

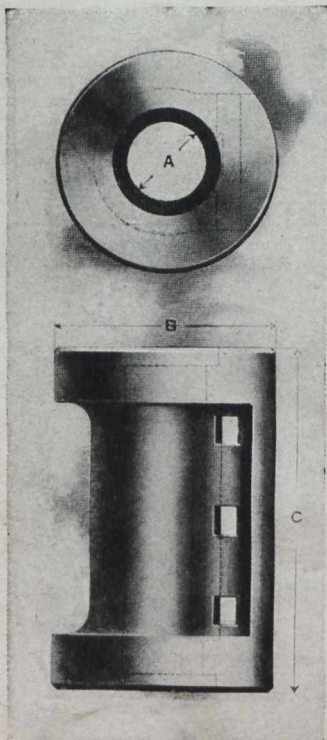
CANADIAN MINING JOURNAL

VOL. XXXVIII

TORONTO

No. 23

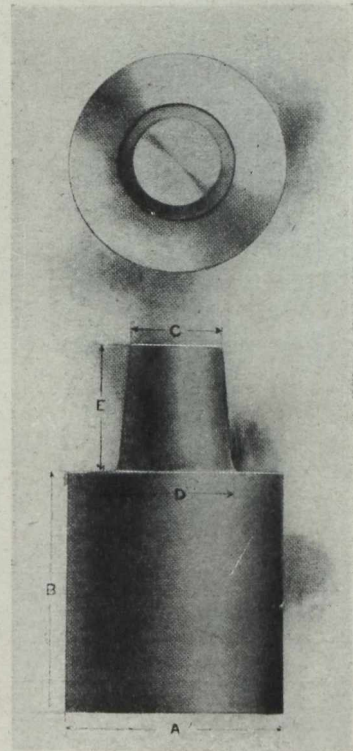
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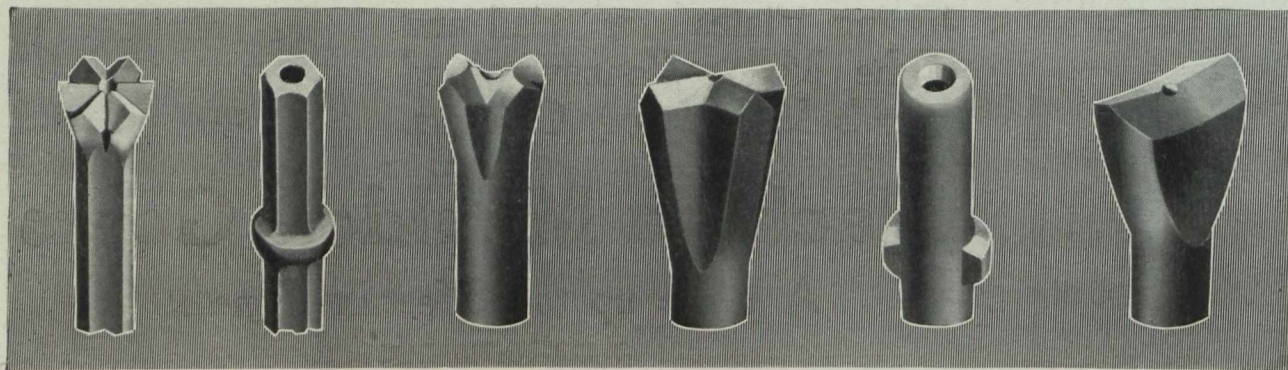
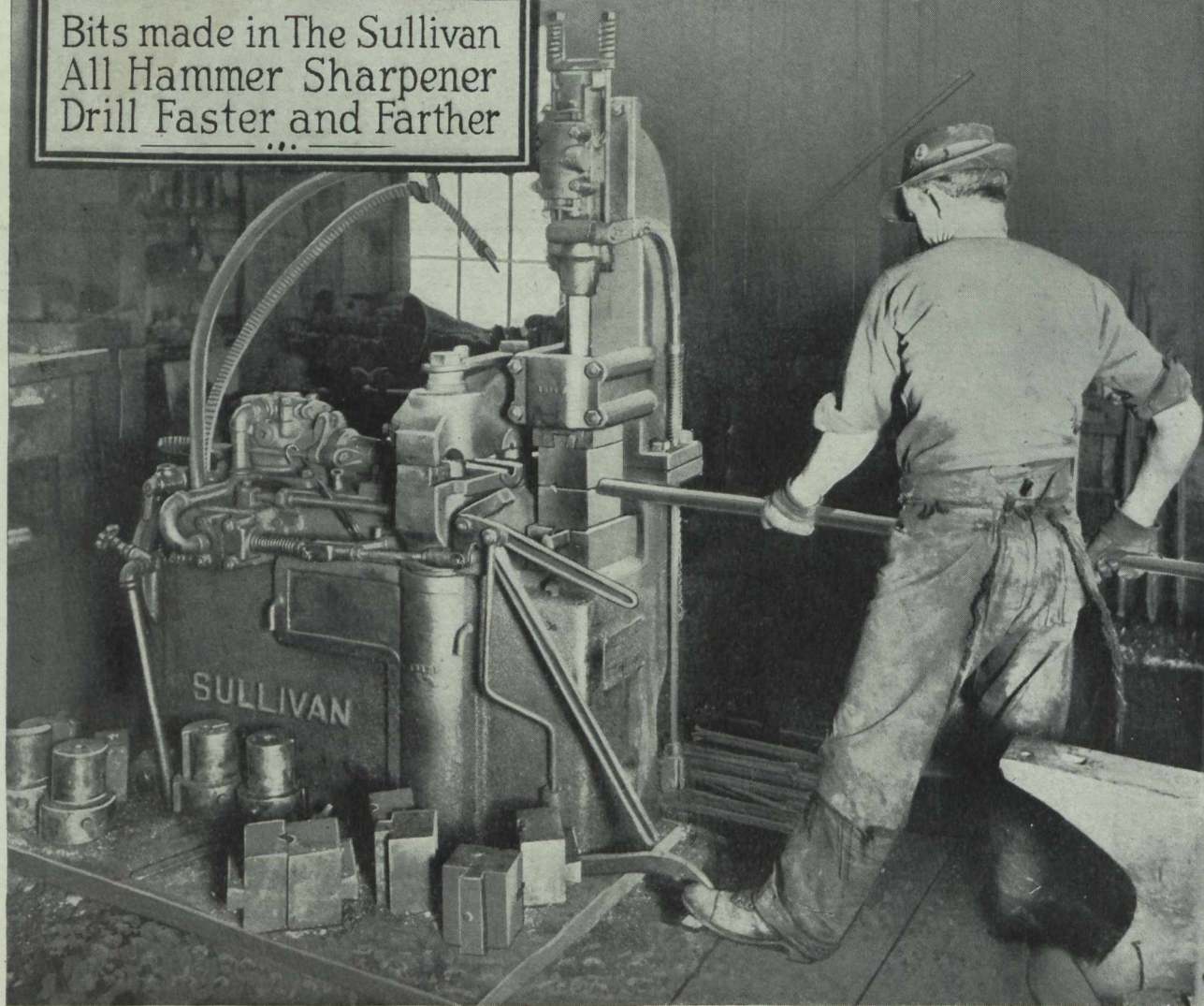
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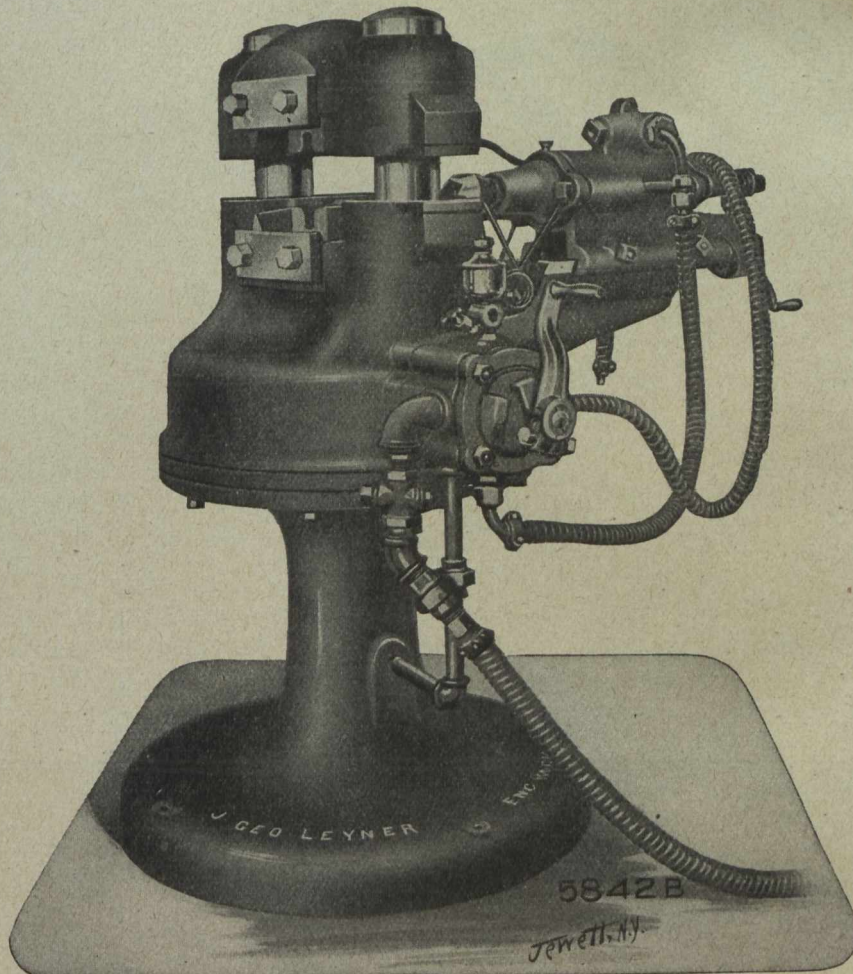
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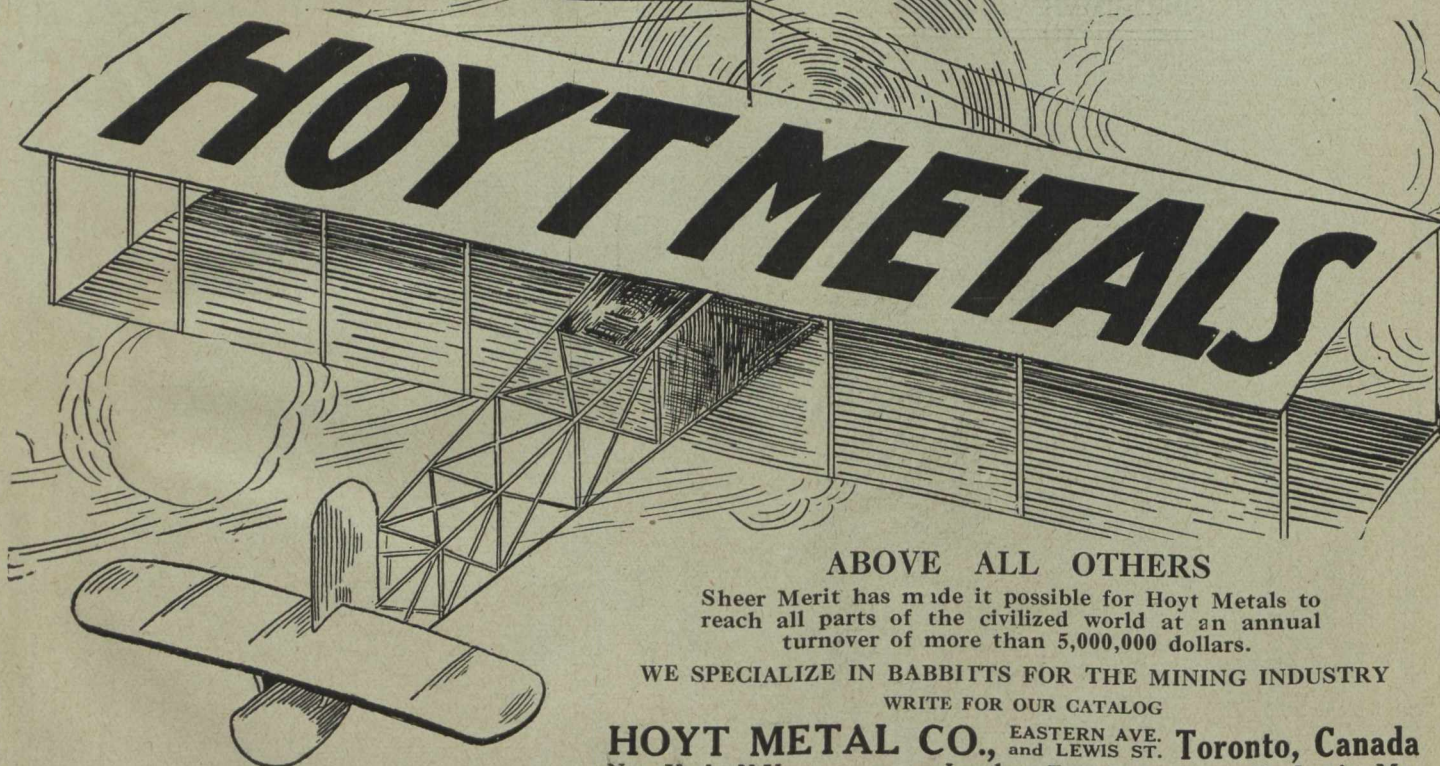
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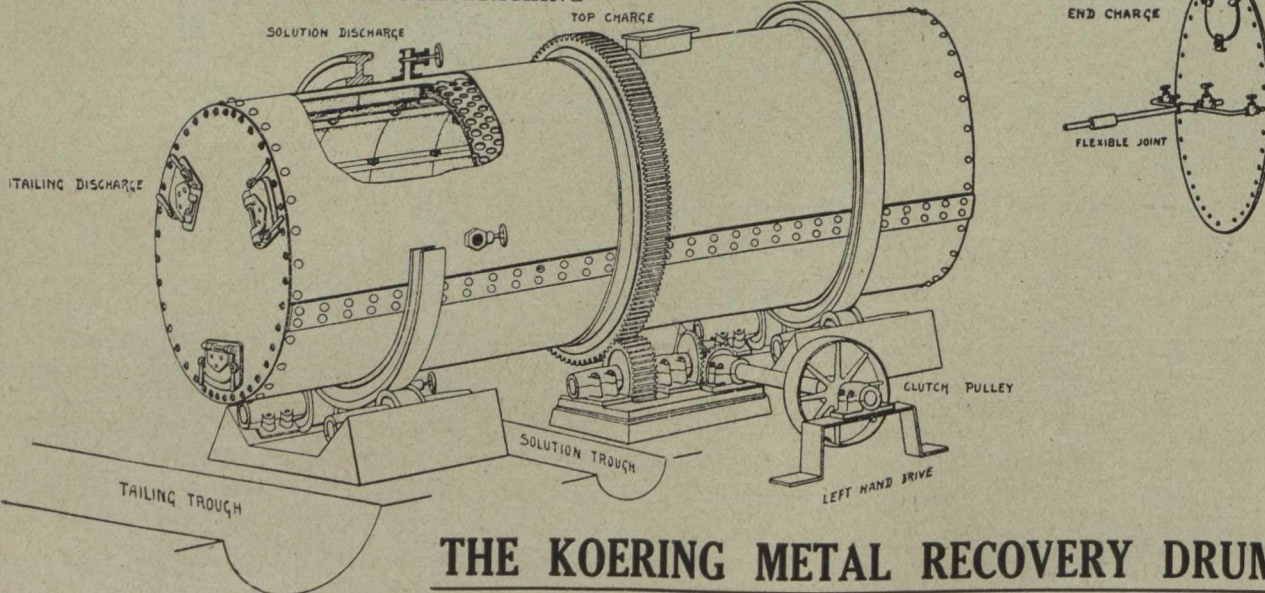
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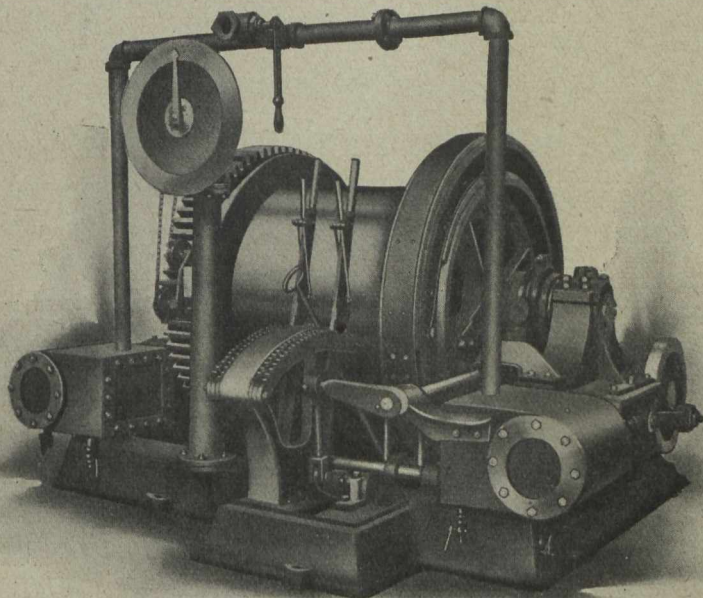
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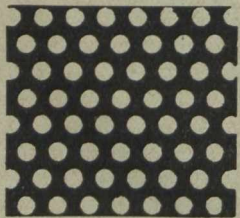
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Coal Over six million tons of coal were produced in the province during 1916, making Nova Scotia by far the leader among the coal producing provinces of the Dominion.

