

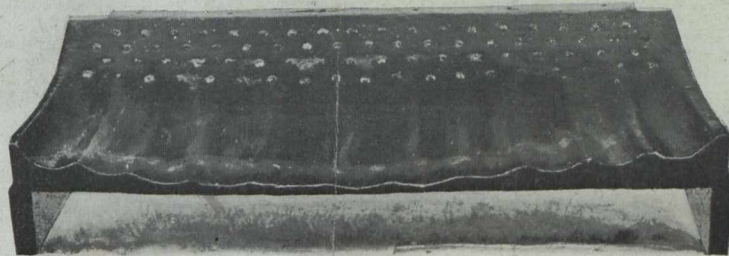
# CANADIAN MINING JOURNAL

VOL. XXXIX

TORONTO

No. 3

## A Plate with a Record



THE above illustration shows one of our Chromic Steel Grinding Plates for a No. 8 Krupp Ball Mill, after giving 1,000 hours longer wear than any plate used, and still in use.

Liners for Kominuters, Hardinge Conical Mills and Shoes and Dies made from the same material giving the same results.

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*Canadian Representatives:* **HARDINGE CONICAL MILL COMPANY**

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exactly suited to your needs. If your ground is soft or broken, choose "DF 21" **Light-hitting** Stopers. If your ground is hard and tight, choose "DG 21" **Heavy-hitting** Stopers. Then there's the "DA21" for average conditions, and the "DC21," with air jet, for flat holes. An atomizer, for laying dust, may be attached to any of these drills.

**Sullivan Stopers** of all types are profit-earners. Their great cutting speed, low air consumption and splendid stability render them favorites in many of the world's mining districts.

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They're Fast  
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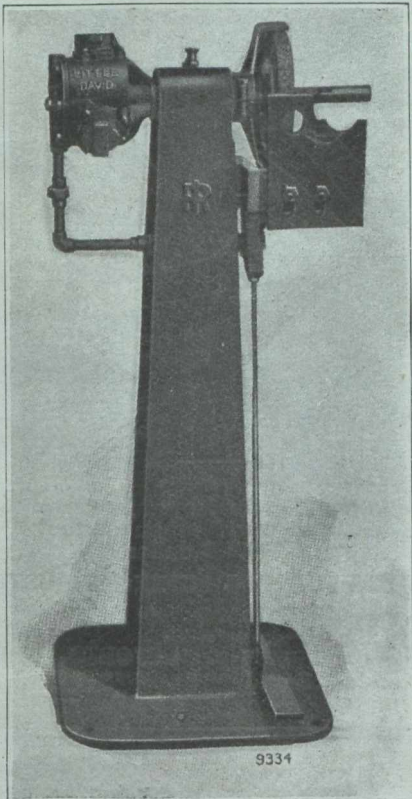
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The "Little David" Pedestal Grinder will help you to get and maintain the greatest practicable freedom from drill stoppages due to broken drill shanks and pistons, as well as to get the best action when using water and hollow steels.

This grinder may also be used for general grinding purposes

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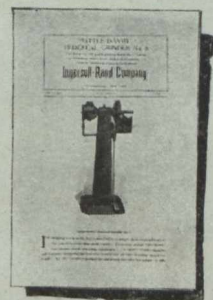
For Squaring Off Rock Drill Shanks,  
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*Saves Piston Breakages  
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This is a new tool for mine use which adds greatly to the efficiency of drill sharpening equipment. While the drill sharpener insures a plentiful supply of sharpened steel, properly formed shanks have much to do with the final results in footage.

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the whole story. Other bulletins are yours  
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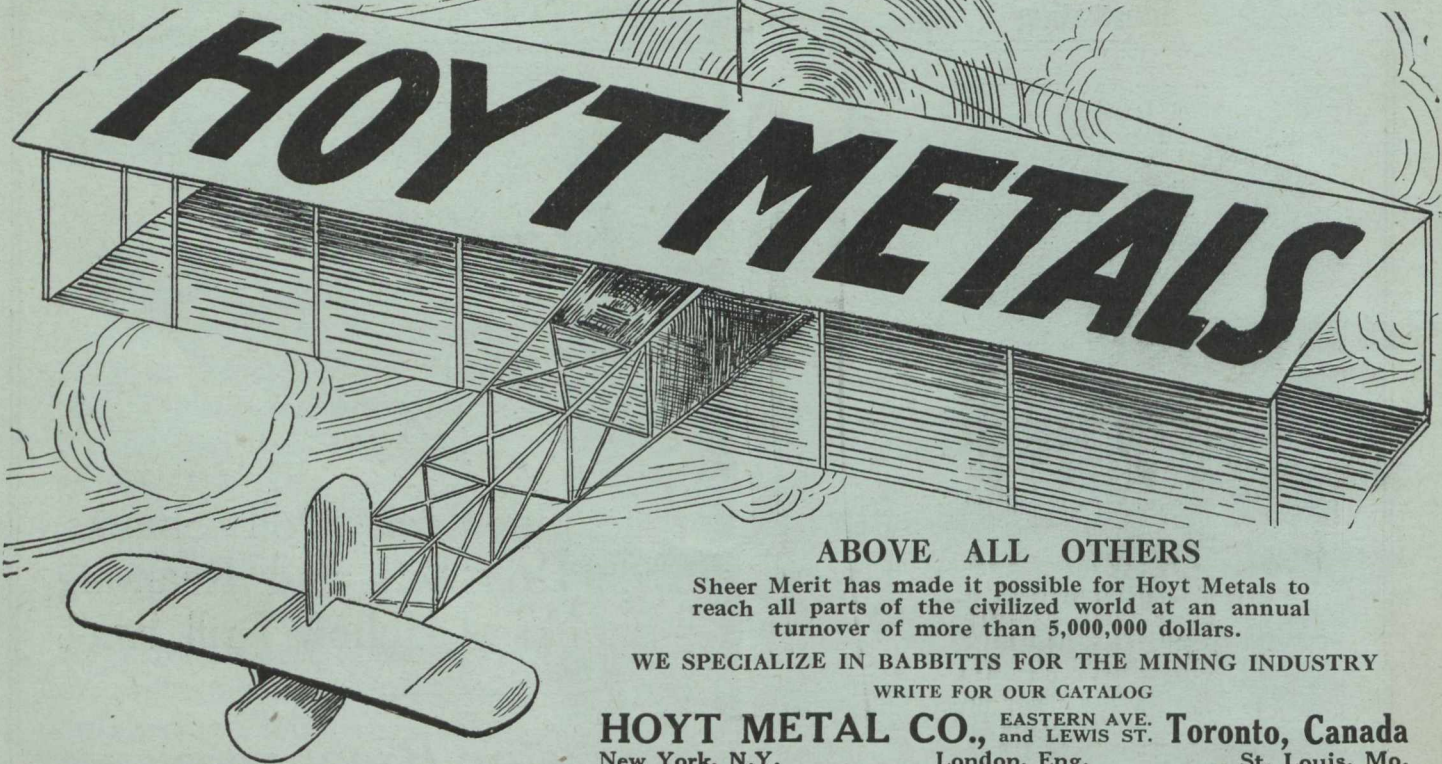


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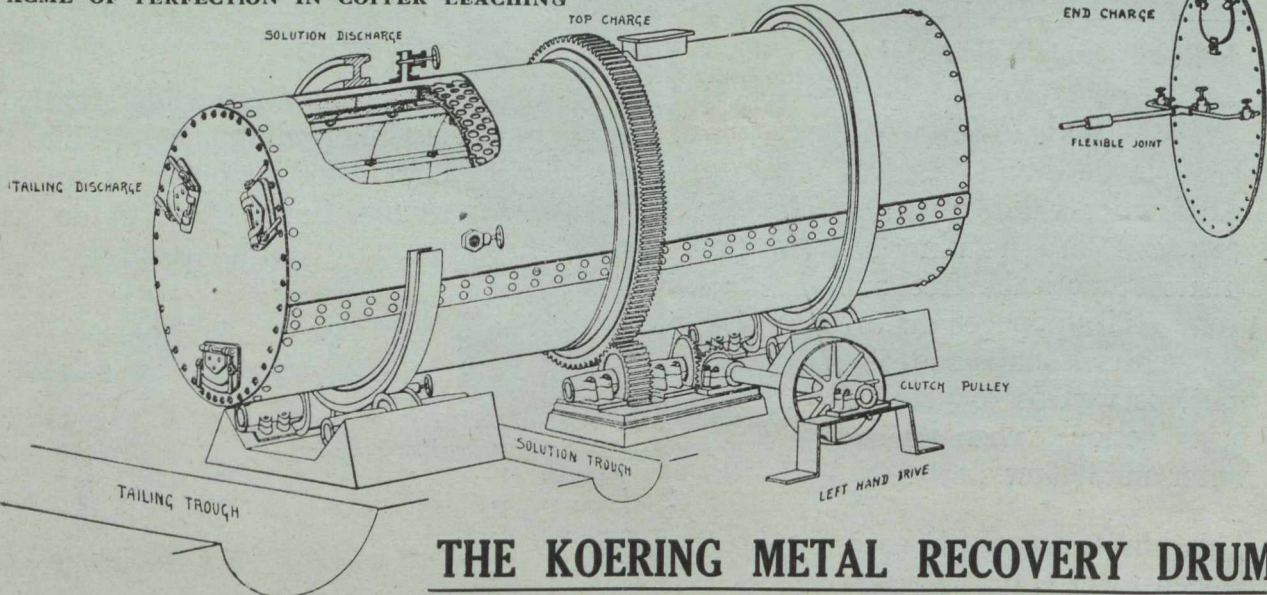
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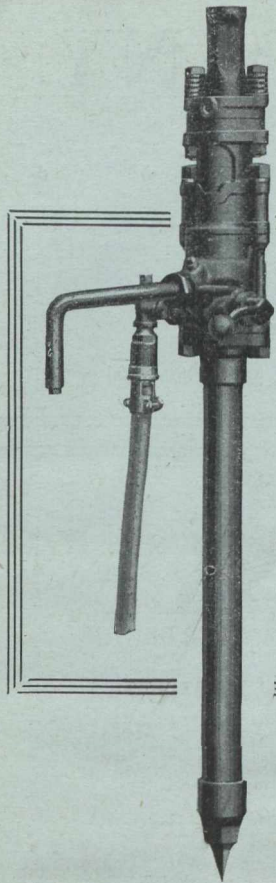
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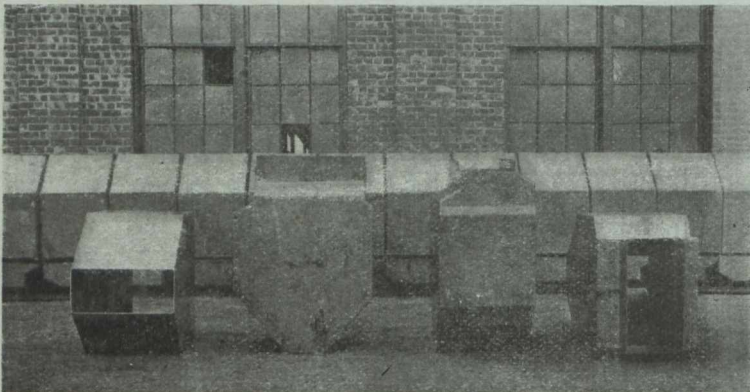
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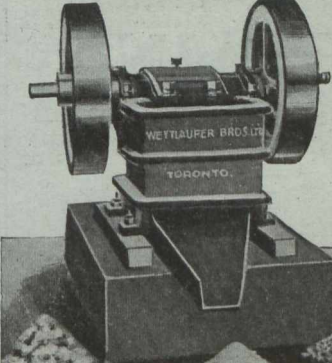
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Prime Metals for the Manufacture of Nickel Steel, German Silver, Anodes and all remelting purposes. Our Nickel is produced as Rods, Sheets, Strip Stock, Wire and Tubes.

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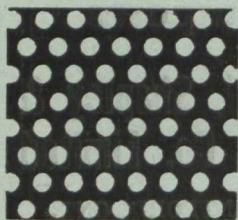
We are **SOLE PRODUCERS** of this natural, stronger-than-steel, non-corrodible alloy.

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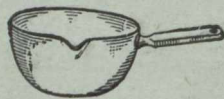
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# The Minerals of Nova Scotia

## THE MINERAL PROVINCE OF EASTERN CANADA

COAL, IRON, COPPER, GOLD, LEAD, SILVER, MANGANESE, GYPSUM, BARYTES, TUNGSTEN, ANTIMONY, GRAPHITE, ARSENIC, MINERAL PIGMENTS, DIATOMACEOUS EARTH.

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

**HON. E. H. ARMSTRONG, - Halifax, N. S.**

*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 date of the staking, the prospector, to retain his rights, must take out a mining license.

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

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

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

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

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

**HONOURABLE HONORÉ 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; 94,516; 94,718; 96,182; 96,183; 99,743; 127,397; 129,819; 129,820; 134,271; 135,089; 137,404; 142,607; 147,431; 147,432; 148,275; 151,479; 151,480; 151,619; 151,810; 157,488; 157,603; 157,604; 160,692; 160,693; 160,694; 160,846; 160,847; 160,848; 160,849; 160,850; 160,937; 163,587; 163,608; 163,707; 163,936; 165,390; 166,415; 167,474; 167,475; 167,476; 167 603.

