



# CANADIAN MINING JOURNAL

Vol. XL

GARDEN CITY PRESS, Ste. Anne de Bellevue, OCTOBER 15, 1919.

No. 41.

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## DEPARTMENT OF MINES

HON. MARTIN BURRELL, *Minister*      R. G. McCONNELL, *Deputy Minister*

### MINES BRANCH

#### Recent Publications

Iron Ore Occurrences in Canada, Vol. II. Compiled by E. Lindeman, M.E., and L. L. Bolton, M.A., B.Sc. Introductory by A. H. A. Robinson, B.A.Sc.

The Copper Smelting Industry of Canada. Report on, by A. W. G. Wilson, Ph.D.

Building and Ornamental Stones of Canada (British Columbia). Vol. V., by W. A. Parks, Ph.D.

Peat, Lignite and Coal; their value as fuels for the production of gas and power in the by-product, recovery producer. Report on, by B. F. Haanel, B.Sc.

Annual Mineral Production Reports, by J. McLeish, B.A.

The Coal-fields and Coal Industry of Eastern Canada, by F. W. Gray.

Occurrences and Testing of Foundry Moulding Sands. Bulletin No. 21, by L. H. Cole, B.Sc.

Analyses of Canadian Fuels. Parts I to V, by E. Stansfield, M.Sc., and J. H. H. Nicolls, M.Sc.

Clay Resources of Southern Saskatchewan, by N. B. Davis, M.A., B.Sc.

Summary Report of the Mines Branch, 1917.

The Mineral Springs of Canada. Part II., by R. T. Elworthy, B.Sc.

The Mines Branch maintains the following laboratories in which investigations are made with a view to assisting in the development of the general mining industries of Canada:—

**Fuel Testing Laboratory.**—Testing value of Canadian fuels for steam raising and production of power gas; analyses, and other chemical and physical examinations of solid, liquid and gaseous fuels are also made.

**Ore-Dressing Laboratory.**—Testing of Canadian ores and minerals, to ascertain most economical methods of treatment.

**Chemical Laboratory.**—Analysing and assaying of all mineral substances and their manufactured products. Copies of schedules of fees, which are slightly in excess of those charged by private practitioners, may be had on application.

**Ceramic Laboratory.**—Equipment is such that complete physical tests on clays and shale of the Dominion can be made, to determine their value from an economic standpoint.

**Structural Materials Laboratory.**—Experimental work on sands, cements and limes is also undertaken.

Applications for reports and particulars relative to having investigations made in the several laboratories should be addressed to The Director, Mines Branch, Department of Mines, Ottawa.

### GEOLOGICAL SURVEY

#### Recent Publications

Summary Report. The annual Summary Report of the Geological Survey is now printed in parts. Applicants should therefore, state what particular geologist's report is required, or what subjects they are interested in.

Memoir 95. Onaping Map-Area, by W. H. Collins.

Memoir 105. Amisk-Athapapuskw Lake district, by E. L. Bruce.

Memoir 107. Road materials in the vicinity of Regina, Saskatchewan, by L. Reinecke.

Memoir 108. The Mackenzie River basin, by Charles Cam-sell and Wyatt Malcolm.

Memoir 109. The Harricanaw-Turgeon basin, northern Quebec, by T. L. Tanton.

Memoir 110. Preliminary report on the economic geology of Hazelton district, British Columbia, by J. J. O'Neill.

Memoir 112. Geology of the district belt of southwestern Alberta, by J. S. Stewart.

Map 42A. Duncan sheet, Vancouver Island. Geology.

Map 44A. Sooke sheet, Vancouver Island. Geology.

Map 115A. Sheep river, Alberta. Topography.

Map 164A. St. John, New Brunswick. Topography.

Map 179A. Onaping; Sudbury and Timiskaming districts, Ont. Geology.

Map 183A. Harricanaw-Turgeon basin; Abitibi, Timiskaming and Pontiac, Que. Geology.

Map 1585. Mackenzie River basin. Geology.

Map 1680. Portions of Grenville, Harrington, Chatham and Wentworth townships, Argenteuil county, Quebec. Geology.

Maps 1697 and 1698. Explored routes in a belt traversed by the Canadian Northern Ontario railway,—in two sheets: Sheet 1 Gogama to Missonga, Sudbury district; Sheet 2 Oatland to Penhurst, Algoma district, Ontario.

Map 1690. Whiteburn Gold District, N.S. Geology.

Map 1702. Klotassin, Yukon Territory. Geology.

Map 1708. Bridge river, Lillooet district, B.C. Topography.

Map 1710. Bothwell-Thamesville oil region, Kent county, Ontario.

Map 1712. Foothills of Southern Alberta, St. Mary river to Hig:wood river. Geology.

Map 1714. The Niagara peninsula, Ontario. Geology.

Map 1715. The Ontario peninsula. Geology.

Applicants for publications not listed above should mention the precise area concerning which information is desired.

The Geological Survey will, under certain limitations, give information and advice upon subjects relating to general and economic geology. Mineral and rock specimens, when accompanied by definite statements of localities, will be examined and their nature reported upon.

Communications should be addressed to The Director, Geological Survey, Ottawa.

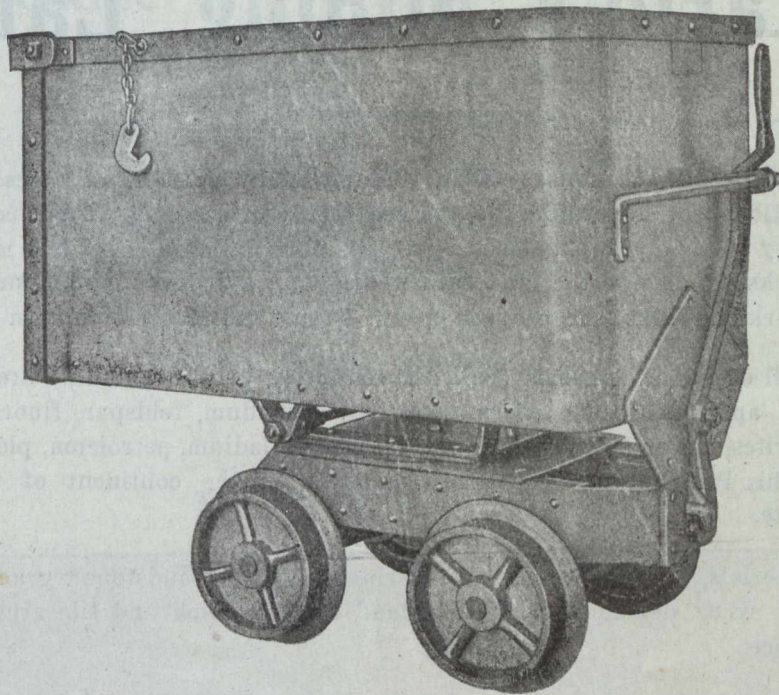


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# Ontario's Mining Lands

Ontario, with its 407,262 square miles, contains many millions of acres in which the geological formations are favorable for the occurrence of minerals, 70 per cent of the area being underlain by rocks of pre-Cambrian age. The phenomenally rich silver mines of Cobalt occur in these rocks; so also do the far-famed nickel-copper deposits of Sudbury, the gold of Porcupine and Kirkland Lake, and the iron ore of Magpie and Moose Mountain Mines.

Practically all economic minerals (with the exception of coal and tin) are found in Ontario:—actinolite, apatite, arsenic, asbestos, cobalt, corundum, feldspar, fluorspar, graphite, gypsum, iron pyrites, mica, molybdenite, natural gas, palladium, petroleum, platinum, quartz, salt and tale. This Province has the largest deposits on the continent of tale, feldspar, mica and graphite.

Building materials, such as ornamental marble, limestone sandstone, granite, trap, sand and gravel, meet every demand. Lime, Portland cement, brick and tile are manufactured within the Province.

Ontario in 1918 produced 45 per cent. of the total mineral output of Canada. Returns made to the Ontario Bureau of Mines show the output of the mines and metallurgical works of the Province for the year 1918 to be worth \$80,308,972 of which the metallic production was \$66,178,059.

Dividends and bonuses paid to the end of 1918 amounted to \$13,359,210 for gold mining companies, and \$74,810,521 for silver mining companies, or a total of \$88,169,733.

The prospector can go almost anywhere in the mineral regions in his canoe; the climate is invigorating and healthy, and there is plenty of wood and good water. Hydro-electric power is available in many parts of the Province, and many undeveloped water-powers remain to be harnessed. A miner's license costs \$5.00 per annum, and entitles the holder to stake out in any or every mining division three claims of 40 acres each. After performing 240 day's assessment work on a claim, patent may be obtained from the Crown on payment of \$2.50 or \$3.00 per acre, depending on location in surveyed or unsurveyed territory.

For list of publications, illustrated reports, geological maps and mining laws, apply to

**Thos. W. Gibson,**

Deputy Minister of Mines,

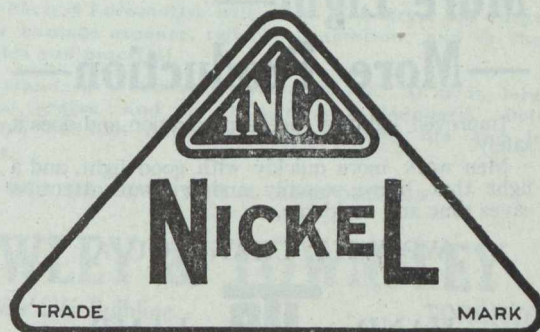
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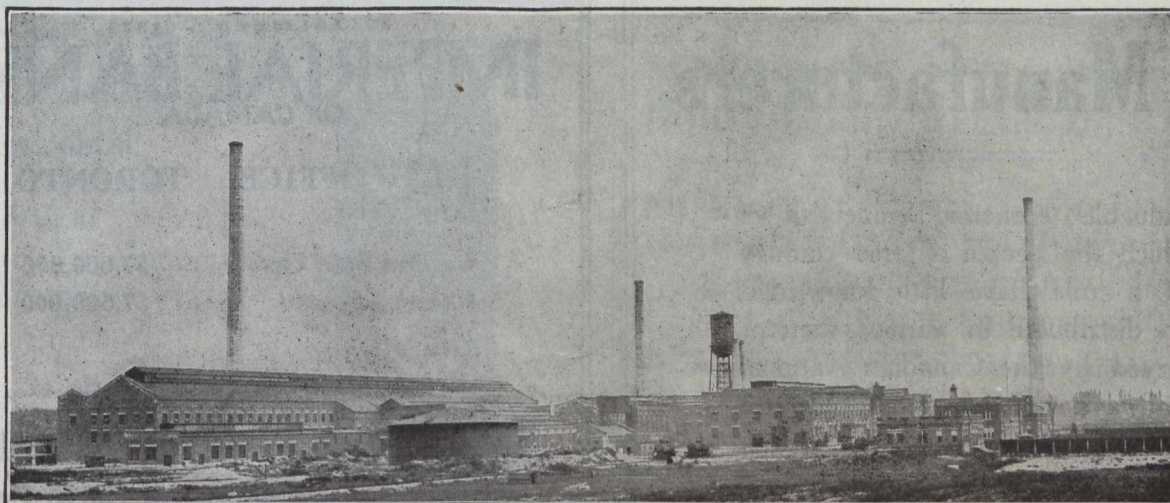
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**The Industrial and Resources  
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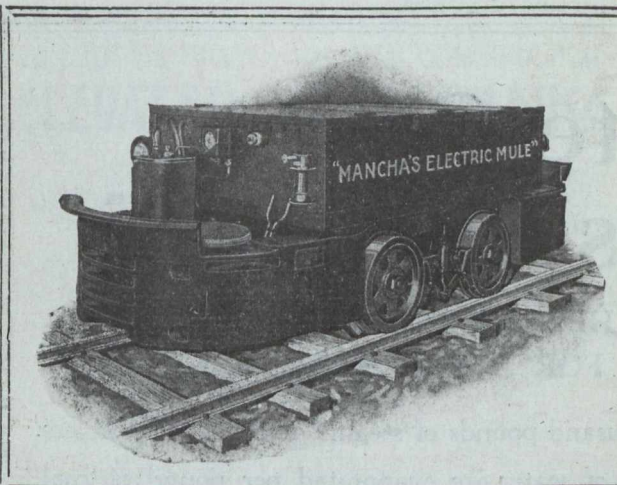
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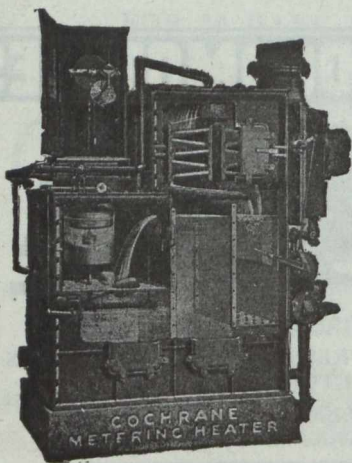
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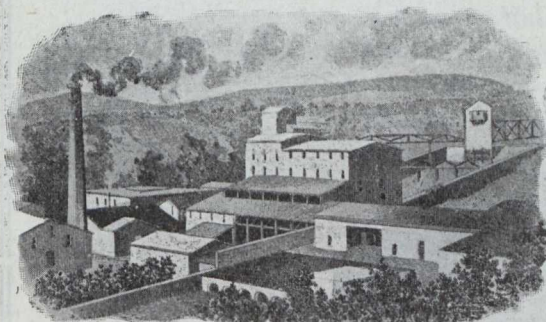
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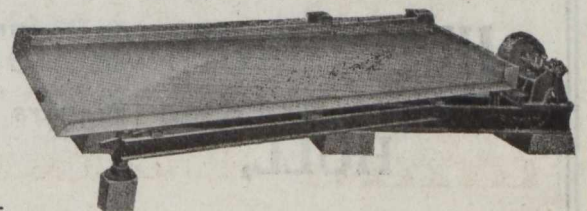
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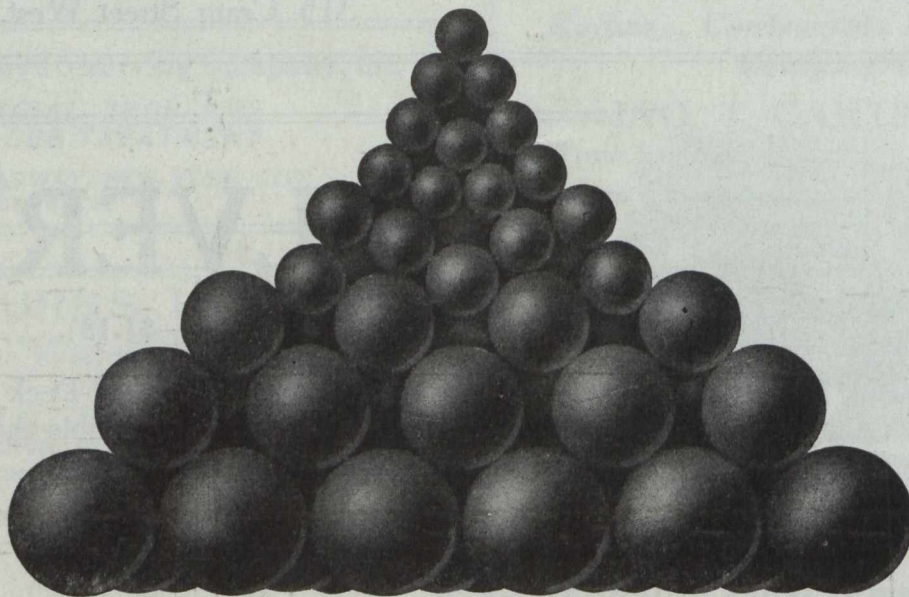


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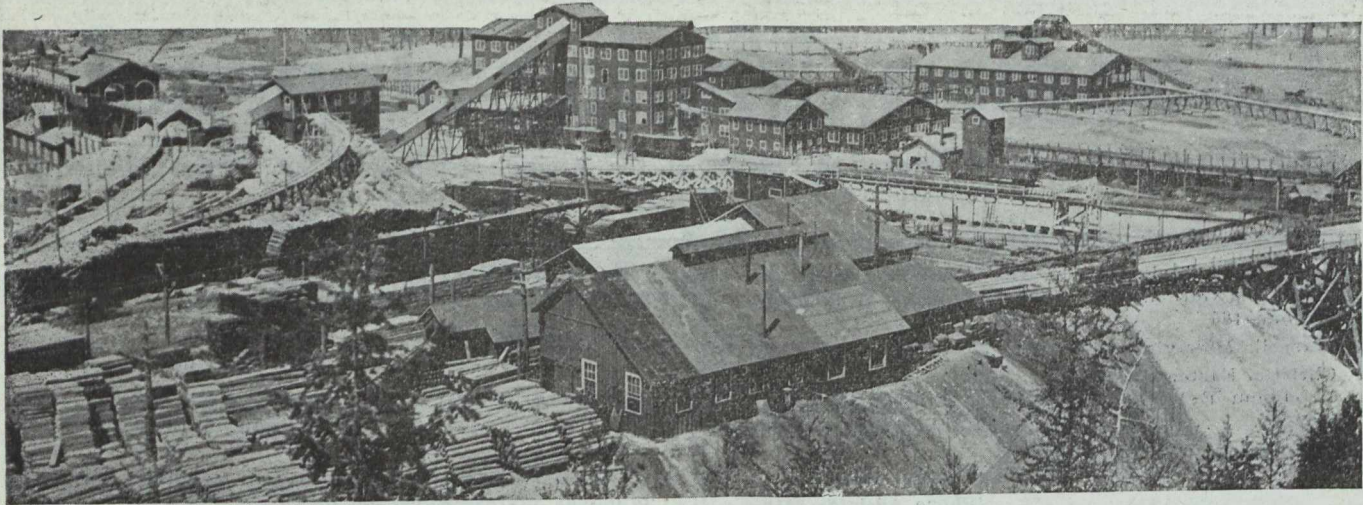
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# EDITORIAL

## *PROGRESS OF THE CANADIAN MINING INSTITUTE.*

The complete manner in which the activities of the Canadian Mining Institute now cover Canada from coast to coast is shown by the last number of the "Bulletin," which contains a list of the Provincial and Local Branches and the Technical Sections now organized.

The Canadian Mining Institute can now claim to be a body that adequately represents all the direct and associated activities of mining in Canada, both in the metropolitan centres and in the mineral-producing districts.

Many years of hard work, much experimentation, much vision and tactful organization, some tribulation, but a far greater sum of good fellowship and a desire to help the other fellow, have combined to bring about the rounding-out of our Canadian Mining Institute, and to secure for it the recognition which it is now accorded as the fully accredited and truly representative consensus of the varied interests that compose the national industry of mining and its outgrowths.