Iron The province contains numerous districts in which occur various varieties of iron ore, practically at tide water and in touch with vast bodies of fluxes. Deposits of particularly high grade manganese ore occur at a number of different locations.

Gold Marked development has taken place in this industry the past several years. The gold fields of the province cover an area approximately 3,500 square miles. The gold is free milling and is from 870 to 970 fine.

Gypsum Enormous beds of gypsum of a very pure quality and frequently 100 feet thickness, are situated at the water's edge.

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Department of Colonization, Mines and Fisheries

The chief minerals of the Province of Quebec are Asbestos, Chromite, Copper, Iron, Gold, Molybdenite, Phosphate, Mica, Graphite, Ornamental and Building Stone, Clays, etc.

The Mining Law gives absolute security of Title and is very favourable to the Prospector.

MINERS' CERTIFICATES. First of all, obtain a miner's certificate, from the Department in Quebec or from the nearest agent. The price of this certificate is \$10.00, and it is valid until the first of January following. This certificate gives the right to prospect on public lands and on private lands, on which the mineral rights belong to the Crown.

The holder of the certificate may stake mining claims to the extent of 200 acres.

WORKING CONDITIONS. During the first six months following the staking of the claim, work on it must be performed to the extent of at least twenty-five days of eight hours.

SIX MONTHS AFTER STAKING. At the expiration of six months from date of the staking, the prospector, to retain his rights, must take out a mining license.

MINING LICENSE. The mining license may cover 40 to 200 acres in unsurveyed territory. The price of this license is Fifty Cents an acre per year, and a fee of \$10.00 on issue. It is valid for one year and is renewable on the same terms, on producing an affidavit that during the year work has been performed to the extent of at least twenty-five days labour on each forty acres.

MINING CONCESSION. Notwithstanding the above, a mining concession may be acquired at any time at the rate of \$5 an acre for SUPERIOR METALS, and \$3 an acre for INFERIOR MINERALS.

The attention of prospectors is specially called to the territory in the North-Western part of the Province of Quebec, north of the height of land, where important mineralized belts are known to exist.

PROVINCIAL LABORATORY. Special arrangements have been made with POLYTECHNIC SCHOOL of LAVAL UNIVERSITY, 228 ST. DENIS STREET, MONTREAL, for the determination, assays and analysis of minerals at very reduced rates for the benefit of miners and prospectors in the Province of Quebec. The well equipped laboratories of this institution and its trained chemists ensure results of undoubted integrity and reliability.

The Bureau of Mines at Quebec will give all the information desired in connection with the mines and mineral resources of the Province, on application addressed to

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MINISTER OF COLONIZATION, MINES AND FISHERIES, QUEBEC.

The Flotation Process

All patent and other rights to this process
in North America are now controlled by

Minerals Separation North American Corporation

who is the registered owner of the following Canadian patents: Nos. 76,621; 87,700; 94,332; 94,516; 94,718; 96,182; 96,183; 99,743; 127,397; 129,819; 129,820; 134,271; 135,089; 137,404; 142,607; 147,431; 147,432; 148,275; 151,479; 151,480; 151,619; 151,810; 157,488; 157,603; 157,604; 160,692; 160,693; 160,694; 160,846; 160,847; 160,848; 160,849; 160,850; 160,937; 163,587; 163,608; 163,707; 163,936; 165,390; 166,415; 167,474; 167,475; 167,476; 167,603.

On December 11, 1916, the SUPREME COURT OF THE UNITED STATES adjudged our basic patent for air-froth flotation to be valid, holding that this patent covers any process of froth flotation wherein the results obtained are such results as are secured by the use of a fraction of one per cent., on the ore, of an oily frothing agent in an ore-pulp, with agitation. Three of the thirteen claims which specified the use of "a small quantity of oil" and which the Court held to be invalid have since, by proper disclaimer, been brought within the scope of the Supreme Court's decision and, at a recent trial in the United States District Court at Butte, Montana, Judge Bourquin admitted these claims as amended.

On May 24, 1917, the UNITED STATES CIRCUIT COURT OF APPEALS at Philadelphia, in the case of Minerals Separation, Ltd., against Miami Copper Company, unanimously sustained the validity and broadly construed a second basic patent, owned by us, for the use of all "Soluble Frothing Agents." In the same opinion, the Court also validated a third patent for the use of cresols and phenols in the cold and without acid. The defendants, Miami Copper Company, endeavored to avoid infringement of these patents by using Callow pneumatic cells, but the Court held that the operations of the defendant company infringed all three patents.

Prospective users of our flotation processes are earnestly requested not to be misled by the mistaken views disseminated by interested parties that any of these BASIC PROCESS PATENTS can be evaded by a mere variation of apparatus for agitating and aerating the pulp, or by the simple addition of oils or other materials in excess of a fraction of one per cent. on the weight of the ore treated.

NOTICE

Notice is hereby given that we will enforce our patents and stop all infringements, but are prepared to grant licenses for the right to use all or any of our processes to those who wish to use them. To those who infringe or have infringed our patents, notice is given that a settlement for such infringement must precede the granting of licenses for the future use of same.

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Aggregate Value of \$558,560,715

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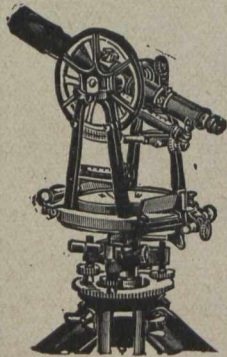
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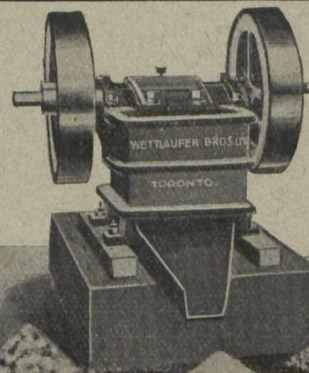


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THE CANADIAN MINING JOURNAL

VOL. XXXVIII.

TORONTO, December 1st, 1917.

No. 23

The Canadian Mining Journal

With which is incorporated the
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Devoted to Mining, Metallurgy and Allied Industries in Canada.

Published 1st and 15th of each month by the
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"Entered as second-class matter April 23rd, 1908, at the post office at Buffalo N.Y., under the Act of Congress of March 3rd, 1879."

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The appointment of an incompetent editorial board to edit the reports of technical departments and the acceptance by the House of an absurd report from the Committee on Public Printing are evidence that we cannot depend on the politicians of any party to give intelligent consideration to matters affecting the basic industries of the country. It is time that technical men and others engaged in the basic industries expressed their opinion of such acts. If we must have an editorial board, should not the technical departments have competent representatives on it? The best trained men in the service of this country are in the technical departments. What is the use of endeavoring to keep such men in the service if they are to report only what a board of non-technical men believe to be valuable?

RETROGRADE LEGISLATION.

As a result of a report on public printing, made by a joint committee of both Houses, a decidedly unsatisfactory condition of affairs has been brought about. In view of the waste that has been going on, the making of an inquiry was very necessary. Some good results were obtained; but the committee was evidently not very well informed and unfortunately some foolish recommendations passed through the House without criticism. That members of the House should show such lack of intelligence in dealing with matters affecting the mineral industry is, unfortunately, nothing new; but it is surprising that a committee appointed to make an enquiry should be willing to so misrepresent the facts. The House doubtless accepted the report as an honest statement. If we had in the Cabinet a real Minister of Mines, the absurdity of some of the statements made by members of this committee would doubtless have resulted in the report being challenged. As no one was present to defend the Mines Department, and as the average member of the House knows next to nothing about the mineral industry, the House accepted the report and acted on it as though it were a fair presentation of the facts. As a result there was appointed a board of three censors of publications, which is entirely unqualified to pass on reports affecting the mineral industry and is unqualified to pass on the work of any of the technical departments. This is retrograde legislation and the best interests of the country demand that it should not be allowed to pass without revision.

In the misleading report, presented by Mr. J. A. Currie, from the Joint Committee of both Houses, it is stated that "the Committee is of opinion that no interest would have been injured had there been a total suspension of the publications of this (the Mines) Department as soon as the war commenced." Would it not be well for this Committee to express its ideas on how war should be waged? Apparently Mr. Lloyd George in declaring that this war is largely one of munitions has not had the advice of this Committee. The world at large seems to be under the impression, not shared in by the Committee, that the intelligent utilization of our natural resources is at this time of even more than ordinary importance.

The majority of members of the House take no interest in and know practically nothing of the work of the technical Departments. Even our so-called Ministers of Mines are quite innocent of the work being done. The work might be improved and extended by a capable Minister, and is not beyond criticism; but it is not the fault of the House that it is as good as it is. It ill becomes the House therefore to interfere and cut down the efficiency of the Department.

Apparently the Committee on Public Printing measured the value of government reports by the number of requests received by members for copies. They reported that "many of the publications of this (the Mines) Department are not of public interest." This is an indirect tribute to the service that the Mines Department is giving, for it shows that the people who are really interested in the mineral industry are applying to that Department instead of to members of the House for information.

It is true that novices sometimes apply to members of the House for information concerning the mineral industry and some requests for reports are received by members, but anyone much interested in mining soon learns to apply directly to the Mines Department.

The work being done by the Mines Department is for the good of the public. The investigations are of permanent value and should be recorded in such a manner that the public can benefit from them. It would be folly to prevent publication of this work and it is deliberately false to state that no interest would have been injured by a total suspension of the publications of this Department.

That the report of the Committee on Public Printing is not in accordance with the facts is shown by such statements as the following, made by Mr. Currie in presenting the report: "The Mines Department has spent something like \$5,000 publishing a big book with regard to a mine not in Canada, and with which Canada has nothing to do." It is probable that many of those who heard Mr. Currie, believed that he was telling the truth and that they voted the way they did without realizing that they were being falsely informed. They probably supposed that the man who made such a statement did so after a careful investigation. The Committee was appointed to investigate and report and it is not unnatural to have expected that the facts would be presented. But what are the facts?

The report to which Mr. Currie referred was one on the Wabana iron ores of Newfoundland. His statement as to the cost of publishing the report is not reliable. His statement that Canada has nothing to do with the Wabana mines is absurd. On the contrary the Wabana deposits supply most of the iron ore used in Canada. The deposits are owned by and being worked by two of our largest producers of iron and steel.

After discussion of the report of the Committee on Public Printing it was decided at the last session of the House to create an editorial board of three members of the Civil Service, "thoroughly conversant with public affairs." Three gentlemen who are wholly unqualified to edit technical reports, such as those of the Mines Department, were chosen. If the Government considers it advisable to appoint an editorial board, it might at least attempt to choose a competent one.

The Editorial Board.

The Committee on Public Printing reported in part: "The most effective way to bring about economies in Canadian Parliamentary and Departmental printing is, in the opinion of the Committee, to create an editorial board of three members of the Civil Service, thoroughly conversant with public affairs, and with a knowledge of Departmental workings. This board should have plenary powers to order such excisions of copy of Departmental reports, leaflets, bulletins, memoirs, etc., or to refuse to sanction the printing of any report, if, in their judgment, the public interest would not be seriously affected by such refusal.

"It would be the duty of the Board to call upon the Deputy Head of any Department or Branch of the Public Service created by Parliament, whose requisition and 'copy' for printing were under consideration, to show cause why any proposed reductions in 'copy' should not be made or the printing thereof suspended entirely, and only upon the direct written authority of the Minister of the Department interested should the decision of the Board of Editors be countermanded."

This recommendation was acted upon and an editorial board appointed. This board is called upon to edit the reports offered for publication. Although wholly unqualified for the task, it pretends to be able to consider intelligently all sorts of technical matters. Although not a member of the board is guilty of possessing any technical knowledge of any consequence, the board will determine what should be published by the technical departments.