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

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

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

### NOTICE

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

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

All applications should be made direct to

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## BRITISH COLUMBIA

### The Mineral Province of Western Canada

Has produced Minerals valued as follows: Placer Gold, \$74,620,103; Lode Gold, \$91,350,784; Silver, \$41,358,012; Lead, \$36,415,124; Copper, 114,559,364; Other Metals (Zinc, Iron, etc.), \$7,730,178; Coal and Coke, \$165,829,315; Building Stone, Brick, Cement, etc., \$26,697,835; making its Mineral Production to the end of 1916 show an

### Aggregate Value of \$558,560,715

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.

### Production During last ten years, \$284,916,993

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

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Glace Bay

Nova Scotia

19 Collieries

Output—5,000,000 tons annually

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Screened, run of mine and slack

“Springhill” Coal

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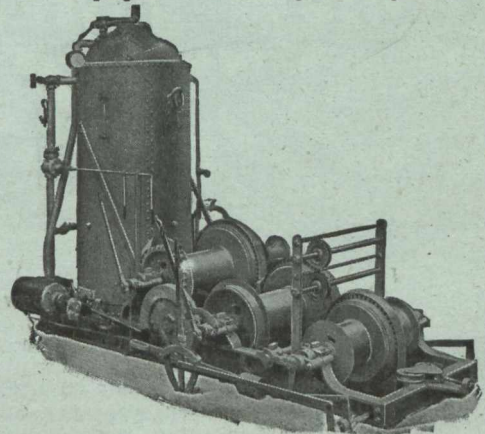
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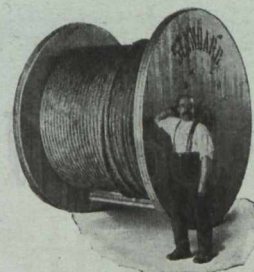
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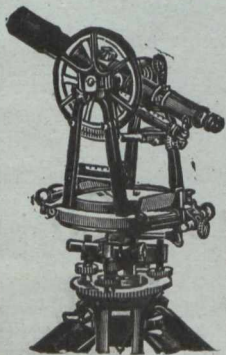
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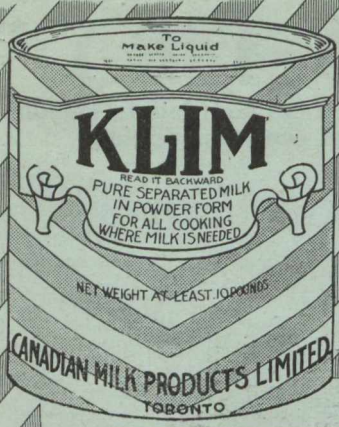
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# THE CANADIAN MINING JOURNAL

VOL. XXXIX

TORONTO, February 1st, 1918.

No. 3

## The Canadian Mining Journal

With which is incorporated the  
"CANADIAN MINING REVIEW"

Devoted to Mining, Metallurgy and Allied Industries in Canada.

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Advertising copy should reach the Toronto Office by the 8th for issues of the 15th of each month, and by the 23rd for the issues of the first of the following month. If proof is required, the copy should be sent so that the accepted proof will reach the Toronto Office by the above dates.

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"Entered as second-class matter April 23rd, 1908, at the post office at Buffalo N.Y., under the Act of Congress of March 3rd, 1879."

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Manitoba can easily be supplied with high grade Canadian coal, if a reasonable freight rate can be secured by coal operators. Proper utilization of Canadian coal in Manitoba has been made impossible by the railway companies. A fair freight rate for Canadian coal should be insisted upon.

There are many undeveloped coal deposits in the United States which might be developed by Canadians for consumption in Central Canada. Capital might be found in Canada for opening coal mines to supply the Canadian market if some assurance were given that the producers would be permitted to ship their product to Canada.

### THE COAL SHORTAGE.

The public is now beginning to realize that an adequate supply of coal is a fundamental necessity in carrying on war. Early in 1915 the folly of neglecting to provide for the working of collieries to capacity was recognized in England and a Parliamentary Committee was appointed to enquire into the effect of recruiting mine workers. It was soon found that miners had responded in such large numbers to the call for volunteers that coal production was diminishing at an alarming rate. The committee advised that coal miners should not be taken from the mines.

Canadian coal producers early recognized the folly of recruiting miners; but for some time, doubtless because they believed it their patriotic duty, they refrained from calling attention to the result of encouraging these willing men to enlist. Two years ago, however, they decided it was their duty to state their views and they called the attention of the public and the Government to the seriousness of the situation and predicted the coal shortage which is now brought home to everyone. Prompt action might have greatly improved conditions. The disinclination to do anything to discourage recruiting, however, made the task a difficult one and there was great delay long after the facts were known. The damage has been done and yet we must now find means to produce and transport fuel in larger quantities than ever before.

There is plenty of coal of good quality in Canada and the United States. We may find it advisable to use peat and lignite in some localities; but the chief problem is the mining and transportation of the excellent coal which North America is fortunately endowed with. Shortage of miners and coal-carrying ships in Nova Scotia makes us more than ever dependent on the United States. Our American friends appear to be able to produce plenty of coal; but they are unable to get cars.

It would obviously be to the advantage of Ontario, which produces no coal, to find a substitute fuel. We have peat bogs which might be developed to advantage and there are indications that something will be done along this line. The simplest way to cut down our coal imports in Ontario is, however, to utilize our water powers. When the public ceases to be satisfied with raving about the beauty of Niagara Falls and is ready to utilize fully this source of power, situated so fortunately close to Ontario's great industrial centre, we can do without half the coal we are now importing. When Niagara Falls and the St. Lawrence are doing the work which they should do, and our railroads are electrified, there will be little need of coal for power purposes in Ontario.

An interesting pamphlet on "Carbonizing and Briquetting of Lignites" has been published by the Commission of Conservation, Ottawa. The report was prepared by Mr. W. J. Dick and contains data on the probable cost of carbon briquettes in Manitoba and

Saskatchewan, as estimated by R. A. Ross of the Honorary Advisory Council for Scientific Research. Mr. Ross estimated the cost at \$7 per ton on a basis of \$1 per ton for coal used. Mr. Dick estimates that the cost at Bienfait would be \$7.25 per ton of carbonized briquettes produced. Mr. Dick, allowing for a profit of \$1 per ton, estimates the price at various towns in Manitoba and Saskatchewan would be \$9.75 to \$10.15 per ton f.o.b. cars, which he points out is somewhat less than the price of U. S. anthracite in these towns.

A strange and regrettable feature of the report is the impression given that the district is dependent on the United States for its supply of high grade coal. Our enormous supply of excellent bituminous coal in the West is completely ignored in the report and the casual reader may imagine that the district is absolutely dependent on the United States for good coal. Mr. Dick says: "It is inconceivable what would happen if the exportation of hard and soft coal from the United States were prohibited." Considering that he is referring to a district that could readily be supplied with first class Canadian coal we cannot understand the purpose of such a statement.

The decision of the Mines Department to discontinue the concentration of molybdenite ores has created some consternation among those who are planning to work molybdenite deposits during the coming summer. It should be borne in mind, however, that the undertaking of custom work by the Mines Department was never intended to mean that the laboratories should be permanently used for such purposes. Mr. Mackenzie and his assistants investigated processes of treatment of molybdenite ores and then undertook to do custom work until producers should instal their own plant. For various reasons this custom work has been carried on longer than was expected and the Mines Department has thus been deprived for some time of the services of men and the use of laboratories needed for investigations. Unfortunately, those who have become interested in molybdenite production have assumed that custom work would be continued by the Mines Department. This being the case, some time will be needed to make necessary arrangements for concentration of ores from properties that will be opened up as soon as the snow has disappeared. Those who propose to begin development work this spring will not have much time to test their deposits before the only custom concentrator is closed.

According to cable messages from London, the British Government is making changes that should materially increase the efficiency of its Intelligence Departments. A new department will absorb several subdivisions of the Board of Trade and the Foreign Office. The status of Trade Commissioners is to be improved and the best men are to be obtained "from any source." Recent announcements indicate that more attention is to be given to Canada. Mr. Hamilton Wickes, senior British Trade Commissioner in Canada is to go to London and is to be succeeded by Mr. G. T. Milne. Mr. F. W. Field of Toronto, editor of the "Monetary Times" is to be appointed British Trade Commissioner in Toronto.

Mr. Field is an Englishman who has been in Canada for the past twelve years. He has earned a reputation as a leading authority on financial affairs in Canada and will be able to keep London well informed of conditions here.

### CIVIL ENGINEERS CHANGE NAME OF THEIR SOCIETY.

It is difficult to see what advantage will accrue to the Canadian Society of Civil Engineers in the changing of its name to that of the Engineering Institute of Canada. The society has long borne a name similar to that of a society of high standing in Great Britain and to that of one in the United States. It would appear that such a well established name would carry more weight, not only in Canada but abroad, than would any new title. Abroad the new name will tend to be confused with that of such societies as the Amalgamated Engineers, who now are in the spot light in Great Britain and consist of stationary engineers and other mechanics.

The new name is not definite enough. Unlike that of the mechanical engineers, chemical engineers, et al, it does not indicate whether its membership represents a profession, a trade, or whether it is an organization for merely educational work, such as collegiate institute, Fraser institute, etc.

Heretofore, the Canadian Society of Civil Engineers has admitted as members only those men who were possessed of well proved professional qualifications. It has been strictly a society of professional men, and has not represented an industry as well as a profession, as does, for instance, the Canadian Mining Institute.

A few years ago it was proposed to change the name of the American Institute of Mining Engineers to one that would indicate that the membership embraced metallurgists, but the members would not agree to the change, preferring the name that during a period of forty years had come to be recognized with respect throughout the world.

The C.E.'s, in changing their name, appear to be working against the tendency of the age. Specialized effort during the last few decades has resulted in the formation of a number of engineering societies that have no official connection one with another. In the United States there are, for instance, in addition to that of the civil engineers, those of mining engineers, mechanical engineers, electrical engineers, and others. Some of these societies are composed entirely of professional men, while the membership of others represents both the profession and an industry. As time goes on there will not be fewer engineering societies, but more of them. Even at present in Great Britain there are two distinct societies, both under royal charter, whose members are associated with the mining industry. One of these societies, whose membership is entirely professional, deals with the whole industry with the exception of that of coal, while the activities of the other are chiefly concerned with this substance. In the United States one mining society is composed entirely of professional men, while the other great institute in its membership represents both the profession and the industry.

During the past twenty-five years the Canadian Society of Civil Engineers has attempted, at various times, to have laws passed in the provincial legislature making engineering a closed profession, like that of law or medicine. In this they were badly advised, as no legislature after due consideration would agree to such a backward and undemocratic step. Doubtless wiser councils will prevail in the renamed society and members who are inclined to grasp at the unattainable will be restrained.



While one cannot but regret the passing of the historic name of the society, like that of some great personality, let us hope for the prosperity of the newly christened organization.

So far as we know the decision of the Canadian Society of Civil Engineers to change its name is not because its officers are ashamed of the misleading propaganda which they have been responsible for during the past year. The society has not yet made amends for the false statements concerning the Canadian Mining Institute contained in a pamphlet which it published.

Canada has plenty of coal in East and West, both for ourselves and the Atlantic and Pacific States. Central Canada has no coal; but is conveniently supplied by coal-fields of the United States. We import far more than we export; but we can export far more if the United States wants it and if miners and ships for coast trade can be obtained.

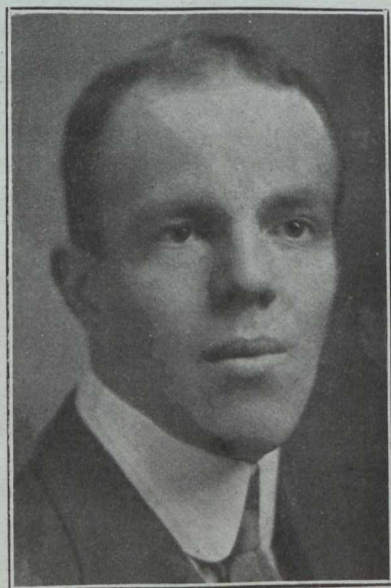
#### COPPER PRICE FIXED AT 23½c.

Washington, Jan. 22.—President Wilson to-day approved the recommendation of the War Industries Board that the maximum price for copper fixed upon its recommendation by the President, and announced September 21, 1917, be continued in effect upon the same conditions until June 1, 1918. The maximum price under this action will be twenty-three and one-half cents per pound, f.o.b. New York, subject to revision after June 1, 1918, upon these conditions:—

That the producers will not reduce the wages now being paid.

That the producers will sell to the allies and to the public copper at the same price paid by the Government, and take the necessary measures under the direction of the War Industries Board for the distribution of the copper to prevent it from falling into the hands of speculators who would increase the price to the public.

That the producers pledge themselves to exert every effort necessary to keep up the production of copper to the maximum of the past, so long as the war lasts.