The meeting of the Sudbury Branch reported in this issue, the meeting of the Montreal Branch, the forthcoming meeting in British Columbia, are indications of the wide geographical scope of the Institute, and also of the pervading desire of its members to be up and doing. The goal of the Sudbury Branch to be "the liveliest Branch in Canada" is finding simultaneous expression in fifteen other branches.

Membership in the Canadian Mining Institute was always a thing to be prized, but to-day it is more than ever a distinction, and C.M.I. members should wear the beaver and crossed hammers as members of the Engineering Institute of Canada, and of the A.I.M. & M.E. wear their society insignia. The members of the C.M.I. belong to no mean society, and they should feel that way about it. Such a feeling is neither "swank" nor egotism, it is but the adequate and sober realisation of a very significant fact. Canada is a continental area only partially prospected. It stands, in potentiality of population and industrial importance, where the United States stood after the Civil War. If the forefathers of the C.M.I. dreamed dreams and saw visions, they set us a good example, because in Canada there lies the substantial stuff from which vision can be translated into actuality, as time and time again it has so been translated in the lifetime of this generation of Canadians.

In the Canadian Mining Institute, now emerged from its adolescence, we have an institution that can guide the

mining industry aright, can guard professional ethics while it inspires material progress in the science and art of mining; an institution which has for members the pioneers of mineral development in the Dominion, and the latest graduates of our mines and universities.

No technical society can look forward to its future with such justified optimism as should guide the policies of the Canadian Mining Institute and inspire the enthusiasm of its membership.

## *DAMNING WITH FAINT PRAISE.*

"There are adventurous spirits who will doubtless rush to The Pas, at the head of Lake Winnipeg, in search of the gold and petroleum reported to have been discovered in amazingly rich quantities in that district. The quest of the golden fleece never wanes, but it will be well to await authentic news on the subject, and it is somewhat suspicious that the alleged find has been made by a travelling Chicago salesman. There may be gold and there may be oil in the neighborhood of The Pas. Both are found in many parts of Canada. New Brunswick produces gold, Quebec also, as well as petroleum, and in Ontario both are found in liberal quantity; to say nothing of silver. Manitoba has more than once before had its rush of gold prospectors. The precious metal is found in the North Saskatchewan river, Alberta has profitable oil fields, and British Columbia is rich in minerals. But not many an El Dorado has yet been uncovered in Canada, though the hope of doing so is constantly nurtured, and the game of chance is irresistible with many people. Surface indications of gold and oil abound and there they stop. Time and money and industry must support faith before the recompense comes, if it ever does come, and while the story of the Pas strikes is interesting, we must wait awhile to learn whether a hoax has been perpetrated, and whether, if otherwise, the indications run below the surface."

The foregoing editorial, under the title of "Time for Incredulity" appeared in a metropolitan newspaper which usually admits to its columns only accurate information, and in its editorial utterances is distinguished by correct historical perspective and wholesome good sense. For once, however, Homer nods, and it would be difficult to find more misinformation, and a more incorrect perspective of the history of mineral development in Canada than is contained in the foregoing quotation.

The Pas is not the scene of the latest mineral discoveries. The district is from 70 to 90 miles north of Le Pas, neither is Le Pas at the head of Lake Winnipeg. We have not heard of the unusual juxtaposition of petroleum and gold assumed to exist in the neighbourhood of Le Pas, neither do we recollect hearing of discoveries of gold in New Brunswick or petroleum in Quebec.

But what is principally to be objected to is the statement that "not many an El Dorado has yet been uncovered in Canada." This is damning Canada with faint praise, and is incorrect. The mineral history of Canada goes back a bare fifty years. The country is not half prospected, and many of the great discoveries have been accidental and fortuitous, and usually associated with railway extensions. Cobalt, Porcupine, the Yukon were none of them mean examples of great concentrations of mineral wealth, nor is there any reason to suppose that these camps will exhaust the "El Dorados"—if one may use the term—of Canada. The Portland Canal, District of British Columbia, the region north of Le Pas (described in the "Journal" of October 1st by Dr. Wallace, the Commissioner of Northern Manitoba) are mineral areas of great promise. In the present issue will be found a description of the Upper Harricana River gold area in Quebec that is of much interest. The possibilities of Northern Ontario are by no means exhausted, as, discounting the vicious promotion literature that is being circulated, there are a number of recent discoveries within an area that has been fairly well mapped and prospected.

What is the meaning of such a statement as "surface indications of gold and oil abound, and there they stop"? Surface indications of gold would satisfy most prospectors, neither are surface indications of petroleum to be despised. If surface indications of gold and petroleum were found combined then the prospector would be justified in becoming excited.

The writer of the editorial referred to writes truly, however, when he says that the hope of uncovering rich mineral deposits in Canada is constantly nurtured. We believe it will continue to be so nurtured. The material results already achieved in Canada justify such nourishment of hope, the geological information available indicates the scientific basis for it, and more than all, the blood of the prospector is the Canadian's rightful heritage. It is not alone the lure of gold that draws men to the search, but as expressed by Chase Osborn, in a book reviewed in this issue, "the greatest charm of prospecting is not the hope of finding wealth, it is life in the clean unhurt out-of-doors."

Incredulity in the reception of much of the mine promotion literature that is being circulated is very timely, but incredulity in regard to the mineral wealth of Canada is not justified by history or by present knowledge.

### THE RIGHT TO REMOVE TIMBER FROM MINING CLAIMS IN ONTARIO.

Hartley Dewart has directed an attack against the administration of the Crown Lands Department of Ontario, which has been given wide publicity, which does not measure up to the importance which its wording would imply and which does not find corroboration in this part of Northern Ontario.

Mr. Dewart said:

"Let Hon. Mr. Ferguson throw open the books of his department to me for seven days and I will show the proportions of the dishonest sealing and inspection. Do you understand the conditions under which mining licenses are granted? Go through the North country, and you will find hundreds of claims from which timber has been cut and exported to the United States as pulpwood."

As one who has spent more than a dozen years in prospecting for mineral in the North country, the writer is aware of the unfairness of the foregoing assertions. First of all, it should be pointed out that the above does not charge the Department of Lands, Forests and Mines with dishonesty. It merely implies such by saying "I will show the proportions of the dishonest sealing and inspection." It does not say what proportion, if any, can be shown. The other statement that pulpwood has been whipped from hundreds of claims is probably correct, and mining men as well as prospectors resent the fact of this being incorporated in what purports to be a charge.

The mining laws of Ontario require the holder of a mining claim to perform 240 day's assessment work before a patent can be secured and the timber remover therefrom. Even then certain kinds of timber cannot be removed excepting for building purposes on the property. It costs the holder of a mining claim about \$5 a day for performing the assessment duties, or some \$1,200 for each 40-acre claim, in addition to which is a patent fee of \$3 per acre, making a total of \$1,320. In this way it would cost something like \$5,280 to acquire 160 acres. When the patent to such land is secured at such large cost, prospectors and mining men in discussing the matter with the writer declare that they fail to see why they should not be entitled to remove timber. Furthermore, the profit which any claim holder can make from timber upon mining claims could not cover the cost of carrying the claims to patent, which fact makes it quite absurd to declare that claims are taken up for that purpose. Prospectors point out that settlers may take up 160 acres merely by paying a fee of \$20 and are permitted to remove pulp timber, and fail to see why they should be drawn into a political controversy and thus indirectly made to share the onus of such ridiculous inference which residents in the southern parts of the province may be made to believe true.

J. McRae.

Mr. M. J. Warren, President of the Consolidated Mining & Smelting Company, says Canada can supply ten percent of the world's demand for zinc, and is only producing 25,000 tons. Mr. Warren intimates the Consolidated Company will make arrangements to supply the world demand more commensurate with the ore resources of his Company than the existing reduction facilities.

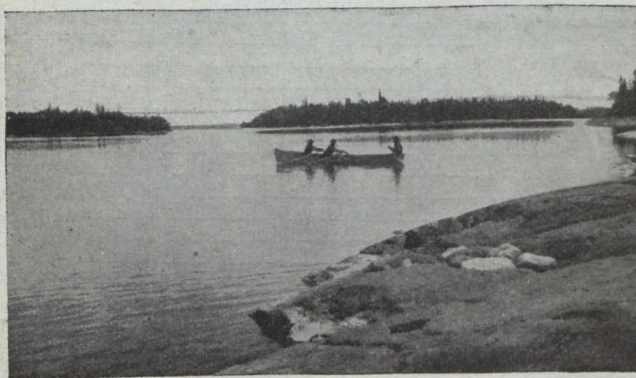
# The Upper Harricana River Gold Area

By ADHEMAR MAILHIOT.

(Professor of Geology at l'Ecole. Polytechnique,  
Montreal.)

In accordance with instructions received from Mr. Theo. C. Denis, Superintendent of Mines of Quebec, the writer spent a part of last summer in making a geological examination in the district adjoining lake DeMontigny (Kienawisik) where recent gold discoveries had been made.

The area is located in Dubuisson and Varsan townships, county of Temiskaming, Province of Quebec. The nearest railway station is Amos on the National Transcontinental Railway, 433 miles west of the city of Quebec and 141 miles east of Cochrane, Ontario. From Amos the route to the district follows the Harricana River on which unobstructed navigation is possible for gasoline launches and small river steamers from the railway crossing to the mining camp and 30 miles beyond. The distance from Amos to lake De Montigny is about 40 miles, and within this distance the river locally expands into three lakes which are known respectively from north to south as lake Figury (or Peter Brown), lake LaMotte (or Jack Pine), and lake Malartic (or Seal's Home). The stretch of river between lake Malartic and lake De Montigny is locally called the Askigwaj River.



View of Lake De Montigny from Parker's Island.

The country along the water route is of low relief and heavily covered with stratified clay deposited in the bottom of a very extensive lake that, geologically speaking, recently occupied the region of the "Clay Belt" during the recession of the glacial ice-sheet. The valley of the Harricana River is well suited for farm lands and the Quebec Government, for the last five years has been encouraging colonization in that district. The region under consideration is situated just north of the height of land and drains into James Bay through the string of lakes and the Harricana River.

## History of Discovery of Gold on Lake DeMontigny.

The first discovery of gold in that district was made in July, 1911, by Mr. J. J. Sullivan; he staked a claim on the eastern shore of lake DeMontigny which was developed as Sullivan's property during the following years. The discovery now owned by the Martin Gold Mining Company, Ltd., was made the same year, with

two other gold bearing veins. \* In 1915 gold was discovered on the claims now held by the British Minerals Corporation, Ltd., on the largest island in the lake, known as Siscoe Island. Apart from the work done on the latter claims by the Siscoe Mining Syndicate and on the Martin property, there was practically no prospecting done in the district during the war. Since the signature of the armistice numerous prospectors were attracted to the neighborhood of this lake and made some gold discoveries among which the more promising are the following: Stabell, Foisie, Craft, St.-Germain-Gale, Legault, Parker, Caron, Marsil, Clowse and others.

## General Geology.

The Lake DeMontigny area is underlain by a series of Keewatin rocks formed mainly of fine-grained green chlorite and hornblende schists. Some of these schists are altered diabase and diorites. Numerous exposures of this green schist can be seen on the southern, eastern, and western shores of the lake as well as in almost all the islands in the lake. Altered basalts showing the pillow or ellipsoidal structure are also common, inter-bedded with the green schist. Good examples of this structure can be seen just west of the Martin

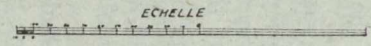


"A" Shaft, Siscoe Mine.

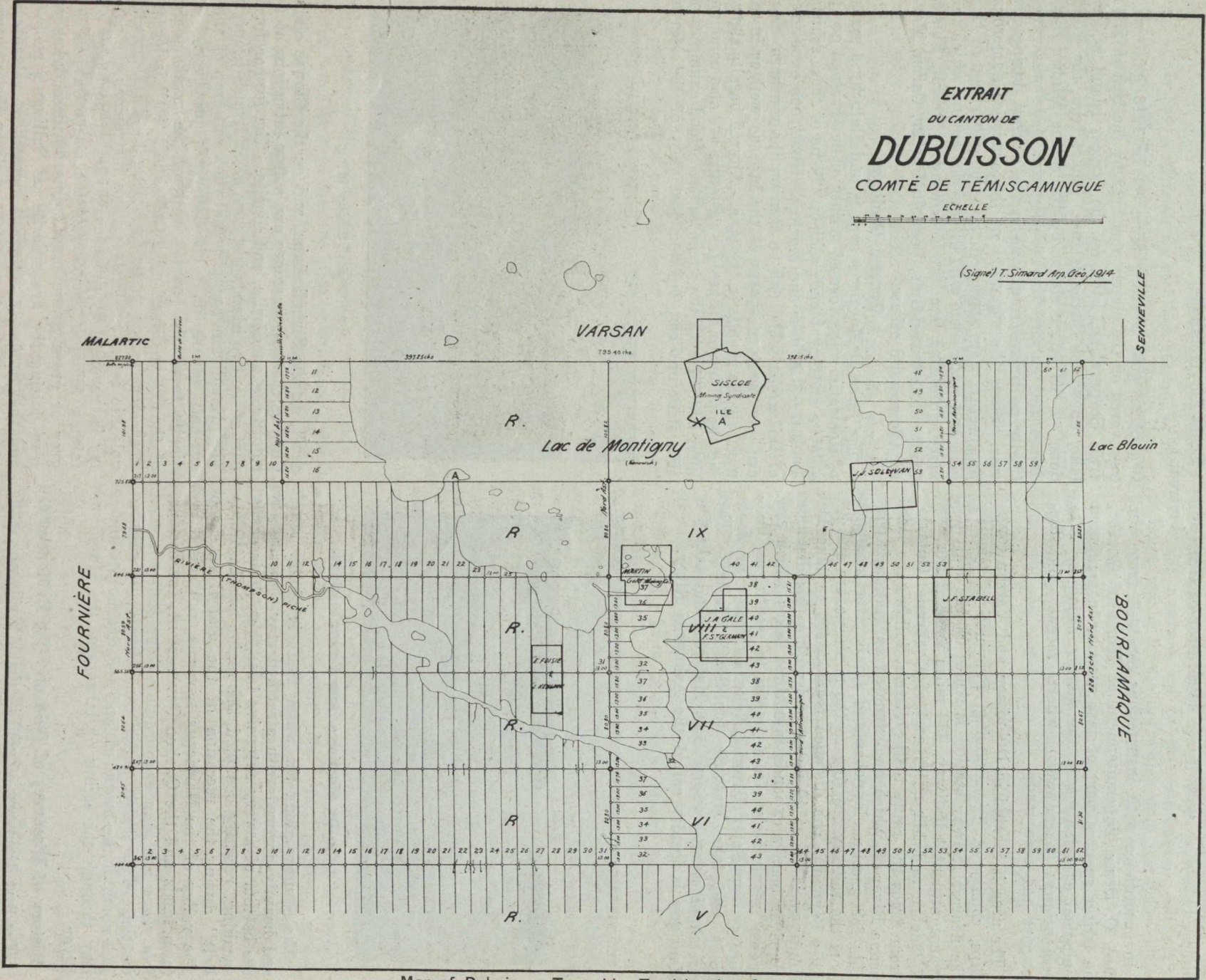
shaft, on the Stabell claim, and on the Clowse claim. Cutting these greenstones are a few intrusions of peridotite, granodiorite, and diorite. The former forms part of the two islands just west of Sullivan's property. The granodiorite occupies the whole out-crop of about one-half square mile on Sullivan's property. The diorite forms the country rock of the northern part of the Siscoe Island where the shaft "D" is located. These intrusions probably belong to the Laurentian volcanic activity. Besides these intrusions the country is traversed by numerous dykes of porphyry containing feldspar phenocrysts the size of a pea in a grey or green groundmass. One of these dykes was seen cutting the granodiorite on Sullivan's property and they probably represent subsequent volcanic activity. South of the Thompson River the country is

\* See Report on the Geology of the Headwaters of the Harricana River," by Dr. J. A. Bancroft, Report of Mining Operations in P. of Q. for 1912, pp. 217-229.

EXTRAIT  
 DU CANTON DE  
**DUBUISSON**  
 COMTÉ DE TÉMISCAMINGUE



(Signé) T. Simard App. Gée. 1914



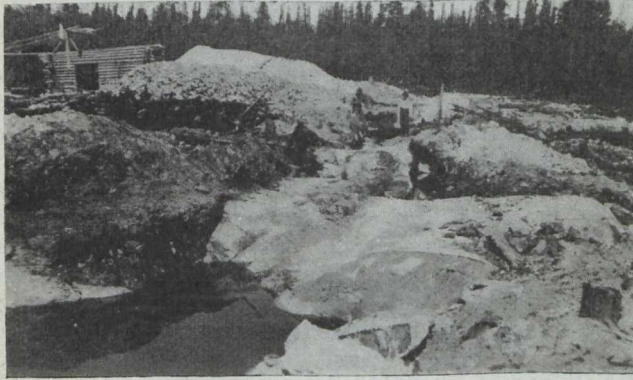
Map of Dubuison Township, Temiskaming Co., Quebec.

underlain by the Pontiac schists and in Lacorne township the Laurentian granites and pegmatites are well developed especially at the south-west corner of the township where the pegmatites and the granite contain veins of molybdenite which have been opened up by Mr. Benjamin of Montreal.

#### Economic Geology.

##### Sullivan's Claims.

These claims are situated on the eastern shore of the lake and occupy part of lots 48, 49, 50 and 51, range IX, and part of lot 53, range X, Dubuisson township.



"C" Shaft, Siscoe Mine.

It is on these claims that gold was first discovered in July, 1911, by Mr. J. J. Sullivan. The veins are cutting a boss of granodiorite underlying the northern part of the claims. This boss forms a rounded outcrop having about 1,500 feet diameter. The work done upon these claims consists of trenches, test pits and a shaft of 18 feet deep. The veins vary in width from a few inches to 5½ feet. Some ten different veins, or croppings of mineral-bearing rocks, have been found on these claims up to the present time. The strike of the veins varies from due east and west to N. 70° W. Two small outcrops (Nos. 9 and 10) run northwest.

During the summer of 1912 considerable prospecting was done and three new veins roughly paralleling No.



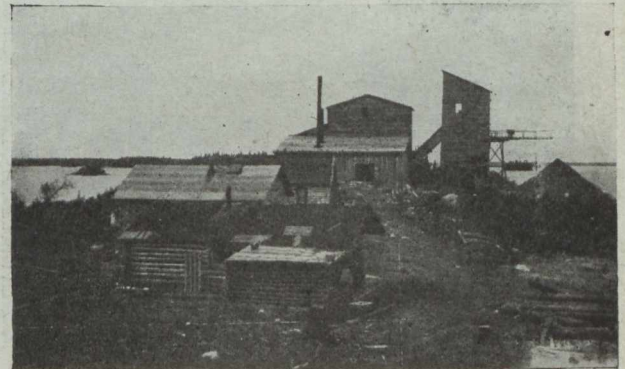
"D" Shaft, Siscoe Mine.

