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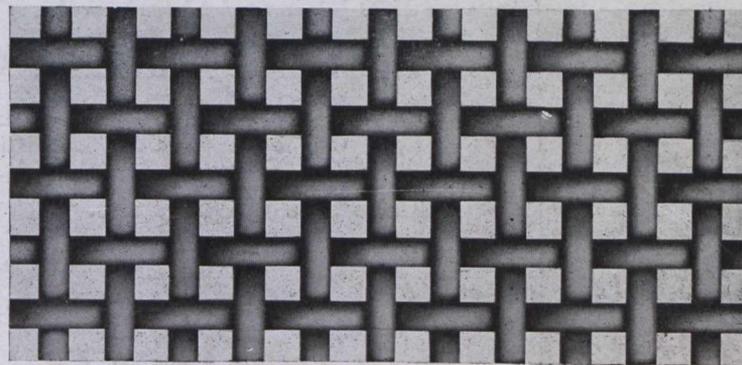
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CANADIAN MINING JOURNAL

VOL. XXXIX

TORONTO

No. 22



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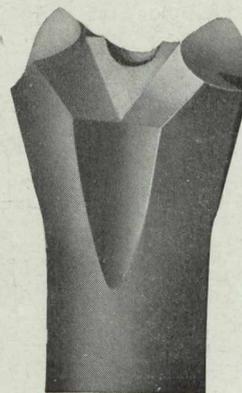
The Canadian Mining Journal, Purman Bldg. 263-265 Adelaide St. West, Toronto, Ont.
Published on the 1st and 15th of each month. "Entered as second-class matter, April 23rd, 1908, at the post office at Buffalo, N.Y., under the Act of Congress of March 3rd, 1879."

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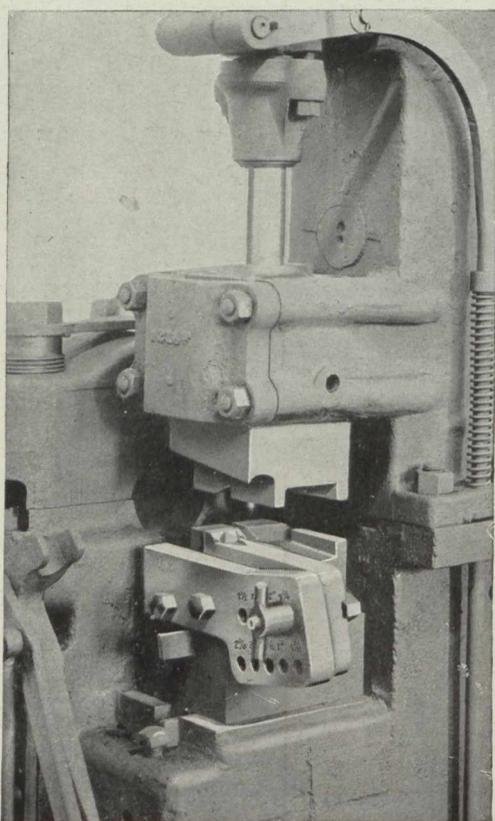
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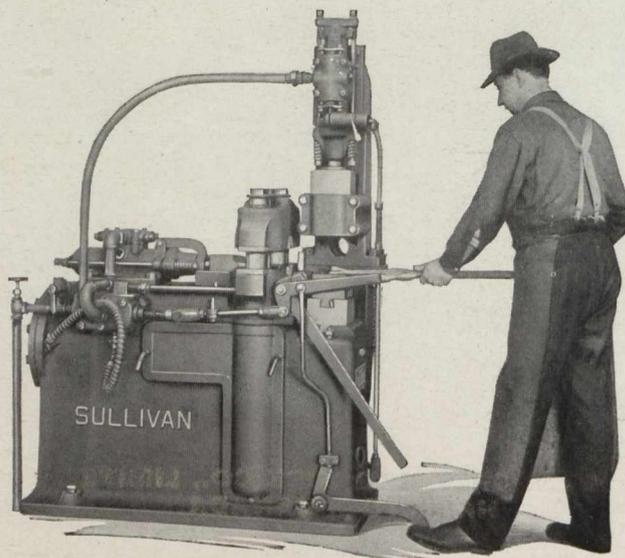
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Double Arc	$\frac{1}{8}$	3.05	4.15	5.56
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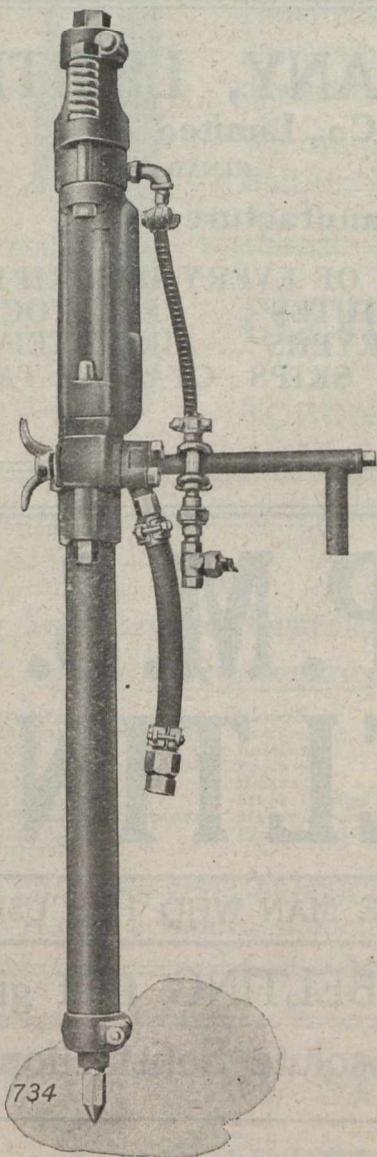
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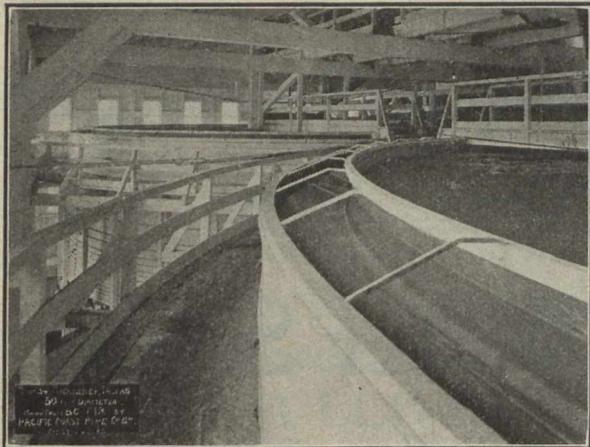
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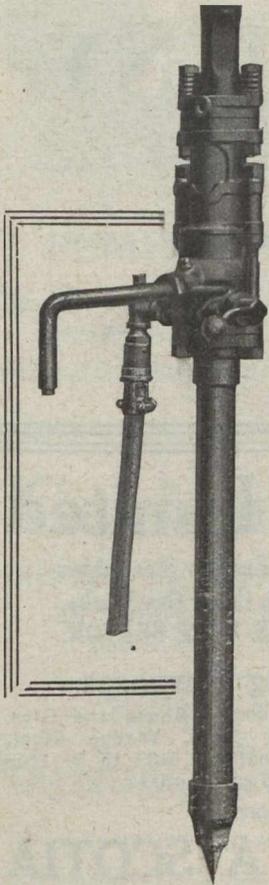
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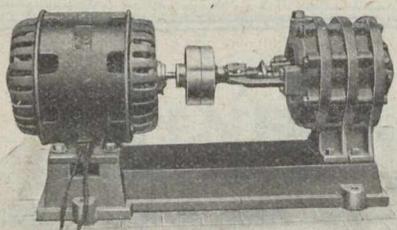


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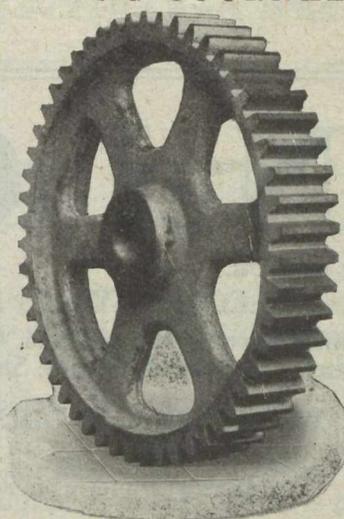
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The Canadian Northern Railway, recently constructed across Northern and Western Ontario, has opened up for prospecting a large territory. Easy access to many promising areas is now available. Geological maps of some of these areas can be obtained from the Geological Survey, Ottawa.

The Canadian Northern Railway in Manitoba gives access to the Pas Mineral Area. In Alberta the Canadian Northern is serving important coal fields.

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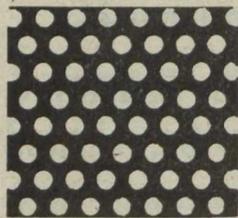
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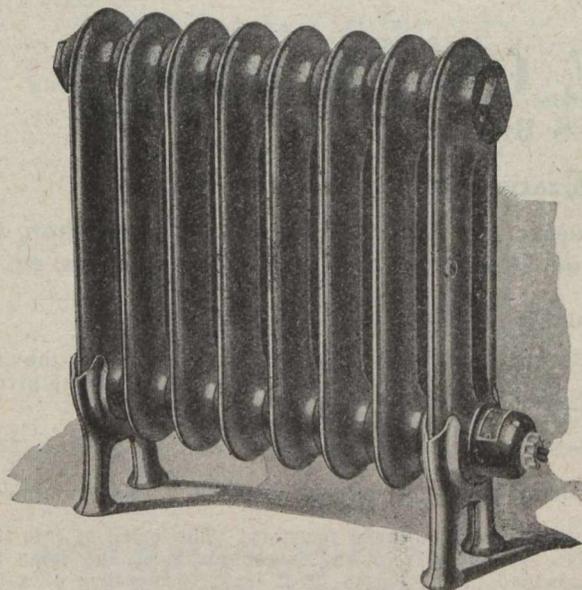
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The Minerals of Nova Scotia

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Nova Scotia possesses extensive areas of mineral lands and offers a great field for those desirous of investment.

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.

High grade cement making materials have been discovered in favorable situations for shipping.

Government core-drills can be had from the department for boring operations.

The available streams of Nova Scotia can supply at least 500,000 h.p. for industrial purposes.

Prospecting and Mining Rights are granted direct from the Crown on very favorable terms.

Copies of the Mining Law, Mines Reports, Maps and other Literature may be had free on application to

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Commissioner of Public Works and Mines



PROVINCE OF QUEBEC

MINES BRANCH

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 the 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 LAVIOL 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

HONOURABLE HONORE MERCIER,

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; 94,510; 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.

Notice is further given that no one is authorized to introduce our processes or apparatus into the United States, Canada or Mexico.

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Aggregate Value of \$595,571,107

The substantial progress of the Mining Industry of this Province is strikingly exhibited in the following figures, which show the value of production for successive five-year periods: For all years to 1895, inclusive, \$94,547,241; for five years, 1896-1900, \$57,605,967; for five years, 1901-1905, \$96,509,968; for five years, 1906-1910, \$125,534,474; for five years, 1911-1915, \$142,072,603; for the year 1916, \$42,290,462; for the year 1917, \$37,010,392.

Production During last ten years, \$296,044,925

Lode-mining has only been in progress for about twenty years, and not 20 per cent. of the Province has been even prospected; 300,000 square miles of unexplored mineral bearing land are open for prospecting.

The Mining Laws of this Province are more liberal and the fees lower than those of any other Province in the Dominion, or any Colony in the British Empire.

Mineral locations are granted to discoverers for nominal fees.

Absolute Titles are obtained by developing such properties, the security of which is guaranteed by Crown Grants.

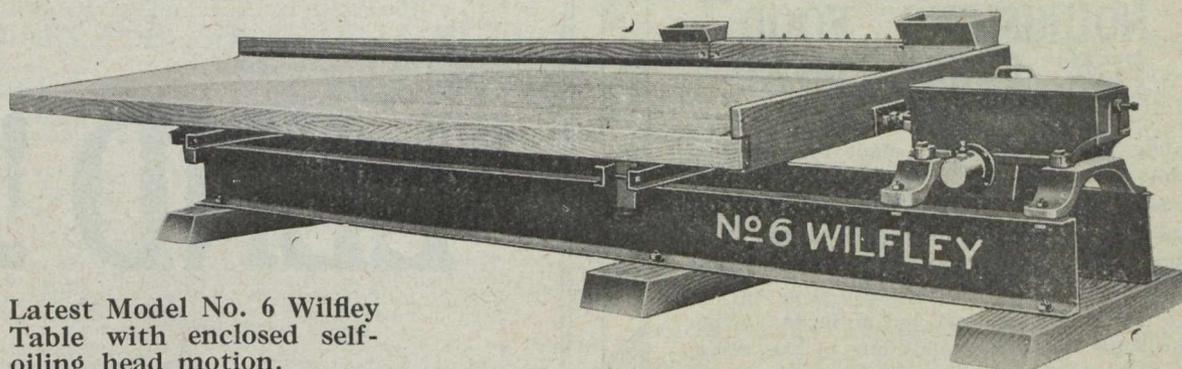
Full information, together with Mining Reports and Maps, may be obtained gratis by addressing

THE HON. THE MINISTER OF MINES
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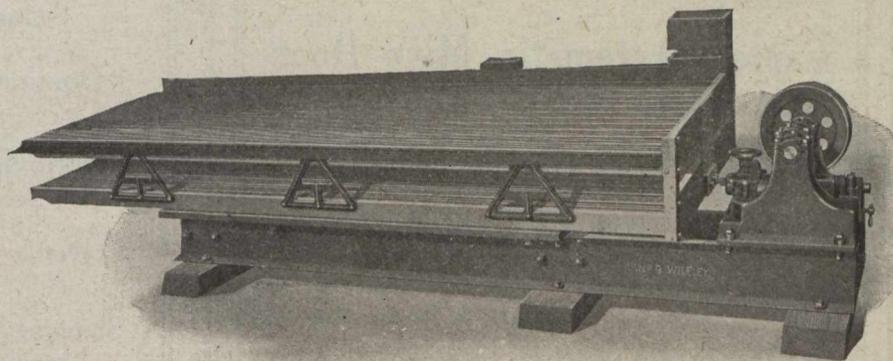
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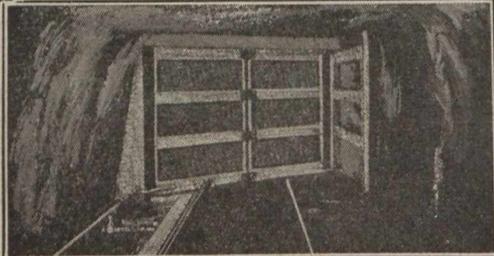
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ASSISTANCE TO GOLD MINING.

The British Government is said to have appointed a Royal Commission to report on "The War's Effect on Gold Production in the British Empire." The commission is composed of four members with Lord Incheape as its chairman, while Mr. William Frecheville is its technical advisor. Dr. W. G. Miller represents Canada.

Mr. Frecheville is one of the foremost mining engineers in London, and at the same time one of Great Britain's most public spirited citizens. A few years ago he gave up a large and lucrative private practice to assume the onerous duties of Dean of the Mining School in the Imperial College of Science in order to put that school on a higher educational plane, and assist in educating the young engineers of the Mother Country. The people of Canada may feel the utmost confidence in leaving their case for any possible assistance to gold mining in Mr. Frecheville's hands. He knows the gold mining industry of Canada thoroughly. He has visited the country himself on several occasions, and he is also one of the directors of the Anglo-French Exploration Company, which has an interest in the Hollinger and other mines in the country, and whose representative, Mr. J. B. Tyrrell, keeps him, along with the other directors of the company, thoroughly informed on our mining situation.

DEVELOPMENT OF MINERAL RESOURCES WILL NOW BE SPEEDED UP.

Those who are engaged in developing our mineral resources have busy days ahead of them. The rapid development of our mineral deposits is now necessary and will soon be possible. The world is crying for our raw materials. Canada's mines have done well during the war in spite of shortage of labor and high cost of supplies, and they will soon be in position to greatly increase production and add materially to the wealth of the nation.

During 1917 Canada produced minerals and metals valued at \$192,982,837. This great production was obtained under conditions that made operation very difficult. Many of our best miners have been fighting in France. There has been a shortage of machinery and supplies. The demand for raw materials is now greater than ever before, and with men, machinery and supplies available our production is bound to increase.

The effect of the coming of peace has already been interpreted by the stock exchanges. Munitions manufacture must now give way to the production of basic necessities. Construction and the repairing of badly worn equipment will call for enormous quantities of minerals and metals. With more men and machinery available, and with less costly supplies, the Canadian mining and metallurgical industries must grow rapidly in the next few years.

