Province of Manitoba

DEPARTMENT OF MINES AND NATURAL RESOURCES

MINES BRANCH

PUBLICATION 49-7

MINERAL DEPOSITS

of the

CAT LAKE - WINNIPEG RIVER AREA

Lac du Bonnet Mining Division

Manitoba

by

G. D. Springer

WINNIPEG

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DEPARTMENT OF MINES AND NATURAL RESOURCES

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CONTENTS

ILLUSTRATIONS

MINERAL DEPOSITS OF THE CAT LAKE-WINNIPEG RIVER AREA

INTRODUCTION

The geology of the Cat Lake-Winnipeg River area was described previously in Preliminary Report 48-7 of the Manitoba Mines Branch. The map-area was extended during the 1949 field season and it now comprises some 525 square miles and is bounded by the Manitoba-Ontario boundary on the east, longitude 95°30' west on the west, latitude 50°15' north on the south and latitude 50°40' north on the north. In addition there is a rectangular area on the northwest side of the sheet covering the Maskwa Lake-Little Bear Lake district.

Mineral occurrences described in this report are located and numbered on the accompanying map.

Capable assistance in the field during the 1949 field season was given by G. J. R. Hanna, J. A. Pike, and P. W. Rainier, all of the University of Manitoba.

GENERAL GEOLOGY

All consolidated rocks in the area are of Precambrian age. The oldest rocks belong to the Rice Lake group which has three divisions, of sedimentary, volcanic, and metamorphic origin. These rocks outcrop in wide bands which trend east between Oiseau (Bird) River and Winnipeg River. A much narrower band trends northwesterly from Tulabi Lake towards Cat Lake.

The sedimentary rocks are typically quartzose in composition and range from greywacke to quartzite, conglomerate, tuff, chert, argillite, quartz-biotite and quartz-hornblende schist that in part is highly garnetiferous, and iron formation.

The volcanic rocks consist of andesite and basalt, and minor dacite and trachyte. They are massive, schistose, porphyritic, or ellipsoidal in nature. Many of the flows, especially those in the southern part of the area, show well-developed pillow structures.

Quartz-biotite and quartz-hornblende schist and gneiss are altered derivatives of sedimentary formations that have been intimately injected by pegmatitic granite.

The rocks of the Rice Lake group were intruded by the peridotite and gabbro of the Bird River sill. The width of the sill ranges from 500 to 3,500 feet, and the peridotite forms the lower one-quarter to one-half of the sill. Bands of dense and disseminated chromite have segregated at a uniform distance below the top of the peridotite. The minerals of the peridotite are highly altered, whereas those of the gabbro are still fresh in appearance.

Most of the area is underlain by granitic rocks of varying composition, which intruded the rocks described above. The granitic rocks include pegmatitic granite, grey biotite granite, quartz diorite, granodiorite, oligoclase granite, microcline granite, pegmatitic albite granite, and acid and basic dykes. The age relations of some of these types are not known. Many of the stocks and batholiths shown on the map are extremely variable in composition. This condition is especially marked north and west of Oiseau Lake where two or more types of late intrusives are intimately mixed. All the granitic types are probably successive phases of the same period of igneous activity. Because of their gradational contacts it is thought that some of them are almost contemporaneous in age.

STRUCTURAL GEOLOGY

The largest structural feature is that indicated by the Bird River sill which intruded the Rice Lake group as an essentially flat-lying body. The sill differentiated while in this position, and the whole assemblage was folded into a large anticline before the granite was intruded. The limbs of the structure dip at high angles and converge to the east.

The rocks of the Rice Lake group appear to be closely folded. Relatively tight folds are seen in a number of places, and pillow structures indicate that fairly broad structures are present south of the Bird River anticline.

ECONOMIC GEOLOGY

The important deposits contain minerals with the following elements: (1) copper-nickel, (2) chromium, and (3) lithium and beryllium. Tin, gold, and radioactive minerals occur in minor amounts.