1 vein were discovered and partly stripped. A test pit 10 feet deep was also sunk on No. 1 vein. In March, 1914, work was resumed on the claim and new buildings were erected on the property. Stripping of the surface was continued and new discoveries were made. At the same time test pits and open cuts were made on the different veins, and two shafts, one on No. 4, the other on No. 1 vein were started. These had reached a depth respectively of 9 feet and 18 feet when work was stopped at the outbreak of the war in August, 1914. No other work has since been done on the claims

except prospecting and assessment. Most of the work was done on veins Nos. 1, 2, 3 and 4, and it is said that good returns were obtained from the assays. The British Minerals Corporation, Ltd., of Montreal, have taken an option on the property and it is expected that this company will resume work in the near future.

##### The Martin Gold Mining Co., Ltd.

This company who own parts of lots A and 37, ranges VIII and IX, of Dubuisson township, have a shaft sunk to a depth of 125 feet with over 100 feet of cross-cut and drifts on a gold bearing deposit which has been uncovered at the surface for 700 feet. The vein occurs in the Keewatin greenstones presenting an ellipsoidal structure. An intrusive dyke of feldspar porphyry cuts the Keewatin and roughly parallels the strike of the vein; this intrusive is 50 feet in width where exposed 30 feet west of the vein on the lake shore. The general strike of the vein is S. 45° E. and its dip is about 75° towards the northeast. The vein has been exposed over a distance of 700 feet by stripping and trenching, and its width varies from 2 to 10 feet. It is formed of a bluish banded quartz with inclusions of greenstones. Both the quartz and the adjoining rocks are mineralized, and visible free gold occasionally occurs in the quartz. The shaft has been started on the vein and sunk vertically to a depth of 125 feet. The foot-wall of the vein leaves the shaft



Martin Gold Mining Co., Shafthouse and Mill Buildings.

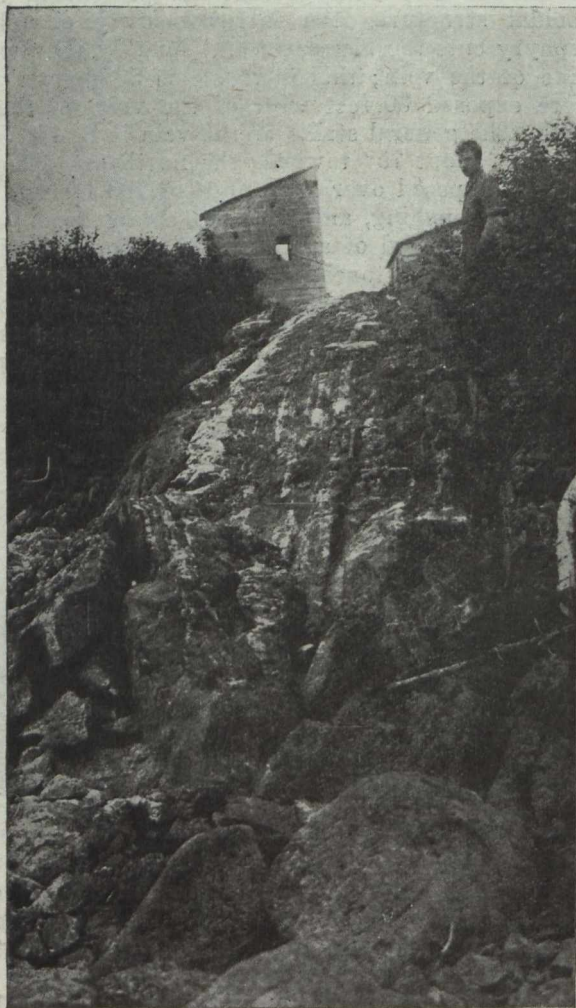
at a depth of about 35 feet. At the bottom of the shaft a cross-cut of 10 feet was driven to catch the vein and a drift was run on the vein 50 feet in a northerly direction and 25 feet in a southerly direction. The width of the vein in the drift is 11 feet. In 1918 the company built a small milling plant, for experimental purposes, near the shaft house. The ore is hoisted in a bucket containing about 600 lbs. and emptied in a small ore-car which is trammed over a trestle to the mill. The ore is passed through a jaw crusher, put into a bin of a capacity of 25 tons, which feeds a 10-stamp battery. The pulp passes over 3 amalgamated plates measuring 4 feet by 6 feet. Milling operations were carried on during part of the summer 1918, but the resulting gold was not disposed of. The ore is said to yield good values. The mine development work was discontinued during July of the present year on account of financial difficulties.

##### The Siscoe Mine.

This property, which is now operated by the British Minerals Corporation, Ltd., is situated on the largest island on lake DeMontigny occupying an area of 360 acres. The island is underlain by a complex of more or less altered igneous rocks of the Keewatin forma-

tion. The northern part of the island is formed of diorites or andesites and diorite-porphyrates and the rest of the island is formed of greenstones and ellipsoidal basalt. All these rocks are locally cut by irregular dykes which possess the composition of quartz porphyrites.

The gold occurs in quartz veins and stringers, containing much tourmaline, with a little calcite and considerable disseminated pyrite. In one of the veins (the "C" vein) scattered grains and small lumps of scheelite have occasionally been encountered. Four principal veins have been prospected which are known as veins A, B, C and D.



Gold-bearing Vein on the Martins' Property.

On vein "A" a shaft of 45 feet has been sunk on the vein which is practically vertical down to this depth. The vein has been uncovered by stripping for a length of 90 feet.

The shaft at the "B" vein is 32 feet deep, sunk at the contact of a dyke of quartz porphyry, 8 to 10 feet in width, traversing the Keewatin greenstone.

On vein "C" a shaft has been sunk to a depth of 100 feet on a slope of 35° which corresponds to the dip of the vein. The vein at the bottom of the shaft is 22 inches wide. Dr. J. A. Bancroft, who reported on the property this spring for the British Minerals Corporation, Ltd., took four samples across the vein at depths of 41 and 47 feet and had returns of \$0.80, \$8.00, \$21.60 and \$33.00 per ton in gold. Dr. Bancroft considers this vein the best that has been discovered on the property.

The "D" vein zone includes a vast number of wide-

ly scattered irregular veins and stringers of quartz which rarely exceed a few feet or yards in length. These veins traverse the Keewatin greenstones, possessing the composition of an andesite or fine-grained diorite. In a few places, irregular dykes of light gray quartz porphyry, a few feet in width, traverse the greenstone. Several of these quartz stringers carry "nests" or "pockets" rich in free gold from which spectacular specimens may be taken. This zone was carefully sampled this summer by Mr. John A. Dresser and Professor J. W. Bell of McGill University. In one instance, a bulk sample weighing 8.3 tons was crushed in a stamp mill and amalgamated with the return of \$39.64 per ton in gold. This bulk sample consisted for the most part of clean quartz showing an occasional speck of visible gold. In their opinion "the prospective value is sufficient to warrant undertaking further development work, especially taking into consideration the fact that the network of stringers in "D" zone and the "C" vein itself dip towards each other, the possibility of their being related is a matter which merits exploration. This work should be concentrated on the area between C and D and on the D zone. It would be most economically done in the first instance by diamond drilling, say to the amount of three or four thousand feet."

#### The J. F. Stabell Claim.

This claim comprises the northern half of lot 53, range VIII, Dubuisson township. A vein varying in width from 2 to 30 feet has been found running across the claim with a strike of N. 40° W., over a distance of about 700 feet. This vein is formed of stringers of quartz interbanded with schist. On the surface the rock is heavily rusted with decomposed iron pyrites forming the gossan. The same vein was found extending towards the west on J. B. Legault's claim. The prospecting work consisted in trenching and stripping on the surface. It is said that one of the prominent operating companies in the Porcupine district has taken an option on this property and will soon start diamond drilling.

#### The Foisie-Kangrow Claims.

These claims are situated between lake DeMontigny and the Thompson River, lots 27 and 28, ranges VII and VIII, Dubuisson township. This claim was staked in early part of June this year and a very promising gold deposit was found by the stakers while making their assessment work. The vein outcrops near the corner post of lots 27 and 28, on range line between ranges VII and VIII. It strikes N. 45° W. and has an average width of about 10 feet. The vein matter is formed of blue and white quartz containing pyrite, chalcopyrite, stibnite, and particles of free gold. It has been uncovered by stripping and trenching for a distance of about 200 feet. There exists in the vicinity of the vein an intrusion of quartz diabase. Mr. Edmond Bregent, mining engineer of Montreal, has taken an option on the property and contemplates to open up that property this fall.

#### The St.-Germain-Gale Claim.

This claim occupies parts of lots 38, 39, 40, 41, 42 and 43, range VIII, Dubuisson township. Three veins have been discovered on it. Vein No. 1 has a width of 35 inches at the bottom of a shaft 18 feet deep. Vein No. 2 has a width of about one foot and a shaft 10 feet deep has been sunk. On vein No. 3 the rock excavation is about 6 feet deep and the vein is only a few inches wide. Spectacular free gold is often found in these veins.



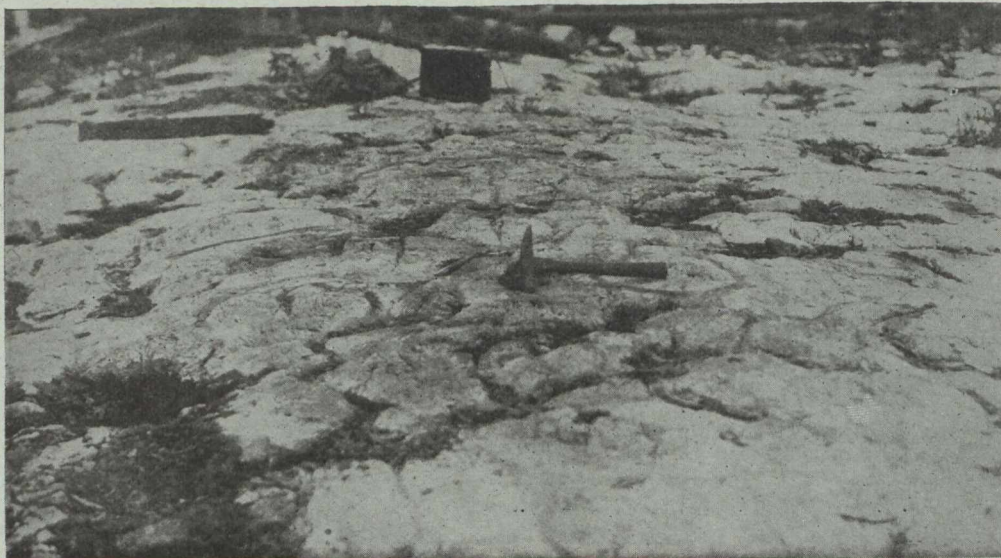
Marsil Vein—Showing interbanded quartz with schist and granite. Total width mineralized zone is over 80 ft.



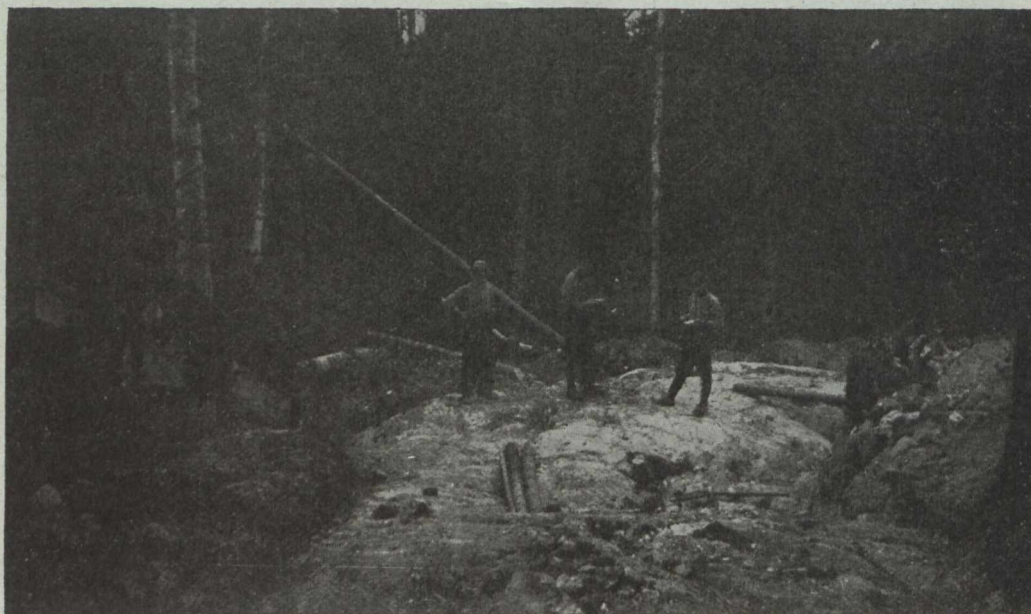
Stabell Vein and Porphry Dyke.



Gold Bearing Vein on Craft Claim.



Ellipsoidal Basalt on Martins' Property.



The Foisie Kangrow Vein, Stripped.

#### Other Properties.

There are a few other properties upon which gold bearing veins have been discovered and which are actively prospected by the owners. The most interesting are: J. B. Legault's claim, lots 51 and 52, range VIII, Dubuisson township; this claim is adjacent to Stabell claim, and outcroppings show the continuation of what is thought to be the Stabell vein which has been described above in this article. The Parker claim and the Caron claim occupy a few islands along the southwest shore of the lake. On each of these claims gold-bearing veins have been found. The Marsil claim, situated on lots 39 and 40, range I, Varsan township, the Manibal Claim, lot 35, range VIII, Dubuisson, the Neuveu claim, parts of lots 44 and 45, range VIII, Dubuisson, the Craft claim, part of lots 44 and 45,

range VIII, Dubuisson, the Carriere claim, lots 40, 41, 42, range IX, Dubuisson, are the most promising among the others.

#### EXHIBIT OF THE ONTARIO DEPARTMENT OF MINES.

At the Chicago Exposition of Chemical Industry, Sept. 22nd.

The Ontario Department of Mines is to be congratulated on the comprehensive nature and the excellent selection of the minerals shown at the Exposition of Chemical Industry in Chicago. The exhibit attracted much attention, and from varying grades of visitors, and Ontario's mineral wealth received wide advertisement. A fairly complete list of the exhibits follows:



Sphalerite—Big Duck Lake, north of Schreiber.  
 Gold ores—Miller-Independence; Tough-Oakes, Kirkland Lake; Hollinger Mine.  
 Copper Ore—Mine Centre.  
 Iron ore—Magpie Mine (siderite); Moose Mountain (magnetite, also briquetted ore); Lanark County (hematite).  
 Pyrite—Canadian Sulphur Ore Co., Queensboro; Nicholls Chemical Co., Goudreau.  
 Nickel Ore—Mond Nickel Co., Levack Mine; pyrrhotite, Mond Nickel Co., Alexo Mine, Porquis Junction; copper-quartz ore, Mond Nickel Co., Bruce Mine; furnace matte, nickel-copper, Mond Nickel Co.; Bessemer matte nickel-copper, Mond Nickel Co.; nickel and copper sulphates, Mond Nickel Co.  
 Galena—Jas. Robertson Mine, Galetta.  
 Molybdenite—Eastern Ontario.  
 Nickel Ore—Creighton Mine (showing pentlandite crystals); Ingot Nickel, International Nickel Co.  
 Nickel preparations (sulphate, carbonate, oxides); nickel shot—International Nickel Co.  
 Silver—Large slab of native silver from Coniagas Mine.  
 Bar Silver Bullion.  
 Cobalt bloom.  
 "Stellite" metal, cobalt-tungsten, chrome alloy, Nickel and cobalt oxides, Arsenic, Metallic cobalt and nickel—Deloro Smelting & Refining Co.  
 White and metallic arsenic—Coniagas Reduction Co.  
 Nickel carbonate, metallic cobalt, cobalt acetate, cobalt hydroxide, cobalt sulphate, nickel and cobalt oxides—Metals Chemical Co., Welland.  
 Ferro-silicon—Electro-Metals Co., Welland.  
 Cyanimide, nitric acid, urea, ammo-phos (fertilizer), ammonia aqua, ammonia sulphate, ammonia nitrate, dicyandiamid—American Cyanamid Co.  
 Soda and soda-ash—Brunner-Mond Company.  
 Gypsum (and number of plaster products)—Ontario Gypsum Co., Caledonia.  
 Oil shale—Kettle Point, Lambton, C.  
 Barite—Premier-Langmuir Mine, Connaught Station.  
 Apatite—Hastings Co., Eastern Ontario.  
 Yellow ketone oil, acetic acid, wood alcohol, sodium acetate, hardwood creosote, acetate of lime, acetone alcohol, acetone (pure), charcoal, formaldehyde—Standard Chemical Iron & Lumber Co.  
 Salt (brine, and all grades), caustic soda, bleaching powder—Canadian Salt Co., Windsor.  
 Marble samples, polished—Bancroft.  
 Graphite (large block of amorphous graphite, with graded qualities of prepared graphite—Black Donald Graphite Co., Calabogie.  
 Talc—Geo. H. Gillispie Co., Madoc.  
 Abrasives (aloxite, artificial carborundum, corundum)—Craigmont, Ont.  
 Fluorspar—Madoc.  
 Mica—Lacey Mine, Sydenham. An extremely fine crystal, measuring about 17 by 24 inches.  
 Feldspar—Richardson Mine, Verona.  
 Brick Clay—Mattagami River, north of Transcontinental Railway.

### BRITISH COLUMBIA CORRESPONDENCE.

#### Trail B. C.

The Consolidated Mining & Smelting Company is considering plans for the installation of two concentrating plants, one at Rossland B. C. and the other at Kimberley B. C. The Kimberley installation is said

to contemplate a plant having a capacity of 10,000 tons daily at the outset and possibly the erection of another unit of the same size, which would make the total capacity 20,000 tons. If the project thus outlined is carried through the concentrator would be the largest on the continent. The nearest approach to it in this respect is said to be a plant in the State of Utah, which is capable of handling 15,000 tons a day. The several plants of the Anaconda Copper Mining Company, Montana, it is pointed out, take care of 15,000 tons daily. Plans for the Rossland Plant have been under consideration for some months. It was proposed at first to provide a 1500 tons plant but recent reports are that the Company now has in mind a 5,000 ton installation. The chief problem at Rossland has been a source of water.

