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VENUS GOLD MINES, BARRAUTE TOWNSHIP, ABITIBI COUNTY, PART B

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PROVINCE OF QUEBEC, CANADA

BUREAU OF MINES

Honourable J. E. PERRAULT, Minister of Mines

J. L. BOULANGER, Deputy-Minister

A. O. DUFRESNE, Director

ANNUAL REPORT
OF THE
QUEBEC BUREAU OF MINES
FOR THE CALENDAR YEAR
1930

JOHN A. DRESSER, Directing Geologist

PART B

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BARRAUTE TOWNSHIP, ABITIBI COUNTY

by L. V. Bell

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VENUS GOLD MINE
BARRAUTE TOWNSHIP, ABITIBI COUNTY

by L. V. Bell

LOCATION AND HISTORY OF PROPERTY

The property of Venus Gold Mine, Limited, comprises approximately 1,200 acres in Barraute township, Abitibi county. It consists of lots 11-16 in range II, lots 10-19 in range III, and lots 12-18 in range IV, all inclusive. The mine is located on the Quebec-Cochrane branch of the Canadian National railways, about 25 miles southeast of the town of Amos and 5 miles northeast of the town of Barraute. The railway passes through the central part of the group of claims.

The original discovery was made by the staker, E. Foisie, who in 1925 discovered visible gold in several narrow quartz veins on lot 13, range II, about one and one-third miles south from mile post 59 of the railway line. This is now termed the South zone or vein system. The North zone or vein system, where development is now entirely centred, is situated about three-quarters of a mile to the north of the railway line. The original claims, together with several others which now make up the group, were transferred to *La Mine D'Or Vénus, Limitée*, which was incorporated as a company in October, 1927. This Company now controls the property.

ROCKS OF THE AREA

The claims are underlain by volcanics of Keewatin age to which the term 'greenstone' may be applied. These rocks are dominantly andesitic in composition, but rhyolite also is fairly abundant. Although for the most part the area is covered by glacial deposits, the greenstone appears to extend for some distance on all sides of the group of claims. Later intrusives have not been located on the Venus property, but on the 'Fiedmont' map-sheet of James and Mawdsley, a small stock of granite has been indicated as occurring near the property, on the line between ranges III and IV.

Owing to the fact that the two vein systems on the property do not form a continuous zone, are markedly different in their form of occurrence, and have been developed independently of one another, each will be described separately. The area between the two zones is largely drift-covered.

THE SOUTH VEIN SYSTEM

GENERAL DESCRIPTION:

The South vein system, of which the original discovery forms a part, is located near the boundary between lots 13 and 14, about a quarter of a mile south of the line between ranges II and III. The rather sparse natural outcrops of rock, together with that revealed by trenching and stripping in the vicinity of the vein systems, are shown on the accompanying sketch map (p. 43). All of the rock exposed here may be classed as greenstone. By far the greater part of these rocks appear to represent volcanic flows, but a few occurrences suggest that some of the rock is tuffaceous. Rocks of andesitic composition predominate, but rhyolite occurs to a minor extent, and it is probable that some phases of the rock are more basic than andesite. In the main south cross-cut of the mine, rock with a porphyritic texture was intersected, but it is believed that this also is a differentiate of the volcanic flow rock. Carbonated phases of the greenstone form a very minor part of the rock and appear to be essentially localized to the vicinity of shear zones, 'breaks', and quartz veins and lenses.

SHEARING:

Locally, there is a marked uniformity in the structure of the rocks, which bears a very definite relationship to the vein system. The rocks are schistose, with the major shear-planes striking N68°W. and dipping 55° to 60° north. A second set of shear planes, which is not, however, as well developed, bears a closer relationship to the vein system. The strike is similar to that of the main system, but the dip is in the opposite direction, at 45° to 50° south. This corresponds to the attitude of the principal veins.