COPPER-NICKEL DEPOSITS

Maskwa Lake Area

Copper-nickel deposits consisting of pyrrhotite, pentlandite, and chalcopyrite were discovered 5 miles north of Maskwa Lake in 1917. The deposits lie on the south side of the north limb of the Bird River sill and are associated with andesite and gabbro. The sulphide minerals form replacement bodies in both these rock types. Pyrrhotite, pentlandite, and chalcopyrite were deposited in that order, with the latter replacing the earlier sulphide minerals. A small amount of titaniferous magnetite is also present.

The largest visible sulphide deposit outcrops in andesite and gabbro on the Mayville claim which was the original discovery. Trenching has exposed the body for 200 feet in a northwesterly direction along the strike. Exploration has also been carried on by diamond drilling. The two narrow disseminated sulphide zones give assay results for copper and nickel. The south trench contains up to 50 per cent pyrrhotite and chalcopyrite for short distances. The general tenor of the deposit averages slightly more than 1 per cent copper and between 0.40 and 0.80 per cent nickel[1].

Another sulphide body in this area, exposed on the Hititrite claim, contains copper and nickel and a trace of platinum. The deposit has an exposed length of 125 feet and is from 10 to 20 feet wide. Assays made at the time of the discovery range from 0.27 to 3.23 per cent copper and from 0.19 to 1.68 per cent nickel[1].

Scattered sulphides occur in peridotite on the Colossus 24 mining claim west of the Mayville, and other small deposits of this nature are known.

Surface work was abandoned in 1929. Since that time magnetometer surveys have been used to outline and enlarge the sulphide deposits and also to discover other magnetic bodies. Magnetite may exert some influence on the magnetometer as the mineral is known to occur in small amounts in the ore bodies. Along the north side of the Copper Contact claim there is an attraction that is strong enough to deflect a compass needle.

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[1] McCann, W. S.: The Maskwa River Copper-Nickel Deposits, Southeastern Manitoba; Geol. Surv., Canada, Sum. Rept. 1920, pt. C, pp. 19-29.

Oiseau River Area

In 1920 deposits of sulphide minerals were found west of Oiseau Lake. The geological setting is similar to that at Maskwa Lake; that is, the sulphides occur in members of the Rice Lake group and the Bird River sill near granite contacts. The mineralized zone extends from about two miles west of Oiseau Lake intermittently along the contact of the granite with the earlier rocks for a distance of some $2\frac{1}{2}$ miles to the west. The ore minerals again are pyrrhotite, pentlandite, and chalcopyrite. They may not all occur in a single body, and some deposits are nickel-free. Pyrite, chalmersite, and titaniferous magnetite may be locally abundant. Traces of cobalt have been found as well as galena, sphalerite, silver, and gold. Assay results are erratic but in general are higher than those obtained from the Maskwa Lake deposits.

The sulphides are found mainly on the Chance, Devlin, Martin Fraction, Wento, Colossus 3, and Colossus mining claims.

The most easterly showings are those on the Chance. Pyrrhotite, pentlandite, and chalcopyrite are exposed in a number of trenches for 800 feet on the west side of the claim. In addition to a number of drill holes, two shallow shafts were sunk on the property. The zone extends in an east-west direction along which there are disseminated sulphides in a width as much as 40 feet. The host rock is a fine-grained andesite and a coarse-grained hornblendic rock which may be either a phase of the andesite or part of the Bird River sill. Granite lies immediately to the north of the trenches. Wright reported average assay results of 1.95 per cent nickel and 0.15 per cent copper[1].

The next ore body extends across the Devlin claim and overlaps onto the Martin Fraction. Geological conditions are similar to those on the Chance. The oxidized sulphide zone is 20 to 40 feet wide and contains nickeliferous pyrrhotite, chalcopyrite, and magnetite. It is divided into east and west parts which have been explored by 28 trenches and 3 drill holes. Assays indicate from 1 to 3 per cent copper and 0.5 per cent nickel[1].

