At the western boundary of the sheet, it appears there are three peridotite dykes cutting the gabbro. East of lot 32, range IX, Landrienne township, the exposures of this highly serpentinized rock are rare; a narrow ledge of serpentinized peridotite in the northern part of lot 39 and two large outcrops about 700 feet south of this point are the only occurrences. It appears also that the peridotite dykes die out within the gabbro near the west margin of the map sheet.

Barraute Gabbro

This elongated mass is exposed on lots 13 to 20, range VII, Barraute township. The general outline of the intrusive mass appears to be lenticular with the long axis being roughly parallel to the trend of the adjacent lavas. Near the margins of the mass, on lots 18 and 19, and at the eastern end on lot 20, range VII, Barraute township, offshoot dykes and lobate extensions of the main mass interfinger the volcanic rocks.

The gabbro has several phases. Within the central portion of the mass, the rock type is a leucocratic, medium grained, greenish grey "diorite"; greyish feldspar and greenish amphibole are present in about equal proportions. Towards the margins, the percentage of amphibole increases and the rock grades into very coarse amphibolite. In portions of this outer amphibolitic zone, remnants of recognizable volcanic rocks are preserved. A zone of metamorphosed hybrid fragmental lavas is exposed along the contact with the lavas on lots 17 to 19, range VII. Near the eastern limit of the gabbro on lot 20, range VII, the margin of the intrusive appears to be an altered pyroxenitic gabbro.

Soma Gabbro

This small metagabbroic mass has an irregular outline, in part defined. The exposures are confined to the northern parts of lots 47 to 51, range VIII, and the southern parts of lots 47 to 50, range IX, Duvernoy township. For the most part, it is an amphibole-rich rock surrounded and invaded by an irregular zone of carbonatization. It is very difficult to differentiate the highly altered basic volcanic rocks from the metagabbro. From a study of the contact between the intrusive mass and the adjacent breccia zone on lot 48, range VII, Duvernoy township, the metagabbro has been classified as an intrusive, probably of post-folding age.

La Morandière Gabbro-Masses

At least five small bodies and one rather large lenticular mass of gabbro-amphibolite outcrop in La Morandière township. The largest lens is exposed in ranges V and VI, lots 24 to 43; the long axis trends S.75° E; the rock is dark greenish, coarse-grained, amphibole-rich gabbro, which grades into massive amphibolite near the contact with the volcanic rocks. Adjacent to the northern margin of outcrop on lot 34, range V, La Morandière township, octagonal structures resembling pillows are preserved in the amphibolite.

Numerous quartz veins, all barren of visible mineralization, are traceable for lengths up to 400 feet within the mass on lots 33 to 37, range V.

Other small sill-like interpenetrations of coarse-grained amphibolite-gabbro occur within the volcanic formations on lots 11 to 26, adjacent to the La Morandière-Barraute township boundary and on lots 38 to 51, range I, La Morandière township.

Quartz and Feldspar Porphyries

Two small masses of quartz porphyry intrude the volcanic rocks in La Morandière township; one is exposed on lots 33 to 35, range III, and the other in a small exposure on lot 29, range I. In both, the porphyry is a reddish-grey, quartz-bearing feldspathic rock with dark flakes of biotite and hornblende scattered in the matrix. The porphyry mass in range III is sheared along the north contact; there are also numerous small quartz veins within this mass, but there is no significant mineralization.

In lot 33, range III, the south contact between the porphyry and pillow lava is exposed. Since the porphyry has intruded the folded volcanic rock in a sharp inverted V contour, the age is definitely post-folding. Probably the porphyry is genetically and spatially related to the Dalquier-Duverny granite masses. (5) (4).

Leclerc and Matico Porphyry

On the Barvue and Matico properties, range VII, Barraute township, narrow feldspar porphyry dykes occur interfingering within the volcanic rocks. These dykes are intrusive into the lavas, but the age relationship to the other intrusive rocks is uncertain. There are similar occurrences in the siliceous volcanic rocks in the eastern part of range VI, Barraute township.

