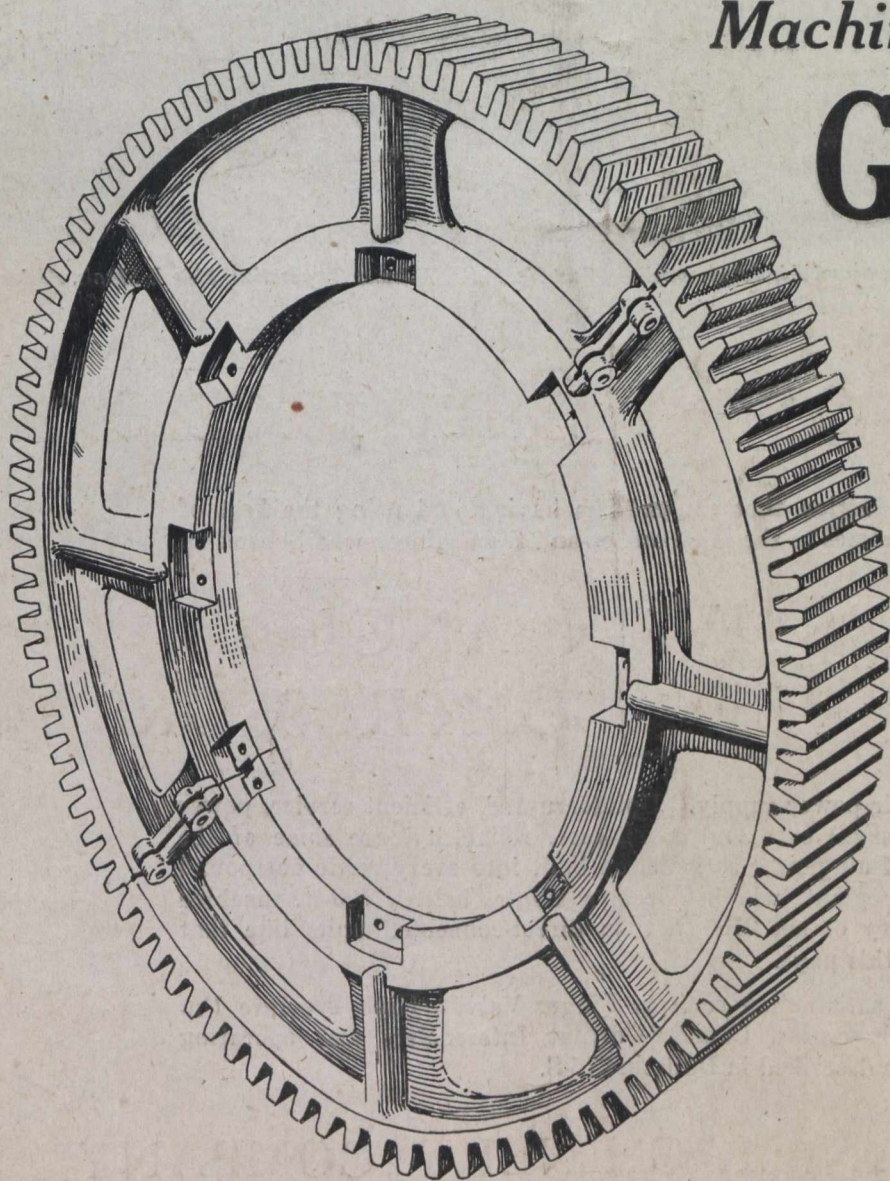


CANADIAN MINING JOURNAL

Vol. XLI.

Garden City Press, Ste. Anne de Bellevue, March 12, 1920.

No. 10.