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[1] Wright, J. F.: Geology and Mineral Deposits of a Part of Southeastern Manitoba; Geol. Surv., Canada, Mem. 169 (1932).

The Colossus 3 deposit is of much smaller extent. It contains chalcopyrite as well as minor amounts of galena, sphalerite, silver, and gold.

The Wento ore body is 300 feet long and a maximum of 100 feet wide. The sulphides occur in andesite which is surrounded by granite to the north and west and gabbro to the south and east. Pyrrhotite, chalcopyrite, and titaniferous magnetite are more massive than in any other place in the area. Assays of more than 5 per cent copper were reported from samples taken in a shaft that was sunk in the centre of the zone[1].

Three trenches on the Colossus claim contain sulphides, mainly chalcopyrite, for a distance of 130 feet in a northerly direction and across a width of 100 feet. The host rocks are mainly tuffaceous sediments. The copper content ranges from 1.5 to 4.1 per cent. Assays as much as 7 per cent copper[1] have been reported, but these must be exceptional, as the sulphides cannot be seen to be localized in any quantity.

Diamond drilling on some of the deposits seems to indicate that the assay values obtained on surface do not continue to very great depths. The mineralization was probably connected with the basic rocks of the region, but some reworking is indicated as sulphides are present in granite at its contact with the earlier rocks. Wright concluded that there were probably two periods of mineralization, the first associated with the intrusion of the Bird River sill and characterized by the presence of copper and nickel, and the second associated with the intrusion of the granite and characterized by the presence of copper without nickel.

Traces of cobalt have been found in the area. This fact is interesting when it is considered that the district is on strike with Werner Lake in Ontario where cobalt-bearing deposits are known.

Cat Lake Area

A north-south zone of sulphides that contains chalcopyrite and pyrrhotite has been located about 1 mile west of Cat Lake on the Eagle group of claims. The minerals form disseminated replacements in medium- to coarse-grained basalt. Some diamond drilling has been carried on, and sulphides persist to at least a depth of 750 feet. Sections of massive chalcopyrite and pyrrhotite up to 1 foot in width were found in parts of the core.

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[1] Wright, J. F.: Geology and Mineral Deposits of a Part of Southeastern Manitoba; Geol. Surv., Canada, Mem. 169 (1932).

Interest in all the copper-nickel deposits has revived in recent years. The occurrences have been re-examined by geological and geophysical ground parties, and the airborne magnetometer has been used to detail the whole potential sulphide zone.

CHROMITE DEPOSITS

Oiseau River Area

The largest mineral deposits in this part of Manitoba have been formed by chromite segregations in the peridotite of the Bird River sill. The best outcrops of chromite-bearing peridotite in the Oiseau River district occur intermittently in the area that begins just west of the map-area and continues to the east end of Lac du Bonnet. These deposits were not discovered until 1942 at which time they were described by Bateman[1] and Brownell[2].

The chromite occurs within 170 feet of the top of the peridotite. It is found in three zones, the most important is a layered band of both dense and disseminated chromite across a width of about 8 feet. The mineral is in the form of tiny black metallic or resinous octahedrons set in a chloritic or amphibolitic groundmass. Gangue minerals may constitute less than 25 per cent of dense ore. The continuity of the bands is interrupted by closely spaced faults, most of small displacement. Most of these faults are approximately normal to the strike of the chromite bands.

Outcrops containing chromite are scarce along Oiseau River within the map-area. However, a drilling program was carried out at the west end of Oiseau Lake and a chromite zone more than 50 feet wide was encountered beneath the overburden.

The chrome-iron ratio of about 1.5 to 1 of these large deposits is too low for use at the present time but, when metallurgical techniques make possible the utilization of material of this grade, huge reserves of chromite are available.

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1 Bateman, J. D.: Bird River Chromite Deposits, Manitoba; Trans. Can. Inst. Min. and Met., 1943, vol. 46, pp. 154-183.