Late Precambrian Dykes

The late Precambrian dykes in the district follow two distinct directions. The northeasterly dykes are in general larger and more continuous. In detail, these dykes have a sinuous trend with either right-hand changes of strike or an échelon arrangement with an apparent right-hand displacement. The other set, trending northerly, are narrow, discontinuous, and poorly exposed.

Non-Consolidated Sediments

The entire area is covered by a thin mantle of glacial and glacio-fluvial deposits. These deposits are of three main types: 1) esker and moraine deposits of coarse till, boulder clay, and poorly sorted gravels; 2) sandy clay and varved clay deposits of the old glacial lake; and 3) recent swamp and muskeg deposits. The glacial débris lies on the heights of land, while the clay and muskeg deposits cover the low-lying, flat land.

A well defined esker with wide outwash on the flanks extends southeasterly across the eastern parts of Duverny and Landrienne townships.

In ranges VII to IX, La Morandière township, there are several large areas of terminal moraine. The remainder of the township is covered with flat beds of clay which have been deposited in the glacial lake.

STRUCTURE

Folding

The axes of three major isoclinal folds traverse the area. The fold of major influence to the geology is the Duverny syncline in the central sector. This structure has a gentle plunge to the west. The average dip is approximately 80° with local variations occurring with a change of strike. The regional trend of the volcanic rocks in this central area is $S.80^{\circ} E.$ to $S.85^{\circ} E.$ In the vicinity of the axial plane of the syncline, the strike diverges as much as 35° from this direction as the beds wrap about the nose of the structure.

The Soma anticline in the northern sector has no apparent plunge. The general trend is $S.70^{\circ} E.$ to $S.80^{\circ} E.$, slightly more southerly than in the remaining part of the area. The dips on either limb of the fold in the eastern part of Duverny township range between 65° and 75° . In La Morandière township, overturning occurs in the vicinity of the anticlinal axis, but the degree of overturn rarely exceeds 10° . On the outer flanks of the folds, the beds are steeply inclined.

The Amos anticline in the southern sector appears to have a gentle plunge to the west and is overturned to the south. The regional trend is slightly south of east. On the north limb, the dip to the north ranges between 70° and 85° . On the south limb, the degree of overturn gradually increases towards the south boundary of the map sheet; the maximum degree of overturn observed in range VI, Barraute township, was of the order of 30° .

Near the eastern limits of the mapping in ranges VI and VII, Barraute township, the volcanic rocks are sharply contorted and the strike swings 50° or more to the south in the short distance of one mile. It has been assumed that this change of strike is due to drag along a major fault of the northeasterly type, probably an extension of the Laflamme River fault. Small cross-faults trending in a northerly direction locally displace the bedding shear zones.

Shearing

In all but a few instances, the shear zones and schistosity parallel the regional trend of the volcanic formations. For the most part, the shear zones are narrow, local and discontinuous. Small adjustments of a post-folding age are commonly observed along the pre-existing zones of weakness.

On the other hand it is probable that there has been considerable post-folding movement on a few of the shears parallel to the regional trend. A major zone of movement separates the siliceous volcanic rocks and the sediments along the south shore of Castagnier lake. This schistosity persists within the volcanic rocks to at least lots 31 and 33, range VIII, La Morandière township, where narrow schist zones occur in the sheared lavas.

Another shear zone strikes east-west across lots 19 and 20, range VII, La Morandière township. The zone is about 15 feet in width.

There are three prominent zones of shearing within highly carbonatized lavas on the Soma Duvernoy in range VIII, Duvernoy township. The shear direction parallels the anticlinal axis, and is offset by northeasterly faults. Towards the east, in La Morandière township, these shear zones fade out into a mild regional schistosity. The carbonatization associated with these zones of movement does not appear east of lot 10, range VIII, La Morandière township.

The volcanic rocks off the nose of the Duvernoy granite in the synclinal basin in the eastern part of Duvernoy township are sheared and schistose across a section one mile wide. In range III, Duvernoy township, the shearing is intense in the siliceous agglomeratic and tuffaceous bands on the Mompas property. The mineralized Mompas shear zone has been traced for a distance of 1,100 feet in an east-west direction on lots 33 to 35, range III, Duvernoy township. In the northern part of lots 36 and 37 of the same range, a schistose zone over 150 feet in width is exposed for a length of over 600 feet. The regional schistosity in the synclinal basin decreases in intensity as one proceeds away from the granite eastward into La Morandière township.