While the consumption of the common metals, iron, lead and zinc, is sure to be large for reconstruction purposes, as it has for munitions manufacture, there also will be great demand for the precious metals. Our gold mining industry, which has stood the severe test of war in a very remarkable way, is certain to take giant steps forward in the coming year. That our gold mining companies have been able to operate at all during the past two years has been surprising to many of us. An industry which has lived through such trying times cannot but develop very rapidly now.

Silver has fortunately commanded a price which made possible the profitable operation of the Cobalt silver mines in spite of high costs. The demand for silver continues good and it is unlikely that silver will be cheap again for many years. The Cobalt silver mines have never had large reserves developed, but they continue to show up well on development. Much of the ore has been mined, but the end of silver mining at Cobalt is still far away.

The Sudbury nickel-copper mines and smelters have been very busy during the war and will continue so. Nickel refining on a large scale in Canada has just begun. Nickel, so useful in the manufacture of munitions, will be in great demand for the manufacture of nickel steel for peaceful trades. Copper also will be needed and there is a great scarcity of platinum and palladium which occur in the Sudbury nickel-copper ores.

It is reasonable to expect that the refinery at Port Colborne will soon be enlarged so that all the matte

produced by the International Nickel Co. will be refined in Canada. We should also look forward to the recovery in Canada of all the precious metals which are mined with the nickel. There is also now under construction a refinery for the British America Nickel Company which is developing the Murray mine.

Northern Manitoba has during the war become an important producer of copper. Under serious handicaps several thousand tons of rich ore has been mined and shipped from Schist Lake. A large deposit of sulphide ore at Flin Flon Lake has been discovered and explored by drilling. Several gold deposits have been found. Northern Manitoba is sure to attract much attention from mining men now that peace is near.

In Quebec great changes have been brought about in the asbestos industry by the war. Formerly much of the asbestos went to Europe, and the production naturally fell off when the war began. A larger market in the United States has been developed and larger quantities than ever will be used both in the United States and Europe.

In the Prairie Provinces the coal shortage has resulted in greater production and consumption of Canadian coal. The immediate result has been greater activity at the Alberta coal mines. The market for Alberta coal has been considerably enlarged and the coal mining companies will be permanently benefitted by the greater utilization of local fuel.

In British Columbia gold mining has naturally suffered severely. This industry will be greatly benefitted by the return of peace conditions. The war has hastened the establishment of zinc and copper refineries. The search for "war minerals" has resulted in the direction of attention to many idle properties. Greater activity in prospecting and development of the mineral areas of British Columbia is confidently expected.

In Nova Scotia the coal mines have been handicapped by shortage of men and inadequate transportation. With men and ships available the Nova Scotia mines will greatly increase production. The great activity in the iron and steel industry will continue war or peace. This will require larger supplies of ore, fuel and fluxes. Mining in Nova Scotia and Newfoundland must therefore be increased to supply the needs of the province. Mining of coal to supply the Maritime Provinces, the Atlantic States and for coaling ships will also be necessary.

THE EMPIRE'S MINERAL RESOURCES.

The Imperial Institute, in continuation of its publications with reference to the Mineral Resources of the Empire, has now issued a map with diagrams indicating the sources within the Empire of the chief metals of commercial importance. The outline map shows the occurrence in each British country of important metallic ores, and also the existence of deposits at present unworked. The diagrams attached to the map give for 1915 the production of each country as well as the total British output and the world's output of each important metal or ore.

Among the striking features disclosed are that in the case of gold more than half the total production is within the Empire, the principal producer being South Africa. With silver the British proportion is rather less than one-fifth, the principal producer being Canada. In the cases of manganese, chromium, tin and molybdenum the

British proportion is near one-half. It is remarkable that there appears to be scarcely any production of the valuable metals mercury and platinum within the Empire, so that we are almost entirely dependent on foreign countries for supplies. In the case of nickel, and cobalt Canada produces most of the world's supply.

This publication should prove of great general interest apart from its importance to those specially concerned in mining operations and should be of considerable value for educational purposes.

The map, which is folded and mounted on linen, has been prepared with the advice of the Mineral Resources Committee of the Imperial Institute, of which the late Lord Rhondda was chairman at the time of his death. The map with diagrams has been placed on sale at a price of 5s. 6d. post free.

The data used are for 1915. At present Canada is producing much larger quantities of molybdenite and chromite than in 1915. Canada also produces a very considerable quantity of platinum and palladium.

CORRESPONDENCE

Proposed Changes in Mining Act.

To the Editor of the CANADIAN MINING JOURNAL:

Sir,—I noticed in your publication of October 15th, a statement by Mr. Godson, that there is a growing sentiment throughout the country in favor of the elimination of the existing system of issuing Crown Grants of mineral claims to parties who comply with the requirements as to development, etc., and the inauguration in its stead, of a system whereunder the government would retain perpetual ownership of their mineral lands, only granting leaseholds on liberal terms, with a penalty of forfeiture if the terms are not complied with.

In the spring of 1918, at the mining convention, held in this city, a number of resolutions suggesting changes in the Mining Act were unanimously passed by a large number of mining engineers and prospectors who attended the convention. One of the most important changes suggested as being beneficial to this and other mining divisions, was exactly the opposite to Mr. Godson's statement, i.e.—to abandon the lease system and grant patents instead, for the following reasons. "Uncertainty of tenure of leases and Licenses of Occupation, subject to regulations which may be altered from time to time by Orders-in-Council, or may be cancelled or revoked, render them too hazardous a proposition for capital to entertain, and the mining industry is entirely dependent on securing capital for its development."

It is further the opinion of this Board, that the above reasons are amply justified by the many years experience that the members of the mining committee have had in this district, and other parts of the provinces. For example—a mining company might go to very heavy expense in development, mines buildings, machinery, etc., and if a term of lean years in the market came along, they would be forced, under the lease system, to operate at a very heavy loss or the lease would be automatically cancelled and many thousands of dollars of development and mine equipment would be completely thrown away, or at best the mine equipment would have to be scrapped and sold at a great loss.

It is true that the lease system is applied to many iron mines in the United States after Patents to owners are issued; but the length of lease invariably extends over a very considerable period of time ranging from 25 to 50 years, also the minimum shipments are made so low that a mining company could tide over several lean years on paying their advance royalties and mining the ores when the market improved.

But the important point of all is that it would absolutely discourage exploration. What explorer could afford to

take out a lease from the government and start mining, or fulfil the requirements of a government lease while endeavoring to make a sale of his claims? It is a hard enough struggle under normal conditions to fulfil the requirements of the Ontario Act and secure a Patent. Many claims revert to the Crown owing to the inability to comply with these conditions, as the claim is automatically cancelled, even if the full three years assessment work has been complied with, if the prospector has been unable to raise the necessary cash to make a survey and pay the required government price for the land. It frequently happens that even after securing his Patent, he is forced to carry these lands for years before making a sale. To do this under a lease and forfeiture system would be simply impossible.

In British Columbia, the terms and conditions of working clauses to be complied with are much easier, and we must not forget that the development of the entire mining district is dependent on the explorer who works faithfully season after season, only too frequently to see his hopes of a title depart from him. It must be remembered that if it rested with the average mining company to employ the great number of explorers who spend their lives searching over our great northern territory, the amount of work done along that line would be tremendously lessened, also that the mining company is just as dependent on the labors of the explorer as the explorer, on the capital of the mining company.

In the opinion of this Board, nothing would be more detrimental to the development of the mining interests of this country than the passing of such a measure.

Yours, etc.,

Jos. Z. FINZEL,

Secretary Port Arthur Board of Trade.

Port Arthur, Nov. 6th, 1918.

PROPOSED AMENDMENTS TO THE MINING ACT.

Following is a copy of proposed amendments passed at the convention:

1. That the Recorder of a Mining Division have the power to issue a Special Renewal License. (Under the present terms of the Act, considerable delay occurs by having to submit the matter to the commissioner, which would be obviated by vesting that power with the Recorder. This delay is at a season of the year that can be ill afforded by the prospector.)

2. That Orders-in-Council affecting mining claims and regulations under the Mining Act be published in at least one newspaper in the district affected, in order to inform prospectors and others interested. (Unless the prospector visit the Recorder's office he has no opportunity of becoming advised of such Orders-in-Council and this may result in undue hardship.)

3. That Patents be issued for claims or parts of claims covered by water, where it can be shown that the granting of such Patent will not interfere with navigation.

4. That in Crown Forest Reserves and Timber Berths where prospecting is permitted, Patents instead of leases be granted for mining locations, subject to such reservations as may be deemed advisable. (The uncertainty of tenure of Leases and Licenses of Occupation, the fact that they are subject to regulations which may be altered from time to time by Orders-in-Council, or may be cancelled or revoked, render them too hazardous a proposition for capital to entertain, and the mining industry is entirely dependent on securing capital for its development.)

5. That the Assessment Work consist of \$100 worth of actual mining work per 40 acre location per year, for a period of three years, when a Patent shall issue at the usual price per acre.

6. That the Assessment Work may include cost of survey, not to exceed \$100 per location, and in the case of an iron location, may include a magnetic survey.

(The condition of the labor market, the increase in wages, cost of materials and living, which have all more than doubled since the present Act came into force, make it desirable that Assessment Work should be on a fixed basis of value and not dependent on variable factors. By including the cost of survey in the Assessment Work, the tendency would be to have this performed at an earlier period in the development of the location than obtains at present and would thus avoid many difficulties and disputes as to boundaries, besides reducing the total cost to the prospector. In case the of iron locations more practical benefit would result in many cases from a magnetic survey than any surface trenching. Under the present conditions, the total cost to the prospector of Assessment Work, Survey, Purchase Price, License and Recording, is a minimum of \$70 per acre, which is prohibitive on all but bonanza ores. The proposed amendments would reduce this to about \$10 per acre which is reasonably high enough considering the hazardous nature of mining operations.)

7. Sub-Clause to (7) Sect. 78. That in the case of claims taken up for iron and iron pyrites, the Assessment Work may be applied on one or more of 10 contiguous claims. (Prospecting for iron and iron pyrites involves exploratory work distributed over large areas of promising formation, in which a concentration of merchantable ore may only be expected under favorable conditions. In most cases these can only be determined by extensive diamond drilling, involving an outlay that should be applicable as Assessment Work over a larger number of contiguous claims than obtains with other ores.)

8. That the unorganized portion of the Fort Frances Mining Division be administered by the Mining Recorder at Port Arthur. (At present the Mining Recorder's office at Fort Frances is closed. This necessitates the forwarding of various documents to Toronto, causing delay and inconvenience, which could be obviated by administering the Division from Port Arthur.)

OBITUARY.

C. E. Watson, Geo. Randolph, Jas. Alexander and A. B. Clabon.

Two prominent Canadian mining men were lost on Friday, the 25th October, when the Str. "Princess Sophia" foundered in Lynn Canal, while on her way south. They were Messrs. C. E. Watson and G. O. Randolph, the former being general manager of the Mining Corporation of Canada, and the latter a Cobalt mining engineer. They came to British Columbia in September and, after an inspection, acquired control of the Woolsey Silver Claims, situated on Silver Creek, near Revelstoke, B.C. This business completed they proceeded to the Atlin District to examine the Engineer Free Milling Gold property, situated on Taku Arm of Tagish Lake, and owned by Captain James Alexander. It was generally understood that their intention was to endeavor to effect an agreement with Capt. Alexander for the purchase of his mine, providing their observations satisfied them as to its possibilities. They were on their way back, accompanied by Capt. Alexander and Mrs. Alexander, when disaster overcame the vessel on which they had taken passage and all met death in the icy waters of the northern coast. Mining men are referring to the tragic coincidence in that so many of the principals in the Woolsey property deal should have been so suddenly carried off, Mr. A. B. Clabon, through whom much of the preliminary negotiations were conducted, having been killed only a short time ago by falling over a precipice at Silver Creek. Capt. Alexander also had many friends in mining circles in British Columbia. Capt. Alexander valued the Engineer Mine at \$2,000,000.

Possibilities of European Immigration After the War

By F. W. GRAY

A year or more ago there appeared in various Canadian newspapers a suggestion that Canadians should prepare for a renewal of the tide of European immigration which has been interrupted by the war. It was intimated that the cost of the war would result in such increase of taxation in European countries as would drive the peasantry and artisans to seek less onerous conditions of living and the greater political freedom of the United States and Canada. The preponderating movement of population forecasted was from Europe westward, or an accelerated continuation of that great migration which was a distinguishing characteristic of the Nineteenth Century, and out of which have arisen forces that are profoundly influencing current events. Is this forecast a correct one? There have been significant occurrences within the past few months which would indicate that it is not. The statement has been so often made that the present war is a conflict of two ideals, a conflict between autocracy and democracy, that the statement has become hackneyed and outworn, maybe, and as a writer in the October "Atlantic" states, "The original watchwords of the conflict are in danger of losing their potency as incentives after years of conflict"—but they are none the less true.

To-day we are justified in believing that the triumph of democracy is imminent, but few have realized how tremendous and world shaking are the events which will follow the actual consummation of the triumph. They may be such as even to eclipse the preliminary cataclysm and in countries such as compose the Teutonic League the birth-pangs of rule by the people through truly representative institutions may be as terrible as those which are at the present time agonizing the peoples of Russia. For, to quote again from the writer just mentioned, "When the end shall come, it will be in reality a great beginning."

That may well be, but nevertheless, nothing is more certain than the speedy replacement in Europe of all forms of autocracy and feudal survivals by representative parliamentary governments, accompanied or not—and this is really not important—by the forms of limited monarchy. While it may be hoped and prayed that Europe may be spared the extravagances and wickedness of Bolshevism, and the absurd ideas concerning property which this particular form of lunacy is attempting to propagate, it may be anticipated that the large estates of the Prussian and Magyar Junkers will be divided up amongst the peasantry, that conscription for military purposes will disappear in the consummation of a League of Nations, and that the vote will really mean something to those European peoples to whom as yet it has been nothing but a mocking of their legitimate aspirations.

All these things would seem to be the reasonable accompaniments of truly triumphant democracy, and if, and when they come to pass will not Europe be as good a country to live in as North America? And will not the main incentives to emigration from Europe have largely disappeared, at least so far as the undeveloped countries of South-Eastern Europe are concerned? This reasoning may not hold good in the case of Italy and some other countries where emigration has been forced by actual surplus population, and the lack of the basic minerals, in particular by the lack of coal, but for Russia and Siberia, for the Balkans, Poland, Hungary and Rumania, it will most certainly hold good.

There are many millions in North America who were born in the belligerent countries of Europe, and their homes, their relatives and friends have been involved in the wastage of war. For years some of these people have heard nothing of their own people, and curiosity alone,

not to mention stronger impulses will draw them to the land of their birth so soon as ocean travel on a normal scale becomes possible and permissible. The alien enemies among these present residents of North America have in most cases been enabled to earn large wages, but they have been precluded from sending to Europe the remittances that they were accustomed to send before the war. Enquiry from the large steamship companies will probably disclose the fact that steamer tickets have already been spoken for by thousands of natives of Europe now in North America who for one reason or another wish to revisit the scenes of their youth, or what remains of them. The money these people have is currency which has suffered no depreciation in value, nor is likely to, and it is evident that Europe, purged of its militaristic wrongs and restored to the rule of the people, with years of assured peace ahead, will offer many attractions to the returned emigrant with good money in his pocket.

The great wastage of life caused by the war must also exercise a deterrent effect on emigration from Europe, at least for a time, but probably this will be one of the least important of the factors in the long run.

Summarising the foregoing possibilities, does it not seem that there is a fair probability that the tide of migration may for a period set eastwards, from North America to Europe? That is to say so far as the countries are concerned with which we are to-day at war.

But when one comes to consider the question of British emigration, a different aspect is presented.

The war has unified and compacted the British Empire in a wonderful manner. The Australian has met, and in many cases married, his English cousin; the Canadian has visited and been joyfully received by his relatives in Scotland, maybe. The average Englishman whose foreign travel was limited to a Cook's tour to Switzerland has seen the Pyramids and travelled the Euphrates from the Persian Gulf to ancient Bagdad. No more can the present generation of the British be regarded as stay-at-homes, and the vision of the British people to-day in every place where the flag floats,—and they were never so many nor so scattered—is as wide and as keenly adventurous as it was in the heyday of the Elizabethan age. Many hundred of thousands of British young men, when demobilization takes place, will once again tread the familiar decks of a transport, her camouflage changed for peace-paint, bound for Canada, Australia, New Zealand, for augmented British Africa, and for the thousand and one places where our soldiers will resume the work of peace times. The complexities of the interchange of population which will take place between the British Isles and the rest of the Empire cannot be foreseen, or even guessed at, but there can be little doubt that here in Canada we shall receive an influx of British immigrants of large proportions.

