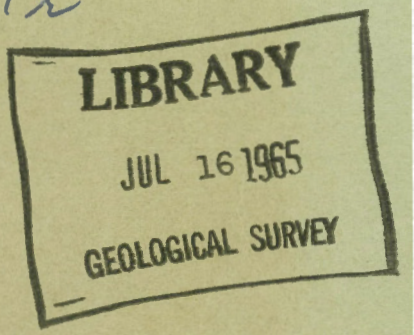

GEOLOGICAL SURVEY OF CANADA

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PAPER 65-11

MINERAL INDUSTRY OF THE NORTHWEST TERRITORIES, 1964

E. A. Schiller

Price, 75 cents

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DEPARTMENT OF MINES AND TECHNICAL SURVEYS

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ABSTRACT

This report reviews mining and exploration in the Northwest Territories for 1964. Mining is undertaken in Mackenzie District only. The district's four gold mines—Giant Yellowknife Mines Limited, Con-Rycon Mines, Discovery Mines Limited, and Tundra Gold Mines Limited—produced 469, 125 ounces of gold bullion with a total value of just over 15 million dollars. Echo Bay Mines Limited, the district's newest silver mine commenced production in late 1964. Pine Point Mines Limited, a developing lead-zinc property, will commence production in 1966.

Exploration in Mackenzie District centered about the following areas and involved the following companies: Pine Point — Pine Point Mines Limited and Conwest Exploration Limited staked claims and completed geophysical surveys. Sulphur Bay — The Consolidated Mining and Smelting Company Limited and Rayrock Mines Limited staked claims and performed geological studies. Clan Lake — A gold find made by the Earl-Jack Syndicate precipitated a mild staking rush. Coronation Gulf area — Several companies were active in 1964; gold occurrences were discovered by McIntyre Porcupine Mines Limited and James River Syndicate. Back River — The Consolidated Mining and Smelting Company Limited and Falconbridge Nickel Mines completed geophysical surveys and diamond drilling and Discovery Mines Limited and Radiore Uranium Mines Limited staked claims and completed geological mapping. Bathurst Inlet — Roberts Mining Company prospected 3 permit areas and did detailed studies in selected localities. Contwoyto Lake — Canadian Nickel Company and Falconbridge Nickel Mines did a minor amount of work on claims staked in previous years. Itchen Lake and Point Lake — Giant Yellowknife Mines Limited, Roberts Mining Company, and Point Prospecting Syndicate completed geological studies. Yellowknife — Falconbridge Nickel Mines and the Consolidated Mining and Smelting Company Limited undertook geological studies and commenced diamond-drill programs on properties near Yellowknife. At Benjamin Lake International Mines Services Limited staked 273 claims, and base-metal showings were staked at Camsell Lake and La Loche River. In 1964, 3, 919 claims were recorded in Mackenzie District.

In Franklin District Baffinland Iron Mines Limited explored their iron deposit on Baffin Island and The Consolidated Mining and Smelting Company Limited examined lead-zinc showings on Little Cornwallis Island. In Keewatin District the central and southern parts were explored by Canadian Nickel Limited and Selco Exploration Company Limited respectively.

MINERAL INDUSTRY OF THE NORTHWEST TERRITORIES, 1964

INTRODUCTION

This is the fifth in a series of annual reports on the mineral industry of the Northwest Territories. Previous editions (Baragar, 1961*; 1962; Baragar and Hornbrook, 1963; Schiller and Hornbrook, 1964) have dealt primarily with the Mackenzie District and to a limited degree with the Keewatin District. In this report exploration in the Territories will be reviewed with emphasis on Mackenzie District and to a lesser degree with Keewatin District. Information on Franklin District is derived from a review of company reports and publications and is not necessarily complete. Producing and developing mines are present in Mackenzie District only. A review of production and development is included in this report. The writer acknowledges the hospitality of mining companies and personnel in the field and their cooperation in examining properties and reviewing company reports.

MACKENZIE DISTRICT

TRANSPORTATION

In 1964, construction of the Great Slave Railway was completed to Hay River and Pine Point. The importance of this event has not been fully realized yet, but there is no doubt it will have considerable impact on the mining industry in the future. An all-weather road to Pine Point from the Mackenzie Highway was also completed during the year. The Pine Point road forms part of the winter route to Fort Smith.

Yellowknife, with a population in excess of 3,800 people, is the centre for exploration and mining in the District. Except for periods of break-up (May-June) and freeze-up (November-December) in which traffic is suspended across the Mackenzie River, Yellowknife can be reached by an all-weather road from southerly points. Truck transport, barge, bus, and aircraft provide freight and express services into Yellowknife. Shipping rates and schedules are as follows:

Trucking (Edmonton to Yellowknife)

Class	1	2	3	4	5
Cost (dollars/100 lbs)	6.03	5.11	4.24	3.55	3.00

Bus (Express, Edmonton to Yellowknife three times weekly)

Pounds	0-5	5-10	10-20	20-30	30-40	40-50	50-60
Rate	$1.35	1.50	2.40	2.70	3.45	4.20	4.80

Pounds	60-70	70-80	80-90	90-100
Rate	5.75	6.80	7.85	9.00

*Names and/or dates in parentheses refer to publications listed in the References.

Air Cargo (daily scheduled service except Sunday)

Pounds	Edmonton to Yellowknife	Yellowknife to Edmonton
Less than 100	$ .20/lb	$ .10/lb
100 to 1,800	15.75/100 lb	8.00/100 lb
1,800 to 3,000.....	13.75/100 lb	7.00/100 lb
More than 3,000	12.00/100 lb	6.00/100 lb

Barge (Waterways to Yellowknife, June-October)

Class 5 (general cargo)..... $1.75 per 100 lbs

Railroad

	Roma Junction to Hay River
Rate.....	$300.00 per carload[1] (this charge applies only on traffic on which Canadian National Railways receives a road haul to or from Edmonton).

A wide range of 'bush' aircraft are available for charter at Yellowknife, Hay River, and Fort Smith. Charter helicopters are based at Hay River and Fort Smith.

EXPLORATION

In 1964 several separate areas were actively explored in contrast to previous years when most of the work was concentrated in the north-central part of the District around Contwoyto Lake. From January 1 to December 31, 1964 there were 3,919 claims recorded in the Mackenzie Mining District.

Areas of major activity and staking are as follows:

1) Pine Point area (mineral claim sheets 85-B-10, 11, 15, and 16) - Pine Point Mines is scheduled to commence production in the fall of 1965. The company and Conwest Exploration Limited staked 1,423 claims adjacent to the main claim block of Pine Point Mines.

2) Sulphur Bay area (mineral claim sheets 85-G-5 and 12; 85-F-8) - Rayrock Mines Limited and the Consolidated Mining and Smelting Company staked 545 claims. The latter company did geophysical and diamond drilling work on their claims.

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[1] Subject to reduction depending on volume and duration of trafffic.

3) Clan Lake area (85-J-16) - A gold find made by the Earl-Jack Syndicate 34 miles north of Yellowknife precipitated a mild staking rush and led to the staking of 222 claims.

4) Coronation Gulf area (mineral claim sheets 76-M-11 and 12) - Several companies performed work on claims staked late in 1963 and 1964. New gold showings were found by McIntyre Porcupine Mines Limited and the James River Syndicate that warrant further work.

5) Back River area (mineral claim sheets 76-G-3 and 4;76-B-13; 76-F-1) - The Consolidated Mining and Smelting Company, Falconbridge Nickel Mines, and a combined team of Discovery Mines Limited - Radiore Uranium Mines Limited performed work on showings found primarily in 1963.

6) Bathurst Inlet area (76-N-2 and 6; 76-K-14) - Roberts Mining Company staked claims and acquired 3 permit areas. They performed surface work on claims staked late in 1963 and 1964.

7) Contwoyto Lake area (mineral claim sheets 76-E-11 and 14) - Canadian Nickel performed little work on their main gold showing originally staked in 1961. They staked several claim groups between the Coppermine River and Bathurst Inlet.

8) Itchen-Point Lakes area (mineral claim sheets 86-H-6, 7, 9 and 10) - Giant Yellowknife Mines Limited drilled 2 gold showings found in 1963. Roberts Mining Company and Point Prospecting Syndicate completed surface work on claims staked mainly in 1963.

9) Yellowknife Gold Belt - Falconbridge Nickel Mines and the Consolidated Mining and Smelting Company Limited undertook geological studies and commenced diamond-drill programs on properties near Yellowknife.

Late in 1964, International Mine Services Limited staked 274 claims in the Benjamin Lake area 120 miles east of Yellowknife (mineral claim sheet 75-M-2). The claims reportedly cover base-metal showings in an area previously staked many times. At least 3 companies had prospectors in the Indin Lake area, but few claims were staked as a result of this work. A number of claims were staked in the La Loche River area, south of Great Slave Lake (mineral claim sheet 85-H-9).

Base-metal showings were staked in the Camsell Lake area by the Earl-Jack Syndicate and Precambrian Mining Service. Exploration in this area was prompted by magnetic data obtained from G.S.C. map 3107G (1963). Electro-magnetic surveys revealed lengthy conductors that represent potential base-metal deposits (mineral claim sheet 75-M-11).

A number of claims were staked in the vicinity of Yellowknife. Part of the staking centered around the property of Rodstrom Yellowknife Gold Mines Limited (mineral claim sheets 85-J-8 and 9).

The Department of Northern Affairs and National Resources prospector assistance program sponsored 34 men in 1964 to the amount of about $27,000.00. The program provides remuneration up to $900.00 per

person to individual and company prospectors who spend more than 60 days in the field in the Territories.

DESCRIPTION OF PROPERTIES

Back River Area

Three companies were active in an area along the upper part of the Back River, near Regan Lake, 270 miles northeast of Yellowknife. The Consolidated Mining and Smelting Company of Canada Limited and Falconbridge Nickel Mines performed diamond drilling, geophysical, and geological work. A combined team of Discovery Mines Limited - Radiore Uranium Mines Limited, did mapping and trenching on their claims. The area covered by the claims was mapped by Wright (1956) and briefly summarized by Schiller and Hornbrook (1964, pp. 36-37). The properties described are shown on mineral claim sheets 76-B-13, 76-G-3 and 4, and 76-F-1[1].

Consolidated Mining and Smelting Company Limited

The company owns two contiguous claim groups, the RUBY and TOBY of 70 and 148 claims respectively, along the Back River, south of Regan Lake at latitude 64°50'N and longitude 107°40'W (mineral claim sheet 76-B-13). Gold showings were found in the summer of 1961 on what was staked in August, 1962 as the TOBY group 1-100 and RUBY group 1-14. The remaining claims were staked in the summer of 1963.

The claims are underlain by volcanic, sedimentary, and igneous rocks of diverse origins. The oldest rocks in the area are a sequence of acid to basic rocks, in part pyroclastic, of the Yellowknife Group. Flow banded rhyolites, for the most part porphyritic, are interbedded with acid tuffaceous rocks. The acid volcanic rocks are overlain by intermediate varieties, which in turn are overlain by more basic units (i.e. greenstones). The volcanic sequence is overlain by sedimentary rocks that comprise from oldest to youngest, conglomerate and grit, iron-formation and tuffaceous iron-formation, chert, slate, and greywacke. The conglomerate may represent an unconformity at the base of the sedimentary rocks. In the south part of the claim block the contact of volcanic and sedimentary rocks roughly parallels the west side of the Back River. In the central part, east-striking faults displace the contact to the west, with the result that volcanic rocks for the most part lie west of the Back River whereas the sedimentary rocks for the most part lie east of the river.

Aphanitic rocks that are for the most part porphyritic and range in composition from rhyolite to dacite occur as sills and dykes up to a few hundred feet wide and thousands of feet long. Coarse-grained diorite and amphibolite form plugs less than a few thousand feet in diameter and dykes up to hundreds of feet wide and thousands of feet long.

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[1] Mineral claim sheets as defined by the National Topographic Series; available at a cost of $.50 per sheet from the Mining Recorders Office, Department of Northern Affairs and National Resources, Yellowknife, N.W.T.

Rocks in the southern part of the claim block strike about N 10°W and dip steeply northeast. Northward they form a complexly faulted, fold structure with a northeast trend. In general the rocks covered by the claims form an arcuate belt nearly parallel to the Back River.

Company work was directed to areas believed to be underlain by gold-bearing quartz veins. Such work included geological mapping, magnetometer and E.M. surveys, and diamond drilling. The following showings received work:

1) South Zone - It lies along the west side of claim TOBY 36 and extends north and south to TOBY 35 and 37 respectively. Mineralized quartz veins occur along a northwest-striking zone that contains a narrow band of iron-formation with volcanic and sedimentary rocks on the west and east respectively. The zone is faulted and shows evidence of carbonate alteration.

2) A Zone - This zone is on TOBY claims 23 and 24. Northwest-striking quartz veins occur in sedimentary rocks adjacent to a bay locally called Bud Bay.

3) B Zone - This zone is in the south-central part of TOBY 20. Several gossans occur in 'porphyry'.

4) C Zone - C zone lies on the east side of the Back River on TOBY claims 16 and 17. A quartz vein or veins is (are) traced continually for 900 feet. The vein strikes northward and dips steeply. The quartz occurs along or adjacent to a contact between volcanic rocks on the west and sedimentary rocks on the east. In 1963, two holes totalling 528 feet were drilled in the zone.

5) D Zone - The original discovery was made on exposures of gold-bearing quartz for the most part well-mineralized with sulphide minerals. The zone extends from the west side of TOBY 10, north to the southwest corner of TOBY 8. In 1963 and 1964, 14 holes totalling 4,670 feet were drilled and provided 9 intersections of the zone over a strike length of 3,400 feet. A number of 'Toby'[1] quartz veins or lenses were intersected that ranged from a few inches up to 20 feet wide. Some gold assays of significance were obtained from part of the zone, but most of these were low and averaged 0.05 ounce gold per ton.

6) E Zone - This zone lies on the northwest side of TOBY 4 and consists of gold in a silicified magnetite-bearing rock and in quartz veins along or adjacent to a sedimentary-volcanic rock contact. In 1963-64, three holes totalling 827 feet were drilled in the zone.

7) F Zone - This zone occurs between D and E zones beneath the Back River.

8) RUBY #1 Zone - It is located in the central part of RUBY 3. The zone is represented by 'push-ups' of quartz and massive sulphides in altered rocks. In 1963 two drill holes totalling 582 feet were put down in the zone.

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[1] Glassy grey to black quartz

9) RUBY #2 Zone - RUBY #2 lies in the southeast corner of RUBY #16. Quartz veins occur within undefined rock units. In 1963 three holes totalling 610 feet were drilled in the zone.

10) North RUBY Zone - The zone occurs in the southwest central part of RUBY 40. The zone is represented by boulders of gold-bearing quartz situated in an area underlain by sedimentary rocks.

Other areas containing mineralized rocks and quartz were examined. In several cases the units examined were boulders. Magnetometer and E.M. surveys were conducted over parts of the claims but the information obtained was of limited use.

Exploration in the area was directed to quartz veins, many of which were gold-bearing. The quartz is glassy grey to black and is known locally as 'Toby' quartz. Parts of the quartz veins contain pyrite, pyrrhotite, and possibly marcasite as disseminated and massive bodies. There appears to be no relationship between the gold content and size of the quartz vein or amount or nature of the sulphide minerals.

Discovery Mines Limited and Radiore Uranium Mines Limited

The two companies own jointly the LARK claims 1-36 recorded in July and October, 1964. They tie onto the RUBY claims on the west and lie west of the Back River (mineral claim sheet 76-B-13).

The claims are underlain by a north-northeast-striking belt of rocks. The north quarter of the claim block is underlain by mainly greywacke and argillite. The remaining area consists of intrusive and extrusive, partly porphyritic, aphanitic rocks and some sedimentary rocks.

The following showings were examined in detail by the companies:

1. Discovery showing - It lies on the west side of LARK 5.
2. LARK 15 showing - This showing is located in the southeast corner of LARK 15.
3. LARK 6 showing - It is situated in the central part of LARK 6.
4. LARK 41 showing - The showing lies in the southwest corner of LARK 41.

The claims were mapped at 1 inch to 500 feet and the showings at 1 inch to 100 feet. Trenches were excavated in the showings. The above showings consist of mineralized quartz veins and stockworks, for the most part in aphanitic porphyries. The grey glassy quartz is similar to that found on the adjoining Consolidated Mining and Smelting claims. Sulphide minerals consisting of pyrite, pyrrhotite, galena, sphalerite, and arsenopyrite contain significant amounts of gold and silver.

Falconbridge Nickel Mines Limited

The company owns the following claim groups - SAM group 1-58 and DON group 1-42 located north of Regan Lake (mineral claim sheets 76-G-3 and 4) and the ACK group 1-36, 13 miles northwest of Regan Lake (mineral claim sheets 76-G-4 and 76-F-1).

Coded Alk 107 REGAN LAKE (13 Km NW 3) / ACK

The geology and work performed on the SAM and DON groups in 1963 were reported by Schiller and Hornbrook (1964, pp. 38-40). No work was performed on these claims in 1964.

The ACK claims are underlain by sedimentary rocks of the Yellowknife Group. They strike N80°W and dip steeply southwest. Mineralized amphibolites of the type found in the Contwoyto Lake area were explored.

Two showings on ACK 23 were examined by mapping at a scale of 1 inch equals 100 feet, trenching and diamond drilling.

The No. 1 showing is 200 feet north of the baseline and lies within complexly folded amphibolites that appear as isolated lenses and fold structures with steep dips and plunges respectively. Massive arsenopyrite and lesser amounts of pyrite have replaced parts of the amphibolite producing intensely gossaned rocks. A few quartz veins were found in the amphibolites. Grab samples of well-mineralized amphibolites assayed as high as .6 ounce Au per ton.

The No. 2 showing is just over 300 feet northeast of the No. 1 showing. It consists of intensely gossaned boulders probably indigenous to the locality. Massive arsenopyrite and disseminated arsenopyrite and pyrite replace parts of the amphibolite. Grab samples of well mineralized amphibolite reportedly assayed as high as .8 ounce Au per ton.

Other areas containing mineralized amphibolite are known to occur on the property but were not examined in detail by the company.

In 1964, eight holes totalling 1,500 feet were drilled on the No. 1 and 2 showings. Further work on the claims is not expected.

Bathurst Inlet Area

Interest in the Bathurst Inlet area arose from the work of two men who spent the 1963-64 winter season prospecting with dog teams on the west side of the Inlet. Base-metal and gold showings were discovered and staked, and subsequently three permit areas were granted to Roberts Mining Company to cover these showings. Canadian Nickel Company had parties working in the general vicinity of the Inlet and staked some claims.

Bathurst Inlet is a major structure in the Canadian Shield and marks the boundary between 2 structural provinces of the Shield (Stockwell, 1964). Typical Archaean rocks occur immediately west and east of the Inlet, whereas sedimentary rocks of Proterozoic age outcrop within the Inlet. Lengthy sills and dykes of gabbro and diabase have intruded both types of rocks. The west side of the Inlet is bound by a major fault that continues south along the Western River for more than 200 miles.

The Eskimo settlement and Hudson Bay store at Bathurst Inlet (previously called Burnside) was moved to a new site on the east side of the Inlet at north latitude 67°42' and west longitude 107°55'. The new settlement is on the shores of Baychimo Harbour, but the settlement will retain its Bathurst Inlet name.