The members of the board may be very capable in their own departments; but it is unfair to ask them to edit technical reports. If they knew enough about this work to be able to appreciate their foolish position, they would doubtless refuse to undertake the task. However, they probably feel proud of their new responsibilities and cannot be expected to turn down what looks like promotion, without trying the impossible. It is up to the Government to put these men at work which they can do. This is no time to be introducing retrograde legislation. Technical men were never more useful than now.

Who are these men who are to edit the reports of important technical departments? Are they men of technical training and experience? Not at all. Mr. Fred Cook, Assistant Kings Printer, Mr. F. C. T. O'Hara, Deputy Minister of Trade and Commerce and Mr. Francis C. C. Lynch, Superintendent of Natural Resources, Intelligence Branch of the Department of the Interior, are the three men who have been placed in this foolish position. None of them pretend to have had a training that would warrant their assuming such duties.

There may be reports that these three men could edit; but it would be folly to allow such incompetents to interfere with the technical departments. These gentlemen could give advice on running a newspaper, if our Government proposes to imitate the American Government, but they cannot intelligently edit the reports of the Mines Department.

Northern Ontario mining districts have contributed handsomely to the Victory Loan. The Temiskaming district passed its objective in the second week of the campaign.

It is reported that one in seven of the people of Cochrane subscribed to the Victory Loan. Recalling that the town has suffered disastrously from fires, this is a very remarkable showing.

PROSPECTING FOR OIL IN ONTARIO.

During the past summer Mr. M. Y. Williams, of the Geological Survey, Ottawa, has been engaged gathering information for the purpose of making a geological map of the area in the vicinity of Rockwood, Ontario. As was pointed out by Mr. Williams in an article published in the July 15 number of this Journal, the geological features at Rockwood are favorable for the occurrence of oil and gas. There is no certainty that important deposits occur there; but the work of Dr. Williams has already led to preparations being made by oil men for thoroughly testing the area.

Ontario is, and has been for decades, a large producer of oil. The Lambton and Bothwell fields have been Canada's premier oil fields for many years. Their output is slowly but steadily declining. Other fields, more recently opened up, do not give evidence of taking the place of the old fields. It is necessary that organized effort be made to develop new fields. It is therefore satisfactory to note that the Geological Survey is undertaking to assist operators in determining what areas are most likely to prove productive. It is to be hoped that the work begun by Mr. Williams this year will be continued. We are sure that operators appreciate the help which such work gives them and that they will heartily cooperate.

MR. MATHEWSON GIVES A POPULAR ADDRESS ON NICKEL.

"Canada will never lose her pre-eminence as a nickel producer," declared Mr. E. P. Mathewson, manager of the British American Nickel Company, before the Royal Canadian Institute at the Physics Building, University of Toronto, on Saturday, Nov. 24.

Mr. Mathewson gave an interesting resume of the history of the industrial development of nickel from its earliest stages to the most modern refining methods. The speaker declared that over 80 per cent. of the world's output is produced in Canada, and that "no other deposits compare with the nickel deposits in the Dominion."

"Canada is not only a producer of ore, but a refiner," declared Mr. Mathewson, "which will give Canada a higher place in the industrial world." He lauded the work of the commission appointed by the Ontario Government to look into the nickel question, declaring that its report is a "masterpiece in detail and general information, and it has been accepted by the producing and refining experts as one of the best and most complete compilations ever published."

The lecture was illustrated. Many excellent views of nickel mining developments were shown. Mr. J. Murray Clark, president of the Institute, presided.

It is reported at Kamloops that a find of copper ore has been made in the same part of Kamloops mining division as the Iron Mask is situated in, and distant from that mine two or three miles. The Iron Mask has been a producer of copper ore for many years, though not in anything like such large quantity as it would have been had there been suitable reduction works established close at hand. However, it is expected that eventually conditions in this respect will be improved.

WILL FRANCE AND BRITAIN EXCHANGE CERTAIN OF THEIR COLONIES.

The importance of New Caledonia as a producer of nickel and chrome, and formerly of cobalt, makes the following article of special interest to mining men. The article is translated from a recent number, Aug. 25th, 1917, of *Le Bulletin du Commerce*, published at Noumea, New Caledonia.

W. G. M.

Is it the intention of France and England to profit by the war to exchange a certain number of their colonies in different parts of the globe? Although the question has not as yet attracted the attention of the general public, it has been plainly placed recently before British colonial opinion.

The manner in which it has been received is significant enough. The journal "The New Europe" has taken the initiative by proposing a kind of general regulation of accounts. On 12th April last it recommended an arrangement which would consist essentially of extending French territory in West Africa in exchange for compensations granted to Great Britain and her Dominions in other parts of the world. France would obtain, in whole, or in part, Gambia, Sierra Leone, Togo, and perhaps even the Gold Coast. She would relinquish Saint Pierre and Miquelon to Newfoundland; Tahiti and the Marquise islands to New Zealand; the New Hebrides to Australia; and to India (i.e., to England herself), the principal French settlements of India. The same journal even sets forth the eventual ceding to Australia of New Caledonia, its wealth in nickel, according to the journal, having lost its importance to France since the discovery of the large Canadian deposits.

The plan as a whole meets a lively enough opposition in British colonial centres. For the moment we shall confine ourselves to pointing out these trends of opinion. What is even now certain is that, if a part of the English colonial world seems to be truly little in favor of a readjustment of the French and English colonies, on the other hand, any agreement, exclusively economic, would be warmly received. It is not unreasonable to hope, for example, that the French and English interests in West Africa could be brought to agree to a joint policy for shipping and railways. It is in this direction that, in default of eventual exchange of territories, fruitful solutions will undoubtedly be found.

The Vancouver Daily Province stated lately that "at the request of the Dominion Advisory Council of Scientific and Industrial Research, Dr. J. G. Davidson, head of the Department of Physics at the University of British Columbia, was leaving Vancouver for Ottawa to superintend the installation of a by-product coke-oven plant in Eastern Canada. He will be away from British Columbia several months. Dr. Davidson stated that for three years he had experimented with the application of an electrical method of cleaning smoke and dust from gases, and extracting smoke from coal gas in gas plants and by-product ovens. The object is to eliminate in new plants much of the machinery used in the older ones. Dr. Davidson pointed out that the importance of coal tar, on account of its derivatives, benzol and toluol, had been realized by the United States Government in its war preparations to such an extent that manufacturers of machinery had been asked to give precedence to making equipment for by-product ovens.

Molybdenite at Falcon Lake, Manitoba

By J. S. DeLury.

Considerable interest has been aroused recently in Manitoba by several reports of discoveries of molybdenite in the province. It has been known for some time that this mineral occurs at Herb Lake, to the northeast of The Pas, in a quartz vein associated closely with a granitic intrusion. It has also been noticed recently as a prominent constituent of a chalcopyrite-quartz orebody which is being opened up on the east shore of Lake Winnipeg near the mouth of the Hole river. During the past summer several claims with showings of molybdenite have been staked near Falcon lake. A description of the area adjacent to these claims together with some notes on the occurrences of the molybdenite follows.

Falcon lake is nearly eight miles long and averages about one mile in width. The Ontario-Manitoba boundary is near the east end and the molybdenite claims not far from the west end of the lake. Lying only a few miles from and between the Canadian Pacific railway to the north and the Greater Winnipeg Water District railway to the south, the claims are easily reached by canoe and trail from Ingolf on the former railway and from a point on the latter where it crosses the Falcon river.

The area immediately adjacent to the molybdenite prospects has not been geologically mapped, though an area lying a short distance to the northeast, the Star Lake District, was described and sketch-mapped by Wallace in the Report of the Public Utilities Commission of Manitoba for 1916 and another area east of the Ontario boundary by Parsons in the Annual Report of the Ontario Bureau of Mines, Part 1, 1912. The accompanying sketch-map is an enlargement of Wallace's Star Lake map to include the molybdenite area and to show the prominent rock-outcrops and the approximate geological boundaries in the vicinity of the claims.

The country is forested, but good rock exposures are found on many comparatively bare ridges. Pre-Cambrian rocks occupy the whole area for miles around and their relations are rather complex, but it is hoped that a few general remarks concerning the prominent rocks, supplemented by the map and vertical section, will make clear at least sufficient of the geological relations to explain the occurrence and origin of the molybdenite.

Long and relatively narrow belts of Keewatin rocks occupy troughs in a complex of granites in this and adjacent areas. The Keewatin belt, which is of interest in connection with the molybdenite deposits, is indicated on the map. It consists mainly of old basaltic lavas, some of them showing pillow structure and others grading into agglomerates, with here and there small bands of a light-colored rock which in some places suggested quartzites and in others felsites. These old basalts have been changed by folding and shearing, and by intrusions of granite, so that now they appear as schistose metamorphic rocks; the most prominent type being a chlorite hornblende schist. This schist stands nearly vertically in most places where it was observed and strikes parallel with the granite contacts, or roughly in a northeasterly direction.

At least two, but possibly more, granite masses have intruded this area. An early gray granite is prominent in the district; it is seen to be the older as it has in many places a pronounced banding and besides it has been intruded by a second granite, a red variety which shows little or no banding. Connected with this

later red granite, or possibly with a still later intrusion, are some pegmatites and aplites which appear in the granite complex and in the schist for some distance from the contact with the granite. The intrusion of these acid phases of the granite is the important geological event in connection with the formation of the molybdenite deposits. The relations between these various rocks are brought out in a general way in the vertical section across the contact accompanying this paper.

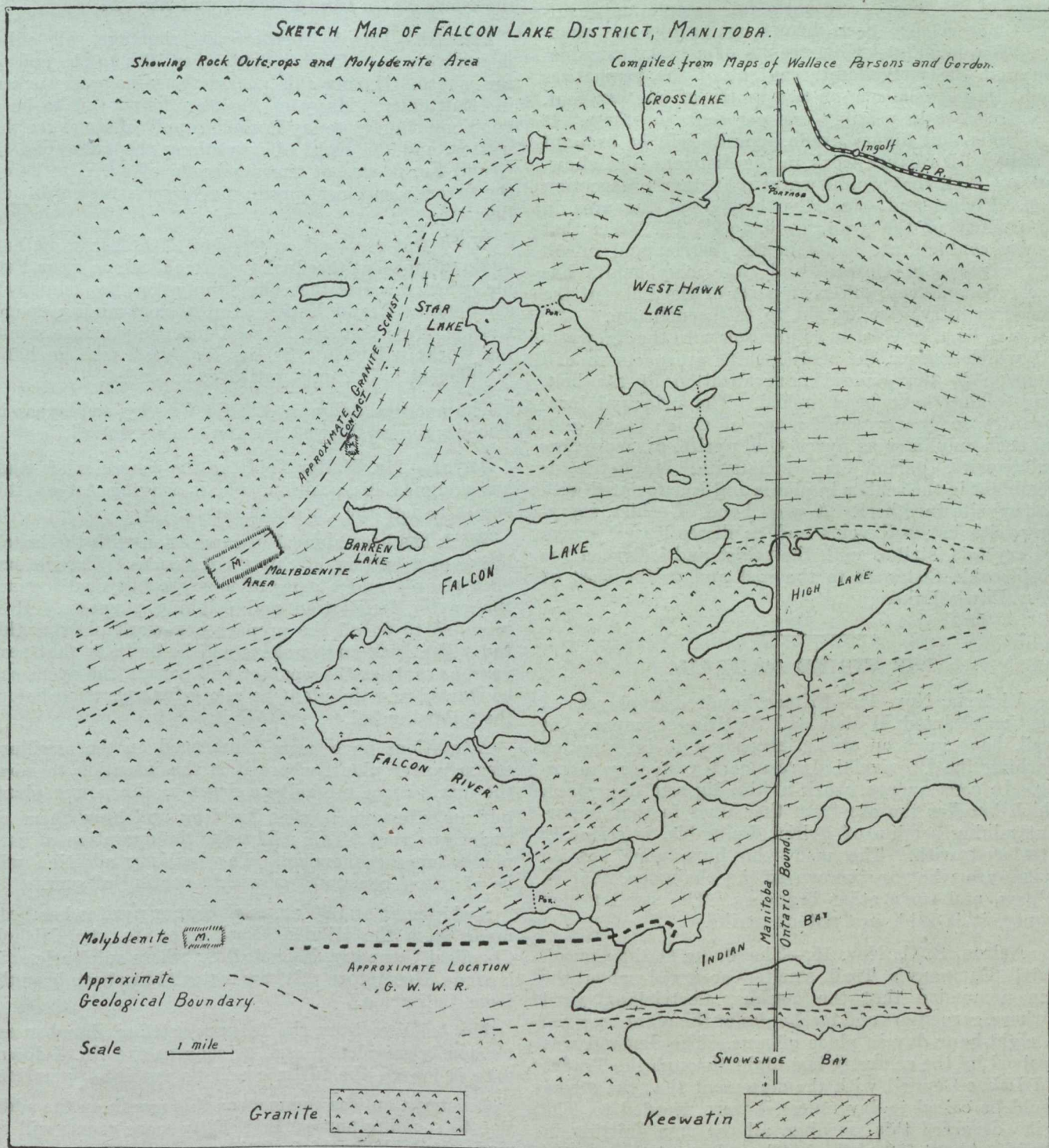
The pegmatite dykes, which are of interest in connection with the molybdenite, lie in the schists parallel to the granite contact, as a rule, but in places they cut the schists at small angles and minor pegmatitic masses cut the cleavage planes of the rock at almost right angles. The dykes in the vicinity of the molybdenite prospects are confined to a band of the Keewatin about a half mile wide running parallel with the contact and adjacent to it. Typically the dykes are from two to ten feet wide and occur commonly in groups or pairs. Commonly they have a lens-shaped form and may be split more or less by bands of schist. Individually the dykes do not appear to be very persistent in width; but on the other hand there is a persistent zone of dykes, many of which are almost joined. Some individuals might be traced several hundred feet; but there was insufficient stripping to decide this point positively. Larger masses of pegmatite occur in the district. Near the smaller molybdenite area, as indicated on the map, is a wide, rather irregular mass of pegmatite made up of large feldspar crystals, some of them as much as a foot in diameter, in a matrix of quartz carrying abundant small muscovite crystals. There were no signs of molybdenite in this mass.

The pegmatites vary in texture from coarse-grained varieties with large crystals and masses of mineral up to several inches in diameter to fine-grained types which grade in places into graphic granite and aplite. The prominent minerals of the dykes are quartz and feldspars with minor and varying amounts of muscovite mica, which is never in commercial sizes. Small red garnets are common and are abundant in places in the fine-grained pegmatites and in the aplite. Beryl crystals were noticed in two places; but they do not appear to be abundant. In the pegmatitic mass, apparently as an original constituent of the rock, is molybdenite occurring in a variety of forms. Irregular prismatic crystals up to two or three inches in diameter and coarse radiating groups of lamellae of even larger size are found distributed here and there through coarse and fine-grained pegmatite. Fine-grained massive specimens were found in one place in a massive quartz phase of the pegmatite. Small grains and lamellae are present in parts of the aplite.