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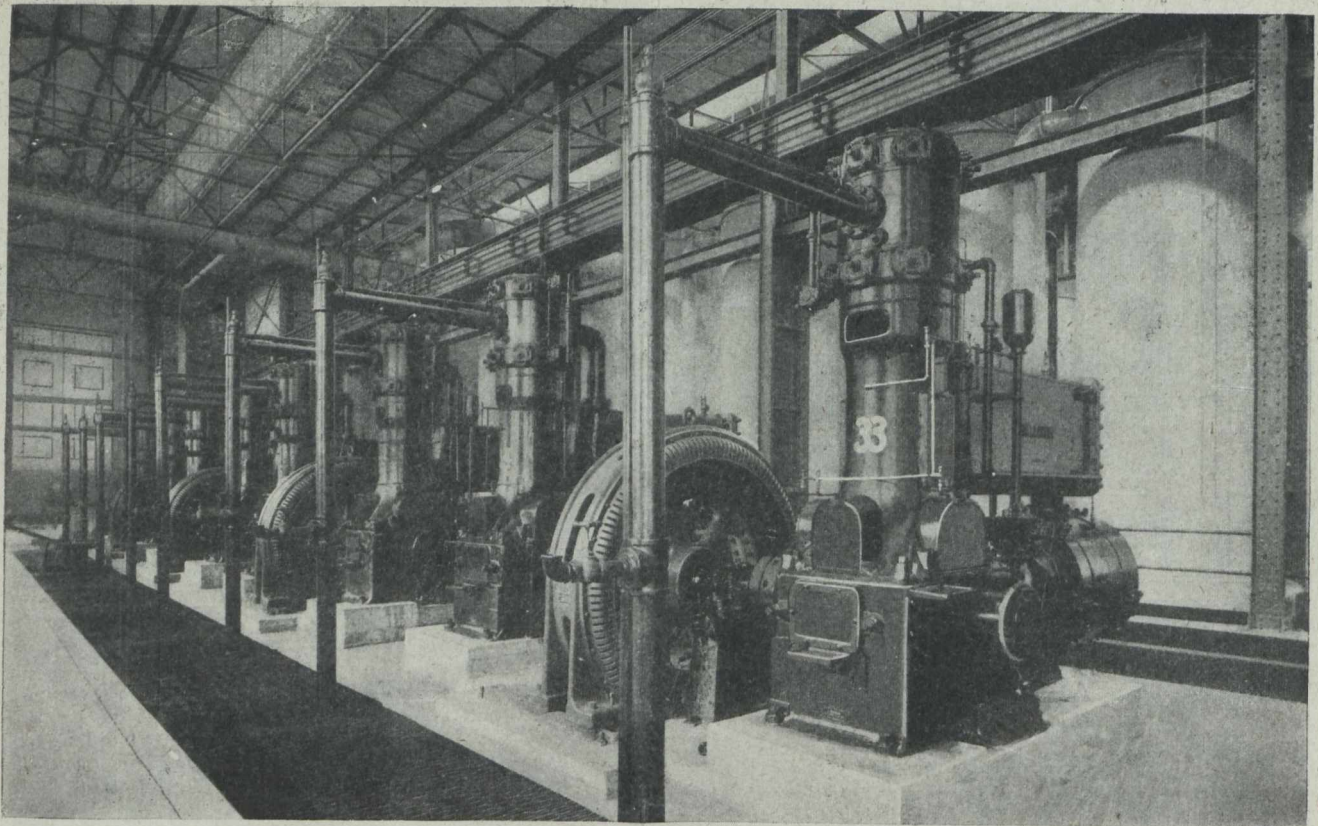
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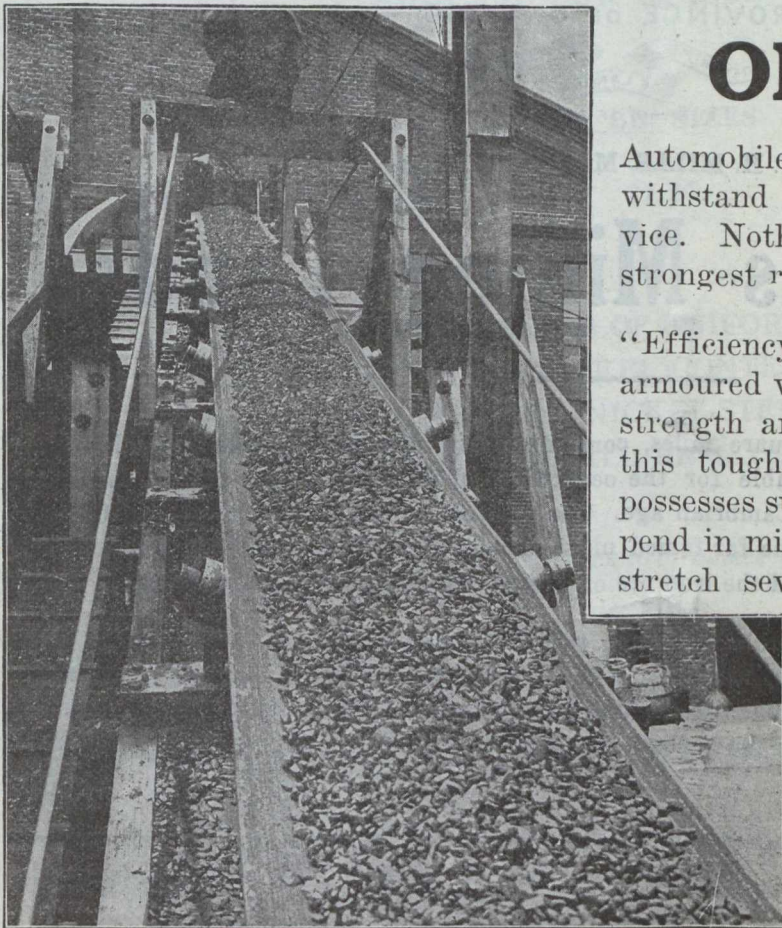
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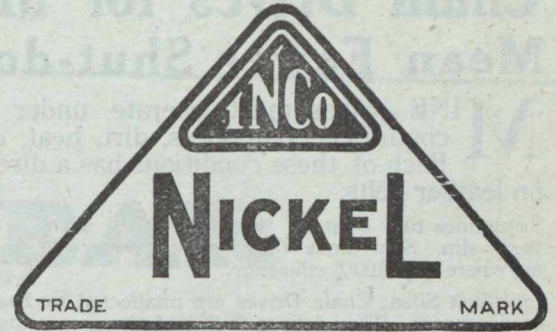
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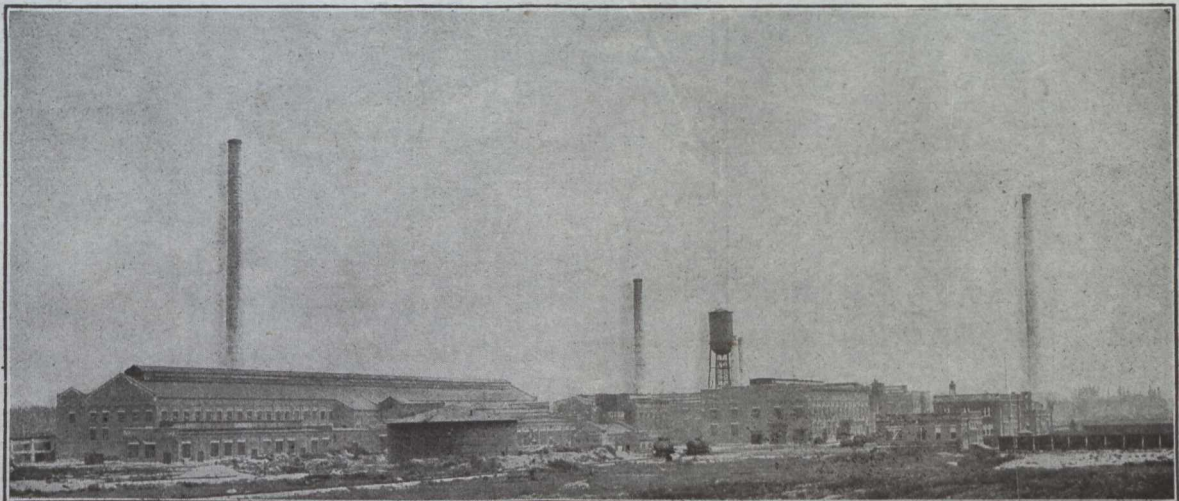
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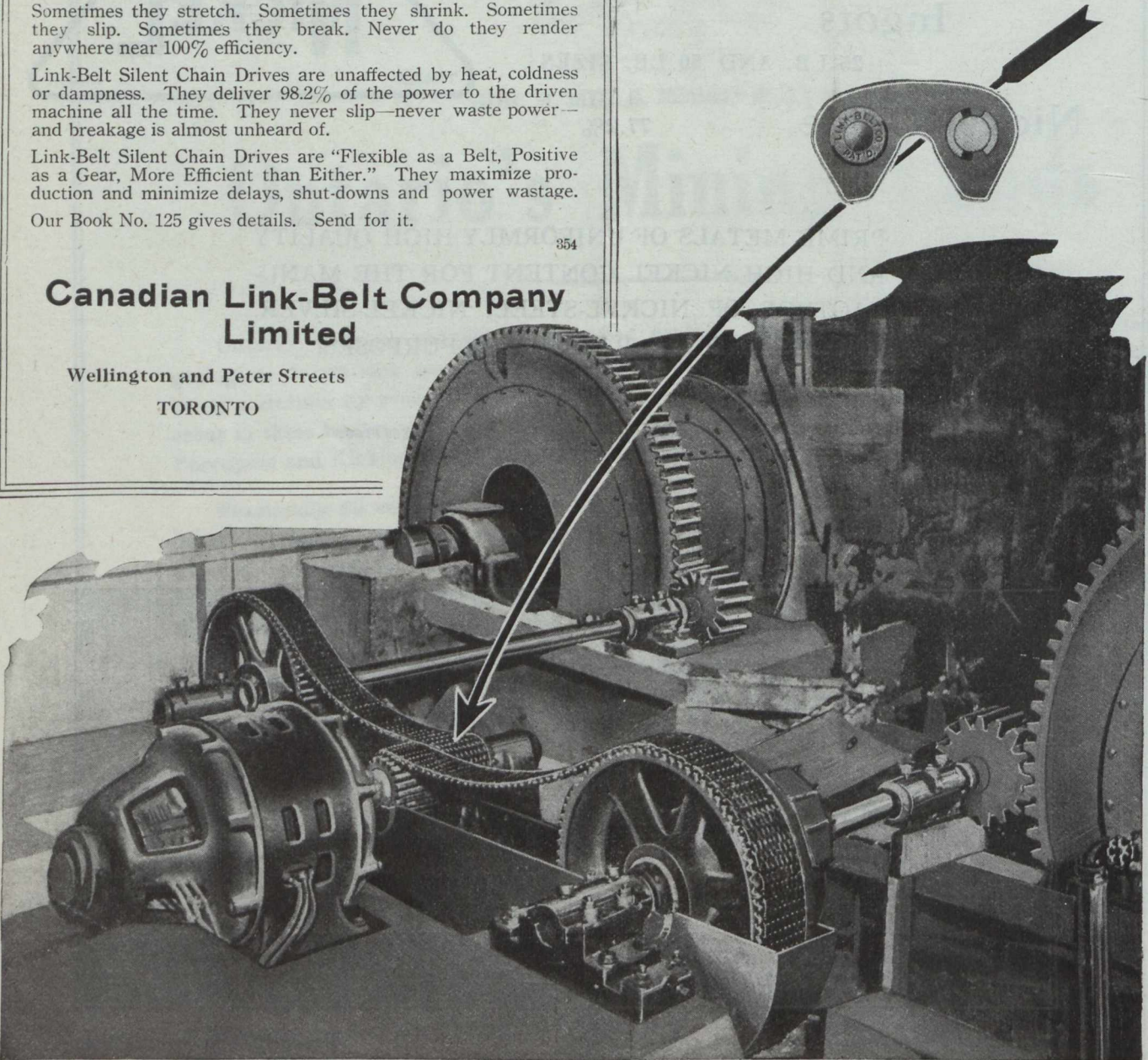
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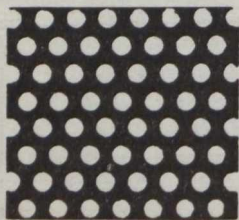
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VOL. XLI.