F. W. FIELD  
British Trade Commissioner at Toronto

#### Mines Department Will Discontinue Custom Work

Mr. Geo. C. Mackenzie, Chief of the Division of Ore Dressing and Metallurgy, Department of Mines, Ottawa, in a letter dated January 16th, says: Subsequent to the decision of the Canadian Government that exports of molybdenite and tungsten will be licensed for shipment to France and the United States, the Testing Laboratories of the Department of Mines have been requested to undertake the custom milling of molybdenite ores for various private interests.

In view of the fact that the normal functions of the Testing Laboratories are interfered with to a considerable extent with such custom work, I have been instructed to inform you that shipments of molybdenite ores will be received for treatment **only until 31st July next**, in order that operators may have an opportunity of taking advantage of the market in the United States and France while undertaking the construction of their own concentrating mills.

Shipments of crude ore received for custom work will not be allowed to interfere with the routine work of the Laboratories and will only be accepted on the advice of the officer in charge of this Division.

The charges set forth in the attached schedule include unloading when ore is delivered on the railway siding at the testing plant and concentrating and assaying, but do not include charges incidental to packing and shipment of concentrates.

Concentrates and ores will be accepted at owner's risk and the Department does not hold itself responsible for loss through fire or accident beyond our control.

Concentrates will be delivered at Ottawa or shipped at owner's direction and expense on the receipt of a certified cheque covering all expenses due the Department in connection therewith.

#### Schedule of Prices.

Governing the milling of molybdenite ores and concentrates delivered F.O.B. Dominion Government Testing Plant, Ottawa.

Concentrates will be made upon the following terms:

- (1) On assay returns from samples dried at 212 deg.
- (2) Moisture will be deducted.
- (3) The treatment charge to be \$5.65 per ton of 2,000 lb. of crude ore.
- (4) Credit will be given for molybdenite only. No allowance will be made for molybdite or wulfenite.
- (5) Recoveries of molybdenite per ton of 2,000 lb. dry ore delivered railway siding, Mines Branch Testing Laboratories, Ottawa:—

For molybdenite ores containing—

- (a) Between 0.5 per cent. and 1 per cent. inc. for 70 per cent. of the total molybdenite content.
- (b) Between 1.1 per cent. and 1.5 per cent. inc. for 78 per cent. of the total molybdenite content.
- (c) Between 1.51 per cent. and 2.0 per cent. inc. for 84 per cent. of the total molybdenite content.
- (d) Between 2.1 per cent. and 2.5 per cent. inc. for 87 per cent. of the total molybdenite content.
- (e) Between 2.51 per cent. and 3.0 per cent. inc. for 90 per cent. of the total molybdenite content.
- (f) Between 3 per cent. and . . inc. for 92 per cent. of the total molybdenite content.

Many Lives Lost at Allan Shaft

Stellarton, N.S., Jan. 24.—No sign of life was heard to-day in the Allan shaft of the Acadia Coal Company's mine, where an explosion occurred last evening. The rescue workers managed to reach the upper levels, and there found fifteen bodies. The number of miners unaccounted for is 81, for whose safety little hope is entertained. Many of them are a thousand feet under the ground, and cut off from help from the outside by huge falls of coal.

The cause of the explosion is unofficially given as an accumulation of gas. One of the Government's inspectors entered the shaft this afternoon to begin an investigation of the disaster.

In the meantime every preparation has been made to look after any injured that may be rescued.

With the arrival of the special train from Cape Breton to-day with 32 experienced Draeger men and apparatus, more effective rescue work can now be done at the Allan shaft.

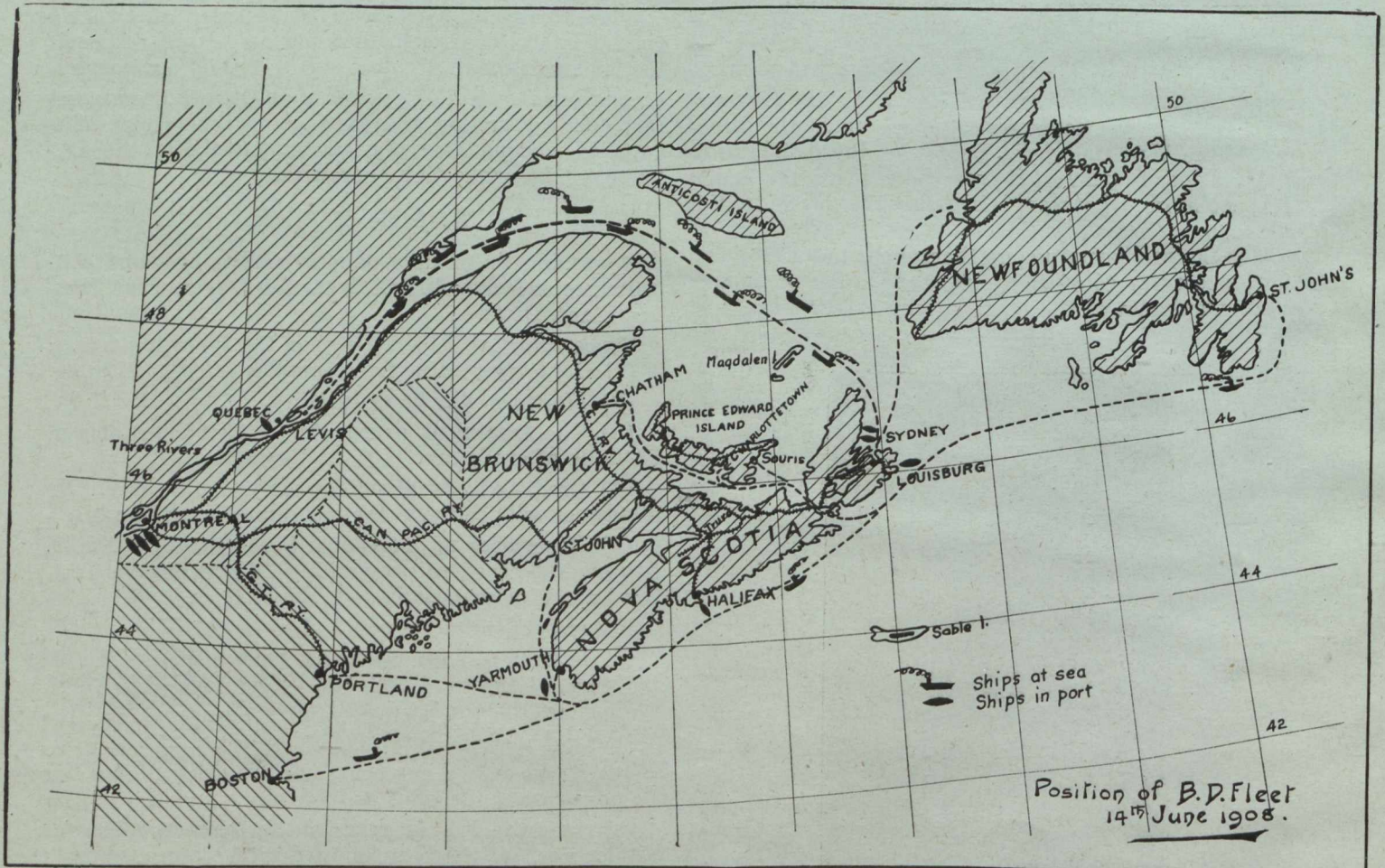
The rescue workers have been particularly warned to look out for fire, as it is suspected that behind the falls of coal may be raging furnaces.

Halifax, N.S., Jan. 24.—The death toll of the disaster at the Allan shaft, Acadia Coal Company's collieries, Stellarton, is now listed at 98. Company officials say that there were one hundred and five men in the mine at the time. Seven of these, on the first landing, escaped, and seventeen bodies have since been recovered, the last two having been brought out late this afternoon. Twelve of the bodies have been identified as miners belonging to Stellarton and Westville, three are Frenchmen, and the other two are unrecognizable.

There is now no gas in the mine, and the work of clearing away the debris is proceeding apace. A few small falls at the bottom of the shaft have been cut through, but there appear to be heavy falls ahead, and officials are unable to say when they will be able to reach the eighty-one men still in the mine. They have given up all hope of any of these men being alive, maintaining that all who were not crushed to death by the debris must have died of suffocation many hours ago.

The explosion at the Allan shaft has cut down the Pictou county coal output by 500 tons daily, and there is now some fear of a coal shortage there. The entire plant of the Nova Scotia Steel & Coal Co. has been closed down until Tuesday next.

An inquest into the disaster will be held to-morrow afternoon by Coroner Kennedy of Stellarton, and it is understood will adjourn until next week, when it will develop into a formal investigation.



SKETCH MAP SHOWING LOCATION OF THE COAL AND IRON INDUSTRY OF EASTERN CANADA

Newfoundland produces iron ore. Nova Scotia produces coal. The steel works are at Sydney and New Glasgow, Nova Scotia

### VANCOUVER MAY HAVE STEEL PLANT.

Vancouver, Jan. 22.—The Province to-day has a despatch from Victoria which says an intimation was given by Hon. Wm. Sloan, Provincial Minister of Mines, that Vancouver might become the headquarters of a large electrical smelting and steel plant industry, and enter the world's competition for steel shipbuilding "on the same basis as Belfast and Glasgow."

"For several months past," the story continues, "it is said, the Government has been engaged in negotiations with Eastern capitalists and electrical smelter experts. The negotiations now have reached a point where the Government has agreed to join with the Pacific Steel Company of Eburne and the Aetna Iron and Steel Company of Port Moody—in which companies the Tudhope interests of Orillia, Ont., and R. F. Turnbull, a well-known electrical metallurgist of Welland, Ont., are identified, together with other interested parties—inviting an eminent outside metallurgist of international standing to visit Vancouver and make a final report on the proposal to establish a steel plant here. It is understood if the final report proves satisfactory the Government will extend the company its aid and influence."

This information, adds The Province, was confirmed by Hon. J. W. deB. Farris, Attorney-General. The Tudhope-Turnbull interests, he said, for some time had been active in sizing up the iron and steel situation on the Pacific coast.

Another short course in mining and associated studies has been commenced at the University of British Columbia, Vancouver, B.C., the instruction to extend over eight weeks. Similar short-course instruction in mining is popular in the Northwestern States, at Colleges of Mines in Washington and Idaho especially.

### CHROMITE.

An important chrome deposit, recently discovered, is being developed near Richmond, Quebec, by D. B. Sterrett. Quebec is an important producer of chromite. Nearly all the chromite produced is exported to the United States where there is an excellent demand.

### KAOLIN FOR FIREBRICK.

Development of the kaolin deposit at St. Remi d'Amherst, Quebec, has proven the existence of a large body of kaolin suitable for the manufacture of firebrick. The company's operations were begun with the intention of producing kaolin for china and pottery making as part of the deposit is suitable for this purpose. A very large amount of kaolin, not suitable for pottery making is available for fire-brick.

### MOLYBDENITE.

The chief producer of molybdenite in Canada at present is the Dominion Molybdenite Company which is operating the Moss mine at Quyon, Quebec. The company has erected at Quyon a concentrating plant to treat 200 tons per day. It is understood that the development work has proven the existence of a large tonnage of low grade ore, averaging about 0.7 per cent. molybdenite.

### United States Wants Chromite

According to the U. S. Geological Survey more chromite than is now obtainable is needed in the United States. A recently issued statement is in part as follows:

"The mineral chromite is the source of the metal chromium, which, as an alloy in chrome steel and in several chemical compounds, occupies an important place on the battle front on both land and sea. The compounds furnish the strong and durable yet subdued and protective colors that are used to dye the soldiers' khaki clothes and tan the upper leather of his shoes. Chromite readily forms alloys with iron and gives hardness to the steel that is used for armor plate on war vessels and for the armor-piercing projectiles which they hurl at the enemy. It is one of the essential elements in stellite, which is now so largely employed in making high-speed tools for cutting steel in the manufacture of munitions.

"Unfortunately for the United States the present domestic output of chromite is scarcely one-fourth of the quantity needed for war and domestic uses, so that the other three-fourths must be imported. Hitherto most of our imported chromite has come from Rhodesia and New Caledonia, and, notwithstanding the scarcity of ships, much of it still comes from those distant lands. In response to our call for chromite Canada has rendered us most efficient help. In 1916 she sent us 10,930 long tons and in 1917 she more than doubled her shipments of chromite to the United States. At present we are facing a deficit in the supply of chromite and we should spare no effort to increase the output of this country as well as that of adjacent countries.

"Most of the chromite we use is needed in factories in the eastern United States and on account of the difficulty and expense of long transportation from the western deposits one of our most urgent present needs is to increase the production of chromite in the Atlantic States. The chrome industry of America really began in the Eastern States. The mines of Maryland and Pennsylvania once supplied the world's chromite."

Twenty years ago, in January, 1897, a commencement was made to ship ore from the Le Roi Mine, Rossland, B.C., to the smelting works at Northport, the contract to send 75,000 tons to the smeltery established at Trail early in the previous year by the late F. Aug. Heinze, having been completed. From the beginning of production, in 1894, to the end of 1897 the output of the Le Roi mine has totalled about 2,023,000 tons of gold-copper ore having a gross value of approximately \$26,000,000.

