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ADVANCE REPORT ON QUEBEC MANITOU-FLEMING MAP-AREA

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ADVANCE REPORT
ON
QUEBEC MANITOU-FLEMING MAP-AREA

PROVINCE OF QUEBEC, CANADA
DEPARTMENT OF MINES AND FISHERIES

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L.-A. RICHARD, DEPUTY-MINISTER.

BUREAU OF MINES
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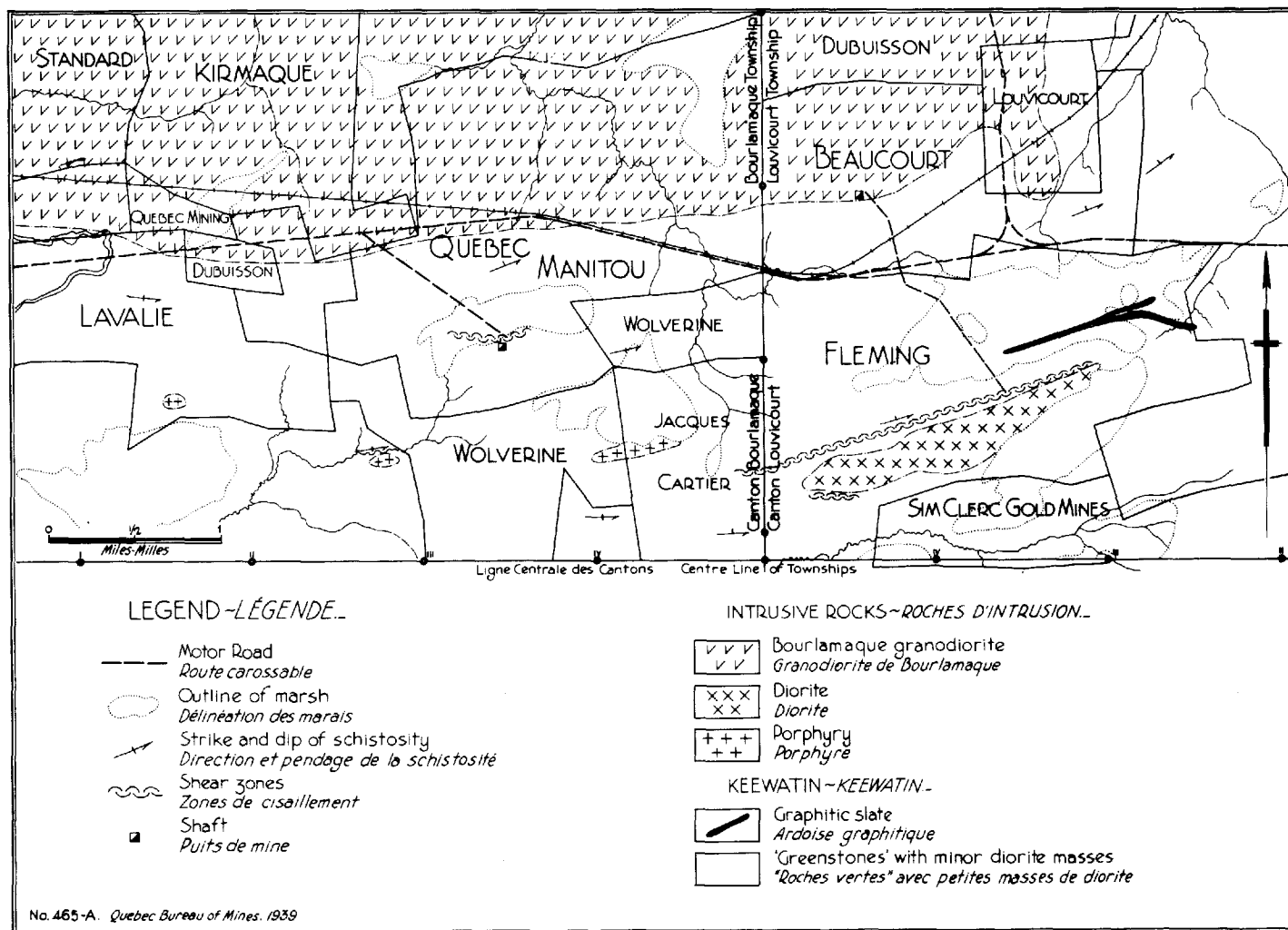
ADVANCE REPORT
ON
QUEBEC MANITOU-FLEMING MAP-AREA
BY
BERTRAND-T. DENIS
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QUEBEC MANITOU-FLEMING MAP-AREA
by
Bertrand-T. Denis

The Quebec Manitou-Fleming map-area comprises a strip of territory about six miles in length (E.-W.) and one to two miles wide (N.-S.) in Bourlamaque and Louvicourt townships, along the Val d'Or-Senneterre highway. From the Bourlamaque-Louvicourt township line it extends westward four miles to the Bourlamaque river, and eastward about two miles to the eastern end of the claim-group held by Fleming Mines, Limited. Geologically, it covers the southern portion of the eastern end of the Bourlamaque granodiorite batholith.

