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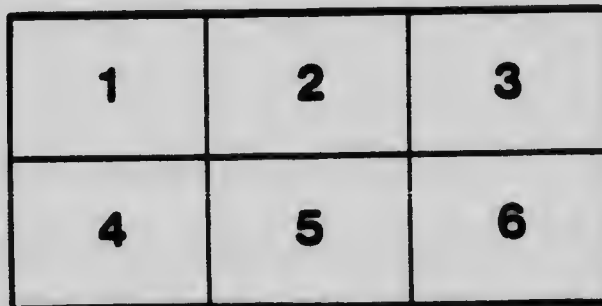
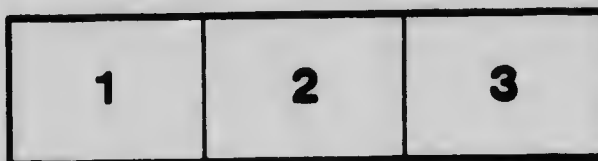
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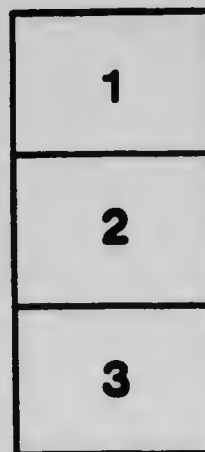
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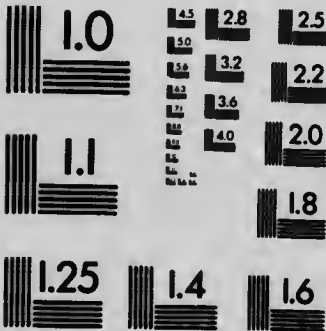
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FIELD DEPARTMENT

PROVINCE OF ONTARIO

Publication No. 37

Ontario Bureau of Mines.

West Shannongtree Gold Area

W. E. HOPKINS

Geological Map of
the West Shannongtree Gold Area

Approved by Order of
the LEGISLATIVE ASSEMBLY OF ONTARIO

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PROVINCE OF ONTARIO



BUREAU OF MINES

Bulletin No. 39
OF THE
Ontario Bureau of Mines.

West Shiningtree Gold Area

BY

PERCY E. HOPKINS

Accompanied by a Coloured Geological Map :
No. 29a. —West Shiningtree Gold Area

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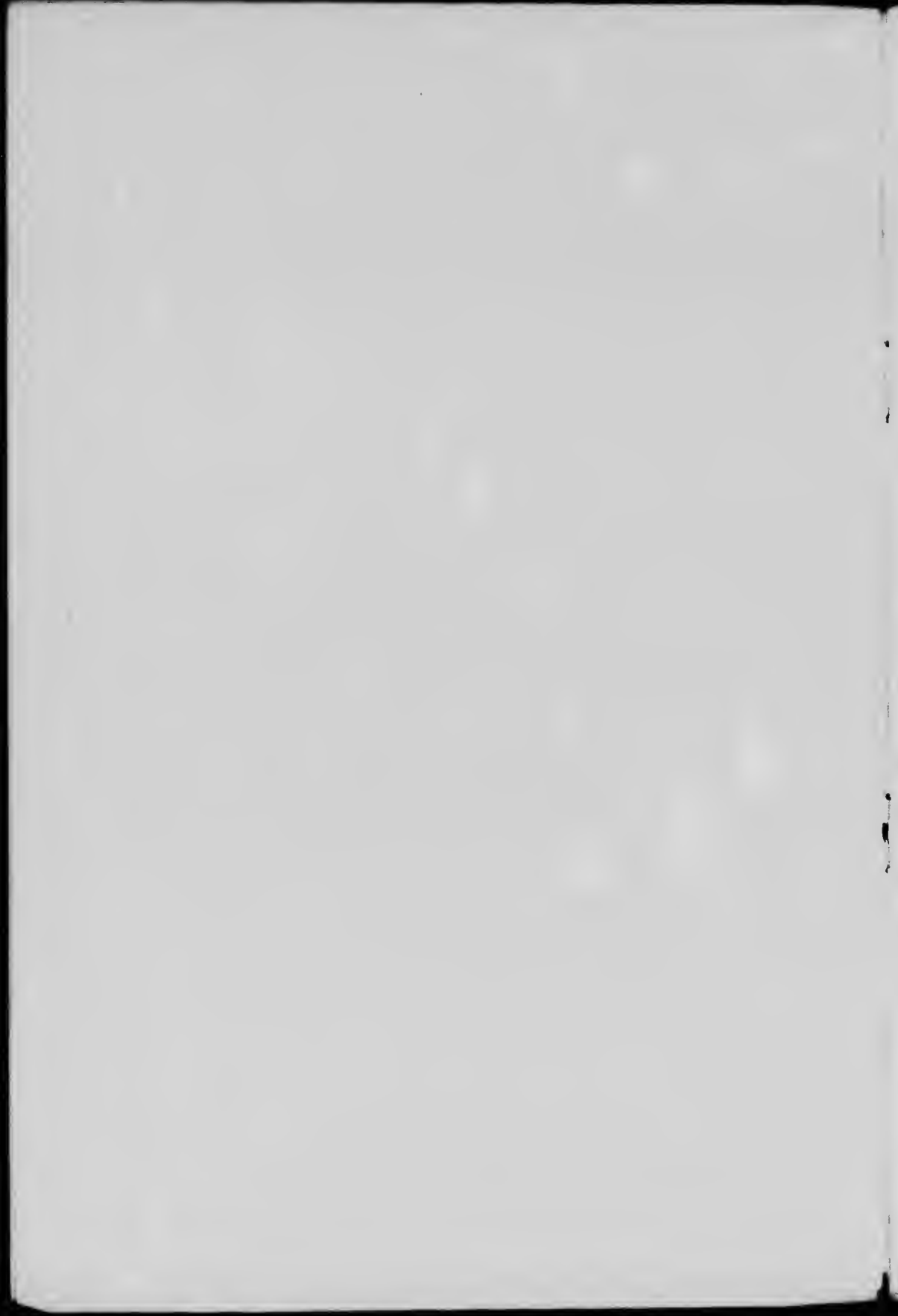
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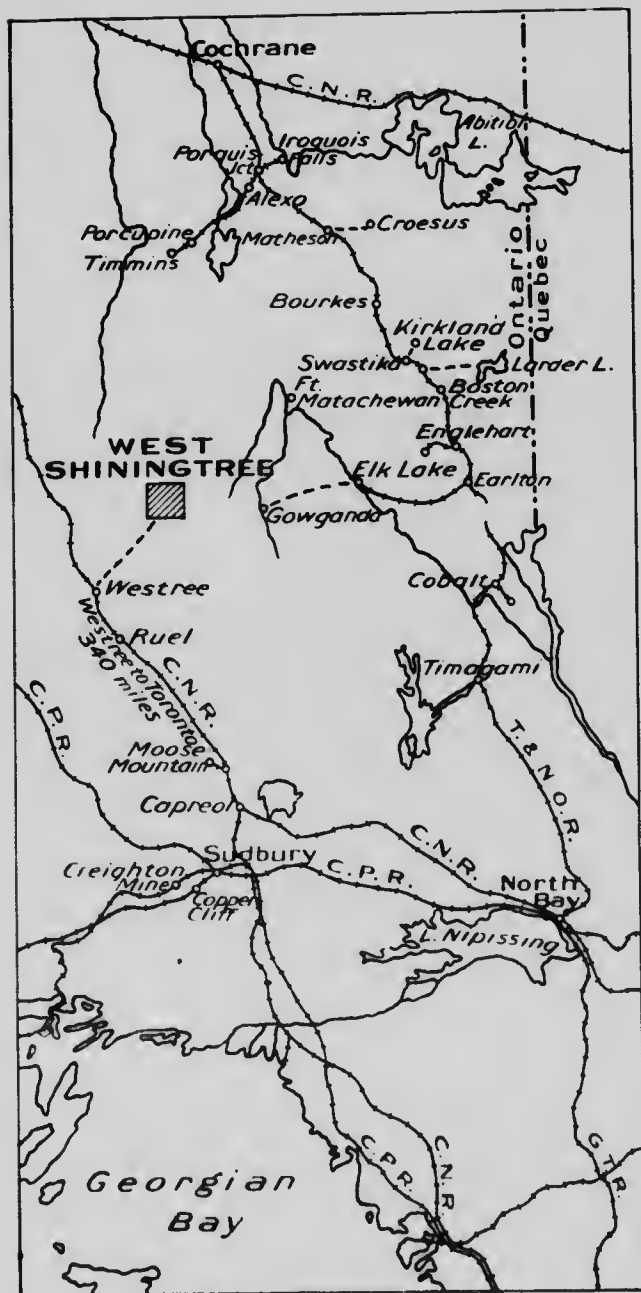


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Key map of part of Ontario showing West Shiningtree as related to other mineral areas. The broken lines represent wagon roads.