The Steel Co. of Canada will build an addition to its plant at Brantford, Ont., involving an expenditure of \$100,000. Extensions to the company's plant at Hamilton, Ont., are also under way, in addition to the coke oven plant which is expected to be completed by next spring. Although the company has large shell contracts on hand, more attention is now being paid to the development of business along ordinary lines, the extensions referred to being part of this policy. The shell plant at Montreal has been closed and the space will be utilized for other purposes. The shell plant at Brantford will be operated to capacity and shrapnel bars will be rolled at Hamilton.

### The Electrolytic Process for Recovery of Zinc

In a paper presented at the Pittsburg meeting of the American Electrochemical Society, Oct. 3, Mr. Thomas French, of Nelson, B.C., said in part:

In the last two years a large quantity of high-grade electrolytic zinc has been produced in the United States and Canada, and at the present time many other plants are projected. In view of this rapid progress the question has often been asked: Will the older retort process of smelting be superseded by the electrolytic deposition of zinc?

The reply to this question is generally given in an unqualified negative, apparently justified by the rather unsatisfactory recoveries of zinc obtained by those who have adopted the electrolytic process. The poor recovery is attributed mainly to the difficulty of roasting the ore without the formation of ferrite of zinc, which is very difficult to dissolve in the acid effluent from the electrolytic vats, but also to the difficulty in dealing with the filtration of slimy acid and neutral solutions.

We hear of great variations in the amount of zinc that can be dissolved from the roasted ore. Sometimes a 90 per cent. extraction of the zinc in the ore is obtained, and at other times only half, or even less than that amount, from the same ore. The average recovery of zinc appears to be less than 70 per cent. by most of those engaged in the manufacture of electrolytic zinc from ores or concentrates containing about 40 per cent. zinc.

If an extraction of 90 per cent. of the zinc can at times be obtained, and at other times cannot be obtained from the same ore, then assuredly, sooner or later, the reason for the disparity will be found. That being so, and taking into consideration several weighty factors favoring the electrolytic process for the reduction of zinc from its ores, there is more than a strong probability that the retort process for the reduction of zinc is doomed in the near future.

In forming this opinion, one of the chief considerations is that electrolytic zinc is being produced either by lead or copper manufacturers, and may be considered to be a by-product. It is true that some of these manufacturers are treating customs ores, but this is only to take advantage of the very profitable price of zinc which has ruled for some time, and to fulfil large contracts. The primary reason for the erection of these electrolytic plants was to extract from their own ores the zinc which previously had either been wasted or not worked at all.

In the case of the lead smelter, especially those whose ores contain much zinc, it is imperative that the zinc should be extracted, in order that the lead may be profitably smelted. Before long a modern lead smeltery will not be considered complete without the adjunct of an electrolytic zinc reduction plant, if it is within reach of electric power at a reasonable rate. The competition of this by-product zinc will itself seriously affect the output of the retort smelters.

With proper adjustment of the roasting furnace conditions, it is not a difficult matter to obtain extractions of 90 per cent. from ores containing 15 per cent. to 25 per cent. zinc, and in the latter case with as much as 25 per cent. of iron. As far as the author's experience goes, furnaces of the Wedge and Herreshoff type are admirably adapted to the roasting of this class of ore. A large Wedge furnace, with seven hearths and a di-

ameter of 22 ft. 6 in. is capable of roasting about 1¼ tons of this ore per hour, with unskilled labor, and gives a more satisfactory product than the smaller hand-rabbed furnaces. After roasting concentrates containing 45 per cent. zinc, there is little difficulty in extracting as much as 95 per cent. to 97 per cent. of the zinc.

The successful electrolysis of zinc from sulphate solutions has not been an easy matter, and it is only within recent years that the difficult problem of depositing high-grade zinc has been satisfactorily accomplished on a commercial scale. The principal requisite is that the electrolyte shall be quite free from certain impurities. The methods by which freedom from these impurities is assured are now very well understood, and with experienced superintendence there is little difficulty in obtaining a high efficiency in that part of the process.

When certain underlying principles are recognized, the difficulty encountered in dealing with the filtration of the acid and slimy solutions also largely disappears, although it has been a very serious one to the uninitiated. In the dissolving of the zinc from the roasted ore there is nothing which any competent chemical engineer can not undertake, and any other operations connected with the electrolytic process are either of little or no difficulty, or are common to the retort process.

In comparing the two processes, I do not think there is any more experience required in the electrolytic process than in retort smelting, and I shall not be surprised if within the next year or two the electrolytic is preferred as the simpler of the two. It is certain that, with the exception of the care of the electrical machinery, the commonest unskilled labor only is required to produce electrolytic zinc, whereas the retort process requires not only many physically strong, but also very skilled and highly paid men. The amount of labor necessary in the electrolytic process is, however, greater than that required in retort smelting, and also, as a general rule, the current to produce a ton of zinc costs much more than the gas or fuel to produce a ton of spelter. The electrolytic is as much dependent on cheap power as the retort process is on cheap fuel. The operation of roasting in Wedge Furnaces is, however, less costly than that in the special furnaces used for roasting the ore for retorting, in which nearly all the sulphur must be eliminated. The labor and power costs are in favor of the retort process.

Just as soon as the lead or copper smelter recognizes that a good extraction of zinc can be made from his zinc-lead or copper ores, we may expect him to erect an electrolytic zinc plant as an adjunct to his smelter, even though the price of zinc should fall so low that he can make no direct profit from the zinc, provided, of course, that he is favorably situated with regard to cheap power.

In Canada, and especially in British Columbia, there are vast quantities of complex ores and silver-zinc-lead ores, which it has not been possible hitherto to concentrate to much above 45 per cent. The retort process in Canada is impossible on account of the small supply of ore of sufficiently high grade. The concentrates are impure and therefore do not command a high price. These concentrates are, however, very easily treated by the electrolytic process. It is imperative that the British Columbia miner shall concentrate his ore in order to separate the valuable silver-lead contents; the zinc con-

concentrates are merely a by-product. The latter generally carry a considerable quantity of silver, of which 65 per cent. to 70 per cent. is paid for the United States smelters, after first deducting 6 oz. The price paid for the zinc is generally based on 5-cent zinc, \$17.00 to \$18.00 per ton being given for 40 per cent. concentrates. After deducting duty, penalties and freight to the nearest United States zinc smelter, the Kootenay miner received only \$5.00 to \$7.00 per ton for his zinc concentrates. An electrolytic plant using these concentrates will prove to be a very serious competitor to the zinc smelter who can treat only high-grade concentrates. Even though he were able to treat 40 per cent. concentrates as profitably as 60 per cent., the Missouri miner could not supply his 40 per cent. concentrates to the smelter at much under \$27.00 per ton. The electrolytic plant would thus have an advantage of about \$20.00 per ton in the cost of ore, which much more than compensates for the higher cost of production in that process.

It must not be forgotten that when zinc-lead ore occurs in veins it must be concentrated in order to separate the more valuable lead contents, whether the miner is able to dispose of his zinc concentrates or not. Many of them actually run the zinc down the creeks because there is no market for it.

There are, of course, the considerations of cheap electric power, the improvement in flotation methods of concentration, distance from markets, and many others, which affect the future of these rival processes, but I think it must be conceded that it is at least very doubtful whether or not the retort process will be able to survive the competition of the electrolytic process within a few years.

In the early part of January only four of the eight blast-furnaces at the Granby Consolidated Co.'s smelter at Grand Forks, B.C., were being operated. The local newspaper stated that there was plenty of coke obtainable, but the supply of ore was short, temporarily.

#### MR. W. E. SEGSWORTH SPEAKS ON VOCATIONAL TRAINING.

Addressing a representative gathering of the Canadian Credit Men's Association in Toronto, Mr. W. E. Segsworth, Administrator of Vocational Training in connection with the Military Hospitals Commission, Ottawa, gave an instructive narrative of the work that is being accomplished in fitting the disabled soldier to provide for himself.

Mr. Segsworth announced that the department had branched out from the original scheme, and inaugurated a system of industrial surveys, which had been introduced in the vocational training schools as far West as Winnipeg during the past month with wonderful results.

In this connection, officials of the department visit the various industries, in which many different kinds of machinery are in use, and make a close study of the outstanding features of each machine and its mode of operation. The re-educational work is still in the experimental stage in Manitoba, while in the schools in Toronto and Montreal marked progress has been made.

#### The Silver Market

Messrs. Mocatter and Goldsmid, the London precious metal merchants, in reviewing the silver markets for the year say that the outlook is too uncertain for any definite prophecies.

"As last year," this firm writes, "we anticipate large requirements for coinage, both in India and in Europe, and the amount required will probably again exceed the world's products, but as indicating a tendency on the part of the Governments of the allies to avoid, as far as possible, further purchases of silver during the continuance of the war, it is interesting to note that early in October the Italian Government issued a decree calling in one and two lire pieces. France, too, has since decided to call in all five franc pieces coined up to the year 1870, and to demonetize these coins, using the silver for the coinage of subsidiary pieces.

"Owing to the entire absence for some time of any speculation in silver, the necessity of keeping large stocks of silver in London to prevent a possible 'corner' has disappeared, and although there was at the beginning of the year a stock of about 6,800,000 ounces this has been materially reduced, and is now almost negligible. Shipments, however, have arrived with wonderful regularity from New York and Canada, for with the exception of the steamship *Laconia* early in the year, and the *Mineota*, in September, no steamer bringing silver to London has, to the best of our belief, been lost; truly a wonderful record, and one for which we have to again thank the vigilance of our navy and those of our allies. The largest shipments of silver, however, have not been across the Atlantic, but on the Pacific side, owing to the enormous transactions with China, which have been such a feature this year. China has undoubtedly been a seller on balance during the past twelve months, over 39,000,000 ounces having been sent from there to India alone, in addition to minor shipments to other ports. Since these shipments from China have only been replaced to the extent of about 25,000,000 ounces imported from San Francisco, it gives an indication of the steady flow of *sycee* and other forms of silver which find their way to Shanghai from the interior of the country, the stock of *sycee* in Shanghai at present being hardly less than at this period last year."

Messrs. Heron & Co., members Toronto Stock Exchange 4 Colborne St., have issued their annual (11th year) Summary of Mining Statistics. The publication, which has been prepared with great care and accuracy is a very comprehensive one covering useful data in connection with all Mining Companies, the shares of which were traded in on the Toronto market during 1917.

#### NIPISSING MINES CO.

With a silver yield of slightly more than 4,000,000 ounces Nipissing during the past year maintained its normal output, while the higher prices which prevailed increased the gross value over 1916. Dividends were as in previous year, 30 per cent.

Higher wages and cost of materials combined to raise the average cost above the 24.13-cent level of 1916, but the advance was probably more than compensated by the higher price received for silver.

## NITRATES\*

By Hoyt S. Gale.

Nitrogen for use in manufactures and in agriculture is supplied principally in the form of nitrates, and as these salts, or the nitric acid derived from them, constitute the basis of practically all explosives, they are absolutely essential also to warfare. As they are among the chief salts used in chemical fertilizers an adequate supply of them affects directly the quantity and the quality of the food supply.

Nearly all the sodium nitrate marketed is obtained from extensive deposits in the desert region of northern Chile. Commonly a few thousand tons of potassium nitrate is imported by America annually from India, where it is artificially produced in "saltpeter plantations." Calcium nitrate obtained in Norway by artificial fixation of the nitrogen of the atmosphere has also been listed among the fertilizer materials marketed in America. The United States has been the largest purchaser of Chilean nitrate since the German market has been cut off.

Just after the outbreak of the European war the Chilean nitrate industry experienced a severe depression which has, however, been followed by gradual recovery. The cost of production at the mines has risen considerably, owing largely to the increased cost of labor and the scarcity and high price of fuel. The coal used for refining the nitrate has been obtained principally from Wales as return cargo in the nitrate vessels. Fuel oil from California is also used.

At present the dearth of shipping facilities and high freight rates have considerably increased the price of the nitrate in the countries to which it is exported.

Nitrate of soda exported from Chile, calendar years 1912-1915, in short tons: 1912, 2,748,124; 1913, 3,018,469; 1914, 2,035,707; 1915, 2,230,054.

Normal New York quotations for sodium nitrate, 95 per cent. pure, ranged from \$44 to \$52 a short ton in 1912 and from \$44.40 to \$52.40 in 1913. At the end of 1916 or early in the spring of 1917 sodium nitrate was quoted at \$75 a ton in Atlantic ports.

The U. S. import figures show a war-time stimulus, the normal annual domestic consumption of about 600,000 tons of sodium nitrate increasing to more than double this amount in 1916. Of this large increase between 100,000 and 200,000 tons is believed to be in storage as a reserve for the time when access to a foreign supply may be cut off. The remainder of the increase, probably 600,000 tons, may be assumed to have gone into munition manufacture, chiefly for export.

The amount of nitrates consumed in fertilizers is not known exactly, but about 280,000 short tons (250,000 long tons) of sodium nitrate was used in 1916 for direct application to the soil as fertilizer. It is said to be applied chiefly as a top dressing, by itself, to promote or hasten growth at certain seasons, usually in the spring, after the crop has made a start.