GENERAL GEOLOGY

The general geology of the district has been adequately described by Hawley (1), by L.V. and A.M. Bell (2) (3), and by Cooke, James, and Mawdsley (4).

The major geological feature of the area is the contact between the granodiorite and the Keewatin volcanics. This divides the area into two parts, of which the northern is underlain by granodiorite and the southern by the Keewatin. At the eastern end of the map-area this contact swings northward to cross the boundary, thereby establishing the southeastern limit of the batholith. Throughout the western part of the area, the contact lies close to the highway.

The most noteworthy features of the volcanics are: 1° the abundance of fragmental (agglomerate and breccia) facies; 2° the abundance of porphyritic facies; 3° the presence of finely-bedded tuffaceous facies of which one, highly graphitic, has been traced by diamond drilling and geophysical survey for a length of about 6,000 feet; 4° the abundance of fine to medium grained rocks of intermediate composition which appear to be in part tuffaceous, in part flows; 5° occasional horizons of acidic volcanics, both flows and tuffs; 6° the absence of pillows or definitely recognizable amygdules and other structures characteristic of flows.

There is no sharp division between the acidic and the intermediate volcanics, nor between the definitely fragmental and doubtful tuffaceous types.

Low-grade metamorphism, characterized by the development of sericite, chlorite, quartz, carbonate, and albite, prevails throughout. Sericitic, chlorito-sericitic, and chloritic schists, which have resulted from the metamorphism of the acidic to intermediate facies of the volcanics, are therefore common. The widespread development of porphyritic textures suggests extensive albitization, although insufficient field evidence has been found to justify conclusions. The rocks are highly altered.

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- (1) Gold and Copper Deposits of Dubuisson and Bourlamaque Townships, Abitibi County; Que. Bur. Mines, Ann. Rept., Part C, 1930.
 - (2) Bell River Headwaters Area; Que. Bur. Mines, Ann. Rept., Part B, 1931.
 - (3) Mining Properties of Pascalis-Louvicourt Area; Que. Bur. Mines, Ann. Rept., Part B, 1932.
 - (4) Geology and Ore Deposits of Rouyn-Harricana Region; Geol. Surv. Can., Mem. 166, 1931.

DIORITE

Rocks having the texture and composition of altered diorite or diorite porphyry are common in the map-area.

The problem of distinguishing between intrusive diorite and Keewatin 'green-stone' appears to be ever-present in areas underlain by Keewatin volcanics of intermediate composition. The tendency of the diorites to form lenticular masses conformable to the regional structure, together with the coarseness of the grain found in some flows, makes it very difficult to establish the origin of different rock types of similar composition, unless the relations are adequately exposed in the field. This is rare. In the Lamaque-Sigma Mines area, for example, many types formerly regarded as extrusive are now considered to be intrusive (1). Recognition of their true nature is important, because some diorites, such as those which are facies of the granodiorite of the Lamaque boss, have a genetic relationship with the gold deposits in their vicinity. As the Lamaque boss itself measures only about 520 feet by 300 feet, it follows that even small exposures may be significant.

On the other hand, the recent gold discoveries in the Quebec Manitou district show clearly that certain strong structural features indicate 'good prospecting ground', regardless of the absence of exposures of diorite or allied rocks in the immediate vicinity.

In view of the difficulty in correlating the numerous varieties of diorite and diorite porphyry, even within the limits of a single mine where exposures furnished in underground workings are continuous and far more extensive than are the surface exposures which are the rule, for example, in the Quebec Manitou-Fleming area, the value of attempting correlations from one field to the next is debatable. It will not be attempted here.

The largest body of diorite in the map-area is that which outcrops to the southeast of the camps of Fleming Mines, Limited, where a ridge about 9,000 feet long by 1,000 feet wide is formed of this rock. Throughout this mass, fine to medium grained, porphyritic and equigranular facies are present in such variety that it is generally impossible to select specimens which are satisfactorily representative even of single exposures. The field relations do not show conclusively the origin of the body. On its northwest side, where the contact is exposed on the surface and has also been penetrated by diamond drilling, the relations are obscured by shearing; no exposures of the contact were seen on the southeastern margin. The rock is for the most part altered to an aggregate of chlorite, saussurite, quartz, and carbonate.