Adjacent to the Amos anticlinal structure, throughout the northern part of Barraute township, the regional schistosity appears to be the strongest and most widespread in the map-area. The intensity of the shearing and especially the frequency of occurrence of zones of strong schistosity increase towards the eastern limits of the mapping. Pyroclastic and tuff beds are particularly favourable to the localization of schistose zones. Sericitic schists, up to 45 feet in width, are exposed in strong shear zones north of the gabbro body on the Frebert property and to the east on lots 29 and 30 of the Barvue property, both in range VII, Barraute township. Beyond the map-area, there is a wide belt of chloritic schists striking northwesterly on lots 33 and 34, ranges VI and VII, Barraute township.

The recent drilling on the Barvue and Pershcourt properties has confirmed the parallel attitude of the schistosity and the strike of the volcanic rocks. A schistose zone up to 75 feet in width and containing narrow widths of gouge material occurs along the footwall of the mineralized zone for a known length of almost 1,000 feet on the Barvue property. A lesser zone occurs along the hanging wall. Similar conditions have been encountered

in the drilling on the Pershcourt property in lots 27 and 28 (north half) range VII, Barraute township; this is apparently the continuation of the Barvue shear zone, and at present, has a known length of over 1,500 feet on this property. The main shear zone has been slightly displaced by small cross-fractures, and local drag along these fractures tends to produce a series of step-like, right-hand displacements.

These movements are assumed to be in part post-ore for the contour of the mineralized zone sharply reflects a change in the position of the defining schistose zones.

The sum total of the increments on this step-like pattern produces a smooth tangential curve parallel to the indicated change of strike owing to drag in the trend of the volcanic bands.

Faulting

Fault zones are difficult to recognize because of poor exposures. There are few indications of major faults in the area.

A fault zone, trending N.14° E. has offset the breccia marker horizons and shear zones within the volcanic sequence on the Soma-Duverny property in the eastern part of range VIII, Duverny township; movement on this fault is right hand. A fault in direct alignment with the Soma fault has displaced the breccia bands in the synclinal basin in ranges II and III, Duverny township, and apparently has displaced the gabbro-volcanic contact in range II, Duverny township; this fault has been traced south-westerly into range I, Duverny township, where it appears to curve or branch to the west and dies out in an east-west shear zone beyond the limits of the present mapping.

A northeasterly fault zone has been assumed to lie beyond the map-area in the northeastern part of Barraute township. It is possibly a continuation of the Laflamme River fault to the south. It appears that this fault dies out to the north, for there is little suggestion of its presence in the La Morandière exposures. It has been assumed that the drag folding and schistosity in the volcanic rocks in ranges VI and VII, Barraute township, are subsidiary movements arising from this major fault movement.

There are numerous small northerly and northeasterly offsets and cross-fractures with small displacements in the sheared zones on both the Amos and Soma anticlinal structures. Shear planes in the drag folded volcanic rocks likewise are in a northeasterly direction.

Economic Geology

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

In the mapping of the area, it was noted that most of the occurrences of base-metal mineralization are located near or within schistose zones,

particularly the bedding shear zones. The host rocks are predominantly siliceous fragmental or pyroclastic and tuffaceous volcanic rocks. For the gold occurrences, the host rock may be any rock type, but the majority of the discoveries have been made within heavily carbonatized rocks. The carbonatization is however only an indicator of structural disturbance. It is associated with the shear and fault zones and occurs mainly about the margins of the sodic intrusive rocks. The gold in the known occurrences is associated with quartz and mainly occurs in the quartz-filled tensional fractures subsidiary to the main movement. The continuity of the gold occurrences is in a northerly plane, whereas the base metal mineralization favours the plane of shearing parallel to the regional trend. It is also worthy to note that the gold and base-metal mineralization appear to be separate and only rarely do they appear together in significant amounts in the same mineralized zone.

