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ADVANCE REPORT ON THE NORTHERN DUBUISSON AREA, COUNTY OF ABITIBI

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ADVANCE REPORT ON THE NORTHERN DUBUISSON AREA

COUNTY OF ABITIBI

PROVINCE OF QUEBEC

by

L.V. Bell

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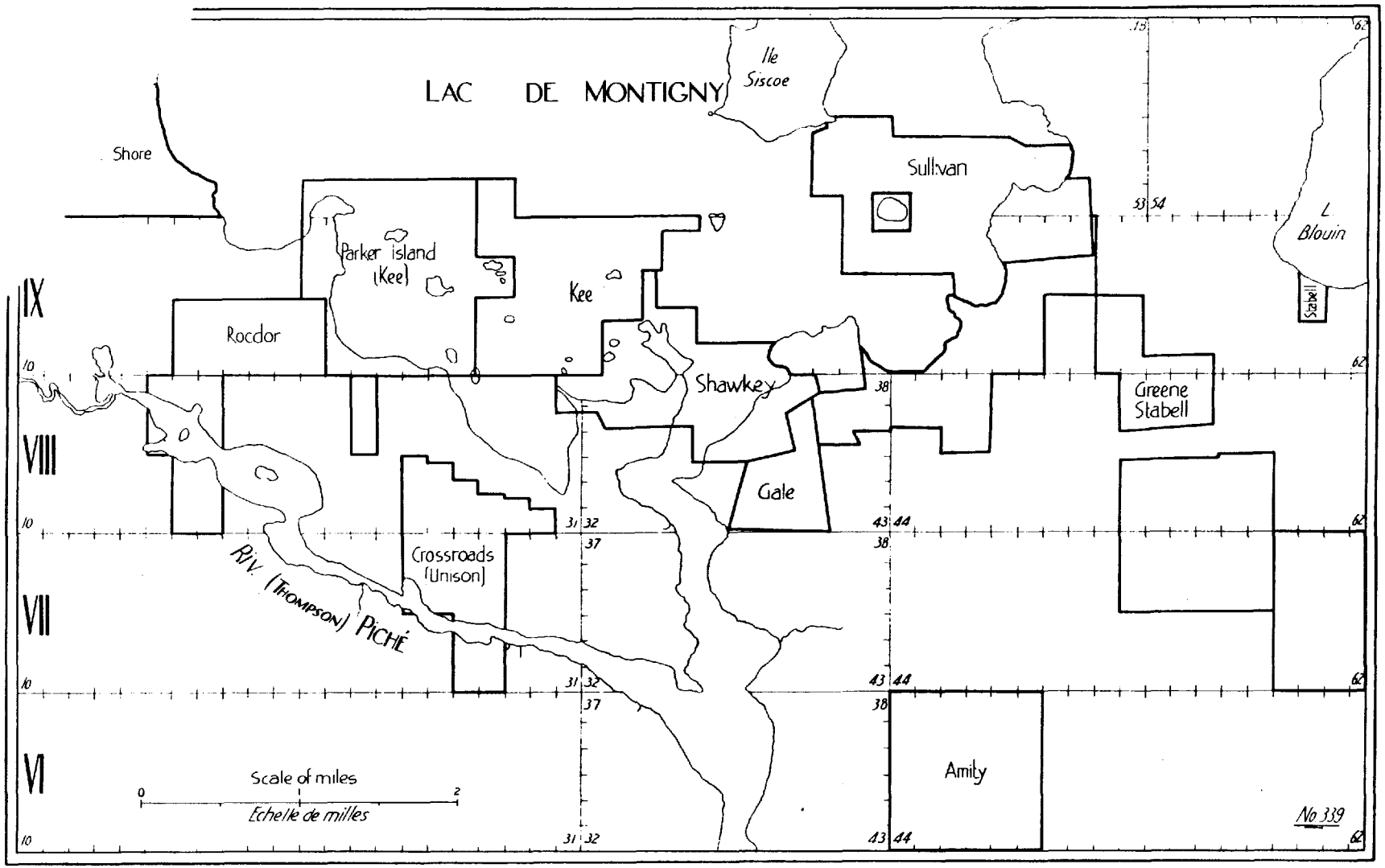