Trenching on claims A-54647-48-49, held by Lavalie Gold Mines, Limited, has exposed diorite characterized by the presence of needles of hornblende. This diorite is similar to the 'older diorite' which is found throughout the Rouyn-Bell River belt.

ACIDIC PORPHYRIES

Acidic porphyritic rocks - syenite and quartz-feldspar porphyry - are found at several localities in the area. They show a marked tendency to form sill-like bodies, conformable to the regional structure. One of these bodies, composed of rock containing phenocrysts of pink feldspar up to half an inch in diameter, has been traced by trenches along the strike on claim A-46970 for a length of 500 feet. Its width is about 75 feet. A similar rock was encountered near the southern boundary of the Lavalie Gold Mines, Limited, claim-group. This occurrence is about one mile from the western end of the former, and is roughly on its projected strike. Other occurrences were noted in the northern half of the area.

Large outcrops of grey syenite porphyry are found on the north side of the high ridge which rises above the level of the muskeg about the middle of the western boundary of the Jacques-Cartier claim-group. This body was traced for a length of 2,000 feet on the strike and at the western end is at least 500 feet wide.

(1) Bell, L.V., Lamaque-Sigma Mines and Vicinity, Western Bourlamaque Township; Que. Bur. Mines, Ann. Rept., 1934, Part B, p.10.

GRANODIORITE

Descriptions of the granodiorite are to be found in the reports referred to on an earlier page.

ANDESITE

There are a few narrow dykes of andesite (1) in the area. On the Beaucourt Mines, Limited, claim-group, two such dykes cut massive granodiorite.

STRUCTURE

The regional structure of the volcanics both the stratification and the schistosity, is generally conformable to the granodiorite-Keewatin contact, i.e., east-west, swinging to northeast in the eastern portion of the area. The dips are generally steep and toward the granodiorite. Marked schistosity is apparent throughout the greater part of the volcanic series and there are some zones of intense shear; that in which the Quebec-Manitou ore-bodies are located, for instance, is about 80 feet wide. Throughout the area there has been developed a set of incipient cross-fractures striking about N.40°E. Although each is unimportant in itself, they are noteworthy for their abundance, and for the invariable direction of the apparent movement, which is north side east.

The individual members of the Keewatin formation seem to be distinctly lenticular in habit and, except for the graphitic-schist horizon mentioned above, there is a lamentable lack of distinctive marker horizons. The work of Bell in the Lamaque-Sigma and Northern Dubuisson areas suggests that the Keewatin forms but one continuous series, in which case the tops of all units would be facing toward the south.

DESCRIPTION OF PROPERTIES

Beaucourt Gold Mines, Limited, carried on surface exploration and diamond drilling on a group of 26 claims on the western boundary of Louvicourt township. The larger part of the claim-group covers the claims previously worked by Leroy Gold Mines, Limited. A shaft was sunk and underground workings opened on two levels by the previous owners on a vein system in granodiorite close to the granodiorite-Keewatin contact.

The work carried out by Beaucourt Gold Mines in the vicinity of the old workings was confined to exploratory diamond drilling in order to trace the extension of the known vein-system. Much surface exploration by trenching and test-pits was carried out in other parts of the claim-group, and veins, some of which were gold-bearing, were found at about a dozen places, both in the granodiorite and in the volcanics. The most promising occurrences were tested by diamond drilling, but the results were inconclusive as erratic values were encountered. No economic bodies were outlined. Both quartz-tourmaline-pyrite veins and disseminated pyrite mineralization in shear-zones were tested.

Fleming Mines, Limited, carried out surface exploration, a geophysical survey, and diamond drilling on a group of 53 claims in the west-central part of Louvicourt township. A persistent mineralized zone in acidic volcanics was traced for a length of 10,000 feet along the strike; this zone is to the northwest of the large diorite mass which outcrops on the Fleming claims. Surface exploration and 20 diamond-drill holes proved the existence of quartz-pyrite-chalcopyrite mineralization throughout the greater part of this zone but failed to find a concentration sufficient to justify underground exploration. Low tenors of gold accompany the sulphides. The most encouraging results were obtained near the extremities of the zone - toward the northeast, and also at the southwest end, on claims held by Jacques Cartier Mines, Limited, in Bourlamaque township.

Near the north end of the property, on the road from the highway to the camps, exploratory diamond drilling was carried out on some mineralized quartz lenses in diorite, but the results were not very encouraging. Diamond drilling in the muskeg to the northeast of the camps brought to light the graphitic-schist horizon already mentioned. Within this zone there are streaks of finely divided, disseminated pyrite.

(1) Hawley, J.E., op. cit., p. 15.

Bell, L.V. op. cit., (1931), p. 79. Also Northern Dubuisson Area; Que. Bur. Mines, Ann. Rept., 1935, Part B, pp. 18-19.