If then there should occur simultaneously an efflux of the more distinctly "foreign" nationalities from Canada and the United States and an influx of British born, will it not radically, and permanently maybe, change the labor situation, and have far-reaching effects on rates of wages, hours of labor and labor politics generally? It would appear quite probable.

The effect on the mining industry will be very considerable. In the past the mining industry has depended very largely for labor supply on the newly arrived European immigrant, particularly for the more arduous and less highly paid occupations. This is probably more true of the great mining centres of the United States than it is of Canada, but we also were heading in the same direction before the war.

The British born immigrant will not adapt himself to the conditions of a common laborer, nor will he accept the conditions of living and the rate and hours of wages which have been common among "foreign" labor in mining camps—or at least were common before the war. It is not necessary to point out the changes in mine operation and in the costs of mining which must follow a reversal of labor supply such as is herein indicated. In short, common labor is to-day decidedly scarce, but it would look as if it were going to be much scarcer after peace has been arranged and demobilization has taken place.

It may be anticipated that the necessity will bring forward some remedies, and one direction in which advances may be expected is a more extended use of mechanical appliances in mining operations. Hard manual labor will in the future be much more at a discount than it is to-day, and if men can achieve results by the substitution of machinery is it not progress? Mine managers and the directors of large mining operations will be well advised to investigate every possible method of substituting mechanical devices for manual labor. It is not altogether that **cheap** manual labor is a disappearing thing. It is the actual labor supply itself that is diminishing and promises still more to diminish.

The effect of after-war conditions on coal mining in Canada would seem to be the most important of all.

Coal, as the world is now realizing, is the basic factor in industry and civilization. Shortage of coal supply, or excessively costly coal, will throttle and depress all other industry. As everybody knows, the man-power at Canadian collieries is to-day so reduced that proper outputs are not possible. But what is more serious, there appears to be no source from which the man power at the coal mines can be replenished, either during the war, or after. Only a small proportion of those miners who went to the front will return to work in the collieries. A great many are dead, many others are so wounded that they will not be able to take up coal mining again, but a far greater number will seek other avenues of employment. Notwithstanding the short hours and the comparatively large wages earned by underground workers, it is not popular employment, nor is it employment that is being followed by the sons of miners. Canada offers too many varieties of endeavor to favor the formation of a mining class—almost a caste—such as is to be found in Great Britain and in the coal fields of Europe. It has for many years been increasingly evident in Nova Scotia that the only source of labor supply for the collieries is Europe, and if that is cut off, production must decline.

Apart from the suicidal policy of curtailing coal production in war times, this feature of the Nova Scotian coal industry is one which would have advised the retention of the coal-miners in the industry. Fewer more flagrant examples of dissipation of war effort have occurred than the hand-picked enlistment of Nova Scotian miners, but the consequences of the mistake in recruiting which occurred in Nova Scotia will extend far beyond the period of the war, and will for years to come be a deterrent to the progress of the Province. No reflection is here intended upon the miners, hundreds of whom have died for their country. Braver men never stood in shoe leather than the colliers of Nova Scotia, but they would have been of far more service to the cause had those who directed the affairs of Canada counselled and allowed them to remain at home and dig coal.

To sum up the foregoing; if our reasoning is approximately correct, it would seem as if the after war possibilities in Canada will include a decided shortage of "common" or "foreign" labor, an influx of British born to whom laboring work will not appeal, accompanied by a continuation of a demand for coal which will be greater than the available labor supply will make it possible to

produce. Prophecy is not a pursuit to be recommended or indulged in in times when almost every prediction made has been falsified by events, but intelligent anticipation of the future may prove of profit if it enables us to prepare solutions of the problems of the future. Students of reconstruction after the war are invited to give consideration to the possibilities mentioned above, and some actual enquiry of sources which are in touch with immigration matters might prove useful to those who employ large bodies of men in mining operations.

BRITISH COLUMBIA MINES DEPARTMENT WILL PROSPECT CLAIMS.

The Snowstorm Group, which comprises five highly mineralized copper-silver-gold claims situated in Highland Valley, Yale District, will be prospected by the Provincial Department of Mines by diamond drilling under the terms of the Mineral Survey and Development Act.

Announcement to this effect has been made by Hon. Wm. Sloan, Minister of Mines, and tenders are being invited for 10,000 lineal feet of drilling, more or less, thus allowing ample margin for the definite proving, or otherwise, of the ore body which, it is generally believed, exists.

Before deciding on this step Mr. Sloan has had the property inspected and reported upon by the best engineering authority. Among those who have expressed the opinion that the Snowstorm Group is a good prospect and likely to prove a valuable asset to the Province, with further development are R. W. Thomson and P. B. Freeland, resident engineers with headquarters respectively at Kamloops and Grand Forks. Their views are supported by Mr. Wm. Brewer, now resident engineer, Nanaimo, B.C., whose report on this property appears in the 1915 report of the British Columbia Minister of Mines and the late Dr. C. W. Drysdale, formerly of the Geological Survey Branch, Ottawa, who did considerable survey work in this Province, and who held a very favorable opinion of the mineral zone in which the claims in question are situated.

Mr. Brewer, in 1915, states that, after an examination of the Highland Valley Camp, his conclusions were that "while there is considerable tonnage of high grade bornite and chalcocite copper ore on several of the mineral claims, yet that the future growth and prosperity of the camp will eventually centre around the apparently extensive bodies of low grade copper ore. To systematically and thoroughly prospect and develop these deposits, diamond-drill boring would appear to offer more advantages than the slower and more expensive method of opening up the mineral-bearing zones by working openings."

It is Mr. Sloan's hope that the diamond drill which he has authorized will result in proving a large and rich mineral area which has been lying idle for years, and that the direct outcome will be an important addition to the shipping mines of British Columbia.

Asked whether any action had been taken by the Department of Mines towards the diamond drilling of any of the iron ore deposits of the Province, Mr. Sloan said that he expected to be in a position shortly to call for tenders for the drilling of one or more such properties.

The West Kootenay Power & Light Co., of British Columbia, has ordered 800,000 lb. of copper cable and other material from manufacturers in Hamilton, Ont. This is sufficient for 300 miles of line and will be used chiefly in extending the circuit from Greenwood, B.C., to Copper Mountain, to furnish power for the operations of the B. C. Copper Mining Co. at that point. This work, it is stated, will be completed by July, 1919.

THE ROMANCE OF THE YUKON.

The romance of the Yukon was never better illustrated than in the career of Mr. William Scouse, one of the 343 lost on the morning of the 25th of October, when the Str. "Princess Sophia," one of the vessels of the Canadian Pacific Steamship Co., having struck a reef in Lynn Canal while en route south, sank and carried all her passengers and crew to an untimely end. Mr. Scouse was one of the real "Sourdoughs," whose ranks are fast thinning. It was he who raised the first bucket of "pay" on the famous Eldorado Creek.

It was in February, 1896, before the days when the finding of the gold made the Klondyke a household word throughout America, that four young men of Nanaimo, B.C., impelled by a spirit of adventure, decided to set out on a trip through the Northland. They were William Scouse, William Sloan, Jack Wilkinson, known by the sobriquet of "Big Jack" to the miners of Nanaimo, and Thomas Flack.

"Our idea was to prospect the country," explained Mr. Sloan in recalling the circumstances of the expedition, "but I think that what was even more prominently before our eyes was that we would see the vast and mysterious northern lands of which so little was known in those days."

The little party took passage by the old Str. "Willapa," and outfitted at Juneau from where they hit the trail into the interior, passing over the Chilcoot Pass, where a few years later, when the historic trek to the Klondyke started so many were to give up their lives, into the Stewart River Country.

For the greater part of the summer they prospected without success. Running short of supplies they decided to work into the Yukon, where, just at that time, excitement ran high over the discovery of rich deposits on Bonanza Creek. They reached this creek too late—all the ground had been staked. This turned them aside to Whipple Creek, later to be known the world over as the Eldorado. On September 7th, 1896, Mr. Scouse staked No. 14 and Mr. Sloan No. 15, Eldorado, while Mr. Wilkinson recorded No. 25, Adams Creek; Mr. Flack No. 32, Bonanza; and others were staked on Hunker Creek.

When the four left Nanaimo it was understood that they were equal partners in anything that was found, and to this agreement they held throughout. Their joint efforts were generously rewarded, each leaving the Yukon with a substantial fortune.

Having made their records, it was decided that the Eldorado prospects should first be developed and a small but comfortable cabin was built close to the claims. The lumber for the cabin's floor was whipsawed, Messrs. Wilkinson and Sloan doing the whipsawing which was required for all operations at that time. Mr. Sloan, in this connection, remembers that, with "Big Jack" on one end of the saw he had to "go some."

In discussing these early days, Mr. Sloan says, that the reports that his partner, the late Mr. Scouse, hoisted the first "pay" dirt on the Eldorado is quite correct. He recollects the circumstances quite clearly. "I was the boss carpenter," Mr. Sloan recalled with a smile, "and thus it fell to my lot to make the first windlass and bucket for the prospecting of the first shaft on the Creek. There was some argument as to the required size of the drum and the bucket. When they had been constructed I gave them their first trial and raised the first dirt, which then was without pay, on the Eldorado."

While Sloan and Flack were hauling supplies to their claims from the Klondyke River, word reached them that the first "pay" dirt had been raised on their property.

At the time they were on their way to the Creek and, meeting Alex. Orr, a miner with claims above theirs on the Eldorado, he told them that Scouse and Wilkinson had reached bed-rock and that Scouse, with Wilkinson in the shaft, had brought the first gold to the surface, there being \$57 to the bucket.

In sinking the shaft the character of the ground was watched with interest and carefully prospected, but the results were disappointing all the way down. When the gravel was thawed out it was found, Mr. Sloan explains, to be a loose light wash. About 20 feet down a pile of drift wood was encountered and it was not until after this had been passed that hard tight wash was reached, this being only a short distance from bed-rock. While there was exceptionally good pay at bed-rock on this shaft the main pay was found in cross-cutting to a second shaft. Mr. Sloan states that before the claims were thus proved the partnership was "stony broke" so that the day that the first gold was hoisted saw them step from a condition of poverty to one of comparative affluence.

While luck was with the Nanaimo men, other miners were not so favored by the Goddess of Chance. It was the old story of a thousand gold fields. Some made good and others failed. Some were brought within easy reach of fortunes only to be turned aside by the whims of chance. This was the case, Mr. Sloan narrated, with Jack Kool and French Pete, partners in the great game of gold hunting. They could have staked Claims 16 and 17, next to the Scouse-Sloan, et al, combination, the former of which turned out to be the richest of the Yukon. They, however, did not like the looks of the Creek at that point and left to take up Nos. 26 and 27, Adams Creek. The latter did not pan out and later on the two returned and worked for wages for the Nanaimo partnership. No. 16, Eldorado was staked later by Con Van Alsteine, who had been prospecting near Messrs. Scouse, Flack, Wilkinson and Sloan in the Stewart River Country that summer. Van Alsteine traded No. 16 to Mr. T. S. Lippy, who had staked No. 37 on the same creek, and it was thus that Mr. Lippy came to be possessed of the wealth of one of the most productive pieces of ground in the Yukon. Van Alsteine, it was recalled by Mr. Sloan, sold No. 37 for a good figure. Going to New York he lost his money in a matrimonial venture, his bride, to whom he had entrusted his "roll" deserting him as they boarded a steamer which was to take them to Europe on a honeymoon.

A human interest touch is given this story of the Yukon by the fact that the four Nanaimo men, when they separated after their success, agreed that on the twenty-fifth anniversary of the Eldorado strike they would meet again, all being alive, to celebrate and to live again in reminiscence the days of their pioneering. The pact provided that they would come together on that date no matter how far anyone of the four might have to travel. Mr. Scouse's death makes the first break in the partnership.

"The last time I saw Scouse he referred to our reunion," observed Mr. Sloan, "Now he is gone. He was a man of the utmost integrity, a genial companion and a thorough gentleman in every respect. We four worked harmoniously together for some years; there was never the scratch of a pen in our dealings together and when we finally dissolved the partnership and dispersed, there remained an enduring friendship which has continued through the years. I know the other members of the partnership, Messrs. Flack and Wilkinson, will feel keenly, as I do, the untimely and sad fate of our old friend, William Scouse."

Mr. Wilkinson is now retired and living near New-castle-on-Tyne and Mr. Flack at present is living in Chicago, Ill.

MINERS' STRIKE CAUSES LOWER COAL OUTPUT.

The total production of coal for the Province of British Columbia for the month of September was 164,460 tons, or a decrease of 75,777 tons as compared to the August output. This is the first month of this year that has shown a decline, and it is to be explained to a large extent by the month's strike of the miners of the Fernie and Michel Collieries in the Crow's Nest Pass Field. This is responsible for a loss of at least 50,000 tons, the August return from these mines being 78,971 tons as against 17,784 tons for the month under review. There also should be taken into consideration Labor Day, five Sundays, and a thirty-day month, as well as the Nanaimo accident, in which some sixteen miners were lost when the hoisting cable in No. 1 Shaft, Protection, Western Fuel Co., broke and let a descending cage fall.

The tonnages produced by the various districts follows:

	Tons
Vancouver Island.....	131,695
Crows' Nest Pass.....	17,784
Nicola Princeton.....	14,831
Northern Area (the first record from this field)	150

164,460

The tonnage produced by the various mining companies follows:

Vancouver Island.

	Tons
Canadian Collieries (D), Ltd.....	67,156
Canadian Western Fuel Co.....	50,858
Pacific Coast Coal Mines.....	5,581
B. C. Coal Mining Co. (Jingle Pot).....	3,273
Granby Mining & Smelting Co.....	2,327
Nanoose Collieries.....	2,500

131,695

Crow's Nest Pass Field.

Crow's Nest Pass Coal Colliery:		Tons
Coal Creek Colliery.....		3,224
Michel Colliery.....		1,399
Corbin Coal and Coke Co.....		13,161

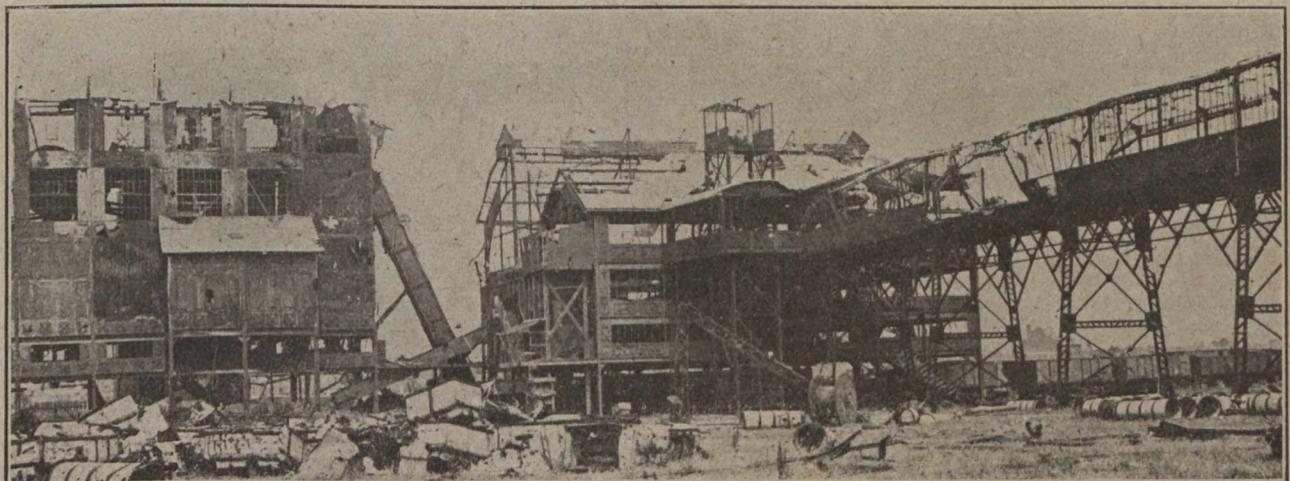
17,784

Nicola-Princeton Field.