RÉGION NORD DE DUBUISSON, ABITIBI
Lieu des propriétés minières mentionnées au rapport

NORTHERN DUBUISSON AREA, ABITIBI
Location of mining properties mentioned in report

NORTHERN DUBUISSON AREA (Preliminary Report)

by

L.V. Bell

During the field season of 1935 detailed geological work was carried out in northern Dubuisson township in the district lying immediately south of the Siscoe mine and embracing the Greene Stabell, Sullivan, Shawkey and Gale, in addition to several other less active mining properties. Since the general geology had already been worked out the present work consisted of much more detailed mapping of a limited area and an examination of mining development, more particularly those developments subsequent to 1930 when the general area was examined in the interests of the Bureau by J.E. Hawley. The area mapped in detail has an east-west length of eight, and a width of four and a half miles comprising 36 square miles in all. It is bounded on the east by the Dubuisson-Bourlamaque boundary line thus adjoining and forming a companion map-area to the Lamaque-Sigma mines area which was also mapped in detail by the writer during the previous field season.

The central and by far the greater part of the map-sheet is underlain by Keewatin volcanic rocks that consist principally of lavas but which on the south pass transitionally into tuffs. These are succeeded in turn by fine-grained Temiscamian sediments which occupy the southern and southwestern portions of the map-sheet and which represent the northern margin of the principal belt of such rocks. The northeastern part of the map-sheet covers sparse outcrops representing the westerly prolongation of the Bourlamaque granodiorite batholith in the principal exposure of which (within the map-sheet) is the Sullivan mine.

Other intrusives are largely confined to the area of Keewatin rocks and include rather numerous dykes and small masses ranging in composition from granite to diorite, feldspar porphyry being a rather abundant representative. Such intrusives are of particular interest economically as at the Greene Stabell, Shawkey, and Gale mines. Situated chiefly in the vicinity of the boundary between ranges VI and VII and more particularly to the east of the narrows separating lakes Montigny and Lemoine is a series of dykes, dioritic in character and somewhat suggestive of the intrusives in the vicinity of the Lamaque and Sigma mines. Similar intrusive material was noted elsewhere within the area. There are two intrusive bodies which in themselves are of more considerable dimensions. The first lies south of the Greene Stabell mine on the boundary between VII and VIII in lots 54 to 56. It is of granitic nature but includes certain basic facies, the body as a whole having apparent dimensions of a quarter by three-quarters of a mile, the direction of its elongation being northeast-southwest. Covered ground in this

vicinity does not permit of accurately delimiting the body. A second definitely intrusive if somewhat more irregular stock rather uniformly dioritic in character encloses the deposit of the Crossroads (formerly Unison) mine. It has been traced easterly on the adjoining Godon claims. Of interest geologically was the discovery of a sill of quartz diabase, almost undoubtedly older than the foregoing intrusives and injected along the presumed steeply-dipping contact between the Keewatin volcanics and the Temiscamian sedimentaries. The youngest intrusives in the area, probably later than the ore-bearing veins, are dykes of olivine diabase, trending northeasterly.

The older rocks, Keewatin and Temiscamian, have been thrust into a steeply-dipping attitude with a general, but somewhat variable east-west strike. The schistosity has a similar strike and commonly a steep, northerly dip. The tops of the beds appear to face predominantly to the south.

Mining properties within the map-area upon which new development (subsequent to 1930) may be recorded include the Greene Stabell, Sullivan, Shawkey, Gale, Crossroads, West Shore, and Amity. Of these the four first named have seen the more extensive and important developments.