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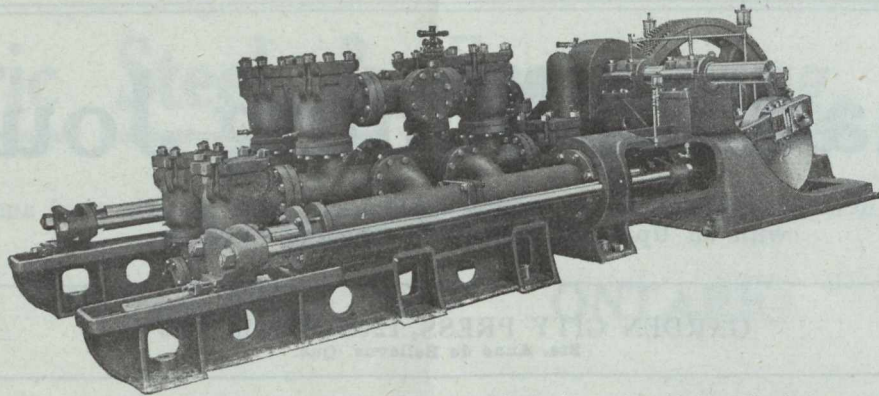
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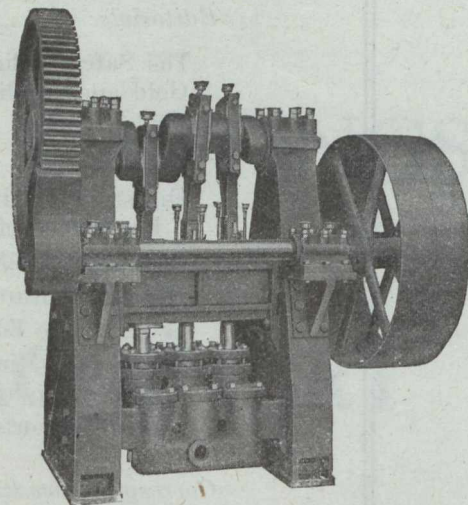
FOR General Water Supply, Municipal Waterworks, Oil Pipe Lines, and General Services, requiring high pressure and large capacities.

Capacities ranging from 155 gallons per minute at 1500 pounds pressure to 705 gallons per minute at 335 lbs. pressure. Complete data and description in bulletin 115. Copy on request.

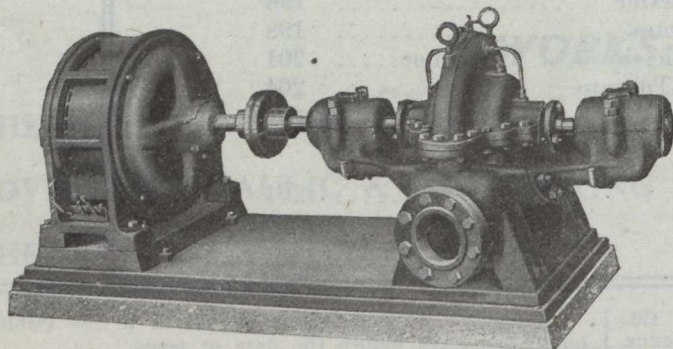
FIG. 1628. For general water supply, Municipal Waterworks, Mine Pumping, etc., where the total net head does not exceed 1305 feet. Made in six sizes, with capacities ranging from 9,360 gallons to 37,500 gallons per hour and for 140 to 565 pounds Working Pressure.

The Frame consists of two standards carrying the main bearings. Crank shaft is steel, accurately machined and the bearings are phosphor bronze. The gearing, Cylinders and valve boxes are charcoal iron. Cross-heads are fitted with adjustable bronze shoes which run in bored Guides. Connecting Rods are cast steel and the plungers cast iron, accurately machined.

Complete data and description in Bulletin 103. Copy on request.