2 Brownell, G. M.: Chromite in Manitoba -- Geology and Character of a Discovery Deposit; Precambrian, Winnipeg, 1942, vol. 15, no. 12, pp. 3-5.

Maskwa Lake Area

Chromite is sporadic in occurrence on the north limb of the sill, in sharp contrast to the more extensive outcrops along Oiseau River. Only small deposits can be located, and they are always in close proximity to gabbro. In some localities the chromite-bearing peridotite is considered to have been squeezed into the gabbro at a time when the gabbro was only partly consolidated.

The gabbro-peridotite contact is exposed at the northeast junction of the Pronto and Colossus 24 mining claims. The relations are somewhat obscure as chromiferous peridotite and gabbro alternate for a distance of more than 200 feet south of the uniform gabbro. Both dense and disseminated chromite are present.

A band of peridotite, 150 feet long and 12 feet wide, that contains dense chromite and small blebs of massive chromite is located in gabbro on Colossus 22 claim. The gabbro is sheared for a few inches on either side of the band. This gives the impression that post-intrusive movement has shifted the upper part of the peridotite into the gabbro.

Diamond drill cores from the Mayville property which are lying open to the weather and in a state of disarray show sections of peridotite that contain chromite crystals.

Euclid Lake Area

No outcrops of peridotite on the north limb of the sill are known between the last-described occurrence and the east end of Euclid Lake. The gabbro-peridotite contact lies beneath a small stream flowing into the lake. On the south side of the stream chromite-bearing peridotite abuts against granite which has destroyed the lower part of the sill. Disseminated and dense chromite may be seen in the few feet of peridotite exposed. Gunnar Gold Mines Limited reported that drilling beneath the stream to the gabbro contact intersected a wider chromite zone. It is possible that the sill extends for some distance southeast of Euclid Lake, but it cannot be very wide as rocks of the Rice Lake group outcrop on both sides of the covered valley.

LITHIUM AND BERYLLIUM DEPOSITS

Lepidolite, lithium mica, was found in the Boundary District of Manitoba near Star Lake in 1916. However, it was not until 1924, with the discovery of the Silver Leaf deposit south of Winnipeg River, that much interest was taken in the lithium minerals. The spectacular Silver Leaf dyke gave such an impetus to prospecting activity that within the next two years numerous lithium- and beryllium-bearing dykes and sills were uncovered between Winnipeg River and Cat Lake 17 miles to the north.

Many stocks of pegmatitic albite granite outcrop between Winnipeg River and Oiseau River and there is a small stock southeast of Euclid Lake. The complex, rare element dykes are probably a differentiate of this granite.

Cat Lake Area

Interest is now centering on the northern part of the district with the construction of a road to Cat Lake preparatory to the development of the spodumene pegmatites in this vicinity.

A number of spodumene and beryl dykes cutting basalt and oligoclase granite are located on both sides of Cat Lake. The largest and most important ones are to the north and west of the lake.

A vertical dyke, as much as 24 feet wide, has been exposed for over half a mile on the Eagle group of claims (Figure 1). White and green spodumene is the mineral of economic importance. The main minerals present are spodumene, microcline, albite, quartz, garnet, and muscovite. A few small crystals of purple fluorite were deposited locally near the border of the dyke. Spodumene seems to be one of the early-formed minerals as it is replaced by most other minerals with which it is associated. Albite predominates over microcline and replaces it. The spodumene is fine to coarse grained but does not occur in crystals of great size as is common in the South Dakota pegmatites. Much of the spodumene is intimately associated with quartz, a characteristic which is prevalent in most of the dykes. Near its west end this dyke is cut by another which, in addition to the minerals already noted, contains pink albite of the cleavelandite variety, black tourmaline, and small crystals of green beryl as much as 1 inch in cross section. Northern Chemicals Limited plans to mine the spodumene by open-cut methods. The company reports that exploration by diamond drilling and bulk sampling has indicated a grade of 1.40 per cent lithia (Li_2O) to a depth of 200 feet. Plans call for a mill and a concentra-

tor and shipment of concentrates to Lithium Corporation of America.