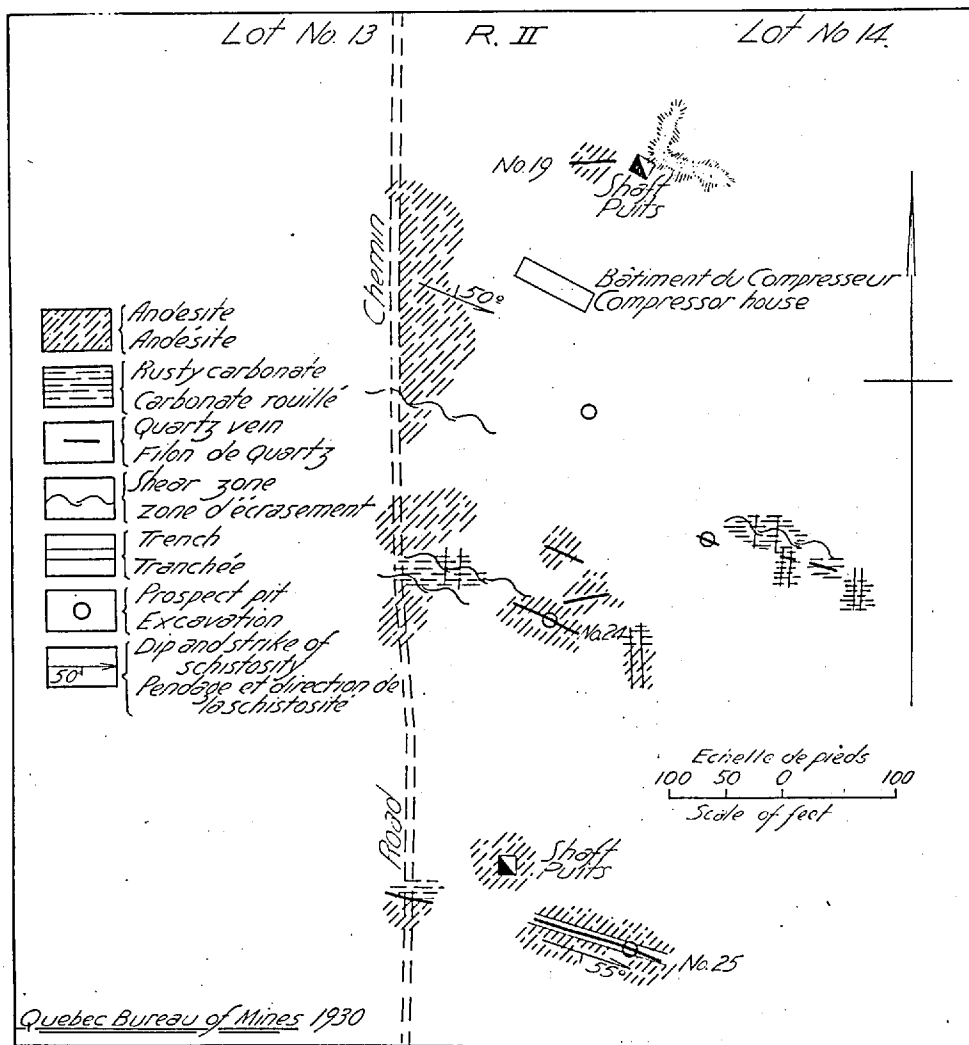
RELATION OF VEINS TO SHEARING:

Similarly, there are two sets of quartz veins. In their attitude, these correspond fairly closely with the two sets of shear-planes, which appear to have given access to the vein solutions. Only the southerly-dipping quartz veins are of importance. The northerly-dipping set consists of narrow non-vitreous quartz veins or veinlets which almost invariably follow the plane of foliation. As a rule, they are very sparsely mineralized. In the southerly-dipping veins, the quartz is vitreous and of variable thickness. They may follow the plane of shearing, but commonly they cut these planes at an angle, and have, at the same time, a variable dip, which gives rise to rolls or flexures. The flexures, where first observed on the surface, were assumed to be saddle-veins, but underground work has shown that, in general, this vein system dips in only one direction. The quartz of the southerly dipping vein system is later than that of the northerly dipping system, since, at their intersections, the latter is invariably cut by the former.