The City has the first right to a supply but has shown a disposition to share it liberally with the smelting company. The construction of a dam in the mountains near Rossland, it is believed, would take care of this need, although there is no doubt that the expense of the undertaking would be considerable. The proposed site of the Rossland Concentrator is between the War Eagle and the Le Roi Mines and the sources of ore would be the Le Roi, War Eagle and Centre Star Mines, which are the property of the Consolidated Mining & Smelting Co. In these are large reserves of low grade copper-gold ore. At Kimberley the chief ore supply will come from the Sullivan Mines of the Consolidated Company. From these properties from 2,000 to 4,000 tons of lead and zinc ore are shipped weekly, the output for the last eleven days of the month of August being 6,537 tons of zinc and 630 tons of lead. In addition to this ore, which is of smelting grade, the mine contains an enormous quantity of ore carrying zinc and lead in lower percentage. Its removal at a profit was a problem until a year about when it was announced that it had been solved by the metallurgical staff of the Company at the Trail Smeltery.

### RUBBER FITTINGS OF BREATHING APPARATUS LEAK IN PRESENCE OF GASOLINE.

James S. Cunningham, Denver, Col., one of the rescuers of the Bureau of Mines, Department of the Interior, and attached to Mine Safety Car No. 2, met death in a storage gasoline tank of the Sinclair Oil and Refining Company, at Trinidad, Col., Monday, August 25. It is thought that while attempting to connect some pipe fittings in the bottom of the tank, his half hour oxygen breathing apparatus touched the gasoline in the bottom of the tank, the rubber in the breathing bag dissolving in the gasoline and allowing the fumes to enter the apparatus.

Commenting on the cause of the fatal accident, and entirely aside from the grief over the loss of a brave rescuer, George S. Rice, chief mining engineer of the bureau, said: "The accident brings out strikingly the serious risk, not previously understood, that is undertaken when a gasoline tank is entered, using the ordinary breathing apparatus in which rubber has been an essential part of the apparatus. As the necessity to enter a partly filled tank to make repairs arises not only on shore but also aboard ship, the Bureau of Mines will make inquiry of the principal refineries and wherever storage tanks are used regarding the frequency with which such conditions are met to establish the importance of the development of a type of apparatus which does not use rubber parts."—"Coal Industry," Pittsburgh.

# A New Discovery of Pitchblende

By CYRIL W. KNIGHT.

It having been reported to the Ontario Bureau of Mines that pitchblende, extraordinarily rich in radium, had been discovered in Butt township, east of the Georgian Bay, in the Province of Ontario, the writer was instructed by Thos. W. Gibson, Deputy Minister of Mines for Ontario, to visit the area and make a preliminary examination. Accordingly, two days were spent early in October in this township, and one or two ounces of pitchblende were collected.

The mineral was identified and found to be pitchblende by M. K. McNeill, Provincial Assayer for the Province of Ontario. He also found that it was strongly radio-active.

Butt township is entered by way of Kearney, a town on the Grand Trunk Ry. 167 miles by rail north of Toronto and 6 miles east of Scotia Junction. The deposit of pitchblende is 22 miles north-eastward from Kearney. A wagon road leads to within 4 miles of the occurrence, and the last four miles must be travelled on foot. It may be added that teams, wagons and supplies are obtainable at Kearney for those who desire to visit the area. Hotel accommodation is available at Scotia Junction and Kearney.

The country along the wagon road into the deposit is for the most part rugged, particularly in Butt township. The hills rise two or three hundred feet or more above the valleys, the latter being filled with sand and gravel. In that part of the township in which the pitchblende occurs, the rocks are largely covered with drift, making prospecting difficult. Mica has been mined in a small way in this part of the country, on and off, for years.

The pitchblende occurs sparingly in a coarse, granite pegmatite dike, striking north 25 degrees east, and dipping at about 60 degrees to the northwest. The dike has been worked by an open cut about 40 feet long, and 7 or 8 feet deep. It occurs at the edge of a small lake, locally known as Mica lake, on lots 13 in the sixth and seventh concessions of Butt township. The lake has been partly drained in order to prevent the pit being flooded during mining operations.

The width of the dike is not known, since only the foot-wall has been exposed by the pit, but it appears to be at least three or four feet wide. The length of the dike is also not known, the surface being covered with drift; the open cut shows it to have a length of at least 40 feet.

The dike consists of white feldspar, red feldspar, white quartz, smoky quartz, white mica, black mica, a little tourmaline, pitchblende, and other minerals in small quantity, which have not as yet been identified, but which are being investigated by the Ontario Bureau of Mines.

The pitchblende appears to be associated with the red feldspar, in which respect it resembles the occurrence of euxenite, a radium-bearing mineral, in Lanark county, Ontario, described in the 26th annual Report of the Bureau of Mines, 1917. The euxenite of Lanark county also occurs in a coarse granite pegmatite dike.

Little need be said concerning the general geology of this part of the Province of Ontario. The country rock is pre-Cambrian in age, and consists of banded gneisses, such as granite gneiss, mica gneiss, quartzite gneiss,

etc., etc. These banded gneisses cover a great area, extending as they do from the Georgian Bay eastward to the Province of Quebec, and from about Lake Timagami southward almost to Lake Simcoe, a distance of some 150 miles. The gneisses are everywhere cut by numberless dikes of granite pegmatite. It is in one of these dikes that the pitchblende in Butt township and the euxenite in Lanark county occurs. The number of coarse granite pegmatites is so great in the Province of Ontario as to encourage the hope that pitchblende or some other radium-bearing mineral may be found in large quantities.

The pitchblende in Butt township was discovered by Mr. Wm. Elliott who has worked the deposit for mica from time to time during the past three years. About a ton of mica has been mined and shipped. Mr. Elliott noted the presence of a black, heavy mineral which he eventually forwarded to Ledoux & Company of New York City, who gave him the following report, sample No. 1 being the mineral itself, and sample No. 2 the feldspar in which it occurs:—

	Per cent.
No. 1 Uranium . . . . .	63.60
Equivalent to	
Uranium Oxide (U <sub>3</sub> O <sub>8</sub> ) . . . . .	74.98
No. 2 Uranium . . . . .	0.35
Equivalent to	
Uranium Oxide (U <sub>3</sub> O <sub>8</sub> ) . . . . .	0.42

Sample No. 1 appears to be pitchblende; it contains approximately 10 per cent of lead. The radio activity as determined by the electroscope is very high. Calculated at the usual Uranium ratio, the sample contains Radium in the proportion of about 190 milligrams per ton. It is impossible to even approximate the value of such extraordinarily rich ore since there are no established quotations. We think you would be safe in taking \$3.00 per pound for the Uranium Oxide contained as a minimum which would give a value of about \$4,500.00 per ton of 2,000 pounds.

Sample No. 2 is too low grade to be of any commercial value."

The pitchblende in the township of Butt occurs in grains about the size of peas or larger. Mr. Elliott reports that he has found the mineral occurring in masses as large as an egg.

This is the second occurrence of radium-bearing material in Ontario reported since the Legislature in 1914 offered a reward of \$25,000 to the first discoverer of ores or substances containing radium in sufficient quantity for commercial extraction. The reward has been claimed in respect of both discoveries, but so far the conditions have not been met, in that radium has yet not shown to be present in commercial quantity.

Mr. T. J. Brown, General Superintendent of the Nova Scotia Steel Company at Sydney Mines was present at the dedication ceremonies of the Research Laboratories of the United States Bureau of Mines at the end of September. Mr. James MacMahon, First-Aid Director of the Dominion Coal Company, and in charge of that Company's Rescue Station, was also a visitor on this occasion.

### ORGANIZATION OF SUDBURY BRANCH OF THE CANADIAN MINING INSTITUTE.

The Sudbury Branch of the C.M.I. was organized on September 4th. The following officers were elected: E. J. Corkhill, Chairman; R. H. Hutchinson, Secretary-Treasurer; E. J. Carlyle, O. Hall and E. A. Collins, Committee.

It is proposed to hold a series of regular meetings of the Branch, with special meetings as often as suitable speakers are available. The meetings will be quite informal and will take the form of a luncheon, followed by a program.

The first meeting occupied the afternoon and evening of October 4th and took the form of a visit to the smelter and other buildings of the British America Nickel Corporation, at Nickelton a banquet at the Nickel Range Hotel, and a very fine lecture on the Rio Tinto mine, Spain, by General Manager W. A. Carlyle of the B. A. N. C., with musical program.

#### Visit to B.A.N.C. Plant at Nickelton.

The visit to the works at Nickelton was made by members of the Institute and a number of Sudbury citizens interested in mining who had been invited to make the trip. The magnitude of the works, together with their completeness in every detail, came as a revelation to the visitors. The party was conducted through the smelter, power house, shaft house, converter and furnace buildings, dry house, and various buildings, by Manager Carlyle, Capt. Hibbert, and other officers of the company. The trip to Nickelton was made on a special train at 2.30, the visitors returning about six o'clock. Several million dollars have already been expended at Nickelton, and the construction work is rapidly nearing completion. What struck the visitors most was the solid and substantial construction of buildings, the modern mining and smelting machinery, the automatic stokers in the engine room, the layout of the yards and tracks, and the methods employed to ensure the safety of the workmen, together with the provision made for expansion should circumstances warrant after the producing stage has been reached. During the afternoon a visit was paid to the huge dining hall which accommodates several hundred men for dinner daily, and a luncheon of sandwiches, cake and coffee was served to the visitors. The plant installed for preparation of food, it was told these present, was well equipped with everything required to meet the demands of the many workmen.

#### The Meeting a Success.

That the meeting of the Institute branch was successful beyond all expectations is certain. At the supper in the Nickel Range in the evening President Corkill stated that he had been at many meetings of branches of the Institute in Canada, but never before had he seen so large an attendance at any branch meeting. He was convinced that a mistake had been made in not organizing an Institute branch in this district long ago as a means of bringing mining men together. Announcement was made that letters had been received from Hon. Mr. Ferguson, minister of lands, forests and mines, expressing regret at being unable to be present on this occasion, also from the deputy minister, W. T. Gibson. Both men wished the new Institute branch all success, and expressed the hope that they would be able to visit Sudbury on some future occasion. President Corkill invited all members of Institute branches in other places to join the district branch.

#### Banquet and Lecture.

Returning from the works at Nickelton a banquet was held in the Nickel Range Hotel, followed by a lecture on the Rio Tinto mine in Spain, given by General Manager W. A. Carlyle, of the B.A.N.C., Ottawa. To the banquet in addition to the visiting mining men, were invited a number of local men, including Mr. Chas. McCrea, M.L.A., Major D. M. Brodie, W. A. Evans, Mayor Morrison and others. A prominent guest was Mr. J. B. Tyrell, expert geologist for the Dominion government, who was passing through from Winnipeg, coming in on invitation of Institute officials.

Mr. Carlyle's description of the Rio Tinto Mine illustrated by lantern slides was enthusiastically appreciated by a critical audience, and the votes of thanks given to Mr. Carlyle and to Rev. Wm. MacDonald for the loan of the lantern, were well deserved.

Chairman Corkill announced that the Institute intended holding another similar gathering one month hence. It would take the form of a luncheon and a visit would be made to some part of the district.

About 75 persons took part in the excursion and 90 attended the dinner. The Secretary of the Sudbury Branch says the members "are out for the liveliest Branch in Canada," and the "Journal" wishes them good luck.

#### THE MONTREAL BRANCH OF THE C.M.I.

A meeting of the Montreal Branch of the Canadian Mining Institute was held at headquarters on the 10th October in the evening. Prof. Bell in the Chair.

Business included election of branch officers, nomination of councillors for the province, and arrangements for the winter's meetings.

Capt. J. G. Ross was elected as Chairman of the Branch and Capt. Kemp as Secretary. A vote of thanks was given to Mr. Graham, the retiring Secretary.

Dr. Adams, the Acting Principal of McGill University, mentioned that the mining classes at the University were larger than for some years past, and not this alone, but the quality of the students was unusually good. He looked forward to a very successful year in the mining classes.

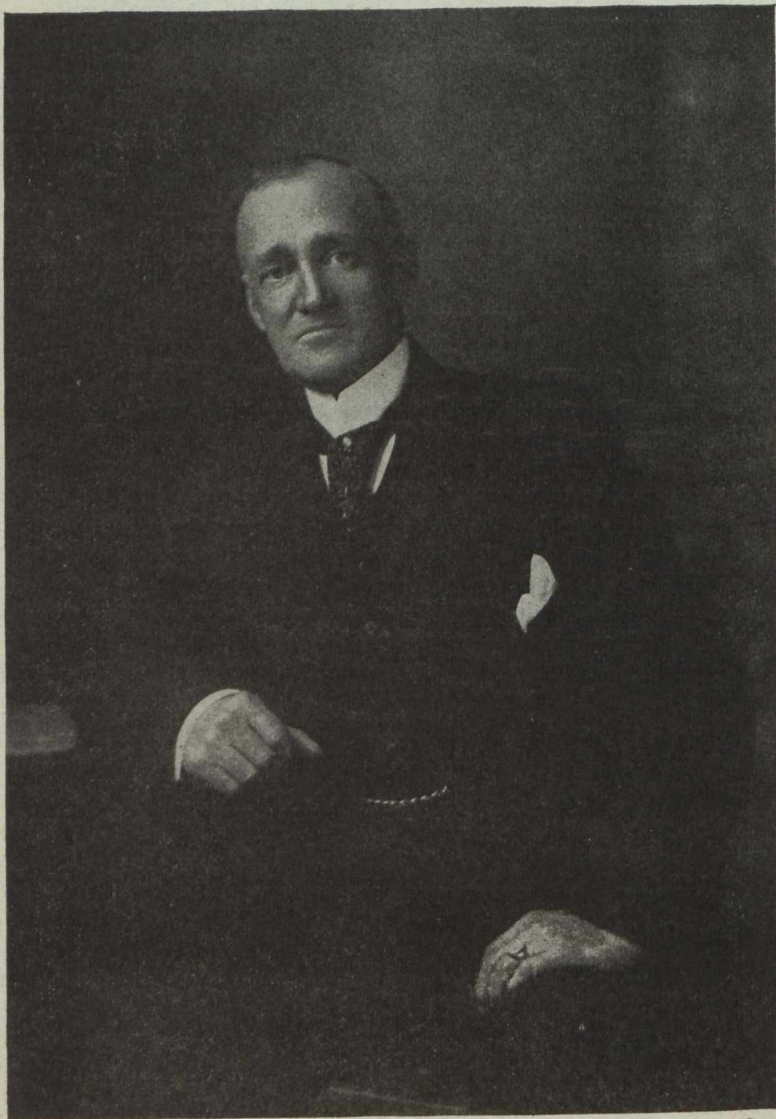
Dr. Bell said he had received a letter from Mr. Eugene Cowles, who is now in South Africa, which, among other matters, mentioned that there was a real dearth of qualified mining men on the Rand, and a number of openings for such men should the supply of positions in Canada be less than the number of applicants.

The attendance at the meeting was good, but Capt. Ross, the Chairman elect, was unable to be present, and discussion regarding the winter's programme was deferred. It is suggested the meetings will take the form of a monthly dinner, followed by a meeting.

Mr. C. A. Magrath, late Fuel Controller of Canada, touches the heart of the coal problem in Canada when he describes it as being largely one of transportation, and the purchase and storage of coal in the Summer season. Canada because of climatic conditions has an open and a closed season of transportation, and as the three central provinces of Canada have no coal deposits, they must make transportation fit in with the seasons, or be sorry that they did not.

**CANADIAN COAL MEN.****Charles Montserrat Odell.**

C. M. Odell was born in Sarnia, Ont. in 1861. In 1864, his father a pioneer engineer of the Grand Trunk Railway, came to Nova Scotia being employed on the Nova Scotia Railway, then being built from Halifax to Pietou. In 1879, C. M. Odell went to Winnipeg, where after two years of hard endeavour and study he joined the staff of the Canadian Pacific Railway, just formed, and went in 1881 to the Rocky Mountains as Assistant-Engineer, on the first survey party sent to the mountain section, running the first line of levels through the Kicking Horse Pass on the route that is now traversed by the Canadian Pacific Railway. In 1885, Mr. Odell came to Cape Breton and was engaged on Government surveys up to the completion of the Intercolonial Railway from the Strait of Canso to Sydney in 1891. In 1893, when the Dominion Coal Company was incorporated, Mr. Odell located the line of the Sydney and Louisburg Railway, and then left the Dominion Company for a short period, being engaged in coal mining and railway location in Inverness County, and in connection with the Coxheath Copper Mine and various local municipal water services.



C. M. ODELL.

In 1897, Mr. Odell returned to the Dominion Coal Company's service as Resident Engineer, and until the affairs of that concern grew so large as to require division into departments he was in charge of all the underground surveys, new construction, and general engineering.

Mr. Odell, therefore, may be justly styled a pioneer Canadian, having seen and assisted in the opening up of the country both in the West and in the East. With the Dominion Coal Company, his record of service is notable even among the permanent officials of a Company that has a good record in this regard, and it may be said that Mr. Odell located the Sydney & Louisburg Railway at the birth of the Dominion Coal Co. and has kept it in good order ever since. This road has probably the most intensive traffic of any single forty miles of track in North America, handling as it has done up to 35,000 tons of coal in one day, and its enviable freedom from accidents is sufficient evidence of the attention that had been paid to the maintenance of track.

As Resident Engineer, Mr. Odell's duties have included the adjustment of land damages, subsidence claims, and kindred matters involving intimate dealing with the local farming population and county and municipal officials, duties in which his encyclopaedic memory, and a justly celebrated gift for incisive characterisation, combined with a clarifying humor that illumines the most dry-as-dust rating appeal, or shortens up legal cross-examinations by dangerous repartee or a solemn *reductio ad absurdum*, have made his services of great value to the side on which he might be engaged. It may be said that the least of the failings of the inhabitants of Cape Breton is a lack of native shrewdness.

"Charlie" Odell's annual contribution to the proceedings of the Mining Society of Nova Scotia is a feature that always evokes pleasant anticipation, for it is his especial faculty to make wisdom sound like nonsense, and it will never be said of him, as was said of some solemn wise acres of old; "There is that which sayeth naught, and it is accounted unto him for wisdom."

We could tell tales of a wonderful motor craft known as the "See-em-Oh!" and of aquatic feats on the Mira River that would pale the yarns of Rougemont, but are they not written in the annals of the Royal Cape Breton Yacht Club? Nothing that we could tell of Charlie Odell's "feats on the fiord" can exceed the precise truth, and it may be left at that.

That Mr. Odell is a good engineer is not only attested by his record, but will be borne witness to by all who have tried to follow him along a blazed trail in the woods with a dial and a chain, or have tried to outwalk him up some two miles of a seven per cent grade underground.