During the early summer of 1950, there was little or no activity in the area. At that time, the area was only partially staked. Following the discovery of lead-zinc-silver mineralization in range VII, Barraute township, the area and surrounding region was almost completely restaked. The coming season will see unprecedented activity in this district. At present a large number of companies including Barvue Mines Ltd., Barmanitou Mines Ltd., Pershcourt Goldfields Ltd., Frebert Mines Ltd., Matico Mines Ltd., Bouzan Gold Mines Ltd., Malbar Mines Ltd., Marbenor Malartic Mines Ltd., New Marlon Mines Ltd., Bartec Mining Co., Bargold Mines Ltd., Barvin Mines Ltd., Damascus Mines Ltd., Con-west Exploration Ltd., Citralartic Mines Ltd., Quebec Diversified Mining Interests, and others are presently active or propose to work in the spring upon their holdings in the Barraute area.

There are no producing mines within the area. The present report will cover the exploration completed up to the late winter of 1950-51.

Description of Mining Properties

Barraute township

Barvue Mines Ltd.

This company was incorporated in the late fall of 1950 to explore a surface showing of silver-lead-zinc mineralization outcropping in the south half of lots 29 and 30, range VII, Barraute township. The ground held by the company includes the south half of lots 27 to 34, the north half of lots 33 and 34, range VII, and the north half of lots 33 to 36, range VI.

The surface showing is located 1,550 feet north of lot-post 29-30, in range VII. The silver-lead-zinc mineralization consists of sulphide replacement (mainly pyrite-pyrrhotite-galena-magnetite) in a sheared rhyolite breccia. The schistosity strikes at S. 35° E, and dips to the north at 72°; this condition is believed to be the result of bedding shearing in a less competent horizon in a series of overturned siliceous volcanics. This entire band of volcanics lies on the south limb of an anticlinal structure. It would appear that a large-scale drag fold has been responsible for the gentle S-shaped structure centring on the Barvue property. The shearing is believed to be subsidiary to the movement on northeasterly fault zones confined within the Laflamme River basin.

An original trench 22 feet in length on the surface returned an average of 3.62 per cent zinc and 6.50 oz. per ton silver over the entire width. Following this original work, the property was optioned first to L. Almond, thence to New Goldvue and finally to Golden Manitou Mines.

The last company commenced drilling in November and has undertaken to prove up the potential ore possibilities.

At present, four diamond drills are drilling on the property. The mineralized zone has a known length of over 1,250 feet and in view of the Pershcourt drilling, there is a potential additional length of over 1,250 feet to the northwest on the Barvue property. The width averages slightly in excess of 100 feet though low-grade mineralization occurs across over 400 feet of the sheared zone in certain instances. The drilling has explored in section to a depth of 500 feet and is presently probing at the 1,000-foot depth.

To the known depth of 500 feet, the completed drilling (30 holes) has outlined a possible orebody estimated to contain approximately 1,000,000 tons per 200 feet of horizontal length and to grade 3.12% zinc and 0.94 oz. silver per ton.

With Pershcourt Goldfields now intersecting the assumed continuation of the mineralized Barvue shear zone, it appears reasonable to expect the mineralization to continue in the intervening space, a distance of over 1,200 feet. The present deep drilling will establish the conditions of mineralization at a depth of 1,000 feet. The extension of the ore zone to the southeast is likewise open. Therefore, it appears that in the near future, the estimated tonnage now in excess of 5,000,000 tons could very quickly achieve the minimum of 10,000,000 tons, desired prior to mill construction.

Andrew Robertson advises the preliminary ground work, for the anticipated 4,000-ton mill is now being prepared. The first acquisition of the company has been the steel framework of the old Uchi Lake Gold mine. The contracts for a spur line railroad and power supply are completed.

Andrew Robertson, manager of Golden Manitou Mines, is supervising the exploration. L. Almond has been retained as consultant engineer and Dennis Allan is the resident engineer.

Pershcourt Goldfields Ltd.

This company holds the ground adjoining Barvue Mines Ltd. on the north. It comprises the south half of lots 27 to 34, range VIII, and the north half of lots 25 to 32, range VII, Barraute township.