NUMBER AND CHARACTER OF VEINS:

The South zone, or vein system, consists of a number of narrow, more or less parallel, quartz veins, veinlets, and lenses. Although a considerable number of these were formerly assigned numbers as individual veins, only four of them are sufficiently persistent, or sufficiently well mineralized, to permit of any development. These are Nos. 19, 24, 25, and 26. With some variation, the veins have a general strike of N.70°W. and a dip of 55° south. Thus it will be noted that the only veins of any importance belong to the southerly-dipping set. For the most part, they cannot be traced for very appreciable distances along their strike.

The veins consist of white, vitreous quartz through which needles of tourmaline are usually distributed in varying amount. Frequently the quartz is bordered by a narrow zone of calcite. The metallic minerals present are pyrite, a very small amount of chalcopyrite, and occasionally native gold.



Map 120.—Venus Gold Mine. Sketch map of South vein system.

The wall-rock is commonly altered for short distances on either side of the vein matter, as indicated by its light greyish colour in contrast to the darker colour of the main rock mass. This alteration consists essentially in carbonatization and silicification, accompanied by some pyritization.

No. 19 VEIN:

No. 19 vein, the most northerly exposed vein of the South system, outcrops a short distance west of the shaft: in fact, the shaft was sunk on this vein. According to James and Mawdsley, the vein had at one time an exposed length of 60 feet ①. Where it is trenched, it has the appearance of a saddle-vein, with limbs dipping in opposite directions. The apparent saddle is due, however, to a local flexure in the vein. The vein was cut in the south cross-cut on the 200-foot level of the mine (the only level which has been opened up) at a point 140 feet south of the shaft, which would indicate a dip of 54° south. The vein strikes N.73°W. It has been opened-up by a drift on either side of the cross-cut for a total distance of 200 feet. Where intersected by the cross-cut, the vein dips flatly to the south and it maintains this flat dip for about 90 feet east of the cross-cut. This portion of the vein averages about 4 inches in thickness. East of this point, the continuation, or an offshoot, of the vein may be traced for an additional 75 feet as a narrow vein accompanied by intense alteration and pyritization of the wall-rock. West of the cross-cut, the vein has been opened-up in the drift for a distance of 40 feet. It averages somewhat less than one foot in thickness and appears to dip at about 30° to the south. Mineralization, consisting in the main of pyrite, is heavy, particularly along the altered borders of the vein.

Systematic channel sampling of the vein underground gave disappointing results. It is thought improbable that the surface outcrop of the vein was sampled; at least, the writer could obtain no record of such sampling. James and Mawdsley report very fine, visible gold in association with tourmaline and carbonate ②.

① Geol. Surv. Can., Sum. Rept. 1926, Pt. C, p. 65.

② Loc. cit., p. 65.

No. 24 VEIN:

Vein No. 24 is exposed on the surface 400 feet south of vein No. 19. Two other short, lenticular veins are also exposed a short distance north of vein No. 24, but these have not been assigned numbers as distinct veins. Vein No. 24 has been traced along its strike for a distance of 55 feet, and it attains a maximum thickness of $2\frac{1}{2}$ feet. It pinches out to the east and disappears under overburden on the west. The dip, taken in a pit which has been sunk on the vein, is about 60° to the south. The vein is lenticular in its surface outcrop, and it seems to terminate within a short distance in a vertical direction, since it has not been intersected in the south cross-cut of the mine.

No. 25 VEIN:

Vein No. 25 outcrops about 270 feet south of vein No. 24. Two outcropping portions of this vein give it a total exposed length of 150 feet. The most easterly exposed portion is 110 feet long. Near its eastern end, where a test-pit has been sunk, it has a thickness of eight inches, but to the west it narrows to a mere film of quartz. The 40-foot portion of the vein exposed to the west has a thickness of only two or three inches.

No. 25 vein has been intersected in the south cross-cut of the mine, where drifts have been cut for short distances to the east and west. The average dip here is 56° south. The strike, as noted from the surface outcrop, is $N.77^\circ W.$ Strong local variations in the dip are seen in the drifts. Where intersected in the cross-cut, the vein appears as a flat stringer that widens to a foot in thickness at the face of the east drift, and at this point it has a slight dip to the south. In the west drift, the vein is almost flat-lying and may dip slightly to the north. The vein persists to the face of the west drift. As a whole it appears to be fairly well mineralized with pyrite, which is even more abundant in the adjacent altered wall-rock.