DON Claims - Galena Point

The DON claims 1-22 are situated at Galena Point, 10 miles southeast of Cape Barrow on the west side of the mouth of Bathurst Inlet, 390 miles northeast of Yellowknife (mineral claim sheet 76-N-13). The deposits were first described by O'Neill (1924) and later by Lord (1951).

In July 1961, Messrs. D. Normand and A. Cameron of Edmonton staked 10 claims that cover the central part of the large island and part of the mainland. In April 1964, A. Moesey staked the DON claims 11-22 for A. Cameron.

Much of the following information was obtained from Mr. Ken McDonald of Yellowknife. The claims are underlain by granitic rocks and contain quartz veins, in part pegmatitic, some of which are tourmaline-bearing. The veins range from inches to about 4 feet wide and contain disseminated and massive galena. In one vein massive galena up to 4 feet wide crops out for several feet along strike before entering the ocean on the north side of the island. Numerous veins inches wide occur on the property. Parts of the granitic host rocks contain disseminated galena.

In 1963 a crew, supervised by K. McDonald excavated 9 trenches on claim DON 1. In 1964, one trench was excavated on claim 2 and some trenches excavated in 1963 were enlarged.

OX Group

The OX group 1-10 is located east of Bathurst Inlet 360 miles from Yellowknife (N. latitude 66°42'; W. longitude 107°28'). The claims were staked by Canadian Nickel in August, 1964 (mineral claim sheet 76-J-11).

The claims are underlain by nodular schists and interbedded amphibolitic rocks of the Yellowknife Group. The amphibolites have parts that contain pyrite and pyrrhotite disseminations, some of which are gold-bearing. To the west of the claim group sedimentary rocks of the Goulburn Formation crop out.

Roberts Mining Company

The company, prompted by 1963-64 winter prospectors, staked claims and acquired three permit areas in the Bathurst Inlet area. Permit areas granted to the company are: 76-K-14, 76-N-2, and 6. Claims recorded in 1964 include the contiguous CCI group 1-36 and COM group 1-36, south of James River at approximately North latitude 67°13' and West longitude 108°55'; the contiguous NOEL group 1-36 and NOEL group 1-18, west of the Hood River at approximately North latitude 67°03' and West longitude 108°46'. In November, the company recorded two claim groups APA 1-20 and APA 21-24 southeast of Hope Bay in Melville Sound (Kent Peninsula) at approximately North latitude 68°05', West longitude 106°40' (mineral claim sheet 77-A-3). The company maintained a base camp at a lake locally referred to as Turner Lake south and west of the James and

Hood Rivers respectively at North latitude 67°12' and West longitude 108°45'. The writer visited the area on three occasions and examined briefly showings on the CCI and COM claims.

The geology in the vicinity of Turner Lake is as follows (Fraser, 1964): Turner Lake lies within a 3-mile wide belt of Yellowknife Group metasedimentary and mafic rocks that extend north and south of the lake. Small bodies of Archaean granitic rocks have intruded the Yellowknife Group. East of the lake and extending north and south is a discontinuous body of Proterozoic gabbroic rocks that have intruded the Yellowknife rocks.

The Yellowknife Group comprises fine- to medium-grained meta-arenite and greywacke, which commonly contains biotite. Within the Yellowknife rocks a lengthy zone of mixed mafic rocks consisting of amphibolitic and gabbroic rocks of sedimentary and igneous origins respectively are host to sulphide and arsenide bodies that contain Ni, Co, Cu, and Au. Certain mafic rocks are foliated or gneissic for the most part in contrast to the younger massive Proterozoic gabbroic rocks. The granitic rocks are generally medium grained, but pegmatitic parts are not uncommon and contain black tourmaline. Extensive areas of granite crop out west and south of Turner Lake.

The Yellowknife rocks in the vicinity of Turner Lake appear to be a homoclinal sequence that strikes northwest, and northward, south of the James River, a few degrees west of north. A few miles southwest of Turner Lake the strata strike northeast.

Two principal showings near Turner Lake were mapped in detail during the summer by the company. These were a base-metal showing and a gold showing. The former consists of a zone, in part mineralized and sheared, which has been traced discontinuously for about 3,000 feet. The zone extends across COM claims 18, 13, and 9. It strikes west of north and dips steeply east for the most part. The zone consists of small pockets of massive and disseminated copper and nickel sulphides within meta-sedimentary rocks of Yellowknife Group and meta-gabbroic rocks. Sulphide minerals present include chalcopyrite, pyrrhotite, and niccolite. In one section of the zone the cobalt minerals safflorite and gersdorffite occur.

The gold showing occurs mainly on CCI claim 34 and 35. The eastern exposure of the showing is on a cliff face about 200 feet above the valley. It consists of disseminated arsenopyrite, in part gold-bearing, and sporadically distributed free gold within a band of arenaceous and amphibolitic rocks of the Yellowknife Group. The band is several tens of feet wide and has a fold-like configuration with a westerly striking axial plane and steeply plunging axis. The fold has an apparent amplitude of over 1,000' feet and a width that ranges from a few hundred feet to about 1,000 feet. In the central parts of the fold, some of the bedded rocks are tuffaceous; in addition dykes of felsite and diabase and a meta-gabbro body are present. Eighteen trenches and pits were excavated in the mineralized band. Medium grade gold assays were obtained from localized areas in the band, but the average grade across the band in several sections was low.

A number of gold showings were examined on the NOEL group 1-36 and NOEL group 1-18. The showings consist of eight zones that are characterized by gossans in amphibolites and to a lesser degree in quartz biotite schist. The zones, A through H are located 1 mile east of a lake locally called Pistal Lake. The zones lie east of a diabase dyke that extends a considerable distance north and south of Pistal Lake. Seventeen trenches were excavated in the eight zones. Medium grade gold assays were obtained from parts of certain zones, but the overall grade of individual zones appears to be low. The 1964 results are incomplete and further work in 1965 is required to properly assess the potential of the zones.

Clan Lake Area

A mild staking rush was precipitated in this area during the summer of 1964, as a result of a gold find by the Earl-Jack Syndicate. Clan Lake is located 34 miles north of Yellowknife (mineral claim sheet 85-J-16). A block of 105 claims was staked about a gold showing 1/2 mile east of the southeast arm of Clan Lake. Fifteen claims were staked about a second gold showing northwest of Clan Lake. One hundred and seventeen claims were staked peripherally to the main claim block by prospectors mainly from Yellowknife.

The geology of the area as shown by Jolliffe (1939) is as follows: A sequence of volcanic rocks that in outcrop have a 'boot'-shaped pattern lies between Clan Lake and Sophia Lake to the east. The base of the boot (or sole) trends northeast. The main showing is situated on the toe of the boot. There the volcanic rocks are steeply dipping and produce an important steeply plunging fold or domal structure. The volcanic rocks range from rhyolite to basalt, with dacite predominating. Some fragmental rocks are present. Sedimentary rocks, in part nodular, and amphibolitic rocks, wrap themselves around the volcanic 'boot'. Regional structures strike variously from north to north-northeast.

The Syndicate performed mapping, trenching, and magnetic surveys of their NOSE group. Claims held by other prospectors received no work.

Earl-Jack Syndicate

The Syndicate discovered one of the most promising gold occurrences in Mackenzie District in 1964. The Syndicate, backed by Gunnex Limited, staked the NOSE group 1-40 to cover the occurrences. The claims lie 1 mile east of the southeast arm of Clan Lake (mineral claim sheet 85-J-16). The Syndicate staked a second gold occurrence northwest of Clan Lake and covered by the EL group 1-15. No detail work was done on the claims.

The main gold occurrences are found on the NOSE claims. The claims are underlain by a sequence of acid to basic volcanic rocks composed of a variety of flow and tuffaceous rocks of mainly intermediate composition. The gold occurrences are centered about a major structure within dacitic rocks. Steeply dipping strata accompanied by intensive drag folding indicates

steeply plunging folds in the central part of the claims. A domal effect is apparent on the claims and may be due to a basic igneous plug in the central part of the claims. Basic volcanic and sedimentary rocks are folded around the inner dacitic volcanic rocks and reveal the northeasterly trends of the general area.

Three principle zones have been outlined and are described as follows:

No. 1 Zone - The No. 1 Zone occurs on the boundary between NOSE claims 27 and 28, 600 feet south of a small pond. It extends southerly, then southeasterly, and then swings northeasterly to the No. 4 Zone or the eastern extension of the No. 1, a distance of 900 feet. The northerly (and discovery) exposure of the zone has been exposed for a length of 70 feet. Tracing of the zone throughout its entire length has been done by extensive stripping of overburden and trenching. An interlocking network of a few major quartz veins up to 12 feet wide and innumerable stringers and appendages occur within dacitic volcanic rocks. In certain parts of the zone quartz is found across a width of a few tens of feet, but the widest gold-bearing section is 15.5 feet, grading 0.677 ounce Au per ton. Surface sampling of the northern exposure of the No. 1 Zone in four trenches averaged 1.08 ounces Au per ton over an average width of 11.4 feet, amounting to 66 tons per vertical foot.

The gold is found primarily in quartz and occurs free and associated to some degree with pyrrhotite, arsenopyrite, pyrite, chalcopyrite, galena, and sphalerite. Visible gold was noted in a number of trenches, especially the discovery exposure.

No. 2 Zone - The No. 2 Zone lies 120 feet west of the No. 1 Zone on claim 28. It has been exposed in 2 trenches for a length of 25 feet and a width of 25 feet. The eastern part of the zone is characterized by brecciated volcanic rock fragments in milky quartz whereas the western part contains glassy quartz stringers and lenses in contorted sericite schist. Gold occurs free in the quartz and in the schist and associated with arsenopyrite. Disseminations of pyrrhotite, pyrite, chalcopyrite, sphalerite, and galena are present. Parts of the zone have assayed as high as 1.98 ounces Au per ton over a width of 4.0 feet.

No. 3 Zone - This zone lies east of the No. 1 Zone on the edge of claim 28, adjacent to a prominent muskeg, and has been traced for a length of about 200 feet and a width of up to 90 feet. It, like the No. 1 Zone, consists of an interlocking network of quartz veins and stringers in dacite. Arsenopyrite, some of which reaches massive amounts, is present in parts of the zone. A grab sample of arsenopyrite-mineralized quartz assayed 2.38 ounces Au per ton and 5.00 ounces Ag per ton.

In 1964 parts of the NOSE claims were geologically mapped, magnetically surveyed and prospected. Fifteen trenches were excavated and extensive sampling was undertaken. Preliminary work indicates that the mineralized zones can be traced by means of magnetic surveys, as sufficient pyrrhotite and possibly magnetite are apparently present in the zone. The property will be drilled in February, 1965 and further exploratory work on the claims will be done.

Contwoyto Lake Area

This area was relatively inactive in 1964 in contrast to 1962-63 when a considerable amount of exploratory work in search for gold deposits was done by several companies. The area of interest is centered about the northwest side of Contwoyto Lake at about North latitude 65°45' and West longitude 111°15', 270 miles northeast of Yellowknife. Canadian Nickel Company and Falconbridge Nickel Mines Limited performed a minor amount of work on their claims. Both companies directed exploration programs from base camps on Contwoyto Lake. Continued work on the part of Canadian Nickel on their gold property at Contwoyto Lake is not expected. A company spokesman had this to say about the property: "The discovery has been carefully evaluated and the conclusion reached is that, while this is an important find likely to be worked some day in the future, it is not economic to open up a mine there at the present time because of the inaccessibility of surface transportation. If a road or a railroad had existed near the deposit we would be proceeding now with a mining program". [1]

Canadian Nickel Company

The company operated out of a modern base camp on the northwest side of Contwoyto Lake. The company owns a block of claims centered about an important gold showing located 4,000 feet southwest of the camp (mineral claim sheets 76-E-11 and 14). It was the result of this gold showing found late in 1961 that led many companies to commence exploratory programs in central and northern Mackenzie District in 1962, 1963, and 1964. During the 1964 field season, the company employed an average of 36 men engaged in geological and geophysical work, surveying, and diamond drilling. They were supported by Otter aircraft and a G-2 helicopter. A field assay office was maintained and completed over 2,000 assays.

The company performed the following work this summer -

1. Permit areas 76-E-10, -12 and -15 were prospected, all of which will lapse this year.

2. Some of their Contwoyto Lake claims were mapped at 1 inch to 50 feet. Three holes totalling 583 feet were drilled to intersect amphibole zones to the north and east of the main showing. Geophysical work was done on certain claims at Contwoyto Lake.

3. A combined geological mapping and reconnaissance prospecting program, at a scale of 1 inch to 1 mile, of a large area in northern Mackenzie District was completed. This work was done by a helicopter and ground traverses. Diamond drilling and geophysical work was done on claims staked during the summer. A brief description of staked ground follows.

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[1] The International Nickel Company of Canada, Limited, Address to Shareholders by Henry S. Wingate, Annual Meeting, April 22, 1964, Toronto, Canada.

KEIKO Group - The KEIKO group 1-25, was staked in early June. The claims straddle the boundary between the Great Bear and Slave structural provinces and is located 5 miles northwest of the northwest arm of Itchen Lake (mineral claim sheet 86-H-11).

Two showings 1 1/2 miles apart containing chalcopyrite occur in quartz stockwork along a north-striking contact between Proterozoic clastic sedimentary rocks to the west and Archaean gneissic rocks to the east. Some chalcopyrite occurs in the sedimentary rocks.

An SP survey was undertaken over the claims with no success and three holes totalling 519 feet were drilled.

ANDY and COP Groups - These claims lie at approximately North latitude 67°35' and West longitude 115°00', 10 miles east of Coppermine River (mineral claim sheet 86-O-11). The showing was found by an Eskimo and optioned to Canadian Nickel. Four ANDY claims were staked on July 15 and eight more claims were staked in early August. The contiguous COP group 1-54 was recorded in October.

The claims are underlain by clastic sedimentary rocks of the Coppermine River Series. Several copper showings consisting of bornite and possibly chalcopyrite in a quartz-carbonate gangue are found in chert breccia. The breccia possibly represents an old shear zone.

WIG Group - The WIG group 1-36 lies south of the Hood River at approximately North latitude 66°48' and West longitude 110°50' (mineral claim sheet 76-L-15). The group was staked in June, 1964. They tie onto the ESKER group of C.M. & S.

The claims cover copper showings that consist of quartz lenses containing pyrite, chalcopyrite, and small amounts of gold within acid to basic volcanic rocks of the Yellowknife Group. The more basic rocks are amphibolitic. The quartz lenses range from 3 inches to 1 foot wide and 10 to 15 feet long.

The company did magnetometer and EM surveys over the claims. Further work on the claims is not expected.

CHUCK Group - The CHUCK group 1-28 lies north of the Hood River at North latitude 66°50' and West longitude 110°59'. The claims were staked on July 16, 1964 (mineral claim sheet 76-L-15).

The claims cover copper showings in basic volcanic rocks of the Yellowknife Group. Disseminated chalcopyrite, pyrite, and pyrrhotite occur in a zone 1 foot to 4 feet wide and about 700 long.

Three pack-sack drill-holes were put down with poor core recovery. Magnetometer and EM surveys were done over the claims.

Falconbridge Nickel Mines Limited

The company has under option from Conwest Exploration four claim groups comprising 391 claims (mineral claim sheets 76-E-11 and 14). The claims adjoin the gold property of Canadian Nickel on the northwest side of Contwoyto Lake. Baragar and Hornbrook (1963, pp. 16-18) and Schiller and Hornbrook (1964, pp. 14-15) reviewed the geology of the claims and the work completed by the company to the end of 1963. Exploration has been directed to gold-bearing amphibolites within sedimentary rocks of the Yellowknife Group. In 1964, magnetometer and self-potential surveys were conducted over selected areas of the FOX claims and a few trenches were excavated on the BOX claims. Continued work in the area is not expected.

COP and BOB Groups

The COP claims 1-18 were staked by J. Kilgour in July, 1963. Claims 1-2 and 11 to 18 were allowed to lapse and the remaining eight grouped and retained. At a later date Mr. Kilgour acquired the ten lapsed claims and an additional three contiguous claims known as the BOB group 1-13. The claims lie 7 miles east of the north end of Snowbird Lake, 236 miles northeast of Uranium City, Saskatchewan (see mineral claim sheet 65 D/N.E.)[1]. The writer visited the property on September 15th, 1964.

The claims are underlain by a homoclinal sequence of amphibolitic rocks that strike northward and dip steeply to the east and west. Taylor (1963) mapped these rocks as part of a basic volcanic unit of Archaean age. Except for parts that are seemingly massive and gabbroic looking the unit is distinctly foliated and partly gneissic. Several bands of magnetite-rich amphibolites (iron-formation) were noted. The amphibolites appear to be meta-basalts whereas certain gabbroic rocks may be sills. Field relations suggest that the gabbroic rocks are probably central portions of thick massive flows. Aplite and quartz veins are found cutting the sequence.

Three showings on the claim group were examined.

The number 1 showing occurs in the central part of COP claim 1, west of the south end of the only lake on the claim. A well-developed fracture zone has been partly filled with veins of quartz and minor carbonate and interesting amounts of gold and sulphide minerals. The fracture zone strikes westward and dips 70°S. It extends eastward into the lake, but probably for only a short distance; it has been traced for 130 feet west of the lake, but probably does not extend much farther west. Gangue minerals filling the fractures extend from a point 20 feet west of the lake west for 110 feet. The zone and gangue minerals extend farther west beneath overburden, but from the diminishing character of both they probably extend no more than 10 feet.

The fracture zone is up to 5 feet wide in the central parts of the zone and pinches out towards both ends. Gold and sulphide minerals occur in a quartz vein up to 2 feet wide, but averages 1 foot, and in several other parallel veins inches wide that occur along a strike length of 75 feet. The

[1] Arctic and Hudson Bay Mining District: claim sheets are available from, Mining Section, Mineral Resources Division, Department of Northern Affairs and National Resources, Kent-Albert Building, Ottawa, Ontario.

quartz is white and sugary textured; parts of the vein are vuggy and contain quartz euhedra. Galena and chalcopyrite occur in this 75-foot length as discontinuous disseminations and narrow lenses and stringers up to several inches long and a few inches wide. Visible gold occurs in two separate pockets east of the gabbro-amphibolite contact. At the time of the writer's visit all visible gold had been removed from surface outcrops.

In 1963 Kilgour trenched and removed overburden from about 80 feet over the zone. The best assay reportedly obtained was 4.94 ounces Au per ton and 3.86 ounces Ag per ton over a width of 1.5 feet.

The number 2 showing occurs in the northwest and southwest corners of contiguous COP claims 9 and 8 respectively, west of the largest lake in the claim group. The amphibolites strike northeasterly and dip 70°-80° northwesterly. A quartz-filled fracture zone that strikes N 45°W and dips vertically has been partly exposed in several pits over a strike length of 280 feet. The quartz is white and is mineralized with scattered pockets of heavy disseminations and massive veinlets of galena, chalcopyrite, and pyrite. The fracture zone is over a foot wide and the quartz veining up to 10 inches wide. The best assay was obtained from the most southerly pit and assayed 0.25 ounce Au per ton and 6.43 ounces Ag per ton across 0.9 feet. Several bands of magnetite iron-formation extend across the fracture zone and carry disseminations of pyrite. Glassy to light grey quartz veins, some of which contain sulphide minerals, cut the amphibolite and iron-formation.

The number 3 showing occurs in the south-central and north-central parts of claims 6 and 7 respectively in foliated amphibolites. A fracture zone that strikes north-northwesterly has been partly uncovered in five main trenches over a length of 480 feet. A N 10°W base line extends through or very close to all trenches. The trenches, south to north and numbered 1 to 5, expose the following:

Trench 1 (18 feet long). Much of the trench was caved in; no sulphide was noted but the fracture zone was evident.