Northern Chemicals Limited also controls a dyke on the F. D. 5 claim east of the Eagle. The dyke outcrops as a low knoll about 90 feet by 45 feet in plan and as four smaller exposures 100 feet to the southeast. This pegmatite is different from the Eagle in that it is very coarse grained with crystals of microcline and albite as much as 1 foot long. Large books of biotite are evenly scattered throughout. Apple-green crystals of spodumene up to 2 inches in length make up 50 per cent of the pegmatite in places.

Another large dyke, one-quarter of a mile long, cuts across the Irgon claim north of the lake (Figure 2). It is narrow at its western extension, widens to 60 feet to the east, and then disappears under a muskeg. Alternations of quartz and spodumene with granitic and aplitic pegmatite, as well as the linear development of muscovite flakes contribute to a banded structure parallel to the strike. The mineral assemblage is similar to that in the Eagle dyke.

A zoned pegmatite sill on the Central claim half a mile south of Cat Lake is exposed on the east side of a low granite ridge. It has a variable dip which averages 20 degrees to the west. Spodumene and quartz in equal proportions were deposited in a zone 10 feet thick over an observed distance of 150 feet. This zone is successively overlain by bands of albite, quartz-muscovite rock, and albite granite.

The remainder of the Cat Lake dykes are of lesser importance. Three at the southeast end contain spodumene and beryl in small amounts. One, on the north side of the lake near the east end, is 60 feet long and 5 feet wide and contains about 20 per cent spodumene for half of its length. Some yellow beryl is found in a small dyke 1,000 feet north of the west end of the lake.

The only other dyke of interest in this vicinity is one that contains some spodumene on the Spot group of claims north of Maskwa Lake.

Bernic Lake Area

No lithium- or beryllium-bearing dykes of any importance are known for a distance of 13 miles south of Cat Lake. Farther south about 1,400 feet east of Bernic Lake a large complex pegmatite sill has been exposed by open cut on the Buck claim. The

sill dips to the south, and a 20-foot cut has not revealed the footwall. The pegmatite is exceptionally well zoned with a 2-inch zone of plagioclase at the top underlain by 1½ feet of black tourmaline and then a 3-foot band of quartz-muscovite mixture. Silicates and phosphates of lithium including spodumene, amblygonite, triphylite, and a little lepidolite occur mainly in a quartz zone which probably forms the central portion of the sill. Some beryl is also present. All the rare element minerals are coarse grained, and considerable quantities have been hand-cobbed and stockpiled in bins.

Other small pegmatite and quartz bodies near the sill contain scattered large white amblygonite and beryl crystals as much as 1 foot in diameter. A small pit near the lake has uncovered an almost pure concentration of petalite, a rare lithium aluminium silicate.

A quantity of milky to clear, glassy beryl has been stockpiled from a dyke on the north shore of Bernic Lake near the old Jack Nutt tin mine. Occasional small crystals of triphylite are also present at this location.

The old Stannite and Rush claims north and west of Rush Lake contain small amounts of white spodumene, amblygonite, triphylite, and beryl.

Several pegmatite dykes and quartz bodies that contain white to yellow beryl have been found on the south shore of Shatford Lake. Those with the most interesting outcrops are located from 3,000 to 6,000 feet from the east end of the lake and not more than 300 feet from the shore. The dykes are as much as 200 feet long and only a few feet wide. Limited areas contain beryl crystals in notable amounts.

Winnipeg River Area

Two of the best known pegmatites in southeastern Manitoba are those located on the Huron claim and on the old Bear or Silver Leaf claim, now known as the Bob. These have been described by Stockwell[1] and DeLury[2]. Uraninite and lepidolite were obtained from these claims for use in age determinations.