A very important use for sodium nitrate is in the manufacture of sulphuric acid by the chamber process. In this process, by which the greater part of the acid of low gravities produced in this country is made, the nitric acid is required for the oxidation of the sulphurous gases to sulphuric form. The weight of sodium nitrate used in this way is estimated to be about 5

per cent. of the weight of the sulphur consumed to make the sulphuric acid. The production in 1916 of 4,500,000 tons of sulphuric acid of strengths less than 66 per cent. Baume therefore required 75,000 long tons (nearly 85,000 short tons) of sodium nitrate.

### Fixation of Nitrogen.

The processes for fixation of atmospheric nitrogen that have been developed in a practical way may be classified as the arc processes, the Haber process, and the cyanamid process. Arc processes involve direct oxidation by means of the electric arc to form nitric acid and nitrates. These are fundamentally the simplest but are limited in application by the great amount of electric power required. Norway, with abundant water power, has been able to employ these processes successfully, but it seems doubtful if the power available in the United States could be spared for use in this way. The Haber and cyanamid processes form other compounds of nitrogen, which, however, can be converted into nitrates by a further process.

The Haber process consists in forcing gaseous nitrogen and hydrogen to combine under high pressure, a reaction being effected with the aid of a catalytic agent. This process yields ammonia, which would have to be converted to nitric acid, at least in part, to supply munition requirements, but which could be used in agriculture by conversion into ammonium phosphate or sulphate. This process, together with one for obtaining ammonia from cyanamid, is used at present in the production of nitric acid for munition supplies and inorganic nitrogen fertilizer salts in Germany, and these industries are believed to have been developed to such a degree as to render that country entirely independent of outside sources of nitrates when the war requirements cease.

The cyanamid process consists in the production of a compound of lime, nitrogen, and carbon, known as calcium cyanamid. It involves two main steps, each based on electric-furnace treatment but requiring only about one-fifth the power expenditure of the arc process. It is said that calcium cyanamid must be converted into ammonium salts to meet the requirements of nitrogen-carrying mixed fertilizer. An additional step would be necessary to convert the product to a nitric form.

By-product ammonia, derived from the production of coke and of illuminating gas, is an important source of combined nitrogen and is an available source for the production of nitric acid or nitrates. Such ammonia can be practically oxidized to nitrates, and the supply of this material is therefore available to relieve emergency requirements should other sources fail.

Mr. H. Freeman of the American Cyanamid Co., at a recent meeting of the Board of Trade of Niagara Falls, Ont., said:

"The establishment of the first, and at present only factory for the fixation of atmospheric nitrogen in America or the British Empire at Niagara Falls, Canada, by this company, was due to the failure of negotiations for the development of hydro-electric power in the United States, and to the cheap power offered at that time in Canada. When in 1913 capital was obtained in London for the extension of the industry to Alabama, where it was originally intended to go, similar conditions prevailed and the Canadian plant was extended by the expenditure here of some millions of dollars.

\*Extracts from U. S. Geological Survey Bulletin 666-Z.

"Since the commencement of operations in 1909 the American Cyanamid Company has energetically sought the maximum development of the possibilities of cyanamid in many fields and at this plant a great amount of technical work has been carried on under the direction of Dr. W. S. Landis, and the use of cyanamid has been extended into many arts. The plant is up-to-date in every respect. Its employees are better paid than those of any other similar factory, and their welfare is taken care of by a very efficient safety committee, whose endeavors have made conditions of working far better than those in the majority of chemical factories.

"The raw materials used in the manufacture of cyanamid are the atmosphere, lime and coke, and to bring them into the proper combination a plentiful supply of electric power is required."

#### MORE ARSENIC NEEDED.

The shortage of arsenic and arsenic compounds that became apparent late in 1916 continued throughout 1917, according to a statement of J. B. Umpleby made public by the United States Geological Survey, Department of the Interior. It now appears that the United States needs about 12,000 short tons a year, whereas the available supply in 1917 only amounted to 9,787 tons.

In December, 1917, the manufacturers of insecticides, in response to a detailed canvass made by Mr. C. W. Merrill, of the Food Administration, estimated that they needed, for delivery before June, 1918, 6,900 short tons. Of this amount 5,476 tons had been contracted for and only 2,100 tons had been delivered. The manufacturers of sheep dip, in reply to inquiries made by the Department of Agriculture, estimated that they needed 1,000 tons. It is highly desirable also that some arsenic be exported to certain agricultural countries whose excess production is available to the allied governments. At present it is not known to what extent arsenic may be utilized in preparing poisonous gases for use in trench warfare.

The price of white arsenic in New York, as quoted by the Oil, Paint, and Drug Reporter, ranged from 8 cents a pound in January to 20 cents in May, and fell to 16 cents in December. Even at these prices, however, deliveries are said to have been far behind the stipulations of the contracts. It is understood that the maximum price for wholesale lots during the year was 16 cents a pound.

Last month The Trail News made the following comment: "During the recent strike at the Consolidated Mining & Smelting Co.'s smeltery at Trail, B.C., the office staff had the time of their lives, albeit a new experience and a healthy one. Having completed totaling figures and making segregations re pachucas, motor generator sets, acids, metals and a few hundred other matters, they donned their overalls and went to work unloading cars of ore, coal, coke, etc. When that was done they increased their muscular exercise by loading pig lead and other metals of various kinds. While a bit strenuous at first, perhaps, it doubtless did them good and got them away for a time from their usual sedentary walks of life. And they never had better appetites, going back to their ledgers and adding machines when the strike was over with a new zest.

#### PERSONAL

Mr. J. B. Tyrrell, of Toronto, has been awarded the Murchison medal of the Geological Society, London, for recognition of his work as a geologist. Dr. A. P. Coleman, of Toronto, was awarded the medal a few years ago.

Mr. Van H. Smith has returned to Copper Mountain, B.C., from San Francisco, California, where he spent some time in the offices of Messrs. Bradley, Bruff & Labarthe drafting plans for the 3,000-ton flotation concentration mill to be erected and equipped by the Canada Copper Corporation at a site near Similkameen River, and about four miles above Princeton, B.C.

Mr. Oscar V. White, of Sandon, B.C., superintendent for the Slocan Star Mines, Ltd., has been ill as a result of ptomaine poisoning.

Mr. James J. Warren of Trail, B.C., managing director of the Consolidated Mining and Smelting Company of Canada, Ltd., in his last annual report, stated that the members of the company's staff on September 30, 1916, the end of the company's fiscal year, were as follows: Assistant General Manager, Mr. S. G. Blaylock; Metallurgical Manager, Mr. E. H. Hamilton; Manager of Mines, Mr. W. M. Archibald; General Superintendent of the Smeltery and Refineries, Mr. F. N. Flynn; Comptroller, Mr. T. W. Bingay. The Manager of Mines stated that Messrs. M. E. Purell, G. H. Kilburn, and H. L. Batten were engaged in examination and exploratory work, and that the operations of the various mining properties of the company were directed by the following other members of the staff: Centre Star and War Eagle, Rossland, Mr. E. G. Montgomery; Le Roi and White Bear, Rossland, Mr. F. S. Peters; Sullivan and St. Eugene, East Kootenay, Mr. J. K. Cram; Highland, Ainsworth, Mr. L. W. Oughtred; Molly Gibson, Nelson mining division, Mr. Ronald Stomier; Ottawa, Slocan City mining division, Mr. D. Matheson; Lucky Thought, Silverton, Slocan, Mr. D. M. Tattie; Emma, Boundary district, Mr. Edward Nordman; Coast Copper Co., operating in Quatsino mining division, Vancouver Island, Mr. Wm. Clancy.

Mr. Wm. Thomlinson, of New Denver, B.C., who was employed by the Dominion Government to collect British Columbia minerals for inclusion in Canada's exhibit at the big expositions held in recent years at San Francisco and San Diego, California, and was in charge of the mineral exhibits at those big fairs, has contributed to The Daily Colonist, Victoria, an article in which he advocates that prospectors be certified after due training. Another of his contributions favors the employment of the Indians of British Columbia as prospectors.

#### ASBESTOS.

The demand for asbestos continues good and there is great activity at the Quebec asbestos mines. In addition to the regular producers several old mines have been reopened in the Broughton district.

#### GRANBY CONSOLIDATED.

For a winter month December established a record for the Granby Co. in the treatment at its Anyox smelter of 90,000 tons of ore.

### Mineral Production of British Columbia in 1917

British Columbia's mineral production in 1917 aggregated in value \$37,182,570, compared with \$42,290,462 in 1916, a decrease from the latter year of \$5,107,892, according to figures compiled by Mr. W. Fleet Robertson, Provincial Mineralogist, and published in the annual preliminary review and estimate of mineral production, issued by the Department of Mines, just off the Government press. The detailed figures showing the production of various minerals and their value are as follows:

	1916		1917	
	Quantity.	Value.	Quantity.	Value.
Gold, placer.....	.....	\$580,500	.....	\$550,000
Gold, lode.....oz.	\$221,932	4,587,334	118,239	2,444,000
Total gold.....	.....	\$5,167,834	.....	\$2,994,000
Silver.....oz.	3,301,923	2,059,739	3,069,021	2,372,353
Lead.....lb.	48,727,516	3,007,462	38,661,811	3,054,283
Copper.....lb.	65,379,364	17,784,494	51,416,617	16,693,037
Zinc.....lb.	37,168,980	4,043,985	33,776,335	2,550,113
Total value of metalliferous.....	.....	\$32,063,514	.....	\$27,663,786
Coal.....tons	2,084,093	\$7,294,325	2,160,417	\$7,561,460
Coke.....tons	267,725	1,606,350	159,554	957,324
Total from collieries.....	.....	\$8,900,675	.....	\$8,518,784
Miscellaneous, building materials, etc.....	.....	\$1,326,273	.....	\$1,000,000
Total value of production.....	.....	\$42,290,462	.....	\$37,182,570

Summarizing the mineral situation throughout the past year, the report says:

"The decrease in total value of the 1917 mineral production as compared with that of the previous year would appear at first sight to show a very serious decline in the mining industry; this condition, however, was not due to any decline in mining itself, but to the cumulative effect of several adverse influences acting on the mining industry as a whole. It must be remembered that the year 1916 was a record one of demand for metals, which, therefore, made that year a banner one for mining, not only for British Columbia, but for the whole American continent. In comparing the estimated 1917 production with any previous year, excepting 1916, it is seen that the 1917 output easily exceeds any other; for instance, it is nearly \$5,000,000 greater than the former record year of 1912.

The adverse influences which retarded mineral production in 1917 may be summarized as industrial troubles, reduced metal prices in the last quarter of the year, a very much lessened demand for lead and zinc for munition purposes, and the economic conditions which severely handicapped the mining of gold.

"Industrial troubles in 1917 were more frequent and extensive than usual; in the early months of the year a protracted strike in the Crow's Nest district not only cut down the output of coal and coke but forced the copper and lead smelters to close for lack of fuel, and, as a direct cause, interfered with metal mining. This strike was followed by another one at Rossland,

which stopped production from the big gold-producers of that camp.

"The great decrease in gold production this year is mainly due to the heavy falling-off in the Rossland output, which usually makes over one-half the yearly output of the Province. Early in November another serious strike occurred at the Trail smelter, which closed the whole plant until practically the end of the year; this in turn stopped productive mining during that time throughout East and West Kootenay.

"The reduction in metal prices was confined mainly to lead and zinc, as the average price for copper was practically the same as for the previous year, while

silver advanced in price. A larger production of lead, however, could have been made by the Trail smelter but for the inability to market the product, due to the curtailment of orders by the Imperial Munitions Board.

"Gold-mining suffered also from increased costs of labor and supplies, with no corresponding increase in the value of the metal produced, thereby causing a smaller margin of profit, and, in many cases, making it unprofitable to mine gold.

"But for these untoward circumstances the hope anticipated at the commencement of the year, that the mineral output of the Province for 1917 would reach the \$50,000,000 mark, would probably have been realized. Taken in the aggregate, our mineral production and development in the year 1917 and the future prospects of the industry are conditions for congratulation at this time.

"In 1914 the average market price of copper for the year was 13.6 cents; in 1915 it was 17.3 cents; in 1916, it was 27.2 cents; and in 1917 it was 27.18 cents. The 'high-water mark' for the year was in February, when the high monthly average of 31.75 cents a pound was reached; a steady, although somewhat irregular, decline thereafter set in. In September the United States Government, after conferring with the representatives of the big copper-producers, fixed a price of 23.5 cents a pound, and since that time this price has prevailed as the standard on the New York market; the New York price in turn is standard for the American continent, as sales and ore-purchases are governed



by it. This fixed price is apparently satisfactory to all, as the present supply and demand are about equal.

"The lead market is at the present time in a very dull and featureless condition. The high price prevailing for lead during the first nine months of the year so stimulated production that the supply soon exceeded the demand, with the natural result that stocks accumulated and the price commenced to decline. In Canada the chief producer of lead is the Consolidated company at Trail, which company delivered a large part of its output to the Imperial Munitions Board. Towards the end of the year, however, these orders were largely reduced, which caused the Trail company to have difficulty in marketing its lead; as a result the company had to curtail lead production.