Trench 2 (8 feet long). The fracture zone is 4 feet wide and strikes N 35°W and dips 75°W. The amphibolites strike north and dip 85°E. This trench best illustrates the character of the mineralization in this zone. Quartz forms an irregularly shaped mass 1 foot to 2 feet wide within wall-rocks that are hydrothermally altered; galena, chalcopyrite, sphalerite, and pyrite occur in pockets in amounts up to 10 per cent in the quartz. Lesser amounts of sulphide minerals occur in the wall-rocks. Fluorite is disseminated throughout much of the zone. Several tight drag fold inches in amplitude are exposed in the trench.

Trench 3 (8 feet long). The trench was flooded with water but a 5-foot wide fracture zone was noted by the writer. Kilgour (personal communication) reported that the central part of the trench was well mineralized. An assay of 0.53 ounce Au per ton across 5 feet was obtained by Kilgour from this trench.

Trench 4 (6 feet long). The fracture zone is 3 feet long and contains a few quartz stringers and disseminations of pyrite and galena. The rocks show

evidence of considerable alteration. A sample taken by Kilgour from a 5-foot width assayed 0.03 ounce Au per ton.

Trench 5. Two trenches, 10 and 5 feet long, were excavated. The amphibolites strike N 10°W and dip 75°E. A sparsely mineralized quartz vein 3 feet wide is exposed in the large trench.

The geology is similar on the BOB claims; no showings are known to occur on them, but several draws and depressions extend from the COP to the BOB claims, some of which may represent important "breaks".

Coronation Gulf Area

A gold discovery in the fall of 1963 by prospector-pilot G. Bruce along the arctic coast led to the acquisition of a large block of claims by several companies and individuals. Companies holding ground in this area are Augustus Mines Limited, James River Syndicate, Metal Mines Limited, McIntyre Porcupine Mines Limited, Point Prospecting Syndicate, Rayrock Mines Limited, Radiore Uranium Mines Limited, and Duncan Range Iron Mines Limited, in addition to other groups and individuals. By the spring of 1964, 963 claims were recorded and by the end of 1964, 52 more claims were staked bringing the total to 1,015 claims. The claims lie south of a bay locally referred to as Caribou Bay about 12 miles southwest of Hepburn Island. The centre of the claim block is at North latitude 67°38' and West longitude 111°35' (mineral claim sheets 76-M-11 and 12).

The claims are underlain by a north-striking belt of acid to basic volcanic rocks of the Yellowknife Group. Granitic rocks have intruded the volcanic rocks and form small plutons; belts of mixed gneiss and schist are metamorphosed Yellowknife rocks.

During the summer of 1964, much of the staked ground was prospected, certain properties were geologically mapped, and surface work was done. The initial gold find of the James River Syndicate was drilled. A description of companies that performed work follows.

Augustus Mines Limited

This company owns the M group 1-60. The group lies on the southwest side of the main claim block staked in the fall of 1963 and winter of 1964. A lake locally referred to as Rum Dum Lake extends across the northeast corner of the group (mineral claim sheet 76-M-12).

The claims were prospected and geologically mapped at 1 inch to 1,000 feet. They are underlain mainly by gneissic rocks of the Yellowknife Group. No significant showings were found.

James River Syndicate

The Syndicate owns the Sidewalk group 1-60 (not designated as such on mineral claim sheet 76-M-11), grant numbers N49139 to N49158 and

N50010 to N50049, and the contiguous J group, claim numbers 2, 4, 6, 8, 10, and 12. These claims were recorded in October, 1963. They own the FG group, 1-30, recorded in November, 1964, which ties onto the H group on the east (mineral claim sheet 76-M-11). The James River Syndicate is backed by a consortium of companies that comprise Iso Mines Limited, Docan Mining Limited, Canadian Dyno Limited, and private individuals. The original gold discovery was made on the Sidewalk claims and led to the staking of over 1,000 claims in this area.

The geology of the Sidewalk and J groups is as follows. A belt of volcanic rocks of the Yellowknife Group underlies much of the area of interest. Fraser (1964) mapped granitoid and gneissic rocks respectively east and west of the volcanic belt. The volcanic belt strikes N 30°E and dips vertically to steeply east and west. The volcanic belt is probably a homoclinal sequence and is divisible into two units. The northwestern part is primarily tuffaceous. The tuffs are generally grey or grey-green and distinctly banded by thin darker coloured bands. Tight drag-folds (shear type), inches to a few feet in amplitude and up to 1 foot wide and with steeply plunging axes, are common. Drag-folded quartz veins and quartz-filled gash veins (a few feet long and inches wide) are also common.

The southeastern part is mainly flow banded, pink and red rhyolite. Some grey quartz-eyed dacites comprise less than 10 per cent of this unit. A brick red unit shows discordant relations to the sequence at times, but is probably for the most part of volcanic origin. Quartz-poor parts may reach syenitic compositions. A pink, 'quartz-eye' unit in places shows discordant relations and is probably not an extrusive rock in all cases.

The original exploration target was quartz veins of substantial size. The excitement creating the staking rush was due to the Sidewalk vein. The vein is concordant within the rhyolite sequence. In Sidewalk claim Nos. 25 and 26 (grant Nos. N50014 and N50015) the vein strikes N 30°E and dips 80°N. The vein was drilled on the southeast part of claim #25 and the northeast part of claim 26. It is 2,000 feet long, up to 30 feet wide, with an average width of 20 feet. A drill program consisting of 3,063 feet in 17 holes was completed July 20. The best results were obtained from two drill holes 100 feet apart in which .89 ounce Au per ton over 13.5 feet of core in hole #6 and .44 ounce Au per ton over 19 feet of core in hole #7 were intersected. Further testing of the vein failed to indicate commercial grade values.

Prospecting during the summer of 1964 uncovered additional gold-bearing veins. The following information was supplied by G. Bruce.

East Boundary Vein. The vein is located on the east of the claim group on Sidewalk claims 55, 56 and 57 (grant Nos. N50044, N50045, and N50046). It strikes N 5°E and dips vertically. It is discontinuously traced for 1,675 feet; one part of the vein is exposed for more than 200 feet. The vein is as much as 10 feet wide, but averages 4 feet, and consists of quartz, in part sheared, and is mineralized with galena, pyrite, and chalcopyrite. Visible gold is found in several parts of the vein. The vein occurs chiefly in granitic rocks of Archaean age.

Thirteen pits and trenches were excavated in the vein. Assays of a few ounces Au per ton were obtained from several parts in the vein.

North Vein. This vein is the southerly extension of the promising gold-bearing vein that occurs on the adjacent G group of McIntyre Porcupine Mines Limited. The vein lies in the northeast corner of the Sidewalk group. It has been traced discontinuously from the northern part of the east boundary of Sidewalk claim 52 (N50041) southwest 7,430 feet. Some sections of the vein are exposed for a few hundred feet in length and up to 7.5 feet in width. It strikes, on the average, N 30°E and dips nearly vertical.

The vein on the Syndicate and McIntyre ground represents the most encouraging occurrence of gold in the area. It occurs within granitic rocks, and is in part sheared and well mineralized with galena, pyrite, and chalcopyrite and important amounts of gold.

Seventeen pits and trenches were excavated in the vein. Assays of a few ounces Au per ton were obtained from several parts of the vein.

Bobby Vein. The vein is located in the east-central part of the Sidewalk group in the southeast corner of claim 46 (N50035) and extends onto adjacent claims. It has been traced discontinuously for 1,500 feet. The vein is up to 4.5 feet wide, strikes N 15°E, and consists of sheared quartz in granitic rocks containing parts mineralized with sulphide minerals and gold.

Three trenches were excavated in the vein.

The staking of the FG group was prompted by the discovery of gold-bearing veins, similar in character to those described.

The Syndicate is in the process of forming a company to explore their claims. A program including diamond drilling is planned for 1965.

McIntyre Porcupine Mines Limited

The company owns the G group 1-32 and the J group numbers 1, 3, 5, 7, 9, and 11 staked in 1963 and the GREGG group 1-22 staked in September 1964. The claims are in the northeast corner of the main claim block staked in the fall and winter of 1963-64 and lie in part adjacent to the sea (mineral claim sheet 76-M-11).

The claims are underlain by three northeast-striking belts of rocks: a central belt of grey-green banded tuffaceous rocks, bounded on the northwest and southeast by granite and granite gneiss respectively. The volcanic rocks are a continuation of those described on ground held by the James River Syndicates.

Several gold-bearing veins were found on the G claims and prompted detailed surface work. The veins occur in the granite gneiss unit and consist of quartz, for the most part sheared, and contain variable amounts of pyrite, galena, and sphalerite. The main vein system strikes about N 20°E and dips vertically to steeply west and lies within a narrow zone a few hundreds of feet wide. A description of each vein follows.

North Vein. It was traced 1,200 feet on claim G-32 and was reported to occur for several thousand feet to the southwest on ground owned by the James River Syndicate. Twelve trenches were excavated in the vein. An average of 20 samples taken from the trenches across widths ranging from 1 foot to 10.7 feet assayed .396 ounce Au per ton over a width of 4.6 feet.

The vein consists of well-sheared quartz accompanied by a parallel sheared, pink granite dyke. Best assays were obtained from pyrite-rich parts of the vein.

Discovery Vein. The vein lies in the central part of claim G-22, 4,000 feet northeast of the North Vein. It is exposed discontinuously for a length of 600 feet. Three trenches were excavated in the vein. Two samples from this vein averaged .695 ounce Au per ton over a width of 2.0 feet.

Several veins were found between the North and Discovery veins on the east side of claim G-31; they may possibly be a continuation of the two veins.

No. 10 Vein. The No. 10 vein consists of two parallel quartz veins in the northeast corner of claim G-14. A trench was excavated in the southeasterly vein.

Sphalerite Vein. It is located 300 feet northwest of the Discovery Vein. The vein is tens of feet long and up to 2.5 feet wide.

Flat Vein. The vein is 350 feet northeast of the Sphalerite Vein. Its length is not known; a sample from one trench in the vein assayed .30 ounce Au per ton across 1.5 feet.

No. 9 Vein. This vein is 300 feet west of the Flat Vein. It is a minimum of 500 feet long and about 1.5 feet wide. Two trenches were excavated in the vein.

Bronze Vein. This vein lies 3,500 feet east of the vein system that contains the five previously described veins. It lies on the east side of claim G-8. The vein strikes N 15°W; it is a minimum of 100 feet long and about 3 feet wide. One trench was excavated in the vein.

Metal Mines Limited

The company owns the L group 1-40. The group lies on the northwest side of the main claim block staked in the fall of 1963 and winter of 1964 (mineral claim sheet 76-M-12).

The claims were prospected and geologically mapped at 1 inch to 1,000 feet. They are underlain by acid to basic volcanic rocks and gneisses of the Yellowknife Group. No showings of interest were found.

Point Prospecting Syndicate

The Syndicate owns the D group 1-100. The claims are located in the southeast part of the main claim block staked in the fall and winter of

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TREE RIVER (18 km SE of mouth) / D Group

1963-64 (mineral claim sheets 76-M-11 and 12). The Syndicate is a consortium of companies that includes American Metal Climax Inc., Fort Reliance Minerals Limited, and Guggenheim Explorations Inc., and is managed by Nahanni Mines Limited.

The claims are underlain by belts of north-striking rock units. A major north-striking fault extends through the west-central part of the group. Other major faults nearly parallel to the major fault are present on the claims. West of the fault going from east to west, four belts of the following rock units occur: (1) a basic and acid volcanic belt, (2) a meta-diorite belt, (3) an acid volcanic and porphyry belt and (4) a basic volcanic belt. East of the fault north-northwest striking belts of mixed acid and basic volcanic rocks are intruded by granite and porphyry bodies.

Group

Showings consisting of gossaned rocks were found at the following locations.

1. Along a north-striking fault located halfway between the west boundary of the claim group and the major fault, lengthy pyritic zones, some traceable for 1,000 feet, were examined.

2. In the northeast corner of the claim group, 2,000 feet southwest of a lake locally called Locana Lake, a folded, east-striking structure more than 1,000 feet long contained variable amounts of sulphide minerals.

The claims were mapped and certain showings were sampled.

Rayrock Mines Limited and Radiore Uranium Mines Limited

The companies own the RR group 1-100. The claims lie on the south-central part of the main claim block staked in the fall of 1963 and winter of 1964. A lake locally referred to as Rum Dum Lake is situated in the central part of the group (mineral claim map 76-M-12).

The claims were prospected and geologically mapped at 1 inch to 1,000 feet. They are underlain by acid to basic volcanic rocks and gneisses of the Yellowknife Group. No showings of interest were found.

Other Activities

The following claim groups were prospected by the companies or individuals listed.

A group - 100 claims - Duncan Range Iron Mines
B group - 100 claims - G. Bruce
E group - 48 claims - L.B. Almond
H group - 50 claims - I.C. Christopher - The important gold-bearing vein that occurs on McIntyre Porcupine Mines and James River Syndicates' ground extends across the northwest corner of the H group. In December 1964, the claims were acquired by Consolidated Manitoba Mines Ltd.

THOMPSON LAKE (SOUTHEAST)
/GAY/WIN/PLUTO/LUN

dlul 81/09.

GAY Group

The GAY group 1-9 lies north of MacKay Lake, 30 miles east-northeast of Yellowknife (mineral claim sheet 85-I-11)[1]. The claims cover a gold showing staked by F. Avery and associates in October, 1963. The showing was originally staked in the late thirties subsequent to the staking of the Thompson-Lundmark gold property. The showing was restaked on several occasions; original staking was the LUN group by Partridge Yellowknife Gold Mines followed by the PLUTO group in the fifties. It was staked as the WIN group by Avery in September, 1962, and finally as the GAY group in 1963. The writer visited the showing on October 16, 1964. The ground was snow covered but there was no difficulty examining the showing.

The showing consists of a single quartz vein 532 feet long, up to 3 feet wide but averaging 2 feet, which occurs conformably within Yellowknife Group banded greywacke and siltstone. The rocks strike N 5° to 25°W and dip 50°NE (see geology of the area and the quartz vein mapped in Fortier, 1947). The quartz varies from white-sugary to light grey and contains small amounts of tourmaline. Some sedimentary beds are nodular. The quartz is sparsely mineralized with galena, pyrite, and pyrrhotite; visible gold is present but its recognition is made difficult by its fine grain-size. The gold is not necessarily associated with the sulphides, hence its distribution in the quartz is difficult to predict. A quartz vein system consisting of veins a few inches wide and striking N 30°E and dipping vertically lies west of the main vein.

A 60 degree drilled hole was put down about 400 feet east of the vein by previous owners. Core and core boxes indicate the hole went down nearly 400 feet. To date Avery has excavated 5 trenches and 4 pits in the vein.

dlul 81/09 Hidden Lake (NE Shore End) HM-2

H.M. Group - Hidden Lake

The H.M. group of three claims covers a gold prospect on the northeast side of Hidden Lake 28 miles east-northeast of Yellowknife. The claims are held by H. Wist and associates of Yellowknife. The first staking of the property was by A. McClure in the thirties. The claims lapsed and J. Herriman restaked them in December, 1938, then subsequently sold them to other interests. Mr. C. McAvoy restaked them and retained them until 1959. Mr. J. Herriman restaked the claims in June, 1959. The work to date, primarily by C. McChesney and J. Herriman, consists of a small drilling program, sinking of an 8- by 12-foot (7- by 9-foot at the base) 80 degree inclined shaft, 69 feet deep, and underground development work. The shaft has a N 10°E bearing and is located approximately 700 feet east-northeast of the base of a conspicuous narrow peninsula on the northeast shore of Hidden Lake. An old caved-in, 40 degree inclined shaft that has a bearing of about S 70°E and lies 65 feet southwest of the main shaft, was excavated by earlier owners in addition to two pits north and south of the old shaft. The writer visited the property on October 10, 1964, and acknowledges the assistance of Mr. J. Pearson in mapping the property.

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[1] In November, Mr. Avery recorded contiguous claims GAY 10-16 and KOD 1-17.

The claims are underlain by thin-bedded greywacke and slate of the Yellowknife Group, which have a west of north strike and a shallow to moderate easterly dip. A feature somewhat unique to this property is the presence of quartz boudins, some of which contain a fair amount of visible gold, conformable within the sedimentary rocks. One boudin, which has generated much of the interest on this property, is about 20 feet wide, 30 feet thick, and more than 50 feet long. It strikes east and plunges parallel to the bedding, which varies from N 40°E at the surface to N 30°E in the mine. It rakes 90° as do all the boudins whose plunge is controlled by the dip of the beds. In the shaft the large boudin dips moderately to steeply to the southeast. The base of the boudin lies 4 to 8 feet above the bottom of the shaft and has a low easterly dip. In the shaft it averages 25 feet thick.

Development work in the mine has been on one level and consists of the following. From the shaft a crosscut on a bearing of 110° azimuth has been driven 45 feet. Ten feet east of the shaft, a sub-drift has been driven 10 feet to the northeast. From the end of the crosscut one drift has been driven 60 feet on a bearing of 165° azimuth and a second drift has been driven northward thence westward to a point that nearly connects it with the 10-foot sub-drift. The crosscut and circular drift exposes much of the north and south limits of the large quartz boudin. The strata adjacent to the large boudin conform with the surface of it and indicate the east-striking trend of the boudin. In the south drift many quartz boudins, up to a few feet wide and less than 2 feet thick, but averaging 1 foot wide and inches thick (length of boudins not determinable), all plunge parallel to the bedding (25° to 30° NE) and rake 90°. A conspicuous banding in the quartz of all boudins has an easterly to northeasterly strike and steep northwest dip.

In the past it was thought that the small boudins formed a band that overlay the large boudin. It appears now that the small boudins and the large boudin are within the same stratigraphic unit. On surface, quartz boudins can be found above and below the presently explored quartz boudined band.

Gold is associated with several sulphide minerals, but appears most often with galena. Other sulphides include pyrite, chalcopyrite, possible marcasite, and a dark coloured mineral that is probably sphalerite. Antimonial sulpho-salts are reported by the owners to occur here. The above minerals are most commonly found rimming the boudins within the quartz and adjacent wall-rock. Coarsely crystalline biotite rims some of the boudins, and seams of chlorite have developed about the large quartz boudin. Visible gold was noted in place and in a number of samples on the dump at the surface. Three samples were taken for assay purposes; they are as follows:

1. vertical channel sample across a 2-foot boudin, east side of south drift, .68 ounce Au per ton and .75 ounce Ag per ton.

2. grab sample from several small boudins on the west side of the south drift, .02 ounce Au per ton and .02 ounce Ag per ton.

3. vertical channel sample across 1 foot of large quartz boudin below contact with wall-rock (taken from east side of north drift), .02 ounce Au per ton, .02 ounce Ag per ton.

The owners are presently completing mill facilities, which includes a ball mill, jig, concentrating table, and amalgamation barrel. Hoisting equipment includes a Sullivan tugger hoist-turbine type. A small diesel generator provides sufficient power to operate surface and underground equipment. Milling will not commence until next year, but mining will continue during the winter.