On one of the claims in the main group a small dyke cuts across a vein of reddish quartz which is from two to three feet wide and lies parallel with the schist. In this quartz vein, within a few feet of the dyke, are cross-fractures which carry lamellae of molybdenite. This is the only occurrence noted in the district where the molybdenite is secondary in the rock. Another occurrence of special interest was seen on a claim located in the smaller area as indicated on the map. Here a quartz vein from two to three feet wide, carries along the walls numerous feldspar crystals and small masses with an occasional lamellar mass of molybdenite. The molybdenite content of this vein is small, but the occurrence of bismuth in small grains in the quartz is of some interest, especially as it was not noticed in any of the true pegmatites.

Before discussing the molybdenite content of the dykes it seems worth while to suggest that the mineral, owing to its softness and toughness, is not apt to make a good showing on the weathered surface for the reasons that ice-action would tend to pluck out and to wear away the molybdenite from the surface. Any that might be spared this erosion would be apt to be

could only come from those parts of the dykes which had been opened up by blasting. In practically all of these pits crystals and masses of molybdenite, commonly one, two and three inches in diameter, were exposed. The showings were much better in some openings than in others. At one point where a shot had been put in exposing about one square yard of fresh pegmatite, three crystals of molybdenite were



weathered out later or at least disguised by alteration products. In support of this view is the fact that openings made in the dykes have invariably made better showings than would have been deemed possible from the aspect of the unbroken surface. Though molybdenite masses, usually small ones, were seen on the surface in several places, evidences of quantity

exposed, which taken together, it was judged, would weigh from one-half to one pound. In the blasting out of seven or eight cubic yards of the dyke-rock, twenty or twenty-five pounds of loose crystals and masses were gathered, while in the large unbroken blocks of rock piled on the dump, could be seen many more.

The prominent type of occurrence of the molybdenite is in large crystals and lamellar masses which could be readily hand-picked into an almost pure product. There is another type which if found in sufficient quantity would be of economic importance: the fine-grained variety as found in aplite.

The nature of the ore makes sampling out of the question in the present state of development of the properties. It would be necessary to crush large masses of ore in order to get a fair sample and insufficient material has been thrown out to give this quantity. It was judged from results of a hasty examination that the molybdenite content of the pegmatites would lie between one or two tenths of one per cent. in some cases to possibly one per cent. in others. It is possible that higher grade deposits will be brought to light with further work in the district. The showings are such that would warrant further prospecting on the claims and generally throughout the area in the vicinity of the granite contacts. The facts that granite contacts are many in the district and in adjoining parts of Ontario and that molybdenite has been reported from different parts of the Lake of the Woods country give weight to this conclusion.

It may be of interest in connection with the Keewatin belt which carries the molybdenite prospects to call attention to the general mineralization of the belt. Many claims have been staked. The principal locations are on quartz veins, many of which carry gold and such sulphides as pyrrhotite, pyrite, arsenopyrite, chalcopyrite, galena and sphalerite. Magnetite is prominent in the schists in places and is associated with chalcopyrite in others. A wide band of schist, carrying pyrite in small veins and as disseminated grains and crystals, strikes with the schist and is traced for considerable distances to the east and to the west of West Hawk Lake.

THE STRIKE AT TRAIL.

Victoria, Nov. 16.—Fifteen hundred employees of the Consolidated Mining and Smelting Company, at Trail, have gone on strike, according to information reaching the Provincial Government yesterday morning. In consequence, work at the big smelting plant, which handles the ore from the mines in that important mining section of British Columbia, is seriously interfered with. The men who have gone out on strike, are what are known as the chainmen, that is, helpers, and some other branches. The smelter men proper, it is said, are not on strike.

Nelson, B. C., Nov. 15.—The strike at the Consolidated Company's Trail smelter occurred when the men demanded that the masons, electricians, yard workers, carpenters and mechanics at the plant be given an eight-hour day in place of nine. The demand was received by the company last night through the Trades and Labor Council with the statement that the strike would be called to-day unless it were acceded to. The strike occurred this morning, all the men quitting in a body. About 450 of the 1,500 workers at the smelter are affected by the demand for eight hours. Negotiations with a view to a settlement have started, but without any result so far. The company had an agreement with the local union of the Western Federation of Miners, and states that if it had dealt with the Trades and Labor Council it would have broken that agreement. The men contend that they are entitled to the eight-hour day.

GRANBY CO.'S OPERATIONS.

The November number of the Granby News, as also did earlier issues, contains interesting news of Granby properties, including informative contributions by several of the company's officials, news from its several centres of activity, and miscellaneous information also of interest. The following items have been taken from the News Notes from Phoenix and Anyox:

Phoenix.—Due to further coke shortage, all shipments were cut off from September 19th to the end of the month. During this period the mine was worked intermittently. Many of the men found this to be a good opportunity to lay in their supply of wood for the winter, and the right of way along the auto road to Grand Forks was at times a scene of activity, being the favorite and most productive area in the cordwood line.

Word was received on October 24th that work had again stopped at the Coal Creek coal mines, near Fernie, whence comes the coke supply for the company's smeltery at Grand Forks. Unless coal-mining operations shall be resumed at once, inactivity at the smelting works will result, as the supply of coke on hand is sufficient to last only until November 1st.

The average daily wage paid Granby employees in Phoenix during August and September was \$4.75.

Anyox.—Mr. Walter Noble, of the general office staff, has resigned his position, and is leaving Anyox this month to join the Canadian forces.

Work has been started in connection with the installation of a battery of thirty coke-ovens. The site has been cleared and a gang of men are busy getting out timber for foundation and cribbing purposes. It is intended to do all the preparatory work possible this fall. The dock and bunkers will be built, so that next year, as early as the weather will permit, the ovens can be started and the plant be ready for operation before the following fall.

Alterations have been commenced on the auxiliary steam power plant, where it is the intention to move the auxiliary plant boilers closer to the power plant, put an extension to that building and have them all under one roof. This will make the operation of both plants more economical. The building addition will be of frame construction with a coating of gunite.

A shipment of 1,000 tons of copper pyrites has been made from the Hidden Creek mine to the Nichols Chemical Company, Barnet, B.C., where sulphuric acid is made. Heretofore this raw material has been brought from California.

The brickwork on the furnace settling chamber extension is completed, and, as soon as the No. 4 down-take is moved the furnace will be put into operation.

Construction was commenced this month on the addition to rooming house "B." Fifty more rooms will be made available by this addition.

Work on the brick structure of the converter chamber is in progress.

The roof is almost complete on the new converter building extension and the painters are busy giving the final coat.

The experimental mill put in operation the three shifts on Sept. 22nd.

Oxygen Mine Rescue Apparatus

By F. W. Gray.

The mining profession is once more indebted to the United States Bureau of Mines for a well timed Bulletin. The result of the latest enquiry of the Bureau is contained in Technical Paper No. 82, prepared by Dr. Yandell Henderson and Mr. James W. Paul, formerly chief of the Department of Mines of West Virginia, and from 1908 to 1915 in charge of the mine rescue work of the Federal Government of the United States, and deals very thoroughly with the characteristics of existing types of oxygen mine-rescue apparatus, their limitations, their possible improvement and their physiological effects on users.

Dr. Henderson, as Professor of Physiology in Yale Medical School, is a physiologist of repute, and in his knowledge of the physiology of breathing, occupies a place in medical circles in the United States comparable to that occupied by Dr. John Haldane in Britain. Mr. Paul's record is well known to all who followed the progress of the use of oxygen breathing apparatus on this side of the Atlantic, and his researches cover the entire period during which oxygen apparatus has been used in connection with mine rescue work on this continent. The writer brought one of the first—if not the first—Draeger apparatus to this side in October, 1907, and it was about this time that the United States Bureau of Mines commenced its investigations.

The findings of the authors of this Bulletin may therefore be regarded as embodying the result of the widest experience, under wide variations of circumstances, and as being free from preconceived ideas or the bias which has in the past militated against the development of oxygen breathing apparatus as applied to mine operations.

As is pointed out by the Engineering Supplement of the "Times" the enquiry of the U. S. Bureau of Mines covers the same ground as will have to be covered by the committee recently appointed by the Department of Scientific and Industrial Research in Britain, the duties assigned to this committee being: "to enquire into the various types of breathing apparatus used in coal mines, and by experiment to determine the advantages, limitations and defects of the several types of apparatus, the improvements possible in them, and the advisability of standardizing the types used in mines." No doubt the British Committee will avail itself of the accumulated experience of our U. S. friends, and in this, as in other matters, there will in these days of closer approach, be no hesitation on the part of the British investigators to collaborate with the Bureau of Mines.

The Bureau of Mines of the United States is an institution having features that should commend themselves to those who urge a Ministry of Mines in Britain, and to those who have urged the necessity for an extension of the work of the Department of Mines in Canada. However, we are so far fortunate that we may avail ourselves without charge of the researches of the U. S. Bureau, and in the present instance, as in others that have preceded it, the mining profession of Canada will appreciate the international courtesy which extends the free distribution of literature of the Bureau to ourselves.

The author points out that at the present time the apparatus sold in North America, consists mainly of

three types—the Fleuss or Proto, of English manufacture, and the Draeger and the Westfalia, made in Germany. In their broadest features these three forms of apparatus are identical, and the authors consider it probable that "all future apparatus will have to be built on fundamentally similar lines."

The essential features of the three main types of apparatus are, (a) a breathing bag, (b) a supply of compressed oxygen, and (c) the provision of some alkaline substance to absorb carbon dioxide.

The authors do not consider the liquid air apparatus or devices of the "pneumatogen" type offer much prospect of future development.

The most interesting feature of the Bulletin is the announcement that the Bureau of Mines has itself undertaken to develop an apparatus that shall embody the good and essential features of the three main types of apparatus in use, and eliminate the defects so clearly revealed by the enquiry. The chief defect of the breathing apparatus hitherto used is, in the opinion of the authors, its failure to respond quickly to the tremendous variations in the rate of breathing and the consumption of air which accompanies the performance of violent work by individuals of varying physical type.

This lack in the typical apparatus was, many years ago recognized by Sir W. E. Garforth, the inventor of the "Weg" apparatus. This apparatus was fitted with an automatic oxygen feed valve, and was an early endeavor to meet a recognized need.

The new type of apparatus developed by the Bureau of Mines is the result of two years' work by Mr. W. E. Gibbs, a mechanical engineer of experience and skill, assisted by the authors of the Bulletin, and it differs from the standard types particularly in respect to three features, namely:

"(1) The control of the oxygen supply, (2) the arrangement of the alkaline absorbent, and (3) the prevention of excessive heat from the reaction between the carbon dioxide exhaled and the alkali."

"The rate of oxygen supply is automatic. The wearer of the apparatus breathes into and from a small bellows. When the bellows is sucked flat a valve is opened, which allows oxygen to feed in rapidly from the compression tank, through a reducing valve of improved design. Thus, the rate of oxygen supply is automatically controlled by the wearer's breathing, and, as tests have shown, adjusts itself with equal readiness and adaptability to his needs during rest, when the consumption per minute is only 300 to 400 c.c. and during vigorous exertion, when it is between 2,000 and 3,000 c.c. per minute."

The authors condemn, without qualification, the use of helmets, because of the "dead space" they contain, the great difficulty in keeping them tight, and preventing accumulations of carbon dioxide within the helmet portion of the breathing circuit.

The use of an injector such as is employed in the Draeger and Westfalia apparatus is condemned. The authors are convinced of the dangers of apparatus of the negative pressure type and consider a positive pressure is desirable, but not to exceed a pressure at the mouthpiece of more than 5 centimeters (2 inches) water gauge even during the most forcible expiration.

The authors lay great stress on the necessity for complete absorption of carbon dioxide from the breathing air, and at the suggestion of Professor Henderson, trial has been made, instead of fused alkali, as in the Fleuss, Draeger and Westfalia types, with alkali containing a small percentage of water of crystallization, approximately 1 per cent., or one molecule of water to two of hydroxide.

The avidity of the alkali for moisture being thus already partly satisfied, the amount of heat produced is considerably less than in other forms of apparatus and the alkali is efficient at a much lower temperature.

The importance of keeping down the temperature of the regenerator cartridges is well known to those who have had occasion to use breathing apparatus under such conditions as, for example, those attending a mine fire. At the Sydney Mines fire in 1908 the cartridges became so hot as to burn the backs of the men who were wearing the apparatus.

The authors point out the insidious effects of breathing air defective in oxygen and quote the results of some simple but remarkable experiments showing how quickly, and with what little warning a man may collapse under these conditions.

The following account of one of these experiments may be quoted from the Bulletin:

"A young man was set to perform an experiment to determine the rate of oxygen consumption at various rates of work on a stationary bicycle. By means of a mouthpiece and tubing he breathed from and into a large gasometer through a can of soda lime, which absorbed the carbon dioxide exhaled. Instructions were that the gasometer should be filled with oxygen at the beginning of the experiment, but through a mistake it was filled with air. After a minute's vigorous exertion on the bicycle the oxygen percentage had been so much reduced that the subject, who had no suspicion that anything was wrong, suddenly lost consciousness and fell off the bicycle, twitching and kicking as in a convulsion. In a few minutes, after breathing fresh air, he recovered consciousness and seemed none the worse except for a slight headache. He had no recollection of what had happened."

The effects of breathing insufficient quantities of oxygen and those of breathing carbon monoxide are very similar, and the great danger that accompanies these conditions is the impairment of discretion and judgment which precedes the lightning-like suddenness of the eventual collapse.

The authors very properly point out the dangers inherent in the use of rubber in breathing apparatus, particularly in the dry atmosphere of North America, and especially in mining camps situated in an elevated region such as the Western and Northwestern States.

The authors make the following very serious statement:

"The inspection of the helmets kept to-day at various mines in America awaiting a mine accident, indicates that if ever used they are more likely to contribute to the loss of life than to decrease it." Unfortunately there is every reason to believe the statement of the authors to be only too accurate, and during the past ten years the writer has in the columns of the "Journal" repeatedly emphasized the fact that unless breathing apparatus are kept in good condition and worn only by trained men, their use under conditions of danger is an invitation to disaster."