Goulds Single-Acting Triplex Pump



Goulds Fig. 3030. Single Stage, Double Suction Centrifugal Pump, direct connected to an open type motor

FIG. 3030. For general water supply, hot water circulating in heating systems for irrigating, drainages, booster and mine service, and many similar services, where the total net head does not exceed 150 feet, the Goulds Single Stage, Double Suction Centrifugal Pump excels on account of the high efficiency obtained. 80 to 8000 gallons per minute, based on cold, clear water 150 feet head or 65 pounds pressure.

Complete data and description in Bulletin 110. Copy on request.

GOULDS PUMPS FOR EVERY SERVICE

COMPLETE SET OF BULLETINS ON REQUEST

THE CANADIAN FAIRBANKS-MORSE CO. Limited

St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, Windsor, Winnipeg,
Saskatoon, Calgary, Vancouver, Victoria.

EDITORIAL

The Safeguarding of Investors in Mines

Mr. R. E. Hore, in this issue, argues for recognition and protection of the "speculator" in mining enterprises, and refers to an article contributed to the "Engineering and Mining Journal" by Mr. J. B. Tyrell, which, if we may be pardoned for stating the fact, this journal would have been pleased to have had for its own circle of readers. Both writers urge the necessity to protect the small investor against fraud by safeguarding public stock issues through provisions requiring disclosure of pertinent facts. This much will be very generally conceded, and Ontario by requiring the filing of certain statutory information regarding mining flotations, has provided one effective safeguard. We cannot quite agree with Mr. Hore in his plea for the "speculator", for the term is practically synonymous with that of "gambler". The French word "entrepreneur" more exactly defines the person who imparts the initial impulse to mining flotations, and this function is a proper and useful one. It is not one, however, that should be attempted by the "small investor", and we do not believe that any useful purpose has ever been served by mining flotations offering stocks, or "certificates of a taken chance" at so many cents a share. Legislation to protect such persons is probably necessary, but it is nevertheless an attempt to protect a fool against his folly. A recent stock offering in a Montreal newspaper frankly admitted that its proposition was a gamble, inasmuch as the advertisement stated that the winnings would be larger in proportion to the amount "you ante up".

It may be regarded as unfair to the "small investor" to suggest that the only proper way to develop mining prospects into producing and profitable mines is through wealthy development companies advised by competent engineers but such is undoubtedly the teaching of experience. Such organizations offer solid inducements to the prospector, and provide the bridge between him and capital that is so necessary.

Mr. Tyrell, with good reason, deplors the fact that in Ontario, "anyone, no matter how incompetent, untrained, or reckless, is allowed to manage or mismanage a mine, to handle or disburse large sums of money

"intrusted to him by confiding people for purposes of development and equipment, and, by bad management to risk the ruin of what might have been, under proper management, an excellent property." There is some danger of confusing some issues here. The government is, or should be, charged with the duty of seeing that only competent persons are allowed to superintend mining operations insofar as these are concerned with prevention of accident and safety of life and real property. The principle of requiring certificates of competency from mine managers is a well-recognized one. It should also be within the powers of government to require that no persons should practise as a mining engineer, professing certain qualifications, unless his profession of such essential qualifications can be certified, either by examination, or by endorsement from some organization of engineers, in the same manner that other professions are regulated. But, as those who pay the piper call the tune, it will never be possible to regulate in any statutory manner, the expenditure of money on mine development. The best manner in which to safeguard the expenditure of monies invested in a mining company is for shareholders to insist upon the employment of competent engineers, and to give a wide berth to mining ventures that do not employ competent mining engineers and give publicity to the reports of these men.

It cannot, moreover, be denied that technical attainments and business acumen do not always go together, another fact in favor of the handling of mining prospects through large development companies, in which there will usually be found the necessary admixture of the spirit of the scientific engineer and the financial "entrepreneur".

One statement of Mr. Tyrell's will be generally acceded to, no matter what personal opinions may be held as to the fitness of the new government in Ontario to oversee the mining development of the Province, namely, that no better men could be found to advise the Ministers than the present Deputy Minister of Mines and the Provincial Geologist, and their respective staffs.

Gold and Credit

Credit being based largely on gold, the present situation has an unusual interest for gold producers. During the war it was realized in Canada that the maintenance of a high rate of production of gold was desirable, but the pressing need of men for the battlefields and for munitions manufacture made increased production impossible. The restoration of peace would have brought about a rapid expansion of the gold mining industry if the selling price had increased as has the cost of mining. The future expansion depends largely on the faith of the public in the soundness of the credit structure. If there comes a demand for maintenance of the normal ratio between gold and credit, conditions favorable to the gold producer will exist.

Some indication of the trend of events is to be found in the opinion expressed recently by James S. Alexander, President of the National Bank of Commerce in New York. He says:

"The strain under which the credit resources of the country are now laboring is evidenced by the high money rates in all classes of loans. An analysis of the fundamental factors in the situation clearly reveals that the chief cause of the strain is that the volume of credit has expanded until the gold basis is becoming inadequate in view of conditions affecting the liquidity of credit. One index of the basic situation is found in the seriously altered ratio between the total stock of gold coin and bullion in the United States and the total volume of other money and bank deposits subjected to check. Both of these latter items are efficient instruments of business because of the unshaken and unexpressed faith of the public that underlying them is enough gold for the redemption of all obligations incurred in either of them which might be required in the course of business. As long as this faith is unshaken there is a relatively small call for the gold, so that a comparatively small ratio of the metal normally suffices. Thus, in the last analysis, the soundness of the business situation requires that the ratio of the gold base to the credit structure be such that all practical needs will be easily met, maintaining unwavering public faith. I in no sense mean to imply that the gold ratio is now down to a point that should unsettle public confidence or that any fixed ratio is advisable, but nevertheless it is approaching a point that is lower than experience shows best serves the credit requirements of the nation."

When one considers that Mr. Alexander is speaking of conditions in the United States, where there was a great importation of gold during the greater part of the war in part payment of goods purchased by the Allies, it is not surprising that that country does not pay a high price for the paper money of other coun-

tries. Americans may still have faith that there is sufficient gold behind their own paper, but they have expressed in no uncertain way their preference for gold when trading with other countries. In the United States the gold ratio was well maintained until the year 1918. During 1919 it fell off rapidly, and is still falling off. Is it mere coincidence that exchange rates have risen so sharply during recent months?

It is generally believed that the British Columbia Legislature will re-enact the twice disallowed Vancouver Island Settlers' Rights Act. The Victoria "Daily Colonist" writes: "Were it not for the fact that the principle involved in the measure, which continues to cause Ottawa so much official displeasure, has stood the test of the highest court in the Empire, the Legislature might have some reason to proceed more cautiously." This reference is to the decision of the Privy Council, which decided that the Act in question was one within the powers of the provincial legislature.