Greene Stabell Mines, Limited

The mine was brought into production in November 1933 and during the year 1934 it produced gold to the value of $196,029 in addition to copper valued at $53,790. The mill is currently treating 60 to 75 tons per day. The deposit is situated in Keewatin lava flows less than a half mile south of the southern margin of the Bourlamaque granodiorite batholith. The productive vein occupies a fault striking N. 60° W. and dipping 70° to the northeast. A dyke of granodiorite porphyry with an average width of seven feet also follows the fault for the greater part, although it leaves the fault before reaching the surface where it outcrops some little distance to the north of the vein. The ore-bearing solutions have for the most part been deposited as lenses on either side of the porphyry dyke so that separate stopes are carried along both its foot and hanging-wall. The stoping width of such lenses would average about five or six feet. That the ore may occur independently from the porphyry is, however, indicated by the fact that a portion of the ore shoot has been extracted from near the surface where developed by means of an open cut. The ore consists of quartz mineralized with pyrrhotite, auriferous chalcopyrite, and some pyrite. Development carried out since the mine came into production has not materially increased the amount of ore computed in earlier estimates. The main ore-body lies to the northwest of the intersection of the vein with what is known as the Blouin lake fault zone by which the southeastern portion of the vein is offset for 200 feet to the southwest. The ore-body has been developed over a maximum length of 350 feet but as an average, about 200 feet. Although the body shortens rather rapidly below a depth of around 400 feet it has been developed to

a vertical depth of about 480 feet, below which mine workings at 600 feet and some still deeper diamond drilling have not as yet indicated additional ore. They have, however, indicated that the vein carries down with a structure essentially similar to that exhibited on the upper levels of the mine. The vein southeast beyond where it is offset by the Blouin lake fault zone has been developed for some 640 feet on the 600-foot, and for about 300 feet on the 450-foot levels. Apart from a small occurrence of ore on the upper horizon little encouragement was met although the structure of the vein was shown to be essentially similar to that of its productive portion. On the 600-foot level an effort was made to explore the contact of the main body of granodiorite where some values in gold had been obtained by diamond drilling at a point some 1500 feet north of the shaft. The work was discontinued when it was found that the highly-fractured character of the rock would not permit of thoroughly exploring the zone by diamond drilling from the long north crosscut that had been driven from the shaft. The mine is equipped with a two-compartment shaft from which are lateral workings on the 150-, 285-, 450-, and 600-foot horizons. Operations are carried out with electric power furnished by the Northern Quebec Power Company.

Development is now centred in sinking a shaft in the granodiorite and situated in ground optioned from the Stabell Lake Gold Mines, Limited, at a point about a half mile northeast of the mine shaft. Several intersections of vein material, some with good width but the average gold tenor of which was relatively low, were had by diamond drilling in this vicinity which is near the eastern side of the northeasterly-striking Blouin lake fault zone. Owing in part to the fact that the rock in this vicinity is heavily mantled with drift data concerning the deposit is furnished only by diamond drill holes and these are insufficient to permit of gauging the nature of the occurrence, i.e. as to strike, dip and dimensions. The object of the present development is to determine the importance of the drill intersections by underground work in the hope that sufficient ore can be developed here to offset the near depletion of the known reserves of the mine. The vein material is quite different in character from that of the productive vein and consists of somewhat greenish-white quartz sparsely mineralized with fine pyrite and chalcopyrite. It is thus somewhat more typical of the vein material commonly associated with the Bourlamaque granodiorite than is that of the productive vein.

Sullivan Consolidated Mines, Limited

The mine was put into production on a 50-ton basis in the spring of 1934 but has since been stepped up to about 115 tons per day with a present average monthly output of approximately $44,500 in gold. The ore-bodies occur in granodiorite near the southwestern extremity of the Bourlamaque batholith and are chiefly of the white quartz-tourmaline-pyrite association typical of the mineralization connected with that intrusive. There are two definite vein systems, each with a characteristic structure. The first system has a north-