WEST SHININGTREE GOLD AREA

By
Percy E. Hopkins

Introduction

A preliminary examination of the geological and economic features of the West Shiningtree Gold Area was made by the writer during four weeks in September, 1919. Unfortunately, during that short period the weather was very wet; nevertheless, practically all the known gold deposits were visited. Accompanying the report is a coloured geological map on a scale of 40 chains, or one-half mile, to the inch, which may be of value to those who may prospect or visit the area or engage in development work. This map is produced largely from map No. 153A, accompanying Memoir No. 95, by W. H. Collins of the Geological Survey of Canada, and also from R. B. Stewart's map in the Twenty-second Report of the Ontario Bureau of Mines.¹ A few changes in the geology were made, and some additional mapping was done in the vicinity of recent discoveries. The forest fire in July, 1919, laid bare much rock which had hitherto been covered, thus facilitating the work. Acknowledgments are due K. B. Heisey, student in mining from the University of Toronto, for his able assistance, and to the mining men and prospectors of the area for their kind hospitality and the information they supplied.

Summary of Economic Possibilities

Since the first discovery of gold in 1911, when the railway was sixty miles distant, numerous other finds have been made in parts of four townships. The railway now passes within twenty miles of West Shiningtree lake, and is connected by a wagon road with most of the properties. Freightling in summer is still quite expensive. Not only the poor transportation facilities, but also conditions during the war period, have retarded mining development; hence very little underground exploration has been done.

Gold occurs in numerous deposits, some of which are quite large, but in many of them the precious metal is not concentrated sufficiently to pay for working, while in others it is irregularly distributed. A few small pockets of high grade ore have been found on half a dozen properties, but this does not necessarily signify that these will make mines, since the other portions of the veins may contain little or no gold. According to the manager's reports on the Herriek, ore shoots of considerable size are indicated by surface sampling, by sinking and sampling a 50-foot shaft, and by diamond drilling. The Ribble vein, which outcrops on the Wasapika, has also been exposed on the Miller-Adair claim, and is traceable for about one-quarter of a mile on the Foisey, being in all over a mile long and of a satisfactory width. The manager, G. E. Rogers, reports that the outcrop of this vein on the Wasapika shows 800 feet of \$9.00 ore

¹ Mr. Stewart's examination of the area was commenced in the autumn of 1911, immediately after the discovery of gold, and completed in 1912; Mr. Collins' report and map were based on field work during the same years.

across four feet, while in addition a cross-cut on the 100-foot level showed 23 feet of schist and quartz, assaying \$1.20 in gold per ton. One-half mile south of the Wasapika, on the Miller-Adair, there are also indications of ore in the Ribble vein on the surface; and further south still, on the Foisey, the vein is large, and carries visible gold. Shoots of ore may occur in various places along the Ribble vein, but it will not necessarily all be ore.

A few properties in the area have promise, but they are still in the prospect stage. Whether they will become mines or not will only be determined by further developing the veins underground and sampling the same.

It may be said that during the geological examination of a deposit such as one of iron or copper, it is often possible to form some idea regarding its value; but in the case of gold deposits it is usually more difficult to do so, systematic sampling being required. It is not the practice of the Bureau of Mines to undertake systematic sampling of gold or other deposits, this being naturally the function of the technical or professional men employed by the property owners.

Location

The townships¹ of Asquith, Churchill, Fawcett and MacMurchy, near the western side of the Timagami Forest Reserve, are known collectively as the West Shiningtree gold area. Other townships might be included, since somewhat similar geology extends sixty miles north to Porcupine. West Shiningtree lake, near which gold was first discovered, and from which the area received its name, lies near the west central part of the area. It is reached from Westree, a station on the Canadian National² railway, 80 miles north-west of Sudbury, and 340 miles by rail north of Toronto. A 20-mile wagon road connects Westree with West Shiningtree lake, over which stage and freight teams operate. Trails and corduroy roads extend as far as five miles beyond West Shiningtree lake to the various prospects. There are also water routes with portages necessitating a day's trip from either Westree or Ruel stations. Another means of entering is to use the wagon road for thirteen miles to the halfway house on the Opikimimika river, and the water routes for the remaining portion, thus avoiding the worst part of the road.

History

Gold was first found in the area in August, 1911, on the Gosselin property, W.D.1151 (2196), which lies on the north line of Asquith township between the second and third mile posts. At that time the railway was 60 miles distant. A few days later gold was found five miles easterly on the Jefferson claim 2504, now the Atlas, on lake Wasapika, MacMurchy township. Other discoveries have been made from time to time, some of which were quite rich. The most recent finds are on the west side of lake Michiwakenda, in Churchill township, on the Cochrane, Gold Coron and Knox claims, the last-named being better known as the Herriek and Churchill properties respectively. The Ribble vein which the Wasapika company is developing has been found to extend into the Miller-Adair and Foisey claims, to the south.

¹ Township outlines were run in 1909 by J. W. Fitzgerald, O.L.S.

² The line referred to was formerly the Canadian Northern, now part of the Canadian National railways.

Exploration work in the area consists for the most part of stripping, sinking shallow test pits and sampling. Some diamond-drilling has been done on the Herriek. One shaft has been sunk beyond 100 feet, viz., the 130-foot shaft on the Wasapika, there being a 50-foot cross-cut at the 100-foot level.

The nearest post office, Coyne, is located at Westree. Owing to the recent discoveries and improvements in transportation facilities, there has been increased activity, particularly in the Wasapika section. No gold has yet been produced apart from what has come from a few high-grade samples, and the area is still in the prospect stage. The recent forest fires have facilitated prospecting in parts.

Topography

Broadly speaking, the country is a rocky plain-like area at an elevation of approximately 1,400 feet above sea level. The relief is slight, the highest peaks being not more than 250 feet above the lowest valley. Lakes are numerous: Mr. Collins found seventy-two lakes in seventy-two square miles examined, and three of these were each five miles long. The height of land, separating the waters of the Great lakes from those of Hudson bay, skirts the western and northern parts of the area. A large proportion of the forest has been completely burned, leaving the rocks well exposed over large areas. The covered portions have only a thin coating of glacial sand and gravel. The average magnetic declination is about ten degrees west of north.

West Shiningtree lake is remarkable for its irregular shape, numerous bays and long shore line, as well as the low relief of the surrounding land.

Literature

Prior to 1911, when gold was discovered, there was little known geologically of the area except in a reconnaissance way.¹ Immediately after the discovery R. B. Stewart briefly examined the geology and character of the deposits² for the Ontario Bureau of Mines. During the following summer, 1912, Mr. Stewart continued his examinations and published a brief report, accompanied by a very useful sketch map.³ W. H. Collins, of the Geological Survey of Canada, who was also in the area at the time of discovery investigating the Onaping region, published an advance photographic map of the Shiningtree section, to accompany his summary report.⁴ Mr. Collins also spent a part of the following summer, 1912, in the West Shiningtree area proper. His report and detailed coloured map of Churchill and Asquith

¹In 1909, W. R. Rogers, topographer of the Bureau of Mines, during an exploratory trip westerly from Gowganda, made a rough traverse of West Shiningtree lake, a plane table traverse of lakes Okiwukenda and Michiwukenda to the north, also a compass and micrometer survey of the Opikimikik river to the south of the area. Map No. 21d, published in 1912, incorporated the results of this work.

²West Shiningtree Gold District, by R. B. Stewart, Ont. Bur. Mines, Vol. XXI, 1912, Part I, pp. 271-276.

³West Shiningtree Gold Area, by R. B. Stewart, Ont. Bur. Mines, Vol. XXII, 1913, pp. 233-237.

⁴Geology of Onaping Map-Sheet, Ontario; Portion of Map-area between West Shiningtree and Onaping lakes—*Can. Rep. Geol. Surv.*, 1911, pp. 244-252.

townships accompanies his general report on the whole area.¹ Several general articles have appeared in various mining journals from time to time by R. E. Hore and others.

General Geology²

The compact rocks are all pre-Cambrian. They have been glaciated and are well exposed, being only thinly covered in places by glacial sand and gravel. The following table gives the rocks in the order of their supposed relative ages, the oldest being placed at the bottom.

PRE-CAMBRIAN.

KEWEENAWAN.

Quartz and olivine diabase dikes and sill remnants.

ALGOMAN?

Granite porphyry, quartz porphyry and felsite (granitic in places).
Granite, gneissic in places.
Lamprophyre.

PRE-ALGOMAN?

Serpentine.

Intrusive Contact.