"The high prices paid for zinc in 1915 and 1916 resulted in such an increased production that the supply far exceeded the demand, with the inevitable result that the market price declined very materially in 1917. The present market price of zinc of from 7.5 to 8 cents a pound cannot be considered as being any better than the before-the-war price, when it is remembered that operating costs are correspondingly higher. The average price of zinc for the year 1917 was 8.884 cents a pound (December estimated), which compares with 12.804 cents in 1916 and 13.23 cents in 1915. The Provincial output of zinc for the year 1917 is, however, only slightly less than in the previous year.

The value of coal produced in 1917 shows an increase of \$267,135 as compared with the previous year, but the coke production shows the large decrease of \$649,026. The coal production in the Coast District was considerably greater than in 1916, but labor troubles materially decreased the output in the Crow's Nest of both coal and coke; it is in this latter district that most of the coke production of the Province is made.

"As far as can be ascertained at present, there is a small decrease in the item of building materials, due to the cessation of building operations in the larger cities.

Gold production in all forms has suffered from the war, due to the increased cost of labor and supplies, while the price of the product remains stationary. Due to the greatly enhanced value of the baser metals such mines operating on the sliding scale of wages, regulated by the price of the metals, have been paying abnormally high wages, which have drawn miners away from the gold-mining, both placer and lode. The estimated production of gold, in ounces, for 1917, compared with 1916, was as follows:

Rossland, 32,416-129,790; Boundary-Yale, 59,685-76,230; Nelson, 1,284-107; Skeena, 17,511-3,806; Coast, 2,612-3,204; Lillooet, 3,000-2,625; all other districts, 1,731-2,170. Total, 118,239-221,932 ounces. The fact that the Rossland camp was closed down for a considerable portion of the year made a great decrease, as may be seen by the above figures.

Silver, while showing a decrease in quantity, was greater in value than in 1916 owing to higher prices for the metal, the high price being 100.74 cents in September, but since then dropping off to 85.5 cents, the average for the year being approximately 81.38 cents compared with an average in 1916 of 65.66 cents and 49.68 cents in 1915. The approximate silver production in 1917 was as follows: Sloean and Sloean City, 1,722,269 ounces; Skeena, 258,300; Boundary-Yale, 251,911; Ainsworth, 216,571; Fort Steele, 192,387; Coast, 128,648; Omineca, 104,838; Trail Creek, 51,508; all

other districts, 142,589. Total, 3,069,021 ounces. In the Sloean, which produced 56 per cent. out of the total silver output, the increase over 1916 was over 200,000 ounces and would have been larger but for the curtailed shipments of ore at different times owing to the inability of the Trail smelter to handle the ore. The largest producer was the Standard, with an output estimated at 374,000 ounces, followed by the Van-Roi, Queen Bess and Surprise, each over 200,000 ounces. The total number of shipping mines in that district was about thirty-five. Ainsworth and Fort Steele divisions showed decreases compared with the preceding year, while about 50 per cent. of the output of the Boundary district came from the Granby company's properties at Phoenix and the Skeena output was almost entirely from the Granby's Hidden Creek property at Anyox.

Lead showed a decrease of 10,065,705 lbs., but owing to increased prices the aggregate value of the output was \$46,821 over 1916, this 1917 output being the highest in the history of lead-mining in British Columbia. The high price in June was 11.181 cents a pound, declining to 6.25 cents in December. The average price for the year was 8.78 cents. By districts the output was: Sloean, 13,667,762 pounds; Fort Steele, 13,101,200; Ainsworth, 6,877,377; Nelson, 2,708,400; Windermere-Golden, 1,528,600; Revelstoke-Trout Lake-Lardeau, 410,700; Omineca, 287,672; all other districts, 80,100. Total, 38,661,811 pounds.

Copper production showed some falling off from the previous year, when the greatest output in the history of the Province occurred, but considering labor troubles, the year's results are deemed most satisfactory, the product being 6,416,617 pounds, valued at \$16,693,037, compared with the 1916 figures of 65,379,364, valued at \$17,784,494. But the 1917 output is the highest of any previous year but 1916. The average price of copper for the year was 27.18 cents compared with 27.202 cents in 1916. The district production was as follows: Skeena, 27,251,323 pounds; Southern Coast, 20,283,210; Boundary-Yale, 11,035,361; Trail Creek, 1,658,080; Omineca, 1,058,943; all other districts, 129,700. Total, 61,416,617 pounds.

During the past three years the report sets forth, copper mining has become the most important form of mining in British Columbia, and from all indications it should maintain this prominent place. Last year it formed 60 per cent. of the total value of the metalliferous mines and 45 per cent. of the total mineral production. In the working of the large low-grade deposits and subsequent smelting of the ores produced, a great number of men are employed and a large proportion of the money value is retained in the Province in payment of wages and purchase of supplies.

The gross production of coal was 2,402,410 long tons, of which 241,993 tons were made into coke, leaving a net production of 2,160,417 tons, a decrease from 1916 of 83,170 tons gross and an increase of 76,324 tons net. The quantity of coke produced was 159,554 tons, a decrease of 108,171 tons from 1916. The provincial coal production was divided as follows:

Vancouver Island .....	1,698,235
Nicola .....	151,817
Crow's Nest Pass .....	552,358

Coke production was: Vancouver Island, 30,399 tons; Nicola, nil; Crow's Nest Pass, 129,155. Total, 159,554 tons.

## SPECIAL CORRESPONDENCE

## BRITISH COLUMBIA.

Published estimates of the total value of the mineral production of British Columbia for the calendar year 1917 range from \$37,500,000 to about \$41,300,000. The former amount is stated to be the latest estimate of the Provincial Mineralogist. The opinion of the Journal's correspondent, who, by the way, has not obtained any production figures from mine-owners other than those made public by the Trail smeltery officials, is that it is just as likely as not the final returns will show even the lower estimate of the Provincial Mineralogist to have been somewhat high.

While these notes are being written before the date of the annual general meeting, in Toronto, of shareholders in the Consolidated Mining and Smelting Company of Canada, Limited, the results of the company's operations in its fiscal year ended September 30, last, are known, and it is gratifying to find that the total value (\$13,020,127) of the metals produced at the company's smeltery at Trail was so much higher than in any previous year, and that a net profit of \$1,076,828 had been earned in the fiscal year, during which the total of dividends paid to shareholders (\$995,012) was also larger than in any previous year. It may be of interest to add that the total quantity of ore treated from the time the smeltery was established in the early part of 1896 to September 30, 1916, was 5,626,324 tons, and that the quantities of metals produced and their total gross value were as follows: Gold, 1,877,235 oz.; silver, 29,290,981 oz.; lead, 498,309,934 lb.; copper 79,583,490 lb.; zinc, 23,058,996 lb.; gross value, \$102,207,303. The total of dividends paid during the same period is \$3,946,360.50, of which sum a little more than one-fourth was paid in the last fiscal year. It is recalled that Mr. S. G. Blaylock, the company's assistant general manager, when giving information concerning the Trail smeltery and refineries in the course of an address made at the International Mining Convention held in Nelson, West Kootenay, B.C., last May, said: "The Trail plant is probably as complete a metallurgical institution as there is on the North American continent. Of course I do not say that it is by any means as large as some other plants, but we are working about sixteen hundred men, and are making electrolytic copper, copper sulphate, electrolytic lead, lead pipe, shrapnel, wire, electrolytic zinc, refined gold and silver, sulphuric acid, and hydrofluosilicic acid." The outstanding features of the last two years' operations are the successful establishment of an electrolytic copper refinery, the standardizing of the electrolytic zinc process and the completion of the electrolytic zinc refinery and latterly the increasing of output of refined spelter to more than sixty tons a day; also the establishment of the acid-making plants. Labor difficulties having been overcome, it is earnestly hoped that the current year's operations and results will be successful and satisfactory.

The following is a clipping from the Nelson Daily News of January 11: Nelson Board of Trade proposes to make a protest against the 10 per cent. income tax which has been imposed by the Provincial Government on mining companies of the province, it was intimated at the meeting last night. The details of the matter will be gone into later and the resolution presented to the Associated Boards of Trade convention in Nelson next month. Mr. Fred A. Starkey last night said the

tax would work a great hardship and recalled that last year Hon. William Sloan, Minister of Mines, had promised that there would be no increase of taxation of mines.

## EAST KOOTENAY.

Work has been resumed at the Consolidated Mining and Smelting Co.'s Sullivan lead-zinc mine, which was closed in November when the Trail smeltery employees went out on strike. During the first week of January there was received at Trail 1,188 tons of zinc ore from the Sullivan.

Approximate figures of the quantity of coal produced at Crow's Nest district collieries in 1917 show a total of about 559,000 long tons gross, that is including the coal made into coke. This quantity compares with 882,270 long tons gross for 1916. The decrease of fully one-third in output is, of course, the direct result in largest degree of the miners having been on strike for several months, and in a smaller extent of the occurrence of disasters at some of the mines of the Crow's Nest Pass Coal Co.

## WEST KOOTENAY.

**Ainsworth**—Shipment of ore from mines in Ainsworth mining division has been small since the strike of the workers at the Trail smeltery. The Bluebell shipped 342 tons in December, and during the first week in January 41 tons of zinc ore from the Bell mine, in Jackson basin, also reached the smelting works.

Much prominence has been given in newspaper columns to a proposal involving the purchase of the Sunset and Bell mines by the Utica Mines, Ltd., for \$70,000 cash and 800,000 shares in the company, which was approved at a meeting of shareholders held in Kaslo on January 5, which meeting also authorized an increase of the company's capital from 2,000,000 to 3,000,000 shares of \$1 each, par value. Meanwhile district newspapers report that mining has been suspended at the Utica mine, and that it is understood there is no money available at present for continuance of operations.

It is stated that thirty men are employed on the Consolidated Mining and Smelting Co.'s No. 1 silver-lead mine, in Ainsworth camp. There are other properties in the division on which work is being done, but generally there will be little ore production until such time as shipment to Trail shall again be permitted.

**Slocan**.—A meeting of shareholders of the Slocan Star Mines, Ltd., has been called to consider a proposal to wind up the affairs of the company, the accounts having shown a loss of \$38,700 as the result of operations during the fiscal year ended October 31, last. The company is reported to have ore valued at \$18,000, but the suspension of ore-buying at Trail has prevented realization.

The authorized capital of the Lucky Jim Zinc Mines, Ltd., is to be increased from \$2,500,000 to \$6,000,000. The purpose of the increase, it has been announced, is to absorb \$125,000 in bonds outstanding, discharge other obligations, and provide a surplus of treasury stock for sale to raise money for improving the mining property.

Following the report that a shoot of ore nine feet wide had been encountered on the 150-ft. level of the Galena Farm silver-lead-zinc mine, near Silverton, Slocan lake, it is stated that there is sufficient ore in sight to supply the concentrating mill with 100 tons daily for a period of six to eight months. Operation of the

concentrator will be resumed in March; meanwhile further development of the mine is in progress.

The ore shoot recently encountered on its property adjoining the Slocan Star mine has been developed by the Noonday Mines, Ltd., for 40 feet and its width found to be 8 ft. along that distance. About 12 in. of the ore is of shipping grade and the remainder suitable for concentrating. It is likely the latter will be concentrated at the Slocan Star mill, nearby.

**Trail.**—On January 4 the Trail News gave some information relative to conditions at the Consolidated Mining and Smelting Company's smelting works and refineries at Trail, in part as follows:

"Trail's extensive reduction works are once more getting back into their old form since the resumption of operations on December 21. Three or more furnaces are in operation, with others soon to be in blast; the zinc plant is practically in full swing, having turned out about 30 tons of spelter yesterday, and the copper refinery is being put into shape for again separating the gold and silver from the copper and producing the pure red metal. The concentrator and acid plants are also being operated.

"A little later the lead refinery will doubtless be again placed in commission, especially if some method can be worked out by the management for disposing of the lead product—a matter of no little importance not only to Trail, but as well to every silver-lead and lead-zinc mine in the Kootenay districts. The accumulation of pig lead that was on hand in November has practically all been shipped to market.

The total quantity of ore received at the Trail smelting works in 1917 was 347,614 tons, of which about 243,000 tons was from mines operated by the company and the remainder was of custom ores. The total for 1916 was 486,688 tons, so that there was in 1917 a decrease of 139,074 tons or 28 per cent., which was largely accounted for by there having been 187,000 tons less ore sent to Trail from the company's Rossland mines, with a partial offset of mines in East Kootenay.

#### VANCOUVER ISLAND.

The available supply of custom ore has proved too small to allow of the smelting works at Ladysmith to be continued in operation, so suspension has been found necessary. It is unlikely smelting will be resumed here until several months hence. Meanwhile efforts are being made to develop more ore and to arrange for its shipment to the smeltery.

The gross output of coal from Vancouver Island collieries in 1917 is stated to have been 1,698,235 long tons, as compared with 1,492,761 tons for 1916. The proportions from the mines of the several companies are as follows: Canadian Collieries (Dunsmuir) Limited, 800,348 tons; Western Fuel Co., 658,001 tons; Pacific Coast Coal Mines, Ltd., 150,517 tons; B. C. Mining Co. (formerly Vancouver-Nanaimo Coal Mining Co.), 61,547 tons; Nanoose Collieries, 27,822 tons.