WELL KNOWN CARIBOO PROSPECTOR THINKS P. G. E. ROUTE SHOULD BE CHANGED

Joe Wendell, who has mined, prospected and hunted the hills of the Cariboo for thirty years is now in Vancouver.

He says that the route of the P. G. E. should be changed from the Fraser River to the Willow or the Bowron River. The railway would then pass through the fine agricultural and big timber areas of the Horsefly. It would take in the big River where there is a wonderful supply of water power capable of electrifying the Railway and many industries and also Barkerville where mining is rapidly developing. Down the Bowron River there are great areas of pulp spruce and coal measures. Following the present route there will be 150 miles south of Prince George which will produce practically no traffic.

Mr. Wendell's suggested route would require considerable more grading than the present one but would prove cheaper in the long run because it would eliminate the many branch lines which will eventually be necessary if the present is followed. The government has been asked to investigate thoroughly before continuing construction.

There is some talk of the G. T. P. building a line of railway to the coal deposits of the Bowron River. This coal is similar in character to Vancouver Island coal and would be very valuable for smelting purposes.

Mr. Wendell says the country is large and full of untouched mineral areas of many kinds and he would not be surprised if a placer camp equal to any of the old time diggings should some day be found.

A private company under the name of Sudbury Alloys Securities Company, Limited, has been formed with head office at Toronto, the provisional directors being William Bain, John Henry and James S. Lovell.

Digest of the Preliminary Report of the Mineral Production of Canada 1919 Compiled from the Statistics of the Department of Mines

A Year of Transition.

By the courtesy of Mr. John McLeish, Chief of the Division of Mineral Resources and Statistics, and with the permission of the Deputy Minister of Mines, the "Journal" is enabled to publish the following digest of the Preliminary Report on Mineral Production for 1919. The Report states that:

Estimates of the total probable value of the mineral production of Canada during 1919 made on the first of January last were short about 3.6 per cent of the preliminary figures now available. Sufficient allowance had not been made for the increased production and increased value of cement, clay, quarry and other similar structural material products. The coal mining industry too, during the last three months of the year responded quickly and extensively, particularly in the Province of Alberta to the heavy demand for fuel.

In reviewing the industry as a whole it is customary to express the total mineral production and to make comparisons of production of different years or districts in terms of dollars or total values. The wide range of prices through which many metals and mineral products have passed during the past five years and the continuation of high prices for many products have of course resulted in greatly increasing the total value of the mineral production, even when the actual quantities of metals or minerals obtained might be decreasing. It is evident that less importance should be given to comparisons in values and that more stress should be laid upon quantity comparisons. This may be readily done with individual products, but appears less feasible when dealing with totals of a great variety of products.

The total estimated value (1) of the metal and mineral production in 1919 was \$173,075,913 which is less than the total value reached during each of the three preceding years. Compared with the production in 1918 valued at \$211,301,897 a decrease of \$38,225,984 or 18 per cent is shown.

Just as the declaration of war in 1914 was followed by a short period of industrial dislocation before the activity necessitated by the war's requirements became fully launched so following the cessation of hostilities there has been an interregnum, or transition period, during which the war's demands are being replaced by the legitimate requirements of peace industries and the demands of reconstruction.

The difficulties of making these readjustments have been aggravated by social upheavals and strikes.

The net falling off in mineral production in 1919 has been a means between a large decrease in the production of metals, coal and many "war minerals"

such as chromite, graphite, magnesite, pyrites, etc., on the one hand and large increases in the production of structural materials such as cement, clay products, lime and building stone and also of asbestos, gypsum and salt.

The metallic production in 1918 was valued at \$14,549,152, which fell in 1919 to \$72,401,829 a decrease of \$42,147,323 or 36.8 per cent. Gold is the only metal of which there was an increased production. The falling off in the quantities of other metals varied from 9.5 per cent in zinc to nearly 52 per cent in nickel.

The total value of the non-metallic production including clay and quarry products in 1919 was \$100,674,084 as compared with \$96,752,745 in 1918 showing an increase of \$3,921,339 or 4.1 per cent. The cement clay and stone products alone were valued at \$25,754,692, as against \$19,130,799 in 1918 an increase of \$6,623,893, or over 34 per cent. The total value of non-metallic products other than structural materials was \$74,919,392 as against \$77,621,946 a decrease of \$2,702,554 or 3.4 per cent.

In the decline and recovery of the production of structural materials, in the increased value of non-metallies (which are chiefly composed of fuels), and in the astonishing rise of the production and values of metallies during the war period, and the much smaller figures of 1919, may be traced the chronology and effect of the War.

Copper.—The 1918 production of copper was highest recorded in Canada. That of 1919 is the lowest since 1911. Compared with 1918, copper production shows a decline of 36.7 per cent in quantity and 52 per cent in value. Manitoba produced three million pounds of copper, compared with two million pounds in 1918, all from the Mandy Mine.

Gold.—The total production of gold in 1919 amounted to 767,167 ozs. against 699,681 ozs in 1918. Nova Scotian production was only 940 ozs against 1,176 ozs in 1918. This is the smallest production obtained in any one year in this province, the records of which have been published for 58 years. The largest production was 112,226 ozs. in 1899. Production in Manitoba, derived from the gold and copper ores of Le Pas District, was only 611 ozs. as compared with 1,926 ozs. in 1918.

Lead.—Production in 1919 was 43,895,888 pounds compared with 51,398,002 pounds in 1918, a decrease of 14.6 per cent.

A comparison of the value of the production in Canadian mines and quarries, in the three main divisions used in the statistics of the Mines Department, during the period 1913 to 1919 inclusive, is as follows:

	Structural Materials and Clay Products	Non-Metallies	Metallies	Total
1913	30,809,752	48,463,709	66,361,351	145,634,812
1914	26,009,227	43,476,229	59,386,619	128,863,075
1915	17,920,759	43,373,571	75,814,841	137,109,171
1916	17,467,186	53,414,983	106,319,365	177,201,534
1917	19,837,311	63,354,363	106,455,147	189,646,821
1918	19,130,799	77,621,946	114,549,152	211,301,897
1919	25,754,692	74,919,392	72,401,829	173,075,913

Nickel.—The production and also the value of this metal show heavy declines, 1919 production being 44,452,953 lbs. against 92,507,293 lbs. in 1918. The quantity of nickel ore refined in Canada showed a gratifying increase, amounting to 5,063 tons as against 1,204 tons in 1918.