Q 1 K 64/10 HOPE Group TOP L-K

The HOPE group 1-8 lies east of Bridge Lake, 85 miles northeast of Yellowknife (mineral claim sheet 85-P-8). Bridge Lake is 6 miles northeast of Spencer Lake. The claims occupy a block 2 east-west and 4 north-south. Previous claim groups on the property extended west, north, and southeast of the present staking. Messrs. A. Marceau and E.H. Olsen staked the property in May, 1964. The property was originally staked in November, 1945 by C.H.B. Frere and called the TOP claims and transferred to Consolidated Mining and Smelting in March, 1946. The claims lapsed in 1949 and were restaked by E.G. Jones and E.H. Olsen in December, 1949 and called the EEE claims. The claims lapsed in 1950 and were restaked by E.H. Olsen in August, 1956 and called the PAL group of 6 claims. The claims were transferred to B.J. Bentner in January, 1957 and lapsed, after an extension period of 15 months, in November, 1959. The writer visited the property on June 18, 1964.

The property is underlain by fine- to medium-grained, amphibolitic rocks of the Yellowknife Group. The amphibolites are massive except for some pillowed rocks between claim 5 and 6. Fairly lengthy north-trending valleys are conspicuous on the claims. The area covering the claims was mapped by Moore et al.(1951).

The main showing is situated on the southern boundary of claim No. HOPE 1, on top of a prominent east-striking escarpment. The escarpment is probably due to a fault whose displacement is not known. A zone about 75 feet long and striking N 25°W and dipping 65°E has been exposed in 5 pits. Description of the workings from north to south is as follows:

Pit 1 - a quartz-calcite vein 1 inch wide is exposed and contains no sulphide minerals.

Pit 2 - the vein is not exposed due to infill of debris.

Pit 3 - scattered pockets of fairly massive arsenopyrite and minor amounts of galena and sphalerite occur in a quartz vein that is 14 inches wide; overall sulphide content is less than 10 per cent. A well-mineralized sample from pit 3 assayed 1.39 ounces Au per ton and 3.37 ounces Ag per ton.

Pit 4 - the best mineralized rocks in the zone and on the property are exposed in pit 4. The zone is 18 inches wide and consists of heavily disseminated arsenopyrite across the entire width. The arsenopyrite is the fine needle variety and makes up about 20 per cent of the rock. The rock is granular, almost detrital looking in thin section, and composed entirely of quartz and arsenopyrite. A sample from this pit assayed 1.13 ounces Au per ton and 0.67 ounce Ag per ton.

Pit 5 - rusted rocks are exposed and contain little or no quartz and few scattered grains of sulphide minerals. Two debris-filled trenches were noted approximately 100 and 200 feet south of pit 5.

A quartz-calcite veined shear zone on claim No. 6 has been blasted. It strikes N 25°W, dips 65°E, and is up to 4 feet wide and traceable for a few tens of feet. Few specks of sulphide minerals were noted; grab samples taken by the owners from this zone assayed less than 0.1 ounce Au per ton. Several other quartz-calcite veined shear zones were observed on claims 5 and 6 up to 5 feet wide and a few tens of feet long, but negligible amounts of sulphide minerals were noted.

Itchen and Point Lakes Area

Giant Yellowknife Mines Limited, Roberts Mining Company, and Point Prospecting Syndicate performed work on claims staked primarily in 1963. The area of interest lies from Itchen Lake south to a point, south of the east end of Point Lake (between North latitudes 65°46' and 65°10' and West longitudes 113°15' and 112°25'). Giant drilled their Tree Lake and AA group gold showings and Roberts Mining and Point Prospecting did geological mapping and trenching. Canadian Nickel Company drilled a copper showing 5 miles northwest of the northwest arm of Itchen Lake, found in 1964. The outcome of this year's work was generally discouraging, and further work by the companies concerned in the immediate future is not foreseen.

The geology of the area comprises a variety of igneous, sedimentary, and metamorphic rocks of Archaean and Proterozoic age. The Archaean rocks are typical of the Shield and show evidence of moderate to strong deformation. Structural trends between Point and Itchen Lakes are northerly to northeasterly. The exploration target sought is similar to that found at Contwoyto Lake and consists of gold-bearing amphibolite interbedded in metasedimentary rocks of the Yellowknife Group. In addition base-metal targets sought include greenstone and gabbro of Archaean age and clastic sedimentary rocks of Proterozoic age.

Giant Yellowknife Mines Limited

The company performed diamond drilling on two gold showings in this area staked in 1963. The showings are covered by the TREE claims at Point Lake (mineral claim sheet 86-H-7) and the AA claims northeast of Itchen Lake (mineral claim sheet 86-H-16).

The showing on the TREE claims was described by Schiller and Hornbrook (1964, pp. 27-28). Eight holes, totalling 2,997 feet, were drilled. Two parallel bands of amphibolite separated by metasedimentary rocks of the Yellowknife Group were intersected. One band is at least 800 feet long and averages 0.11 ounce Au per ton over 8.6 feet, whereas the second band is more than 800 feet long and averages 0.22 ounce Au per ton over 8.1 feet. Much of the amphibolite was mineralized with arsenopyrite, pyrrhotite, and pyrite. Further work on the property in the near future is not expected.

The AA claims lie 2 miles south of the southwest corner of a lake locally called Rockinghorse Lake and southeast of a small lake locally called George Lake. Six holes totalling 1,374 feet were drilled in an area centered about claims 7, 8, 37, and 38. Yellowknife Group schistose rocks strike northeast and dip steeply southeast and are intruded by concordant bodies of granitic rocks. Sulphide lenses and pods, some of which are gold-bearing, are present in the metasedimentary rocks. Subsurface intersections of sulphide bodies carried trace to minor amounts of gold. Further work on the claims is not expected.

Point Prospecting Syndicate

The Syndicate owns the CUP group 1-60, the RUST group 1-8, and the GREY, GORD, and CAM groups of 40, 21, and 10 claims respectively. The CUP claims lie south of Point Lake at approximately North latitude 65°13' and West longitude 113°15' (mineral claim sheet 86-H-3). Part of the CUP group was staked in 1959 and covered by the now lapsed BIG, BUSY, and BUG groups. The RUST claims are south of Point Lake at approximately North latitude 65°13' and West longitude 112°56' (mineral claim sheet 86-H-2). The GREY claims tie onto the TREE and TESS groups of Giant Yellowknife Mines and lie north of Point Lake (mineral claim sheet 86-H-7). The GORD claims adjoin the GREY group on the west and the PINE claims of Giant Yellowknife Mines on the northwest (mineral claim sheet 86-H-6 and 7). The CAM claims lie on the south side of a prominent inlet north of the central part of Point Lake (mineral claim sheet 86-H-6). The GREY and CUP groups were recorded in December, 1963. The RUST claims were recorded in October, 1964. The GORD and CAM groups were recorded in July, 1964. Mapping and magnetometer surveys of certain claims were completed and trenches were excavated in several showings. A description of claim groups follows:

CUP GROUP - The claims are underlain by east-trending greenstones and meta-gabbro and minor amounts of quartz-biotite gneiss. Several north-striking shear zones are present and are host to gossans containing sulphide minerals. Three principal showings were examined:

1. McDonald Showing - The showing is located just east of a small pond in the west-central part of the group on CUP claim 37. It occurs in a north-striking shear zone in altered gabbro immediately south of an east-trending, north-dipping gabbro-greenstone contact. Pyrrhotite, some pyrite, and minor chalcopyrite consisting of disseminated bands and massive stringers are found in chloritic and graphitic altered gabbro. A trench 86 feet long was excavated by previous owners across the widest part of one gossan. Low copper and nickel assays were obtained from the trench.

2. Valley Showing - The showing is found along the same east-striking contact zone as the McDonald Showing but 2,400 feet to the east. It occurs along the axis of a N 20°E-trending fold with a northerly plunge. Mineralized rocks outcropping here are similar to those of the McDonald Showing.

3. "D" Showing - It is located in the northern part of claim 19. Several gossans consisting of disseminated and massive lenses occur in sheared, siliceous greenstone along or adjacent to a gabbro-greenstone contact.

The gossans crop out along an easterly trending zone over 1,200 feet long. Some chalcopyrite and reportedly very minor pentlandite are found along the north boundary of the zone.

GREY GROUP - The claims are underlain by a sequence of north-striking, steeply dipping, quartz-biotite schists and related metasedimentary rocks and interbeds of amphibolitic rocks. In the northwest corner of the claim block northeasterly-striking acid volcanic rocks are in fault contact with metasedimentary rocks. The fault strikes northeast. Small granitic bodies crop out east of the claim block. A possible major northwest-striking fault extends from the southeast corner of the claim block to the central part. The two following mineralized zones were examined in detail.

1. Tamby Zone - The zone is located in the central part of the claim block. A number of gossans occur in amphibolite that is cut by a possible northwest-striking fault. The zone and enclosing rocks strike N 50°W and dip 50°NE. The amphibolite, in part garnet-bearing, contains disseminations of pyrrhotite and arsenopyrite. Low gold assays were obtained from mineralized parts of the zone.

2. Flag Zone - The zone is along the fault contact between volcanic and metasedimentary rocks on claims GREY 37 and 38. The volcanic rocks are banded aphanites and minor probable tuffs. Massive pyrite is found along the fault on the shore of Point Lake whereas mineralized volcanic rocks west of the fault contain pyrite disseminations. East of the fault the metasedimentary rocks contain primarily disseminations of pyrite, pyrrhotite, and locally arsenopyrite in the amphibolite beds. Quartz lenses primarily associated with the amphibolites contain massive pods of arsenopyrite. A magnetometer survey was completed over the zone and four trenches were excavated in the amphibolitic mineralized rocks. Gold assays obtained were erratic and generally low; the best assays came from amphibolitic rocks containing disseminated arsenopyrite.

CAM GROUP - The claims are underlain by northerly-striking, steeply-dipping metamorphosed basic volcanic rocks. On the northwestern edge of the claims porphyritic granite and diorite crop out. Several shear zones containing quartz veins and stringers and mineralized with galena, pyrite, and locally arsenopyrite occur in the volcanic rocks.

Continued work on the above showings is not expected.

Roberts Mining Company

The company owns the MAR group 1-112, located at Itchen Lake, and staked in August and September, 1963 (mineral claim sheet 86-H-10). The claims were mapped at 1 inch to 1,000 feet, three principal showings were mapped in detail, a magnetometer survey was done on the No. 2 showing, and a number of trenches were excavated.

The claims are underlain by metasedimentary micaceous schists and related rocks of the Yellowknife Group. These rocks strike N 65°E and dip steeply to vertically. Amphibolite bands and lenses, some of which are gold-bearing are interbedded in the sedimentary rocks. A gabbro body lies

in the central part of the claim block. Bands of acid volcanic rocks are interbedded in the metasedimentary rocks in the northwest part of the claims. An extensive system of northwest-striking diabase dykes intrude all rock units.

The following three showings were examined in detail.

No. 1 Showing - This showing is in the southern part of claim 5. Minor disseminated pyrrhotite, pyrite, arsenopyrite, and chalcopyrite are found in the metasedimentary rocks and amphibolite. Five trenches were excavated in gossanized rocks but nothing significant was uncovered.

No. 2 Showing - It is located in the central part of claim 52. A small gabbro body has intruded the metasedimentary rocks. A zone of shearing lies along the contact between the gabbro and metasedimentary rocks and contains disseminations and stringers of nickel sulphide and copper minerals. Seven trenches and pits were excavated on the west side of the gabbro contact. Assays containing significant amounts of gold, copper, and nickel were obtained from excavations.

No. 3 Showing - The showing consists of three zones in an area between claims 106 and 107. The showings are underlain by schistose rocks and minor interbeds of amphibolite. In B zone, assays of rusted schistose rocks from a trench gave low gold values. In A zone, 300 feet northeast of B zone, 1 trench and 5 pits were excavated. Assay results from the excavation gave low gold values. C zone is 1,200 feet north-northeast of A zone. One trench was excavated and revealed a gossan zone containing pyrite. Mineralized rocks from this zone were found to contain no gold.

PAT and W.D. Groups

The PAT claims 1-16 and the contiguous W.D. claims 1 and 3 are located on the northeast shore of Johnson Lake 40 miles north of Yellowknife (mineral claim sheets 85-O-1 and 85-J-16). They were staked by W. Ternawski in September 1964. The claims were originally staked in the forties as the H.W. and KEN groups for Sovereign Gold Mines. Considerable work was done by Sovereign and included 19 X-ray drill holes totalling 2,500 feet and several surface trenches. The claims lapsed and J. Woolgar restaked the showing in 1959. The claims again lapsed and W. Ternawski restaked the showing in 1960 as the PAT group 1-9. The claims were allowed to lapse and in the spring of 1962 J.E. Stephens restaked the showing as the JON group 1 and 2. The JON claims lapsed early in 1964[1].

The claims are underlain by Yellowknife Group rocks in which a mineralized zone nearly parallels a contact between banded and laminated argillites and siltstones on the west and banded and massive, light to dark grey volcanic rocks (probably tuffs). The mineralized zone lies primarily in the sedimentary rocks. The strata and zone strike generally northeasterly and dip steeply. A fracture zone up to 5 feet wide containing mineralized quartz veins up to 4 feet wide but generally less than 2 feet was traced for

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[1] Giant Yellowknife Gold Mines took an option on the property early in 1965.

more than 1,500 feet. Ternawski extended the zone 237 feet to the north, bringing the total length of the zone to 1,737 feet. Three showings in the zone have been explored.

The No. 1 showing area is about 50 feet long and lies between claims 7 and 10 near their southern boundaries. Six trenches and pits were excavated in previous years. One pit lies 60 feet west of the zone. The central trench (#2) exposes the following. Strata strike N 20°W and dip vertically to 60°W. A 3-foot wide quartz vein strikes N 35°W and dips 55° SW. A vertical north-striking fault cuts off part of the quartz mass on its west edge. A prominent fracture cleavage strikes northward and dips steeply to the east. Three quartz veins up to 2 inches wide dip at a low angle into the fault from the west. To the north a few feet, the quartz vein broadens then thins. Variable amounts of disseminated pyrite, sphalerite, arsenopyrite, and galena occur in the quartz and the country rock. In #2 pit, massive galena veinlets occur in the quartz. Assays of up to 1.09 ounces Au per ton over 30 inches were reportedly obtained in the #2 trench. South of the #1 showing the zone trends S 35°E. One hundred feet north of the #1 showing Ternawski has uncovered similarly mineralized quartz veins in 3 pits. This part of the zone strikes N 65°E.

The No. 2 showing area lies south of the No. 1 showing and can be traced with good continuity for 200 feet. It lies in the northwest corner of claim 8. Five trenches were excavated in this area. The argillites strike westerly to northwesterly and dip vertically to steeply southwest. On the north part of the showing a well-developed shear zone up to 4 inches wide continues southward and becomes more of a fracture zone 2 or 3 feet wide. Quartz veins cut and lie within the zone. One main quartz vein mineralized in part with disseminated arsenopyrite and pyrite, is about 2 feet wide and can be traced about 180 feet. A grab sample taken by Mr. Ternawski from the southern part of the showing and containing abundant arsenopyrite assayed 10.5 ounces Au per ton.

The No. 3 showing area lies in the west-central part of PAT claim 8 south of the No. 2 showing. It has been explored in 6 pits over a distance of 95 feet. The strata strike N 40°E to N 75°E and dip vertically to steeply west. The fracture zone strikes N 40°E and dips vertically, is up to 4 feet wide and contains many veinlets and stringers of quartz. A quartz vein about 1 foot wide lies east of the zone. Small pockets of massive arsenopyrite were noted in the more southerly trenches. Quartz containing arsenopyrite in the most northerly pit is reported by Mr. Ternawski to assay up to 0.70 ounce Au per ton over 1.3 feet.

Two showings not directly related to the zone described occur 100 feet southwest of the No. 2 showing, and 1,400 feet east of the cabin (southeast corner of claim 5).

P.H. Group

The P.H. claims 1-6 and 7-12 were staked in August and September, 1964 respectively by A.V. Giauque. They lie on the east side of Spencer Lake, 80 miles northeast of Yellowknife. This ground was previously covered by the BOOM group 1-20, staked by L. Garski in 1938

and by the B.C. group 1-16, staked by S. Christie for Gunnar Mining Limited in April, 1962 (mineral claim sheet 85-P-1). The writer examined the property on September 29, 1964.

The claims are underlain by a north-striking belt of amphibolitic rocks (meta-basalts) of the Yellowknife Group on the western half of the group and by conformable metamorphosed siliceous rocks that have the appearance of mylonite on the east. The 'mylonite' is light grey to glassy, and weathers white. Moore et al.(1951) mapped a north-striking contact between granitic and volcanic rocks west of the 'mylonitic' rocks. The rocks east of the contact were mapped as basic volcanic rocks and did not include the siliceous rocks, which may represent metamorphosed felsic lavas.

A considerable amount of work has been expended on a sparsely mineralized zone in the mylonite. The zone extends from a point east of a lake on claim 5 and strikes N 10°W for 400 feet, then according to Mr. Giauque swings northward for 500 feet. Seven trenches have been excavated in the southerly 400 feet and 7 or 8 trenches are present in the northerly 500 feet of the zone.

A brief description of the seven southerly trenches (south to north) follows.

Trench 1 - 10 feet long. A quartz vein up to 15 inches wide occurs along a contact between light grey, mica-flecked siliceous rocks and dark grey meta-siltstones. Minor amounts of pyrite occur in the quartz.

Trench 2 - A 10- and 20-foot excavation separated by a 3 foot wall. A chloritic-rich band inches wide contains disseminated arsenopyrite and pyrite.

Trench 3 - 25 feet long. Nearly massive veinlets of arsenopyrite occur with narrow quartz veins.

Trench 4 - 25 feet long and 5 feet wide. Highly irregularly shaped quartz masses up to 1 foot thick contain small pockets of arsenopyrite, galena, and pyrite. A chlorite-rich zone up to 10 inches wide shows conspicuous iron oxide and contains disseminated pyrite.

Trench 5 - 6 feet long. No mineralized rocks present.

Trench 6 - 45 feet long. In this trench two chlorite-rich zones contain iron oxides and some pyrite and arsenopyrite.

Trench 7 - Overburden is uncovered here and nothing is exposed.

Pine Point Area

As a result of Pine Point Mines' approaching production date in the fall of 1965 interest in this area was shared by Pine Point Mines and Conwest Exploration Limited. The two companies staked more than 1,400

claims in areas adjoining the main claim block of Pine Point Mines[1]. The Pine Point area lies south of Great Slave Lake, 57 miles east of Hay River (mineral claim sheets 85-B-10, 11, 14, 15 and 16).

Three contiguous claim blocks described herein and staked in the late fifties and early sixties and adjoining the Pine Point property on the west are underlain by the Presqu'ile dolomites and from a limited amount of drilling appear to be in a favourable location.

Conwest Exploration Limited

In 1964, the company staked 732 claims in the Pine Point area. Groups staked and their recording date are as follows:

1. TV Group 1-108	February
2. TV Group 109-158	September
3. I.P.[2] Group 1-102	October
I.P.[2] Group 105-217	
TL[2] Group 1-150	
AM Group 1-50	
4. CEX Group 159	December

The claims adjoin the main claim block of Pine Point Mines on the southwest, west, northwest, and part of the north boundaries (mineral claim sheets 85-B-10, 11, 14, 15 and 16).

McPhar Geophysics Limited did induced polarization surveys over some of the claims. Results of the surveys were inconclusive, but the company will undertake more geophysical work of this type in 1965.

CUBE Group

The CUBE group 1-30 ties onto the Th claims of Conwest Exploration Limited and lie west of the main claim block of Pine Point Mines. The claims are owned by West Canada Collieries and were staked in 1956 (mineral claim sheet 85-B-11).