west (N.50° W.) strike and an average dip of about 40° to the northeast; the second system is composed of east-west striking vein structures dipping both gently and steeply. The veins of the first system lie near and to the north of the shaft over a total width of about 500 feet measured normally to their strike. In order of their position from southwest to northeast they are termed veins A, 2, 3, and 4. Veins A and 4 are much the stronger structures; Nos. 3 and 4 have been recognized as yet only where intersected in the crosscut on the third level of the mine. Vein 'A' contains the principal ore shoot yet developed and has furnished the major part of the gold produced to date. This shoot occurs in the vicinity of the shaft and yields ore of very good grade for some 300 feet on the first level while an additional 500 feet to the northwest although of relatively low grade, is probably mineable. The major shoot is continuous to the second level where ore occurs in several sections or lenses for a total length of some 300 feet. On the third level, however, the body has pinched to only a few short and narrow lenses. The shoot attains its greatest width of some 30 feet on the first level where the vein dips more flatly than usual and bends to a more westerly strike. Much of the ore in this section of the vein shows a brecciated structure and is exceptionally rich in gold. Most of the ore as yet removed from the shoot as a whole has been taken from a short distance above the first, and from that portion lying between the first and second levels. The body is not as yet fully developed. A second ore-body in 'A' vein has been opened up on the second level 500 feet northwest of the main crosscut intersection. The ore occurs where the vein fracture intersects an easterly-striking shearing. Although of good grade the occurrence is somewhat irregular and as yet seems to be very closely associated with the cross shearing; further work is necessary to establish its nature and importance. The concentration at this point seems obviously to be ascribed to the effect of the intersection of the northwest-southeast ('A' vein) structure with an east-west structure. It is possible that the localization of the principal shoot in 'A' vein was effected in the same manner, the east-west intersecting structure in this case being the steeply-dipping No. 1 vein on which the shaft was sunk.

Veins Nos. 2 and 3, while by no means as strongly defined as vein 'A', are almost identical in their structure and although the bodies as yet developed are very small, sufficient gold-bearing material has been opened up at intervals to indicate the possibility that more extensive masses will eventually be developed. The weaker nature of these two veins as compared to 'A' vein is indicated by the fact that they were not recognized in the north crosscut on the first level; crosscutting is not as yet sufficiently advanced to tap them on the second level of the mine. The vein fractures are in part followed by narrow trap dykes and the vein matter frequently shows a brecciated structure, the inclusions consisting of albitic material indicating that early vein solutions were highly sodic in composition.

Vein No. 4 has been opened up on the first and third levels of the mine. It might be more properly termed a zone than a vein since it is defined by an altered trap dyke which on the first level

attains a width of over 100 feet but pinches on the third level to about 22 feet; on each level there are rather numerous small dykes similar in composition and in the near vicinity of the main dyke. The softer, more basic dyke rock has yielded to stresses much more readily than the adjacent granodiorite with the result that movement and shearing is largely concentrated in the dyke resulting in its extensive alteration to chlorite schist. A relatively wide, chloritic shear zone of this nature while giving access to the mineral-bearing solutions could provide but little control for their deposition. As a result the No. 4 vein or rather zone consists of a series of related, irregular quartz lenses occurring at intervals throughout the chlorite schist that now represents the sheared dyke. Some of the gold-bearing lenses are of sufficient size in themselves or a number of them are sufficiently concentrated as a zone to constitute mineable ore, more particularly on the lower level of the mine where the dyke is narrower and may thus be assumed to have provided a correspondingly more restricted control over vein deposition within it. In addition, diamond drilling has shown that in places the granodiorite adjacent to the sheared dyke is fractured, silicified, and pyritized and carries gold values of ore grade. Further work will be necessary to determine the importance of the No. 4 zone as a whole. The vein matter is somewhat peculiar for the mine, consisting of white, fractured quartz with which abundant chloritic matter is associated. Only very minor amounts of tourmaline are to be noted while mineralization consisting of pyrite is on the whole, sparse. Visible gold is reported and the mineralized vein matter is said to carry good values.

The second of the two vein systems of the mine, the east-west system, is represented chiefly in two occurrences, both to the south of the shaft. One consists of a recently discovered quartz vein as yet opened up only on the first level and situated a short distance south of the principal ore shoot in the 'A' vein. It strikes N. 70° W. and dips 40° south. The vein matter some two and a half feet thick is well mineralized with pyrite, chalcopyrite, sphalerite, and galena with good values in gold reported throughout the limited distance over which it had been opened up at the time of the writer's examination.