KEEWATIN.*

Conglomerate, arkose and slate (partly of pyroclastic derivation) and tuff.
Iron formation.

Rhyolite, trachyte and hornblende andesite.

Pillow andesite and basalt, diabase, agglomerate, carbonate, chlorite, hornblende- and sericite-schist.

* Some of the sediments including parts of the Iron formation may belong to the Timiskaming series.

The older rocks of the area belong to the Keewatin. They consist dominantly of volcanics—andesite, basalt and rhyolite, with subordinate amounts of rusty carbonates, green schists, Iron formation, and sediments partly of pyroclastic origin. Some of the well water-sorted sediments may be Timiskaming in age. Intruding the schist complex are several igneous rocks, viz., dikes of serpentine, quartz porphyry and felsite, batholiths and stocks of granite and gneiss, dikes and stocks of lamprophyre granite porphyry, and dikes and sill remnants of diabase. All the intrusives may be of pre-Algoman or Algoman age except the later diabase, which is Keweenawan in age. The gold deposits occur largely in the basic schists, but they have been found in all varieties of rocks except the serpentine, granite-gneiss and Keweenawan diabase. There is even a possibility that gold will be found in the granite. The various rocks will be briefly described in the following paragraphs.

Keewatin

Pillow Lavas, etc.—The basic pillow lavas comprise basalt, andesite and probably dacite. The pillow structures or snowshoe-like outlines which are so prominent, denote that these rocks are surface flows. The rocks are at times massive, but usually somewhat schistose, and greatly altered and folded. The more pronounced

¹ Mem. No. 95, Onaping Map-Area, by W. H. Collins, Geol. Surv. of Canada.

² The geology will only be briefly described owing to the writer having spent most of his time in studying the gold deposits. A detailed description of the geology is given by W. H. Collins in Memoir 95, above mentioned.

schistosity is along narrow east-west vertical zones, and it is in these zones that some of the gold veins occur. During the alteration the rocks have been changed to hornblende, chlorite and sericite schists, particularly when in close proximity to the granite masses. The greenstone near the granite contact on the Burke claim at Granite lake has been changed to a hornblende-chlorite schist, but still retains the pillow structure. Owing to the resemblance of the ellipsoidal andesite and the other basic volcanics they have all been grouped together. There are, however, bands of rusty-weathering greenish carbonates, extending for three miles from the Gosselin property to Stewart lake, which could be differentiated in detailed mapping. These rocks closely resemble in appearance those in Deloro township,



Quartz veinlets in rusty carbonate on claim No. 2325. Gold occurs in some of the stringers.

t Larder lake, and Opasatika lake in Quebec. They are intersected by quartz stringers which sometimes carry visible gold and in many places are intruded by granite porphyry. A sample of the massive green carbonate from the Clark claim, No. 2277, Asquith township, was found by W. K. McNeill, Provincial Assayer, to be an impure magnesium-iron-lime-carbonate. The green colour is probably due to ferrous oxide; a trace of nickel is also present. Other impurities are quartz and sericite.

Portions of the agglomerate may represent the broken rocky surfaces of certain lava flows. Accompanying the pillow lavas in places are banded "sugary" quartz and pyrite of the Iron formation type, which on analysis sometimes contain a little gold.

Rhyolite, Trachyte and Hornblende Andesite.—These rocks occur as angular flow-like masses in various parts of the area, particularly in the northern part of Churchill township, just beyond the map area. Mr. Collins has described the trachyte and andesite in great detail in Memoir No. 95. The rhyolites in the vicinity of the Herrick are grey, green and sometimes pink in colour, frequently have a porphyritic structure. Amygdules are not common, but a few were seen at the south end of Michiwakenda lake. Some of the porphyries and granites



Contorted jaspilite near the northwest corner of claim No. 4534, on the west shore of Michiwakenda lake.

in the southeast part of Churchill township may be connected with the rhyolite group. Under thin section the rhyolite consists of quartz and feldspar phenocrysts in a fine ground mass of the same minerals with chlorite and carbonate. The rhyolites are similar to those in Kowkash and other areas. The flows pass gradually upwards into fine-grained ash rocks and finally into water-sorted slate, greywacké. Iron formation and conglomerate, the last containing numerous rhyolite fragments.

Conglomerate, Iron Formation, etc.—Mr. Collins regards these sediments, which occupy four or more square miles, simply as a series of assorted volcanic débris laid down in water during a long period of volcanic activity. Those seen by the writer are partly pyroclastic and closely associated with the Keewatin. Others, however, are much fresher-looking and resemble the Timiskamian in other areas of the Province. The rocks have been greatly contorted and now stand on edge. The pebbles in the conglomerate are dominantly porphyritic rhyolite and chert, with some white quartz and an occasional granite pebble. The slates contain and are interbedded with lean Iron formation, viz., banded magnetite, hematite, chert, sugary quartz and jasper. At a point on the west side of Michiwakenda lake and one mile south of the portage into lake Okawakenda are two or three



Outcrop of serpentine on the east shore of Gosselin lake, Churchill township, showing hexagonal-like columnar structure.

narrow bands of granitic rock six inches in width, which lie between and parallel to the contorted layers of jaspilite. Gold quartz veins have been found in the conglomerates and slates on the Herriek near a lamprophyre intrusion, and also in an Iron formation band extending across the Cochrane and Gold Corona claims. It would therefore seem reasonable to assume that all these sediments are worthy of prospecting for gold near points where they have been intruded by lamprophyre or acid rocks.

Pre-Algoman (?)

Serpentine.—Only two exposures of serpentine were found, viz., on the east shore of Gosselin lake and on the south side of Green lake. They are probably altered peridotites which immediately preceded the acid rock of the Algoman epoch. In the former locality the serpentine has taken on a beautiful surface weathering, showing hexagonal outlines as shown in the illustration.

Algoman (?)

Lamprophyre.—A reddish-grey lamprophyre with mica phenocrysts and large chloritic inclusions occurs as sills or dikes cutting the rhyolite and sediments in the vicinity of the Herrick property. A somewhat similar outcrop, occurring on the Churchill-MacMurchy boundary line 20 chains from the south end, appears to be a differentiation phase of the granite. Under thin section the lamprophyre on the Herrick shows biotite phenocrysts largely altered to chlorite, and a few altered feldspar crystals in a groundmass of the same materials with apatite, magnetite and much carbonate and other secondary minerals. The rock resembles the Kirkland lake lamprophyre, and is important, since it forms the wall rock of a large portion of the Herrick gold vein.

Granite.—The granite in the southern parts of Asquith and Fawcett townships is the northern part of a large hornblende-biotite-granite batholith which is feebly gneissic in places. Directly east of the Burke property on the east shore of Granite lake, is a coarse, massive, pink biotite granite.

Granite-Porphyry, Quartz-Porphyry, Felsite, etc.—The granite-porphyrries, or granodiorites, are probably apophyses, or small offshoots, from the large granite masses, and may be Algoman in age. They often occur in the vicinity of many of the gold showings in Asquith township, which suggests some relationship between the two. The amount of albite, orthoclase and quartz present in the porphyry varies from place to place. Frequently the orthoclase phenocrysts are over an inch across. Quartz veins carrying gold values occur in the porphyry.

The light-coloured rocks in southeast Churchill township included with this group comprise quartz-porphyry or rhyolite, granitic rocks, feldspar- and granite-porphyry, which grade at times into each other, thus making it difficult to separate them in mapping. They are quite massive and fresh-looking, and cross-cut at times the green schist; nevertheless, some of the quartz-porphyrries may be connected with the rhyolites already described. Certain gold-bearing deposits lie in the green schist not far from the north and east contacts of this group of rocks in southeast Churchill. The quartz-porphyrries are light grey or pink. The numerous quartz and occasional feldspar phenocrysts stand out prominently in the dense fine-grained groundmass. The granitic rocks, which are at times in sharp contact with the quartz porphyrries, are mauve in colour and have a fine and even grain. The microscope shows quartz, acid feldspars, biotite, apatite, chlorite and magnetite. In places the granite becomes lamprophyric and porphyritic.

On the Atlas a quartz-porphyry, now a sericitic schist, has intruded the slates and contains inclusions of the same.

The felsites are fine-grained, white weathering rocks which contain altered feldspar, quartz, chlorite and sericite, etc. Some exposures appear to be altered rhyolites, while the outcrops on the Gosselin, which contain gold-bearing veins, are closely associated with the porphyry. Two small felsite dikes were seen cutting the gold veins, viz., on the Buckingham claim and on the south part of the Moore-MacDonald (2276).