Assay values, as reported by Mr. L. Germain, the mine manager, indicate that the easterly surface exposure of the vein averages about \$8 in gold per ton over an approximate width of two feet and a length of 100 feet. Fine gold may be seen in the quartz where exposed on the surface a short distance west of the test-pit. Underground sam-

pling of the vein in the east drift to a point 40 feet east of the cross-cut gave negligible results. The drift was not, however, carried sufficiently far east to cut the vein vertically beneath the point where the values were obtained in the surface sampling.

No. 26 VEIN:

Vein No. 26 is revealed only in the underground workings of the mine, where it is apparently but an offshoot of vein No. 25. As already noted, the latter dips quite flatly where it is intersected in the cross-cut. A narrow vein, $1\frac{1}{2}$ inches thick, and dipping flatly; may be traced in the cross-cut for some little distance to the south of the drift on No. 25 vein, or to a point midway between this drift and the drift on vein No. 26. This vein appears to be an offshoot, or a continuation, of vein No. 25. Vein No. 26 has been opened-up for a short distance in the drift to the east of the cross-cut, and also for a distance of 40 feet in the west drift. At the cross-cut intersection, the vein is merely a $1\frac{1}{2}$ -inch quartz stringer, but at the face of the east drift it has a thickness of $2\frac{1}{2}$ inches, with dip variable but averaging about 45° to the south. The quartz is sparingly mineralized but carries abundant tourmaline.

Channel sampling of vein No. 26, as shown in the mine records, indicated uniformly low values in the east drift. Some rather erratic results were obtained in sampling the west drift, with values as high as \$20 in gold per ton.

No. 15 VEIN:

A vein, or more probably a lens, of quartz has been cut by diamond drilling and has also been intersected a short distance south of the face of the north cross-cut of the mine. It has been designated vein No. 15, but appears to be of little or no importance.

MINING OPERATIONS:

The several veins described above have been explored underground by a two-compartment shaft sunk to a depth of 200 feet, and a cross-cut driven on the 200-foot level on either side of the shaft with a bearing N.30°W. The cross-cut has been driven for 700 feet north-

ward, and 900 feet southward, from the shaft. Short drifts have been cut from the south cross-cut on the several veins intersected, as already described. Exploration has also been carried out by very extensive diamond drilling. In all, fifteen holes were drilled, with results that were rather inconclusive from the standpoint of elucidating the vein structure, and disappointing as regards assays of the vein matter intersected.

POSSIBILITIES OF SOUTH VEIN SYSTEM:

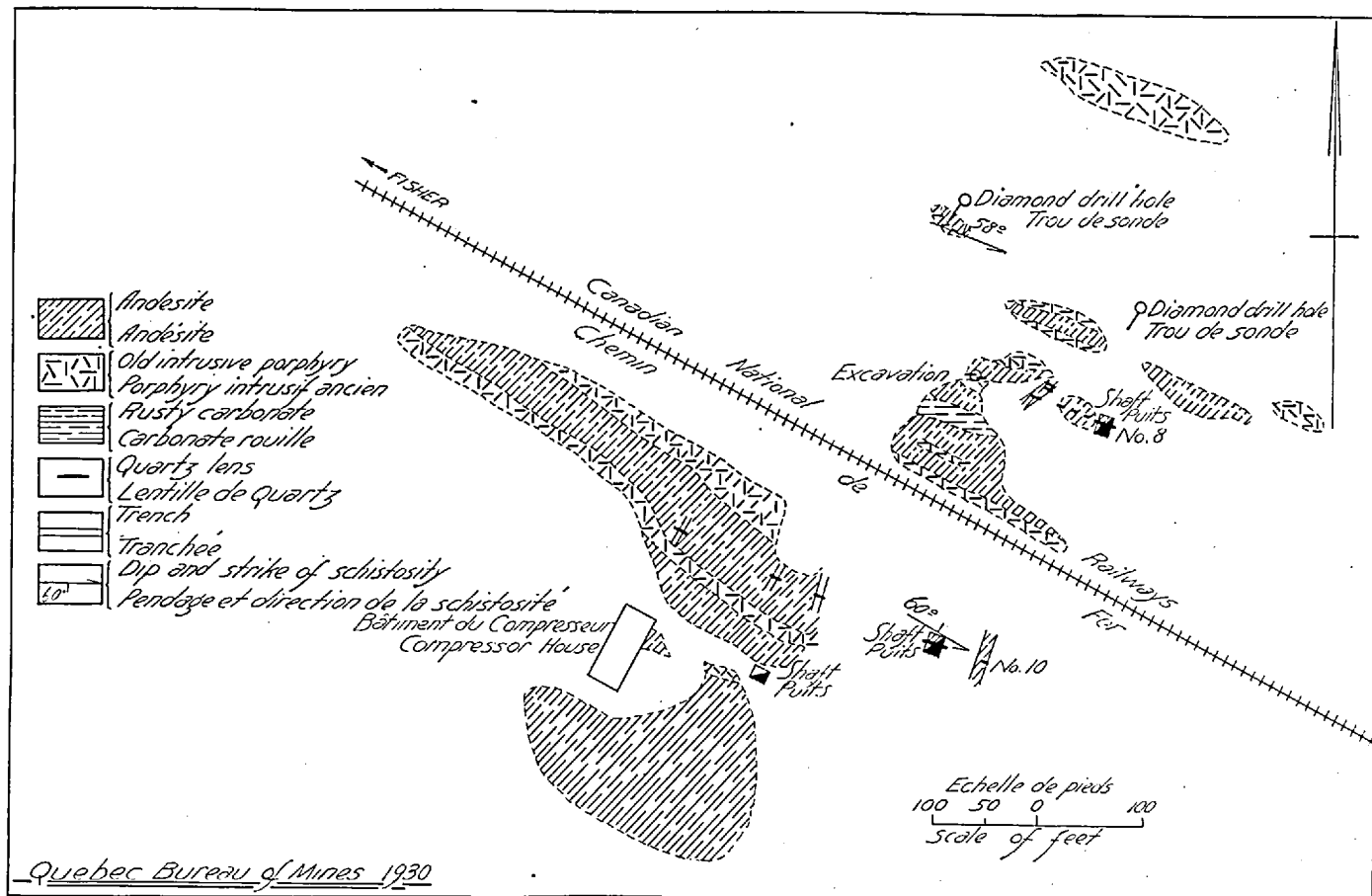
On the whole, it may be said that as yet there is but little hope of developing a commercial ore-body in the South vein system. The veins are very narrow, irregular, and lenticular. Since values are practically restricted to the quartz or its immediate vicinity, the veins would have to be exceedingly rich to provide ore over stoping widths.

THE NORTH VEIN SYSTEM

GENERAL DESCRIPTION:

The North vein system, upon which the new shaft has been sunk, is located on lot 17, range III. The railway passes between the two outcropping veins, and the shaft is located a very short distance south of the railway. The outcropping rock is Keewatin andesite together with more acid porphyritic rock. In places, it is clear that the porphyritic rock is intrusive into the andesite; but since it is sheared to the same extent as the latter, it is evidently an old intrusive, probably of Keewatin age. It is characterized by the presence of quartz phenocrysts.

The structure here is similar to that of the South vein system, in that there are two sets of shearing planes dipping in opposite directions, with the major set dipping to the north. In the deep prospect pit to the south of the railway track, a third set of shear or joint planes was noted, striking N.70°E. and dipping 70° north. The three directions of shearing, together with the extreme irregularity of the quartz lenses that occur here, indicates that the rock has been more intensely shattered here than in the South zone. Although it is scarcely more than a suggestion, the theory might be advanced from the foregoing that the North vein zone is located on the axis of a structure such as a fold.



Map 121.—Venus Gold mine. Sketch map of North vein system.

The North vein system consists of two more or less parallel veins that outcrop on either side of the railway track. The veins might more properly be termed zones of quartz lenses, since the quartz shows but little continuity and exhibits the utmost irregularity in its form of occurrence.