There are no outcrops on the property. Late in the fall of 1950, a geophysical survey of the property was made.

The present drilling programme with 5 drills in action commenced adjacent to the mutual boundary with the Barvue property, slightly west of the 28-29 lot-line. The continuation of the mineralized shear zone has been followed to the west as far as lot 27, range VII, with an additional 2,000 feet yet to explore until the boundary is reached with Frebert Mines Ltd.

This drilling (14 holes) has outlined a mineralized zone approximately 50 feet in width and 1,000 feet in length. Unofficial estimates of the grade and tonnage of this zone are reported to be 3,150,000 tons containing 2.5 and 5% and 1 oz. per ton silver. This zone includes a narrower section estimated to be 10 feet in width, containing 700,000 tons grading 4 and 5% zinc and 2 oz. per ton silver.

J. M. Thompson is resident engineer in charge of the field operations. J.J. Coughlan is directing the exploration programme.

Frebert Mines Ltd.

This company, formerly known as Frebert Snow Lake Mines Ltd., has the property adjoining Barvue and Perincourt on the west. The property includes lots 15 to 24, and the south half of lots 25 and 26, range VII, and lots 20 to 26, range VIII.

In the 1946-48 period, exploration consisted of trenching and diamond drilling. A number of trenches in the carbonatized amphibolitic gabbro in the northern half of lot 17, range VII, revealed small quartz veins and stringers in pyritized country rock. A series of trenches, in a narrow draw along the north contact of the gabbro, revealed a band of iron-stained mineralized sericite schist, over 100 feet in width and extending for a length of over 700 feet on lots 17 and 18, range VII. This shear zone was probed by diamond drilling along a length of 500 feet and across a 200-foot section. The central point of the area explored is approximately 2,900 feet north of the 17-18 post-range VI-VII. The diamond drilling had an aggregate footage of 1,485 feet in 6 holes. The shear was tested at moderate depth in 2 holes, Nos. 2 and 6. The assay results from the better mineralized sections are given below:

D.D.H.	Footage	Est. true width	Au (Oz. per ton)	Ag	Zn (%)	Pb (%)
1	84-107.5	16.5'			0.195	1.45
2	127.5-153.5 180-182.5	22.5'	Tr.		0.228 0.360	1.59 3.79
5	78-110	22.4'			0.363	1.35
6	100-120 140-160 125-130	10.0' 10.0'			0.350 0.697 3.645	2.31 1.57 0.25

In the course of our detailed mapping, an assumed offset continuation of this mineralized shear zone in rhyolite breccia and tuffs was located 1,200 feet northeast of the trenches. A cross-trench excavated at the time of the writer's last visit exposed 22 feet of low-grade zinc-silver-lead-copper mineralization.

Golden Manitou Mines Ltd. has recently acquired an option on this property. The drilling programme will include cross-sectioning of the property to locate and follow the mineralized shear zone between the surface exposures and the Pershcourt-Frebert boundary. Two diamond-drill holes beneath the surface exposures immediately to the west of the diabase dyke in lot 19, range VII, have encountered a zone, 17 feet in width, averaging 1.7 per cent zinc and low values in lead, silver and copper.

The direction of the drilling programme is under the management of Golden Manitou Mines Ltd.

Matico Mines Ltd.

This company holds title to 1,000 acres in ranges VII and VIII. The holdings comprise lots 35 to 39 and the south half of lot 40, range VII, and lots 35 to 38 and the south half of lot 39, range VIII. As there are very few outcrops, the company has explored the property by means of a geophysical survey and cross-sectional diamond drilling. This cross section has been described on page 7. The company, through arrangements with Jellicoe Mines (1939) Ltd. and Transcontinental Resources Ltd., commenced an active exploration programme early in 1951.

La Morandière Township

Daljo Gold Mines Ltd.

This company presently holds 2 lots, Nos. 9 and 10, range VII.