In the fall of 1937, more encouraging results were obtained in exploring by diamond drill another mineralized zone to the south of the large diorite mass close to the Bourlamaque-Louvencourt township line. Five diamond-drill holes, spread over a length of 1,100 feet on the strike, indicated a continuous ore-zone of pyrite, chalcopyrite, and quartz, carrying from one to three per cent of copper over widths of from ten to thirty feet; it is possible, of course, to select narrower sections of the core which are higher grade. According to published reports, further work proved the extension of this zone to at least a total length of 1,600 feet before operations were suspended for the time being.

Sim-Clerc Gold Mines, Limited, carried out surface exploration on a group of 10 surveyed claims on the Louvencourt township east-west centre-line, adjoining and to the south of the Fleming property. Outcrops are rare on this group of claims, and the work was confined to the vicinity of the boundary between the two properties, where quartz veins and lenses carrying pyrite and some chalcopyrite were uncovered. There is abundant evidence of sulphide mineralization, but no consistent tenor of either copper or gold was reported.

Jacques Cartier Mines, Limited, hold a group of 15 claims on the eastern boundary of Bourlamaque township. Exploration work consisted chiefly in diamond drilling close to the township boundary, on the extension of ore-zones of the adjoining Fleming group. The same type of mineralization was encountered.

Quebec Manitou Mines, Limited, hold a block of 61 claims in the west-central part of Bourlamaque township. Early in 1937, an important discovery of zinc-silver-copper-gold ore was made on the southern part of this property. It is the extension of the ore-zone previously explored by the Caribou Copper Corporation, Limited. (1).

On an outcrop rising above the level of the large muskeg to the north, a zone of sericitic schists, striking about east-west and dipping steeply to the north, had been explored by surface trenching, test-pitting, and some diamond drilling, which had revealed strong pyritic mineralization accompanied by chalcopyrite and a little sphalerite. A geophysical survey of this part of the property was made, and it was decided to test by diamond drilling the extension of the mineralized zone to the west of the outcrop, beneath the muskeg. Eighteen holes were drilled, spaced over a distance of about 1,800 feet on the strike of the zone. The drilling indicated the existence of lenses of zinc-silver-gold ore in the wide zone of pyritic mineralization. The ore carries a little copper and very little lead.

According to Mr. Allen Jeckell, consulting engineer, preliminary estimates based on the information obtained from the drilling indicate 348,000 tons of ore carrying 11.4 per cent zinc, and 3.31 ounces silver and 0.088 ounces gold per ton. The drilling penetrated the ore-zone to a depth of only 500 feet, and no attempt was made to estimate possible ore below this horizon. The chief factor of uncertainty in establishing the tenor of the ore lies in the fact that, although low values in gold were found throughout most of the ore, a few very rich sections were encountered, notably one 3.2 feet in length which carried 15 ounces gold per ton. Under such conditions, any estimate of average gold tenor is obviously open to uncertainty. It should be stated, however, that, according to published reports, subsequent underground development has, within reasonable limits, confirmed the preliminary estimates.

The ore-zone is a strong shear in a band of sericitic schists, which is about parallel to, and 3,000 feet to the south of, the granodiorite-Keewatin contact. The width of the band as shown by diamond drilling is some 400 to 500 feet, and to north and south of it are fine-grained chloritic rocks, presumably andesitic, although they may be tuffaceous. Neither the chloritic rocks nor those in the acidic band are uniform in character. Prominent among the acidic rocks are highly siliceous portions, some of which show distinctly brecciated structure; for the most part, however, they are sericitic schists or have partings of what appears to be talc, but which is more probably a crypto-crystalline aggregate of hydrous potassic aluminosilicates of the pinite mineral group. The zone of more intense shearing in which the sulphide minerals occur is about 80 feet wide, but, as already stated, the ore sections are lenticular masses within this zone.

There are no known intrusive masses in the immediate vicinity of the ore-bodies.

(1) Hawley, J.E., op. cit., pp.88-92.

Wolverine Mines, Limited, carried out exploration by trenching and diamond drilling on two groups of claims, to the east and to the south of the Quebec Manitou property. The drilling on the east group was an endeavour to find the extension of the Quebec Manitou mineralized zone along the projection of its strike. As more or less intense regional shearing is found throughout this part of the area, it is uncertain whether the same zone was definitely located. After the writer left the field, however, it was reported that intersections carrying from two to eight per cent of zinc had been encountered in two holes near the northeastern corner of the claim-group, about 7,000 feet from the Quebec Manitou ore-bodies. Although no economic ore-body was outlined on Wolverine ground, the fact that mineralization of the same type as that on the Quebec Manitou was encountered is important, because of the incentive it provides for further exploration.