All good engineers are traditionally inarticulate, at least the "Engineering & Mining Journal" says so, and the subject of our sketch is a good engineer, and he also is the author of an article which appeared in the C. M. I. Bulletin, June number, on "Romance and Rascality in Mine Promoting." There is a terminological inexactitude somewhere.

Letters patent have been issued to incorporate a new mining company in northern Manitoba, to be called the Laura Mines, Limited, with a total capital stock of \$2,000,000. The mine is situated in the Rice Lake district.

**NOVA SCOTIA NOTES.****Dominion Coal Company Opening a New Mine.**

The Dominion Coal Company is opening the Emery Seam near the shore of Big Glace Bay Lake, at the rear of Caledonia Colliery. The area tributary to the new opening will be approximately the area which was tributary to the Caledonia Colliery in the Phalen Seam above, but will be about twice as large in extent because of the extension of the Emery Seam to its outcrop is almost half a mile in the rear of the Phalen Seam lying some 160 feet vertically above. The new mine it is reported will be known as the Victory Mine, No. 24. There are at present two openings on the Emery Seam, namely No. 10 and No. 11 Collieries situated approximately in the same relative position to the Emery Seam No. 5 (Reserve) and No. 3 Colliery on the overlying Phalen Seam.

The growing importance of the Emery Seam was noted in the last issue of the "Journal." It now has attained a production amounting to ten per cent of the output of all the Cape Breton Dominion mines, and its relative contribution is a growing one. Even yet, however, the Emery Seam is virtually a virgin area of coal, superficially much greater in extent than the Phalen Seam lying above, which last-named seam is largely exhausted of solid coal in the land area. Under the Emery again lie the Clarke, Martin and Mullins seams all successively greater in superficial area than the Emery Seam, because of their successive concentric outcrop. All these lower seams are included within the Dominion Coal Company's properties, and they extends seawards below the three seams now being mined in the submarine tract, namely, in successive order, the Hub, Harbour and Phalen seams.

The Emery Seam coal is a good steam coal, with a fairly large percentage of light flocculent ash that does not clinker. The coal is one that is washed with advantage. The sulphur present in the coal is apparently in such form that it can be removed by mechanical washing, and when so treated it makes a good metallurgical coke. The coal is also in good demand for locomotive and steamship bunkers, because the volatile constituents are relatively low, and do not occasion soot deposition in burning.

In connection with the lower seam of the Glace Bay district, it may be of interest to quote from a chapter on this subject contained in Mr. F. W. Gray's description of the Dominion Coal Company's operations, written in 1907 when the Emery Seam was not being operated. Mr. Gray stated:—

"As the collieries on the Phalen Seam, such as Reserve, Caledonia, and in fact all the older collieries, become depleted, the present plant will doubtless be used for mining the Emery and Gardiner (or Lorryway), and the life of these collieries may be considered for the purposes of the present generation, as indefinitely prolonged."

"We may expect in Cape Breton as time goes on the same appreciation in the value of coalfields as has taken place in older countries. In England, for example, the thicker seams, such as the Barnsley Bed in South Yorkshire and the Thick Coal in Staffordshire, are being rapidly worked out, and seams are now being mined which were at one time entirely neglected. By the use of coal-cutting machines,

electric power transmission, longwall face-conveyors and general improvements in mining practice afforded by modern equipment, it has been found possible to successfully and profitably mine coal-seams that do not exceed sixteen inches in thickness. When it is considered, therefore, that there are in the Glace Bay Basin not less than six seams of coal practically untouched which are each over three feet in thickness, and that in addition to this the Coal Company's submarine leases in the Glace Bay Basin, the Lingan-Victoria tract and near Point Aconi, in the Sydney Mines Basin, are as yet almost virgin, it will be seen that there is not yet any need for anxiety as to the coal resources."

**Minto Mines N. B. Conciliation Board.**

A conciliation Board to enquire into the labour difficulties at Minto will sit on the 23rd October with Chief Justice McKeown as Chairman. The men are asking for weekly pay, pit-head scales and recognition of the union.

**Toronto Mine of Bras d'Or Coal Company resumes Work.**

The Toronto Mine of the Bras d'Or Coal Company near North Sydney has re-opened after a period of idleness caused by lack of orders. Contract for railway coal has been arranged with the Government.

**BRUNNER-MOND CANADA, LIMITED.**

The mineral exhibit of the Province of Ontario at the Chicago Chemical Exposition included samples of the products of the Brunner-Mond Company, which were from this company's United States plant. The Canadian plant is new, and will not be in operation until this month (October, 1919).

The new plant is expected to produce from 50 to 60 tons of soda-ash daily when operations commence, with an ultimate capacity of 125 tons daily. The company controls and will use a limestone deposit of unusual purity, namely, analysing 97 per cent calcium carbonate. The company holds 525 acres of ground, with four salt wells, and will employ on its works about 200 employees. It will generate its own electric power from turbo-generators, it being extremely important that the processes of manufacture should not be endangered by interruptions in power supply.

The Nichols Chemical Company, Northpines, Ontario, advertise that the Northern Pyrites Mines of this Company is resuming operations, and ask for applications for employment.

**Vancouver B. C.**

Recent reports by the Mines Branch, Ottawa, on the production of Mica in the Province of Ontario and Quebec and on the muscovite occurrences at Tete Jaune Cache and Big Bend Districts, British Columbia, has directed attention to the fact that the latter are as yet undeveloped and comment is made on the importance, from this point of view alone, of finishing the Pacific Great Eastern Ry. and thus furnishing the transportation facilities necessary for the opening up of these deposits.

## SPECIAL CORRESPONDENCE NORTHERN ONTARIO.

### Company Stores at Timmins Proving Beneficial.

The mining companies of the Porcupine district are making good their promise to reduce the cost of living. It will be recalled that at a conference of the employes and the employers, each faction recognized the futility of endeavoring to saddle the economic burdens of the day on the other, with the result that it was decided to establish company stores with the object in view of reducing the cost of living. Representatives of the mining companies declared it to be reasonable to expect a reduction of about eighteen per cent.

Several months ago a price list was compiled which is said to show the prices which then ruled. This list has been used as a basis from which to measure the result of the company stores. It now develops that a coupon good for \$10 worth of life's necessities at last spring prices, may now be purchased for just \$7 or a reduction of thirty per cent.

The system employed by the Hollinger and the McIntyre companies is the establishment of a store the management of which is placed in the hands of a man of proven experience in both wholesale and retail business, and supplies are sold at cost. The plan promises to be successful.

Provided workmen were available the mines of Porcupine could absorb two thousand or more at comparatively short notice. Toward this end it is believed not improbable that the companies and the Soldiers' Civil Re-establishment will be able to cooperate with the desired result in due time.

### The Skead District Discoveries.

The gold discovery in the township of Skead is attracting wide interest. The find is perhaps the first one of importance to be made in this district by a returned soldier. The discoverer was Walter Manley, of Haileybury.

Mr. Manley enlisted with the well-known Borden Battery in January 1915, being one of the sixty men picked from among prospectors of this district.

"Bill" Reilly, partner of Manley's, does not know that he is a partner in the rich gold find in Skead, for the reason that Bill left some weeks ago for the scene of the recent gold find in The Pas in Northern Manitoba and is not expected out to the railroad until the last boat down. Obviously, when he learns that such a prize awaits him, he will lose little time in reaching headquarters at Haileybury.

The Skead find has every appearance of being of at least equal importance as that which caused the rush to The Pas. The spectacular gold showings occur in a dike already found to be upwards of twenty-five feet in width, and composed of altered porphyry and intersected with veins of quartz. The gold occurs in the porphyry. So far, owing to the overburden being heavy, the full width of the dike has not been determined, although trenching to a depth of as much as sixteen feet has been carried on. The group of six claims, known as the Manley-Reilly Group, and in which Harry Crawford, of Haileybury is also interested having been given an interest for recommending the Skead area to Manley, is situated in lot 6 in the 6th concession of Skead. The claims had been previously staked, but their holder failed to do the necessary surface work to discover the gold which literally lay

right at the very grass roots. The valuable ground was accordingly permitted to revert to the Crown, later to be re-staked by Manley, on behalf of himself and Reilly, the present owners.

Work on the Wisconsin-Skead is being carried on aggressively, drifting operations being carried in two directions at the 100-ft. level. Results obtaining are said to be favorable.

At the Crawford-Skead some surface work is being done, and arrangements are being made to do some sinking.

In addition to the spectacular gold find on the Manley-Reilly Group, promising gold finds have been made on other claims, including the Gorman-Meaney claims, as well as claims owned by Harry Martin of Montreal.

### Lake Shore Mine.

Harry Oakes, president of the Lake Shore Mine, states that milling operations are to be resumed at the Lake Shore within the next few days. Some little time will be required to de-water the mine, but sufficient ore is on surface to keep the mill running for perhaps six weeks more, while, at the 100-ft. level of the mine sufficient ore is available on which to operate for at least several months and possibly a good deal longer. The mine is in such a condition that a force of less than thirty men is all that are required to produce at full capacity.

The dividend of 2½ per cent declared payable October 25th to shareholders of record October 15th will call for the disbursement of \$50,000 and shows the extent of the confidence of the director in being able to get the mine back to a normal basis of production without difficulty.

### Kirkland Lake District.—Statement by Manager of the Teck-Hughes Gold Mines.

Regarding the position of the mines in the Kirkland Lake district, a summary of the situation has been received from Mr. D. L. H. Forbes, manager of the Teck-Hughes Gold Mines, Limited, as follows:

"It will be recalled that the mines of this district (Kirkland Lake) were closed down on June 12th by a general strike which was precipitated on two days notice and in violation of the rules of the miners' union.

"With very few exceptions, the men employed at the Teck-Hughes and other mines here expressed themselves as being satisfied with the working conditions and not in favor of the strike. Nevertheless, these men quit work in sympathy with the rest rather than be branded with the ugly names used by the strikers. Almost immediately following the strike about nine-tenths of our former employees left the district to seek work elsewhere, while the few who were left here obtained work in various odd jobs such as road building, assessment work, and prospecting. In the face of this condition, we had no alternative but to minimize the loss from maintaining an idle mine and plant and to await patiently the turn of the tide.

"About the middle of September a movement among the business men and workers with families living in the district was started with a view to re-opening negotiations with the mines in order to have them start up again. As a result of this movement a conference between the mine managers and a Committee of the workmen took place at which the mine managers presented the workmen's committee with their wage schedule and a proposal for representation of the workmen in deciding the working conditions of the camp by means of electing committees from each of the operating mines. The stand taken by the mining companies in this matter was a determined one to the end that any

alterations and adjustments of the wage-scale or working hours must come as a result of conference and cooperation by the workmen actually in their employ and not as a result of a strike precipitated by socialist agitators most of whom were merely parasites on the real workmen of the district.

"The conference appeared at the time to appeal to the reason of the better elements of the handful of workmen left here but, when a vote by secret ballot was subsequently taken on the question of calling off the strike, the votes of the well known majority of the workmen were in some farcial manner, perhaps by the simple expedient of stuffing the ballot box, overruled by the socialist minority. At about the same time, the latter commenced an insidious propaganda to intimidate the workmen who wanted to return to work and to frighten away any man who might want to come in from outside to work.

"As the majority of the workmen left in the district were thus made unable to declare the strike called off, this and some of the other mines have taken it upon themselves to make it clear that a strike condition no longer exists. As about ninety per cent of our former employees are no longer available, having left the district, we are now starting to operate with a few of our former employees and with returned soldies to whom the arguments of the socialists have no appeal.

"The clique of socialists are endeavoring to dissuade these men from working here and, by the usual devices of placing pickets at the railway stations and along the road to Kirkland Lake, are trying to prevent men that we engaged at other places from coming in to work by calling them strike-breakers. Our answer to this is that the men we are now engaging are the real employees who will have permanent employment in this district, and, the socialists, by their unfair tactics and greedy scheme to create a monopoly of labor here, have forfeited any right they may ever have had to be considered as our workmen. To any of our former employees who may wish to return to work, we say the door is still open and you may disregard the loose talk and propaganda of the socialists with whom we will have no further dealings whatever. Our fight is not nor has it ever been, with unionism, as the term is now generally understood. On the contrary, we want to give our workmen an opportunity to cooperate with us in the upbuilding of the mining industry of this district. We have, however, taken a decided stand against the rabid type of socialism that has been preached by certain members of the community here and, as patriotic Canadians, are not going to have this poisonous social weed continue to grow in our midst. We therefore bespeak the support and influence of all those in the north country who feel as we do in this matter in counteracting any propaganda which may be set at work by the radical socialists."

**Silver Shipments From Cobalt.**

During the week ended October 10 six Cobalt companies shipped an aggregate of sixteen cars containing approximately 1,410,229 pounds of ore. The Nipissing with seven cars containing 630,479 pounds headed the list.

The following summary shows that ore shipments have been assumed such proportions as to compare favorably with any period during the past year or so:—

Shipper	Cars	Pounds.
Nipissing . . . . .	7	630,479
Buffalo . . . . .	3	263,155
McKinley-Darragh . . . . .	2	190,875
Coniagas . . . . .	2	129,927
La Rose . . . . .	1	99,232
Beaver . . . . .	1	96,561
Totals . . . . .	16	1,410,229

During the corresponding period no bullion shipments were made. On October 11th, however, the Nipissing sent out 75 bars containing 100,482 fine ounces.

**The Kerr Lake Statement.**

During the fiscal year ended August 31st the Kerr Lake mine produced 1,482,649.40 ounces of silver, in addition to which was 90,586 pounds of cobalt and 137 pounds of mercury. This is inclusive of 154,682 ounces of silver on hand August 31st, 1918. Ore reserves are estimated to contain at least 500,000 ounces, as shown in the following explanatory paragraph:— "At the present time we do not consider it advisable to estimate ore reserves in detail inasmuch as it would be difficult to estimate with a reasonable degree of accuracy the future production of the property. However, under the present conditions, we estimate ore reserves to be approximately 300,000 ounces silver in high grade ore and 200,000 ounces silver in low grade milling ore, with a possibility of developing further values of real importance."

The report further states: "On July 23rd all miners of the Cobalt district went out on strike and although our men apparently had no grievance against the Company they struck with the other miners. This strike lasted until September 7th. On that date the miners returned and operations are now resumed."

Mining and development costs amounted to a fraction under 17½ cents an ounce, shipment and treating charges amounted to a fraction under 20 2-3 cents an ounce, while administration and general expense amounted to 2 4-5 cents an ounce, making a total cost of 40 4-5 cents an ounce.

Regarding development work, H. A. Kee, manager, states that during the year 2,382 feet of development was done by drifting, crosscutting and sinking, all of which failed to encounter new veins of importance, although commercial values were exposed in extensions of ore shoots, portions of which were previously located in known veins.

It is very interesting and encouraging to note that about two-thirds of production came from high grade ore, and that even of the ore in reserve about three-fifths is composed of high grade ore.

The financial statement shows that \$600,000 was paid in dividends during the year in addition to which was \$22,152.90 carried to balance, making a surplus of \$657,641.43.

**PLANNING LARGE MILL FOR ASSOCIATED GOLDFIELDS.**

**Details of Operations on Big Property at Larder Lake—Spent Nearly \$1,000,000.—What Company Says.**

"Associated Goldfields Mining Co., Ltd., Larder Lake, is undertaking something that has never before been attempted in Ontario, namely, mining large bodies of so-called low-grade ore on an enormous scale. Before the discovery of present-day methods of gold extraction this would have been an impossibility, but to-day such mines as the Treadwell of Alaska, working on ore that does not average over \$2 per ton, and the Homestake Mines of Black Hill, South Dakota, where the ore does not run over \$3 per ton, and the Rand Mine of South Africa (also low grade) are paying their shareholders millions of dollars in dividends yearly. Associated Goldfields assays have averaged well over \$5 per ton.

This Ontario corporation (and the great body of its stock is owned in Ontario) was organized in 1914 by the amalgamation and purchase of several of Larder Lakes largest and most promising gold claims, altogether about 2,000 acres of properties, 1,600 comprising

actual claims, and the balance water-power rights-of-way. Upon the advice of thoroughly competent mining engineers a plan of development and financing was inaugurated, and it is being consistently followed. This plan was to thoroughly block out the ore bodies on three of the properties, blocks "B," "C" and "D" formerly known as Harris-Maxwell, Kerr-Addison and Dr. Reddick Mine, respectively, by means of shaft sinking, drifting, diamond-drilling and surface exploration, and ascertain how much tonnage was in sight, and its actual value in gold content.

To do this required an enormous amount of money, and as the market was practically dead during the war it was decided to sell stock by private subscription, rather than list it on the open exchange (no money has been paid out for advertising), and the wisdom of their decision is proven by the fact that the bulk of the shareholders, numbering upward of one thousand, are composed of substantial business men and investors, who have either investigated and visited the camp themselves, or taken the advice of those who have, the list also including several mining engineers, contractors, men in charge of the work, a large percentage of the miners themselves and all salesmen selling stock.

#### Spent Nearly \$1,000,000.

Almost one million dollars has already been spent in installing the water-power plant, over twenty-five miles of transmission line, forty miles of private telephone lines connecting the different properties, building sawmill, planing mill, bunk houses, installing machinery, and actually developing and blocking the ore bodies. The bunk houses just being completed at Block "B," to accommodate an additional one hundred and fifty men (over one hundred are now at work on the different properties) will be heated by hot water, have hot and cold baths and all accommodations, and it is planned to duplicate these at once on Blocks "C" and "D."

The actual development work consists of sinking a shaft on Block "B," the Harris-Maxwell (a hill of ore 1,000 feet long by 130 feet wide, rising 100 feet above lake level), to the 500-foot level, cutting an adit or tunnel directly across the body at the 100-foot level and drifting and cross-cutting through tunnels 8 feet by 7 feet for a distance of 1,500 feet at the 500-foot level, where the body has proven to be over 300 feet wide.

While for obvious reasons it is inadvisable for the company to publish its assay charts—and is not the custom to do so—its engineers have actual proof that every ton of ore can be run through the mill at a profit that compares favorably with other mines, and justifies it in planning a mill on the property that will handle 5,000 tons of ore per day, which is larger than any two mills in Ontario. This mill will be erected immediately the development and blocking out of the ore are completed, and the work is being pushed day and night.