#### OMINECA.

The plan to haul ore from the Babine Bonanza Mining and Milling Co.'s property, in the Babine range, to the Grand Trunk Pacific railway at Telkwa, a distance of about sixteen miles, has been abandoned for the winter, the newly-made road being too soft to allow of heavy hauling being done over it. Mr. James Cronin, of Spokane, Washington, for many years manager of the St. Eugene lead mine in East Kootenay, but now at the head of the Babine Bonanza company, is re-

ported to have bonded what is known as the Sweeney properties, situated in the Sibola district, south of the G.T.P. railway. These claims are distant from the railway about fifty miles, but as there occurs on them some remarkable showings of silver-lead ore, development work will be done on them as soon as shall be practicable.

The Silver Standard Mining Company recently completed a contract it had entered into to ship ore from its mine on Glen Mountain, near Hazelton, to the Selby smeltery, near San Francisco. It is understood that the ore thus shipped was silver-zinc ore. An idea of the metal contents of this kind of ore is given in an official report which states that in 1916 there was shipped from this mine to the United States, 209 tons of zinc-silver ore containing 168,616 lb. of zinc and 12,647 oz. of silver. The quantity of silver-lead ore shipped from the mine to the Trail smeltery in 1917 was 366 tons as compared with 738 tons in 1916. Returns for 651 tons in 1916 gave gold 126 oz., silver 74,593 oz., and lead 162,051 lb. Arrangements have been made to put in a concentrating plant to treat the Standard ores and the machinery was recently at Prince Rupert on its way to Two-mile creek, where the mill buildings have been erected to receive it.

#### DAWSON MEN FIND COPPER.

Whitehorse, Yukon, Dec. 28.—A rich strike in copper ore has been made on Williams creek near Yukon Crossing, by Dawson men. A tunnel has been run into the hill 180 feet, and now the lead is being penetrated with splendid ore all the way. Joe Viau and Martin Berrigan, who are working on the ground this winter write the good news of the strike, and say they will have a good deal of the ore on the dump by spring. They write to Paul Guite and Dr. Lachapelle of this city, the heaviest owners in the property. Viau and Berrigan are working the property under special agreement.

Mr. Guite and Dr. Lachapelle have spent thousands of dollars on the development of the property, and deserve great credit for their persistence in opening the resources of the country. Mr. Guite has held interests there much longer than any others and has made the heaviest expenditures.

The strike is one of a group of ten copper claims lying on Williams and Merrit creek. The tunnel is on Williams creek, only three-quarters of a mile back from the steamboat landing on the main Yukon river, and four miles below Yukon Crossing.

Writing from Williams creek to Mr. Guite, Mr. Berrigan, in a letter just received, says:

"I am glad to tell you that the rock is showing up fine. We have two pieces here on the table to-night almost pure copper. Yes, she sure is looking good. Joe is just tickled to death. He is the happiest man you ever saw since the days of '98. Joe says that despite all the knockers we got a mine at last and you could not buy him out now for love or money.

"As we have to follow the hanging wall we cannot tell the width of the lead as it is all copper the whole width of the tunnel, so we can't tell how wide it is to the foot wall. But after we get the 100 feet we will crosscut to the foot wall to see how wide it really is. It is sure a big thing as it looks at present. You can see lots of solid chunks of the pure mineral coming out on every wheel barrow load. It is sure a big surprise to Joe, as you know when we struck the lead at first

as I was telling you in Dawson, there was no mineral in sight. It was not until we got in 10 feet on the lead that there appeared occasionally small signs of mineral. But she came in a rush at 20 feet. It was all copper, so I hope it will keep on getting better, as it has been since we hit the copper. I know Paul, you will feel good over this, as you told me you spent \$9,000 on this property. I think you are a lucky man. If you could see the face of this tunnel shining with copper you would think so too.

"We have lots of copper if we could convert it into money, but we can't do that just yet."

In another letter received by Dr. Lachapelle and written Nov. 11, Joe Viau writes:

"We got through the granite and now are in the lead, and have good indications of ore in the foot wall from which I enclose a couple of samples. Thank the Lord I am now on the down hill pull and I don't think you will have any more kick."—Weekly Star.

#### LAKE SUPERIOR DISTRICTS SHIPPED 64,275,000 TONS IRON ORE IN 1917.

The iron ore mined in the United States in 1917 amounted to about 75,324,000 gross tons, compared with 75,167,672 tons in 1916. The shipments from the mines in 1917 are estimated at 75,649,000 gross tons, valued at \$236,178,000, compared with 77,870,553 tons, valued at \$181,902,277 in 1916, a decrease in quantity of 2.9 per cent., but an increase in value of 29.8 per cent. The general average value of the ore per ton at the mines for the whole United States was therefore \$3.12 in 1917, as compared with \$2.34 in 1916.

About 85 per cent. of the ore mined in 1917 came, as usual, from the Lake Superior district, which mined about 63,964,000 gross tons and shipped 64,275,000 tons, these quantities representing a very slight increase and a decrease of 3.2 per cent., respectively, compared with 1916. The shipments of iron ore by water from the Lake Superior district, according to figures compiled by the Lake Superior Iron Ore Association, amounted in 1917 to 62,498,901 gross tons. It thus appears that the iron-mining industry in the Lake Superior district has been able to bear the strain of the war demand, but not to duplicate the great record of ore shipments made by Lake in 1916, which amounted to 64,734,198 gross tons. The slight falling off, it is understood, was due to less favorable weather for shipping early and late in the season of 1917 rather than to inability of the Lake fleet to handle the ore mined.

#### BOOK REVIEW.

**Eye Hazards in Industrial Occupations** (Octavo, 150 pp., illus.) By Gordon L. Berry, Field Secretary, National Committee for the Prevention of Blindness, with the co-operation of Lieut. Thomas P. Bradshaw, U. S. Army, formerly Technical Assistant to the Director of the American Museum of Safety. Published by the National Committee for the Prevention of Blindness, 130 East 22nd Street, New York. Price, 50 cents.

In this volume the author reviews the chief industrial hazards to eyesight in the industries of the United States. Case reports illustrate each section, the special dangers are described and recommendations made for such changes of working conditions, or installations of protective devices, as have been found suitable for protecting workers. The book is most completely illustrated.

#### DEVELOPMENT OF THE MURRAY-MOGRIDGE GOLD MINE.

Among the mining properties under active development in the Kirkland Lake gold area is the Murray-Mogridge, situated at Wolf Lake. Results of development at this property are very encouraging. Mr. G. S. Harkness has given us the following notes on operations to date:

The property, four hundred acres in extent, was acquired by the Murray-Mogridge company about a year ago. Last spring mining plant was installed and underground development commenced.

Two shafts have been sunk on Vein No. 1 about 2,600 ft. apart; the South or No. 2 to a depth of 240 ft., and the North or No. 1 to the 50 ft. level. Stations have been cut and the orebody opened up at the 50, 100 and 200 ft. levels from the No. 2 shaft, and within a short time the 300 ft. level will also be ready for lateral workings.

The vein system in all the workings ranges from 3 to 20 ft. in width, and average values from careful channel sampling on the different levels show the following results: Surface \$8; 50 ft. level \$12; 100 ft. level \$11 and 200 ft. level \$16.40 along the 175 ft. of drifting to date. Recent sampling near present faces shows the highest results yet obtained, values ranging from \$16 to \$60 across the full width of the drift with only one wall showing, while special samples from a rich streak along the foot wall gave high returns of \$600 to \$822 per ton.

The North or No. 1 shaft will also be continued to the 300 ft. level and after opening up the No. 1 vein at this point a crosscut will be run to the East to pick up No. 6 vein which was uncovered last fall. This vein stripped some 90 ft. and sampled every 3 ft. gave an average of \$13.20 across 5 ft. of ore. Four other veins carrying good commercial ore have been uncovered and trenched for a considerable distance. The property, conveniently located, is well equipped with all necessary buildings, machinery, etc.

#### OBITUARY

James May, the oldest prospector in Northern British Columbia, died recently at Hazelton. In a lengthy notice contributed to a Prince Rupert newspaper the following occurs: "James May was among the stampedeers of the Fraser River excitement, and among the first in the greater stampede that followed to the Cariboo diggings. But as the outcome of these frolics he staked some claims on Tom Creek, in the Omineca, and despite the known propensity of old-time prospectors to drop everything on the rumor of a new strike, Jim stayed with these placer claims of his on Tom Creek—stayed with them for more than fifty years. A great gaunt figure was James May. His death removes a figure of the landscape in the Omineca diggings. Six feet two he was, broad and sinewy, wearing a closely trimmed beard these many years and always a smile and an open hand for every deserving creature, human or animal. Hard callous handed as he was, he was always the Kentucky gentleman."

The Pathfinder Consolidated Mining Company has been organized to acquire the Pathfinder and Little Bertha mining properties, in Grand Forks mining division of British Columbia. In earlier years the Pathfinder shipped copper ore, but the price of copper was then too low for operation of the mine to be profitable.

**CARBON BRIQUETTES**

Mr. W. J. Dick, of the Commission of Conservation, says:

To save from 45 cents to \$2.50 per ton is a possibility for the anthracite coal users of the prairie provinces. In 1916, Canada imported 4,570,000 tons of anthracite coal, nearly all of which was used for domestic purposes. Of this, about 400,000 tons were shipped to destinations in Manitoba and west thereof for domestic use. As the eastern portion of Saskatchewan forms the competitive area between supplies of United States coal on the one hand and the high grade bituminous coal of the Rocky Mountains on the other, the cost of coal in that portion of the province is high.

An investigation undertaken by the Commission of Conservation in co-operation with the Advisory Council for Scientific Research shows the economic possibility of manufacturing a high-grade fuel from the lignites of Saskatchewan. The results are published in the pamphlet "Carbonizing and Briquetting of Lignites." Carbonized lignite briquettes are stated to be practically equal in heating value to anthracite coal. They will, therefore, stand comparison very closely on the basis of cost. The difference in favor of briquettes as compared with anthracite coal varies from 45 cents per ton at Portage la Prairie to \$2.50 per ton at Moose Jaw. This allows a profit of \$1.00 per ton to the producing plant having a capacity of 30,000 tons per annum. With a capital cost of \$400,000, this would return 7½ per cent. on the investment. The lower price of carbonized briquettes would mean a large saving to consumers in western Manitoba and Saskatchewan and a plant such as that referred to would save some \$225,000 to the country annually which is now being paid to American coal producers.

**FRENCH CONTROL OF METALS.**

France is taking steps to ensure the economic development and control of her mineral and metal industries after the war. A company has been formed, entitled the **Societe Minerai et Metaux**, with a capital of \$2,000,000 for the purpose of fostering and protecting the metal industries of the country. The company, which is representative of existing interests, is not a profit-making enterprise so much as an organization which has for its object the improvement and extension of the methods of distribution, treatment, and marketing of the metals produced in France and her colonies.—W.J.D.

**Markets**

**TORONTO MARKETS.**

Cobalt oxide, black, \$1.50 per lb.  
 Cobalt oxide, grey, \$1.65 per lb.  
 Cobalt metal, \$2.25 per lb.  
 Nickel metal, 45 to 50 cents per lb.  
 White arsenic, 15 cents per lb.  
 Jan. 25, 1918—Quotations from Canada Metal Co., Toronto).  
 Spelter, 12 cents per lb.  
 Lead, 9 cents per lb.  
 Tin, 85 cents per lb.  
 Antimony, 17 cents per lb.  
 Copper, casting, 31 cents per lb.  
 Electrolytic, 32 cents per lb.

Ingot brass, yellow, 20 cents; red, 26 cents per lb.  
 Jan. 25, 1918—(Quotations from Elias Rogers Co., Toronto).  
 Coal, anthracite, \$9.85 per ton.  
 Coal, bituminous, nominal, \$9.00 per ton.

**SILVER PRICES.**

	New York Cents	London Pence
Jan. 4, 1918 .....	87%	43%
Jan. 4, 1918 .....	89%	44%
Jan. 7, 1918 .....	90%	45%
Jan. 8, 1918 .....	90%	45%
Jan. 11, 1918 .....	90%	45%
Jan. 14, 1918 .....	90%	45%
Jan. 15, 1918 .....	89%	44%
Jan. 17, 1918 .....	89%	44%
Jan. 18, 1918 .....	89%	44%
Jan. 21, 1918 .....	88%	44%

**STANDARD MINING EXCHANGE.**

Messrs. J. P. Bickell & Co. report the following closing quotations on the Standard Stock and Mining Exchange on January 23, 1918.