In an article written for the "Journal" some years ago the writer likened mine rescue apparatus, and the

necessity for using it carefully, and keeping it in good order, to the rifle of a soldier; or to the use of the aeroplane, and in this connection the opening paragraph of the Bulletin puts the case very lucidly, to quote:

"Self-contained breathing or rescue apparatus, often popularly referred to by simple but misleading term 'oxygen helmet' is a device by which man is enabled to do work in places where he is by nature unfitted to go, to live and to work. In this respect mine rescue apparatus may be classed with the aeroplane and with diving apparatus, including the submarine boat. The loss of life that has attended the development of the aeroplane and the submarine is well known; the loss of life in the development of oxygen apparatus for use in asphyxiating gases is not so generally realized. That such development is accompanied by fatalities is not surprising, because penetrating the smoke-filled passages of a burning mine is quite as abnormal as for man to ascend into the air or to navigate and explore the water below the surface of the sea."

The main conclusions of the Bulletin may be quoted in extenso as follows:

"The helmet of the type used with the Draeger and the Westfalia apparatus should be entirely discarded. Any device of this type which may be invented in the future should have a 'dead space' not exceeding 200 c.c., and should be tested with the utmost care as to its tightness upon the face.

"A self-adjusting valve should replace the fixed feed valve. Whenever the fixed-feed valve is used it should be set to a flow of not less than 3,000 c.c. a minute as a minimum, measured at 60 deg. F., and a barometric pressure of 30 in.

"The arrangement for artificial circulation in the Draeger and Westfalia apparatus should be eliminated and replaced by a natural circulation, but when those appliances are used in their present forms the automatic circulation should be not less than 75 litres a minute. The injector should be placed between the exhalation bag and the absorber so as to decrease to the smallest possible limits the area in which a negative pressure occurs.

"The weight of the whole apparatus should not exceed 35 lb.

"The absorption of carbon dioxide should be so nearly complete that the air in the circulation system during moderate exercise will not contain more than 0.5 per cent. of carbon dioxide, and at no time, even during the most vigorous exercise, more than 1 per cent. The absorber should be capable of fixing at least 2.5 litres of carbon dioxide a minute.

"A by-pass valve should be made a part of the apparatus, to be used in case of failure of the reducing valve, for refilling the breathing bag in case it is pressed flat, and for renewing the air contained in it in the event of poor absorption of carbon dioxide.

"An automatic relief valve that can also be operated by the hand or finger should be provided and placed on the exhalation bag.

"The inhalation and exhalation bags should have a combined capacity of at least eight litres, and if a single breathing bag is used its capacity should be at least five litres.

"The breathing bags should be protected against accidental compression when the wearer is crawling through a low passageway.

"The air within the circulating system should at all points be under a positive pressure not exceeding 1 c.m. water gauge, to ensure that any leakage that may occur shall be outward, not inward.

"All tubes and valves should be sufficiently large to permit the breathing of 100 litres of air a minute without undue resistance, with a positive pressure not exceeding 5 c.m. water gauge and no negative pressure even during the deepest and most rapid breathing.

"Pressure gauges should be regularly tested in comparison with a standard instrument. They should be calibrated in atmospheres and also in minutes of duration of the remaining oxygen supply, and should be placed where the wearer can easily see them, or be provided with some device that will warn him that the supply is nearly exhausted.

"Couplings and connections should be reduced to the smallest number possible and made strong enough so that even a heavy blow will not dislodge them, cause them to leak, or compress them so that the air cannot pass freely through them.

"The production of heat in the absorber should be reduced to a minimum, and an efficient radiating or cooling device provided.

"Parts of the apparatus worn on the back should be protected against damage when the wearer is travelling under a low roof. The valve regulating the oxygen supply, which in some forms of apparatus now projects to the side, should be protected against accidental closing."

The authors make but one slight reference to the use of breathing masks and respirators in the war. The use of gas masks at the front has a different object from the use of oxygen breathing apparatus under the conditions which are found in attendance on mine fires and after mine explosions. In the mine the difficulty is usually the absence of a sufficient percentage of oxygen to sustain life, whereas in offensive operations of the war the object is to remove from the air the poisonous gases which have been diffused throughout the atmosphere. There is here a considerable analogy with mine air, not necessarily deficient in oxygen, but containing a poisonous percentage of carbon monoxide.

There is no doubt that in some cases life could have been saved after mine explosions by the use of a simple respirator with the power of absorbing carbon monoxide, and there is some possibility of development and invention along these lines.

The use of gas masks, and also of oxygen breathing apparatus, has attained proportions during the war previously undreamt of. Many thousands of men, among them miners previously trained in the use of oxygen breathing apparatus, have during the war had experiences, which, when they are collated and made the subject of investigation after the war, will, it seems very probable, add greatly to our knowledge of both the physiological effects and the psychological effects of the use of oxygen breathing apparatus.

In the Allied countries and also in Germany, it is probable that the manufacture of gas masks and oxygen breathing apparatus for war purposes has entirely overshadowed the uses of these devices in peaceful pursuits, and in considering the future developments of oxygen breathing apparatus as applied to mining operations, it seems quite probable to anticipate that the experiences of the war will exercise no small effect.

The work of Messrs. Henderson and Paul is the most important contribution to the literature of mine rescue apparatus that has appeared in many years. It holds out the hope that the mining profession may be freed

from the often offensive pressure of the claims of manufacturers of rival apparatus, and that there may some day be available an apparatus which will combine all the good points of the standard types, while avoiding their defects.

In view of the unmitigated condemnation which mine rescue apparatus has met with in some quarters, it is encouraging to those who have always believed in the usefulness of these devices under proper supervision, to note the account of the accomplishments of the Bureau of Mines Rescue Corps since its formation.

During the seven-year period from January 1st, 1908, to January 1st, 1915, the Bureau Rescue men had attended a total of 283 mine disasters in which 2,700 lives were lost. Rescue apparatus was worn by 699 men; 92 miners were saved by apparatus men in the service of the Bureau; 768 were saved by other rescuers and 1,426 miners escaped unassisted.

In this connection it may be mentioned that the Draeger apparatus was used to a limited extent after the explosion at No. 12 Colliery of the Dominion Coal Company in July last. The undoubted suddenness with which death came to all the victims of this explosion gave little or no opportunity for rescuing life.

The majority of the victims died from the burns or shock inflicted by the concussion of the explosion, and those who died from monoxide poisoning can only have lived a few minutes. The apparatus was used for exploratory purposes, and two men traversed the greater part of the explosion area—before the ventilation was restored—with the aid of the apparatus. The saving of the lives of two men who were assisted out to fresh air by men wearing the Draeger apparatus was certainly in large measure, if not entirely, owed to the use of these apparatus.

It cannot be too often stated that the conditions which attend coal-mine explosions, particularly in large well-ventilated modern collieries, are such as to preclude the hope of rescuing any large number of victims alive.

The term "rescue apparatus" is an unfortunate one, and is responsible for many misconceptions of the true uses and the obvious limitations of any device of human ingenuity in the face of the elemental forces of nature which are unloosed with such overwhelming violence in a coal mine explosion.

For reconnaissance purposes, as an adjunct to a colliery fire brigade, for use in the recovery of an exploded mine, building stoppings, restoring ventilation and as the "avant courier" of the rescue parties, oxygen breathing apparatus has its well recognized value, but it is not a universal panacea, as some people seem to think. Breathing apparatus are nicely regulated, delicate mechanisms, not yet fully developed to perfection, and they must be used with discretion and by trained wearers of good physique with other essential qualifications of courage and intelligence.

The Bulletin should be read by every one interested in mining operations.

The Highland Valley Mining and Development Co., operating in Ashcroft mining division, is reported from Spokane, Washington, where its head office is situated, to have produced in October about 150 tons of concentrate estimated to run from 20 to 24 per cent. copper. Mr. Frederic Keffer is manager for the company.

The Mackenzie River Basin

The Canadian Last West

By Gerald M. Ponton.

Love of the romantic is inborn in man. What is more romantic than the truth? What is more interesting than to learn that some district till now thought of as a wilderness is in reality accessible and quite a habitable zone? Several months ago there appeared in the Atlantic Monthly an article from the hand of an Edmonton professor, picturing all that district to the north of Edmonton as the frozen north, a land of endless snows, snow-shoes, dog-sleds, trappers and Indians and wild animals. What a description. Is it wrong to destroy such pessimistic "idealism" by bringing out the fact that this great North, and last West in truth, is a land with wonderful resources, beautiful climate, millions of acres suitable for farming and withal not one whit less romantic because this is true.

What a time we Canadians had living down "Our Lady of the Snows." Is Canada less romantic as the "Granary of the Empire?"

The history of this north to the present from the advent of the white man at the end of the eighteenth century, can be mainly summed up as an era of the fur traders and slow settlement. It is difficult indeed to find an unbiased historian of the pioneers of this far north; but all tell of glorious adventure and achievement by men endowed with the spirit of "The Fore-looper" of Kipling.

"The gull shall whistle in his wake, the blind wave break in fire,
He shall fulfill God's utmost will unknowing his desire,
And he shall see old planets pass and alien stars arise
And give the gale his reckless sail in shadow of new skies.
Strong lust of gear shall drive him out, and hunger arm his hand
To wring his food from the desert nude, his foot-hold from the sand,
And his neighbor's smoke shall vex his eyes, their voices break his rest,
He shall go forth till south is north, sullen and dispossessed,
And he shall desire loneliness, and his desire shall bring
Hard on his heels a thousand wheels, a people and a king.
And he shall come back in his own track and by his scarce cool camp
There he shall meet the roaring street, the derrick and the stamp,
For he must blaze the nation's ways with hatchet and with brand
Till on his last won wilderness an empire's bulwarks stand."

The names of Alexander Mackenzie and Simeon Fraser will always be associated with the Canadian West as are the names of Lewis and Clark with the American North-West. Mackenzie and Fraser explored and at the same time established settlements and forts along the entire line of their explorations. The rapidity and permanency in which they did their work would be a marvel even in this generation.

Perusing the histories of these early Empire makers will bring many a delightful hour. Especially readable are the diaries, which have the human touch. The diary of blunt Samuel Hearn in his attempt and final success in reaching the Coppermine river is an epic. A Canadian historian states with regard to the history of the last 50 years of Canada: "In one sense it is not a dramatic tale; it has little of the ceremonial of Old World movements. But, none the less, it is a profoundly romantic story of the birth of a nation and of its passing from neglected obscurity into a conspicuous place." How true of the North.

The opening of 1916 was concurrent with the arrival of the Edmonton, Dunvegan and British Columbia Railway (E. D. & B. C. Ry.) at Peace River Crossing. Linking the outside world with all this Far North; linking the system of Great Waterways, the Saskatchewan, Athabasca, and the Peace with its supplements the Slave and the MacKenzie, this last Trinity indeed a great waterway. What luck it was that this railway with its companion the Alberta & Great Waterways Railway was planned, financed and started before the war and has been finished (has at least tapped the North) during the struggle. What a God-send it will be to those returning veterans with their well-earned land grants, and emigrants from war-ridden Europe, who will flock to the hemisphere where war has no place. The settlement of the North in the last few generations took place along the rivers and lakes and was thus restricted. The railway striking across country, with roads and trails being built, gives a greater chance for efficient settlement. A satisfied settler is a missionary agent.

Previously, supplies of food and barter went northward in winter only from Edmonton, and like points, while the roads were hard, and lakes, rivers and muskies frozen, to the various trading posts and settlements. Thence it was carried in summer by boats to posts further up or down the rivers. The outgoing freight was then entirely furs, the result of barter.

Now it is quite usual to see farming and mining machinery, as well as food supplies, and less and less trading stock, go north by railway. We see the train denuded gradually of its load at sites of towns to be. Now on the rivers we see grain-loaded scows floating down to the nearest shipping point. On the trails we meet herds of cattle outward bound.

A lasting impression from a trip to the North is the picture of one of the old established Posts, situated at a crossing or ford of a river, the junction of rivers, or the end of a lake. Always the site was wisely chosen. We view from the distance three separate groups of whitewashed buildings, one-quarter to one mile apart as the case may be. On closer view the first group asserts itself as several solidly built log buildings, one at least of two stories. Adjoining these are corrals and stables. Conspicuously placed is a large flag staff with a Union Jack flying, pathways and roadways are lined with whitewashed boulders. About the buildings we glimpse men in uniform, and we know this to be a R. N. W. M. P. Barracks—the headquarters of a detachment of that body of men whose record for efficiency in the prevention of crime,

and of bringing the wrong-doer to justice, has never been equalled.

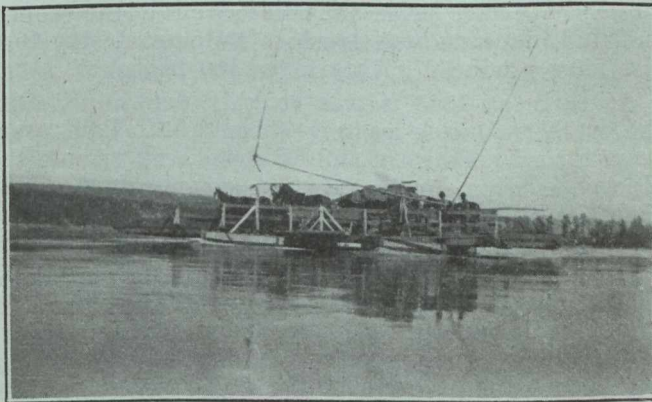
The second group is now in full view, its buildings are more elaborate and substantial than either of the other groups. Large fenced-in gardens surround them on every side. From the large cross displayed on the buildings we recognize the Roman Catholic Mission, often of French origin. These establishments founded and carried on by representatives of that church which has led the world as missionaries, who are as much at home on the forest trail as in the teeming cities. The priest, with his instilled knowledge of psychology and with his picturesque, ceremonious religion succeeding where his brother priest of a rival church fails.

Assuming that we are travelling by water we find that we are going to land near the third group. Prominently displayed on some building we note the legend "The Hudson's Bay Company." Perhaps on

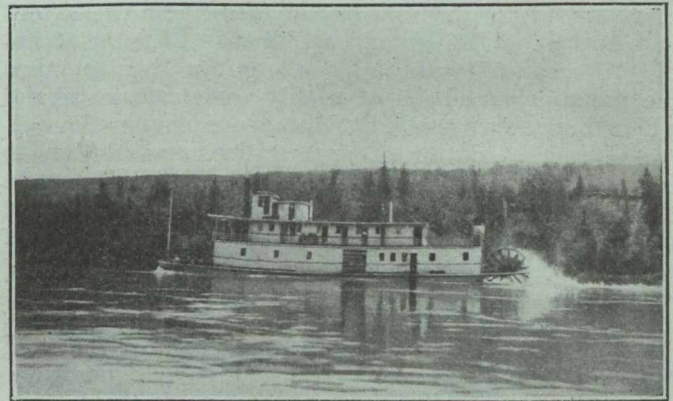
black, cinnamon, and the silver tip and grizzly in the foothills and mountains, are in their element and the many smaller fur-bearing animals are trapped successfully. Game birds, and especially ducks and geese, make this a hunter's paradise. The rivers and lakes teem with fish; the lakes with that greatest of all commercial fish, the white-fish. It is to be hoped that the fisheries will be protected to the full and that the piracy that existed in Eastern waters will be prevented.