The British-American Nickel Company practically completed in 1919 the construction of a new smelter at Murray Mine and of a refinery at Deschenes, Que. The smelter started operations in January 1919, and the refinery will, it is anticipated soon be in full operation. It is expected to have a capacity of 7,000 tons of nickel and 3,500 tons of copper per year. There has also been erected a refinery for precious metals; and refined platinum, palladium, iridium, gold and silver will be produced. The International Nickel Company's plant at Port Colborne has reported for 1919 a production of platinum, palladium, gold and silver.

Platinum.—About 25 ozs. of platinum and 62 ozs. of palladium, in an impure state, together with some gold and silver are reported as having been recovered by the International Nickel Company during 1919 from Surbury nickel ores. A substantial recovery of platinum group metals is expected in the new refinery of the British-America Nickel Co. which will employ the electrolytic method.

Silver.—Production in 1919 was 15,675,134 ozs. against 21,383,979 ozs. in 1918, a decrease of 26.7 per cent.

The contribution of Ontario to silver production was 76.1 per cent of the total, compared with the maximum figure of 93.8 per cent in 1911, when the Cobalt mines were producing at their highest rate. Manitoba produced in 1919, silver totalling 20,760 ozs against 13,316 ozs. in 1918. British Columbia showed a decrease of 9.4 per cent in quantity, but an increase in value of 4.1 per cent. Yukon production fell from 71,915 ozs. to 24,671 ozs.

Zinc.—Zinc showed little change, production for 1919 being 15,869 tons against 17,541 tons in 1918. Both imports and exports of zinc showed a decline.

Iron Ore.—Next to the coal production, the output of iron ore is the most disappointing feature of the mineral record of Canada in 1919. Shipments from Canadian Mines were the lowest recorded in 19 years, amounting only to 195,970 tons.

The quantity of iron-ore charged to blast furnaces in 1919 was 1,752,585 tons, of which 78,391 tons were of domestic origin, or 4.4 per cent. Of the imported ore 519,722 tons came from Wabana, Newfoundland, and the remainder, 1,154,473 tons from the United States.

Asbestos.—The asbestos industry continues to thrive amazingly. Under the conditions of 1919 a production of 153,069 tons of crude and milled fibre compared with 143,456 tons in 1918, is a noteworthy performance. Values of asbestos and asbestic increased so that the monetary return from 1919 production was \$10,723,033 against \$8,870,707 in 1918.

Coal and Coke.—The production of coal in Canada during the historical period 1913-1919 inclusive has been as follows:

	Short Tons
1913	15,012,178
1914	13,637,529
1915	13,267,023
1916	14,483,395
1917	14,046,759
1918	14,977,926
1919	13,586,300

This is indeed a lamentable record. No country can hope to progress, either commercially or culturally, which allows its coal production to slide downhill in this fashion.

The obverse of the picture is seen in the following comparison:

	Canadian Coal Consumption	Coal Mined in Canada	Annual Deficit
1913	31,582,545	15,012,178	16,570,367
1914	26,852,323	13,637,529	13,214,794
1915	23,906,692	13,267,023	10,639,669
1916	29,865,856	14,483,395	15,382,461
1917	33,123,735	14,046,769	19,076,976
1918	34,771,832	14,977,925	19,793,917
1919	28,768,099	13,586,300	15,181,799

The only province in Canada to show an increase in 1919 was Saskatchewan, where 382,684 tons was raised an improvement of ten per cent on 1918 figures.

The production of Nova Scotia had been exceeded in twelve out of the thirteen previous years, and that of British Columbia had been exceeded seven times in the past ten years. The case of Alberta was peculiar, as production in that province has been interrupted by strikes. The output for 1919 was 4,990,726 tons, or 1,079,086 tons less than 1918, but nevertheless the largest production of any year, except 1918 only. The production in Alberta in the month of December 1919 reached 742,482 tons, from which it may be deduced that the mines of Alberta could produce 10,000,000 tons annually without great effort. The production of Nova Scotia is at least 3,000,000 tons annually below what it might be, so that if one adds to these deficiencies the decline in British Columbia, and New Brunswick it is within the mark to say that the coal output of Canada is 10,000,000 tons annually below what it should be.

The progress of the by-product coke-oven industry in 1919 makes interesting reading. During that year there were completed 60 Koppers Ovens at Sydney, 25 Willputte ovens at Sault Ste. Marie, and 30 Lomax ovens at Anyox, B. C. The imports of coke fell from 1,165,590 tons in 1919 to 383,374 tons in 1919. This not displeasing reversal is not altogether due to the larger coking capacity of Canada, some of it being of course due to the slackness in steel production during the first half of 1919, but the additions to Canada's plants have a good deal to do with it, and from now on, it is hoped that importations of coke will lessen in quantity. It will be still more gratifying when Canadian coke is made from Canadian coal. An illuminating statement in Mr. McLeish's Report is that the quantity of coke-oven gas recovered in 1919 was 9,340 million c. ft., or the equivalent of one-third of the total production of natural gas in Canada.

Structural Materials.—While the full result of the resumption of building activity, which must follow its practical cessation during the war period was not felt in 1919, a decided recovery is recorded in the production of cement, clay products, lime, sand-lime brick, and building stones. For the first time, the value of cement exports has greatly exceeded the imports. The increase in values in building materials almost overshadows the increase in quantities, but this is still a material one.

Salt.—Salt production in Canada continues to increase with fair regularity, 1919 production being the equivalent of 148,302 tons compared with 131,727 tons in 1918. During 1919 there was an experimental production of salt from brines flowing from springs near Senlac, Sask. A small quantity of salt was ob-

tained by solar evaporation and disposed of locally. Development continued on the salt deposit at Malagash, 175 tons being shipped during 1919. The discovery of potash minerals associated with this deposit is attracting much interest. The Brunner-Mond (Canada) Co. completed and placed in operation at Amherstburg, Ont., a chemical plant for the manufacture of soda-ash from brine.

Petroleum.—Production of crude oil in 1919 was 240,970 barrels of 35 Imp. galls. compared with 304,741 barrels in 1918. Over 90 per cent of the crude petroleum still comes from the old oil-fields of southern Ontario. The recorded production in the West is all from the Turner Valley Field, about 35 miles from Calgary. Approximate production in 1919 was 16,891 barrels. New Brunswick production was 4,275 barrels.

The tremendous extent of the oilrefining industry in Canada is shown by the fact that in 1918 ten oil refineries in Canada used 262,641,155 gallons of crude oil of which only 12,258,190 gallons came from Canadian wells. The total imports into Canada during 1919 of petroleum oils, crude and refined, was 451,211,270 gallons or some thirty million gallons more than in 1918. The desire to find additional oil-wells in Canada is therefore very understandable.