The other easterly-striking deposit has been developed on the second level from a long drive extending some 1800 feet southwest of the shaft and from the surface by diamond drilling. The drilling had rather consistently indicated ore values in this vicinity although the drill intersections were never satisfactorily correlated, nor have they been substantiated by the underground work completed to date. The deposit in many respects is quite comparable to the No. 4 vein zone. It is defined by a highly sheared and altered dyke somewhat more acidic in composition than that of the No. 4 zone. The dyke attains a width of more than 100 feet and there are numerous smaller dykes of similar material in its vicinity. The strike of the main zone and related dykes is N. 80° E. and the dip is about 60° south. The dyke rock has yielded to flowage and it now appears as a grey, banded and highly contorted schist the original character of which is obscure. The schistosity, or shearing, appears to correspond in strike and dip with that of the dyke itself. Movement and shearing

in the dyke rock has permitted of the fracturing of the adjacent granodiorite and it is here that deposition has taken place rather than within the dyke itself. Mineralization occurs in general in two ways; as a silicification and pyritization of the irregularly fractured granodiorite yielding a somewhat bluish-grey replacement material; and secondly, as somewhat irregular lenses of greyish quartz well mineralized with fine pyrite and occasionally carrying sphalerite and visible gold; gold values, however, are usually low. Albitic alteration particularly evident in the vicinity of several albitite or aplitic dykes, is commonly associated with the first type. The mineralized material as yet opened up by underground workings here is of low grade. It is estimated by the manager that the main zone where intersected by the main crosscut over more than 100 feet carried an average of .09 oz. per ton; somewhat lower average values were obtained in a drift on the zone. It remains to be proven whether or not certain sections of the zone will constitute ore.

The mine is equipped with a two-compartment shaft with lateral workings on the 150-, 250- and 350-foot horizons. A new three-compartment shaft is now being sunk on an incline following the north dip of the 'A' to 4 vein zone from which they will be developed. The mine utilizes electric power furnished by the Northern Quebec Power Company.

Shawkey Gold Mining Co., Ltd.

In the fall of 1933 the old Martin mine was reopened by the Shawkey Gold Mining Co., Ltd. The old working had been carried to a depth of 325 feet but only a very limited amount of lateral development had been completed. The shaft has now been deepened to 575 feet and the principal (No. 1) vein developed on all but the bottom level. A 100-ton mill is in course of construction, the power for which will be furnished by a large Diesel engine supplementary to the small Diesel plant now in use. The mine workings are in Keewatin basaltic lava flows, the attitude of which, as indicated by a flow contact a short distance to the west of the mine, is northwest with a steep dip to the southwest. Intruding the lavas are some irregularly elongated bodies or dykes of syenite porphyry the general trend of which is slightly more westerly than that of the vein. The vein strikes N. 45° W. and has a steep but variable dip which in the average is nearly vertical. On the northwest the vein is terminated against a body of porphyry pitching 55° to the southeast; consequently the vein rakes to the southeast in a similar manner. The probable behaviour of the vein at depth is further complicated by the fact that on the bottom level it has intersected a strong shear zone which was cut in the shaft at 575 feet. Some vein material with gold values on the south side of the shear zone was, however, indicated by diamond drilling from this level. The attitude of the shear zone and hence its probable effect on the vein cannot as yet be inferred since the shearing cannot with any certainty be correlated with other known occurrences of shearing of which there are several in the vicinity. The shear zones almost undoubtedly had their origin before that of the vein.