	Tons
Middlesboro Collieries (Merritt, B.C.).....	8,327
Fleming Coal Co. (Merritt, B.C.).....	2,743
Coalmont Colliery (Coalmont, B.C.).....	748
Princeton Colliery (Princeton, B.C.).....	3,013

14,831

For the purpose of facilitating the equal distribution of anthracite coal in Canada during the winter a further Order-in-Council has been passed by the Dominion Government at the instance of Fuel Controller C. A. Magrath. The regulations contained in this order are designed to prevent disproportionate deliveries of anthracite to large consumers at times when the householder cannot be supplied, the fuel controller being given the right to prohibit entirely, or to limit in any manner he may deem advisable, the use of anthracite coal in any building. This does not apply to private houses using less than 40 tons of coal annually. This law will be enforced through the fuel administrators of the various districts or, in the event of there being no such official, direct from Ottawa by the fuel controller. Infractions of the ruling may be punished by heavy penalties.



—Canadian Official Photograph.

SOME SAMPLES OF WRECKAGE IN THE COAL MINING DISTRICTS.

DRILLING FOR COAL ON EAST COAST, VANCOUVER ISLAND.

New coal mine development of an important character has commenced on Vancouver Island, British Columbia. The measures known to exist on the East Coast near the town of Chemainus are being explored by means of diamond drill and those in the best position to hazard a forecast do not hesitate to predict that the results will be satisfactory as far as the quality and quantity of the coal, the existence of which is to be definitely established, are concerned. Mr. H. W. Treat, of Seattle, Wn., is the party best known in connection with these steps to develop this latent natural resource, but, according to newspaper statements and common report, he has behind him the capital of the Samuel Hill interests of the United States. If this is so it is generally believed that the coal industry of this section is likely, in the near future, to experience a very material growth.

The drills in question are being sunk near the foreshore at Chemainus, at which point Mr. Treat has secured some provincial leases and options on some Crown Granted Lands. Incidentally Mr. Treat, whose energies have been devoted to the Island for some months, has obtained options on coal bearing lands of the district. But in this particular section the drilling is being pushed forward expeditiously under the supervision of Mr. John Hamilton, who had charge of similar work for the Granby Consolidated Mining & Smelting Company, when that company was opening its coal mines at Cassidy's, Vancouver Island. The prospects for the establishment of another large colliery in this part of British Columbia, therefore, are bright and residents are looking forward to it with gratification.

An account of what led up to the present situation is interesting. When the E. & N. Railway Company obtained its land grant as a subsidy for the construction of the road the Dominion Government, besides giving it all the mineral rights within the limits of the belt with the exception of that of gold and silver, also gave it the right to mine "in and under the seas." The Government, however, was doubtful, apparently, as to whether it had the power to extend any such exclusive privilege to any company or individual. For that reason the qualification was inserted that this applied only if Parliament had the authority necessary under the British North America Act. This was the position when Mr. Treat and his associates cast their eyes on the East coast foreshores of Vancouver Island and visualized the immense deposits of coal which lay beneath the protected waters of its bays and estuaries. With the demand for coal the world over increasing and the price soaring it was decided that the point as to whether these rights were open or whether they were the exclusive property of the E. & N. Railway company should be brought to an issue. As was anticipated, no doubt, the plans of Mr. Treat had not proceeded far before legal proceedings were instituted by the company, and since then, up to a short time ago, the matter had been before the courts of the land. The result, as may be judged by the fact that development operations are proceeding, was that the position that the E. & N. Railway Company cannot claim exclusive foreshore privileges has been upheld, although, it is not improbable that the litigation will be carried as far as the Privy Council as the dispute is one of the highest importance, involving title, if the opinion of geologists is to be given any credence, to considerable coal deposits.

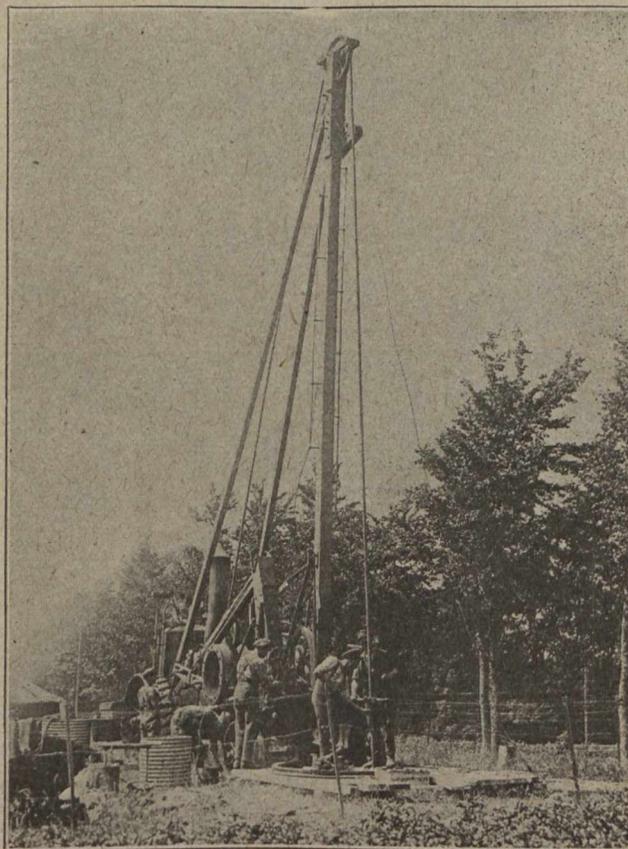
It is possible to get some idea of the coal wealth of the foreshores of the East coast of Vancouver Island, from Cowichan Bay to Nanaimo, a distance of between forty and fifty miles, and even further north, by contemplating the property of the Canadian Western Fuel Company at Nanaimo and its production. This company's

chief output comes from No. 1 mine, and its workings are under water. It acquired title to this, before the railway company got its land grant, from the Hudson's Bay Company, which, of course, was the pioneer concern in the opening up of Western Canada, as it was in the exploitation of the natural wealth of the whole of the Dominion of Canada.

GOLD PRODUCING POSSIBILITIES OF THE CARIBOO DISTRICT.

The gold producing possibilities of the famous Cariboo District of British Columbia, which already has to its credit a gold output aggregating \$65,000,000, is the subject of an interesting report by Mr. B. B. McKay, of the British Columbia Branch of the Dominion Geological Survey. Mr. McKay, who has spent considerable of the summer in that district, states that, notwithstanding the heavy increase in the cost of mining operations and the comparatively low, or standard price of gold, production is going on steadily. He predicts that in many parts of the country there will be much gold recovered, but does not look for this development until after the war, when more labor becomes available. With men looking for employment, and equipment cheaper and more readily secured, he declares that the ground will be made to yield richly. The use of hydraulicking, dredging, drag-line scraping, etc., makes this possible, where, in the old days, it would have been considered impracticable. Lack of transportation facilities, he says, is holding back development, there being areas in the vicinity of Keithley and Harvey Creeks which lack even the roughest of wagon roads.

The installation of the new plant in preparation for winter operations is occupying the attention of the management of the Delta Copper Co., Ltd. This property is situated on Rocher deBoule Mountain, Skeena District. Latest reports are to the effect that on the east end of the claims, and at an elevation of 6,250 feet a body of ore already is blocked out on the upper vein.



—Canadian Official Photograph.
Boring for water in a Canadian camp in France.

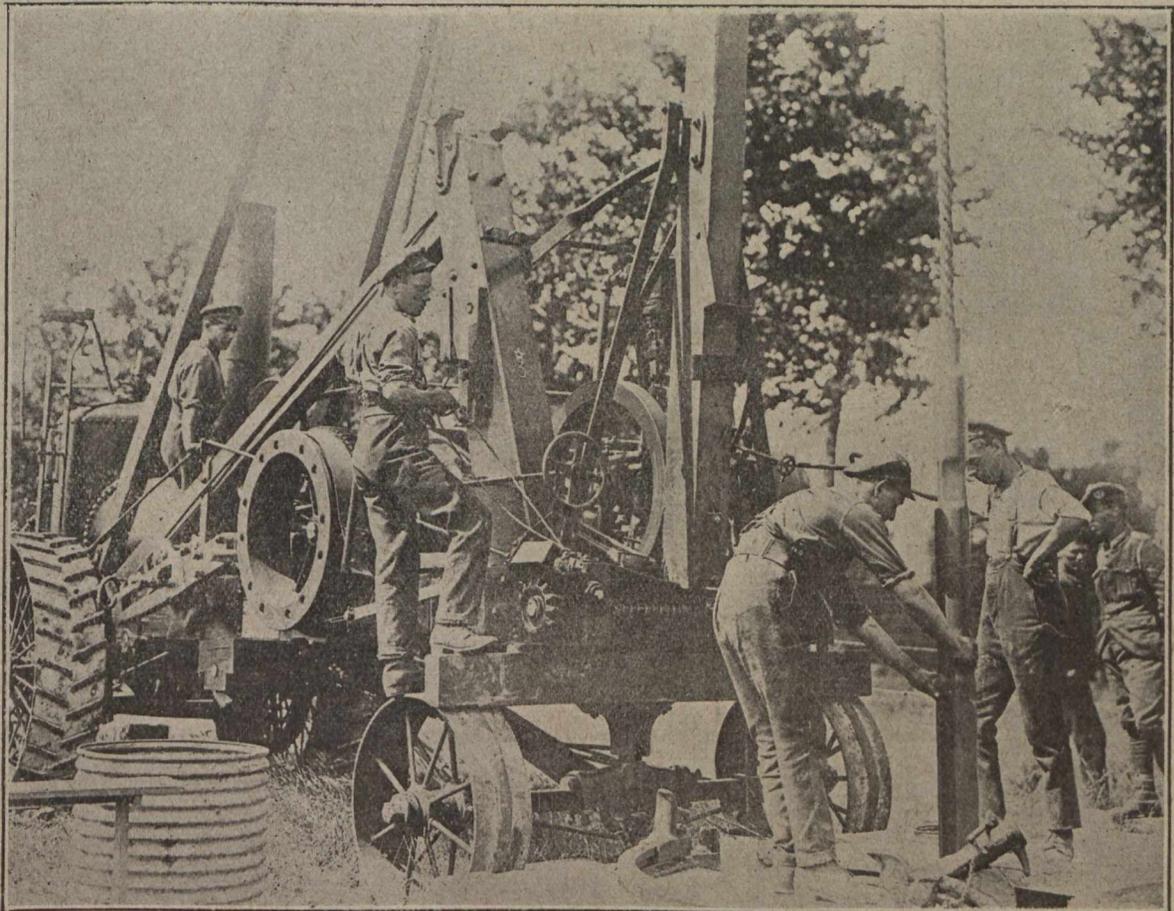
A. G. LANGLEY WILL REPRESENT BRITISH COLUMBIA IN SMELTER INQUIRY.

Mr. A. G. Langley, Provincial Resident Mining Engineer, with headquarters at Revelstoke, B.C., has been appointed to represent the Provincial Government at the pending inquiry into the justice or injustice of the rates charged by the Consolidated Mining & Smelting Co. of Canada, for the treatment of custom ores at the Trail (B.C.) Smeltery. This appointment is the result of a debate which took place in the British Columbia Legislature at its last session, the matter being introduced by members from the Boundary District, in which section are situated the majority of the shipping mines the owners of which are dissatisfied with conditions. The debate led to the passage of a resolution introduced by Hon. Wm. Sloan, Minister of Mines, to the effect that the Provincial Government should be represented at the proposed investigation and that, if the evidence adduced indicated that the mine operators were being unjustly treated, the whole question would be made the subject of a searching inquiry by a Royal Commission appointed by the Government of British Columbia and empowered to submit recommendations for the removal of the cause of protest and for the permanent and satisfactory adjustment of the smelter question in the Province. Mr. Langley therefore will attend each of the sessions of the Committee which now has the matter in hand, the members of which are Messrs. deLashmutt, Fowler and Anderson, and will report to the Minister of Mines. The first meeting of the Committee was to have been held on the 31st of October, at Nelson, B.C., but owing to the regulations prohibiting public gatherings of any kind, because of the prevalence of Spanish Influenza, an indefinite postponement has been announced.

ANOTHER WAGE INCREASE FOR COAL MINERS.

Another wage increase has been granted the coal miners of Vancouver Island, B.C., according to an announcement made on October 24th. The request for this advance has been before the authorities for some weeks, and it was felt that the delay in reaching a decision might have the effect of causing labor trouble of a serious character. Certainly such an outcome was threatened. The acquiescence of the government officials and of the operators, however, has resulted in quieting all murmurs of dissatisfaction. Final decision was reached at a meeting between Mr. J. Bulger, representing the Fair Wage Officer of the Dominion Government; Mr. Nichol Thompson, representing the Fuel Controller; and a number of British Columbia members of the Dominion House of Commons. The extent of the raise is 75 cents per day, and it was agreed further that a Commission consisting of the Dominion Fair Wage Officer and representatives of the men and the companies should meet once in every three months, as is done in Eastern British Columbia and Alberta, to adjust the wage scale in its relationship to the rise or fall of cost of living. The new arrangement as to wages will date from the 1st of November, and the Commission referred to will hold its first meeting in January. Another advance in the retail cost of coal in the province is certain to follow, it being state in authoritative quarters that Fuel Controller Thompson is likely to authorize the addition of fifty cents a ton to the present selling price, the change also to date from the first day of next month.

Under the terms of a recent Order-in-Council the Canadian War Trade Board is authorized to take possession and to operate for a period of five years if, necessary, any mines or properties in Canada which are producing chrome ore, or which have produced it in the past.



BORING FOR WATER IN A CANADIAN CAMP IN FRANCE.

—Canadian Official Photograph.

MANGANESE ORE ON VANCOUVER ISLAND.

In reporting on the recent manganese ore discoveries on Vancouver Island, British Columbia, Mr. Wm. M. Brewer, resident engineer with headquarters at Nanaimo, B.C., states that the mineral deposits in question are in his opinion of very considerable importance. As, however, there has been very little development done as yet, the extent and continuity of the deposits are undetermined. Samples assayed by the Provincial Bureau of Mines, it is stated, show results of percentage of manganese in the ore varying between 15.88 and 52.60 per cent with the majority of the samples showing over 40 per cent. manganese. It is impossible, he says, to form any reliable estimate of the tonnage actually in sight, but is of the opinion that the computation of Mr. G. C. Mackenzie, Western representative of the Munition Resources Commission, of 2,000 tons immediately available may be accepted. It is further stated that the deposits of manganese occur in a belt of cherty jasperised rock which is said to be continuous from Mount Sicker to the northerly end of Cowichan Lake, a distance of some forty miles, and is included in the Mount Sicker series of rock formation. Sufficient work has not been done to determine whether the deposits of manganese ore are residual or whether they occur as replacement deposits in the jasperised rock and occupy fissures in the sheared portion of the belt of rocks. The latter theory would appear, from the conditions at present shown by the shallow work that has been done, to be the most tenable, and if such prove to be the case it is reasonable to presume that the ore deposits may possibly maintain continuity to some considerable depth, as the shearing movement appears to be widespread and deep-seated.

INCREASE IN PRICE OF COAL IN BRITISH COLUMBIA

An increase of 75 cents a ton in the selling price of coal in British Columbia was authorized by Mr. Nichol Thompson, Pacific Coast representative of the Fuel Controller, on the 1st of November. Coal for domestic uses, therefore, now costs \$9.75 a ton in this province. The further advance is the direct result of the raise of 75 cents a day in the wages of the coal miners of British Columbia which was demanded by them and granted by the officials of the Fuel Control Department a couple of weeks ago.

Vancouver City proposes to appoint a Fuel Administrator under the terms of an Order-in-Council passed by the Dominion Government authorizing both Provincial and Municipal officers to work with the Fuel Controller in fixing prices, regulating distribution and in the discharge of the many other duties of the department. Up to the present the Provincial Government has not named a Fuel Controller for this section of Canada, but Mr. Thompson is acting in the interim. It will be the duty of Vancouver's representative to protect the citizens of that City against unduly high prices and, in the event of a shortage of fuel this winter, which does not seem likely to occur, to see that the available resources are fairly allocated.

CROWS' NEST PASS COAL MINES PRODUCTION INCREASING.

When the miners of the Fernie-Michel District, Crow's Nest Pass, British Columbia, went back to work on the Single Shift System, thus having gained that for which they struck for thirty or more days, it was understood that a Royal Commission was to be appointed by the Provincial Government to investigate the men's charge that a single shift was necessary "because of the dangerous condition of the mines." It is authoritatively reported that the delay in the announcement of the personnel of this Commission is due to the men having failed to nominate their representative to its counsels. The company, it is said,

has done so and the government is prepared to take action as soon as the miners are heard from. The explanation given of the delay on the miners' part is that because of the Provincial regulations prohibiting public gatherings as a step towards stamping out the epidemic of Influenza in the West, they have been unable to assemble for the purpose of selecting one of their number to take part in the investigation. Meanwhile the work at the mines is proceeding without apparent trouble and it is satisfactory to be able to report that the re-organization following their enforced idleness is practically complete and that the output from this district may be expected to approximate normal in a very short time.