Gold-bearing mineralization occurs in the carbonatized basic lavas on lot-line 9-10, approximately 2,000 feet south of the VII-VIII range-line. Here, a number of small irregular quartz veins and flat-lying stringers are traceable for short distances in a local area of pyritized pillow lavas and metadiorite. Tourmaline and pyrite are associated with the quartz. The zone was cross-sectioned by 5 closely spaced diamond-drill holes having a total length of 1000 feet. The drill sections were in a north-south plane. The area explored is approximately 250 feet square. One intersection in D.D.H. No. 4 at 135 feet to 137.5 feet gave an average of 0.325 oz. of gold per ton from 5 samples.

L. Almond was consultant for the company during the drilling programme in 1948.

Other Areas of Mineralization in La Morandière Township

Considerable trenching and sinking of test pits have been done in the sheared siliceous volcanic rocks on lots 31 and 33, range VII. Pyritized porphyry intercalated with schistose lavas occur in this locale. No records of the exploration were available.

A small east-west shear zone with irregular pyrite-chalcopyrite-pyrrotite-sphalerite mineralization was discovered by Wm. Fillion on lot 19,

range VII. The shear zone is approximately 12 feet wide and has been traced for 300 feet. A pit at the western end, approximately 1,500 feet south of the VII-VIII range-line, exposes the mineralization. Character samples from this pit assayed 0.002 to 0.018 oz. of gold per ton, nil to 0.33 per cent zinc, and 0.03 per cent to 0.07 per cent copper.

Wm. Drolet has also trenched an area of highly altered basic lavas on lot 24, range VI. Low values in lead and zinc have been found.

A small mineralized zone, consisting of narrow quartz stringers in carbonatized basic lava on lot 4, range VII, has been explored by drilling without significant results.

A quartz vein averaging 12 to 15 inches in width is exposed for a length of 85 feet in a series of caved trenches along the shore of La Morandière creek, in the northern part of lot 3, range VII. This vein reportedly contains visible gold but the writer was unable to confirm this report.

Duverny Township

New Goldvue Mine (4) (10) (11)

During the past season, this company has been engaged in a shaft-deepening operation. The shaft has been sunk to a depth of 750 feet. On the 725-foot level, a cross-cut to the southeast following a fault plane entered strongly carbonatized diorite, 206 feet from the shaft. A series of quartz flats occur in the walls of the fault zone evident in the back of the cross-cut. These flat-lying veins 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.

The company is presently continuing exploration on the 725-foot level to explore the intersection of the main east-west fault and the north-westerly fault followed by the cross-cut. It is proposed to open up two new levels between the 350-foot and 725-foot levels.

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

Southvue Mines Ltd.

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

During the 1947-1949 seasons a considerable amount of trenching, bull-dozing and diamond drilling was completed on the property.

On lot 32, range VII, a narrow shear zone trending east-west and dipping vertically is exposed for a length of 300 feet. In the eastern end of the bull-dozed area, several pits expose a zone of pyrite-chalcopyrite replacement in sheared flow breccia. The zone ranges in width from a few feet to over 12 feet along an exposed length of 175 feet. A series of short diamond-drill holes have explored this zone at a shallow depth.

Early in 1949, a geophysical survey was made of the entire property. This was followed by 3,000 feet of diamond drilling. The drilling tested an anomaly-indicated zone of disturbance without encountering significant mineralization.

The company has been idle during the past year, but, recently, a contract has been signed for further diamond drilling.

G. Dumont was the engineer in charge of the previous drilling.

Soma-Duverray Gold Mines Ltd.

This company holds a group of claims comprising lots 44 to 51, range VIII.

During the period 1942-1948 the company was actively engaged in exploration, particularly on lots 47 to 50, range VII. The work consisted of stripping, trenching, test pits and drilling. During this period, geological and geophysical surveys of the property were made.

The mineralization in the southern part of lots 48 to 50 has been described in a previous report (12). The present report deals with the exploration in the northern parts of lots 47 to 50, range VII.

Trenches in the northern part of lots 47 and 48 expose an irregular zone of carbonatization cut by small quartz veins and stringers. The wall rock is a highly altered and pyritized amphibolitic gabbro. A similar zone in an identical host rock outcrops in the immediate vicinity of the 48-49 lot-post. In both instances the carbonatization appears to follow the schistosity in the plane of the regional trend, S.70° E. The quartz veins and stringers have two preferred orientations, one parallel to the strike of the schistosity and the other a northerly direction. Dips of the veins are variable. Any possibilities of establishing continuity are unpredictable. These zones have been explored along a length of 1,000 feet by 14 diamond-drill holes totalling over 3,000 feet. Despite numerous promising intersections in the drilling, it was impossible to outline a continuous zone.