Up to 100 feet of glacial material underlies the claims. Bedrock is composed of a variety of carbonate rocks, possibly including dolomites of the Presqu'ile Formation. To date 26 holes, all of which intersected only a few feet of bedrock, were drilled. The following claims were drilled:

CUBE claims - 14, 15, 16, 18, 28	- 1 hole
CUBE claims - 13, 26, 17, 29	- 2 holes
CUBE claims - 25	- 3 holes

10 holes - locations not known

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[1] Work performed and claim staked by Pine Point Mines are described on a later page in this report in the section on "Producing and Developing Mines".

[2] Includes fractional claims.

DIAMOND and EV Groups

The contiguous DIAMOND group 1-18, and EV group 1-33, lie west of the main claim block of Pine Point Mines. The DIAMOND group adjoins the CUBE group on the east. The DIAMOND and EV claims were staked in 1957 and 1961 respectively. The claims are owned by J.R. Woolgar and associates of Yellowknife (mineral claim sheet 85-B-11).

The claims are underlain by glacial deposits about 100 feet thick. Drill data indicate that the Presqu'ile Formation in part underlies the glacial deposits. The following claims were drilled:

DIAMOND claim 7 - 14 holes. Galena and sphalerite were found in 5 holes.
DIAMOND claim 18 - 1 hole
EV claim 16 - 6 holes

All holes intersected only a few feet of bedrock.

PUSS and PL Groups

The PUSS claims 1-4 and PL claims 1-4 are located over the Benign Islands (Great Slave Lake) 26 miles southeast of Yellowknife. They lie 3 miles west of the mainland opposite Drybones Bay (mineral claim map 85-I-4). The PUSS group was recorded by Mrs. A. Payne in July, 1958 and transferred to Mr. A. Payne. The PL group was recorded by Mr. G. Frederickson in September, 1961 and transferred to Miss A. Payne. The LOLLY group 1-7 was recorded by Mr. J. Larson in July, 1962 and transferred to Mr. T. Payne; the LOLLY claims are contiguous with the PUSS and PL claims on the east and south. The LOLLY claims lapsed in 1963. The writer visited the property on September 22, 1964.

The claims are underlain by an interbedded sequence of metagreywacke and minor slate, which strike N 55°W and dip steeply north and south. Several shear zones up to 2 feet wide and from tens to some hundreds of feet long have developed in the slates. The shear zones generally parallel the bedding and take the form of schistose rocks some of which contain quartz veins and minor sulphide minerals and some gold. Numerous quartz-filled gash veins truncate the bedding. Drag folds were found to plunge 55 degrees to the southeast. Sedimentary structures noted include graded bedding, rhythmic bedding, and crossbedding, but tops could not be ascertained. A diabase dyke occurs on the largest island.

Surface work has been done on the islands at intervals since 1961. Giant Yellowknife Mines optioned the property in 1962 and geologically mapped the Benign Islands during that summer. The property was subsequently dropped.

Surface work has been done on several of the islands, but due to water conditions only the following was examined.

The largest island of the group located on the northeast side exposes the following:

1. Along the southwest edge of the island four pits have been excavated in a zone 600 feet long that contains discontinuous quartz veins along its entire length up to 1 foot wide and several feet long. White, glassy, and grey varieties of quartz occur containing trace to minor amounts of pyrrhotite and pyrite.

2. On the northwest shore of the island two pits, each 12 feet wide, expose quartz veins similar to those described. Assay results from four samples taken across parts of the east pit all ran less than 0.1 ounce Au per ton. The west pit contains scattered grains of pyrrhotite and pyrite in quartz and scattered euhedral arsenopyrite in the meta-greywacke.

An island and reef 300 feet southwest of the largest island has received considerable attention. On the island two pits have been excavated in two separate zones containing quartz, both of which contain only trace amounts of sulphide minerals. On the reef two parallel trenches, one 30 feet long and 3 to 5 feet wide and a second 12 feet long and 4 feet wide have exposed quartz veins that make up to 50 per cent of the outcrop. The best assay from the big trench was reportedly 1.89 ounces Au per ton across 2.0 feet and from the small trench 11.84 ounces Au per ton across 2.5 feet. Eight other assays from both trenches ran less than 0.10 ounce Au per ton. Both high assays came from the southern end of each trench and indicate the location of a high grade pocket of gold. In September 1964 three 45 degree drill holes, each 140 feet long, were drilled northeastward from the island, and were directed to intersect the zone beneath the reef. The core was examined by the writer and insignificant amounts of sulphide minerals in quartz were noted.

SANS, AI, and AM Groups

SANS group 1-15, AI group 1-10, and AM group 1-10 were staked in August, 1964 by G. McDonnell and are situated on the west side of Lac Sans Disant, 110 miles northeast of Yellowknife (mineral claim sheet 75-M-5).

These groups cover what was previously staked as parts of the PATSY, AGNES, CHAD, RIG, and GEM groups. The writer examined one showing on the northeast corner of claim number SANS 4 on September 29 (mineral claim sheet 75-M-5).

SANS claim 4 and adjacent claims are underlain by a north-trending sequence of amphibolitic rocks of the Yellowknife Group. The main showing consists of several irregular quartz veins up to 10 inches wide within a 6-foot fracture or shear zone. The zone strikes N 10°W and dips 80° SW. A pit has been excavated and exposes sparsely to heavily mineralized rocks. The heavily mineralized rocks are well oxidized and appear to be located in the southwest corner of the pit. A sample of well mineralized and oxidized rocks that had been previously blasted from near the hanging-wall assayed .01 ounce Au per ton. A 1-foot chip sample taken across 1 foot within 12 inches of the foot-wall assayed .005 ounce Au per ton. North of the pit a smooth outcrop face of the quartz-filled zone exhibits little or no sulphide minerals. A quartz vein a few inches wide occurs 125 feet to the northeast of the pit, but only trace amounts of sulphide minerals were noted in the quartz.

def 01/10

Sulphur Bay Area

The Consolidated Mining and Smelting Company and Rayrock Uranium Mines Limited staked claims in the Sulphur Bay area, on the west side of Great Slave Lake, 90 miles southwest of Yellowknife (mineral claim sheets 85-G-5 and 12, and 85-F-8). In the 1950's Preston East Dome Mines Limited staked over 1,000 claims in the area and did a considerable amount of diamond drilling. Exploration in this area is directed toward coarsely crystalline dolomites of the Middle Devonian Presqu'ile Formation (see Douglas, 1959).

Consolidated Mining and Smelting Company of Canada Limited

The company owns the PIP group 1-271, 338-339, 349-354, 360-369, 372-508, 511-515, 517-524, and 533-540, a total of 447 claims, recorded in September, 1964 (mineral claim sheets 85-G-5 and 12, and 85-F-8).

An induced polarization survey and diamond drilling were done on some of the claims. The company plans to resume exploration of the claims in 1965.

Rayrock Mines Limited

The company owns the LIP group 1-22, 25-28, 30-31, 33-34 and 36-68, a total of 63 claims, and the LOT group 1-35, recorded in September, 1964 (mineral claim sheet 85-G-5).

This summer geological mapping and geochemical surveys were completed on the claims. Further work is planned for 1965.

def 01/09

GORDON LAKE (KNIGHTS BAY SOUTH) / TREACY

TREACY and AM Groups, Expander Mines and Petroleum Ltd.

The company owns a block of 7 claims comprising TREACY 7, 8, 10, 11, 12, and 13 and AM 1 on the south shore of Knight Bay at Gordon Lake, 47 miles northeast of Yellowknife (mineral claim sheet 85-I-14). The property was originally staked as the TREACY group by Alex Mitchell and associates in September, 1946. Some claims lapsed and others were added in 1947. AM claim #1 was staked in July, 1950. The claims were transferred to Boreas Yellowknife Gold Mines Limited, which have since changed their name to Expander Mines and Petroleum Limited. Eight holes, totalling 664 feet, were drilled in 1950. The writer visited the property on July 2, 1964.

The claims are underlain by greywacke and slate of the Yellowknife Group. The rocks strike N 60°W and dip steeply west and east. Henderson (1941) mapped a synclinal axis on the east side of claim 8.

Several showings, two of which were briefly examined, occur on the property. A showing in the west-central part of claim AM 1 occurs on a prominent point of land. An east or No. 1 zone and a west or No. 2 zone have been explored in 8 trenches. The No. 1 zone strikes N 50°W and dips steeply.

A fold structure near the shore causes the No. 1 zone to deviate to a more northerly strike. No. 1 zone is over 120 feet long; a main zone of shearing is up to 2 feet wide and contains pulverized graphitic material, dark coloured quartz, pyrite, and minor arsenopyrite and galena. A large quartz mass in addition to small quartz veins containing scattered dissemination of sulphide minerals lies adjacent to the shear zone. The No. 2 or west zone is over 100 feet long and possibly over 200 feet long. The No. 2 zone was partly examined; the character and sulphide content is somewhat similar to No. 1, but appears to be less than 2 feet wide.

A second showing, the No. 3 vein or zone extends across the boundary of TR 7 and TR 8. It strikes N 45°W and dips vertically. Innumerable quartz veins and lenses occur in a shear zone up to 7 feet wide. Five trenches, from 5 to 7 feet wide have been excavated along 100 feet of the zone. The zone probably extends a few hundred feet south of the most southerly trench. A mineralized shear zone (No. 4 zone) on claim TR 10 could be an extension of the No. 3 zone. Sulphide minerals present in Nos. 3 and 4 zones are disseminated pyrite and minor amounts of arsenopyrite. Giant Yellowknife Mines examined the property in 1962.

dlw 81/09

TON Group

TIBBIT LAKE-Y TON 43/RM/ Request/TON

The TON group 1-36, located at Tibbett Lake 35 miles east of Yellowknife, was visited by the writer on June 30 (mineral claim sheet 85-I-11). The claims owned by Mr. J. Turner lapsed in August, 1964. Two gold showings referred to as the North and South showings were examined.

The North showing occurs on the large peninsula in the northwest corner of the lake. The showing extends southwest 1,000 feet from a bay on the east side of the peninsula to a point about 40 feet east of the west arm of the lake. The showing is entirely within claim TON 23.

The showing was apparently staked prior to December 1945 and was covered by the Toust claims numbered 19 through 24. It appears the claims lapsed and A. Rocheleau restaked the claims in January 1946 as the Roust 19 through 24. The claims were optioned to Redmont Mines, who performed a considerable amount of surface work. The claims lapsed in July 1952. The showing was restaked as the RM claims 1 through 5 by W. Bernhard in August 1959. These claims lapsed and were restaked by J. Turner as the TON group in July, 1962.

The entire claim group is underlain by sedimentary rocks of the Yellowknife Group. East of Tibbett Lake a series of north striking metagabbro sills are interlayered in the Yellowknife rocks and carry numerous scheelite-bearing veins (Lord, pp. 290-291, 1951).

The North showing lies in a zone that comprises one or two major quartz veins and additional smaller quartz veins and strikes N 10°E. In the southern half of the zone a single quartz vein up to 5 feet wide but averaging 2 feet strikes N 10° to 35°E and dips 60° to 70°W. The sedimentary rocks strike N 10° to 25°W and dip 50° to 75°E whereas the schistosity strikes N 10°W to north and dips 60°E. Drag folds indicate that the strata were folded about steeply southeast-plunging axes with axial planes striking N 15°W and dipping east.

In the central part of the zone a few thin quartz veins, inches wide, lie adjacent to a major vein, which may be an extension of the one to the south.

In the northern half of the zone several quartz veins that average about 10 inches wide in addition to a multitude of narrower quartz veins are irregularly folded in contrast to the unfolded single vein in the central and southern parts of the zone. A few peculiar weathering limy beds mark out tight shear folds with considerable thinning and thickening along limbs and crests respectively. Throughout the length of the zone 20 pits and trenches have been opened. The quartz is white, sugary-grained, and contains scattered specks and disseminated portions of sulphide minerals most of which is pyrite. Grab samples taken by the author from pits 1, 4, 6, 9, and 18 (south to north) assayed 0.06, 0.02, 0.35, 0.09, and 0.90 ounce Au per ton.

8/09 TIBBIT LAKE-2/TON 4 HONEY

The South showing occurs in the southwest corner of Tibbett Lake on claim TON 4. It was staked in 1945 by a Mr. Hansen and again by Mr. L. Hansel. Mr. Turner restaked the showing as the HONEY group of three claims in July, 1957. The claims lapsed and Turner restaked the showing in July, 1962 as the TON group.

The geology of the claims is similar to that of the North showing. Sedimentary rocks of the Yellowknife Group strike north and dip 70°E. Lineations on bedding planes that represent axial lines of drag folds rake 80°S. Similar southward-plunging structures were noted at the North showing.

The showing is contained within a well defined zone 1,500 feet long that strikes N 10°W and dips on the average 50°W. The zone alternates between a single vein up to 3 feet wide and a series of veins inches wide across a width up to 3 feet. On the average, the zone is 1 foot wide. The quartz and sulphide content is similar to the North showing. Nine pits and trenches were blasted in the zone prior to Turners' staking. Grab samples taken by the author from pits 1 and 6 (numbered north to south) assayed respectively 0.31 and 0.31 ounce Au per ton.

Yellowknife Gold Belt

Considerable interest was evinced this summer in the Yellowknife gold belt by Falconbridge Nickel Mines Limited, Giant Yellowknife Mines Limited, and The Consolidated Mining and Smelting Company Limited. The belt lies west of Yellowknife Bay and River between North latitudes 62°16' and 62°40'. Two gold mines, Giant Yellowknife and Con-Rycon, and the town of Yellowknife lie in the south-central part of the belt. The gold deposits are found in shear zones within mafic metavolcanic rocks (greenstones) of the Archaean Yellowknife Group.

A considerable amount of work was done on properties in the belt and adjacent to the belt in the forties. Since that time little effort was made to examine the early work until this year, when several promising

properties were taken over by the three companies mentioned above[1]. The following is a description of properties examined in 1964. Detailed accounts of each property and a review of the geology of the area are reported by Lord (1951) and Boyle (1961).

Work continued on the property of Rodstrom Yellowknife Mines Ltd. It lies 2 miles northwest of the Giant mine and is of special interest because the gold deposits occur in the hitherto neglected granitic rocks.

81/10 J.M. Group

The J.M. claims 1-4 are located on the south and west sides of Ryan Lake, 8 miles north of Yellowknife (mineral claim sheet 85-J-9). They tie onto the Goldcrest and Midas groups of Northbelt Yellowknife Mines. The claims are the former SOO group that lapsed in August, 1963 and were restaked at that time by J. Jacobson of Yellowknife. Giant Yellowknife optioned the claims in August, 1964.

The structures of importance on the claims comprise the following. On claim No. 1 a north-striking depression was mapped by Henderson and Brown (1952) as a post-diabase fault. The rocks beneath the depression are moderately sheared and resemble the more important pre-diabase sheared rocks of the area. The depression is as much as 30 feet wide and contains minor disseminated arsenopyrite and pyrite. A sample taken by the author 20 feet south of the lake on the east edge of the zone assayed trace Au and 0.06 ounce Ag per ton. Between the depression and the camp to the west a north-striking quartz lense more than 1 foot wide contains visible gold.

On claim No. 2 a quartz vein generally less than a foot wide that strikes N 60°W and dips 90° can be traced about 750 feet southeast from the lake. A pit about 500 feet southeast from the lake contains disseminated and small masses of galena and sphalerite. A grab sample taken by the author of mineralized rock from the vein assayed 0.45 ounce Au per ton and 12.68 ounces Ag per ton. North of this vein three, N 5°W striking, vertically dipping quartz veins can be traced for more than 500 feet and one for more than 1,000 feet. A pit in the southern part of the westerly vein, located about 125 feet east of the lake contains disseminated pyrite, chalcopyrite, and minor molybdenite. All of the above described veins are characterized by quartz-filled fissure veins in mildly fractured or sheared rocks with small amounts of sporadically distributed sulphide minerals.

On claim No. 4 quartz veins occur in more intensely fractured or sheared dioritic rocks than the previous. The shear zone strikes N 25°W, dips 90 degrees. It is 6 feet wide and traceable up to 1,500 feet. A number of pits and shallow bore-holes along the zone indicate that the previous owners did a fair amount of work, results of which are not known. Pyrite is the only recognizable sulphide mineral and accounts for the iron-stained character of parts of the zone. Assay results obtained by a private company from one of the pits gave less than 0.1 ounce gold and silver. Of interest is a pit in the zone that contains massive specularite with anhedral calcite inclusions.

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[1] For a map showing claim groups in the Yellowknife area, see Survey of Mines, p. M-18 1965, published by the Financial Post.

Lynx Yellowknife Gold Mines Limited

The company owns 8 GOLD, LYNX, and FOX claims and fractional claims 4 miles north of Yellowknife (mineral claim sheet 85-J-9). The original claims, which led to the formation of the company, were staked in 1936. Several claims were dropped and new names applied to certain claims. A considerable amount of exploratory work was done on the property prior to 1947 and reported by Lord (1951, p. 200-201). In 1963 the property was optioned from Lynx by the Consolidated Mining and Smelting Company Limited.

In 1964, the claims were mapped at 1 inch to 100 feet. It is expected that the property will be drilled early in 1965.

Northbelt Yellowknife Mines Limited

Northbelt, formerly Crestaurum Mines Limited, was formed in March, 1964 (Northern Miner, March 19, 1964). The company owns the MIDAS and GOLDCREST groups of 12 claims and fractional claims 8 miles north of Yellowknife (mineral claim sheet 85-J-9). Ownership of the claims was transferred from Crestaurum Mines (which no longer exists) to Transcontinental Resources, who in turn sold half interest in the claims to Falconbridge Nickel Mines Limited. Crestaurum changed its name to United Comstock Mines Limited.

A considerable amount of work was expended on the property prior to 1947 and reported in Lord (1951, p. 112-115). In 1964 previous work was re-assessed and a reconnaissance survey was made of the claims. A drill program was initiated in December 1964.

Rodstrom Yellowknife Mines Ltd.

The company has a gold property 4 miles northwest of Yellowknife. They own a 56 claim block comprising the J group 1-13, ED group 1-4, C group 1-16, R group 1-10, PG group 1-9, JC group 1-3, and one JC claim. Work completed on the property to the end of 1963 was reported by Schiller and Hornbrook (1964, pp. 32-34). In 1964 certain claims were prospected and mapped, areas adjacent to principle veins were mapped in detail and trenches excavated; three veins were explored by 8,920 feet of drilling.

The claims are underlain by white, pink, and light grey fine- to coarse-grained massive granodiorite, which is referred to locally as the Western granite. Pegmatite and aplite bodies intrude the granodiorite. Small areas containing greenstone inclusions occur and appear important where intersected by gold-bearing shear zones.

Gold occurs in subparallel fractures or shear zones that cut the country rock. Certain zones are more than 1,000 feet long but on the average are a few hundred feet. The zones (or veins as they are termed) range in width from a few inches to 12 feet and are generally marked by a conspicuous red stain, which extends into the country rock for from 1 foot

to 3 feet on either side of the zones. They commonly consist of sheared quartz and variable amounts of country rock and aplite. The zones may be related to a series of north- to northeast-trending lineaments (apparent on the aerial photographs) that converge on a point on the east side of the northeastern bay of Martin Lake. In 1963 detail exploration was directed to the No. 1, 3, 7, and 15 veins. To date 24 veins have been located. Five principal veins were examined in 1964, four of which were discovered in that year. A description of the five veins follows.