War Minerals.—Pyrites, molybdenum, graphite, chromite and magnesite all show large declines. The records of 1919 can hardly be considered as representative of the ability of Canadian Mines to produce these minerals profitably in peace time, but the outlook for all of these minerals, particularly for those which are used in alloying steel, is not by any means dark.

As a measure of the importance and stability of Canadian mining, the year 1920 will be more accurate than the figures of 1919. The most reassuring feature that we can hope to see recorded is an increase in the production of coal in Canada, and conversely, if such an increase is not recorded, there will be adequate ground for grave anxiety.

MINING VENTURES AND THE PUBLIC.

With the resumption of more normal trade and industrial conditions will probably come the re-appearance of the professional promoter of more or less avowable enterprises, issuing beautifully engraved stock certificates and brilliant prospectuses.

Although such activities are not limited to mining, it must be owned that the lure of returns of one thousand to one on the money invested in mining ventures, as usually inferred by the promoting literature, often attracts and entraps men otherwise sane and of keen business acumen. These last three years have been very prosperous and a great deal of savings have been accumulated, both in rural and urban communities as demonstrated by the success of the various war-loans issued by the Government. This may prove an incentive to shady and questionable promoters to launch new efforts to make victims, especially in rural communities, and among urban people of small means.

Many warnings have been issued through the annual reports of the Quebec Bureau of Mines, guarding the public against the insidious literature and glowing statements of agents, offering mining shares and beautifully engraved certificates in ventures which have never had a chance of success.

Therefore before putting their hard-earned savings into mining or other ventures, of which they personal-

ly know little or nothing, the investing public should enquire from reliable and disinterested sources as to the value and chances of success of such enterprises. The statements and promises of agents, whose sole interest is to sell shares, should not be taken without thoroughly investigating them.

The investing public should discriminate between "mines" and "prospects." Some producing mines, or mines well developed, constitute as safe an investment as any other commercial and industrial enterprise, but these rarely yield more than a fair return. On the other hand, "prospecting" and "developing," be it for ores, for natural gas, for oil, are naturally hazardous ventures. When successful, the returns from such investments are large, but failures are infinitely more numerous than successes. Such investments are not for the small savings, for it should always be remembered that the risk is proportionate to the returns. If the investor expects large returns he has to take risks of losses. And before buying shares in companies searching for, or developing, deposits of gold, lead, zinc or other minerals, or carrying on boring operations for gas and oil, the public should investigate the statements made by the peddlers of stock certificates, enquire from reliable sources as to the possibilities of the enterprises, so as to be able to discriminate between (1) "safe mining investments," (2) "legitimate and reasonable mining speculation," and (3) "mining frauds." In the first the returns are not high but are reasonably sure; in the second, the money contributed by the buyers of shares is really expended in intelligent search and development on the mineral deposits, which may or may not answer the hopes which were founded on them; and the third class comprises the ventures of shady adventures who spend the money obtained from the sale of shares on full page advertisements, in printing, alluring and tempting prospectuses for the purpose of obtaining more money, of which the smallest possible fraction is expended in actual work—usually on hopeless mining claims.

The Bureau of Mines is entirely at the disposal of the public for technical information regarding the mines and mineral resources of the Province of Quebec. An enquiry on such subjects, addressed to the Department of Colonization, Mines and Fisheries, Quebec, will always bring to the writer information from which he usually can judge of the merits of mining ventures in the Province and this will enable him to go into it with a better knowledge of the facts.

Babine, B. C.

The Taltapin Mine, Anderson Creek in the Babine country, is being developed with very satisfactory results, rich ore having been opened up, some of which is being sacked for shipment. The government is assisting in the construction of a road to open up the property.

John D. Galloway, who some months ago resigned his position as Resident Mining Engineer for Mineral Survey District No. 2, British Columbia, to accept a position with a well-known New York concern, has found the climate of Mexico, where his new duties have taken him, too much for his health. Therefore he has asked for and received appointment to his old place in north-eastern British Columbia with headquarters at Hazelton.

Protection For Speculators

R. E. HORE.

In a recent issue of the Engineering and Mining Journal, Mr. J. B. Tyrrell makes some interesting comments on "New Mining Control in Ontario." He outlines the system of Government in Ontario and tells of the recent success of the Farmers' party at the recent general election. He calls attention to the fact that the Department of Mines has now at its head a Minister who was elected to the Legislature by supporters of the Labor party and selected by a Premier who was chosen as leader by the Farmers' party. The little knowledge that the present government has of the mining industry might seriously react on the industry of the Province; but some consolation is found in the fact that the staff of the Department of Mines remains as it was. The Minister of Mines will have able advisers and Mr. Tyrrell expresses the hope that he will take their advice. He then makes some suggestions as to policies which will insure the growth of the mining industry and provide security for those who engage in it. The government should encourage people to invest in sane and honest mining enterprises, and money so invested should be as safe from confiscatory legislation as money invested in any other business. Mr. Tyrrell also claims that the government should protect the small investor from professional swindlers and incapable management.

The term "investor" seems to be rather unfortunately used by Mr. Tyrrell in referring to attempts to make mines.

The protection of the public against loss in mining enterprises is an obvious impossibility. The very nature of the enterprise makes return of capital doubtful and the making of profits very doubtful. Our present mining industry has resulted from the early work done by men who took big risks in the hope of making big profits. The expansion of the industry still depends not so much on the "investor" as on the "speculator." The making of a mine in Ontario is a speculative enterprise and anyone who looks on it otherwise should not be invited to take part in the development of mineral deposits.

We have in Canada a comparatively few important profitable producing mines which have considerable ore reserves and good prospects of finding more ore. These enterprises have already passed the hazardous stage. They have in most cases reached independence of outside capital. The companies operating them have no stock for sale. Investors who realize that mining ore means liquidation of assets can properly be advised to buy shares on the market from other shareholders and put them in their strong boxes, but it makes no difference to operations at the Hollinger, Nipissing or Creighton mine whether the comparatively small block of stock changes hands or not. The so called "investor" is in such cases not helping to provide funds for development. That was done by the "speculators". The investor must be given governmental assurance that the shares he thus purchases will not depreciate in value owing to unfavorable legislation; but the credit for development of the properties remains with the speculator.

Those who wish to see the mining industry expand therefore must recognize that investing in mining enterprises is of comparatively little importance as

compared with speculation in mining enterprises. Protection for the speculator will properly include any measure of protection that is provided for the investor; but it should also include other important features. Failure is often due to legitimate causes, but the speculator finds that many failures are due to deceit or mismanagement. It is in the interests of the mining industry that the risks of the speculator should be confined as far as is humanly possible to the risks of mining. Legislation concerning mining corporations should therefore command attention and suggestions should be made by the mining fraternity with a view to protecting speculators. The problem of providing protection against incapable management should also be discussed.