Between seven and eight miles away, passing by over thirty of the company's other claims, is Block "C," a huge hill of mineralized rock or ore, 1,250 feet long, about 300 feet wide at the surface, rising about 300 feet above lake level, entirely free of overburden, and proven by means of diamond-drilling to be over 500 feet wide at the 500-foot level, and stated by engineers and men who knew to be one of the largest low-grade ore bodies in the world. It is now being explored by diamond-drilling and surface pitting and

blasting, and from indications, every ton of this ore can be run through the mill at a profit, and the plan is to immediately erect a 5,000-ton mill here, which will also treat the ore from the Dr. Reddick, Block "D," which adjoins, and is a continuation of Block "C." On this property is located an air compressor capable of operating twenty-five drills, and the development work consists of sinking a 100-foot shaft and about 1,200 feet of drifting.

#### Gold for Canadian Coins.

"Block "D" is traceable on the surface for about 1,600 feet, and is in places 150 feet wide. It is said to enjoy the unique distinction of furnishing the gold from which the first Canadian coins were minted at Ottawa. The ore here is of a high quality, and some of the veins have proven to be over forty feet wide. Ore showing free gold is found here in abundance; in fact, it is to be found in all three bodies, over large and widely separated areas. While ore showing spectacular patches of free gold, as one critic puts it, does not make a mine, it is a pretty good indication that there is gold present, and justifies the opinion that there is more in the immediate neighborhood.

#### Metallurgists at Work.

Associated Goldfields assays have been taken from ore that does not show free gold, all such being discarded, and to do this work it has a modern chemical laboratory and furnaces right on the premises and under the direct supervision of Mr. A. J. Moore, a well known mining engineer, metallurgist and chemist, who has had charge of some of the largest mining operations in United States and Mexico. Mr. C. G. Dalmpré, also a man of wide experience, is general superintendent and manager of all the work, and the mine captains and foremen are all experts in their line.

The water power, which is estimated as capable of developing 10,000 h.p. without damming, will not only furnish all the power for running the mills, sawmills, electric cranes and shovels, lighting plants and so forth, but will also supply mines in the neighborhood at a profit which will actually make it a dividend-paying asset. The Huronia Mine is to-day using Associated Goldfields current.

Financially the company is now on a firm basis, with over \$600,000 cash and Victory bonds in the bank and on hand.—Toronto "Globe."

#### Personals.

Col. H. H. Johnson, of the Tough-Oakes Gold Mines, has returned from England where he spent the past few weeks on business.

Mr. Dickson, manager of the Temiscaming mine has returned from a brief business trip to southern points.

#### Lady Rhondda Visits Peace River Country.

Sir Humphrey Mackworth, Viscountess Rhondda, and the latter's mother, Lady Rhondda, has returned after a trip through the Peace River Country, where the Viscountess has extensive coal properties, left her by the late Viscount Rhondda. While she has said little of a definite nature as to plans of development, it is understood that the Rhondda Corporation has important plans under consideration. It is reported that the British Columbia Government is to be asked to provide a good road over the Rocky Mountain portage to permit the introduction of motor trucks to partly solve the problem of transportation from West of the Mountain to Hudson's Hope.



**BRITISH COLUMBIA.****The Collieries.**

A new agreement has been entered into between the underground employees of the Canadian Western Fuel Company, of Nanaimo, B.C., and the company, the terms of which, under conditions prevailing before the war, would have been considered out of the question. Briefly the wages granted the miners represents an all-round advance as to the base day rate of 35 per cent and the continuance of bonuses, granted from time to time with the increase in the cost of living, amounting to \$1.50 a day. The base rate for coal miners working by the day heretofore has been \$3.15. Since the war started an increase has been allowed of 35 per cent, which subsequently was enlarged by three bonuses of 75c, 50c, and 25c. The pact now approved established a new base rate of \$3.15 plus 35 per cent, or \$4.25 $\frac{1}{4}$ . This, of course, is unalterable. Allowance is made for present abnormal conditions as to the cost of the necessities of life by adding to the figure last named the total of the several bonuses referred to, namely, \$1.50. This amount may be reduced as the cost of living declines. The situation of the coal miner who is put on day labor, therefore, is that he must get at least \$5.75 a day. The fireboss receives approximately \$6.42, which for a 30-day month would amount to \$192.60.

These figures speak for themselves. In comparison with wages paid in pre-war days they appear startlingly large. And it must be remembered that they apply, not only to the Canadian Western Fuel Co., but to all the collieries of Vancouver Island and, in almost an equal degree, to those of other sections of the Province. A prominent official of the Canadian Collieries (D) Ltd., in discussing the wages question the other day stated, off-hand and in general terms, that the increase of recent years aggregated 72 per cent of the salaries paid before the war. It is interesting comment, in this connection, that the coal miners of Vancouver Island, who are unorganized and who have been getting along with their employers in an amicable manner, are doing slightly better than their fellow craftsmen of the Crow's Nest Pass District, who are well organized and who only a short time ago returned to work after a long drawn out and more or less indeterminate strike.

To return to the Canadian Western Fuel Company and its men, there are some of the terms of the agreement referred to which was signed by G. W. Bowen, managing director, and John Hunt, superintendent, on behalf of the company, and by the members of the Men's Committee, which are worth special attention. After outlining the wage schedule, a summary of which has been given, it describes the system of Dockage Inspection to be instituted at the Company's various mines; gives a schedule of pay for the loading of coal after machines; and then takes up the basis on which the men and the management propose to work in settlement of all possible disputes without rupture. The latter, probably better than any other clauses, illustrates the good feeling which exists between the employed and the employer in respect of this company. It reads:

"The company will meet the Agreement Committee, or a sub-committee thereof, on matters relating to this agreement, or any new matters changing the status thereof, or to adjust any matters in dispute between the employees and the mine officials, it being distinctly understood that there shall not be any stoppage of work by employees individually or collectively, pending the

hearing of and adjustment of any dispute or grievance during the term of this agreement."

A date is set for monthly meetings between the management and the Agreement Committee; provision is made for the calling of special meetings; and it is declared that the agreement, which shall subsist for three years beginning October 1st, 1919,

"shall be binding upon and respected by the company and its successors, and also shall be binding upon and respected by all employees, who before accepting employment shall endorse the agreement by their signature in a book containing a copy of this agreement and kept in the company's office."

It also is provided that, in the event of a fatal accident in the mine, although no holiday will be permitted on the day of the funeral, those who wish may absent themselves from work. All employees in the mine in which the fatality occurred, and who work either on the morning, afternoon or night shifts of the day of the funeral, agree to contribute 50c per man and 25c per boy to a Joint Fund, the company undertaking to duplicate the total of the employees' contribution. The fund thus collected shall go either to the widow, or to the children under sixteen years of age if there is no widow, or to the mother, or to the father, should there be no widow or children, or, in case of there being no dependents, it shall go to the Medical Relief and Accident Fund of the Underground Employees. And it is clearly explained that relief from this source in no way affects claims dependents of employees might have under the terms of the Workmen's Compensation Act.

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Henry Devlin, who has been an Inspector of Mines in British Columbia since February, 1913, has resigned in order to take a position with the Canadian Collieries (D), Ltd. Previous to entering the civil service, Mr. Devlin was mine manager at South Wellington, Pacific Coast Mines.

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Dudley Michel, who for five and one-half years has been attached to the staff of the Department of Mines, British Columbia, as Instructor and Organizer in First Aid and Mine Rescue Work, has left the service. He is taking a position with the Giant Powder Company.

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The Reserve Mine, Canadian Western Fuel Company, Nanaimo, B.C., recommenced operation on the 1st of September after a short period of idleness. David Brown has been appointed manager of the mine and Francis John, overman. With this property again on the producing basis it is expected that the output of the Western Fuel Company will show substantial increase.

**THE METAL MINES.****Reneta, B. C.**

A two drill compressor is being installed at the Mountain Chief Copper Property. Development is making good progress, states J. W. Evans, the manager. From the bottom of the shaft a drift is being carried both ways, and the ore has been exposed on that level for 25 feet. More of this work will be done before sinking is resumed. The bunkers have been filled again, a recent shipment to the Trail Smelter having emptied them, and the ore is maintaining its character, namely, chalcopyrite with a substantial percentage of bornite.

**Nelson B. C.**

The Gold Plate or Hummingbird Group of Mineral Claims, situated at the head of Roaring and Five Mile Creeks, are being opened up again, development work having been started recently by the owners. One of the men, in cleaning out the shaft, picked a gold unget from white quartz. It was not large but the incident is considered a good omen and operations are to be continued until something more definite is known of the possibilities of this property.

**Ainsworth B. C.**

Shipments from the Cork-Province Mine have been suspended, the large carload of concentrates, having left the mine in August. The explanation given is that equipment is being awaited, the chief requirement being a cable for the tramway. Meanwhile considerable ore has been accumulating, there being several carloads of concentrates and a carload of ore on hand. It is estimated 500 tons of zinc concentrates are in the bunkers. Those interested in the Cork-Province have been much encouraged by the recent report of R. H. Stewart, consulting engineer, who recommends that \$100,000 be invested in the development of its property in the Slovan District. Mr. Stewart proposed that a shaft should be sunk and equipped, that additional power be provided for hoisting, that drifting and raising be undertaken on the new level, and that prospecting and development be continued on the present working level. He also refers to possible additions to the Mill to provide for further fine grinding and handling of middling and tailing products.

The Lincoln Group, situated one and one half miles south of Blaylock, Ainsworth District, and which now is held under bond by J. H. Tompson and associates, is being developed to such advantage that the uncovering of a four foot vein of shipping ore is reported, the greater part being galena. It is said that the whole will average about 40 per cent lead with good silver values. This is an old property and the showing made as a result of the comparatively small amount of work done up to the present has created much interest throughout the district. One car of heavy ore was shipped last fall, the returns being satisfactory. This encouraged Mr. Thompson et al and operations were continued, still on a small scale. The hopes of the owners having been realized thus far, arrangements are being made to ship three cars of ore at an early date and a larger camp is projected for next Spring.

The Highland Concentrator, Woodbury Creek, Ainsworth, is in operation again after being idle for seven or eight months. It is handling ore from the stopes of the Highland Mine. While the latter has not been producing until recently, it has been under development constantly. This property belongs to the consolidated Mining & Smelting Co. of Canada. The Company has extended the area of its holdings by the acquirement of a number of claims adjacent to the Highland Mine, so that there is every prospect that this well-known silver-lead property will be a regular producer. An effort is being made by operators of other Ainsworth properties possessing milling ore to have the same treated at the Highland Concentrator.

**Revelstoke B. C.**

There are indications that the property and plant of the Multiplex Mining Milling & Power Co., Camborne Camp, are attracting the attention of possible investors of the Pacific Coast as well as of the adjacent Prairie Provinces. O. B. Bibb, who is associated with the Company, recently escorted a representative party of Vancouver citizens over the property.

It is confidently expected that important developments will take place shortly at Camborne. In this connection it is interesting to refer to the Gold Commissioners report of 1918 in reference to this property. He said:

"The Multiplex Mining Company, which has been the largest operator in the Camborne Camp during the past few years, ceased active work early in the year owing to conditions which made it impossible to get sufficient help from the economic working of the property. Up to date this Company has expended upwards of \$25,000 in actual mine development, and the property now is in good position for future operations. It is understood that the finances of the Company are in good shape for this year and a vigorous development policy is planned. It is understood it is the Company's intention to construct a concentrator this year. It is likely to be a customs concentrator, and will be of great benefit to the small mine owner."

**Merritt B. C.**

The Chataway Mine, Highland Valley Mining & Development Co., is to be developed on a considerable scale. Title to the property has been secured and funds are available for an immediate resumption of operations. The mine and mill of this Company operated during 1917, producing over \$100,000 net smelter returns. In January of last year the mine was closed for a number of reasons, chief among which was the necessity of meeting payments on the purchase of the Chataway Group. After meeting this funds were not immediately procurable to keep the development of the ore reserve ahead of extraction and development fell behind. Another reason given is that as ore would have to be mined below the adit level further plant was required. The year's experience also had clearly proved that to make satisfactory profits the tonnage mined and milled would have to be increased from about 35 tons daily to 100 tons at least. This, it is understood the directors now are in position to undertake and, as stated, work will proceed. The chief value of the ore lies in its copper and what is now exposed is about the best uncovered on the property. The vein maintains its full width and quality and the intention is to sink to depth on this ore body. The Snowstorm Group, on which the Provincial Government has been doing some diamond drilling, is situated in the vicinity of the Chataway.

**Barkerville B. C.**

Mr. R. A. Bryce, representing Toronto and New York capital, has secured an option on the Porcupine quartz holdings in the Barkerville district. The deal is the largest one comprising the Independence Group of three claims, owned by E. E. Armstrong, and the Imperial group of five claims owned by F. J. Tregillus, P. Carey and J. H. Blair. The price ranges into six figures and will mean much to the mining activity of this district.

The property contains gold-bearing quartz, there being apparently two large veins striking in a north-westerly direction as well as smaller ones. Mr. Armstrong first discovered these veins by an ingenious method of pan prospecting, making a systematic search by panning from the creek beds up the mountain sides. Once above the ledges the pan prospects disappeared, indicating he had reached a point above the veins. In this way the original discovery was made.

Using this method Messrs. Carey, Blair and Tregillus located a number of claims on the strike and after several seasons of prospecting and crosscutting picked these veins up, approximately 4000 ft. north-westerly, also a number of other veins.

A force of men will be employed immediately to develop the claim.

#### Victoria B. C.

Labor troubles have closed down operations on three of the most important of British Columbia's metalliferous mines. Two of these are situated in East Kootenay, namely, the Sullivan Mine, owned by the Consolidated Mining & Smelting Co. of Canada and the largest silver-lead-zinc mine in the world, and the North Star Mine, Kimberley, which has been shipping regularly to the Trail Smelter. The third is the Nickle Plate Mine, owned and operated by the Hedley Gold Mining Co. Ltd.

The Hedley Mine has been the greatest producer of gold in British Columbia for years, which position it held until the Surf Inlet Mines began operating on a considerable scale two years ago. The production has averaged around \$700,000 a year. The ore is arsenopyrite and the Tacoma Smelter, which has been treating the concentrates, has been paying as well for the arsenic content during the past two years. Ore valued at between \$4,000,000 and \$5,000,000 is in reserve. With the fall in the purchasing of gold and the increased cost of production of late the Company's profits have been seriously affected. On top of this came a demand for an increase of wages from the miners and fifty cents a day was granted. A like amount again has been demanded and the directors have decided that, as this would mean operating at a loss, to close the mine and mill. As a result a force of about 100 miners will be thrown out of employment, a small force only being retained on development.

The Sullivan Mine is the chief source of zinc for the Trail Smeltery, the production of which is between 18,000 and 20,000 tons of zinc per annum. It is observed that the strike of the miners and the consequent practical closing down of the mine is likely to interfere with the Company's taking advantage of its agreement with the Dominion Government, which is a part of the war supply contract and under the term of which the smelter received a minimum price of 8 cents per pound for its zinc.

At a mass meeting of the miners of Kimberley matters relating to the strike were discussed. Negotiations looking to an adjustment have been conducted through a representative of the Department of Labor, Ottawa, a proposal being made to the men that, if the One Big Union was repudiated, the companies would be prepared to meet a committee of the employees. The appointment of a Board of Conciliation under the Industrial Disputes Act was the method suggested as being most likely to effect a settlement. However,

while the Miner's Committee claimed it did not represent the O. B. U., the miners in attendance declined to give an undertaking that they would repudiate the One Big Union. Consequently negotiations ceased. The Government representative has returned to Calgary and the companies are said to be preparing for a long strike.

#### Alice Arm B. C.

With the Dolly Varden Mine and Railway in operation, and regular shipments being made from the latter property, together with gratifying reports as to the development of other properties, the season is drawing to a close in the Alice Arm Section of Northern British Columbia in a manner that argues well for the future. The North Star Mine has procured horses with which high grade ore, taken out during the summer, will be packed to the railway. If transportation can be secured, and there is every reason to believe that it will be available, \$30,000 is expected to be realized from these shipments. This property has been developed to a considerable extent, a tunnel having been driven which is reported to be all in ore having a substantial content of native and ruby silver. A vein has been opened on the Muskateer, owned by Mr. Meenach, of Seattle Wn., of which very favourable reports are received. Samples taken from the open cut are said to have given value of \$200 gold and 135 ozs. silver. The Tiger and Last Chance Mines also are looking well. Messrs Price and Crawford, of New York, are reported to have acquired the former, the consideration being \$125,000 while the latter also is said to be controlled now by New York people. The Homestake Prospect, owned by Seattle interests, is promising. It is stated that on a property adjoining the latter free gold has been found. At the United Metals Mine are two pack trains of twelve horses each engaged in transporting ore which is expected to average 200 ozs. silver, \$13 gold and 45 per cent lead.

#### BOOK REVIEW.

*The Iron Hunter*, by Chase S. Osborn. MacMillan Company, New York. Cloth 5½" by 8", 316 pp., illus.

This is an unusual book, and after reading it one realises that its author must be an unusual man. The book is actually an autobiography, of the kind that might be expected from a man who made his way by personal endeavour from a penniless condition to Governor of Michigan and a candidate for President of the United States. Mr. Osborn, writes: "For forty years now I have lived in the robust north, and in Winter I have taken a run naked and rolled in the snow every morning before breakfast, when in the woods, say at four o'clock. In all that time I have known of only one young man who would follow my example, without being ridiculed into it or compelled in some way." One can quite credit the statement.

The author claims to have visited virtually every accessible iron-ore deposit in the world, and his travels include a journey by reindeer sled across Lapland, in February, and trips to Madagascar, Africa, Burma, Ceylon, Cochin-China, Turkestan, and Persia, all connected with the hunt for iron-ore that Mr. Osborn conceived as his life work. An interesting reference to Madagascar contains an intimation that the author

is aware of the location there of a vast deposit of iron ore containing metallic iron of 64 per cent and nine-thousandths of one per cent of phosphorous.

But the most interesting references to Canadian readers in this kaleidoscopic recital are in connection with the north shore of Lake Superior, and Mr. Osborn is unstinted in his praise of the open spaces and clean wildernesses of our Canadian Northland. "North of us lies the vastest unexplored territory in the world. I refer to the Dominion of Canada. It is rich, and where it is untouched by man, it is clean. There is not a drop of unwholesome water nor any poisonous insects nor reptiles between Lake Superior and the aurora borealis." Mr. Osborn has the blood of the prospector in his veins, for he remarks: "I think the greatest charm of prospecting is not the hope of finding wealth, it is the life in the clean unhurt out-of-doors." Describing the north shore of Lake Superior he writes: "Olivines and epidotes make floors of verde antique, and pegmatite shows red as blood above and also below the waters." His description of the berries and natural beauties of this region are reminiscent of the writings of another poet turned geologist who has described Northern Cape Breton in the Geological Survey Reports of 1873, the late Hugh Fletcher.