No. 15 Vein - The No. 15 Vein lies in the northwest corner of claim R-1, and has been exposed over a length of 180 feet. The vein strikes east of north and dips 65°E. On about the 25-foot level within a 110-foot section of the vein, drilling has indicated an average of 1.36 ounces Au per ton over an average width of 3.8 feet. An extension of the vein on surface occurs 200 feet northeast; continuation of the vein has been confirmed through drilling. About 150 feet south of the 15 Vein, the 15 south Vein may represent a possible extension of the 15 Vein. It has been exposed over a length of 30 feet. The vein strikes east of north and dips 30° to 50°E. The vein contains innumerable quartz lenses; surface sampling indicated only minor amounts of gold to be present. In 1964, 17 holes totalling 410 feet of X-ray drilling and 40 holes totalling 7,274 feet of AXT drilling were completed on the vein.

No. 22 Vein - It occurs in the western part of claim R-1. The vein is exposed for 120 feet in length and has been traced several hundred feet and possibly for more than a thousand feet. It strikes N50°E and dips 45 to 50° SE. At depth drilling has indicated that greenstone inclusions are present in the shear zone. Surface sampling of the vein indicated an average grade of 2.74 ounces Au per ton over a width of 2.5 feet for a length of the vein. Subsurface intersections of the vein failed to extend the high-grade surface showings to depth. Sixteen holes totalling 1,032 feet of AXT drilling explored the vein in 1964.

No. 13 Vein - No. 13 Vein is southeast of Baker Lake on the west side of claim C-4. It lies within an extensive zone of brecciation associated with the post-mineralization Martin fault. It lies east of the fault and has been exposed for a strike length of 20 feet. The Vein cannot be traced southward, but has been extended northward in subsurface drill intersections. The vein strikes northerly and dips 80°W. In 1964, four holes totalling 203 feet of X-ray drilling explored the vein. Two intersections of the vein at depth assayed 1.55 ounces Au per ton and 15 ounces Ag per ton over a core length of 6 feet and 2.25 ounces Au per ton over a core length of 2.0 feet. Two holes failed to intersect the vein.

No. 16 Vein - The vein is in the northeast corner of claim R-4. It is 200 feet long and strikes northerly and dips steeply easterly. The vein is characterized by greenstone inclusions within the shear zone, hence imparts a more schistose character to parts of the vein.

No. 11 S Vein - This vein occurs in the northeast corner of claim R-1. It strikes northerly and dips 75°E. The vein has been traced for 200 feet and averages 2.5 feet wide. Parts of the vein contain lenses of high-grade material.

Gold occurs free and in association with galena, pyrite, and chalcopyrite. Visible gold has been found in all principal veins, in addition

to other veins. Assays up to 39 ounces Ag per ton have been obtained from samples containing galena. Flexured parts of the veins contain the highest grade sections.

Supercrest Mines Limited

Supercrest Mines Limited was formed in October, 1964 and acquired ownership of claims formerly held by Akaitcho Yellowknife Gold Mines Limited. Supercrest Mines is owned jointly by Akaitcho Yellowknife Mines and Giant Yellowknife Mines. Giant acquired 50 per cent ownership in Supercrest in return for spending $500,000 in the next 30 months on underground exploration and development work. Supercrest owns the A.E.S. group of 24 claims, contiguous with Giant's property on the north (mineral claim sheet 85-J-9). The claims were staked in February, 1936, and in January, 1945 Akaitcho was incorporated. Since that time several management changes have taken place and Akaitcho is now controlled by Falconbridge Nickel Mines.

In 1964, some of the claims were geologically mapped at 1 inch to 100 feet. A drift from Giant's 750-level was extended several hundred feet into Supercrest ground. Three holes totalling 714 feet were drilled from the 750-level eastward to intersect their main shear zone.

A comprehensive review of the property is given in Lord (1951, pp. 64-68). In brief, the claims are underlain by volcanic rocks of the Yellowknife Group and contain gold-bearing shear zones that can be correlated with similar structures to the south in the adjoining Giant Yellowknife property.

PRODUCING AND DEVELOPING MINES

The metal-mining industry in Mackenzie District comprises the following four producing gold mines and one producing silver mine:

1. Con-Rycon Mines of the Consolidated Mining and Smelting Company (gold)
2. Discovery Mines Limited (gold)
3. Giant Yellowknife Mines Limited (gold)
4. Tundra Gold Mines Limited (gold)
5. Echo Bay Mines Limited (silver)

In 1964, 469,208 ounces of gold bullion were produced in the District, with a value of just over 15 million dollars. About 200 tons of silver-copper concentrates were shipped from Echo Bay Mines. Pine Point Mines shipped 17,131 tons of lead-zinc ore to Kimberley and Trail, British Columbia.

Developing mines comprise Pine Point Mines, Liten Mining Company, and Camlaren Mines Limited. Pine Point Mines, south of Great Slave Lake, will commence production of their lead-zince deposit in the fall of 1965. Liten Mining is working a small high-grade gold property formerly operated by Garskie Gold Mines. In 1964 Liten produced a few thousand dollars worth of gold and sold gold samples for mineralogical purposes.

Camlaren Mines is a gold property at Gordon Lake, 58 miles northeast of Yellowknife. The company may commence development in 1965 if ownership is acquired by Discovery Mines Limited.

Camlaren Mines Limited

Camlaren Mines Limited was organized in 1937 to develop a gold property at Gordon Lake 58 miles northeast of Yellowknife. The property includes several islands within the lake and is covered by the CAMLAREN group of 17 claims (mineral claim sheet 85-I-14). Work on the property includes construction of several buildings, diamond drilling and sinking of two shafts to 380 and 220 feet, and 689 feet of underground development work. A description of the mine's history and geology is given in Lord (1951, pp. 89-91). In 1962, 12,174 tons were mined and during the winter of 1962-63 were trucked to Discovery Mines for milling. The ore averaged 1.14 ounce of gold per ton and 0.32 ounce of silver per ton.

The deposit consists of gold in quartz veins contained in slates and greywackes of the Yellowknife Group. The main structure consists of a northeast-striking, overturned anticline that plunges northeast. A saddle-shaped quartz mass which is referred to as the Hump vein, and additional veins were explored in underground workings.

If underground work commences in 1965, the main shaft will be deepened from 380 to 880 feet and lateral work done on the 880-foot level. Diamond drilling to a depth of 1,200 feet will be undertaken.

In 1964 Discovery Mines bought controlling interest of Camlaren Mines from Noranda Mines Limited; however, owing to a problem involving the percentage of control, Discovery may not proceed with development work until a certain amount of stock is held by the company.

Con and Rycon and Vol[1] Mines

Con and Rycon Mines of Consolidated Mining and Smelting Company of Canada Limited, at Yellowknife, is the oldest operating gold mine in the Territories. Production figures for 1964 are as follows:

Bullion production - 109,842 ounces
Tons milled - 132,282
Average grade recovered - 0.6 ounce Au per ton

Milling rate was maintained at an average of 480 tons a day. Mining operations were suspended during the period March 15 - June 7, owing to a fire that destroyed the hoist room.

Detailed descriptions of the geology and mine workings have been given in previous editions of this series (e.g. Baragar and Hornbrook, 1963). At the mine, Yellowknife Group mafic volcanic rocks and minor tuffaceous

[1] Vol Mines was incorporated in 1964 by Consolidated Mining and Smelting Company to acquire the N'Kana property previously held by Conwest Exploration Ltd.

interbeds that strike N 60°E and dip steeply southeast are host to gold deposits in schist zones consisting of quartz-chlorite-sericite-carbonate minerals. Production in 1964 came from the Campbell shear system. It strikes northerly and dips moderately to steeply west. Access to the Campbell zone is by the B-3 winze, which in 1964 was deepened from 3,900 to 4,300 feet below surface, with new levels established at 4,300 and 4,100 feet.

The following zones were mined in the Campbell shear system:

101 Zone - located in the hanging-wall of the system south of the winze, and provided 10 per cent of the total production. Areas between the 3,500- and 3,100-foot levels and above the 3,100-foot level were mined.

102 Zone - located in the foot-wall of the system south of the winze, and provided 45 per cent of the total production. Areas between the 3,300- and 2,900-foot levels were mined.

103 Zone - located north of the winze, and provided 45 per cent of the total production. Areas between the 3,100- and 2,300-foot levels were mined. A limited amount of production came from the N'Kana part of the mine between the 3,100- and 2,900-foot levels.

Development work was performed on the following levels:

4,300-foot level - a crosscut was extended west from the winze. From the crosscut a drift will be extended south to intersect the 101 zone and a drift, north will be driven in search of the 103 zone. Two hundred and seventy-five feet of crosscutting was completed on this level in 1964.

4,100-foot level - 1,650 feet of crosscutting and drifting were done in 1964 southwest of the winze in search of 101 zone.

3,900-foot level - from the winze, a crosscut was driven west, from which a drift was extended south and intersected the 101 zone. Twenty-three hundred feet of crosscutting and drifting were completed on this level in 1964.

3,700-foot level - in 1964, a main crosscut was extended 100 feet to the Campbell shear system and 450 feet of drifting was done to the north to explore the 103 zone. Twelve hundred and fifty feet of drifting was done to the south to explore the 101 and 102 zones.

3,500-foot and 3,300-foot levels - development work consisted primarily of stope preparation in the 101 zone.

Discovery Mines Limited

Discovery Mines is located 52 miles north-northeast of Yellowknife. Previously called Consolidated Discovery Yellowknife Mines Limited, the company reorganized in 1964 by amalgamating with Ormsby Mines Limited. Production figures for 1964 are as follows:

Bullion produced - 47,470 ounces
Tons milled - 77,830
Average mill heads - 0.61 ounce per ton
Average grade recovered in dollars - $23.11
Milling rates averaged 212 tons per day.

A description of the geology and mine workings has been given in previous editions of this annual series. The gold deposits occur within folded meta-greywacke and slate north of, and enclosed in the east side of a northerly striking, westerly dipping lens of basic volcanic rock. Production this year was obtained from the West Zone and the No. 16 Vein and other medium-grade veins and from development ore from the 4B Vein Zone discovered in late 1963 and developed in 1964. The 4B Vein Zone was uncovered on the 20th level and traced vertically to the 17th and 24th levels. Originally it was thought to be an extension of the 4 Zone, but now it is considered to be a new structure. On the 7th level, 4 Zone lies northeast of the nose of the No. 1 Zone and rakes southwest to the 12th level, where it is southwest of the east limb of the No. 1 Zone. The 4B Zone lies south of the quartz mass on the 20th level. It consists of a number of parallel quartz veins and quartz appendages in the metasedimentary rocks. The zone strikes east of north, dips 80°NW and appears to rake vertically. Between the 16th and 20th levels the zone is 500 feet south of the No. 1 zone and between the 21st and 24th levels the zone is 400 feet south of the No. 1 zone. The zone is up to 300 feet in length. Exploration in search of the zone above the 17th level and down to the bottom 27th level will be undertaken. Parts of the zone are very high grade, e.g. on the 18th level car samples averaged 4.85 ounces Au per ton uncut over a width of 6 feet for a length of 240 feet. A new section was unexpectedly discovered late in 1964 in the downward projection of the 16 Vein, 600 feet below any previous development on the vein. The ore was intersected in a drive on the 22nd level south of the 4B Zone. Core from the Discovery drill hole assayed 6.81 ounces Au per ton, uncut, over an estimated true width of 3.0 feet. Previously the 16 Vein was developed at 300-foot intervals from the 18th to 7th levels and mined from the 17th to 8th levels. Ore mined averaged about .5 ounce Au per ton. In 1964, development drifts at 150-foot intervals between 24th and 16th levels have intersected the 16 Vein. Raises extended into the Vein from certain levels have intersected good ore grades. Ore reserves from the 4B Vein Zone are well in excess of 100,000 tons and average 0.95 ounce Au per ton, and combined with the ore potential of the 16 Vein and the medium grade West Zone the mine can expect a life of several years.

Echo Bay Mines Limited

Echo Bay Mines is a producing silver mine located 1 mile northeast of Port Radium. The property is covered by the ECHO BAY claims 1-10, staked in 1930 by the Consolidated Mining and Smelting Company. In 1963, Northwest Explorers Limited optioned the property from Consolidated and proceeded to explore and develop the mine. Echo Bay Mines is a private company owned by Northwest Explorers. In March, 1964 Echo Bay Mines recorded the SUKI group 1-5 that is contiguous with the ECHO BAY group on the south. The SUKI claims were previously the RAD claims (mineral claim sheet 86-K-4).

The mill, located in Port Radium and previously operated by Eldorado Mining and Refining Company Limited, commenced production in October, 1964 on an experimental basis and at years end milling was at a daily rate of about 85 tons. Production of 100 tons per day is expected to be reached early in 1965. At years end about 200 tons of silver-copper concentrate containing 250 ounces Ag per ton and 18 per cent Cu were produced.

A review of the mine to 1963 is given by Schiller and Hornbrook (1964, pp. 16-19). The silver deposits occur in fracture-filled veins that are of the horsetail type. The veins are in a variety of northeast-striking interlayered extrusive and intrusive rocks, most of which are fine grained and highly altered. Tuffaceous and aphanitic rocks, in part porphyritic, show various degrees of silicification. Four principal northeast-striking veins, which range from a few hundred feet to over 1,000 feet long, have been explored. They generally dip vertically or steeply north, but parts of the veins dipping moderately to steeply to the south and north are not uncommon. The veins occupy old fracture or shear zones and are filled by carbonate and quartz gangue and a wide variety of sulphide minerals. Hydrothermal alteration of country rocks adjacent to the veins is common. Several silver minerals are present, but the principal minerals are native silver, argentite, argentiferous galena, and acanthite (Ag_2S). In addition a number of copper, zinc, nickel, and cobalt sulphides are found. Several ages of metallization are apparent. More than one type of breccia within or along the edge of the veins indicates disruption and metal deposition during several periods. The company has directed its exploration program to the four N 40° E striking veins, numbers 2, 3, 4 and 5. Other parallel veins occur on the property, but have not been examined in detail. Veins numbered 2, 3 and 5 were developed in 1964. Mill feed came from the number 2 and 3 veins

Previous work on the property performed by Consolidated Mining and Smelting Company Limited in the 1930's includes an extensive underground exploration program involving two levels of drifting from two parallel adits. Access to the workings is via both adits—an upper adit or 125 level that lies 200 feet above the lower adit or 325 level. The upper adit is 50 feet east of the lower adit. In 1964, backs were brought down on the upper level on veins number 2 and 5. Because of freezing conditions, the upper level was closed down for a part of the winter. From the lower level on the adit a raise was extended to the upper level. The raise will become the main ore pass between levels. Principal development work by Echo Bay Mines Limited was done on the lower level and consisted of the following:

1. The 202 SW drift was extended 650 feet west.
2. The 203 drift was completed between 202 SW drift and the crosscut south of 202-6 ore shoot. This drift followed the number 3 vein for 400 feet.

To date the ore has been removed via the lower level and trucked 1 mile to the mill at Port Radium. In 1965 the company may drive an adit from a point 2,000 feet west of the lower portal to intersect the No. 2 vein 200 feet below the 202 SW drift.

Other work performed in 1964 includes:

1. Sixteen surface and two underground drill holes were completed (average 250 feet per hole).

2. Compressor and a combination dry- and machine-shop building were constructed near the lower portal.

The company will produce silver-lead, silver-copper, and silver-zince concentrates. They will be shipped to the rail head at Hay River, either by truck over winter roads or via barge.

Giant Yellowknife Mines Limited

The Giant Mine is the largest gold producer in Canada and is located 3 miles north of Yellowknife. Production figures for 1964 are as follows:

Bullion produced - 293,318 ounces
Tons milled - 400,606
Average mill heads - 0.7447 ounce Au per ton
Average grade recovered - 0.651 ounce Au per ton

Milling rate averaged 1,094 tons per day. Ore reserves as of December, 1963 were 2,600,000 tons averaging 0.75 ounce Au per ton. Operating costs during 1963 were $12.26 per ton compared to $12.62 per ton in 1962[1].

The gold deposits are contained in shear zones that intersect a sequence of mafic volcanic rocks of the Yellowknife Group. The rocks strike N 30°E and dip steeply southeast to northwest with tops to the southeast. The shear zones have a fold-like configuration and strike N 30°E. Two major 'folds' or arches (the Western and Eastern arch) and a central trough, can be traced the length of the property. The shear zones consist of various combinations of sericite, chlorite, quartz, and calcite. Gold is associated with a complex sulphide—antimony sulphosalt mineral assemblage. For a detail review of the geology of mine see Baragar (1960, 1961).

Principal exploration and development work during 1964 was concentrated in the north end of the mine. On B-3, 1st- or 195-foot level, 375 feet of lateral work was done to further develop the North Giant Zone. On the B-3, 2nd- or 315-foot level and 575-foot levels, drifts were extended northward 1,159 and 1,270 feet respectively, to permit diamond drilling of the L.A.W. Zone. This zone is, in part, a strike extension of the North Giant structure. In the same area, 1,029 feet of drilling was done on the 750-foot level to provide a diamond drilling base for exploration of the A.S.D. Zone extension at depth. The 750-foot level was continued northward into the adjoining Supercrest Mines property. In the upper part of the G.B. Zone along the Giant - LOLOR claim boundary 510 feet of drifting was completed in the foot-wall of a main ore zone. Conwest Exploration Limited have an interest in the LOLOR claims.

A surface drill program on the property consisting of 48 holes was completed in 1964. Most of this drilling was directed to a west-dipping shear zone located on the west side of the property. This zone is situated on

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[1] Annual Report for year ended December 31, 1963, Giant Yellowknife Mines Limited.

the west-dipping limb of the Western Arch and an attempt was made to trace the zone south towards the West Bay fault. A few holes were drilled in C shaft area to define the upper part of the A.S.D. Zone.

Liten Mining Company

The company this summer mined and milled ore from their gold property at Little Sproule Lake, 33 miles northeast of Yellowknife (mineral claim sheet 85-I-12). The property was held until the end of 1963 by Garskie Gold Mines. Liten is a private company incorporated in Alberta, with offices at 7604-79th Street, Edmonton. Two owners of the company—Messrs. J. Nordlunk and S. Emerson—were on the property from April to October.

Considerable geological work and diamond drilling were done in the past and reported elsewhere (Lord, 1951, pp. 225-227; Baragar, 1961, pp. 19-23). For the past 15 years previous owners have mined and milled gold ore, utilizing rather primitive methods but with reasonable success. The gold is mined from open pits, where it occurs free, in spectacular amounts, in quartz veins within steeply dipping, tightly drag-folded metasedimentary rocks of the Yellowknife Group.

Work this summer comprised the following:

1. The Galena Pit was enlarged. A mechanized boom was constructed over the Galena Pit. Well-mineralized quartz containing arsenopyrite, galena, and gold was uncovered.

2. One drill-hole 115 feet long was put down on the Metheuselah vein.

3. The shaft in the Million Dollar pit was deepened about 12 feet to a depth of 40 feet. Drifts were driven on a bearing of N 55°E and S 55°W, 5 and 13 feet respectively. The floor of the drift is at a depth of 32 feet. Between 140-150 tons of ore were excavated from the pit this summer. In the west drift a fault (striking 335°, dipping 65°NE) has cut off the gold-bearing quartz mass. The same fault can be noted on surface on the west side of the pit. The fault on surface is associated with a 1-foot wide fracture zone. In the drift, a barren late white quartz vein parallels the fault. The barren quartz contrasts with the early glassy clear-to-smoky quartz that can contain gold. Of interest, rather spectacular gold was found coating tourmaline euhedra in a muscovite-quartz host in the floor of the east drift.