It is likely that as a result of the recent miners' strike on the coal field of the Crow's Nest Pass, British Columbia, some of those who left their work will be called to the colors under the terms of the Military Service Act of British Columbia. An appeal has been entered by the military authorities against the further exemption of twenty-four employees of the Crow's Nest Pass Collieries on the ground that they have disobeyed the order made by Judge Thompson when he allowed them exemption, it being shown at that time that they were engaged in a work of national importance. This order only permits any employee to remain idle from this essential employment twenty-four working hours within any calendar month. During the strike for single shift twenty-nine working days were lost. The appeals were heard on the 13th of November.

It is announced that the Taylor Engineering Company, of Vancouver, B.C., which was constructing the road, which is designed to open up the Alice Arm Mining District of Northern British Columbia, has assigned for the benefit of its creditors. The latter, it is stated, include most of the workmen engaged on the line. They refused to continue any longer without their wages when within two days of having so far completed the road as to permit of the shipment of ore from the Dolly Varden Mine to Alice Arm Camp. The failure of the construction company, while constituting an unfortunate interruption, is not expected to hold back long the completion of the railway, and the active development of the several mining properties which it taps.

CHROME ORE ON BRIDGE RIVER, B.C.

A recent discovery of chrome ore by Frank Tracey and C. A. MacKay, assays 52 per cent. chromium oxide and a trace of platinum. This ore is the highest grade of its kind yet recorded in British Columbia. The claims are about 8 miles along the Chilcoton Trail on the Bridge River Road and 41 miles from the Pacific Great Eastern Railway.

The Pioneer Mine, Bridge River, has completed sinking a vertical shaft 300 ft. deep. Good ore showings have been revealed and the mill will be soon working to capacity.

The Lorne and Ida May Mines have been operating all summer, but very short handed, help being almost impossible to obtain.

A trail to the Henry Schwartz copper property on Gun Creek, has been partially completed by the Provincial Government. Development work this summer has produced a good showing of copper. Mr. MacKinnon, of Vancouver holds an option on this property.

William Davidson has made a discovery of copper at the mouth of Gun Creek. The first assay shows 6 per cent. copper and 2 per cent. nickel in addition to gold and silver values.

PERSONAL.

Mr. M. F. Fairlie, superintendent of the reduction plant of the Mining Corporation, is now in charge also of the mining operations. Mr. Fairlie succeeds Mr. Chas. E. Watson, who was lost on the "Princess Sophia."

Mr. A. D. Miles, president of the International Nickel Co. of Canada, Ltd., is in Toronto. The company's head office is to be in the new building of the Toronto Harbor Commission.

Mr. J. L. Agnew is now vice-president of the International Nickel Co. of Canada, and is in charge of the company's mines and smelter in the Sudbury district, until recently operated by the Canadian Copper Co. Mr. J. C. Nicols is general superintendent. Mr. E. T. Corkill is superintendent of mines. Mr. E. A. Collins succeeds Mr. Corkill as safety engineer.

Mr. John More is general manager of the nickel refinery at Port Colborne.

Mr. J. B. Tyrrell has returned to Toronto from Matachewan.

Mr. Robt. Bryce has returned to Toronto from New York.

Mr. T. J. Flynn is in Toronto.

J. A. McLean has resigned as advertising manager of the Canadian General Electric Co.

Mr. Nicol Thompson will act as chairman of the Vancouver Chamber of Mines until the next annual election.

Mr. Oscar Lachmund, former manager of the Canada Copper Corporation, has opened an office in Spokane, Wn., his line of business being the revision of smelter contracts, the determination of process for treatment of ore, flow sheets for mills and the examination and non-resident management of small mines.

Mr. James L. Brown has been appointed Overman at No. 7 Mine, Canadian Collieries (D) Ltd., vice Mr. Robert Brown.

Dr. Jas. L. McKee, formerly of the University of Cork, Ireland, has been taken on the chemistry staff at Queen's University. Dr. McKee served as chief chemist for the British Explosive Company, whose plant was recently destroyed at Trenton, Ont.

Prof. V. C. Clarke, of the department of Economic Science at Queen's University, has been released by Queen's University for a year at the request of the Dominion Government, in order that he might get to Ottawa to assist the Department of Labor in problems of reconstruction following the war.

Hon. Martin Burrell, Minister of Mines, has returned to Ottawa, after a trip to British Columbia.

Mr. Geo. Mackenzie, of the Mines Branch, has returned to Ottawa from British Columbia.

A meeting of the Council of the Canadian Mining Institute was held in Montreal on Friday, November 15th. It was decided that the next annual meeting will be held in Montreal in March.

Mr. S. T. Kirkpatrick, of M. J. O'Brien, Limited, is opening offices in the Union Bank Building, Ottawa. Mr. N. B. Davis, of Kingston, has joined the staff. Research work for the company will be carried on at Queen's University by Dr. Drury.

Mr. G. J. Mackay succeeds Prof. Kirkpatrick as Professor of Metallurgy at Queen's University.

Prof. J. C. Gwillim, Professor of Mining at Queen's University, has been granted a year's leave of absence, and will stay in the West.

OBITUARY.

Sydney A. Lang.

The death of Lieut. Sydney A. Lang at St. John's Camp recently, makes a total of seven that have passed away out of the graduating class of 1914 in the Mining Department of the University of Toronto. There were twenty members of this class. Five have made the supreme sacrifice in France, while two have died in Canada. Three other members have been on the casualty lists at various times. The record of the class is one that the University of Toronto and Canadian mining engineers may well be proud of.

F. C. Andrews, J. S. Taylor, S. D. Ellis, J. S. Fleming and G. B. Taylor fell in France. W. A. MacDonald and S. A. Lang passed away in Canada. May we be pardoned for suggesting that possibly the spirit of Dean Galbraith which was instilled in these boys at college, showed them the path of duty and helped them die like men?—D. S. H.

A. B. Clabon.

A. B. Clabon, president of the Vancouver Chamber of Mines, lost his life on the afternoon of Wednesday, October 16th, when he fell over a precipice at Silver Creek, B.C., striking a ledge of rocks 100 ft. below, from which his body rebounded and was thrown 100 ft. further down the gully. Mr. Clabon had been active in mining affairs for many years, residing for a time at the Rossland Camp, before moving to Vancouver. Keenly interested in the mineral development of British Columbia, he took a prominent part, in common with officers and members of the Chamber of Mines, in bringing to public attention the possibilities of the industry. Within the last few weeks he was instrumental in interesting Eastern capitalists in the Wolsely claims, Silver Creek, and it was in connection with this business that he was visiting the properties when the fatal accident happened. Mr. Clabon was well known in Toronto, where he resided for some time, as well as in British Columbia where most of his mining interest was.

Two tons of ore containing platinum values have been shipped from Olivine Mountain, Tulameen, B.C., by the Olivine Mountain Syndicate, the members of which include some prominent residents of Vancouver, B.C., It has been forwarded to the Faust Concentrating Plant, Seattle, Wn., for a test with a view to ascertaining whether platinum can be extracted in sufficient quantity and at a cost low enough to make the operations a commercial success. If this can be demonstrated it is the intention of the Syndicate to install a plant at Tulameen to produce platinum from the dunite which carries this mineral along with gold, copper and microscopic diamonds.

Representations are being made to Hon. Martin Burrell, Canadian Minister of Mines, favoring the appointment of a Canadian mining man to the Commission to Siberia from the Dominion. Those supporting this proposal point out that there is as much common interest between the western section of Canada and Siberia in respect of mining as there is in regard to agriculture, fisheries, and transportation. They argue that it is important that the mineral resources of the two countries would be better known and better understood in each of the countries with a view to laying the foundation for the period of economic and commercial development which will follow the cessation of hostilities.

SPECIAL CORRESPONDENCE

BRITISH COLUMBIA.

What is described as quite an important discovery of chrome ore is reported by Messrs. Frank Tracey and C. A. McKay. The deposit is situated in Taylor Basin a short distance off the old Chilcotin Trail, British Columbia. Samples have been left at the quarters of the Chamber of Mines, Vancouver, which have made a favorable impression. The prospects have not yet been developed.

Mining men of this Province are interested in a specimen of nickel ore from a new discovery in the Bridge River District, British Columbia. When the lead was exposed it was thought that its chief value was copper, but returns from the Ottawa Assay Office show that its primary content is nickel, with silver, copper and platinum values. Three claims have been located and the intention is to develop them without loss of time.

Assurance has been given that the development of the Silver Creek Mining Property, near Revelstoke, B.C., will not be unduly delayed by the deaths of Messrs. C. E. Watson and G. O. Randolph, who went down with the Str. Princess Sophia. A successor to Mr. Randolph will arrive at the property shortly to take up his work, and development will proceed without cessation.

Consolidated M. & S. Acquires Voight Properties.

The Voight Copper Property on Copper Mountain near Princeton, B.C., has been acquired by the Consolidated Mining and Smelting Co. of Canada. This is one of the best known low-grade properties in British Columbia, the claims covering some 6,000 acres and having been in the possession of Mr. Emil Voight for several years. At different times there have been reports that the property had been disposed of, but the companies or syndicates taking them over, while doing considerable work, failed to carry through the purchase. As a result of these transactions legal actions developed from which Mr. Voight has emerged with his title confirmed. While no announcement is made as to the monetary consideration involved in the latest deal there is no doubt that the sum is substantial as the claims have been held for close up to \$1,000,000. The Voight Claims cover fully one-half of Copper Mountain, the Canada Copper Company owning the other half, on which it has done a large amount of development work in recent years and now is fast preparing to commence actual mining. These preliminary preparations, it may be said, include the construction of a 2,000 ton concentrator, the building by the Kettle Valley Railway of a branch line, fourteen miles in length to the mine, and an extension of the power line at Greenwood, B.C., to the property, a distance of about 100 miles. It is expected that the Consolidated Mining and Smelting Co. will inaugurate extensive development operations in connection with its new holdings.

Rocher DeBoule Copper.

The Rocher DeBoule Copper Company has closed down its mine which is situated about 10 miles from Hazelton, B.C., and the ore of which carries good copper values with low values in gold and silver. It is expected that next year a small mill, capable of treating approximately 50 tons a day, will be installed for the purpose of handling the milling ore reserves now in the mine. This work, however, is entirely dependent on the labor market, cost of machinery, etc. The mine was worked steadily this year until the end of September and about 4,000 tons of ore was shipped averaging 7 per cent. copper and \$4 a ton in gold and silver values.

Surf Inlet Mines.

Late reports regarding the operation of the Surf Inlet Mines, British Columbia, are very satisfactory. The tonnage milled, gross value, and net profits for the current year since date of the last annual report are given as follows:

	Tons Milled	Gross Yield	Profit per Month
March.....	8,377	\$95,863	\$37,376
April.....	9,141	84,204	31,460
May.....	8,957	79,780	24,147
June.....	8,880	88,726	30,047
July.....	9,407	89,132	31,153
August.....	7,158	81,069	24,888
Totals $\frac{1}{2}$ year.	52,920	\$518,774	\$179,171

It is stated that the ore reserves will warrant an increase in the milling capacity when gold mining conditions become more favorable.

Silver Standard.

The Silver Standard Mine, situated about five miles from Hazelton, B.C., and the character of the ore of which is silver-lead-zinc, is proceeding with development work. According to report a new shoot of high grade ore has been struck. It is four feet in width and from it a considerable tonnage of clean ore will be available for shipment. A new 50 ton mill, which was commenced in the fall of 1917, was completed in June and changes, additions and improvements also were made in the power plant and surface buildings at the mine.

Will Develop Fitzsimmons Claims.

The Fitzsimmons Group of Copper Mineral Claims, situated on Green Lake, are to be developed, having been bonded by the Consolidated Mining and Smelting Company. A camp has been installed, a trail built to the lower mineral showings, and the work will be pushed forward during the winter. As this is the third property on the coast taken over by the Consolidated Company mining men are expressing the opinion that it is indicative of a fixed policy to obtain control of properties possessing, in the aggregate, a sufficient tonnage of ore to warrant the construction of another smelter somewhere on the British Columbia Coast. That this is the ultimate intention of the company is the belief of most of those who have been watching mining development in the province during recent years.

Quesnel Placer Mining.

Interesting experimental work has been in progress during the past summer on the placer property of the Quesnel Hydraulic Mining Co., situated on Twenty-mile Creek, Quesnel River. This ground consists of an immense deposit of gravel, in part gold bearing. Under the management of Mr. Howard Du Bois an ample water supply for large scale hydraulicking operations was laid on the property, the complete equipment costing about \$1,000,000, and being finished in 1911. The 1912 operations, however, proved a failure as the gravel did not contain sufficient gold to pay operating expenses. Since then prospecting and testing has been carried on under the present management with a view to deciding whether portions of the gravel deposit will pay to work. In the course of last year's investigations it was found that the black sand concentrates in the riffles of the sluices carried, in places, appreciable platinum values. This year, therefore, a plant was installed to save this black sand, the fine material being taken from the sluice box by an under-current and put through a mill consisting of jigs and table and a clean black sand concentrate being obtained. From one half to two tons of this material a day is being re-

covered; the daily recovery varying greatly as different strata of the gravel are being hydraulicked. The question of platinum values, however, is not settled yet, as some assays show platinum and others do not. Thorough testing of the black sand is being carried out.

Takes Options on Silver-Lead-Zinc Claims.

Options have been secured on about a dozen mineral claims situated on Nine Mile Mountain, twelve miles from Hazelton, B.C., by Mr. T. R. Jones, acting for a Toronto Syndicate. The more important of these properties are the Sunrise, Silver Cup, Lead King, and Miller. They were worked some years ago but since have been idle until this year, when surface work was undertaken with encouraging results. The ore is silver-lead-zinc, and it is expected that vigorous development will be initiated next summer.

Alice Arm.

The railway and tram line up the Kitsault River, linking up the Dolly Varden Mine with the Alice Arm Camp, and furnishing an outlet for what is expected to develop into one of the most productive mineral districts of the northern section of British Columbia are almost completed. Mining men anticipate that, with transportation facilities provided, the copper, silver, lead and zinc ores of Alice Arm and the tributary country will be opened up, that several large shipping mines will be in operation shortly, and that prospecting will prove further possibilities than those now indicated. It is asserted that the Granby Consolidated Mining and Smelting Co. is interested in the Alice Arm country which is taken as a sure sign that mining activity will become more pronounced. One reason given for this belief is the fact that the company has surveyed the water-power of the district, the object being, it is confidently stated, the selection of a site for a plant with which to prosecute mining operations.

INTERNATIONAL NICKEL.

New York, Nov. 10th.—The International Nickel Company reports a surplus of \$3,415,905 for the six months ending September 30th, after the deduction of charges, war taxes and preferred dividends. This is equivalent to \$2.04 a share on the common stock, as compared with \$2.68 for the corresponding months of 1917 when there was a surplus of \$4,484,396. The total income for the first half of this year was \$7,809,342, an increase over the preceding year of \$102,279. Administration and general expenses, however, increased by just about this amount.

The decrease in surplus is accounted for by the heavier appropriation made to cover United States and foreign taxes, \$2,749,126 being set aside for this purpose, an increase of practically \$1,000,000 above the reservation of \$1,741,140 during the corresponding period of 1917. After the deduction of \$995,090 for depreciation, practically the same amount as that set aside a year ago, there are profits of \$3,683,283. The preferred dividends amounted to \$267,378, leaving a balance for the common of \$3,415,905.

Satisfactory progress is being made in the installation of plant necessary for the fuller development of the Gibson mineral claims situated in the Ainsworth Mining Division, B.C. A new compressor and power plant are being placed, the former close to the mining operations and the electric plant at a greater distance. A Plenton wheel is to be used to operate the compressor, it being planned to provide sufficient air to keep three drills going at the mine. The work is being rushed with a view to having the entire plant ready for work by the end of the year, and it is confidently expected that this will be achieved, more especially as the former difficulty of securing labor seems to be somewhat relieved.

NORTHERN ONTARIO

Lake Shore

From month to month a steady increase in production is being shown at the Lake Shore Mines at Kirkland Lake. The August record was the highest in the company's history. With a capitalization of \$2,000,000, the company has been brought from a prospect to the producing stage, without further financial encumbrance, chiefly through the efforts of the staker of the claims and present president of the company, Mr. Harry Oakes. This satisfactory financing and management of the concern led to the results of the first clean-up being available for the treasury of the company. The mill was first placed in operation on the 8th of March last. Not only is the company now in a position to disburse dividends at the rate of about 10 per cent. annually, but it is also in a position to add steadily to the net surplus, and thus from profits in excess of dividend requirements will be able to finance further enlargement to milling equipment and enlarged plans of underground development of the property. The company made its initial dividend disbursement of 2½ per cent. on August 20th last. It is considered highly probable that a second disbursement will be made before the end of the current year. With a production of upwards of \$40,000 per month the company is turning out about half a million in gold per annum.