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[1] Stockwell, C. H.: Geology and Mineral Deposits of a Part of Southeastern Manitoba; Geol. Surv., Canada, Mem. 169 (1932).

[2] DeLury, J. S.: Beryl in Manitoba; Can. Min. Jour., 1930, vol. 51, pp. 1017.

The region is one of extreme antiquity as an age of 2,100 million years is indicated [3], [4].

The Huron is outstanding for its content of green beryl and a large irregular mass of golden beryl, as well as for more minor amounts of tantalite, uraninite, and monazite. The body is in the form of a sill 90 feet across and 400 feet long which outcrops mainly on two sides of low ground. Most of the sill is composed of pink albite feldspar in which tantalite and radioactive minerals have crystallized, especially near the east end.

The Bob claim has a large zoned complex pegmatite which is presumed to have a pipe-like shape. It is known to be at least 525 feet long with a maximum width of 100 feet. The eastern third of the deposit is exposed on a hill where the pegmatite rounds off, and the remainder to the west is covered by swamp. The central part, up to 50 feet in width, is composed of lepidolite surrounded by an envelope of spodumene and quartz. Outside of this core is a zone of banded aplite, and a narrow rim of albite granite forms the lower part of the pipe. A quartz-feldspar-muscovite rock makes up the upper part of the body. Prior to 1929 about 75 tons of spodumene and lepidolite were shipped to other countries for experimental purposes. The deposit has been lying idle for many years.

A number of claims in the vicinity of the Huron and Bob claims contain lesser amounts of spodumene, lepidolite, and beryl. The majority of these lie in andesite, but one cuts the albite granite intrusion to the north.

There are numerous small beryl pegmatites to the west, south and east of Green Lake. Most of these occurrences are in granodiorite south of the volcanic band. The Grace, Grace 1, and Grace 2 claims have the best beryl showings in dykes that strike northeast. A dyke on the Grace 1 claim measures 400 feet by 20 feet and contains a good quantity of beryl in crystals up to almost 1 foot in diameter. A few square feet of a smaller dyke on the Grace 2 claim contains as much as 50 per cent green beryl. Small aquamarines of pleasing colour are present in this dyke, but the crystals are fractured and cut by quartz and feldspar.

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3 Nier, A. O.: The Isotopic Constitution of Lead and the Measurement of Geologic Time. (3); Phys. Review, 1941, vol. 60, pp. 112-116.

4 Ahrens, L.: Measuring Geologic Time by the Strontium Method; Bull. Geol. Soc. Am. 1949, vol. 60, pp. 217-266.

A few beryl dykes outcrop here and there along the shores of Winnipeg River. An examination of these outcrops does not yield much information as most of the beryl has been removed. The most westerly showing of beryl is in the deep bay on the river in sec. 17, tp. 16, rge. 15, E. Principal mer. The most easterly showing is on the east side of the river in sec. 16, tp. 16, rge. 17, E. Principal mer.

These beryl dykes present a problem in that beryllium is the only rare element carried. The same amount of beryl in an economic lithium-bearing pegmatite would form a valuable by-product.

Clear, colorless beryl has been mentioned as occurring at Bernic Lake. This mineral of the colorless variety is difficult to recognize in small crystals and might easily be mistaken for quartz. It is possible that many rare element pegmatites contain beryl of this type which should not be overlooked when estimating the economic importance of such occurrences.

The dykes at Cat Lake contain the most consistent values in spodumene and are considered to be the ones of greatest importance in the area. Lithium is assuming increased importance as time goes on. Shepherd[1] discussed the lithium situation as it was before the war, and in the past few years several new uses have been found for this element. It is utilized as metallic lithium, lithium salts, and lithium compounds for use in ceramics, metallurgy, pharmaceuticals, and various branches of the chemical industry.