No. 10 VEIN:

The southernmost of the two veins, No. 10, is trenched and exposed at intervals for a distance of 325 feet, but is represented for the most part by short, disconnected lenses of quartz that occur along the same general strike, namely, N.66°W. Where examined in the main pit, the lenses are commonly flat-lying or dipping at low angles; in some places they are gently curved in such a manner as to suggest synclinal folds. The lenses almost invariably cut across the foliation of the rock. They vary in thickness from one inch to three feet.

The lenses consist of white, vitreous quartz containing needles of tourmaline and also pyrite, which has been deposited along fractures in the vein quartz. Carbonate is a minor constituent and commonly forms a narrow zone bordering the quartz in the lenses. Generally the wall-rock is heavily pyritized, pyrite being much more abundant in the walls than in the quartz. The pyrite occurs in well defined cubes, some of which attain a considerable size. They are sometimes covered by a film of bornite that has probably resulted from the alteration of chalcopyrite. Native gold also occurs as a film partially coating the pyrite cubes.

The lens system comprising No. 10 vein has also been cut in the north cross-cut from the new shaft, on the 200-foot horizon, and has been opened-up by a drift for about 150 feet. The zone as revealed in this underground development has, at the cross-cut intersection, a width of 40 feet and is continuous throughout the length of the drift. It is made up of a number of very irregular lenses and stringers of white quartz which for the most part strike in a direction N.60°W., and dip at varying angles. A well defined lens of quartz forms the foot-wall of the zone. It has a northerly dip which appears to coincide with that of the zone as a whole as estimated from surface and underground exposures, namely 60° north. At a very rough estimate, the proportion of quartz to schist in the zone is as one to four.

As in the surface exposures, the quartz is rather sparsely mineralized, pyrite being concentrated in the wall-rock adjacent to the lenses. For a very short distance on either side of the lenses, pyrite is commonly very abundant; elsewhere in the schist it is sparse. Gold is associated with the pyrite rather than with the quartz. It is not held within the pyrite, however, but occurs in the free state on the faces of the pyrite crystals, where it seems to have been precipitated as the last phase of mineralization. As a result of the gold-pyrite association, values within the zone are largely restricted to the immediate borders of the quartz lenses.

Mine records show that 14 samples from the 10-foot prospect shaft on No. 10 vein (south of the railway track) gave an average value of \$12.50 in gold per ton across an average width of 3 feet. The underground workings on the No. 10 vein zone have not been systematically sampled, but results, furnished by the manager, of assays of a number of channel samples, indicate average values of considerably less than \$3.00 per ton.

It has already been pointed out that the gold-bearing material is largely confined to a narrow zone bordering the several quartz lenses, consisting of pyritized, and in places silicified, wall-rock. It has been found, further, that only very restricted portions of the pyritized 'border zone' carry appreciable gold values.

No. 8. VEIN:

The north, or No. 8, vein outcrops to the north of the railway line, 250 feet north of vein No. 10. It is best seen where an 18-foot prospect shaft has been sunk upon it. Like vein No. 10, it consists of a number of lenses of quartz outcropping at intervals. It has been traced on the surface for a distance of 140 feet with a strike of N.68°W. In the pit, the lenses of quartz exhibit extreme irregularity in their form of occurrence and cut across the schist-planes at various angles.

No. 8 vein zone has been encountered in the cross-cut at the bottom of the new shaft, on the 200-foot level, approximately 250 feet north of vein No. 10. This would indicate that it has a dip similar to vein No. 10, *i.e.*, about 65° north. Little additional information is yet available from this underground work, however, since the vein had been barely intersected in the cross-cut at the time the mine was last visited by the writer. It appears to be a much narrower lens

system than vein No. 10, but, like it, is made up of a number of irregular quartz lenses and stringers. There is a considerable amount of pyrite associated with the lenses, but apparently less than in the No. 10 vein system.

The mine sampling records obtained from 10 channel samples taken in the main pit on No. 8 vein show average values of \$6 in gold per ton over an average width of 3 feet. The vein has not been systematically sampled underground, where it was intersected in the cross-cut.

The information relative to the underground work from the new shaft on the North vein system is not precise, owing to the fact that the workings had not yet been accurately surveyed and plotted.

The thanks of the writer are due to Mr. L. Germain, manager of the Venus gold mine, for much useful information concerning the property and workings, and for many courtesies extended during the visit to the property.