What appears to be an important discovery of gold has been made on the Cullen-Renaud claims adjoining the Miller-Independence property at Boston Creek. The new find is a short distance south from the north boundary of the south claim of the group. The vein has a strike of southeast and northwest and may thus be said to run at right angles to the Miller-Independence. The break in which the gold values occur is about eight feet in width. Exceedingly spectacular splashes of gold are in evidence. However; what is considered a more important feature of the deposit is the very probable presence of tellurides in the ore. This property was recently optioned to Robert W. Norrington and his associates of Detroit, and the work being done is under the supervision of these interests. The work of further opening up the vein is proceeding, and it should soon be possible to estimate the importance of the find. Earlier efforts at the opening up of this property it appears were partly conducted on this vein which cut across a large porphyry dike on which development work was chiefly centered. At one point the dike was broken up and contained high grade gold values, while either to the northeast or southwest it was found to contain little or no gold. Thus some years ago the present vein was in reality discovered without the owners of the property being aware of the fact that it constituted a high grade vein cutting the porphyry dike at right angles.

Miller-Independence

Cross-cutting is under way at the 200-foot level of the Miller-Independence property at Boston Creek. The ore deposition has been proven to continue with undiminished consistency to this depth and the richness of the vein matter is second to none so far discovered in the whole north country. With the 40-ton mill in operation within the next week or two, and drawing ore from such an important body the mine promises soon to become an important producer. A large number of other properties in the district, including the Boston Gold Leaf, the Mondeau, the Hughes Group, the Cotter, and others are receiving a good deal of attention and a number of more or less important discoveries have been recorded. Thus the Boston Creek field may safely be said to be now in the throes of a boom, which if normal conditions existed, would probably equal any other such period in the life of the various mining camps of the north country.

Pittsburg-Lorrain

Milling operations continue by the Pittsburg-Lorrain Syndicate, operators of the old Currie Property, as well as operators under lease of the old Wettlaufer mine of South Lorrain. A small oil flotation plant has been added to the equipment of the old mill on the property, and is being used in the treatment of the ore. During the month of September the company shipped one carload from the Pittsburg-Lorrain and it is understood another shipment is about ready to go forward.

Teck-Hughes

Underground development at the Teck-Hughes mine has been resumed at Kirkland Lake, and efforts are being made to get the required number of men to place the milling end of the mine in operation also. The mine was closed down several months ago due to the supply of labor being inadequate, and the costs of material almost prohibitive. The announcement of a resumption of operations, therefore, came as somewhat of a surprise in the north. The property is equipped with an 80-ton mill. The ore bodies in the mine occur in more or less lenticular bodies, these bodies sometimes widening out to upwards of thirty feet. The operation of the mill during previous working did not prove as satisfactory as might have been expected. The policy to be adopted by the company in the new effort at operation has not been announced.

Schumacher

A loss of \$7,695 for the fiscal year's operation ended March 31st last, is shown in the annual report of the Schumacher Gold Mines, Limited, which is being mailed to shareholders. Bullion production amounted to \$202,387, and other small credits raised the total income to \$202,783, while costs total \$210,479. The surplus carried forward was \$65,530, as against \$73,013 the year before.

President F. W. Schumacher says in his report that, by resorting to selective mining, the property could have been kept in operation, but that it was decided to close on July 15th, rather than mine the rich lenses of ore.

During the period of operation development work was aggressively carried on as is shown by the following figures: Drifting, 1442.2 feet; cross-cutting, 1127.9 feet; raising, 178.7 feet; diamond drilling, 705 feet; stoping, 15,753 cubic yards.

The mill treated 45,373 tons of ore valued at \$259,365.30 and recovered bullion worth \$242,060.84. Income from other sources amounted to \$635.59. Operating cost amounted to \$234,021.33 being \$1.22.02 per ton of ore milled for milling, and \$3.93.75 per ton of ore milled for mining, and all other charges except depreciation. The foregoing figures are from the period between March 31st, 1917, and July 15th, 1918.

Referring to the success of the adjoining properties, the Hollinger and McIntyre at depth, the president points out that the Schumacher directors had mapped out a policy of exploration at depth, but war conditions prevented its carrying out, consequently ore reserves have not been augmented much since the previous annual report.

Toronto, Nov. 14th.—A special meeting of the shareholders of the Schumacher Gold Mines was held immediately before the annual meeting to-day, at which the by-law providing for the sale of 100,000 shares of treasury stock at a discount of not more than 55 per cent. was ratified. A total of \$1,260,000 shares were represented.

At the annual meeting the annual report was passed and the old directors were re-elected, except that Charles A. Cover was elected in place of O. C. Manley, F. L. Culver, vice-president, presided and spoke of the in-

evitable favorable effects of the imminence of peace on the gold industry, and expressed himself as sanguine that it would not be very long before the mill resumed operations.

He said it was the intention of the management to sink the main shaft ultimately to the 1,000 or 1,200 foot level. The mill, he added, had a capacity of 180 tons per day, and a small addition to machinery would readily increase the capacity to 300 tons.

THE SPITZENBERGEN COAL MINES.

There have appeared recently in the daily press many news items concerning coal mining in Spitzbergen. These followed an announcement that a British expedition had reached Spitzbergen to operate the mines.

The development of the coal mines of Spitzbergen is largely due to the efforts of an American, well-known in the Lake Superior iron districts, J. M. Longyear, of Marquette. He successfully carried on exploration in the face of many difficulties, not the least of which was the inability to secure title to the properties.

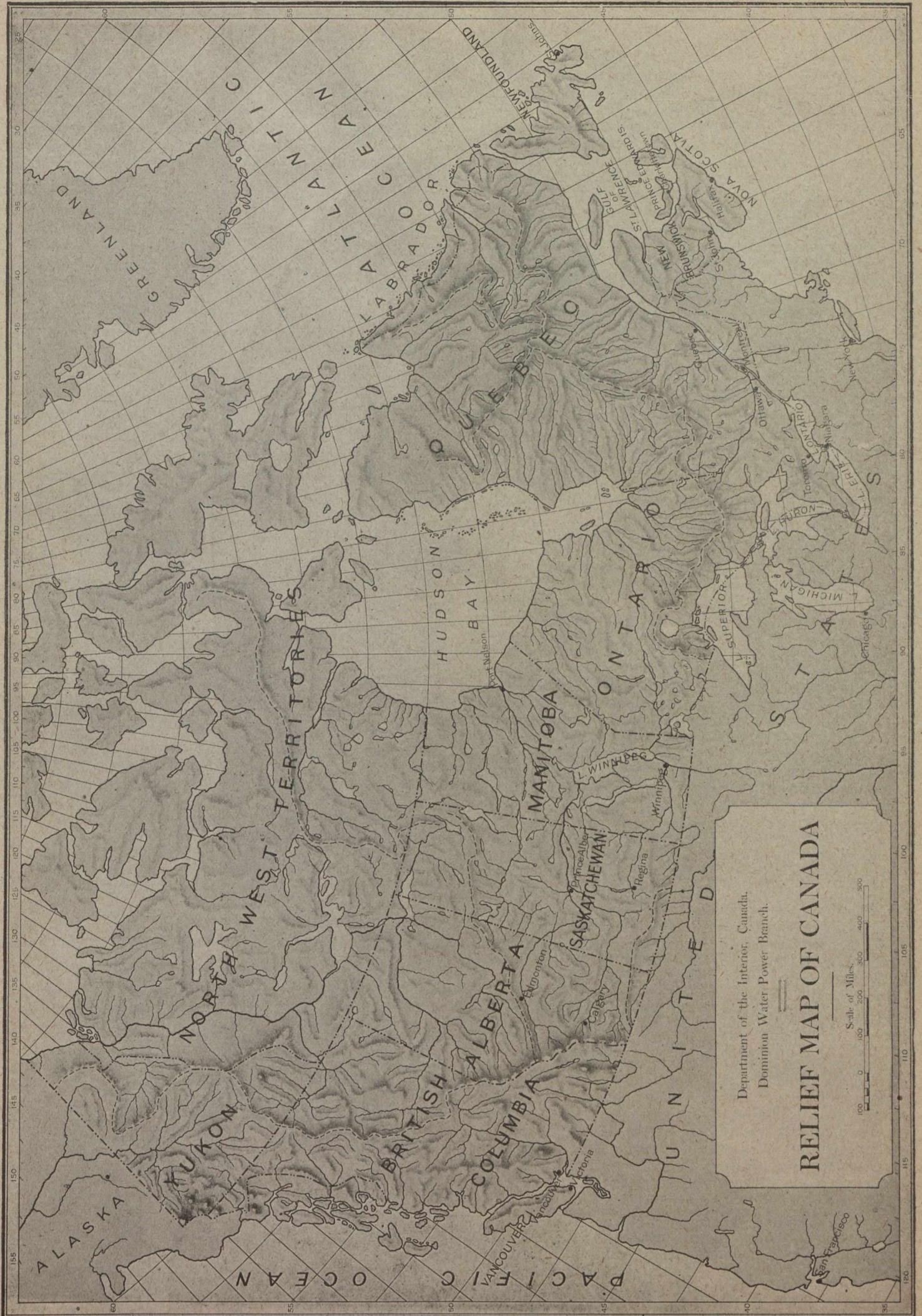
The Spitzbergen islands apparently belong to no country. Mr. Geo. E. Edwards, in an article published by the "Mining World," a few years ago, quoted Mr. Longyear as saying, "If some one stronger puts us off, the property is his." The British Government apparently declared sovereignty over Spitzbergen in 1870, but later renounced title.

The Arctic Coal Co. organized by Mr. Longyear began operations in 1905, holding its property only by possession. Though cut off from the outside world for about eight months of the year, mining was carried on steadily. Mr. Edwards wrote in 1914: "The mine is on a hillside, and the coal is dropped to the stock pile on the ocean shore at Advent Bay by means of an aerial tramway. When navigation opens (in June), this stock-pile contains about 100,000 tons, which is about the present annual shipment. The coal is loaded by crane into cars which run out to bins at the ship landing at the end of a long dock. The dock remains a mass of ice and stone the year round. . . . Everything used about the mines must be shipped in to Spitzbergen, even timber. . . . The staff are mainly American and Norwegian. . . . Two seams are being worked. These contain about 100,000,000 tons of coal, estimated as in sight."

The Norwegian Government has a wireless station about 30 miles from the coal mine, and there is a smaller installation at the mine thus giving communication with the outside world.

DEVELOPING MINERAL DEPOSITS NEAR EDGEWOOD, BRITISH COLUMBIA.

Near Edgewood, B.C., on the west side of the Arrow Lakes, and 100 miles from Revelstoke, B.C., there is a mineral belt colloquially known as Lightning Peak which is being actively developed. There is work in progress on six properties in this locality, the Waterloo, Silver Spot, Dictator and Extension, Rampolo, Lightning Group and Lumpy Group. High grade ore is being shipped from the Waterloo and it is the intention to continue work all winter. Development is underway on the Silver Spot, Dictator and Extension, and the Rampolo, some very fine ore being in sight on the latter. The Lightning Group will be worked without cessation and the Lumpy Group, a new discovery, is to be opened up by the driving of a tunnel this winter to the ledge at 100 ft. depth. Camp is being built and supplies secured. The ledge is said to be 60 ft. wide, and to give values of 145.5 ounces silver, with a picked sample showing 675.5 ounces at the grass roots. A pack trail is the only present means of transportation and it is understood that the Government is to be asked for financial aid in the construction of a permanent trail or wagon road.



KERR LAKE

The annual report of the Kerr Lake Mining Company for the year ending August 31st proved pleasing reading for the shareholders of the famous Cobalt company as well as for all interested in the welfare of the mining camp. In spite of the company's record production the ore reserves were maintained, showing as of September 1st, 1918: 34,730 tons containing 639,800 ounces of silver, and 997,500 ounces of high grade silver, a total of 1,637,000 ounces of silver. In ounces produced as well as value received for the product the past year was the best in the history of the company. The production for the past year amounted to 2,582,993 ounces, against 2,551,345 ounces the preceding year. The total income of the operating company was \$2,394,218, against \$1,909,465 in 1917 and \$1,286,209 in 1916. After paying surplus and dividends a surplus was left of \$1,022,316, an increase over the previous year of \$344,841 and an increase over 1916 of \$880,615. The high price of silver for the current year accounts for the big surplus after the payment of the 20 per cent. in dividends. The company carried forward a balance from the previous year of \$1,711,045 which brings the balance carried forward to the end of the present year to \$2,733,361, while the outstanding stock of the company equals only \$3,000,000. The costs of production totalled 28 cents per ounce. The total amount paid in dividends to August 31st, 1918, was \$7,710,000.

During the year 3,088 feet of development work was done by drifting, cross-cutting, raising and sinking in the more favorable portions of the property. This development footage compares with 3,105 feet last year. As the ore reserves of the mine are decreasing each year, we may expect the grade of future ore extracted to also decrease. The total estimates of ore given in the report may be considered positive commercial ore under present conditions, although future development by stoping and otherwise may somewhat increase these figures."

This statement by the company proves the importance of the silver mining industry not only to the shareholders of the Kerr Lake Mining Company and the Cobalt district itself, but to the Province of Ontario, and the Dominion of Canada, all of which receive in one form and another a share of the large earnings of this progressive mining concern.

DETERIORATION OF WIRE ROPE.

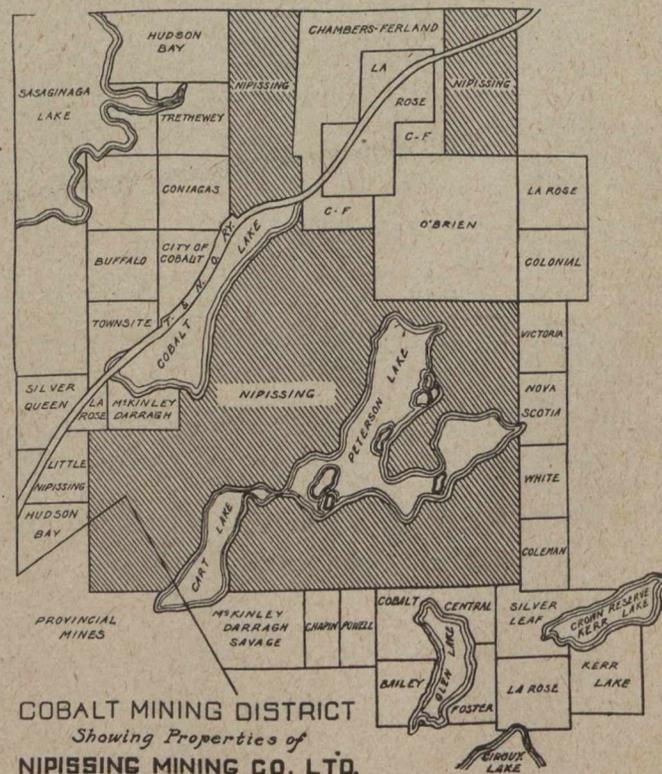
Wm. Fleet Robertson, Provincial Mineralogist for the Province of British Columbia, has returned to Victoria from Montreal, where he has been testing the cable used in Protection Shaft, Western Fuel Company of Canada, the breaking of which allowed a descending cage, loaded with miners on their way to work, to fall, carrying its passengers to instant death. What Mr. Robertson was able to ascertain as to the cause of the breaking of this rope will be told to a Coroner's Jury in Nanaimo, B.C., on the 19th of November. It is understood that he will be able to show that the break was the result of internal corrosion, brought on by the action of water. This, however, is not official, but it is known definitely that the Provincial Mineralogist carried out some careful experiments in the laboratory of McGill University and that, as a result, he will have some interesting statement to make, not alone as to the reason for the deterioration of the steel rope of Protection Shaft, but with reference to the best means of preserving cables of similar character used in mining operations from like deterioration.

INTERNATIONAL COAL CO.

Diamond drilling of coal measures situated near the mouth of the Chemainus River, Vancouver Island, is being resumed as a result of the successful defence in the

court by Mr. H. W. Treat, of his Provincial Title to these coal lands. The soundness of the licenses he holds, it will be recalled, was contested by the E. & N. Railway Co. Mr. H. W. Treat announced that the work would proceed a few days after the court's decision. He is of the opinion that the coal measures in question are the same as were worked by the old Wellington (B.C.) Mine, the area being prospected in this instance being about eight square miles, off the foreshore. The operations, it has been disclosed, are being carried on by the International Coal Co. at the head of which is Mr. Samuel Hill, of Seattle, Wn., son-in-law of the late railway magnate, Mr. James J. Hill. It is pointed out that one great advantage possessed by this property in the event of the existence of coal in commercial quantities being proved, is its accessibility. Its location on the waterfront, it is figured, will permit coal to be placed in the hands of dealers at least 50 cents a ton cheaper than can be done in the cases of most of the Island mines.