Keweenawan

Diabase.—The quartz and olivine diabase is the latest rock in the area, and resembles the Nipissing diabase at Cobalt. It occurs as narrow north-south trending dikes and as small sill remnants. The outcrops are so numerous that only a small percentage of them have been mapped. Occasionally, as shown on claim 2566, Wasapika lake, the diabase is porphyritic, having altered green feldspar phenocrysts up to two inches across. Most of the gold-bearing veins have been cut by diabase, and usually without being displaced, as shown on the map. The diabase has had no influence on the gold formation and is, if anything, a hindrance to gold-mining. It has, however, been responsible for certain calcite veins carrying cobalt bloom, smaltite and silver in small quantities.

Some silver prospects in the vicinity of Shiningtree lake, which lies four miles to the east of the southeast corner of the map-sheet, have been described by R. B. Stewart¹ and W. H. Collins.²

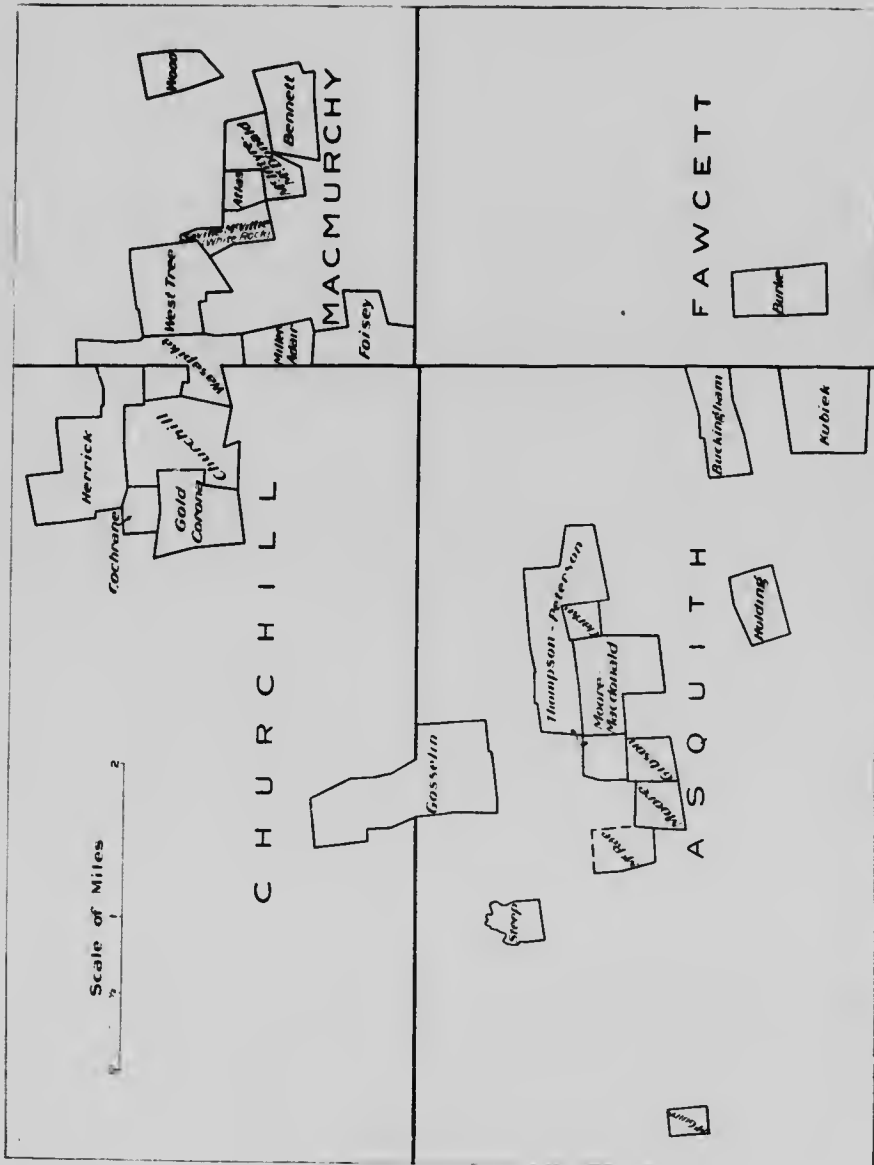
Mineral Deposits

The gold-bearing quartz veins, many of which are shown by a red colour on the accompanying map, have been found in all the rocks of the area, with the exception of the granite, serpentine and diabase. They occur largely in the old basic volcanics, as in the case of the "Ribble" vein. A vein carrying gold on the Churchill property passes from altered basalt into a rhyolite or porphyry. Gold occurs in quartz cutting Iron formation on the Cochrane and Gold Corona. The Herriek vein passes from conglomerate and slate into mica lamprophyre. Coarse gold was seen on the Clark claim in quartz stringers, which cut rusty-weathering green magnesium-iron-calcium carbonate. On the Gosselin, the gold occurs partly in the porphyry and felsite or rhyolite. Spectacular showings in a nearly transparent quartz on the Holding claim are entirely in amphibolite or hornblende schist. Most of the deposits in the vicinity of West Shiningtree lake and easterly to the Buckingham occur in bluish grey quartz veins and lenses in shear zones in altered basalt, andesite and rhyolite. There is another type of deposit comprising banded tuff with pyrite or alternating layers of slate and pyrite, resembling Iron formation. This type is usually found to contain only small quantities of gold. Examples may be seen on claims number 2545, 2433 and 3664.

The veins usually strike east and west, although some persistent and important ones run north and south, the dips in all cases being from vertical to 45° from the horizontal. They vary in width from 50 feet to a few inches, and are often traceable for long distances, although short veins also occur. The Ribble vein can be followed for about one mile, and is probably much longer. The mineral deposits, which frequently occur along old faults, consist of lenses of quartz, several feet wide, with stringers of quartz running into the sides, or there may be numerous quartz stringers and small veins in a wide mineralized rusty schist zone. The gold, which occurs native and at times contains small quantities of silver, is found in dark seams in the fractured quartz, with calcite, sericite, talc, chlorite and pyrite. Such minerals as chalcopyrite, molybdenite, pyrrhotite, barite, galena, tourmaline

¹ The Shiningtree Silver Area, Ont. Bur. Min. Rep., Vol. XIX, 1913, Pt. II, pp. 187-194.

² Summary Report, Geological Survey of Canada, 1911, p. 251.



Map showing the relative locations of the various properties mentioned in this report.

and specular hematite are present in certain deposits. Quartz is frequently white or bluish grey. Pyrite is usually abundant in the adjoining schist, but on the whole, scantily distributed in the quartz. Veins are little faulted, but they have been subjected to all degrees of folding and brecciation. Great pressures have been applied from the north and south, hence the rocks have developed into schists with nearly east-west strikes; the north-south veins, like the Ribble, Herriek and Gold Corona, have been compressed lengthwise, and thus greatly folded and in parts brecciated. The east-west veins are little folded, having been compressed on the sides, while the veins with an intervening strike like the Saville, which runs northwest-southeast, are less folded and less broken than the north-south veins, but more so than the east-west veins. Most of the gold deposits are cut by diabase dikes, usually without being displaced.

A study of the geology and ore deposits would show that the gold-bearing veins are closely associated with the dikes of lamprophyre, granite-porphyr, felsite and rhyolite, which are here classed as probably being of the same age. The presence of albite in the Bennett ore body, and the felsite and tourmaline in the Westree and other deposits, are suggestive of a relationship between the deposits and the granite or pegmatite dikes. The ores were probably derived from solutions associated with and following the eruption of the Algonquin rocks, and prior to the Keweenawian diabase intrusion. Where the veins extend into Iron formation or rocks rich in sulphides, there is usually an enrichment in gold. In the vicinity of West Shiningtree lake and easterly to Granite lake, many additional gold-bearing quartz veins will in all probability be exposed by further erosion.

No gold has yet been produced apart from what may have come from a few high-grade samples, some of which might be called billion. The encouraging results obtained on a few properties will probably lead to mining being conducted on a larger scale. There seems no reason why the veins, which are of satisfactory length and width should not extend to considerable depths. It is also expected to find the values underground much the same as they are at the foot or two of the surface, since any oxidized or weathered surface zone has doubtless been removed by glaciation. All the rock formations are worth prospecting except the granite and diabase. Gold may even be found in the schist, although this rock has not yet, generally speaking, proved very favourable for gold in northern Ontario. The intersection of veins with Iron formation or pyrite formations should be a favourable place to look for enrichment. The Iron formation or pyrite formations do not usually form gold ore bodies themselves, unless cut by numerous secondary quartz veins.