The vein matter consists of greyish-white, finely granular quartz with a little carbonate and contains numerous altered inclusions of the wall-rock. It is mostly very well mineralized with pyrite. Visible gold is fairly common and in places is to be seen in spectacular amounts. Vein filling takes the form of long, persistent lenses in many places accompanied by parallel stringers making up a vein zone; the vein as a whole showing marked continuity except where offset by faults. Post-vein faults are numerous but in the majority of cases the vein is offset for only two or three feet, a maximum horizontal offset of 65 feet has been noted. Thus faulting, although very extensive, does not present any very serious obstacle to development. The faults have a variable, but general east-west strike and they usually dip fairly steeply in diverse manner. A result of the faulting is that in tracing the vein along its strike to the southeast, particularly on the lower levels, it is displaced to the southwest; a further contributing influence is probably the fact that there is an apparent tendency for the southeastern part of the vein to assume a fairly steep southwest, rather than the usual, nearly vertical dip. The vein for the most part might average about three feet in width although it pinches to much less in places and widens in others; the wider portions generally consist of the vein proper together with closely related parallel stringers. It is estimated by the management that ore widths average three feet with an average grade of $12.00 per ton (gold at $35.00 per ounce). In a recent report to shareholders the amount of ore developed on the various levels is stated to be as follows:- 125-foot level, 420 feet; 225-foot level, 480 feet; 325-foot level, 420 feet; 450-foot level, 175 feet. Development of the 450-foot level has only recently commenced. These figures would serve to show that the vein as a whole must be of ore grade practically throughout the entire length it has been developed on the various levels of the mine.

On the northern point of the peninsula 2,050 feet due north of the shaft is what is known as the "Point" or No. 2 vein. It is a fracture or narrow shear in Keewatin basaltic lava occupied only in part by vein matter. The fracture strikes S. 85° E. and dips about 80° north. Injected into the shear at intervals are small disconnected and lenticular masses of porphyry rarely exceeding three feet in width. Vein matter is largely confined to these blebs of fractured porphyry where it occurs as irregular, reticulated stringers of bluish-white quartz mineralized chiefly with pyrite. Visible gold in some of the specimens from the vein is quite spectacular. A few very small lenses of vein matter were noted in the fracture independent of the porphyry. Vein matter on the whole is quite discontinuous and its proportion is relatively small so that it would have to be very rich to constitute ore throughout the vein as a whole. The vein although mostly covered with drift, has been trenched for about 160 feet; on the west it extends almost to the water's edge where the only evidence of vein matter is a few quartz stringers. Several diamond drill holes that were put down to intersect the vein gave little encouragement although it is reported that good results were obtained from three of the bulk samples taken from the vein in the trench by the management.

Gale Gold Mines, Limited

In 1932 the property was held under option by Northern Aerial Minerals Exploration, Limited, by whom a campaign of diamond drilling was carried out. Subsequently the option was dropped. During last spring and summer the present company installed a plant and made preparations for underground work. The plant consists of a small Diesel engine, compressor hoist, oil storage tanks, etc. New camp buildings and shops were also erected. The Keewatin rocks of the principal outcrop are of two types, fine pillow and amygdaloidal lavas, and massive andesites. These are intruded by dykes and small bodies of syenite porphyry.

With the exception of a newly-discovered vein known as No. 4 vein the showings have been described in previous reports. Briefly, they consist in large part of what is known as veins 1, 2 and 3. Veins 1 and 2 are narrow fractures following the respective north and south contacts between a dyke of syenite porphyry and pillow lava. The dyke in its principal exposure is 30 feet wide, strikes N. 77° W. and dips steeply. The fractures at some points carry very narrow lenses or stringers of quartz; coarse visible gold is to be seen in them but for the most part only at the junction of narrow stringers which occasionally intersect No. 2 vein at a low angle. No. 2 vein on its easterly strike passes through the porphyry dyke which at this point swings and is in part faulted to the south; in the lava for a length of 75 feet vein filling attains a width of about one foot to a foot and a half consisting of bluish-white quartz mineralized with pyrite together with a little pyrrhotite and said to carry good values. This portion of the vein dips 60° north.

No. 3 vein occupies a well defined, strong fracture about five feet wide chiefly in massive andesite. Vein matter consists of granular quartz sparsely mineralized, mostly with pyrite. It is fairly consistent for over 200 feet and would average one and a half to two feet in thickness; values, however, are understood to be low. The vein strikes N. 60° E. and dips at 60° to the northwest.

In addition to the veins enumerated there are a few shear zones and a number of fractures essentially of a minor nature; some of the latter carry a little vein matter and occasionally, visible gold. Although varying by as much as 20° they fall into two sets, one of which has an average strike of N. 80° W. and the other, N. 65° E. and commonly dipping to the northwest. It will be noted that veins 1 and 2 belong to the first set and No. 3 to the second.