Mineral Resources.

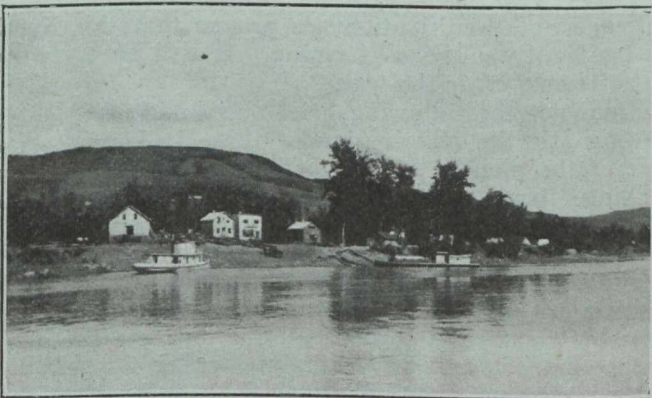
Until further accurate knowledge is gained the resources of minerals can only be lightly touched on. The asphalt or tar sands outcropping along the Athabasca river are especially noteworthy for their extent, and if an economical method of mining and extraction can be evolved, the "Better Roads" movement will make great forward strides. These tars being



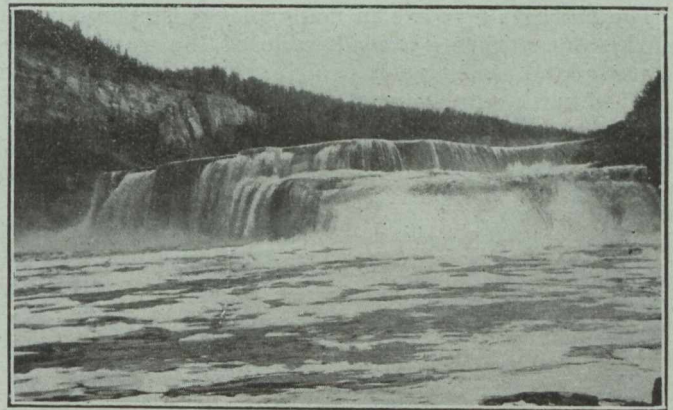
Ferry at Peace River Crossing.



Str. "Northland Call" on Peace River.



Hudson Bay landing, Peace River Crossing.



Falls on Hay River.

Photo by A. E. Cameron

Courtesy G. S. C.

the roofs we see displayed "Great Traders of Great West," and always that Coat of Arms of the Gentlemen Adventurers and the motto "Pro Pelle Cutem," variously translated as "A hide for a hide," "We'll skin you for a hide," etc. Loungers that were about the buildings hasten to the landing and we realize that this last group constitutes the common meeting place of the North. For miles surrounding this trinity of forces are many Indian encampments; some of shacks, some tepees, some harboring local tribes, others tribes from a distance who have brought the results of a winter's work to trade, and to receive treaty money. In the hunting and trapping seasons these encampments are deserted.

One can yet in this North shoot for meat. Moose, red deer and caribou abound. Before very long the hunting will be restricted to seasons. The sly bruin,

but a residuum of oil, together with the many natural gas seepages, offer great encouragement to the oil prospector. No doubt oil will be discovered in some broad, well defined dome where the oil has been stored.

The placer deposits of gold of the Upper Peace River have been panned for generations, the gravel bars bringing in a living wage at least. Tales of panning are many and almost fabulous. In years to come gold dredging will be an established industry.

The bituminous and semi-anthracite beds of coal along the Eastern slope of the Rockies are still to be developed. They will doubtless prove as wonderful as their continuations to the south, viz., Jasper Park, Brazeau, Bankhead, Blairmore and like fields.

The Pre-Cambrian rocks of Ontario are great producers of metals and it is not impossible that the

Pre-Cambrian plateau in this Northland will bring like results, especially along the contacts. Generally speaking, however, the same degree of metamorphism is not noticeable.

Already tales are coming from the upper sources of the Peace, far beyond the Rockies, of lode deposits of copper, silver, gold, etc.

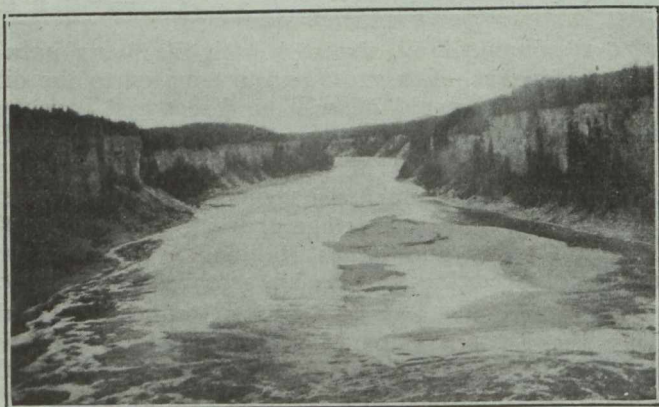
The Peace River Pass through the mountains at its summit is but 2,500 ft. above sea level. Is there any wonder there is talk of this being some day the main railway route, the outlet for Western wheat to the sea ports?

As a field for geological study this country is perfect; the transmountain passes giving access to the mountains. The deep river valleys present well defined cross-sections. The rivers, flowing opposite to the direction of the general dip of the formations, bring to view successively the rocks of the various ages, making easier the search for fossils. The network of rivers allows the surveyor to determine the extent and axis of anticlines and synclines. Of interest are the "Boccanes," especially along the Smoky (thus the name) river; beds of highly carbonaceous shales which have by so-called spontaneous combustion become fired, a matter of superstitious speculation to Indians, and the friend of "wildcat" oil boomers who will have it that oil is the cause of the rumpus, the outcroppings of asphalt, and seepages of natural gas. I have cooked many a meal over a jet of gas issuing from the gravels along the Peace river. Of interest also are the placer deposits and their origin, the coal lands with their multiple system of faulting, to be worked out in detail before extensive operations can be economically started; the uncomformable contact of the Cretaceous and Devonian and, beyond, the Pre-Cambrian Plateau.

The river valleys are in many places timbered with marketable spruce. Considerable of the upper levels is park land, some open prairie, the balance densely covered with poplar, aspen, etc. In the mountains huge stands of timber are found.

Agricultural Possibilities and Climatic Conditions.

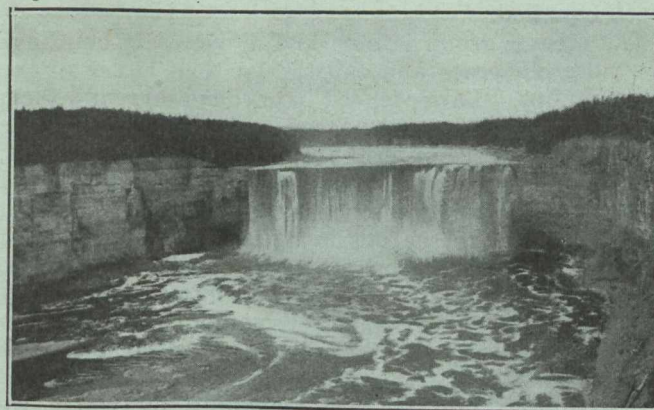
Relative to the adaptability of this country to farming we can go back as far as 1809. On July 21st of this year while Europe was deep in a war of nations, Daniel Harmon of Vermont, who owned some shares in the North-West Company, at that time a rival of the Hudson's Bay Company and now incorporated with it, wanted to see and thus became a sojourner of the Peace River District, entered in his diary: "We have cut down our barley and I think it is the finest I ever saw in any country. The soil along this river



Gorge, Hay River.

Photo by A. E. Cameron

Courtesy G. S. C.



Falls on Hay River.

Photo by A. E. Cameron

Courtesy G. S. C.

is excellent." On Oct. 3rd of the year following he wrote: "We have taken our potatoes out of the ground and find that nine bushels which we planted May 10th last have produced a little over 150 bushels."

As early as 1843 it was roughly determined that the Isothermal line passing through St. Paul from there turned northward and extended well up into the Mackenzie River Basin. "Spring opening at the same time along the great line of prairies from St. Paul to the Mackenzie river."

In 1875 that veteran Professor John Macoun states of the country west of Peace River Crossing: "It would be folly to attempt to depict the appearance of the country, as it was so much beyond what I ever saw before that I dare hardly make use of truthful words to portray it," and Prof. Macoun was first and last an agriculturist.

Every year each with its substantial increase of acreage under cultivation has proven that this North is eminently suited to farming. It will surely come into its own after the war.

Does not the following brief outline of a summer's outing stir the imagination of those looking for the life of the pioneer. "We took train from Edmonton, having there partly outfitted. Arriving at Peace River Crossing we completed the outfits and next day took boat for Hudson's Hope, the gateway to the Mountains. There, after many pleasant days spent in fishing in the mountain streams, a substantial raft was built sufficient to hold all the outfit, a fire-place was constructed at one end for cooking the mid-day meal if necessary, and the long journey by river was commenced. The outfit included a 16-ft. canoe. Turn about, two managed the raft, while the other two with the canoe explored to their hearts' content. Each morning a pre-arranged distance of travel being decided upon. We shot our first bull moose the second day out. This kept us in meat the whole trip when we were without birds or fish.

"Leaving the grandeur of the Rockies we drifted down to Peace River Crossing and then to Fort Vermillion, some 600 miles further. Fifteen miles below Vermillion we came to "the Chutes," the only restriction to navigation from Hudson's Hope to the Arctic Ocean. Soon we were in the Slave river, then 750 miles further brought us to Great Slave Lake. Crossing this we reached the Mackenzie river and had a straight way to the Arctic open before us. At Fort Norman, much against our inclinations, we stopped and had just a few days' wait till picked up by a Hudson Bay boat. On our return we left the Slave river and

returned to Edmonton by way of Lake and River Athabasca to Athabasca Landing and there took train. We were four months in the open and each day brought its quota of adventure, and every mile some surprise was encountered by reason of the constantly changing scenery."

And all this is the heritage of Canadians, and I have spoken of only one North, while there are many such waiting to be claimed. We must all work together to claim it in a manner that will be permanent, holding it and improving it in trust for future generations.

This true North, this great public domain, will be developed into truly a land of gold, a land of coal, a land of grain, if, with public spirit and progressive encouragement, it is made as it should be, "A land of the Willing Hand."

PERSONAL.

Mr. J. B. Tyrrell sailed for England on November 14th.

Mr. W. G. Anderson has resigned as manager of the Ore Chimney Mining Co.

Mr. M. Y. Williams, of the Geological Survey, Ottawa, addressed a meeting of the Toronto branch of the Canadian Mining Institute on Saturday, Nov. 24. He told of recent oil discoveries in Ontario.

Mr. H. E. T. Haultain addressed a meeting of the Electrical Club of Toronto on Friday November 23. Prof. Haultain, who is Vocational Training officer for Ontario, spoke on the work being done for returned soldiers.

Mr. R. G. McConnell, Deputy Minister of Mines, has returned from England.

Mr. C. W. Knight, Assistant Provincial Geologist has returned to Toronto after spending the field season in the Sudbury district.

Mr. P. E. Hopkins, who has been mapping gold areas in Northern Ontario, has returned to Toronto.

Mr. W. E. Segsworth is visiting Western cities in connection with the work of the Vocational Training department of the Military Hospitals Commission. He is expected to return to Toronto early in December.

Mr. Geo. C. Mackenzie of the Mines Branch, Ottawa, was in hospital last week for a minor operation.

Mr. Geo. Chapman of the Minerals Separation North American Corporation, who attended a meeting of the Toronto branch of the Canadian Mining Institute at Toronto, and a meeting of the Mine Managers Association at Cobalt, last month, has been at Houghton, Michigan, in connection with the installation of flotation at the White Pine mine, one of the C. and H. subsidiaries.

Mr. Charles O'Connell has resigned as manager of the Tough-Oakes mine. He is now managing the Boston Hollinger mine, Boston Creek.

Mr. A. Angus of Cobalt has succeeded Mr. C. O'Connell as manager of the Tough-Oakes gold mine, Kirkland Lake.

Mr. E. P. Mathewson gave an address on nickel at a meeting of the Royal Canadian Institute in Toronto on Nov. 24. He will speak on the same subject in Montreal at a meeting of the Montreal branch of the Canadian Mining Institute this week.

Mr. H. E. Miles, chairman of a committee on speeding up production of munitions plants in the United States, addressed the meeting of the Toronto branch of the Canadian Mining Institute on Nov. 24.

Twenty-three vocational training officers of the Military Hospitals Commission attended the meeting of the Toronto branch of the Canadian Mining Institute on Saturday, Nov. 24.

Mr. E. V. Neelands is in Northern Manitoba. His address is care of Bank of Commerce, The Pas.

Mr. A. J. Young is the Liberal candidate in North Toronto.

Mr. G. G. S. Lindsay has been campaigning in Northern Ontario in support of the Government.

TEMISKAMING AND HUDSON BAY.

President George Taylor in a report to the shareholders of the Temiskaming & Hudson Bay Mining Company, says of operations during the year ending August 31st, 1917:

Work at the No. 1 Mine at Cobalt has been carried on continuously throughout the year, with very satisfactory results. A total of 17,525 tons of ore was hoisted, from which 261,887 oz. of silver, with a net smelter value of \$192,097, was obtained. This silver was produced at a cost of 43½¢ per oz., including selling costs and all charges.

The manager's report shows present ore reserves on a conservative valuation of 107,614 oz. There is every indication that these reserves will be largely increased, and probabilities of new veins being discovered in the favorable formation still remaining to be explored.

The financial statement of the operating company shows a total income of \$190,992, and a total expenditure of \$96,043, leaving a profit on the year's operations of \$94,949. The high price of silver has been of great benefit.

In the Dome Lake Mine at Porcupine work has also been carried on continuously throughout the year. Extensive diamond drilling operations were successful in locating a number of good ore lenses at greater depth, which are yet to be developed. In the cyanide plant installed, the experimental filter drum, which had been put in under guarantee from the maker, proved unsatisfactory and was discarded. Arrangements are being made for the installation of a standard filter to replace this. A change in management was made during the year, and under the present manager work has been proceeding satisfactorily. At present ore reserves are 9,089 tons, with a gold content of \$82,008, and the indications are that this figure will be materially increased during the next few months.