TIN DEPOSITS

Oiseau River-Winnipeg River Area

Albite pegmatite dykes that contain cassiterite have been known in southeastern Manitoba since 1924 when the mineral was discovered on Tin Island in Shatford Lake. Only a few square feet of this dyke are visible, but after further exploration in the vicinity, the Manitoba Tin Company Limited decided to sink a shaft on a larger island to the east of the discovery. Drifting along the dyke showed that the tin content was not commercial, and the project was abandoned.

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[1] Shepherd, F. D.: The Lithium Situation in Manitoba; Precambrian, Winnipeg, 1938, vol. 11, no. 7, pp. 3-6.

Jack Nutt Mines Limited sank a shaft on the north shore of Bernic Lake in 1929 to explore a cassiterite showing in a system of low-dipping pegmatite bodies. On the surface the sills contain albite, microcline, quartz, black tourmaline, muscovite, and a few crystals of cassiterite. These pegmatites underground were disappointing in their tin content.

The area south of Oiseau Lake has been carefully prospected for tin. The old Rush and Stannite groups of claims north and west of Rush Lake were those examined in most detail. The dykes range from a few hundred feet to more than one-quarter of a mile in length. Cassiterite of erratic distribution is characteristically associated with quartz-muscovite phases on the hanging walls of the pegmatites. The mineral was deposited in smaller crystals of more uniform distribution in fine-grained albitite dykes associated with the pegmatites. A drilling program was initiated in 1942 to explore further the possibilities of these dykes. Bateman[1] concluded that the tin content was not high enough to be of commercial value.

A few cassiterite crystals as much as 1 inch in length were deposited in the Buck sill at Bernic Lake, and the mineral also occurs on the Annie claim south of Winnipeg River. These occurrences are of mineralogical interest only.

GOLD DEPOSITS

Gold, associated with some sphalerite and galena, was discovered between Maskwa Lake and Little Bear Lake in 1924. The mineralization is localized along a number of sheared lamprophyre dykes which are cut irregularly by quartz veins. The gold occurs in the native state and as tellurides or is intimately bound to sulphides. Most of the ore bodies are small, and the assays are variable from very low to very high.

Elsewhere gold assays are generally discouraging. Only rarely can quartz veins be found that are well mineralized with sulphides, and the gold content so far has always been too low to be of interest.

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[1] Bateman, J. D.: Tin in Manitoba; Can. Min. Jour., 1943, vol. 64, p. 273-278.

RADIOACTIVE MINERALS

Mention has already been made of uraninite and monazite on the Huron claim. The tantalite at this locality is feebly radioactive, and there are also well-formed crystals of unknown composition that give a high gamma ray count. The east end of the Huron sill is extremely radioactive over an area of about 25 square feet.

Close inspection of the Winnipeg River area shows that radioactive minerals are present in a number of other dykes. The Bob lithium deposit contains a narrow veinlet. A few reddish-brown crystals of a complex mineral were formed in the feldspar quarry at the east end of Greer Lake. One of the beryl dykes at Shatford Lake has some crystals of a mineral that probably belongs to the euxenite-polycrase group. However, as is the usual case with pegmatites, these minerals are erratic in occurrence.

Occasional sections of iron formation south of Winnipeg River give geiger counter readings above the background count, but at present it is not known what causes the radioactivity.

OTHER MINERALS

Feldspar is plentiful, especially in the Winnipeg River district, owing to the profusion of pegmatite dykes. Some dykes contain almost pure feldspar with very little quartz admixture. Microcline and albite feldspar was quarried at Greer Lake for a time. The material was barged down the Winnipeg River to Pointe du Bois and then shipped by rail to the United States.

Rose to flesh-coloured quartz is found on the north side of Birse Lake associated with a pegmatite intrusion. Small quantities have been removed. Careful methods have to be employed in the extraction of this type of quartz as fractured masses are almost worthless.

A small amount of topaz was found on the Bob and the Huron claims and at the Birse Lake rose quartz locality.

Bismuthinite in minor amounts occurs in the Greer Lake feldspar quarry, and it has also been reported at Cat Lake. The Cat Lake dykes also contain a few flakes of molybdenite.