Advices from the Stewart (B.C.) Mining Camp indicate that that little community has suffered severely through the ravages of Influenza. With insufficient drugs, no doctor immediately available, and little or no liquor to be had, the patients not only were without skilled professional attention, but could be given nothing more than personal care. The latter was provided by the miners and prospectors of the surrounding districts, who dropped their work for the purpose, all the women of the town being ill. In a mining way Stewart seems to be flourishing, miners from the locality predicting that it is going to prove the biggest gold and silver producing section of British Columbia. The Bush Property near Cascade Creek, recently acquired from a New York Syndicate by Mr. R. K. Neill, of Spokane, Wn., is spoken of most optimistically. Mr. Neill, who came south some weeks ago, is making arrangements for the transportation of ore this winter. The Nesbitt, George, and Lesley properties also are mentioned, and a new company was incorporated recently to work the latter group.



Map showing location of Kerr Lake property.

The Situation at Rossland.

One of the most striking illustrations in British Columbia of the effect of the reduced purchasing power of gold is the situation at present at Rossland, B.C., where the mines of the Consolidated Mining & Smelting Co. have been practically closed down. There has been no ore shipped for some months although work is being carried on in the chief mines of the Camp with small forces. Those employed, however, are engaged only in development, preparations being made for the renewal of activity as soon as conditions again become normal. Only about 200 miners are working in the Le Roi, Centre Star, and War Eagle, while about 80 are employed in the Josie all of which are Consolidated Company's mines. On the Velvet, situated about nine miles from Rossland and owned by Granby Company interests, there are some 50 men. The people of Rossland, however, are not discouraged. The camp is being sustained by other forms of mining and better times than ever are anticipated later on when, it is expected, the mines now dormant will be reopened on a larger scale than heretofore. It is the firm belief that the time is not far off when costs will decline and the demand for gold will continue to be insistent.

Loper Goes to Penitentiary for Over Issue of Stock.

Mining men of this Province have been following the prosecution of Mr. G. Weaver Loper, formerly president of the Lucky Jim Zinc Mines of Victoria, B.C., with considerable interest. On October 2nd, he pleaded guilty to the charge of fraudulently over-issuing stock of the concern, having been arraigned at Spokane, Wn., He was sentenced to a term of from one to ten years in the penitentiary of that State.

Developing Old Sport Copper Property.

Development work on a fairly large scale continues on the Old Sport Group, which is a block of claims under bond to the Consolidated Mining & Smelting Co., since September, 1916, situated on Elk Lake near Quatsino Sound. Operations up to the present have been directed to the proving of a large tonnage of low grade copper ore which may be said to have been already practically established. Diamond drilling has been carried out with satisfactory results and it is confidently expected that it will not be long now before the company is prepared to commence shipping. The ore values, generally speaking, run between 1.4 and 4 per cent. Mr. Wm. Brewer, District Mining Engineer, in his report of 1916, says, in this connection: "In some parts of the orebody exposed in the main adit the copper values run as high as 14 per cent. for a width of 4 or 5 feet, but, so far as known at present, these enriched shoots are irregular and of such limited extent that the value of the property is based on the much larger tonnage of ore of low grade." Last year Mr. Brewer visited the property again and, among other things observed: "A water power plant has been developed from Canyon Creek, which furnishes at present with a 350 ft. head, 50 horse power, but can be developed to furnish about 425 horse-power at low water. The flume is 8,000 ft. long to a pipe line 900 ft. long. A compressor plant for two drills is installed at the camp on Elk Lake and the air carried to the mine-workings through a pipe-line; also an electric light plant, the dynamo of which is run by a 6-inch Pelton motor. At the mine there is a 7 x 9-inch double cylinder friction-hoist run by compressed air which hoists a 1-ton skip. There is also a Cameron sinking-pump, capacity 65 gallons a minute, and an Allis-Chalmers feed-pump, capacity about 35 gallons a minute." Plans are said to be in hand for the construction of a line of railway from the mine to the coast for the purpose of facilitating the transportation of ore,

Developing Copper Deposit on Sunlock Group.

Another promising Vancouver Island property, which is attracting considerable attention, is the Sunlock Group, situated on the Jordan River about forty-two miles by motor road from Victoria, B.C., It is in the development state as yet, but the extensive work being carried out under the supervision of Mr. R. H. Stewart, manager, and formerly with the Consolidated Mining & Smelting Co., has had such results that mining men are predicting that it will prove one of the biggest producers of the Province. Mr. W. M. Brewer, District Engineer, inspected the property last year. Referring to the development work done up to the time of his visit he says that it "consisted of four adits or tunnels exposing three distinct zones, as well as extensive surface stripping across another, known as the 'Centre Zone,' where three open-cuts have been made on apparently three separate mineralized zones at elevations between 780 and 865 feet. Each cut is about 20 feet long across an orebody." It is a low grade copper prospect, samples showing values running between 1.2 to 2.7 per cent., and some carrying gold and silver to the combined value of about 50 cents a ton. This property is being opened up by British Columbia capital chiefly. Besides the work of establishing ore tonnage, which is going ahead steadily, a wagon road has been constructed this year a distance of 6,000 ft. for use in shipping supplies, etc., and also, ultimately, for utilization in the transportation of ore.

The Monitor Mine is Shut Down.

The Monitor Mine, Alberni Canal, Vancouver Island, has been shut down temporarily. It is understood that Mr. Samuel Rider, of St. Albans, Eng., one of the chief owners, is contemplating a re-organization of affairs along such lines as will permit the property to be reopened and established as a permanent shipper. This property carries copper running from 1 to 18 per cent.

MR. C. F. LAW ADDRESSES BOARD OF TRADE.

The urgent need of developing an iron and steel industry in British Columbia was the keynote of an address delivered by Mr. C. F. Law, chairman of the Mining Committee of the Vancouver Board of Trade, before a convention of the British Columbia Boards of Trade on the 15th of October. He asserted that there were 12,000,000 tons of iron ore in sight in the iron deposits along the coast, the Gulf Islands and in Northern sections of the Province. He advocated a bonus by the Dominion Government on pig iron production. Dealing with the obtaining of the necessary fuel he told of the anthracite field of the Carbon District, British Columbia, declaring it to be one of the richest in the world. Touching on the slump in gold production, Mr. Law, recommended the remission of taxation on gold mining, and that all supplies and materials be permitted to enter Canada duty free.

LOCATING CLAIMS IN GRAND FORKS DIVISION.

As illustrating the present mining activity in British Columbia, some figures dealing with the condition in the Grand Forks Mining Division are interesting. In this section this year up to the end of the month of July there had been recorded 80 mineral locations and between January 1st and September 30th, there were recorded 53 certificates of improvement. It may be stated that this section includes the chrome belt of Cascade, B.C., which to some extent explains the remarkable showing made in locations.

According to prospectors returning from the district southwest of Matagami, near Devil's Lje, indications of platinum have been found. No details regarding the reported find are to hand as yet.

MINING IN HAZELTON DISTRICT, B. C.

Mr. J. D. Galloway, Provincial Resident Mining Engineer for the North-Eastern Mineral District of British Columbia with headquarters at Hazelton, B.C., states that mining development in this district has not been as active during the past year as its mineral possibilities warrant, because of the high cost of labor and of mining supplies, especially powder and machinery. He expresses the opinion that, while capital has been available for mining in many forms, the high cost of development has hindered the investment of capital in properties in the prospect stage which necessarily is speculative. Undoubtedly when the war is over, Mr. Galloway avers, many men will return to the northern country and prospecting, which now has practically ceased, will be revived and important discoveries may be made. Referring to the Keithley Creek section of the Cariboo District, he says that it is now virtually deserted although there is considerable placer ground remaining which may be worked at a profit. With the revival of gold mining which should take place after the declaration of peace, he anticipates that the district will attract more attention.

MILL COMPLETED AT SILVER-STANDARD MINE.

The Silver-Standard Mine, Omineca District, B.C., has completed the construction of a 50-ton mill which was commenced in 1917, and changes, additions and improvements also have been made in the power plant and surface buildings at the mine. It is estimated that the cost of the new construction has run between \$30,000 and \$35,000. From June to September the mill was run one shift treating from 17 to 20 tons a day, but it was gradually improved and now is operating two shifts and the production for the last six months of 1918 is estimated at 4,000 tons (milled). Practically no mining was done this year until the 1st of October, the ore for the mill being taken from the dumps. Development, however, is proceeding steadily with very satisfactory results.

Crown Reserve .....	.25 1/4	.24 1/2
Foster .....	.03 1/2	..
Gifford .....	.02 1/2	.02
Gt. North. ....	.04	.03 1/4
Hargraves .....	.03 3/8	.03 1/4
Hudson Bay .....	..	20.00
Kerr Lake	6.25	..
La Rose .....	.37	.33
Lorrain .....	.02	..
McKinley-Darragh .....	.50	.47 1/2
Min. Corp.	2.70	2.60
Nipissing .....	..	8.60
Ophir .....	.04	.03 5/8
Pet Lake .....	.09 1/2	.09 1/4
Silver Lake .....	.02	.00 1/2
Rt. Way .....	.03 1/2	.03 1/4
Temiskaming .....	.33 3/4	.32 1/2
Trethewey .....	.22	.21
York, Ont. ....	.01	.00 1/2

Gold. Asked. Bid.

Apex .....	.04 1/2	.04 3/8
Boston Creek .....	..	.30
Davison Gold .....	..	.62
Dome Extension .....	.29	.28 1/2
Dome Lake .....	.18 1/2	.17
Dome Mine	14.00	13.75
Eldorado .....	.02	.01
Elliott-Kirkland .....	.36	..
Gold Reef .....	.02 1/2	..
Hollinger C.	6.00	5.90
Inspiration .....	.02	.01
Keora .....	.10	..
Kirkland Lake .....	.40 1/2	.40
Lake Shore .....	.95	.90
McIntyre	1.76	1.74
Moneta .....	.10	..
Newray .....	.18	.15
Porcupine Crown .....	.27 1/2	.27
Porcupine Imperial .....	.03	.02 3/4
Porcupine Tisdale .....	.02	.01 1/2
Vipond .....	.25	.24
Pres'on .....	.04 3/4	.04 1/4
Schumacher .....	.34 3/4	.34 1/4
Teck-Hughes35 1/2	.33
P. V. N. T.24	.23 1/2
Th. Krist07 3/4	.07 1/2
West Dome15 1/4	.15
Wasapika G.41	.39

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Adanac11 1/2	.11
Bailey04 1/2	.04
Beaver35 1/2	.35 1/4
Cham-Ferland12	.11
Coniagas	3.50	3.45

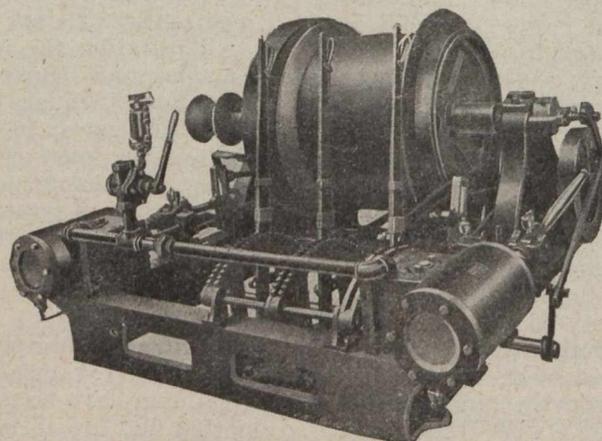
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Mr. R. H. Combs, who has been with the Prest-O-Lite Company Inc., in various capacities since 1908, occupies the position of general manager of the new Canadian company, and under his expert supervision the success of Prest-O-Lite Company of Canada, Limited is assured.

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In a year when the shortage of fuel has rendered the heating of our houses and camp buildings a more than usually engrossing problem, it is interesting to note that the Salisbury Electric Company, Limited, of Toronto, is making an electric radiator, which, with a very low current consumption will produce heat, and radiate it in exactly the same way as its larger relations, the steam and hot-water radiator.

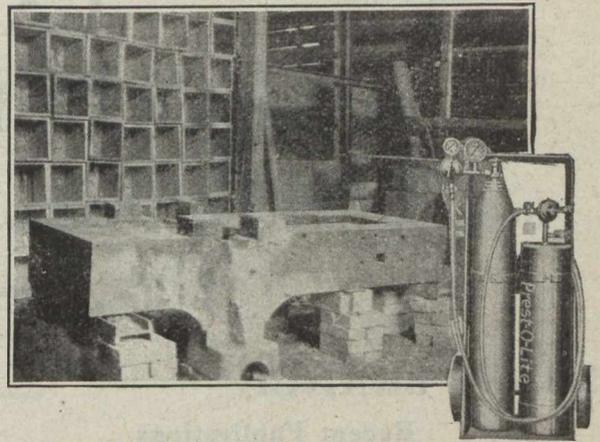
These radiators are built of pressed steel, and, instead of water, are filled with a specially treated oil, which heats very quickly and radiates the heat more rapidly than water. It is also non-freezable, a great advantage in cases where these radiators are used in small buildings which are sometimes left unheated.

The Salisbury Radiators with their low current consumption may be used with great economy in those places where there is cheap power available, and we are informed that the Granby Consolidated Mining Company have a considerable number of them in use, and find them to be very satisfactory in operation.

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Arrivals from the Klondyke state that the reason for the remarkable exodus of miners from the north is the fact that the government has exempted prospectors from remaining on their claims during the war. It is asserted that there will be just as great a rush back to the Yukon in the spring, providing peace is declared in the interim.

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MINES BRANCH

Recent Publications

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

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

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

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

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

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

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

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

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

Summary Report of the Mines Branch, 1916.

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

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

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

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

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

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

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

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

GEOLOGICAL SURVEY

Recent Publications

Summary Report, 1917, Part D. Reports on field work in Manitoba.

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

Memoir 96. Sooke and Duncan Map-areas, Vancouver Island, by C. H. Clapp.

Memoir 98. Magnesite Deposits of Grenville District, Argen-teuil County, Quebec, by M. E. Wilson.

Memoir 99. Road material surveys in 1915, by L. Reinecke

Memoir 101. Pleistocene and recent deposits in the vicinity of Ottawa, with a description of the soils, by W. A. Johnston.

Memoir 103. Timiskaming County, Quebec, by M. E. Wilson.

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

Map 63A. Moncton Sheet, Westmoreland and Albert Counties, New Brunswick. Topography.

Map 132A. Southwestern portion of Rainy River district, Ontario. Soils.

Map 135A. Lower Churchill river, Manitoba. Geology.

Map 145A. Timiskaming county, Quebec. Geology.

Map 154A. Southwestern Yukon.

Map 157A. East Sooke, Vancouver Island, British Columbia Topography.

Map 161A. Beaverton Sheet, Ontario, York and Victoria Counties, Ontario. Topography.

Map 162A. Sutton Sheet, York and Simcoe Counties, Ontario. Topography.

Map 163A. Barrie sheet, Simcoe County, Ontario. Topography.

Map 165A. Windermere, Kooteney district, B.C. Topography.

Map 174A. Blairmore, Alberta. Topography.

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

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

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

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

Map 1702. Klotassin, Yukon Territory. Geology.

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

Maps published within recent years may be had, printed on linen, at the nominal cost of ten cents each.

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

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

To Users of the Callow Pneumatic Flotation Cell

THE recent decision in the Butte & Superior Suit with Minerals Separation has an important bearing upon the use of the Pneumatic, or Callow method of flotation.

The Appellate Court's decision at Philadelphia, in the Miami case, had already made clear the distinction between (1) froth produced by violent mechanical agitation of the Minerals Separation process, and (2) simple levitation by air bubbles, as practised in the Callow or pneumatic cell, without such agitation.

Now the Appellate Court at San Francisco has interpreted the United States Supreme Court's opinion in the Hyde case, whereby the Minerals Separation Patent was restricted to the use of a minimum, or 'critical' proportion of oil, in combination with violent mechanical agitation.

This latest decision of the Appellate Court in the Butte & Superior case, restricts the Minerals Separation basic patent to the use of a quantity of oil *not in excess of ten pounds (0.5%) per ton of ore, in combination with violent agitation*: it is a logical sequel to the Supreme Court's opinion and confirms the status of the Callow or Pneumatic method of flotation as distinct from the agitation-froth process.