The Hudson Bay Mines Limited has continued to finance the Dome Lake Company by making advances when necessary. Recent reports have been most encouraging, and the directors expect that, with the completion of the cyanide plant by the installation of a standard filter, the Dome Lake property will be on a profitable basis.

No work was done on the other claims, situated at Gowganda and Kirkland Lake, but patents were obtained for the Kirkland Lake properties, and the directors believe that these claims will prove to be very valuable. The Kirkland Lake camp is rapidly developing, and excellent results have been obtained there on adjoining properties during the year. It is the intention of the directors to develop these claims thoroughly.

A FEW PATENT POINTS.

By Wm. Rich.

Undoubtedly the greater number of inventors, as well as the public generally, conscientiously believe that the main purpose for which patents are granted is to assist the inventors. This, however, is incorrect. That is not the primary object of the patent system. A patent is not granted for the mere purpose of enabling one man to obtain a monopoly of a certain invention for a term of years to the exclusion of others, but it is founded on a desire to benefit the entire nation.

An inventor is under no obligation to disclose his invention. If new, the public was never aware of it and consequently never had any right to it. It is the inventor's option to divulge it or not, as he pleases. If he does not disclose it the public can never obtain any advantage from it.

The principle was recognized long ago in England where the Statute of Monopolies, enacted in 1623, made all monopolies illegal except those granted by parliament or those in respect of new manufactures or inventions. Upon this last clause is based the English system of letters patent for inventions.

From the above viewpoint, therefore, it is perfectly right and proper to offer an inventor some inducement to disclose his invention so that others may have the advantage of its use, even if they have to pay a price therefor; more, perhaps, than the cost to them if they made it themselves. But why should they not? Is not a man entitled to some remuneration for the work of his brains as well as for the work of his hands? To my mind, any outcry against the granting of a patent, is based upon unsound reasoning. Such an outcry can be based on nothing more than the desire of one man to appropriate to himself the result of another's brain, and wherein is this any more right or honorable than a desire for the appropriation of the work of another's hands, such as a beautiful chair, bookcase, article of silverware or other thing made by him. I, myself, can see no distinction. It is only a misappropriation, no matter by what high sounding name it may be called.

Another argument in connection with the patent system is that, even without its protection, the natural born inventor would work his brain and devise things merely for the pleasure of so doing. This is a great mistake. In the first place such people are few and far between. In the second place their inventions, while possibly unique, are generally of such a character as serve no useful purpose. Of course there are some exceptions. The rule, however, is that the actual inventor is of a more or less practical bent of mind, possibly one who is a poor business man, but at the same time one whose idea in inventing is to make money out of it. The old idea of an inventor as a crack-brained man with wheels in his head, and ambitious to invent a perpetual motion or some equally absurd contrivance has long passed away. Such men occasionally appear but, proportionally, they are about as rare as a two-headed calf or other freak of nature.

Patents in the United States were formerly granted for a term not exceeding fourteen years. By the Statute of 1870, the term was made seventeen years. In 1874 it was provided that if a patent had been previously obtained in a foreign country the United States patent would expire at the same time as the foreign patent expired, but in no case would its term be over seventeen years. Later by statute in force beginning

January 1, 1898, this limitation of term by reason of previously obtained foreign patents was removed and all patents on applications filed since that time have been granted for a term of seventeen years.

Frequently, a patent is infringed. In such case the only recourse of a patentee, if he cannot, by agreement, persuade the infringer to stop, is to sue him.

A patentee in one court decision was likened by a judge to that celebrated character in Holy Writ, Ishmael, in that his hand was against every man and every man's hand against him. While his condition is possibly not quite as serious as that of the biblical character, still it is true that his road is not at all smooth. Very few patents are at once accepted by rivals as being valid. Consequently in order to maintain his rights, if his invention is commercially valuable, it is necessary to bring suit against infringers. In defending this suit the opponents make use of all the defenses permitted by the statutes. The most common defense is that of anticipation by older patents or publications and to determine this the defendants cause to be made elaborate and extensive searches taking days, weeks and frequently months. In such search anticipating references are occasionally discovered.

Although the most frequent cause for the holding that a patent is invalid is that of anticipation by patents or by disclosure in publications, there are other reasons. A patent may be held invalid if it is proven that the invention has been in public use or on sale by any one, even the patentee, for more than two years before the application for the patent was filed, or it may be held invalid if it is proven that another party invented the subject-matter before the patentee; or if the patentee himself was not the actual inventor.

BYPRODUCT COKE OVENS ORIGINATED IN BELGIUM.

The First Aniline Colors were Made at Flenu.

A Belgian engineer, writing in Coal Age, says: "Belgium was a pioneer in the byproduct industry. The oldest byproduct company now in existence is the Societe Anonyme du Charbonnage des Produits, at Flenu, Belgium, which was incorporated in 1856 for the mining of coal and the manufacture of byproducts. The Produits company never ceased for a single day, since 1856, to make byproducts; and the first aniline colors ever put on the market were made at Flenu by this company at a time when its coke and by-product department was managed by the noted Belgian chemist Neyrincks.

"With the advent of the Coppee vertical-flue coke oven, the Produits company became quite a factor in the by-product industry. That was about 1870, at a time when Germany had only beehive coke ovens and when all coke made in Belgium was produced in retort ovens of the original Coppee style. Not only was Germany behind Belgium in getting rid of its beehive ovens, but even to this day there is not in Germany a single coke oven which is not of the vertical-flue kind first invented by Coppee, a Belgian, or the horizontal-flue style developed by Solvay and Semet, the former a Belgian, the latter a Frenchman, both living to-day. There are many people in this country, even among those in the byproduct industry, who believe that the byproduct oven is of German origin and development. To this day, Belgian coke ovens have always kept at least one step ahead of all others."

TEMISKAMING.

Mr. Douglas A. Mutch, mining engineer, Cobalt, Ont., in a report to the shareholders of the Temiskaming Mining Company, Limited, says in part:

Having been officially informed by your president and general manager on September 15th, 1917, that I was to make an examination of the Temiskaming mine and workings, work was commenced on the examination September 19th, 1917.

A preliminary examination was made with the object of becoming familiar with the underground workings, and laying out a system for the complete sampling of the various levels and stopes. Sampling was started on September 25th and completed October 31st. Particular attention was paid to the old workings, and every part of the mine was visited.

During the work practically every vein and fracture was examined and where warranted, thoroughly sampled. Between seven and eight hundred samples were taken.

It was found that practically all the ore reserves were in the form of broken ore laying on the stulls. The greater part of this broken ore being confined to stopes on Veins No. 19 and No. 21. It was found that the wall rock seldom carried commercial values. This shortened the work considerably.

Outside of the ore reserves shown as broken ore and ore in place, there are a few small pillars and ends of veins scattered throughout the mine.

Under the heading "Ore Indicated" are shown reserves which only show one face. These reserves amount to very little and the estimation is based on the sampling of ore exposed, and the conclusions arrived at, as to the ore likely to develop by a study of other similar deposits in the mine. Owing to the very erratic nature of the deposits, it is impossible to prognosticate what ore might be developed on certain veins whose present faces are barren.

An estimation of the tonnage in the tailings dump was made. This was difficult owing to there being no record of the contours of the surface underlying the tailings. A great many soundings were taken and a close approximation arrived at. This dump was sampled by the company, and the value which their sampling showed is used in estimating silver content.

Towards the close of the examination, the conclusion was reached that ore reserves were comparatively small, and that it was a question of rapidly developing new ore. At this time little or no ore was being broken or developed. This conclusion called for a study of the geological problems presented throughout the mine. With this end in view I employed A. R. Whitman, the eminent geologist, to consult with me on the work. Unfortunately this work was stopped by your management when about half completed. It is my firm belief that in order to intelligently explore the remaining portion of your property that this geological work should be completed.

Summary of Ore Reserves.

	Tons Ore.	Oz. Silver.
Positive ore	9,503	364,241
Ore partially developed ..	1,171	24,761
Ore indicated	142	4,798
Totals	10,816	393,800

Owing to extreme variability, even in short lengths of the deposits, also to undetermined dilution which has taken place in the first item of 8,019 tons, this summary should be qualified. I therefore estimate a

total gross ore reserve of 10,816 tons which will yield between 350,000 and 400,000 oz. Nothing that can be estimated as ore reserves at the present time has been left out of this estimation. There are several parts of the mine where development may open up new ore. The No. 15 Vein above the 400-ft. level offers chances. The eastern portions of your property above the 575-ft. level shows strong fracturing with little or no values. It is possible that work in this section might open up pay shoots. The No. 6 Vein on the North boundary may develop ore above the 500-ft. level.

Careful attention was paid to the Gans Lot. No indication of ore was found on this lot, the development work done has been fairly extensive and has decidedly lessened the possibilities.

The work on the 500-ft. level on this lot follows and cuts the most likely section of the property. There is nothing showing in the workings along the lower contact on your property to warrant further work on the 1,600-ft. level.

Tailings Dump.—A careful survey was made and numerous soundings taken on the tailings dump. This work would indicate a gross tonnage of 60,000 to 75,000 tons which could be recovered and treated at present selling price of silver, at a profit. Of this tonnage approximately 40,000 tons or 66 per cent. lies on ground not owned by your company. Surveying and soundings show a total of 1,227,737 cubic feet. In figuring tonnage 20 cubic feet were taken to equal one ton. Sampling indicates a value of 4.2 oz. per ton. This gives a valuation as follows:

	Gross Silver Content Oz.
Tons on Temiskaming Property;	
20,000 tons at 4.2 oz.	84,000
Tons on Adjoining Property;	
40,000 tons at 4.2 oz.	168,000
Total tons 60,000 to 75,000	Total oz. 250,000 to 300,000

Conclusion.—Total ore reserves at time of examination 10,816 tons, which will yield 350,000 to 400,000 oz. of silver. Little or no ore being developed or broken at the present time. Gans lot offers small chances for ore deposits. Exploration work on 1,600-ft. level or lower contact shows nothing to warrant further expenditure. Property is at that stage where life depends on the development of new ore. Exploration work should be governed by geological data, as ore deposits in this section are governed by geological phenomena. Geological work as started by A. R. Whitman and myself should be continued immediately to properly govern future exploration.

DOMES.

J. R. De Lamar, New York, president of Dome Mines, has made the following statement:

"At a meeting of the directors of the Dome Mines Company held this 26th day of November, it was resolved to shut down the mill for the present and continue shaft sinking and the development of the known ore bodies, besides keeping the diamond drills at work on exploring operations. This conclusion was arrived at because while formerly six dollar ore enabled the board to declare dividends at the rate of 20 per cent. per annum on the shares and augment the surplus, this same class of ore now does not pay a profit because of increased cost of labor and supplies, inferiority of labor, and because there are only men enough to be had, to keep the mill running at one-fourth of its capacity."

ORE RECEIPTS AT TRAIL, B.C.

During the month of October 49,955 tons of ore was received at the Consolidated Mining and Smelting Co.'s smelting works at Trail, West Kootenay, B.C. Of this quantity 33,340 tons was from mines operated by the company and 16,615 tons was of custom ores. This was the largest quantity received in any month of 1917, the nearest to it having been 43,979 tons in March. There was one monthly total in 1916—that of August of 47,614 tons—which came nearer to the total of October of this year. Without earlier records at hand to warrant a positive statement being made, the opinion may be expressed that this quantity of nearly 50,000 tons was the largest ever received at the Trail reduction works in any single month since smelting was commenced there.

The proportions of the several districts and divisions of the October total were as under:

	Tons.	Tons.
East Kootenay—		
Fort Steele Division	11,846	
Windermere Division	374	
Golden Division	87	
West Kootenay—		12,307
Ainsworth Division	1,666	
Slocan Division	4,659	
Slocan City Division.....	67	
Nelson Division	535	
Trail Creek Div. (Rossland)..	17,662	
Arrow Lake Division	2	
Trout Lake Division	90	
Revelstoke Division	31	
		24,712
Boundary—Greenwood Division ..		5,225
Yale—Kamloops Division		506
Yukon Territory		48
Alberta		33
Manitoba (Mandy, Le Pas).....		266
Ontario (Tip Top, Kashabowie)...		753
United States—		
Idaho	374	
Montana	73	
Washington	5,658	6,105
Total	49,955	

The total of ore receipts for the expired ten months of 1917 is 336,615 tons, of which 236,849 tons was from mines operated by the Consolidated Co. and 99,766 tons was of custom ores. The decrease as compared with the corresponding period of 1916 was nearly 80,000 tons.

The Chief Shippers of Ore to Trail.

The larger shippers of ore to the Trail smelting works during the month of October were, among the mines operated by the Consolidated Co., the Sullivan, in East Kootenay, 11,520 tons, chiefly of zinc ore; the Centre Star, Le Roi and White Bear mines, in Rossland camp, together 15,778 tons of gold-copper ore, and the Emma, in Greenwood division of Boundary district, 5,156 tons of copper-gold ore. The remaining 886 tons received from the company's mines was of silver-lead ores from East Kootenay, Ainsworth, Slocan and Nelson divisions.

Shipments of custom ores included 1,864 tons from the Le Roi No. 2 Company's gold-copper mine at Rossland; 1,178 tons of silver-lead (and probably zinc) ore from the Standard mine near Slocan lake; 861 tons chiefly of zinc ore, from the Lucky Jim mine, Slocan; 786 tons of lead ore from the Bluebell mine at Riondel, Kootenay lake; and numerous smaller shipments from various parts of British Columbia. Of the 7,205 tons of ore received from places outside the Province, the 5,658 tons from the State of Washington included 2,132 tons of lead ore from the Electric Point mine situated between the International Boundary line and the Northport district in which there is a smelting works in operation; 1,794 tons from the Quilp, which was one of several shippers of gold ore from Republic camp, and 583 tons of copper-gold ore from the United Copper Co.'s mine near Chewelah. The 753 tons of ore received from Ontario was all from the Tip Top mine, Kashabowie, and the 266 tons from Manitoba was from the Mandy mine, situated 65 miles north of The Pas.

EMBARGO ON IRON AND STEEL.

Ottawa, Nov. 16.—Exportation from Canada of iron and steel in unfinished or semi-finished forms, suitable for use in manufactures, will be prohibited by the Government, except under license from the Department of Customs. The classes of iron and steel goods upon the sale of which outside the Dominion an embargo is placed include pigs of iron, steel, ingots, billets, rods, shapes, angles and plates.