Description of Various Deposits

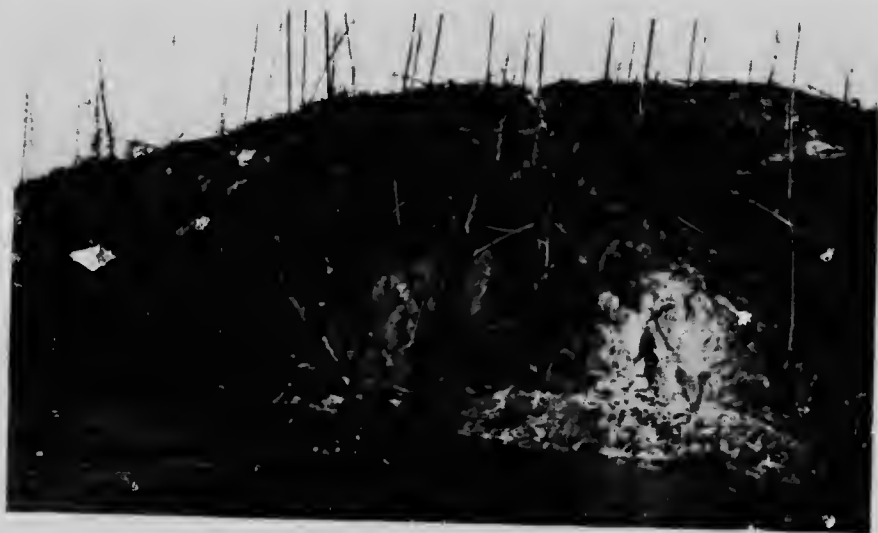
Wasapika Area

At present the working properties are situated in the vicinity of the Wasapika, which lies about four miles northeast of West Shiningtree lake. Underground work is being done at the Wasapika and Westree, diamond drilling at the Herriek, and surface prospecting on the Atlas. The various properties are described in alphabetical order in the following paragraphs.

Atlas (2504).—The Atlas property, which is situated on the south part of

Wasapika lake in MacMurchy township, was originally the Jefferson claim, on which, gold was first found in this section. The rocks comprise pillow lava, and a few slaty bands, the northerly one being intruded by a quartz porphyry schist. All these rocks, including the gold-bearing veins, are cut by several Keweenaw diabase dikes. The "Evelyn" vein is merely banded slate and pyrite, with some quartz, six feet in width, which strikes northwest and dips 70° to the southwest. Rich gold specimens came from pockets in the slaty band near points of intersection with east and west quartz veins. Cobalt bloom occurs in the vein, and smaltite and native silver were reported to have been found. The deposit, however, is of no apparent value from a silver point of view.

The east-west veins, nearly vertical, are lenses of quartz up to three or four feet wide, with quartz stringers running in places out into the rusty schist walls



Outcrops of gold-bearing quartz veins on the Atlas. A tunnel has been commenced on one of the veins. September, 1919.

(page 15) and are about 200 feet long. Gold has been found in two such veins. Development work consists of trenching and a few test pits. In September 1919 a tunnel was commenced in the hillside, in an endeavour to prospect at that level a gold-bearing quartz vein which outcropped on the hilltop some 60 feet above. Three men were employed in the work.

Bennett (2544, 2507).—These claims are situated to the southeast of Wasapika lake. Striking northwest-southeast and nearly at right angles to the general schistosity in that area is a shear or fault zone from three to eight feet wide and 400 feet long, in which are small lenticular veins of quartz, associated with which are the following minerals: albite, talc, sericite, calcite, pyrite and gold, the pyrite being more abundant in the rusty schist than in the quartz. A 50-foot vertical shaft has been sunk on the deposit. Many samples with visible gold can be found on the dump. It is reported that there is a rich ore shoot here which is 75 feet

long and two feet wide on the surface. The rocks are largely altered green basic volcanics, with which is associated a narrow slaty band. These rocks and the vein have been intruded by a narrow diabase dike.

Since leaving the area it is reported that gold has been found on the Kingston claim, No. 3715, which lies immediately south of the Bennett.

Churchill (3773, 3774, 3741, 4041).—The Churchill Mining Company owns four claims to the southwest of Michiwakenda lake, Churchill township. The principal showings, which were discovered by J. A. Knox, are on claim 3774. Two veins from two to three feet wide occur in the rusty pillow lava schist. They have



Gold-quartz deposit outcropping on the Atlas above the tunnel. September, 1919.



Ore body comprising auriferous quartz veins and mineralized schist on the Bennett claim. September, 1919.

been traced for 200 feet or more in a direction slightly north of east, the dip being 75° to the south. Towards the west the veins come together and pass into a porphyritic rock. Towards the east they have been faulted, the easterly portions being thrown 20 feet to the south. A 40-foot shaft has been sunk on the north vein, which was reported by Mr. Knox to average in the shaft 38 inches in width. Gold could be seen in various parts of the veins, usually occurring in fractures, with pyrite and other dark minerals.

Cochrane.—The Cochrane claim (3712) lies northwest of the Churchill group. On the western part of the claim, within 100 feet of the west line, gold has been found in a vein one foot in width striking northeasterly, in porphyritic green-

stone. A few hundred feet northeast of this showing, a white sugary quartz vein about 10 inches in width, cuts across banded Iron formation. The quartz contains much finely disseminated pyrite and numerous small particles of gold.

Foisy (3544, 3545, 3772, 4075).—These claims lie in the extreme southwest part of MacMurehy township, one-half mile south of the Wasapika property. A vein similar in appearance to the Ribble vein on the Wasapika, and probably a continuation of the same, has been exposed by trenching for about a quarter of a mile on 3544 and 3772. Part of the vein is to be seen on the westerly edge of a rocky bluff. The vein cuts across the general schistosity of the altered pillow lava. It has been greatly folded, and apparently dips at a high angle to the west. Considerable gold could be seen in some of the large lenses, nevertheless samples from certain sections across the vein contained no gold. No underground work has been done as yet.



Camps on the Herrick. September, 1919.

Gold Corona.—Claims 3577, 3578, 3645 and 3644, lying west of the Churchill, constitute the Gold Corona, formerly the Queen of Sheba. A vein some eight feet wide, and apparently dipping 50° to the west, has been exposed, by trenching, along the east boundary of 3645. The vein has been folded and brecciated, with small offshoots extending out on either side, one of which contains gold. Some of the veinlets in the banded Iron formation also contain visible gold. A third vein has a northeasterly strike, and where it passes through the banded Iron formation, gold could be seen. The sulphides in the iron band were probably the precipitating agent for the gold.

Herrick (4105, 4106, 4107, 4096, 4097, 4098).—The *Herrick* property lies largely on the west side of the south end of Michiwakenda lake, in Churchill township, and adjoins the Wasapika on the northwest. In 1918 J. A. Knox discovered gold on claim 4105, in what has been called the "Kingsley" vein. This vein occurs in an old vertical fault, and has been traced in a north-south direction for 1,000 feet through conglomerate slate, rhyolite and reddish lamprophyre. The quartz, which is usually accompanied by calcite, varies in width from a few inches to a few feet. The quartz in the lamprophyre frequently occurs in the form of several irregular stringers over a width of 8 or 10 feet. The quartz and porphyritic lamprophyre are usually brecciated, thus resembling somewhat the Kirkland Lake deposits. Visible gold, usually accompanied by pyrite, calcite, chlorite and talc, occurs in dark seams in the quartz. A 50-foot shaft, which is



Gold-bearing quartz lenses on the McIntyre-McDonald claim, No. 2565.

now filled with water, has been sunk on the vein, which was reported by the manager to carry high values across an average width of four and one-half feet. The quartz from the dump contains visible gold; the wall rock at the shaft is greywacké. Owing to the high cost of getting in supplies by wagon in summer, shaft sinking was discontinued for the time and exploration done by diamond drilling. Three diamond drill holes, averaging about 150 feet each, were put down during the fall of 1919. The writer did not see all of the vein core, but according to Geo. R. Rogers, who is in charge of operations, the cores showed a good width of vein, carrying fair values in gold. The property is held under lease from the Crown¹ by F. C. Sutherland & Co., Toronto. A plant will probably be installed during this winter, and further development work done by shaft sinking and drifting. At the time of writing about 15 men were employed.

¹ Title for mining claims in the Timiskami and all other Forest Reserves in Ontario is by way of lease, not patent in fee simple. See Mining Act of Ontario, sections 45, 46.

McIntyre-McDonald (2565-2566).—Several quartz veins and lenses, some of which contain gold, have been exposed on claim 2565, which lies on the south shore of Lake Wasapika between the Atlas and Bennett claims. One of the veins has been traced in a northeasterly direction for 600 feet, the width varying from four feet to one inch. At a point near where the vein passes into claim 2566 a 50-ft. shaft has been sunk. About 350 feet north of this shaft a 55-ft. shaft was sunk on a small rich lens by C. M. Colvocoresses, who had the property under option in the autumn of 1912. The lens is 100 feet long, two feet to three inches wide, strikes a little west of north and dips to the east. A few bags of ore were shipped for testing purposes. Gold can be seen in quartz on the dump.