A compact mill utilizing two cyclones was installed. A description of the mill circuit follows. Discharge from a 3 by 3 ball mill is fed into a slurry pump, then put through two cyclones. The first cyclone removes about 50 per cent of the original feed. The remaining 50 per cent of the feed going through the second cyclone is transmitted as follows: 84 per cent is returned to the feed end of the mill and 16 per cent goes through a gold trap, then over blankets. The concentrate from the trap and barrel is roasted to remove sulphides then put through an amalgamation barrel. A diesel generator supplies power for the operation. The mill operated during September, 1964.

This year 83.201 ounces of gold and 12 ounces of silver were produced. Gold samples for mineralogical purposes with a value of about $800.00 were sold to an Edmonton Mineral and Rock distributor.

Pine Point Mines Limited

The creation of a modern mining community and the utilization of a railroad, for the first time in the history of the Territories, were realized this year as a result of the lead-zinc deposits of Pine Point Mines. The mine is located on the south side of Great Slave Lake. It can be reached by an all-weather road from the Mackenzie Highway or by a branch line of the Great Slave Railway. Pacific Western Airlines provides scheduled service to Pine Point from Hay River and Fort Smith. The airstrip was extended to 4,000 feet and the construction of a second run-way was started. Pine Point Mines Limited is controlled by The Consolidated Mining and Smelting Company Limited. Production of 5,000 tons per day is scheduled to commence in the fall of 1965 pending arrival of power from Twin Falls on the Taltson River. In 1964, 17,131 tons of high grade ore were shipped to Trail and Kimberley, British Columbia.

Schiller and Hornbrook (1964, pp. 30-32) summarized work completed on the property to the end of 1963. Campbell (1957, pp. 161-174) and Bell (1931, pp. 611-624) have given descriptive accounts of the geology of the property. Hurdle (1964, pp. 74-79) reviewed recent mining and geological data. The May-June issue of NORTH[1] highlighted Pine Point Mines and gave a good review of the mine's history.

At Pine Point, the host to the lead-zinc deposits is the Middle Devonian Presqu'ile Formation. The Middle Devonian stratigraphy at Pine Point Mine is as follows:

Middle Devonian	Slave Formation	Limestone
	Presqu'ile Formation	Dolomite, changes vertically and laterally north and south to the Sulphur Point Formation (limestone and shale).
	Pine Point Formation	Limestone and dolomite.
	Chinchaga Formation	Limestone, dolomite, evaporite, and sandstone.

Elsewhere in the Great Slave Lake region the Middle Devonian consists of variations of the above and is characterized by a predominant carbonate sequence.

The Presqu'ile Formation is a dolomitized, coarsely crystalline, reefal facies within the extensive Middle Devonian strata of Northwestern

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[1] Published by the Department of Northern Affairs and National Resources, Ottawa.

Canada. Middle Devonian reefs occur from Manitoba to British Columbia and northward to the Arctic coast. The Presqu'ile in Mackenzie District appears to be a recrystallized biostromal structure possibly of the barrier reef type. In plan the reef is sinuous, probably about 10-20 miles wide and over 200 feet thick (in N.W.T. Desmarais Lake #1-well, the Presqu'ile is 260 feet thick[1]). The Presqu'ile crops out at Sulphur Bay, on the west shore of Great Slave Lake, where the reef may be a separate entity or else it may be an appendage of the main reef south of the Lake. Southwest of Great Slave Lake the Presqu'ile Formation does not outcrop but underlies younger Devonian rocks that thicken in this direction (see Schedule of Wells - 1920-1963[1]). Here the reefal rocks of the Presqu'ile occur on the flanks of the Tathlina and Rabbit Lake highs (see Fig. 11 and other data in Douglas et al., 1963, and Belyea and Norris, 1962).

At Pine Point the reef is an elongated, tabular body that trends northeast and plunges southwest (25 feet to the mile). The reef is at least 5 miles wide and in places about 10 miles. To the northeast it is eroded whereas to the southwest it extends beneath younger rocks. The Presqu'ile underlies glacial deposits over a length of 25 to 30 miles. The overburden varies from nil in rare cases to a little over 100 feet; overburden on two orebodies to be mined initially ranges from 25-40 feet in thickness.

The stratigraphy of the reef at Pine Point is as follows:

Dolomite	see lithologic description
B Horizon	Dolomite containing amphipora, 30 feet thick.
Dolomite	see lithologic description
C Horizon	fine-grained, equigranular, buff-coloured dolomite; it can occur as one to three beds, all of which is up to 10 feet thick. It is fairly continuous on the southeast side of the reef but it lenses out on the northwest side of the reef.
Dolomite	see lithologic description
D-3 Horizon	fine-grained dolomite up to 40 feet thick.

Lithologically the dolomite is extremely variable in texture. Several varieties of dolomite are present, but the important varieties are as follows:

1. Fine- to medium-grained variety. This type is various shades of white, massive, and significantly low in porosity.

2. Coarse-grained, vuggy variety. This type is composed of the No. 1 variety that has experienced collapse and brecciation and subsequent

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[1] Schedule of Wells - 1920-1963, Northwest Territories, Yukon Territory and Canada lands not within the Provinces. Published by the Department of Northern Affairs and National Resources.

recementation by a second generation of dolomite crystallization. A typical sample would consist of angular pieces of No. 1 dolomite bound together by coarse dolomite crystals. This effect produces a rock consisting of voids or vugs lined with white dolomite euhedra. The voids are several centimeters in diameter.

2 (a) Medium-grained, vuggy variety. Similar to #2 except vugs range from 1 mm to 1 cm in diameter. The first generation dolomite may be white or buff coloured.

3. Medium- to coarse-grained, vuggy variety. This type is entirely recrystallized dolomite of one age (first or second generation?). Vugs and dolomite euhedra are up to 1 mm in diameter. The rock is generally white.

4. Veined dolomite. In some rocks, veins of coarsely crystalline dolomite cut finer grained dolomite. The veins are inches wide and vary from horizontal to vertical in attitude. Vugs in the vein and the dolomite euhedra are up to a few millimeters in diameter. This is probably second generation dolomite.

5. Fossiliferous dolomite. This variety is fossil material that has retained its faunal structures after dolomitization. It is generally white.

6. Polka-dot variety. This is a variety of 2 (a), except that the first generation dolomite is a light blue-grey and the vugs are filled with white dolomite crystals.

The sulphide minerals, though small in number are most complex in occurrence or form. Galena and sphalerite are the ore minerals, marcasite is locally quite abundant, and rare pyrrhotite has just been recognized. Native sulphur and bitumen are locally abundant. Sphalerite and galena occur in several forms and can be associated with each other in several ways. Examples of galena and sphalerite mineralogy follow:

SPHALERITE

Occurrence or form	Texture	Varieties
1. Colloform	fine grained, massive, varies from cream brown to brown.	a) tubular (cigar-shaped) delicately banded about long axis of tubes. b) modified tubular or crescent shaped in bands or circular aggregates, delicately banded. c) nodular or concretionary, delicately banded.

2. Normal	a) medium to coarse grained, brown, can be massive (anhedral), when filling vugs - euhedral. b) fine to medium grained, orange-brown, euhedral aggregates that coat other minerals. c) fine to medium grained, brown-red, euhedral crystals and small euhedral aggregates - latest sphalerite crystallization.
3. Normal to partly colloform	fine grained massive brown and creamy brown bands in part like 1 (b) variety - but bands are more continuous and narrower. Bands are separated by voidal planes. Galena crystals within the voids keep the bands together.

GALENA

Occurrence or form	Texture	Varieties
1. Normal	a) anhedral aggregates b) euhedral crystals	
2. Columnar	tetragonal-shaped crystals (centimeters long and millimeters wide) occur as single euhedra and aggregates.	some columnar aggregates have tubular voids parallel to long axis. This variety represents galena replacing coral.

Mineralogical relationships indicate several ages of sulphide precipitation and at this time it would be premature to define any paragenetic sequence. Bell (1931, pp. 619-20) cited work done by J.E. Thomson who described four ages of metallic mineral precipitation.

Information on the orebodies is not well known. They occur as plums in a pudding. Individual orebodies range from a few hundred feet in diameter to over a thousand feet, and range in thickness from several tens of feet to more than 100 feet.

The orebodies lie in the more central regions of the reef and occur throughout its entire length. The ore is situated in the upper regions of the reef, generally above the C-Horizon. There is some suggestion that the lead-zinc ratio is highest in the upper part of the reef and decreases

downward, as shown in the following two drill-hole records (Bell, 1931, p. 620).

I		Assays		II		Assays	
Feet		Lead %	Zinc %	Feet		Lead %	Zinc %
0 -	8	8.27	4.44	0 -	5[1]	10.40	8.40
8	14	24.86	14.96	5	10	28.90	5.90
14	20	Sample lost		10	15	32.20	9.70
20	25	23.41	24.53	15	20	14.70	25.00
25	30	31.11	21.49	20	25	14.10	23.50
30	35	15.98	13.75	25	30	9.50	27.00
35	40	25.38	9.74	30	35	8.25	25.00
40	45	21.91	11.31	35	40	9.40	22.50
45	50	7.71	13.78	40	45	5.10	12.90
50	55	9.59	10.44	45	50	.20	6.10
55	60	2.63	2.96	50	55	.20	2.90
60	65	1.79	.61	55	70	Tr.	4.10
65	70	5.81	2.96	70	75	.80	8.40
70	75	1.69	.70	75	80	.70	9.20
75	80	1.03	.44	80	85	5.90	15.50
80	85	1.06	Tr.	85	90	2.60	9.00
90	95	Tr.	"	90	95	.20	6.80
95	105	"	"	95	100	Nil	6.70
				100	105	.20	3.60
				105	110	Nil	4.70
				110	115	.20	3.60
				115	120	Tr.	Tr.

The overall lead-zinc ratio of individual orebodies ranges from 1:1 to 1:6. In 1954 ore reserves were 5,000,000 tons grading 7.4 per cent Zn and 4.0 per cent Pb[2].

The orebodies that start at or near the top of the reef will be mined by open pit. The orebodies overlain by younger sedimentary rocks will be mined by underground methods.

In 1964, the following work was completed:

Geological - Geophysical

1) Induced polarization surveys were done on the property by Huntec Limited.
2) To the end of October approximately 58,000 feet of BX, wireline drilling was completed. Drilling was directed to delineation of orebodies and testing of geophysical anomalies.
3) A drill program was started in December.

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[1] Overburden and oxidation.

[2] In January, 1965, reserves were increased to 17,500,000 tons grading 7.4 per cent Zn and 4.8 per cent Pb.

Mining

1) Overburden on one orebody was removed. An inclined cut, 40 feet wide, 400 feet long, and up to 25 feet high, has been put into the east side of the orebody. This cut will give access to the ore and serve as a ramp for ore removal.
2) Overburden stripping of a second orebody started in October. A third orebody will be stripped in 1965.

Construction

1) Buildings completed and now utilized include warehouse-office building, machine shop—heavy equipment garage, core shed, water treatment building, carpenter shop.
2) Buildings closed in and not completed include crushers, concentrator, and change house.

In 1964 the company staked 690 claims in areas adjoining their main claim block in the northwest. Claims recorded and their recording dates are as follows (mineral claim sheets 85-B-10 and 15):

September (182 claims) - A Group 99-102, B Group 97-102, C Group 95-103, D Group 92-103, E Group 90-104, F Group 88-103, G Group 83, 87-103, H Group 87-102, I Group 89-102, J Group 89-102, K Group 89-101, L Group 89-101, M Group 89-101, N Group 91-100, O Group 93-94, 96-100, and P Group 98-99.

October (319 claims)[1] - A Group 75-98, B Group 73-96, C Group 71-94, D Group 69-91, E Group 67-89, F Group 64-87, G Group 64 (1 claim), MM Group 105 (1 claim) NN Group 103-104, OO Group 101-104, PP Group 99-104, QQ Group 97-104, RR Group 95-104, SS Group 92-103, TT Group 90-103, UU Group 88-103, VV Group 86-103, WW Group 84-102, XX Group 82-102, YY Group 80-102, ZZ Group 78-100.

November (28 claims) - TT Group 61-62, WW Group 61-62, VV Group 61-62, UU Group 61-62, XX Group 61-62, YY Group 61-62, ZZ Group 61-62, A Group 61-62, B Group 61-62, C Group 61-62, D Group 61-62, E Group 61-62, F Group 61-62, G Group 61-62.

December (161 claims) - A Group 55-63, 66-71, B Group 55-63, 65-71, C Group 52-62, 65-70, D Group 55, 57, 59-62, 65-68, E Group 59-61, 64-66, F Group 59-62, 64, G Group 59-61, H Group 59, UU Group 52-56, 58, 71, VV Group 52-61, 63, 65, 69-71, WW Group 52-64, 67-71, XX Group 52-64, 67-71, YY Group 52, 53, 55-64, 66-71, ZZ Group 55-64, 66-71.

Tundra Gold Mines Limited

Tundra Gold Mines, is located a few miles south of Matthews Lake at North latitude 64°02'N and West longitude 111°11'W, 150 miles northeast of Yellowknife within the barrenlands. Production commenced on April 1, 1964 and the first gold brick was poured on April 12. Production

[1] Includes fractional claims.

figures to the end of 1964 were as follows:

Bullion produced - 18,483 ounces
Tons milled - 33,221
Average mill heads - 0.61 ounce Au per ton
Average grade recovered - 0.54 ounce Au per ton

In 1964, ore milled ranged from 110 to 150 tons per day and averaged 125 tons. A daily rate of 140 tons is planned for 1965. Operating costs at the mine for the 6 month period April-September were $485,438.00 or $21.98 per ton milled. For the same period production amounted to $595,164.00, which included $126,413.00 cost-aid.

The geology and history of the mine are reported by Baragar (1962, p. 38-39; 1961, p. 24-27). A comprehensive review of the mine was given in the Western Miner (June, 1964).

Gold deposits occur in two types of quartz veins: (1) those that lie along or adjacent to a conformable contact between sedimentary and volcanic rocks of the Yellowknife Group; and (2) those that are found entirely in volcanic rocks. The contact strikes about N 15°W and dips 75°E. Meta-greywacke and slate form the hanging-wall. The volcanic rocks are amphibolites, in part garnet-bearing, and meta-tuffs.

Three principal deposits have been outlined in the mine -

1. Matthews vein
2. South zone
3. No. 2 vein

An area containing quartz in volcanic rocks several hundred feet west of the contact remains to be explored.

The major deposit is the Matthews vein, which lies along the contact or in the sedimentary rocks adjacent to the contact. The head-frame is situated on the northern part of the vein and marks the zero point on the company's north-south baseline. Ore within the vein occurs discontinuously between 500 feet north and 1,700 feet south, a distance of 2,200 feet. Ore-bodies generally rake steeply to vertically and are a few hundred feet in vertical extent and from 1 foot to 200 feet in length. The main orebody (4 south shoot) has been blocked out vertically for over 1,200 feet. Ore is found in quartz that forms discontinuous lenticular bodies along the volcanic-sedimentary contact. The quartz ranges in width from a few inches to 20 feet, averaging about 5 feet. Ore widths within the vein are up to 12 feet wide but average about 4 feet.

The No. 2 vein is about 3,000 feet southeast of the head-frame and like the Matthews vein lies along or adjacent to the contact in the sedimentary rocks. The vein is not exposed at the surface, but has been traced for a length of 300 and 375 feet on the 625 and 1,225 levels respectively. In the vein one possible ore shoot 58.4 feet long, an average width of 6.3 feet, and a grade of 0.59 ounce of gold per ton, has been defined.

The south zone lies about 2,800 feet south of the head-frame and occurs entirely in volcanic rocks. It consists of a multitude of quartz veins, up to a few tens of feet long and a few feet wide, which appear to be a north-striking, shallow east-dipping set of fracture fillings. The zone is as much as 200 feet long and 20 feet wide and can be traced discontinuously from the surface to the 1,225 level. No ore shoots have been delineated in the zone, but further exploratory work will be done in this area.

Workings are on the 175, 325, 475, 625, 925, and 1,225 foot levels. In 1964, all mining was from the Matthews vein, from the following levels and ore shoots.

		location
2 level	A shoot	shaft area
2, 3, 4, 6, and 8 levels	1 south shoot	400 feet south
4 level	4 south shoot	1,100 feet south
2 level	6 south shoot	1,500 feet south

The following areas have received stope preparation:

		location
2 level	3 north shoot	500 feet north
2 level	1 north shoot	150 feet north
4 level	6 south shoot	1,450 feet south

Stope preparation on the first level in A, and 4 south shoots was started but not completed at the time of writing (November, 1964).

Drifting will probably commence in December or January on 6 level from its position at 575 feet south to 1,500 feet south. Next year on 8 level, a crosscut will be driven east from about 3,000 feet south, followed by drifting south to intersect the No. 2 zone.

During part of the year a dilution problem in 4 south ore shoot on 2 and 3 levels and in A ore shoot on 2 level led to reduced ore grade milled. Several faults or mud seams, each about 1 inch wide, occur within a zone a few feet wide along the hanging-wall of the quartz vein. Much of the hanging-wall was rock bolted, but caving of the wall was not entirely inhibited. This fault or shear zone extends along the hanging-wall for about half the length of the vein.

Gold and other metallic minerals occur throughout the length of the Matthews vein. The gold is almost entirely free and ranges from microscopic amounts to lenses up to 1 mm wide within the quartz. The quartz is distinctly banded and varies from glassy black to glassy white. The banding in the quartz generally parallels the quartz-wall-rock contact. Metallic minerals in quartz or wall-rock are present in amounts up to 5 per cent. These minerals are arsenopyrite and minor amounts of galena, pyrite, and pyrrhotite and trace amounts of sphalerite and chalcopyrite. Some scheelite is found in the quartz. The arsenopyrite occurs as bands up to a few centimeters wide in the form of disseminated needles and stubby crystals and lie in the country rocks adjacent to the quartz and within the quartz as narrow lenses about 1 centimeter wide. Narrow lenses of sericite are found in the quartz and may be associated with the arsenopyrite-bearing bands and lenses.

The troublesome faults or mud seams that have resulted in dilution problems may be major slips along original sericite-rich lenses. Bands of massive and heavy disseminations of pyrrhotite are not uncommon along the quartz-country-rock contact. Of interest, the gold-silver ratio is 4 to 1 in contrast to the 10-1 ratio of the Yellowknife mines.

FRANKLIN DISTRICT

Exploration in Franklin District is serviced out of Montreal and to a lesser degree out of Churchill. Scheduled air service is maintained to Resolute via Frobisher Bay, and Hall Beach from Montreal. Schedule service operates between Churchill and Baker Lake; the latter has access to tide water, hence could be a suitable service centre. Schedule service is available to Resolute from Edmonton via Yellowknife and Cambridge Bay. Airstrips suitable for large aircraft are present at a number of installations spread over a wide area in the Arctic.

In 1964, Baffinland Iron Mines Limited performed work on their Baffin Island iron deposit and the Consolidated Mining and Smelting Company sampled a lead-zinc deposit on Little Cornwallis Island discovered in 1960 by Bankeno Mines Limited. Syndicate-sponsored prospectors were active in the Melville Peninsula and elsewhere in the District.