Both the use (1) of oil in excess of ten pounds (0.5%) in combination with violent agitation, and (2) the use of the Callow system of aeration with any quantity of oil, appear therefore to be immune from any charge of infringement.

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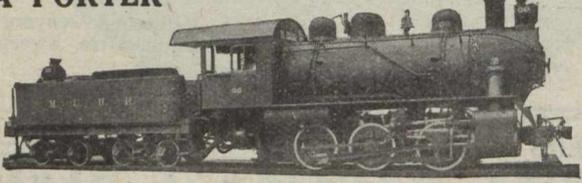
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- Belting—Leather, Rubber and Cotton—**
Northern Canada Supply Co.
Jones & Glassco.
Can. B. K. Morton.
- Blasting Batteries and Supplies—**
Canadian Ingersoll-Rand Co. Ltd., Montreal, Que.
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Canadian Explosives, Ltd.
- Blowers—**
Northern Canada Supply Co.
- Boilers—**
Northern Canada Supply Co.
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Can. Allis-Chalmers, Ltd.
Marsh Engineering Works.
- Boxes, Cable Junction—**
Standard Underground Cable Co. of Canada, Ltd.
- Buckets—**
Hendrick Mfg. Co.
M. Beatty & Sons, Ltd.
Marsh Engineering Works.
Northern Canada Supply Co.
- Cable — Aerial and Underground—**
Northern Canada Supply Co.
Standard Underground Cable Co. of Canada, Ltd.
- Cableways—**
M. Beatty & Sons, Ltd.
Can. Allis-Chalmers, Ltd.
- Cages—**
Northern Canada Supply Co.
- Cables—Wire—**
Standard Underground Cable Co. of Canada, Ltd.
- Car Dumps—**
Sullivan Machinery Co.
- Cars—**
Northern Canada Supply Co.
MacKinnon, Holmes & Co.
Marsh Engineering Works.
Mine & Smelter Supply Co.
- Car Wheels and Axles—**
Marsh Engineering Works, Ltd.
- Cement Machinery—**
Northern Canada Supply Co.
Hull Iron & Steel Foundries, Ltd.
Can. Allis-Chalmers, Ltd.
Hadfields Ltd.
- Chains—**
Jones & Glassco.
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- Chemical Apparatus—**
Mine & Smelter Supply Co.
- Chemists—**
Canadian Laboratories.
Campbell & Deyell.
Thos. Heys & Sons.
Milton Hersey Co.
Ledoux & Co.
- Classifiers—**
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- Coal—**
Dominion Coal Co.
Nova Scotia Steel & Coal Co.
- Coal Cutters—**
Sullivan Machinery Co.
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- Coal Mining Machinery—**
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Hadfields Ltd.
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- Compressors—Air—**
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Smart-Turner Machine Co.
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- Concrete Mixers—**
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Northern Canada Supply Co.
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- Crane Ropes—**
Allan, Whyte & Co.
Can. B. K. Morton.
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- Crushers—**
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Mussens, Limited.
Hull Iron & Steel Foundries, Ltd.
Wettlaufer Bros.
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Koering Cyaniding Process Co.
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Diamond Drill Contracting Co.
Smith & Travers.
Sullivan Machinery Co.
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Hadfields Ltd.
- Dredging Machinery—**
M. Beatty & Sons.
Hadfields Ltd.
- Dredging Ropes—**
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Northern Canada Supply Co.
Can. Allis-Chalmers, Ltd.
Canadian Rock Drill Co.
- Drills—Core—**
Canadian Ingersoll-Rand Co. Ltd., Montreal, Que.
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Sullivan Machinery Co.
Can. Allis-Chalmers, Ltd.
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Sullivan Machinery Co.
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- Drill Steel—Mining—**
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Can. B. K. Morton.
Hadfields Ltd.
- Drill Steel Sharpeners—**
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Canadian Rock Drill Co.
- Drills—Electric—**
Canadian Ingersoll-Rand Co. Ltd., Montreal, Que.
Sullivan Machinery Co.
- Drills—High Speed and Carbon—**
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Hadfields Ltd.
- Dynamite—**
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Northern Canada Supply Co.
- Ejectors—**
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Northern Canada Supply Co.
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Hadfields Ltd.
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Can. Gen. Electric Co., Ltd.
- Electric Mine Locomotives—**
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- Engineering Instruments—**
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- Engineers and Contractors—**
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- Engines—Automatic—**
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- Engines—Gas and Gasoline—**
Alex. Fleck.
Sullivan Machinery Co.
Smart-Turner Machine Co.
Can. Allis-Chalmers, Ltd.
Gould, Shapley & Muir Co., Ltd.
- Engines—Haulage—**
Canadian Ingersoll-Rand Co. Ltd., Montreal, Que.
Can. Allis-Chalmers, Ltd.
Marsh Engineering Works.
- Engines—Marine—**
Smart-Turner Machine Co.
- Engines—Steam—**
Smart-Turner Machine Co.
M. Beatty & Sons.
Can. Allis-Chalmers, Ltd.
- Fans—Ventilating—**
Can. Allis-Chalmers, Ltd.
- Forges—**
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- Forging—**
M. Beatty & Sons.
Smart Turner Machine Co.
Hadfields Ltd.
- Furnaces—Assay—**
Lymans, Ltd.
Mine & Smelter Supply Co.
- Fuse—**
Canadian Explosives.
Northern Canada Supply Co.
- Generators—**
Can. Gen. Electric Co., Ltd.
- Gears—**
Smart-Turner Machine Co.
Northern Canada Supply Co.
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- Hammer Rock Drills—**
Mussens, Limited.
Can. Allis-Chalmers, Ltd.
- Hangers—Cable—**
Standard Underground Cable Co. of Canada, Ltd.
- High Speed Steel—**
Hadfields Ltd.
- High Speed Steel Twist Drills**
Northern Canada Supply Co.
- Hoists—Air, Electric and Steam—**
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Jones & Glassco.
M. Beatty & Sons.
Marsh Engineering Works.
Northern Canada Supply Co.
Wettlaufer Bros.
Can. Allis-Chalmers, Ltd.
- Hoisting Engines—**
Mussens, Limited.
Sullivan Machinery Co.
Can. Ingersoll-Rand Co., Ltd.
M. Beatty & Sons.
Can. Allis-Chalmers, Ltd.
Marsh Engineering Works.
- Hose—**
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- Hydraulic Machinery—**
Hadfields Ltd.
- Ingot Copper—**
Canada Metal Co., Ltd.
Hoyt Metal Co.
- Insulating Compounds—**
Standard Underground Cable Co. of Canada, Ltd.
- Jacks—**
Can. Ingersoll-Rand Co., Ltd., Montreal, Que.
Northern Canada Supply Co.
- Kiln Linings—**
Hull Iron & Steel Foundries, Ltd.
- Kominuters—**
Hull Iron & Steel Foundries, Ltd.
- Laboratory Machinery—**
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- Link Belt—**
Northern Canada Supply Co.
Jones & Glassco.
- Motors—**
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- Machinists and Founders—**
Hull Iron and Steel Foundries, Ltd.
- Manganese Steel—**
Hadfields Ltd.
- Metal Merchants—**
Henry Bath & Son.
Geo. G. Blackwell, Sons & Co.
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Canada Metal Co.
C. L. Constant Co.
Everitt & Co.
- Mining Requisites—**
Hadfields Ltd.
- 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 Sellers of—**
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Geo. G. Blackwell.
Consolidated Mining and Smelting Co. of Canada.
Orford Copper Co.
Canada Metal Co.
Hoyt Metal Co.
Everitt & Co.
- Oxy-Acetylene Welding and Cutting—**
Imperial Brass Mfg. Co.
- Perforated Metals—**
Northern Canada Supply Co.
Hendrick Mfg. Co.
- Pig Tin—**
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- Pig Lead—**
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Hoyt Metal Co.

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Pipe—Wood Stave— Pacific Coast Pipe Co., Ltd.	Pumps—Steam— Can. Ingersoll-Rand Co., Ltd. Mussens, Limited. Northern Canada Supply Co. Can. Allis-Chalmers, Ltd. Smart-Turner Machine Co.	Separators— Smart-Turner Machine Co.	Tanks (water) and Steel Towers— Gould, Shapley & Muir Co., Ltd.
Piston Rock Drills— Mussens, Limited. Can. Allis-Chalmers, Ltd.	Pumps—Turbine— Smart-Turner Machine Co. Can. Ingersoll-Rand Co., Ltd. Can. Allis-Chalmers, Ltd.	Sheet Lead— Canada Metal Co., Ltd.	Tramway Points and Crossings— Hadfields Ltd.
Pneumatic Tools— Can. Ingersoll-Rand Co., Ltd. Jones & Glassco.	Pumps—Vacuum— Smart-Turner Machine Co. Can. Allis-Chalmers, Ltd.	Sheets—Genuine Manganese Bronze— Hendrick Mfg. Co.	Transits— C. L. Berger & Sons.
Prospecting Mills and Machinery— Standard Diamond Drill Co. Can. Allis-Chalmers, Ltd. Mine & Smelter Supply Co.	Quarrying Machinery— Sullivan Machinery Co. Can. Ingersoll-Rand Co., Ltd. Can. Allis-Chalmers, Ltd. Hadfields Ltd.	Shovels—Steam— M. Beatty & Sons.	Transformers— Can. Gen. Electric Co., Ltd.
Pulleys, Shafting and Hangings— Northern Canada Supply Co.	Rails— Hadfields Ltd.	Smoke Stacks— Can. Allis-Chalmers, Ltd. Hendrick Mfg. Co. MacKinnon, Holmes & Co. Marsh Engineering Works.	Tubs— Hadfields Ltd.
Pulverizers—Laboratory— Mine & Smelter Supply Co.	Roofing— Northern Canada Supply Co.	Steel Barrels— Smart-Turner Machine Co.	Turbines— Escher Wyss & Co. Can. Allis-Chalmers, Ltd.
Pumps—Boiler Feed— Smart-Turner Machine Co. Northern Canada Supply Co. Can. Ingersoll-Rand Co., Ltd. Wettlaufer Bros. Can. Allis-Chalmers, Ltd.	Rope—Manilla and Jute— Jones & Glassco. Northern Canada Supply Co. Allan, Whyte & Co.	Steel Castings— Hadfields Ltd.	Twist Drills—High Speed— Can. B. K. Morton Co.
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Pumps—Sand and Silice— Mine & Smelter Supply Co.	Samplers— C. L. Constant Co. Ledoux & Co. Milton Hersey Co. Thos. Heys & Son. Mine & Smelter Supply Co.	Steel—High Speed— Can. B. K. Morton.	Wheels and Axles— Hadfields Ltd.
	Screeners— Northern Canada Supply Co. Hendrick Mfg. Co. Hadfields Ltd.	Steel—Tool— N. S. Steel & Coal Co. Hadfields Ltd.	Winding Engines—Steam and Electric— Can. Ingersoll-Rand Co., Ltd. Can. Allis-Chalmers, Ltd. Marsh Engineering Works.
		Stone Breakers— Hadfields Ltd.	Wire Cloth— Northern Canada Supply Co. B. Greening Wire Co., Ltd.
		Surveying Instruments— C. L. Berger.	Wire (Bare and Insulated)— Standard Underground Cable Co., of Canada, Ltd.
		Switchboards— Can. Gen. Electric Co., Ltd.	Zinc Spelter— Canada Metal Co., Ltd. Hoyt Metal Co.
		Tables—Concentrating— Mine & Smelter Supply Co.	
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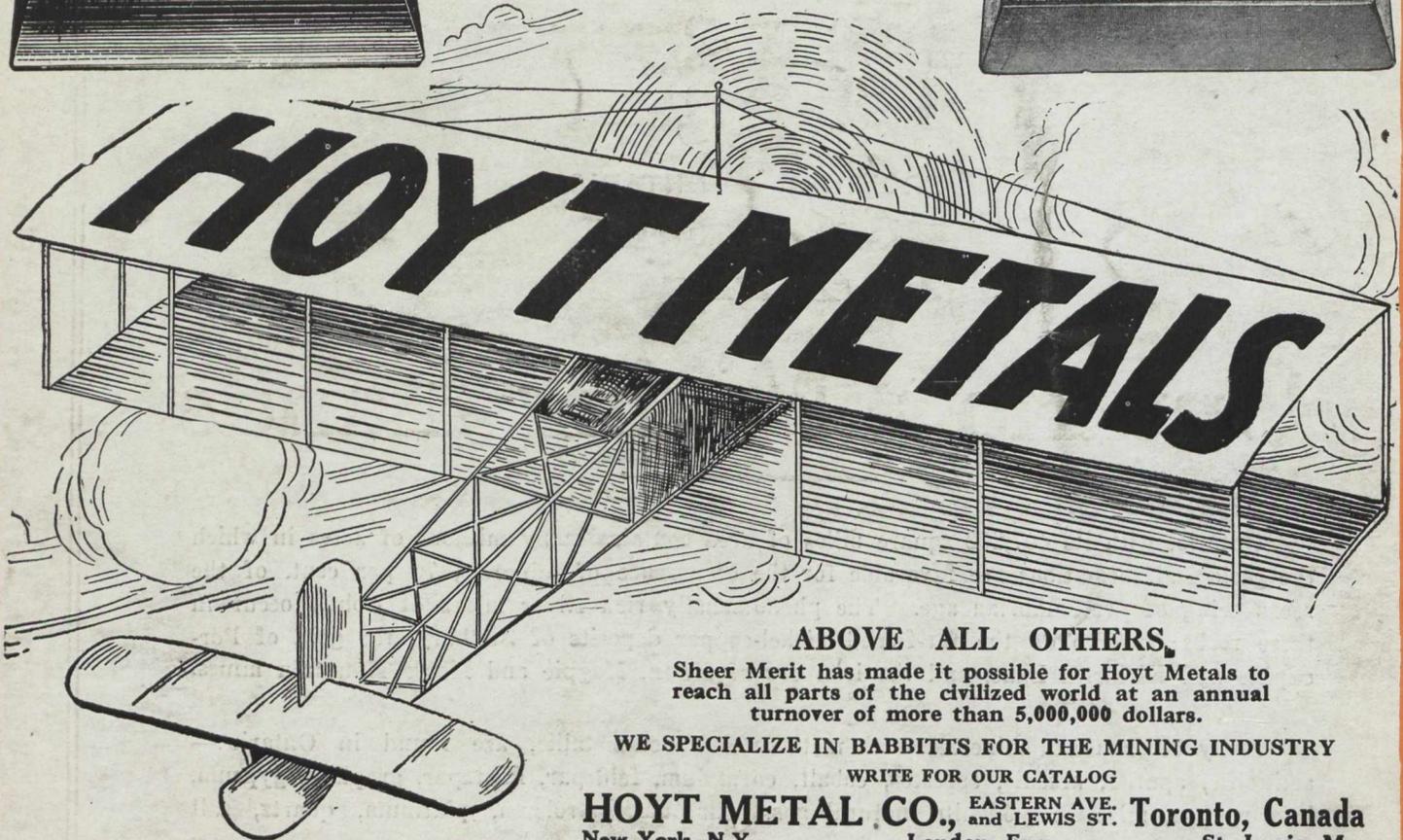
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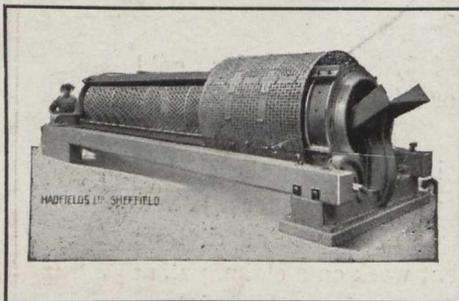
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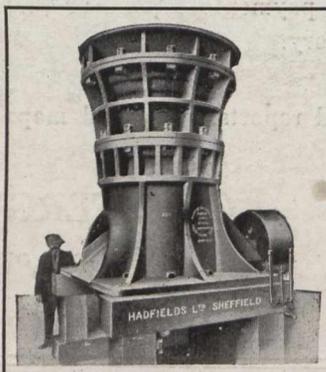
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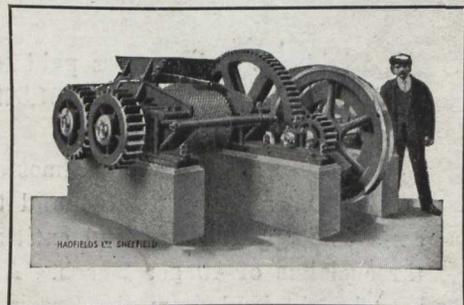
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