Miller-Adair (3698, 4008).—The Miller-Adair prospect lies immediately south of the Wasapika, and north of the Foisey. The vein on the Foisey has been traced for about 150 feet into claim 3698. It cross-cuts the pillow lava schist at an angle



A near view showing the folded character of the "Ribble" vein on the Wasapika. The hanging-wall part of the deposit is composed largely of quartz and mineralized schist.

of about 45° , and in many ways resembles other parts of the Ribble vein. No gold was seen, but it is reported on good authority that surface sampling indicated ore over a width of about five feet. Three mailed samples were found by the writer to yield fair values in gold.

Saville-McVittie (2535, 2536).—These claims, which were staked by T. Saville, lie between the Atlas and West Tree, in MacMurphy township. A lenticular vein, averaging about three feet in width and known as the Saville vein, has been traced northwesterly across the claims for one-half mile, and passes on to the West Tree. The quartz varies from a mere stringer to six feet in width, with

stringers running into the rusty wall rock. The vein has not been folded to such an extent as has the Ribble vein. In places the quartz is rosy and banded, and some gold could be seen in the dark seams in pyrite, tourmaline and other minerals. Some parts of the vein, however, are known to have low contents of gold. Two vertical shafts, 40 and 65 feet deep, respectively, and 1,000 feet apart, have been sunk on the vein. The rocks are largely pillow and amygdaloidal lava.

It is reported that the name of the property had been changed to White Rock, and that supplies were being taken in over the snow with the intention of doing further exploratory work.



Headframe over the Wasapika shaft. The "Ribble" vein outcrops in the distance. September, 1919.

Wasapika (2529, 2530, 3765, 3774, 4078, 4108).—The greatest development in the area has been done in the Wasapika property, which lies to the south of Michiwakenda lake, along the MacMurchy-Churchill township boundary.

The operating company is known as the Wasapika Consolidated Mines Ltd., and is capitalized at \$6,000,000.00. The Ribble vein, which is being developed on this property, constitutes one of the important deposits of the area. Gold was discovered in this vein during the latter part of 1912 by two prospectors, who were grubstaked by A. Ribble. T. R. Jones, of the Buffalo Mine, Cobalt, had an option on the property, and did some stripping and sampling. Shortly after, in 1916, Geo. R. Rogers took over the property, and has been developing it ever since. At present, December 1919, there is a 130-foot vertical shaft with a 60-foot cross-cut at the 100-foot level. Poor transportation facilities and lack of capital have retarded development considerably. The company, however, will continue sinking and will drift on the 100- and 200-foot levels.

The vein, which dips at about 60° to the west along the western edge of a bluff, has been stripped in a general north-south direction for about 2,500 feet, having an average width of approximately five feet. The bluff forming the foot-wall of the vein is a green chloritic pillow lava schist and stands 20 or 30 feet above the western hanging wall which is composed of somewhat similar but softer schist, containing much pyrite, calcite and other secondary minerals. The wall rocks and vein have been much altered by great pressures exerted from the north and south, causing the Ribble vein to be compressed lengthwise, intricately folded and crushed. The deposit lies in a schist zone, and is comprised of numerous quartz lenses up to four feet wide, and irregular narrow veins of crushed quartz, cut by narrow veinlets of pink calcite. The gold usually occurs in narrow, dark seams in the quartz, with carbonate, pyrite, sericite and occasionally copper pyrites. The gold in the vein was probably present when the great folding and crushing took place. Pyrite, on the whole, occurs scantily in the quartz, but is abundant in the form of cubes in the intervening schist. The higher gold content is found in the quartz, rather than in the mineralized schist. Gold, in small particles, can be seen in various parts of the vein, on the surface, and in the cross-cut at the 100-foot level. At times the gold is quite pale in colour, due to the presence of silver.

The results of the preliminary surface sampling by Geo. R. Rogers, as given in the *Canadian Mining Journal* of August 15, 1918, show that at that time "18 carefully moiled samples taken at intervals across the full width of vein (average 50 inches) for a length of 150 feet, gave \$10.10 per ton in gold. Another part of the vein, 120 feet distant, gave \$8.00 in gold, across 49 inches, for a length of 280 feet." Since then Mr. Rogers reports that further surface sampling has proven an additional 300 feet of \$9.00 ore, in which case there would be 800 feet of \$9.00 ore across about four feet. The cross-cut on the 100-foot level shows a width of approximately 23 feet of mineralized schist and quartz veins, and small particles of gold can be seen in some of the quartz lenses near the centre of the cross-cut. The deposit is wider at the 100-foot level than it appears to be on the surface. Assay results across 23 feet of the quartz and schist in the cross-cut were reported by Mr. Rogers to run \$7.20 in gold per ton. One grab sample of the quartz taken from the cross-cut by the writer, gave gold \$4.00 and silver \$1.00, while another sample of the mineralized schist gave no values in gold. The higher assays come from the four or five feet of quartz on the foot-wall side of the deposit.

The surface buildings consist of a small steam plant, blacksmith shop, portable saw mill and camps. Geo. R. Rogers is president and manager of the company, and Martin Hussett superintendent.

West Tree (2531, 2532, 2542, 2543).—These claims, formerly known as the Caswell, were optioned several times, namely, by C. D. Chisholm, J. Knox, Gold Banner Company, and Dominion Reduction Company, before being taken over by the West Tree Co. The property joins the Wasapika on the east, and lies on either side of the narrow southern end of Michiwakenda lake. The rocks are largely altered diabase, amygdaloidal pillow lava, and schist, with carbonate schist

in the vicinity of the veins. The veins and rocks are cut by narrow diabase dikes. The gold-bearing quartz veins occur in the more schistose bands up to 20 feet wide which strike slightly north of east and dip vertically. The individual quartz veins in the zone are numerous, but short and narrow, varying from an inch to a foot in width. On the whole there is more schist than quartz in these zones. The gold usually occurs in dark seams in the quartz containing carbonate, talc, sericite, chlorite, and pyrite. Other minerals present are feldspar, tourmaline, molybdenite, and chalcopyrite.

Some spectacular gold samples came from an open cut and shaft on one of these shear zones in the south part of claim 2543 and on the east side of the lake. The workings were partly filled with water at the time of inspection; however, the rich samples apparently came from a vertical pipe-like deposit formed at the intersection of the shear zone, which is 15 feet wide at this point, and a slaty pyrite band. The slaty band, which is three feet wide, has been faulted, the south part being



Workings on the West Tree, formerly the Caswell, September, 1919. Some extremely rich gold samples came from the open pit across the lake.

thrown approximately 15 feet towards the lake. The shear zone has been traced easterly for 300 feet, having an average width of about five feet; but apparently there are little or no values in the eastern portion of the lode.

On the west side of the lake, 350 or 400 feet distant from the old workings, a 67-ft. shaft (September, 1919) has been sunk on a similar zone, possibly a continuation of the same. The stringers pinch out, however, at a point 100 feet west of the shaft. The larger quartz vein, which varies from an inch to a foot and occasionally two feet in width, contains considerable finely disseminated gold. In sinking, this vein passed into the north wall at a depth of 64 feet, at which point there is also a flat fault. In other parts of the shaft there are numerous, nearly parallel, vertical stringers. Samples across the shaft were reported to average \$8.00 in gold. The company intends to continue this southwest shaft to the 100-ft. level, from which point a drift or level will connect with the workings on the northeast shore of the lake.

Wood (2622, 2623).—Gold was found by J. Knox on mining claim 2623, which lies about one-half mile east of Wasapika lake. On the north end of this claim there are two narrow east-west rusty schist zones which contain a few parallel quartz veins, all being cut by a north-south diabase dike. A little gold occurs in the north vein immediately east of the diabase, and in the south vein directly west of the diabase.

West Shiningtree Area

Numerous discoveries of gold have been made in the southern part of the area in the vicinity of West Shiningtree lake and easterly to Granite lake. On most of these properties considerable surface work has been done but little underground work has been undertaken, and when visited all properties were idle. Visible gold may occur on other claims which have not been described. At any rate there are several deposits not mentioned from which gold can be panned or low assays obtained. A description of the deposits follows, taking them in order from east to west.