	Gold.	
	Bid	Ask
Apex .....	.04%	.05
Boston Creek .....	...	.24
Dome Extension .....	.09%	.10%
Dome Lake .....	.15	.15½
Dome Mines .....	8.50	...
Imperial .....	.01%	.02½
McIntyre .....	1.36	1.38
Hollinger .....	5.05	5.15
Newray .....	.38¼	.38½
Porcupine Crown .....	.24	.25
Vipond .....	.17%	.19
Preston East Dome .....	.02½	.03
Teck-Hughes .....	.50	...
West Dome .....	.12½	.13

	Silver.	
	Bid	Ask
Adanac .....	.10½	.11
Bailey .....	.04%	.04%
Beaver .....	.25½	.26
Ferland .....	.10½	...
Coniagas .....	...	...
Crown Reserve .....	.20	.24
Gifford .....	.03%	.04
Great Northern .....	.04	.04½
Hargraves .....	.08%	.09%
Hudson Bay .....	...	...
Kerr Lake .....	5.40	5.55
La Rose .....	.28	.32
McKinley .....	.54	.55
Nipissing .....	8.25	8.40
Peterson Lake .....	.10%	.11½
Right of Way .....	.03%	...
Seneca Superior .....	.01½	...
Silver Leaf .....	.01%	.01%
Temiskaming .....	.27	.27%
Tretheway .....	.15½	.15%
Wetlaufer .....	.04½	...
Mining Corporation .....	3.45	3.70
Provincial .....	.46½	.47½

## NEW YORK MARKETS.

Connellsville Coke—

Furnace, \*6.00.

Foundry, \*7.00.

Crushed, over 1-inch:

Beehive, \*7.30.

\*Fixed under Lever Act.

Straits Tin, spot, f.o.b. none offering.

Copper—

Prime Lake, 23.50.

Electrolytic, 23.50.

Casting, 23.50.

Lead, Trust price, 6.75.

Lead, outside, nominal, 6.87½ to 7.12½.

Spelter, prompt western shipment, 7.82½ to 7.92½.

Antimony—

Chinese and Japanese nominal, 14.00 to 14.25.

Aluminum—nominal.

No. 1 Virgin 98-99 per cent., 36.00 to 38.00.

Pure 98-99 per cent. remelt, 34.00 to 36.00.

No. 12 alloy remelt, 27.00 to 29.00.

Powdered aluminum, 75.00 to 85.00.

Metallic Magnesium—99 per cent. plus \$2.00 to \$2.50.

Nickel—Shot and ingot, 50.00.

Electrolytic, 55.00.

Cadmium, nominal, \$1.45—1.50.

Palladium, \$115.00.

Platinum (pure), \$105.00.

10 per cent. Iridium, \$113.00.

Cobalt (metallic), \$3.25—3.50.

Tungsten—

Wolframite, \$24.00 to \$25.00.

Gravel Fluorspar: f.o.b. mines—

Prompt, \$28.00 to 32.00.

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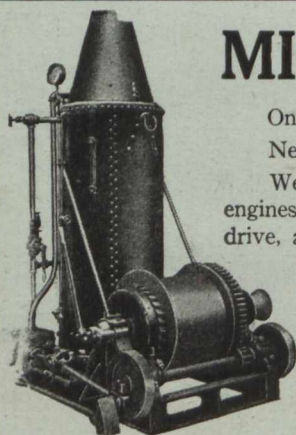
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We make these Mine Hoists in 7 sizes, from the little 10 H. P. size for prospecting or for small mines, to the heavy duty 50 H. P. machines.

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Contract, year 1918, \$25.00.  
 Silver (official), 88%.  
 Metal Products.—The following quotations represent mill prices and are strictly nominal except in the case of lead sheets and sheet zinc:

Sheet copper—Base prices—

Hot rolled, \$31.50—33.00.

Cold rolled, 32.50—34.00.

Copper bottoms, 39.50—41.00.

(Shipments from stock 2c per lb. extra.)

Copper rods—Base prices—

Round, 32.50.

Sq. and rectangular, 33.50.

Copper wire—Base prices—

Nominal, 27.00.

Brass Products—Base prices—

High brass—

Sheets and wire, 27.50—29.50.

Rods, 24.75—26.75.

Low brass—

Sheets and wire, 30.00—32.00.

Rods, 30.75—32.75.

Brazed tubing—

Brass, 34.75—36.75.

Bronze, 39.75—41.75.

Seamless tubing—Base prices—

Brass, 35.50—37.50.

Copper, 38.00—40.00.

Bronze, 42.50—43.50.

Full lead sheets, 9.25.

Cut lead sheets, 9.50.

Sheet zinc, f.o.b. smelter, 19.00.

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1—8 x 8 Gardner, steam drive.

1—8 x 10 Sullivan, steam drive.

1—10 x 10 Laidlaw, steam drive.

1—10 x 12 Sullivan, steam drive.

1—16 x 12 Rand, compound, steam.

1—8 x 8 Curtis, 2 cyl. Belt.

1—Rand, 327 Feet, Belt.

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1—4' x 18', 2/8' plate.

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60 cycle, 3 phase.

2—250 h.p., 6600 v., 514 rpm.

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3—80 h.p., 550 v., various speeds.

3—75 h.p., 550 v., various speeds.

2—50 h.p., 220 v., 800 rpm.

1—40 h.p., 550 v., 1000 rpm.

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2—15 h.p., 220 v., 900 rpm.

2—10 h.p., 220 v., 900 rpm.

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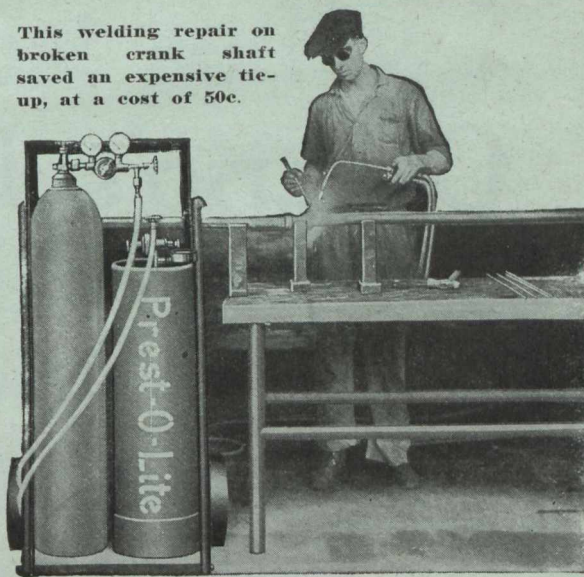
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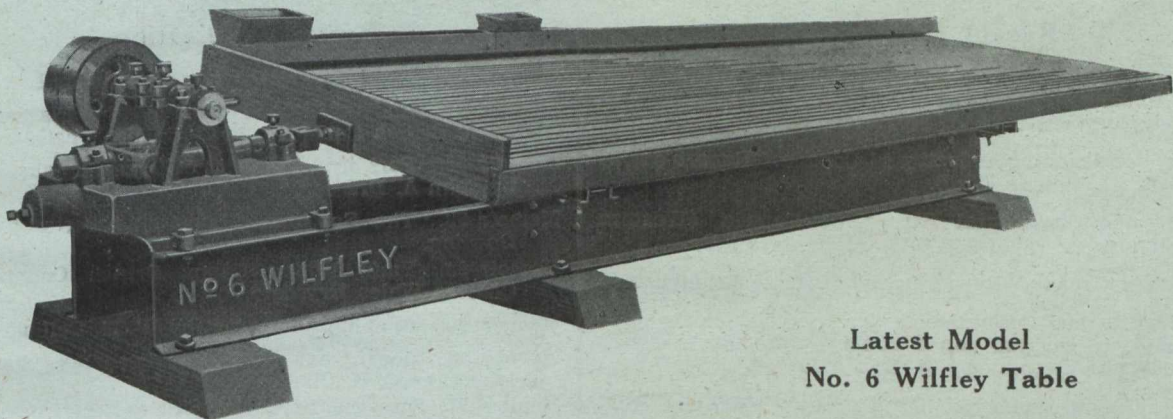
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- The Copper Smelting Industry of Canada. Report on, by A. W. G. Wildon, Ph.D.
- Building and Ornamental Stones of Canada (Western Provinces). Vol. IV., by W. A. Parks, Ph.D.
- Feldspar in Canada. Report on, by H. S. de Schmid, M.E.
- Peat, Lignite 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.
- The Value of Peat Fuel for the Generation of Steam. Bulletin No. 17, by John Blizard, B.Sc.
- Cobalt Alloys with Non-corrosive Properties. Report on, by H. T. Kalmus, B.Sc., Ph.D.
- Mining of the Thin Coal Seams of Eastern Canada, by J. F. K. Brown.
- The Mineral Waters of Canada. Vol. I., by John Satterly, M.A., D.Sc., and R. T. Elworthy, B.Sc.

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- Memoir 87. Geology of a Portion of the Flathead Coal Area, British Columbia, by J. D. Mackenzie.
- Memoir 92. Part of the District of Lake St. John, Quebec, by John A. Dresser.
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- Memoir 94. Ymir Mining Camp, British Columbia, by Charles Wales Drysdale.
- Memoir 95. Onaping Map-Area, by W. H. Collins.
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- Memoir 97. Scroggie, Barker, Thistle and Kirkman Creeks, Yukon Territory, by D. D. Cairnes.
- Memoir 98. Magnesite Deposits of Grenville District, Argenteuil County, Quebec, by M. E. Wilson.
- Map 57A. Frank, Alberta (showing the landslide of 1903).
- Map 63A. Moncton Sheet, Westmorland and Albert Counties, New Brunswick. Topography.
- Map 151A. Nansen and Victoria Creeks, Nisling River, Yukon Territory.
- Map 152A. Kluane Lake, Yukon Territory.
- 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 166A. Portion of Flathead Coal Area, Kootenay District, B.C. Topography.
- Map 182A. Portion of Flathead Coal Area. Geology.
- Map 186A. Explored Routes between Lake Athabaska and Great Slave Lake on the Tazin, Taltson, Slave and Peace Rivers.
- Map 1667. Slocan Mining Area, Kootenay District, B.C.
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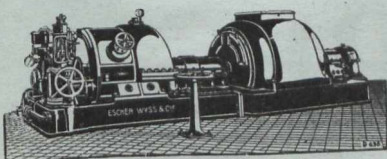
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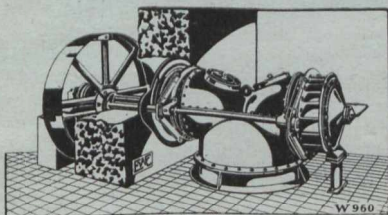
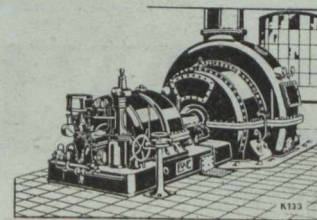
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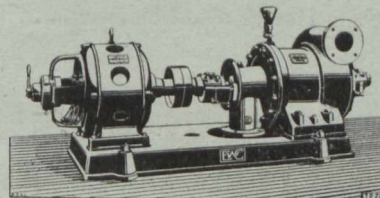
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Standard Underground Cable Co. of Canada, Ltd.
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M. Beatty & Sons, Ltd.  
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Northern Canada Supply Co.
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Standard Underground Cable Co. of Canada, Ltd.
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Sullivan Machinery Co.
- Cars—**  
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MacKinnon, Holmes & Co.  
Marsh & Henthorn, Ltd.
- Car Wheels and Axles—**  
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Hull Iron & Steel Foundries, Ltd.  
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- Chains—**  
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Jones & Glassco.  
Northern Canada Supply Co.
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Campbell & Deyell.  
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Nova Scotia Steel & Coal Co.
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Smart-Turner Machine Co.  
Northern Canada Supply Co.  
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- Converters—**  
Northern Canada Supply Co.
- Conveyer—Trough—Belt—**  
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Mussens, Limited.  
Hull Iron & Steel Foundries, Ltd.  
Wettlaufer Bros.  
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Koering Cyaniding Process Co.  
Can. Allis-Chalmers, Ltd.
- Derricks—**  
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Marsh & Henthorn, Ltd.
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Diamond Drill Contracting Co.  
Smith & Travers.  
Sullivan Machinery Co.
- Dredger Pins—**  
Armstrong, Whitworth of Canada, Ltd.
- Dredging Machinery—**  
M. Beatty & Sons.
- Dredging Ropes—**  
Allan, Whyte & Co.  
Can. B. K. Morton.
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Ltd., Montreal, Que.  
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Sullivan Machinery Co.  
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Ltd., Montreal, Que.  
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Sullivan Machinery Co.  
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Sullivan Machinery Co.  
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Ltd., Montreal, Que.  
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Northern Canada Supply Co.
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Canada Metal Co., Ltd.  
Hoyt Metal Co.
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- Lamps—Electric—**  
J. S. Aspinall.
- Lamps—Safety—**  
Canadian Explosives.
- Lamps—Tungsten—**  
J. S. Aspinall.
- Link Belt—**  
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Northern Canada Supply Co.  
Jones & Glassco.
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Canada Metal Co.  
C. L. Constant Co.
- Monel Metal—**  
International Nickel Co.
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- Ore Sacks—**  
Northern Canada Supply Co.
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Ledoux & Co.  
Can. Laboratories.  
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Canada Metal Co.  
Hoyt Metal Co.
- Perforated Metals—**  
Northern Canada Supply Co.  
Hendrick Mfg. Co.
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Hoyt Metal Co.
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Canada Metal Co., Ltd.  
Hoyt Metal Co.

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