A pleasing, and not overdrawn reference is to the work done in connection with the geology of iron ores in the Lake Superior country. "Such distinguished names as Douglas, Houghton, Brooks and Pumphelly, Charles Wright, Irving, Symthe, Lane, Winchell, Chamberlain, Seaman, Van Hise, Leith, Hotchkiss, Merriam, Allen, Coleman, Miller and others are familiar to those who are interested. At a time when most of these men could have turned their knowledge into money they have been ethical to an extent that is praiseworthy. I do not know of one of these who took advantage of his chance to make a profit; not a single quack among them." And so say we all.

A further statement regarding the administration of Canadian mining law is interesting, coming from a man who is above all a typical citizen of the United States.

"I had heard" writes Mr. Osborn, "that nothing could be obtained from the Government departments at Toronto without paying for it; that from top to bottom there had to be bribery. I saw nothing of the kind during years of experience, and I do not believe a word of it. The fees of Hearst and McKay

"were reasonable, and they told me they never thought of paying any 'grease' money or permitting graft."

Our author tells of a "starvation hike" to an "iron dam" on the Vermillion River, of camping in such primeval wilderness that a bull moose walked over him while asleep, and winds up his chapter by stating:

"Where I slept in the little open shed tent, and was unawakened by the moose that nearby stepped on me, there is now a flourishing mining town reached by a branch of a transcontinental railway. They did not develop there without much hard and enjoyable work." This refers presumably to Moose Mountain.

An anecdote of "Dan Mann" tells amusingly how the Canadian railwayman was challenged to a duel by a Russian count in China, and exercised the privilege of the challenged to choose the weapons by selecting double-bitted axes, to the use of which the Russian, our author suggests wisely, demurred and the duel was off.

The book contains a full technical description of the mining and roasting of siderite at the Magpie and Helen Mines, and makes the observation that in this instance an elaborate and relatively costly mining and roasting system enriches from 30 to 50 per cent, an ore never before used in America, and it is done profitably. Reference is made to the astonishingly cheap and plentiful occurrence of iron-ore in the United States, and its effect on the relative value of lean ores. Our author pertinently remarks: "What are regarded in the United States as lean ores are esteemed of great value in other iron-making countries." Reference is made to an experimental plant at Duluth where Hayden Stone & Company enrich magnetic ores containing thirty per cent of metal to 62½ per cent by electrical treatment, which method alone, the author suggests "will make it possible to utilize the millions upon millions of tons of lean magnetite that belts Lake Superior like a containing encasement."

Mr. Osborn's unusual cast of mind is evidenced in his suggestion that a new and permanent standard for money could be found on the basis of calories. Gold, Mr. Osborn, contends, is not really a norm of permanent value, and the calorie does supply the markets and finances of the world with such a norm. Such a solution of the problem of coinage value fluctuation would not occur to the ordinary person. Mr. Osborn is evidently not an ordinary person, and his book is extraordinary, but well worth reading.

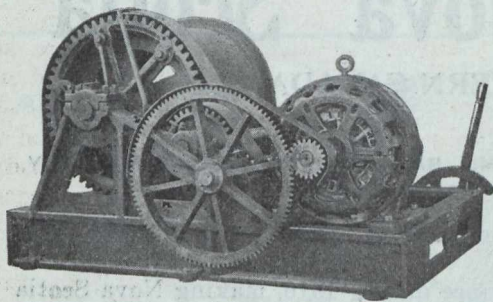
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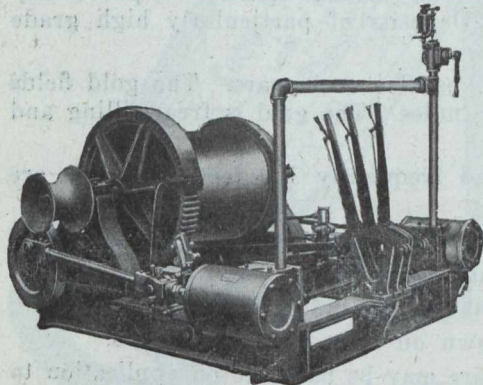
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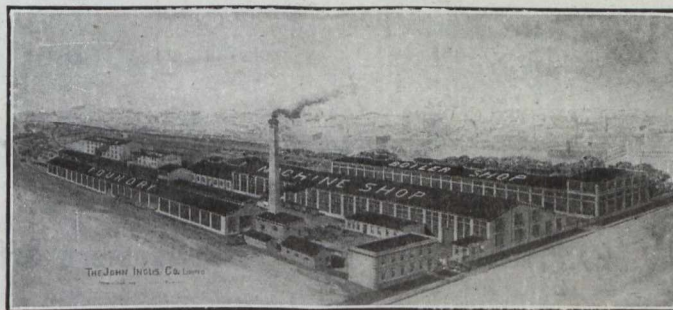
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MacGovern & Co., Inc.  
R. T. Gilman & Co.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
The Mine & Smelter Supply Co.

**Concrete Mixers:**

Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.  
Gould, Shapley & Muir Co., Ltd.  
MacGovern & Co., Inc.  
Mussens, Limited  
R. T. Gilman & Co.

**Condensers:**

Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
Northern Canada Supply Co.  
MacGovern & Co., Inc.

**Concentrating Tables:**

Mine & Smelter Co.  
Deister Concentrator Co.  
The Wabi Iron Works

**Converters:**

Northern Canada Supply Co.  
MacGovern & Co., Inc.

**Contractors' Supplies:**

Canadian Fairbanks-Morse Co., Ltd.

**Consulters and Engineers:**

Hersey Milton Co., Ltd.

**Conveyor Flights:**

Hendrick Mfg. Co., Ltd.

**Conveyor—Trough—Belt:**

Canadian Fairbanks-Morse Co., Ltd.  
Link-Belt Co.  
Hendrick Mfg. Co.  
Mussens, Limited  
Jones & Glassco (Roller, Belt and Chain)  
Hendrick Mfg. Co.  
The Wabi Iron Works

**Conical Mills:**

Hardinge Conical Mill Co.

**Copper:**

The Canada Metal Co., Ltd.  
Consolidated Mining & Smelting Co.

**Cranes:**

Canadian Fairbanks-Morse Co., Ltd.  
Link-Belt Co.  
R. T. Gilman & Co.  
Smart-Turner Machine Co.  
M. Beatty & Sons, Ltd.

**Crane Ropes:**

Allan Whyte & Co.  
Greening, B., Wire Co., Ltd.

**Crucibles:**

Canadian Fairbanks-Morse Co., Ltd.  
Mine and Smelter Supply Co.

**Crusher Balls:**

Canada Foundries & Forgings, Ltd.  
Hull Iron & Steel Foundries, Limited, Hull, Que.

**Crushers:**

Canadian Fairbanks-Morse Co., Ltd.  
Canadian Steel Foundries, Ltd.  
Hardinge Conical Mill Co.  
The Electric Steel & Metals Co., Ltd.  
R. T. Gilman & Co.  
Lymans, Ltd.  
Mussens, Limited  
Mine and Smelter Supply Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works

## Canadian Miners' Buying Directory.—(Continued)

**Cyanide Plant Equipment:**

The Dorr Co.

**D. C. Units:**

MacGovern Co.

**Derricks:**

Smart-Turner Machine Co.  
M. Beatty & Sons, Ltd.  
Marsh Engineering Works  
R. T. Gilman & Co.  
Canadian Fairbanks-Morse Co., Ltd.  
Mussens, Limited

**Diamond Drill Contractors:**

Diamond Drill Contracting Co.  
E. J. Longyear Company  
Smith & Travers  
Sullivan Machinery Co.

**Diamond Tools:**

Diamond Drill Carbon Co.

**Diamond Importers:**

Diamond Drill Carbon Co.

**Digesters:**

Canadian Chicago Bridge and Iron Works

**Dies:**

Canada Foundries &amp; Forgings, Ltd.

**Dredger Pins:**

Canadian Steel Foundries, Ltd.  
The Electric Steel & Metals Co.  
Hadfields, Limited

**Dredging Machinery:**

Canadian Steel Foundries, Ltd.  
M. Beatty & Sons  
Hadfields, Limited  
R. T. Gilman & Co.

**Dredging Ropes:**

Allan, Whyte & Co.  
Greening, B., Wire Co., Ltd.  
R. T. Gilman & Co.

**Drills, Air and Hammer:**

Canadian Ingersoll-Rand Co., Ltd.  
Sullivan Machinery Co.  
Northern Canada Supply Co.  
Canadian Rock Drill Co.  
The Mine & Smelter Supply Co.  
Mussens, Limited

**Drills—Core:**

Canadian Ingersoll-Rand Co., Ltd.  
E. J. Longyear Company  
Standard Diamond Drill Co.  
Sullivan Machinery Co.

**Drills—Diamond:**

Sullivan Machinery Co.  
Northern Canada Supply Co.  
E. J. Longyear Company

**Drill Steel—Mining:**

Hadfields, Limited  
Mussens, Limited

**Drill Steel Sharpeners:**

Canadian Ingersoll-Rand Co., Ltd.  
Northern Canada Supply Co.  
Sullivan Machinery Co.  
Canadian Rock Drill Co.  
The Wabi Iron Works

**Drills—Electric:**

Canadian Fairbanks-Morse Co., Ltd.  
Sullivan Machinery Co.  
Northern Electric Co., Ltd.

**Drills—High Speed and Carbon:**

Canadian Fairbanks-Morse Co., Ltd.  
Hadfields, Limited

**Dynamite:**

Canadian Explosives  
Northern Canada Supply Co.

**Dynamos:**

Canadian Fairbanks-Morse Co., Ltd.  
MacGovern & Company

**Ejectors:**

Canadian Fairbanks-Morse Co. Ltd.  
Canadian Ingersoll-Rand Co., Ltd.  
Northern Canada Supply Co.

**Elevators:**

M. Beatty & Sons  
Sullivan Machinery Co.  
Northern Canada Supply Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
The Wabi Iron Works

**Engineering Instruments:**

C. L. Berger &amp; Sons

**Engines—Automatic:**

Canadian Fairbanks-Morse Co., Ltd.  
Fraser & Chalmers of Canada, Ltd.

**Engines—Gas and Gasoline:**

Canadian Fairbanks-Morse Co., Ltd.  
Alex. Fleck  
Fraser & Chalmers of Canada, Ltd.  
Sullivan Machinery Co.  
Gould, Shapley & Muir Co., Ltd.  
MacGovern & Co., Inc.  
The Mine & Smelter Supply Co.

**Engines—Haulage:**

Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.  
Marsh Engineering Works  
Fraser & Chalmers of Canada, Ltd.

**Engines—Marine:**

Canadian Fairbanks-Morse Co., Ltd.  
MacGovern & Co., Inc.

**Engines—Steam:**

Canadian Fairbanks-Morse Co., Ltd.  
M. Beatty & Sons  
R. T. Gilman & Co.  
MacGovern & Co., Inc.  
Fraser & Chalmers of Canada, Ltd.

**Engineers:**

The Dorr Co.

**Ferro-Alloys (all Classes):**

Everitt &amp; Co.

**Feed Water Heaters:**

MacGovern &amp; Co.

**Flood Lamps:**

Northern Electric Co., Ltd.

**Flourspar:**

The Consolidated Mining & Smelting Co.  
Everitt & Co.

**Forges:**

Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.

**Forging:**

M. Beatty & Sons  
Canadian Foundries and Forgings, Ltd.  
Smart-Turner Machine Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.

**Frogs:**

Canadian Steel Foundries, Ltd.

**Frequency Changers:**

MacGovern &amp; Co., Inc.

**Furnaces—Assay:**

Canadian Fairbanks-Morse Co., Ltd.  
Lymans, Limited  
Mine & Smelter Supply Co.

**Fuse:**

Canadian Explosives  
Northern Canada Supply Co.

**Gears (Cast):**

The Link-Belt Co.

**Gears, Machine Cut:**

Canadian Fairbanks-Morse Co., Ltd.  
Canadian Steel Foundries, Ltd.  
The Electric Steel & Metals Co.  
The Hamilton Gear & Machine Co.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works

**Granulators:**

Hardinge Conical Mill Co.

**Grinding Wheels:**

Canadian Fairbanks-Morse Co., Ltd.

**Gold Refiners**

Goldsmith Bros.

## Canadian Miners' Buying Directory.—(Continued)

- Gold Trays:**  
Canada Chicago Bridge & Iron Works
- Hose (Air Drill):**  
Goodyear Tire & Rubber Co.
- Hose (Fire):**  
Goodyear Tire & Rubber Co.
- Hose (Packings)**  
Goodyear Tire & Rubber Co.
- Hose (Suction):**  
Goodyear Tire & Rubber Co.
- Hose (Steam):**  
Goodyear Tire & Rubber Co.
- Hose (Water):**  
Goodyear Tire & Rubber Co.
- Hammer Rock Drills:**  
Mussens, Limited  
The Mine & Smelter Supply Co.
- Hangers and Cable:**  
Standard Underground Cable Co. of Canada, Ltd.
- High Speed Steel:**  
Canadian Fairbanks-Morse Co. Ltd.  
Hadfields, Limited  
International High Speed Steel Co., Rockaway, N.J.
- High Speed Steel Twist Drills:**  
Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.
- Hoists—Air, Electric and Steam:**  
Canadian Ingersoll-Rand Co., Ltd.  
Canadian Fairbanks-Morse Co., Ltd.  
Jones & Glassco  
M. Beatty & Sons  
Marsh Engineering Works  
Northern Canada Supply Co.  
Mine & Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works  
R. T. Gilman & Co.  
Mussens, Limited  
Link-Belt Co.
- Hoisting Engines:**  
Canadian Fairbanks-Morse Co., Ltd.  
The Electric Steel & Metals Co.  
Mussens, Limited  
Sullivan Machinery Co.  
Canadian Ingersoll-Rand Co., Ltd.  
M. Beatty & Sons  
Marsh Engineering Works  
Fraser & Chalmers of Canada, Ltd.  
The Mine & Smelter Supply Co.
- Hose:**  
Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.
- Hydraulic Machinery:**  
Canadian Fairbanks-Morse Co., Ltd.  
Hadfields, Limited  
MacGovern & Co., Inc.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works
- Industrial Chemists:**  
Hersey, M. & Co., Ltd.
- Ingot Copper:**  
Canada Metal Co., Ltd.  
Hoyt Metal Co.
- Insulating Compounds:**  
Standard Underground Cable Co. of Canada, Ltd.
- Inspection and Testing:**  
Dominion Engineering & Inspection Co.
- Inspectors:**  
Hersey, M. & Co., Ltd.
- Jacks:**  
Canadian Fairbanks-Morse Co., Ltd.  
Can. Brakeshoe Co., Ltd.  
Northern Canada Supply Co.  
R. T. Gilman & Co.  
Mussens, Limited
- Jack Screws:**  
Canadian Foundries and Forgings, Ltd.
- Laboratory Machinery:**  
Mine & Smelter Supply Co.
- Lamps—Acetylene:**  
Dewar Manufacturing Co., Inc.
- Lamps—Carbide:**  
Dewar Manufacturing Co., Inc.
- Lamps—Miners:**  
Canada Carbide Company, Limited  
Canadian Fairbanks-Morse Co., Ltd.  
Dewar Manufacturing Co., Inc.  
Northern Electric Co., Ltd.  
Mussens, Limited
- Lamps:**  
Dewar Manufacturing Co., Inc.
- Lead (Fig):**  
The Canada Metal Co., Ltd.  
Consolidated Mining & Smelting Co.
- Levels:**  
C. L. Berger & Sons
- Locomotives (Steam, Compressed Air and Storage Steam):**  
Canadian Fairbanks-Morse Co., Ltd.  
H. K. Porter Company  
R. T. Gilman & Co.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited
- Link Belt**  
Canadian Fairbanks-Morse Co. Ltd.  
Northern Canada Supply Co.  
Jones & Glassco
- Machinists:**  
Burnett & Crampton
- Machinery—Repair Shop:**  
Canadian Fairbanks-Morse Co., Ltd.
- Machine Shop Supplies:**  
Canadian Fairbanks-Morse Co., Ltd.
- Magnesium Metal:**  
Everitt & Co.
- Manganese Steel:**  
Canadian Steel Foundries, Ltd.  
The Electric Steel & Metals Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works
- Metal Marking Machinery:**  
Canadian Fairbanks-Morse Co., Ltd.
- Metal Merchants:**  
Henry Bath & Son  
Geo. G. Blackwell, Sons & Co.  
Coniagas Reduction Co.  
Consolidated Mining & Smelting Co. of Canada  
Canada Metal Co.  
C. L. Constant Co.  
Everitt & Co.
- Metallurgical Engineers:**  
The Dorr Co.
- Metallurgical Machinery:**  
The Dorr Co.
- Metal Work, Heavy Plates:**  
Canada Chicago Bridge & Iron Works
- Mica:**  
Everitt & Co.  
Diamond Drill Carbon Co.
- Mining Engineers:**  
Hersey, M. Co., Ltd.
- Mining Drill Steel:**  
International High Speed Steel Co., Rockaway, N.J.
- Mining Requisites:**  
Canadian Steel Foundries, Ltd.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works
- Mine Surveying Instruments:**  
C. L. Berger & Sons
- Molybdenite:**  
Everitt & Co.
- Monel Metal:**  
International Nickel Co.
- Motors:**  
Canadian Fairbanks-Morse Co., Ltd.  
R. T. Gilman & Co.  
MacGovern & Co.  
The Wabi Iron Works

## Canadian Miners' Buying Directory.—(Continued)

**Motor Generator Sets—A.C. and D.C.**

MacGovern &amp; Co.

**Nails:**

Canada Metal Co.

**Nickel:**International Nickel Co.  
Coniagas Reduction Co.  
The Mond Nickel Co., Ltd.**Nickel Anodes:**

The Mond Nickel Co., Ltd.

**Nickel Salts:**

The Mond Nickel Co., Ltd.

**Nickel Sheets:**

The Mond Nickel Co., Ltd.

**Nickel Wire:**

The Mond Nickel Co., Ltd.

**Oil Analysts:**

Constant, C. L. Co.

**Ore Sacks:**

Northern Canada Supply Co.

**Ore Testing Works:**Ledoux & Co.  
Can. Laboratories  
Milton Hersey Co.  
Campbell & Deyell  
Hoyt Metal Co.**Ores and Metals—Buyers and Sellers of:**C. L. Constant Co.  
Geo. G. Blackwell  
Consolidated Mining and Smelting Co. of Canada  
Oxford Copper Co.  
Canada Metal Co.  
Hoyt Metal Co.  
Everitt & Co.  
Pennsylvania Smelting Co.**Packing:**

Canadian Fairbanks-Morse Co., Ltd.