Burke (3767, 3786, etc.).—Messrs. Burke, Landagne, Cochrane and Bulloch have staked a group of claims on the west shore of Granite lake, Fawcett township. On one of these claims a large quartz deposit can be seen running north and south under the water near the mouth of Papoose creek. A portion of the vein was picked up by trenching in a swamp four chains to the south of the showing at the water's edge. A 20-ft. shaft was sunk on the creek bank, from which point a cross-cut was driven towards the creek for a distance of 78 feet. Mr. Burke stated that the cross-cut passed through 14 feet of quartz and schist which yielded considerable gold on assay. The dump shows much mineralized schist and quartz, a rough sample from which yielded \$2.00 in gold per ton. Owing to the low land it is difficult to prospect the surface. The vein occurs in a fracture which cross-cuts the altered pillow lava and rusty carbonate schist at about right angles. Hence it is in many ways similar to the Ribble vein which outcrops about two and one-half miles to the north. The vein occurs in a fracture parallel to the Ribble vein, or it may possibly be a continuation of the Ribble, although the writer did not learn of any discovery in the intervening area.

Kubick (4091, 4295, 4296, 4327).—These unsurveyed claims are situated directly west of the Burke, in Asquith township. The rocks comprise hornblende, chlorite and carbonate schists, (altered pillow lavas) which have been intruded by Keweenawan diabase. Much trenching has revealed several large schist areas containing numerous lenses and veins of bluish-grey quartz, some of which are quite large. Gold can be seen in several of these veins, but not sufficient sampling has been done to show whether the gold is in paying quantities or not. Much of the schist next the quartz is green in colour and usually barren in gold. About seven chains westerly from the pit, shown on claim 1327, is a narrow calcite vein carrying considerable cobalt bloom in hornblende schist.

Buckingham (2407, 2461, 3664).—These claims, which lie between Stewart and Seagers lakes, were staked by J. Peddle and have since been sold or optioned to several parties. On claim 2461 an 85-ft. shaft, inclined at an angle of 60° to the south, has been sunk on a vein five feet wide carrying considerable visible gold. The deposit appears to end, or pass into stringers, immediately east of the shaft.

but the vein can be traced intermittently to the west for about 1,000 feet, except where it is intruded by narrow dikes of diabase or felsite. The wall rocks are pillow lava, altered to hornblende, chlorite and carbonate schists. The deposit comprises a quartz vein from one to three feet wide, with some stringers carrying gold on both the hanging wall and footwall. Numerous showings of gold occur along the surface of the vein for 100 feet or so to the west of the shaft. Quite coarse gold came from a pit 275 feet west of the shaft. There is no trouble in picking gold samples from various parts of the dump. A grab sample from the dump yielded \$5.20 gold per ton. The visible gold invariably occurs with talc in fractures in the quartz. Other minerals present in these seams are pyrite, dark calcite, hornblende, tourmaline and occasionally chalcopyrite.



Shaft on the Holding deposit.
September, 1919.

The plant consists of a boiler of the locomotive type, a 2-drill compressor and a steam hoist. Work was suspended in the spring of 1919.

Holding (3508, 3118).—The Holding property, which is controlled by R. L. Henderson, of Toronto, is located south of MacDonald lake in Asquith township. Gold was discovered near the centre of these claims in September, 1912, by R. Holding, of Chapleau, Ontario. The deposit consists of numerous parallel quartz stringers, up to four inches and occasionally one foot in width, in amphibolite or hornblende schist. The deposit is several feet wide, and has been treneched for about 200 feet in a northeast-southwest direction. Certain parallel layers of schist contain an abundance of crystallized pyrite. The quartz is of a white, nearly transparent type, and contains a little copper pyrites and talc and gold in a few places. An inclined shaft, at an angle of about 70° to the southeast, has been sunk on the mineral zone to a depth of approximately 50 feet. At a depth of 30 feet a 10-ft. drift was put in to the southwest and some rich gold samples obtained. Although

rich samples have come from some parts of the deposit, nevertheless many other parts were found on assay to contain no gold.

A pump operated by a gasoline engine was used to keep water out of the shaft.

On the adjoining claim to the north, 2424, Chas. Speed reported that he found gold associated with copper pyrites in transparent quartz veinlets similar to the Holding.

Clarke (2277).—The Clarke Bros'. claim lies directly north of MacDonald lake. Near the centre of the claim is a rusty weathering green carbonate, impregnated in places with iron pyrites and containing a network of quartz veinlets. Gold could be seen in some of the quartz stringers. The rock is an iron-magnesian-lime carbonate, with considerable silica, alumina, and a trace of nickel. A narrow slaty band was observed in the carbonate. On the northern part of the claim the carbonate is cut by red and grey granite-porphry, and near the contacts are large lenses of quartz somewhat similar to those on the Gosselin and carrying feldspar, galena, chalcopyrite, pyrite, talc and sometimes gold and other minerals.

Thompson-Peterson (2306-2312).—Gold has been found on several claims in this group, but all the showings were not examined by the writer. On 2308 and 2310 the gold is contained in a rusty carbonate near the granite porphyry, as on the Clarke claim. Quite large quartz masses occur frequently near these contacts. The showing in 2312 may be a continuation of the one on the Moore and MacDonald claim 2275, which is described below.

Moore-McDonald (2275, 2276, 2279).—These claims are situated in the vicinity of Moore lake. Several east and west shear zones, 60 feet or more in width, have been located on the properties. The shear zone on W. D. 1164 (2276) has been traced for nine or ten chains. What is apparently a continuation of this one has been located on W. D. 1163 (2275) and on W. D. 1127 (2312). These shear zones contain many quartz veins and stringers, and are usually well mineralized with iron pyrites. The quartz is seldom over a foot wide and constitutes a small fraction of the mineralized areas. Much rusty leafy schist adjoins the quartz, and good colours can frequently be obtained from the material on panning. Considerable gold was observed in the quartz veins and stringers on W. D. 1171 (2279).¹

On claim 2276, directly south of the creek which flows from Moore into MacDonald lake, another lenticular vein from one to eight feet wide and dipping about 70° south, has been traced in an east-west direction for 500 feet. Numerous quartz stringers also occur in the hanging-wall, which is hornblende-chlorite schist, or altered pillow lava. A small grey felsitic dike, one inch wide, was observed cutting the vein. The quartz is usually bluish-grey in colour, and is cut by numerous transverse veinlets of white, nearly transparent quartz. Other portions of the quartz have a waxy, wet appearance. Pyrite, pyrrhotite and gold were seen in the vein.

Gibson (3560).—On the Gibson claim, which is situated on the east shore of West Shiningtree lake, there are two or more deposits somewhat similar to those described on the Moore and McDonald. They strike a little north of east and dip about 60° to the south.

¹ Report by R. B. Stewart, Ont. Bur. Min., Vol. XXII, 1913, Pt. I, p. 237.

Moore (3638).—This claim lies southwest of the Moore-MacDonald on the southeast shore of West Shiningtree lake. Gold can be seen at a point about 50 feet north of Moore's cabin, and near the water's edge. The deposit consists of veinlets and small fragments of bluish quartz in a zone 60 feet long and 10 feet wide, the intervening and enclosing material being hornblende schist. About 300 feet south of this deposit is a large zone of pyritiferous slaty tuff, hornblende schist and altered pillow lava, cut by a few bluish quartz veins up to one foot in width. The deposit has been trenched easterly from the lake for 200 feet, is 15 feet wide in places, and dips 70° to the south. Low contents of gold can be obtained on assay or by panning the rusty material.



Outcrop of gold-bearing quartz vein on the Gosselin claim, No. 2365.



A view of some of the larger quartz outcrops, some of which contain visible gold, on the Gosselin claim, No. 2195.

McRae (3792, etc.).—McRae island, which lies in the southeastern part of West Shiningtree lake, is composed of massive pillow lava (andesite), pillow-lava schist, hornblende schist and rhyolitic tuff. Considerable trenching was done along the shores of this island in 1919, which resulted in the uncovering of several east-west quartz veins and isolated lenses of quartz, some of which carry visible gold. In one 20-ft. section across a typical deposit there are 10 parallel quartz veins, each about 2 inches wide, cross-cutting the green schist at a small angle. Many showings of coarse gold and some feldspar were observed in one of the blue quartz veins. The intervening schist at this particular place is quite green and comparatively free from pyrite.

Gosselin (2193-97, 2365, 2366, etc.).—The Gosselin comprises several claims in the vicinity of the 3-mile post on the boundary line between Churchill and Asquith townships. It was on claim 2196 (W. D. 1151) that gold was first found in the area by Fred Gosselin, his partners being A. Frith and C. Speed. Victor Pakowsky, of Duluth, took an option on the property in 1912 and did considerable

surface exploration, comprising hundreds of feet of trenching, sinking of several test pits and much systematic sampling. A 50-ft. shaft was also sunk on a narrow vein in felsite near the contact with green pillow-lava schist. Considerable gold could be seen in the vein near the collar of the shaft, and it was reported that gold occurred in various places throughout the shaft. The results of considerable surface sampling, however, showed the gold to be unevenly distributed. Little work has been done on the property since that time. A. B. Clark, of Toronto, is one of the principal owners.