The "new" or No. 4 vein discovered during the summer of 1935 and partially revealed in a trench is situated near the southern border of the principal outcrop 400 feet southeast of the shaft location. The vein is a fairly well defined two and a half-foot fracture traversing massive, andesitic lava and occupied at intervals by relatively narrow lenses of white, glassy quartz with considerable amounts of associated chlorite and mineralized in places with pyrrhotite and pyrite. Coarse, visible gold occupying fractures in the quartz is not uncommon. The fracture has a somewhat variable east-

west strike and it dips at 68° to the south. It has been traced for more than 200 feet and quartz stringers occur on its westerly strike beyond a covered interval. The vein proper contains appreciable vein matter consisting of several lenses, over an aggregate length of some 75 feet, the lenses averaging about one and a half feet in thickness. In addition there are several narrow stringers with some related silicification following the vein fracture.

Crossroads Gold Mines, Limited

The property was formerly known as the Unison mine and was under development some years ago when a shaft was sunk to a depth of 100 feet and some lateral work carried out. It is described in earlier reports, and although sporadic development including some diamond drilling and the erection of a small mill has since been completed the mine records were not available and the workings were flooded; consequently the writer has little to add to earlier observations. Detailed mapping in the vicinity has, however, shown rather definitely that the diorite in which the deposit of the mine occurs is an intrusive of post-Keewatin age and is of somewhat wider distribution than was previously indicated.

Parker Island

Several years ago the deposit was tested by trenching and by some diamond drilling. There has been no further development in recent years (subsequent to 1930) so that the writer does not feel justified in adding any further description to those given in previously published reports. The property is now controlled by H. Kee.

Kee Property

That portion of the H. Kee property in the southern part of Montigny lake which lies between Parker island and the Shawkey peninsula was optioned by Teck-Hughes interests who early in 1935 carried out a campaign of diamond drilling. Both a mineralized vein now exposed for a few feet on the east shore of the principal island, and the water stretch between the island and the Shawkey peninsula were tested, the latter by drilling from the ice. The option has been permitted to lapse.

West Shore Gold Mines, Limited

That part of the company's property in Dubuisson township is situated in range X near the southwestern shore of Montigny lake. The principal showing comprises a strong shear zone in a body of hornblendite. It has been opened up for about 750 feet throughout which distance it is steeply-dipping with a strike of N. 70° E. and in places with a width of 15 feet. Injected into the shear zone at intervals are narrow lenses of white, sugary quartz with carbonate and sparsely mineralized with pyrrhotite, chalcopyrite, and pyrite. The schistose wall-rock is silicified in places and shows a considerable development of biotite. The mineralized vein matter is reported to carry moderate values in gold.

Amity Gold Mines, Limited

During the spring and summer of 1934 the company carried out some diamond drilling near the boundary between ranges VI and VII, lots 46 to 48, Dubuisson township. The main showing consists of a veinlet of sugary quartz mineralized with chalcopyrite. It follows a one-foot dyke of porphyry which in turn follows a fault cutting pillow lava with a strike of N. 50° W. and a steep dip to the northeast. A 27-foot pit was sunk here several years ago when the ground formed part of the Clowse claim. The veinlet is only an inch or two in thickness but has been traced for some little distance. It is known to carry gold. Four drill holes were put down to test this occurrence and several others of even more speculative nature were drilled in the vicinity. Two of these in lot 47 were designed to test a steeply north-dipping, east-west shear zone which is bordered in part by coarse porphyry and contains a six-inch, mineralized quartz lens twelve feet in length.

Rocdor Gold Mines, Limited

During the winter of 1934-35 some surface work was done by the company in lot 20, range IX of Dubuisson township, the ground having formerly been held by G. McChesney. Barren-looking quartz carrying actinolite and sericite is associated with a dyke of feldspar porphyry intruding volcanic breccia. Mineralization is very sparse, only a little pyrite and chalcopyrite having been noted along slip planes in the fractured porphyry. Very little rock is exposed in this vicinity.