The prohibition of exportation is due to the serious shortage of iron and steel for munition making, shipbuilding and other manufactures. The United States Government has placed restrictions upon the exportation of iron and steel from that country, and has established a priority board to pass upon applications for export licenses. That board will give precedence to requests for steel for munition and other war supplies and for shipbuilding. It will then consider the

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Canadian manufacturers have conferred together with a view to laying their requirements before the United States priority board. It has been felt that at a time when Canada is applying to the United States for iron and steel, it should itself take steps to conserve the domestic output of such material for domestic uses. Export licenses will be granted by the Customs Department only for very special reasons.

SILVER PRICES.

Boston, Nov. 25.—The silver yield from mines in the United States and Canada will come under Government domination should negotiations now under way between representatives of the United States and Great Britain on the one hand and silver producers on the other result in fixing a price for the coming year. No price has been settled upon, but so far as can be learned it will probably be between 85c and 90c an ounce.

The silver output has been falling behind during the past few years from the zenith reached in 1911, when the world produced 226,200,000 ounces. The average price in that period was 49.9c an ounce. Requirements, particularly for coinage purposes, have grown enormously during the past three years and will continue to expand for the duration of the war.

The current year's silver yield will have been affected by the shutdown for several months of copper mines in Montana and Arizona. The ores from these properties carry silver values, particularly in Montana, where the Anaconda Copper Mining Company recovers silver as a by-product in large and important quantities.

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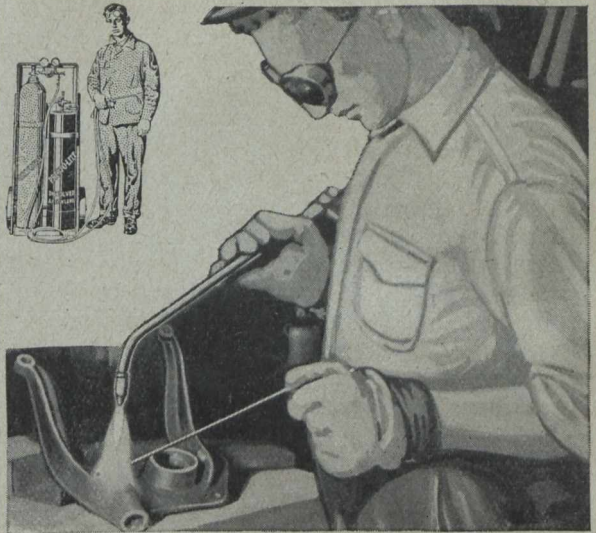
3,500 feet 80-lb. at	\$60.00 per gross ton
75 tons 45-lb. at	60.00 per gross ton
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2,500 feet 25-lb. at	40.00 per gross ton
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CANADIAN KLONDYKE.

Dawson, Y. T., Nov. 23.—The Granville Mining Company, a bond-holding company, including Chester A. Beatty, Herbert H. Hoover, the United States Food Controller, and the South African Goldfields Co., yesterday applied in the Yukon Court, before Judge MacAulay, for a receiver for the Canadian Klondyke Power Company and the Canadian Klondyke Mining Company, alleging failure to issue bonds for a loan of \$1,350,000, or to pay interest thereon, and alleging also other reasons. The acting manager, J. W. Boyle, jun., asked that an interim receiver be named until Mr. Mayers, a Victoria lawyer, could arrive here to act as his counsel. The court agreed, appointing Harold G. Blankman, Deputy Clerk of the Yukon Court, as temporary receiver. Mr. Blankman is now on the coast en route here.

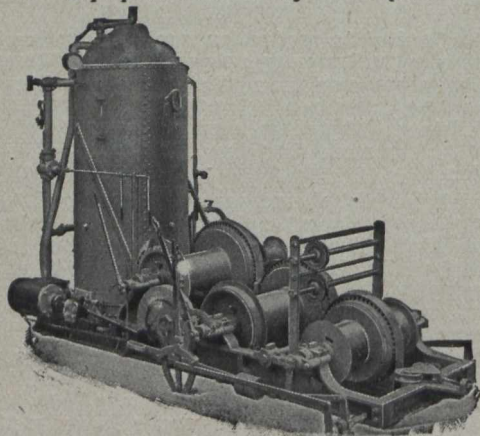
The applicants explained that it was not their intention to shut down the company's operation, but to secure an adjustment for the benefit of all concerned, and to arrange for immediate and steady payments of all obligations.

The mining properties of Arthur A. Boyle are defendants in a similar case.

Mr. W. C. Webster, who has been secretary and general manager and director of the Nichols Copper Company, No. 25 Broad Street, New York, for several years past, has resigned. Mr. Webster expects to take a rest before assuming further duties.

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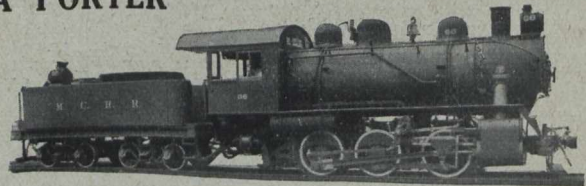
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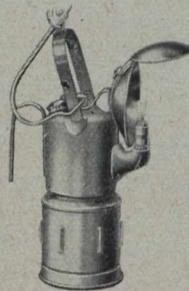
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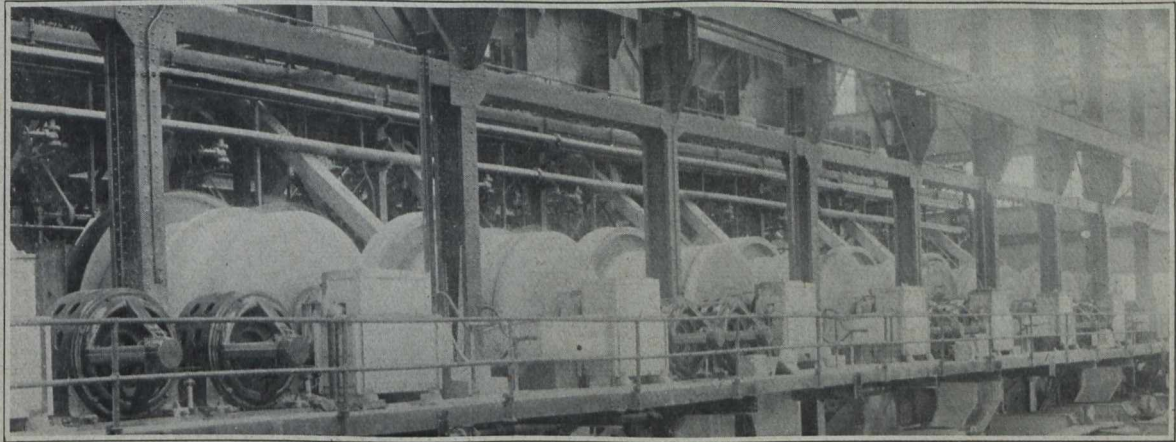
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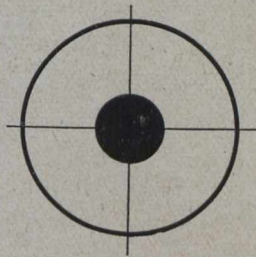
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- Building and Ornamental Stones of Canada (Western Provinces). Vol IV., by W. A. Parks, Ph.D.
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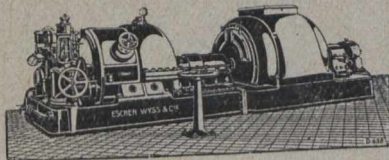
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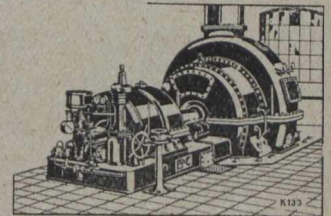
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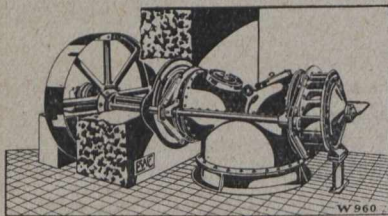
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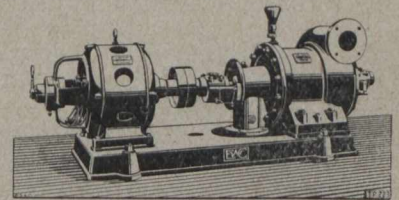
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Can. Fairbanks-Morse Co.
Northern Canada Supply Co.
- Ingot Copper**—
Canada Metal Co., Ltd.
Hoyt Metal Co.
- Insulating Compounds**—
Standard Underground Cable
Co. of Canada, Ltd.
- Jacks**—
Can. Fairbanks-Morse Co.
Can. Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.
- Kiln Linings**—
Hull Iron & Steel Foundries,
Ltd.
- Kominuters**—
Hull Iron & Steel Foundries,
Ltd.
- Lamps**—
Can. Gen. Electric Co., Ltd.
- Lamps—Carbon**—
J. S. Aspinall.
- Lamps—Electric**—
J. S. Aspinall.
- Lamps—Safety**—
Canadian Explosives.
- Lamps—Tungsten**—
J. S. Aspinall.
- Link Belt**—
Can. Fairbanks-Morse Co.
Northern Canada Supply Co.
Jones & Glassco.
- Locomotives**—
Steam, Storage Stetam and
Compressed Air.
- Motors**—
Can. Gen. Electric Co., Ltd.
- Machinists and Founders**—
Hull Iron and Steel Found-
ries, Ltd.
- Metal Merchants**—
Henry Bath & Son.
Geo. G. Blackwell, Sons &
Co.
Consolidated Mining and
Smelting Co. of Canada.
Canada Metal Co.
C. L. Constant Co.
- Monel Metal**—
International Nickel Co.
- Nickel**—
International Nickel Co.
- Ore Sacks**—
Northern Canada Supply Co.
- Ore Testing Works**—
Ledoux & Co.
Can. Laboratories.
Milton Hersey Co., Ltd.
Campbell & Deyell.
Hoyt Metal Co.
- Ores and Metals—Buyers and
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C. L. Constant Co.
Geo. G. Blackwell.
Consolidated Mining and
Smelting Co. of Canada.
Orford Copper Co.
Canada Metal Co.
Hoyt Metal Co.
- Perforated Metals**—
Northern Canada Supply Co.
Hendrick Mfg. Co.
- Pig Tin**—
Canada Metal Co., Ltd.
Hoyt Metal Co.
- Pig Lead**—
Canada Metal Co., Ltd.
Hoyt Metal Co.

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Pipe Fittings— Can. Fairbanks-Morse Co. Northern Canada Supply Co.	Pumps—Pneumatic— Can. Fairbanks-Morse Co. Smart-Turner Machine Co. Can. Ingersoll-Rand Co., Ltd. Sullivan Machinery Co.	Steel—High Speed— Can. B. K. Morton	Steel—Tool— N. S. Steel & Coal Co. Armstrong, Whitworth of Can., Ltd.
Piston Rock Drills— Mussens, Limited. Can. Allis-Chalmers, Ltd.	Pumps—Steam— Can. Fairbanks-Morse Co. Can. Ingersoll-Rand Co., Ltd. Mussens, Limited. Northern Canada Supply Co. Jenckes Machine Co. Can. Allis-Chalmers, Ltd.	Samplers— C. L. Constant Co. Ledoux & Co. Milton Hersey Co. Thos. Heys & Son.	Surveying Instruments— W. F. Stanley. C. L. Berger.
Pneumatic Tools— Can. Ingersoll-Rand Co., Ltd. Jones & Glassco. Jenckes Machine Co.	Pumps—Turbine— Can. Fairbanks-Morse Co. Smart-Turner Machine Co. Can. Ingersoll-Rand Co., Ltd. ada, Limited. Can. Allis-Chalmers, Ltd.	Scales— Can. Fairbanks-Morse Co.	Switchboards— Can. Gen. Electric Co., Ltd.
Prospecting Mills and Machinery— Standard Diamond Drill Co. Can. Allis-Chalmers, Ltd.	Pumps—Vacuum— Can. Fairbanks-Morse Co. Smart-Turner Machine Co. Can. Allis-Chalmers, Ltd.	Screens— Jeffrey Mfg. Co. Northern Canada Supply Co. Hendrick Mfg. Co.	Tanks—Cyanide, Etc.— Hendrick Mfg. Co. Pacific Coast Pipe Co., Ltd. MacKinnon, Holmes & Co. Can. Allis-Chalmers, Ltd.
Pulleys, Shafting and Hangings— Can. Fairbanks-Morse Co. Jeffrey Mfg. Co. Northern Canada Supply Co.	Quarrying Machinery— Sullivan Machinery Co. Can. Ingersoll-Rand Co., Ltd. Jenckes Machine Co. Can. Allis-Chalmers, Ltd.	Screens—Cross Patent Flanged Lip— Hendrick Mfg. Co.	Transits— C. L. Berger & Sons.
Pumps—Boiler Feed— Can. Fairbanks-Morse Co. Smart-Turner Machine Co. Northern Canada Supply Co. Can. Ingersoll-Rand Co., Ltd. Wettlaufer Bros. Can. Allis-Chalmers, Ltd.	Roofing— Can. Fairbanks-Morse Co. Northern Canada Supply Co.	Separators— Can. Fairbanks-Morse Co. Smart-Turner Machine Co.	Transformers— Can. Gen. Electric Co., Ltd.
Pumps—Centrifugal— Can. Fairbanks-Morse Co. Escher Wyss & Co. Mussens, Limited. Smart-Turner Machine Co. M. Beatty & Sons. Can. Ingersoll-Rand Co., Ltd. Can. Allis-Chalmers, Ltd.	Rope—Manilla and Jute— Jones & Glassco. Northern Canada Supply Co. Allan, Whyte & Co.	Sheet Lead— Canada Metal Co., Ltd.	Turbines— Escher Wyss & Co. Can. Allis-Chalmers, Ltd.
		Sheets—Genuine Manganese Bronze— Hendrick Mfg. Co.	Twist Drills—High Speed— Can. B. K. Morton Co.
		Shovels—Steam— M. Beatty & Sons. Can. Allis-Chalmers, Ltd.	Valves— Can. Fairbanks-Morse Co.
		Stacks—Smoke Stacks— Can. Fairbanks-Morse Co. Hendrick Mfg. Co. MacKinnon, Holmes & Co. Can. Allis-Chalmers, Ltd.	Winding Engines—Steam & Electric— Can. Ingersoll-Rand Co., Ltd. Jenckes Machine Co. Can. Allis-Chalmers, Ltd.
		Steel Barrels— Smart-Turner Machine Co.	Wire Cloth— Northern Canada Supply Co. B. Greening Wire Co., Ltd.
		Steel Drills— Sullivan Machinery Co. Northern Canada Supply Co. Can. Ingersoll-Rand Co., Ltd. Can. B. K. Morton.	Wire (Bare and Insulated)— Standard Underground Cable Co., of Canada, Ltd.
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