The rocks consist of Keewatin altered pillow lava and rusty weathering iron-magnesium-calcium carbonate cut by felsite or rhyolite and granite porphyry of Algomian (?) age. The gold-bearing veins occur in all these rocks and in some of the contacts between the porphyry and older rocks. A large vertical quartz vein, from one to twenty feet wide, with offshoots, can be traced for 650 feet in a N. 15° W. direction from claim 2365 to a small lake on 2196. The quartz appears again on the north side of the lake on 2135 in the form of several large lenses along the same general direction for 450 feet. The largest of these quartz masses is 160 feet long and 65 feet wide at its broadest part, and contains a showing of gold. Directly west of this vein on claim 2135 there are parallel lenses in the schist, which carry visible gold. In the north-east corner of 2196 several large lenses of quartz containing gold occur in felsite. Usually the veins in the felsite and also in the rusty carbonate are in the form of numerous stringers distributed in an irregular manner. The quartz in these various deposits has a white or rose colour. It is frequently brecciated, and contains numerous tiny veinlets of transparent quartz which may have some bearing on the gold values. The richest values appear to be on the edges of the quartz masses. Gold was seen in many parts of the various veins. Pyrite and chalcopyrite are quite abundant in places. The deposits are large, and portions of them are fairly well mineralized and apparently warrant further development.

Steep (2434).—The Steep claim is situated on a point near the centre of West Shiningtree lake. In 1914 a shaft 100 feet deep, and inclined 85° to the south, was sunk on an east-west shear zone seven feet in width and occurring in pillow andesite. The broken rock was raised by a whim drawn by a team of four dogs. A lenticular vein of blue quartz up to one foot in width and several parallel veinlets of white quartz occur in the schist zone. The blue quartz has been fractured, the seams carrying zinc blende, galena, copper pyrites, pyrite, talc and native gold. Considerable gold can be seen in the blue quartz samples on the dump. Mr. E. Steep reported that at a depth of forty feet the vein was faulted and thrown seven feet to the south, and at a depth of 100 feet the blue quartz was one and one-half to two feet wide and carried visible gold. Favourable assays were also reported by Mr. Steep to have been obtained from samples taken across the full width of the schisted zone on the surface.

McGuire (3738).—The McGuire claim, which lies south of the southwest bay of West Shiningtree lake, was not seen by the writer. According to R. B. Stewart and W. H. Collins, there are several veins eight to ten inches wide, which strike east and west and dip to the north in a pyritous schist. Some rich samples of gold in quartz are said to have been obtained.

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Map No. 41b
TYRRELL-KNIGHT AREA

1-57

*Mary & Sparks
from JMB
5-75*



PROVINCE OF ONTARIO
DEPARTMENT OF MINES

HON. CHARLES MCCREA, MINISTER OF

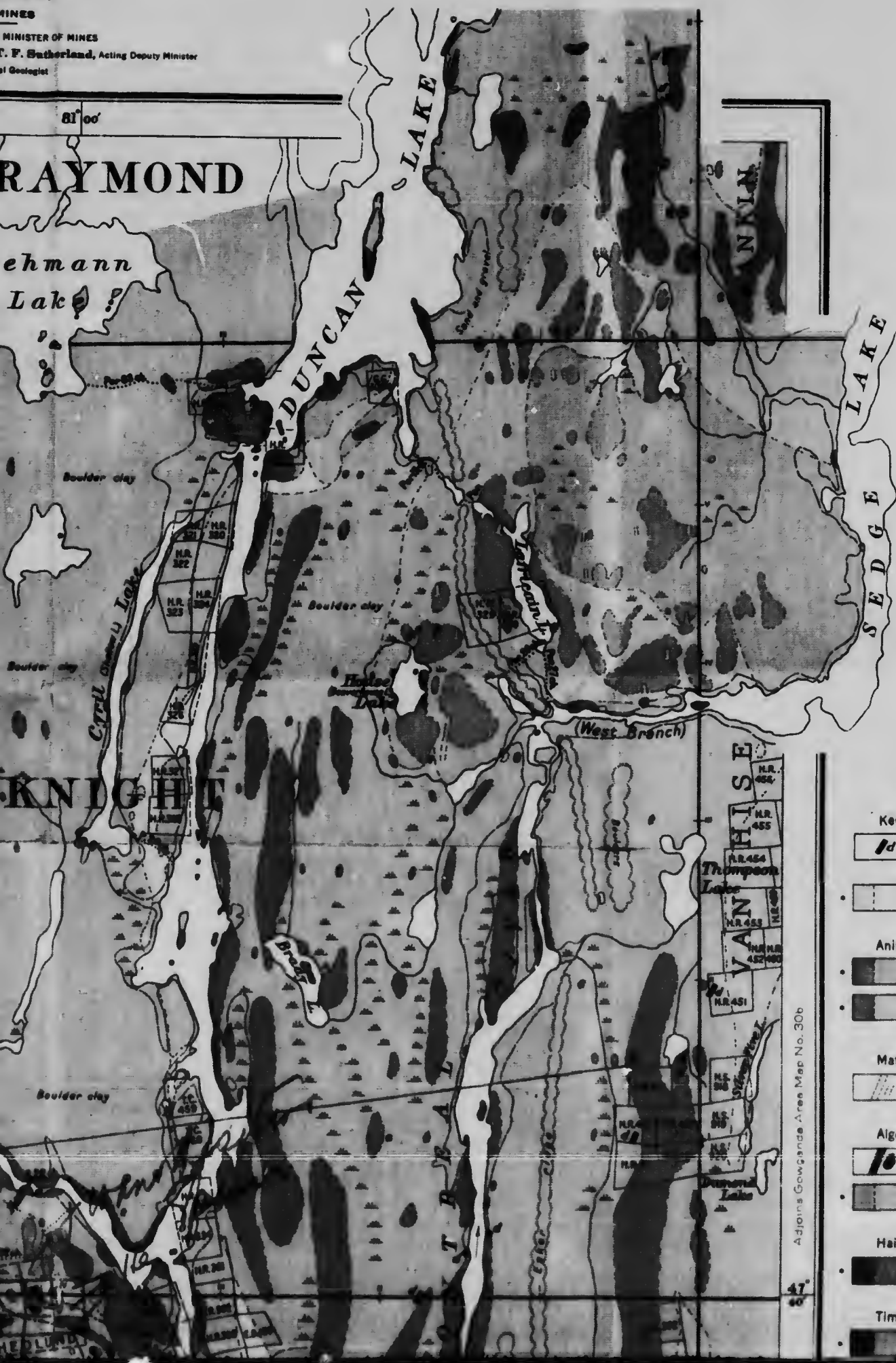
T. W. Gibson, Deputy Minister, Consultant

T. F. Sather

A. G. Burrows, Provincial Geologist

O'BRIEN GOLD MINES, LTD.
(NO PERSONAL LIABILITY)
FIELD DEPARTMENT





LEGEND

PRE-CAMBRIAN

Keweenaw

Olivine and quartz diabase dikes.

INTRUSIVE CONTACT

Quartz diabase sill.

INTRUSIVE CONTACT

Animikean (Cobalt series)

Quartzite.

Gneiss, etc., etc., etc., etc., etc., etc.

UNCONFORMITY

Matachewan

Diabase dikes.

INTRUSIVE CONTACT

Algoman

Amphibolite, etc., etc., etc., etc., etc., etc.

Gneiss, etc., etc., etc., etc., etc., etc.

INTRUSIVE CONTACT

Haileyburian

Serpentine (peridotite).

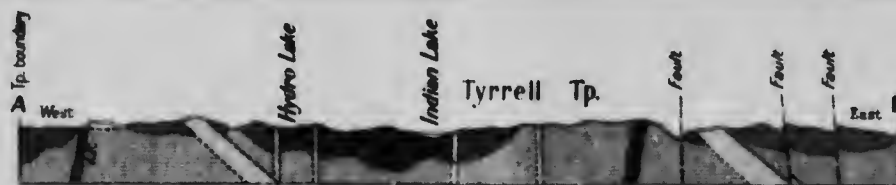
INTRUSIVE CONTACT

Timiskamian

Gneiss, etc., etc., etc., etc., etc., etc.

Adrian Gowganda Area Map No. 30b

47° 40'



SECTION ON LINE A - B

Map No. 41b

TYRRELL-KNIGHT

DISTRICTS OF TIMISKAMING AND SUDBURY

To accompany report by A. R. GRAHAM in Vol. XLI, Part 2, Ontario Department of Mines

Scale $\frac{1}{47,520}$ or $\frac{1}{4}$ Mile = 1 Inch