**Perforated Metals:**Northern Canada Supply Co.  
Hendrick Mfg. Co.  
Greening, B., Wire Co.**Pig Tin:**Canada Metal Co., Ltd.  
Hoyt Metal Co.**Pig Lead:**Canada Metal Co., Ltd.  
Hoyt Metal Co.  
Pennsylvania Manufacturing Co.**Pipes:**Canadian Fairbanks-Morse Co., Ltd.  
Canada Metal Co., Ltd.  
Consolidated M. & S. Co.  
Northern Canada Supply Co.  
R. T. Gilman & Co.**Pipe Fittings:**

Canadian Fairbanks-Morse Co., Ltd.

**Pipe—Wood Stave:**Pacific Coast Pipe Co.  
Mine & Smelter Supply Co.**Piston Rock Drills:**Mussens, Limited  
Mine & Smelter Supply Co.**Plate Works:**John Inglis Co., Ltd.  
Hendrick Mfg. Co.  
The Wabi Iron Works  
MacKinnon Steel Co., Ltd.**Platinum Refiners:**

Goldsmith Bros.

**Pneumatic Tools:**Canadian Ingersoll-Rand Co., Ltd.  
Jones & Glassco  
R. T. Gilman & Co.**Prospecting Mills and Machinery:**The Electric Steel & Metals Co.  
E. J. Longyear Company  
Standard Diamond Drill Co.  
Mine & Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works**Pumps—Pneumatic:**Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
Sullivan Machinery Co.**Pumps—Steam:**Canadian Fairbanks-Morse Co., Ltd.  
Canadian Ingersoll-Rand Co., Ltd.  
The Electric Steel & Metals Co.  
Mussens, Limited  
Northern Canada Supply Co.  
Smart-Turner Machine Co.  
R. T. Gilman & Co.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works**Pumps—Turbine:**Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
Canadian Ingersoll-Rand Co., Ltd.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works**Pumps—Vacuum:**Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
The Wabi Iron Works**Pumps—Valves:**

Canadian Fairbanks-Morse Co., Ltd.

**Pulleys, Shaftings and Hangings:**Northern Canada Supply Co.  
Canadian Fairbanks-Morse Co., Ltd.  
The Wabi Iron Works**Pulverizers—Laboratory:**Mine & Smelter Supply Co.  
The Wabi Iron Works  
Hardinge Conical Mill Co.**Pumps—Boiler Feed:**Smart-Turner Machine Co.  
Northern Canada Supply Co.  
Canadian Fairbanks-Morse Co., Ltd.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
Mine & Smelter Supply Co.**Pumps—Centrifugal:**Canadian Fairbanks-Morse Co., Ltd.  
The Electric Steel & Metals Co.  
Smart-Turner Machine Co.  
M. Beatty & Sons  
Canadian Ingersoll-Rand Co., Ltd.  
Mine & Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works**Pumps—Diaphragm**

The Dorr Company

**Pumps—Electric**Canadian Fairbanks-Morse Co., Ltd.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
Smart-Turner Machine Co.**Pumps—Sand and Slime:**Canadian Fairbanks-Morse Co., Ltd.  
Fraser & Chalmers of Canada, Ltd.  
Mine & Smelter Supply Co.  
The Electric Steel & Metals Co.  
The Wabi Iron Works  
Smart-Turner Machine Co.**Quarrying Machinery:**Sullivan Machinery Co.  
Canadian Ingersoll-Rand Co., Ltd.  
Hadfields, Limited  
Mussens, Limited  
R. T. Gilman Co.**Rails:**Hadfields, Limited  
R. T. Gilman & Co.  
Mussens, Limited**Railway Supplies:**

Canadian Fairbanks-Morse Co., Ltd.

**Refiners:**

Goldsmith Bros.

**Riddles:**

Hendrick Mfg. Co.

**Roofing:**Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.**Rope—Manilla:**

Mussens, Limited

**Rope—Manilla and Jute:**Jones & Glassco  
Northern Canada Supply Co.  
Allan, Whyte & Co.

## Canadian Miners' Buying Directory.—(Continued)

**Rope—Wire:**

Allan, Whyte & Co.  
Greening, B. Wire Co.  
Northern Canada Supply Co.  
Mussens, Limited

**Rolls—Crushing**

Canadian Steel Foundries, Ltd.  
Fraser & Chalmers of Canada, Ltd.  
Hadfields, Limited  
The Electric Steel & Metals Co.  
Mussens, Limited  
The Wabi Iron Works

**Samplers:**

Fraser & Chalmers of Canada, Ltd.  
C. L. Constant Co.  
Ledoux & Co.  
Milton Hersey Co.  
Thos. Heyes & Son  
Mine & Smelter Supply Co.  
Mussens, Limited

**Scales—(all kinds):**

Canadian Fairbanks-Morse Co., Ltd.

**Screens:**

Greening, B. Wire Co.  
Hendrick Mfg. Co.  
Mine & Smelter Supply Co.  
Link-Belt Co.

**Screens—Cross Patent Flanged Lip:**

Hendrick Mfg. Co.

**Screens—Perforated Metal:**

Hendrick Mfg. Co.

**Screens—Shaking:**

Hendrick Mfg. Co.

**Screens—Revolving:**

Hendrick Mfg. Co.

**Scheelite:**

Everitt & Co.

**Separators:**

Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
Mine & Smelter Supply Co.

**Shaft Contractors:**

Hendrick Mfg. Co.

**Sheet Metal Work:**

Hendrick Mfg. Co.

**Sheets—Genuine Manganese Bronze:**

Hendrick Mfg. Co.

**Shoes and Dies:**

Canadian Foundries and Forgings, Ltd.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works

**Shovels—Steam:**

Canadian Foundries and Forgings, Ltd.  
M. Beatty & Sons  
R. T. Gilman & Co.

**Silene:**

Conlagas Reduction Co.

**Saline Refiners:**

Goldsmith Bros.

**Smelters:**

Goldsmith Bros.

**Slidges:**

Canada Foundries & Forgings, Ltd.

**Smoke Stacks:**

Hendrick Mfg. Co.  
MacKinnon Steel Co., Ltd.  
Marsh Engineering Works  
The Wabi Iron Works

**Special Machinery:**

John Inglis Co., Ltd.

**Spelter:**

The Canada Metal Co., Ltd.  
Consolidated Mining & Smelting Co.

**Sprockets:**

Link-Belt Co.

**Spring Coil and Clips Electrico:**

Canadian Steel Foundries, Ltd.

**Steel Barrels:**

Smart-Turner Machine Co.  
Fraser & Chalmers of Canada, Ltd.

**Stamp Forgings:**

Canada Foundries & Forgings, Ltd.

**Steel Castings:**

Canadian Brakeshoe Co., Ltd.  
Canadian Steel Foundries, Ltd.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
Hadfields, Limited  
The Wabi Iron Works

**Steel Drills:**

Canadian Fairbanks-Morse Co., Ltd.  
Sullivan Machinery Co.  
Northern Canada Supply Co.  
The Electric Steel & Metals Co.  
Canadian Ingersoll-Rand Co., Ltd.  
Mussens, Limited

**Steel Drums:**

Smart-Turner Machine Co.

**Steel—Tool:**

Canadian Fairbanks-Morse Co., Ltd.  
N. S. Steel & Coal Co.  
Hadfields, Limited  
Swedish Steel & Importing Co., Ltd.

**Structural Steel Work (Light):**

Hendrick Mfg. Co.

**Stone Breakers:**

Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
Mussens, Limited  
R. T. Gilman & Co.  
The Wabi Iron Works

**Sulphate of Copper:**

The Mond Nickel Co., Ltd.  
Conlagas Reduction Co.

**Sulphate of Nickel:**

The Mond Nickel Co., Ltd.

**Surveying Instruments:**

C. L. Berger

**Switches and Switch Stand:**

Canadian Steel Foundries, Ltd.  
Mussens, Limited.

**Tables—Concentrating:**

Mine & Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.

**Tanks:**

R. T. Gilman & Co.

**Tanks—Acid:**

Canadian Chicago Bridge & Iron Works

**Tanks (Wooden):**

Canadian Fairbanks-Morse Co., Ltd.  
Gould, Shapley & Muir Co., Ltd.  
Pacific Coast Pipe Co., Ltd.  
Mine & Smelter Supply Co.  
The Wabi Iron Works

**Tanks—Cyanide, Etc.:**

Hendrick Mfg. Co.  
Pacific Coast Pipe Co.  
MacKinnon Steel Co.  
Fraser & Chalmers of Canada, Ltd.  
Mine & Smelter Supply Co.  
The Wabi Iron Works

**Tanks—Steel:**

Canadian Fairbanks-Morse Co., Ltd.  
Canadian Ingersoll-Rand Co., Ltd.  
Canadian Chicago Bridge & Iron Works  
Marsh Engineering Works  
MacKinnon Steel Co.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
Hendrick Mfg. Co.  
The Wabi Iron Works

**Tanks—Oil Storage:**

Canadian Chicago Bridge & Iron Works

**Tanks (water) and Steel Towers:**

Canadian Fairbanks-Morse Co., Ltd.  
Canadian Chicago Bridge & Iron Works  
Gould, Shapley & Muir Co., Ltd.  
MacKinnon Steel Co.  
Mine & Smelter Supply Co.  
The Wabi Iron Works



## Canadian Miners' Buying Directory.—(Continued)

**Tramway Points and Crossings:**Canadian Steel Foundries, Ltd.  
Hadfields, Limited**Transits:**

C. L. Berger &amp; Sons

**Transformers:**Canadian Fairbanks-Morse Co., Ltd.  
R. T. Gilman & Co.  
Northern Electric Co., Ltd.**Transmission Apparatus:**

Jones &amp; Glassco

**Troughs (Conveyor):**

Hendrick Manufacturing Co.

**Trucks—Electric:**

Canadian Fairbanks-Morse Co., Ltd.

**Trucks—Hand:**

Canadian Fairbanks-Morse Co., Ltd.

**Trucks:**

Canadian Fairbanks-Morse Co., Ltd.

**Tubs:**

Hadfields, Limited

**Tube Mills:**The Electric Steel & Metals Co.  
Fraser & Chalmers of Canada, Ltd.  
Hardinge Conical Mill Co.**Tube Mill Balls:**Canada Foundries & Forgings, Ltd.  
Fraser & Chalmers of Canada, Ltd.**Tube Mill Liners:**Burnett & Crampton  
Fraser & Chalmers of Canada, Ltd.**Turbines—Water Wheel:**

MacGovern &amp; Co.

**Turbines—Steam:**Fraser & Chalmers of Canada, Ltd.  
MacGovern & Co.**Twincones:**

Canada Foundries &amp; Forgings, Ltd.

**Uranium:**

Everitt &amp; Co.

**Welding—Rod and Flux:**Prest-O-Lite Co. of Canada, Ltd.  
Imperial Brass Mfg. Co.**Welding and Cutting—Oxy-Acetylene:**Prest-O-Lite Co. of Canada, Ltd.  
Canadian Fairbanks-Morse Co., Ltd.  
Imperial Brass Mfg. Co.**Wheels and Axles:**Canadian Steel Foundries, Ltd.  
Hadfields, Limited  
The Electric Steel & Metals Co.  
The Wabi Iron Works**Winding Engines—Steam and Electric:**Canadian Fairbanks-Morse Co., Ltd.  
Canadian Ingersoll-Rand Co., Ltd.  
Marsh Engineering Works  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
Mussens, Limited  
R. T. Gilman & Co.  
The Wabi Iron Works**Wire:**Canada Wire & Cable Co., Ltd.  
Greening, B. Wire Co.**Wire Rope:**

R. T. Gilman &amp; Co.

**Wire Cloth:**Northern Canada Supply Co.  
Greening, B. Wire Co.**Wire (Bars and Insulated):**Standard Underground Cable Co. of Canada, Ltd.  
Northern Electric Co., Ltd.**Wolfram Ore:**

Everitt &amp; Co.

**Woodworking Machinery:**

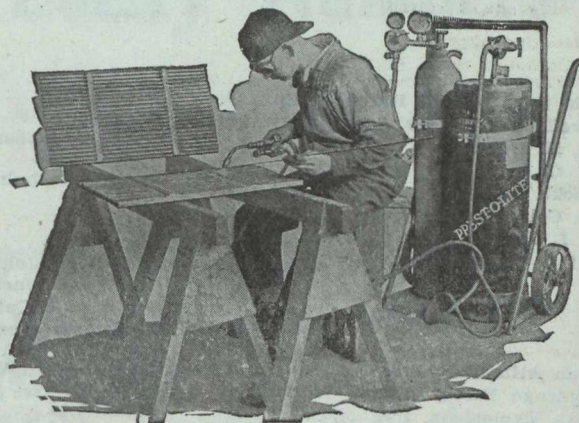
Canadian Fairbanks-Morse Co., Ltd.

**Zinc:**

Everitt &amp; Co.

**Zinc:**The Canada Metal Co., Ltd.  
Consolidated Mining & Smelting Co.**Zinc Spelter:**Canada Metal Co., Ltd.  
Hoyt Metal Co., Ltd.

## Oxy-Acetylene Welding and Cutting

Prest-O-Lite Welding  
Has Proven Its Value

IN nearly every line of metal manufacture, from the making of delicate jewelry to massive locomotives, the Prest-O-Lite Process of Oxy-Acetylene Welding has firmly established itself. Where two pieces of metal are to be joined, it is supplanting the bolt, rivet and threaded joint in hundreds of factories and repair shops.

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Apparatus consists of an equal pressure blow pipe, automatic regulators and gauges, and all necessary equipment. Adaptable for oxy-acetylene cutting by the addition of special cutting blow pipe.

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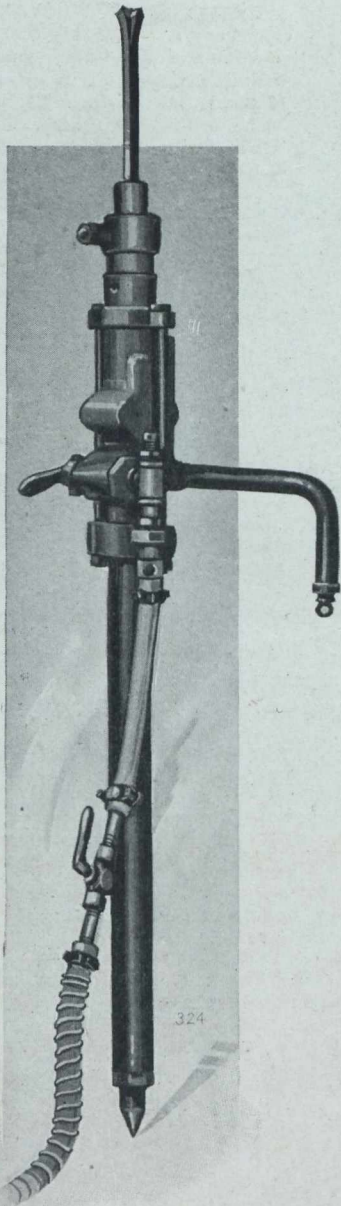
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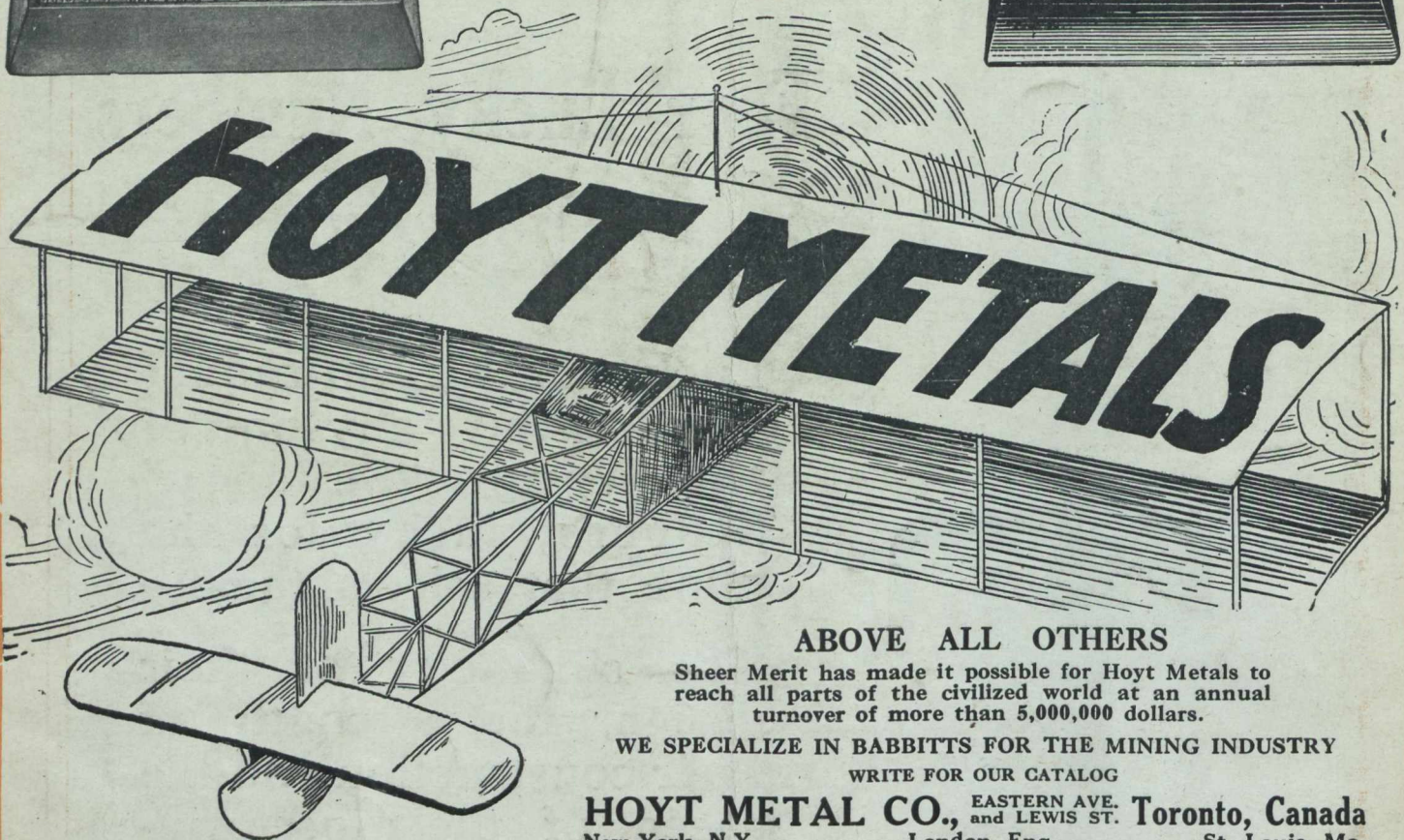
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