BAFFINLAND IRON MINES LIMITED

The company's high-grade iron property high-lighted the year's activity in the District. It is located in the north-central part of Baffin Island at West longitude 79°21' and North latitude 71°19' (mineral claim sheet 37-G-5). The deposits lie a few miles north of the Mary River and are 55 miles from Milne Inlet, 90 miles south of Pond Inlet and 600 miles northwest of Frobisher Bay. Baffinland Iron Mines is owned by a consortium of companies headed by the Anglo-American group of South Africa. The deposit was discovered in 1962 by Murray Watts and associates for British Ungava Explorations and is managed by Watts, Griffis & McOuat Limited of Toronto. At present the company holds parts of two prospecting permit areas, 37-G-5 and 6, over the deposits. The company has staked 119 claims, 74 within permit area 37-G-5.

The area under study is largely underlain by Archaean granites, granitic gneisses, and metasedimentary rocks. Post-Archaean flat-lying sandstone and limestone unconformably overlie the older rocks in some parts of the area. The Archaean metasedimentary rocks comprise quartzite, greywacke, arkose, iron silicate formation and economically important banded iron-formation. The Archaean rocks are intruded by dykes, sills, and plutons of acid to basic igneous rocks. The stratiform Archaean rocks have been complexly folded. No dominant structural trend is recognized; however, to the east, fold axes generally trend easterly.

Four principal deposits have been outlined. The following description has been taken almost directly from company reports.

The No. 1 Deposit

This deposit outcrops along the arcuate crest of a ridge, 1 1/2 miles east of the Mary River base camp. Rising to an elevation of approximately 2,300 feet, the ridge forms a prominent topographic feature visible for many miles. In plan, the outcrop area of the deposit forms an "L" shape structure following the crest of the ridge. High-grade hard hematite and magnetite outcrops more or less continuously along the two limbs of the ridge for a total length of 8,200 feet. In plan, the width of the inferred high-grade zone varies from 70 feet to 390 feet. The maximum continuous width exposed is 230 feet. Drilling during the 1964 season indicated true widths from 350 to slightly better than 500 feet.

Based on available exposure and present information, the No. 1 deposit appears to be the largest of the known high-grade zones.

Detailed structural information acquired by drilling and surface mapping has confirmed the steeply dipping tabular nature of this deposit. The major local structural feature is a syncline, which plunges 65 degrees east. The limbs of the syncline dip 77 degrees southeast and 73 degrees northeast.

The bulk of the high-grade material on the No. 1 deposit is hard blue hematite, although hard magnetite and mixed hematite and magnetite occur in appreciable amounts as well. They are generally very fine grained and massive with little or no impurities. In the hard hematite and mixed hematite-magnetite, moderate porosity and brecciated textures are evident. All three types of high-grade ore break into coarse lumps and produce a minimum of fines. Some specularite occurs toward the northern part of the deposit. This material is massive coarse grained and platy and somewhat more friable than the other forms of hematite high-grade.

In 1964, approximately 5,000 feet of drilling was done and data obtained indicated about 127,000,000 tons of hematite and magnetite grading approximately 68 per cent soluble iron and about 1 per cent silica.

The No. 2 Deposit

The No. 2 deposit occurs on a prominent east-trending ridge 1 1/2 miles to the east of the No. 1 deposit. The deposit is exposed as a relatively continuous ridge of specularite along the north side of the main ridge for a length of 1,200 feet. Along strike in both directions the zone passes into overburden. In plan, the width of the inferred high-grade deposit varies from 70 feet to 230 feet. The maximum continuous width exposed is 130 feet.

Within the high-grade zone, no direct evidence of dip is observed and hanging-wall and foot-wall contacts are not exposed. Low-grade banded iron-formation is believed to form the foot-wall on the south. This lean iron-formation is exposed on sharp peaks along the crest of the main ridge for some 3,000 feet to the west. Although locally contorted, the lean iron-formation generally strikes along the ridge parallel to the high-grade zone and dips vertically. Down slope to the north of the No. 2 deposit, scattered outcrops of grey feldspathic gneiss appear to represent the hanging-wall rocks.

The high-grade specularite is medium to coarse grained, platy, and generally friable. On handling, coarse broken lumps produce abundant fines. Although generally pure, the specularite locally contains minor quartz grains and is injected with fine quartz veinlets.

A series of channel samples over a distance of 77 feet in the high-grade part of the deposit averaged 69.65% total iron.

The No. 3 and 3A Deposits

Approximately 2,000 feet south of the No. 2 deposit, the No. 3 zone is exposed on the southern slope of a prominent east-trending ridge. Five thousand feet farther to the east, the 3A deposit outcrops along the crest of the southern slope. Extensive glacial boulder till blankets the area and no outcrops are found between the No. 3 and 3A deposits.

These two deposits occur along the north flank of a relatively continuous magnetic anomaly. Where exposed, along its 5-mile length, the anomaly has been found to be caused by both low-grade and high-grade iron-formations. The regional dips in the area of the anomaly vary from 50°-80° N. West of the No. 3 deposit, the isomagnetic lines indicate the iron-formation to be faulted north to the vicinity of the No. 2 deposit.

Structural information in the immediate area of the No. 3 deposit is completely lacking. Hanging-wall and foot-wall contacts are not exposed and there is no evidence of structure within the ore. The isomagnetic lines, although very weak, suggest a northwest strike and possible drag-folding of the iron-formation close to the fault.

The high-grade outcrops of the No. 3 deposit are predominantly massive blue hematite with minor amounts of granular and micaceous specularite. Occasional rare grains of quartz are the only visible impurities within the high-grade material. Although massive, the hematite is not quite as hard as that of the No. 1 deposit, and produces moderate fines on breaking. Both types of specularite are friable and break down to a fine powder.

In plan, the inferred high-grade deposit is triangular in shape with a length of 500 feet along the presumed strike direction. Widths vary from 30 feet at the west end to 400 feet at the east end. To the east, toward the 3A deposit, the zone disappears beneath overburden.

Coarse hematite and specularite talus cover the hillside between the scattered high-grade exposures. Local iron silicate and greenschist rubble may indicate minor amounts of these rocks within the inferred high-grade zone.

The No. 3A deposit is exposed by scattered outcrops for a length of 600 feet. In plan, the width of the high-grade zone varies from 40 feet to 100 feet. The high-grade material contains no visible impurities and varies from massive, hard magnetite to moderately hard and friable specularite.

The hanging-wall contact with grey feldspathic gneiss dips 75°-85°N. The foot-wall contact with iron silicate formation probably also dips

steeply north. Within the foot-wall, irregular bands of low-grade iron-formation appear to lens out in the iron silicate formation.

The deposits were not systematically sampled by the company but several bulk samples taken averaged about 68 per cent total Fe.

The No. 4 Deposit

The No. 4 high-grade zone outcrops 15 miles northwest of the No. 1 deposit along the proposed haulage route to Milne Inlet. In contrast to the previously described deposits, the No. 4 zone is located in the lowland area, is not associated with any prominent topographic feature, yet is reasonably well exposed.

The relative abundance of outcrop has facilitated geological mapping and several features observed may be indicative of comparable geology in the other less exposed high-grade deposits.

The No. 4 zone is located along the north limb of a major synclinal fold. In the area of the deposit, the limb strikes generally east-west and dips vertically to steeply south. The high-grade exposures occur within a sedimentary series and have been traced for a strike length of 8,200 feet.

As indicated by geology and isomagnetic lines, the high-grade material forms lenses and bands within an iron silicate formation. On the western half of the claim group, two parallel high-grade lenses separated by a variable width of iron silicate have been traced for 2,500 feet. The southern lens varies from 70 to 250 feet in width and consists mainly of micaceous specularite with occasional lenses of magnetite and hematite. The northern lens, varying from 50 to 150 feet in width, is moderately hard granular magnetite with gradually increasing fibrous iron silicate content to the west. Locally, up to 20 per cent silicates occur within the magnetite.

A relatively short, highly contorted lens of mixed magnetite and hematite is exposed immediately to the east. In the eastern half of the property, a continuous band of high-grade massive magnetite is indicated by scattered outcrops for a length of 4,400 feet. This band is gently undulating and ranges from 50 to 150 feet in width. The magnetite is hard, contains no visible impurities, and is probably the only high-grade material of the deposit suitable for lump ore feed. The specularite of the western section is extremely friable and reduces to a fine powder with a minimum of handling. The granular magnetite is only moderately hard and generally produces considerable fines on breaking.

One series of channel samples averaged 66.5 per cent total Fe over a distance of 46.5 feet, whereas another series of channel samples averaged 68.37 per cent total Fe over a distance of 67 feet.

The importance of these deposits is wholly dependent on providing a shipping period of reasonable duration. Attempts to lengthen the period of open water in Milne Inlet will be tried by ice breaker exercises in 1965. The direct-shipping nature of the iron deposits makes the iron a premium product.

In 1964, construction of a tote road commenced from the property to the expected harbour area at Milne Inlet. The Federal government announced that assistance in feasibility studies and tote road and airstrip construction would be made available in 1965.

BANKENO MINES LIMITED

The company found lead-zinc deposits on Little Cornwallis Island in 1960 while performing exploratory work for oil. Certain deposits were mapped and drilled in 1960 and the area further prospected in 1961. In 1964 the Consolidated Mining and Smelting Company of Canada acquired an interest in the deposits and sampled them in that year. Continued participation by Consolidated is required if they are to retain an interest in the deposits. Bankeno Mines is controlled by Upper Canada Mines Limited.

Staking in 1960 involved covering the original or Main Showing by the Polaris group 1-21, located in the southwest corner of the Island at about North Latitude 75°22' and West longitude 96°55'. In 1961, permit areas 68-H-7, 8, 9, and 10 were granted to the company. The permit areas have since lapsed. In 1961, the East showing found the previous year was staked and covered by the Eclipse group 1-22. It is located 16 miles northeast of the Main Showing. During the field season work on the island is serviced out of Resolute via boat for a limited period and light aircraft equipped with low pressure tires.

Reconnaissance mapping of eastern Little Cornwallis Island was done by Thorsteinsson (1958). The Island is underlain by a northwest-striking, gently folded sequence of Ordovician and/or Silurian sedimentary rocks. The mineral deposits occur in dolomite, for the most part brecciated, of the Ordovician Cornwallis Formation. Outcrops are sparse and data obtained is based on rubble and frost-heaved material. A description of the two showings follows.

The Main Showing constitutes a mineralized zone discontinuously traced along strike for more than a mile. The Cornwallis Formation is primarily dolomitic with limestone interbeds and to the east is overlain by shale of the Cape Phillips Formation. The sedimentary rocks strike about N 15°W and dip gently northeastward. The mineralized zone appears restricted to porous (vuggy) and brecciated dolomite that parallels the attitude of the strata. Nine holes totalling 623 feet were drilled in 1960. The zone may be as much as a few tens of feet thick as indicated from drill data. The best drill-hole intersection of the zone assayed 2.80% Pb, 9.32% Zn, and about 0.1 ounce Ag per ton over a core length of 18.3 feet (core recovery 60 per cent). Sulphide minerals present comprise sphalerite, galena, and lesser amounts of pyrite, and occur as disseminated and massive parts in the dolomite. Barite is found in parts of the zone and elsewhere in the carbonate sequence.

The East Showing is similar to the Main Showing in regard to outcrop, lithology, and sulphide mineralogy. The dolomites strike N 15°W and dip gently to moderately southwest. Three areas 2,000 and 3,000 feet apart and along strike are sparsely to well mineralized with galena, smithsonite, sphalerite, and minor pyrite. Barite is found in a number of areas

in the eastern part of the Island, but nothing is known of its character and extent.

KEEWATIN DISTRICT

There is no mineral production from the Keewatin District. The only lode producer in the district was the nickel-copper property of North Rankin Nickel Mines Limited, which ceased operation in 1962. In the past exploration in the District has been restricted generally to large companies primarily because of the high cost of operation in this part of the country. In 1964, the Canadian Nickel Company and Selco Exploration Company and a few syndicate-sponsored prospectors were active in the District. Canadian Nickel prospected in west-central Keewatin on permit areas 65-J-4 and 5 and Selco concentrated their efforts on a gold property in the Mountain Lake area in the south-central part.

Work in Keewatin is best served out of Churchill and to a lesser degree out of Uranium City and Yellowknife.

In 1964 a block of ground, bound by West longitude 102°00', North latitudes 60°00', 61°30', and 61°45', and on the east by Hudson Bay, was aeromagnetically surveyed for the G.S.C. Aeromagnetic maps covering this area at a scale of 1 inch to 1 mile will be available after March 19, 1965.

SELCO EXPLORATION COMPANY LIMITED

This company is a Canadian subsidiary of Selection Trust Limited, whose major holdings are in South and West Africa. Since 1960 Selco has been active in Keewatin District in a region around Mountain Lake, at North latitude 61°15' and West longitude 98°31'. This is about 80 miles east of the Department of Transport radio station at Ennadai.

The company owns prospecting permits to cover the following map-areas; 65-B-16, 65-G-1, 65-G-2, and 65-H-4. Claims held in the permit areas are: AXE group 1-108, on the southwest corner of Mountain Lake, and DOT group 1-18, JEAN group 1-18, BEE group 1-7, ANT group 1-36, PAT group 1-48 and JOE group 1-18, a contiguous claim block that extends from the southwest corner of Cullaton Lake, southeast to an area south of Kognak River. In 1964, the company staked the HOOK group 1-20 and the RITA group 1-30 north and northeast respectively of Griffin Lake (mineral claim sheet 65-G-7).

The company operated out of a base camp on the west side of the Kognak River, situated about half way between Mountain and Cullaton Lakes. The camp consisted of two metal-covered wood-frame buildings (food and equipment warehouses), 1 wood-frame assay office, 1 wood-frame combination cookhouse and bunkhouse, 1 wood-frame office, 4 tents on frames, and 2 miscellaneous tents. In 1963 a 3,000-foot long airstrip was completed at the southwest corner of Cullaton Lake. It lies at an elevation of about 850 feet and trends about N 10°W. Supplies are routed via Churchill, from which D3 aircraft utilize the airstrip. Unscheduled stops of Transair Limited are made when requested during that airlines schedule service between Churchill

and Baker Lake. A field assay office was maintained during the field season utilizing a naptha-fired furnace.

Commencing with a small exploration program in 1960, company prospectors discovered an occurrence of gold east of Mountain Lake. Nine claims were staked and subsequently three permit areas were granted thereafter. In 1961, a considerable amount of work was expended through diamond drilling, trenching, and geological and geophysical mapping. Further prospecting uncovered new showings and prompted more extensive exploration in 1962.

In 1963 and 1964 gold targets were drilled at several locations in the vicinity of the main camp. Undisclosed lithological targets were sought and results of their activities are not available for publication. Since 1960 113 holes totalling 45, 100 feet have been drilled. In 1964 the company employed about 20 men in the field, who were supported by a G-2 helicopter and a 185 Cessna aircraft.

The geology in the area as shown by Lord (1953) is as follows. Gently to steeply dipping, primarily clastic, Early Proterozoic sedimentary rocks overlie unconformably granitic and volcanic rocks of Archaean age. Exploration has been directed to volcanic and clastic sedimentary rocks. Little information is available for publication, but it can be reported that auriferous rock units of variable lithology occur in the area. A recent geological report by Eade (1964) includes part of this area.

REFERENCES

Baragar, W.R.A.
1961: The mineral industry of the District of Mackenzie, Northwest Territories; Geol. Surv. Can., Paper 61-3, 29 pp.

1962: The mineral industry of Mackenzie District and part of Keewatin District, 1961; Geol. Surv. Can., Paper 62-1, 41 pp.

Baragar, W.R.A. and Hornbrook, E.H.
1963: Mineral industry of the District of Mackenzie, 1962; Geol. Surv. Can., Paper 63-9, 44 pp.

Bell, J.M.
1931: The genesis of the lead-zinc deposits at Pine Point, Great Slave Lake; Economic Geology, vol. 26, No. 6, pp. 611-624.

Belyea, H.R. and Norris, A.W.
1962: Middle Devonian and Older Palaeozoic formations of southern District of Mackenzie and adjacent area, (Report, 3 figures, Appendix); Geol. Surv. Can., Paper 62-15, 82 pp.

Boyle, R.W.
1961: The geology, geochemistry, and origin of the gold deposits of the Yellowknife District; Geol. Surv. Can., Mem. 310, 193 pp.

Campbell, N.
1957: Stratigraphy and structure of Pine Point area, N.W.T.; in Structural Geology of Canadian Ore Deposits; Can. Inst. Min. Met., 6th Commonwealth Min. Met. Cong., vol. 2, pp. 161-174.

Douglas, R.J.W.
1959: Great Slave and Trout River map-areas, Northwest Territories, (Report, Map 27-1958 and Map 28-1958); Geol. Surv. Can., Paper 58-11, 57 pp.

Douglas, R.J.W., Norris, D.K., Thorsteinsson, R. and Tozer, E.T.
1963: Geology and petroleum potentialities of northern Canada; Geol. Surv. Can., Paper 63-31 (Text and Illustrations) 28 pp.

Eade, K.E.
1964: Kognak River area (East-Half) District of Keewatin, map and notes; Geol. Surv. Can., Paper 64-27.

Fortier, Y.O.
1947: Ross Lake, Northwest Territories, map and descriptive notes; Geol. Surv. Can., Paper 47-16.

Fraser, J.A.
1964: Geological notes on northeastern District of Mackenzie, Northwest Territories (Report and Map 45-1963); Geol. Surv. Can., Paper 63-40, 20 pp.

Geological Survey of Canada
1962: Aeromagnetic Series Map 3107G, Camsell Lake, Northwest Territories, 75 M/11.

Henderson, J.F.
1941: Gordon Lake, District of Mackenzie, Northwest Territories, Map 644A; Geol. Surv. Can.

Henderson, J.F. and Brown, I.C.
1952: Yellowknife, Northwest Territories, Sheet 5, Preliminary Map; Geol. Surv. Can., Paper 52-24.

Hurdle, B.E.
1964: The Pine Point Mine; Western Miner, vol. 37, No. 10, pp. 74-79.

Jolliffe, A.W.
1939: Quyta Lake and parts of Fishing Lake and Prosperous Lake areas, Northwest Territories, Preliminary Maps; Geol. Surv. Can., Paper 39-6.

Lord, C.S.
1951: Mineral industry of District of Mackenzie, Northwest Territories; Geol. Surv. Can., Mem. 261, 336 pp.

Moore, J.C.G., Miller, M.L. and Barnes, F.Q.
1951: Carp Lakes, Northwest Territories, Second Preliminary Map; Geol. Surv. Can., Paper 51-8.

O'Neil, J.J.
1924: The Geology of the Arctic Coast of Canada West of the Kent Peninsula; Report of the Canadian Arctic Expedition, 1913-1918, vol. 11 (Geology and Geography) pt. A, 107 pp.

Schiller, E.A. and Hornbrook, E.
1964: Mineral industry of District of Mackenzie, 1963; Geol. Surv. Can., Paper 64-22, 43 pp.

Taylor, F.C.
1963: Snowbird Lake map-area, District of Mackenzie, Northwest Territories; Geol. Surv. Can., Mem. 333, 23 pp.

Thorsteinsson, R.
1958: Cornwallis and Little Cornwallis Islands, District of Franklin, Northwest Territories; Geol. Surv. Can., Mem. 294, 134 pp.

Wright, G.M.
1956: Geological notes on the eastern District of Mackenzie (Operation Thelon), Northwest Territories; Geol. Surv. Can., Paper 56-10, 23 pp.