On lot 50, 25 feet south of the VIII-IX range-line, an east-west trending quartz vein and silicified zone is exposed along a length of 250 feet in a series of trenches. The vein varies in width from a mere stringer to over 40 inches. It dips 40° to the north. A spectacular occurrence of visible gold was found in this vein. During the summer of 1948 an agreement was reached with the owners of the Bacola property to the north to drill this vein. Twelve drill holes with an aggregate length of 3,503 feet were spaced along a length of 650 feet centring on the exposed vein. Several of the holes were steeply inclined to test continuity at depth. Several intersections were obtained as follows:

D.D.H.	Collar	Direction	Footage	Au (Oz. per ton)
9	Lot-line 49-50	South	130.3-152.1	0.30
10	240' E. of 49-50	South	320.6-324 355.6-366.6	0.60 0.73

A quartz vein striking N.15° W. and dipping steeply west is exposed in the northeast corner of lot 49, 120 feet south of the range-line. This vein varies from 6 inches to over 3 feet in width. The northern half consists of a series of parallel veins, each 4 to 8 inches in width. Mineralization is sparse. A quartz vein dipping to the west at 48° and trending northwesterly is exposed in the northwest corner of lot 50. The exposed length of this vein is between 90 and 100 feet. The vein is 6 to 12 inches wide. Mineralization is limited to sparse grains of pyrite and chalcopyrite, with an occasional needle of tourmaline.

P. Decarie is in charge of the property.

Bacola Mining Explorations Ltd.

This defunct company formerly held lots 48 to 55, range IX, adjoining the Soma-Duvernay property on the north.

Exploration was active during the summer of 1946. Geological mapping, trenching and diamond drilling were completed mainly in the outcrop area in the southern parts of lots 49 and 50. The trenching has exposed a number of small, discontinuous quartz veins and stringers in carbonatized amphibolite similar to those on the adjacent Soma-Duvernay property.

W. Sutton was in charge of the exploration up to the cessation of activity in August, 1946.

Gothic Gold Mines Ltd.

This company holds a group of claims comprising lots 52 to 62, range VII, Duvernay township, and also lots 1 and 2, range VIII, La Morandière township.

During 1946, exploration was mainly concentrated on lots 52 and 59. Stripping and trenching on lot 52 have uncovered a carbonatized zone in the coarse-grained 'diorite' lavas, but no mineralization is visible.

The main discovery is on lot 59, approximately 3,000 feet north of the VII-VIII range-line. Here a quartz vein, varying in width from several inches to over 20 inches, is exposed for a length of 120 feet. A narrow, steeply dipping shear zone lies parallel to the vein. The strike is N.40° W. and the dip steeply north. A chip sample across the vein and silicified wall rock, over a width of 34 inches, at the pit in the southeastern end of the vein, assayed 0.18 oz. of gold per ton. The possible continuity of the vein has been tested over a length of 300 feet and across a 200-foot section by 5 drill holes.

A geophysical survey of the north half of lots 59, 60 and 61 was also completed. E. McCool was in charge of operations.

The property has been inactive since 1947.

Beauverny Gold Mines Ltd.

This company holds title to a group of claims totalling 600 acres and comprising lots 36 to 41, range VII.

During 1946 and 1947, this company did considerable trenching and stripping on lots 39 and 40.

The main mineralization is located 1,800 feet south of the VII-VIII range-line in lot 39. A deep rock trench, along a northeasterly fault, has exposed an irregular area of highly carbonatized 'diorite'. Narrow quartz stringers fill the gash fractures in the walls of the fault. Pyritic mineralization is evident in the quartz and wall rock and grab samples of the vein material are reported to contain good gold values. Samples across the carbonatized zone taken by the writer gave insignificant values.

The company has been inactive since 1947.

R e f e r e n c e s

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