With regard to speculation in mining enterprises, it should be clearly pointed out that the protection that is needed is for those who provide funds for the company's treasury. If, after the company has disposed of its stock at a certain price, the stock is resold several times at varying prices these sales cannot be regarded as of equal importance to the mining industry with the first sale. The stock exchanges serve a useful purpose in making share certificates negotiable; but the transactions on the exchanges do not provide money for the development of mines. In some cases the exchanges are made to serve as a medium between the original purchasers who have large blocks of stock and the purchasers of small blocks, but such transactions are obviously in the interests of the purchasers of the shares and not in the interests of the mining company whose shares are being dealt in. Those who trade in shares on the stock exchanges, sell or buy mining securities in just the same way as they sell or buy other securities and for the same purposes. It is quite unlikely that any trader is under the delusion that his money goes into the treasury of a mining company when he purchases stock on the exchanges.

The transactions between the original purchaser of mining stock and the public should become of interest to the government when the first purchaser acts in the capacity of a broker who sells the stock to the public. When a mining corporation deals with the public through agents it retains control of the sale and is in a position to see that the prospective buyer of shares gets reliable information concerning the company's affairs and property. When the purchaser of a large block of shares undertakes to dispose of the stock in a similar way, however, the company has no longer control.

Ontario's new Government has in the problem of protecting the speculator and investor a task worthy of close attention. A sale of shares bill that will give protection without hampering honest enterprise is much to be desired; but admittedly difficult to draft. There are many who believe that more to be desired than new legislation is enforcement of the provisions of the present statutes.

Mr. Tyrrell's suggestions in reference to mine management bring up the question of licenses and certificates for those in charge of operations. So long as this remains debatable ground with those interested in the industry, we can hardly call upon the Farmers'

government to take action in the matter. There is considerable difference of opinion as to whether any but the employer should decide on the qualifications of the man he wishes to employ as manager or superintendent of a mine. Under the present Act there are rules and regulations governing the operation of mines which the operators must comply with. The position of manager is not however restricted to any specially trained or favored group of persons. Ability to do the work satisfactorily to his employers is the present basis of employment. There are some who would like to place restrictions around the employer by the granting of governmental authority to a corporation of engineers who would decide on the qualifications of other engineers and of others in charge of mining operations. It can hardly be said, however, that there is a great demand for such action, though a few engineers are industriously working to that end. "Equal opportunity for all" is a pretty good slogan just now and the Farmers' party will not be loudly praised if it grants special privileges to a certain class of workers. Application of science is a necessity in good mine management; but it does not follow that specialists in applied science are the only capable operators.

The new government of Ontario will do well to give some attention to protection of speculators and investors. In the sale of shares under the present Act there is much that is objectionable. In the management of mines there is also room for improvement. What should be done is, however, not easily determinable.

LETTER TO THE EDITOR

Editor, Canadian Mining Journal:

Sir: For some time past, the writer of your Northern Ontario letter, has referred to the Gowganda Railway problem, stating that the war was entirely responsible for this work being held in abeyance, and quotes Premier Drury's failure to give a definite statement.

Regarding the first claim, anyone who has followed and noted as we have, the statements and proceedings by the late Conservative Government during the last nine years admit that there is no evidence to justify the assumption that the Government ever intended to build this railway, but there is evidence to show that they did not. It is quite true that the Legislation passed an appropriation of \$275,000 for the purpose of beginning construction of this railway. That the Cabinet had other intentions is evident by the beginning last summer of the building of a macadam road which at last year's rate of progress, would take fourteen years to complete, and seems to be intended principally as a source of income for their political friends, who, when the Government were swept out of power, recognised their loss and became the leading figures in a secession movement, by which they hoped to retrieve their lost position. At this very same time it required the united efforts and organized protests of the people interested in Kirkland Lake to prevent the construction of a railway in that camp.

In view of the aforementioned facts is it any wonder that Premier E. C. Drury fails to make a definite decision.

During the administration of the late Government the Cabinet had a following in the Legislature sufficiently large to carry any measure proposed by the

Government. The present government however, does not occupy that position and a direct promise by the Premier at this time, to extend the Elk Lake branch of the T. and N. O. Railway, might be used by the combined opposition as a united action to defeat the Government, when the matter of appropriation of money for this particular work is asked for.

Some time ago I read in the "Toronto Star" a statement attributed to Premier Drury, that the bulk of legislation proposed for consideration at the next session of Parliament would be introduced as private bills, in order to allow of a free discussion.

Such being the case, why should not the member for this district introduce a Bill asking for the necessary appropriation for the immediate construction of this extension of the Elk Lake branch of the T. and N. O. Railway. By doing so he would be only redeeming his pre-war, pre-nomination promises and we would also have the opportunity, when the Bill came up for discussion to separate our friends from our foes. Who is not for us is against us, was considered to be a correct definition during the war. If correct then it must also be so now.

As regards the Canadian Light Railway Company, it is quite clear that they can not definitely decide until they have secured a Charter by act of Parliament and without race-track tactics are resorted to, this Bill could be disposed of before the application for this Charter came up for final action.

The abnormal exchange rates, the high price of silver and the world-wide demand for both gold and silver, coupled with the imperative need of the monetary metals, by both Canada and the British Empire, brings the opening up by a railway of the country west of Elk Lake and through to the C. N. R. a work, that might be termed of national importance, from the fact that it is known to contain producing mines and prospects sufficiently promising to give reasonable assurance that other mines will be developed, along the entire length of such a railway. Cobalt has produced millions of dollars to the shareholders, to the manufacturers and farmers of Old Ontario as well as large revenue to the Province. Cobalt, however, is apparently on the decline and Gowganda is the only presently known district as yet undeveloped that possesses native silver—Cobalt veins, occurring in the same geological formations, at at Cobalt, extending over an area several times as large as the productive area at Cobalt.

Given direct railway connection and with the aid derived from the experiments conducted at the mines at Cobalt in the matter of treating low-grade ores, Gowganda may in a few years attain a yearly production even higher than Cobalt in its palmiest days.

The first serious attempt by the people of this district to secure a railway connection was made in 1911. The stand taken by the Government is described on page 171 of your journal for March 15th, 1911, and is as follows:—"The Minister of Mines candidly told the delegation that the policy of the Government was to protect its timber resources on the Temagami Forest Reserve, rather than to encourage further encroachment by prospectors, miners or railroads."

This is a policy that has in a few years converted large areas of green forest into black stumps and charred dead timber in which even the moose cannot find shelter during the winter months.

As the present Government in Ontario came into power entirely as a result of the mistaken policy of the Conservative Government, it is fair to assume that the Drury Government are not likely to persist in a policy that has proven so damaging to the interest of the Province and its forests.

Gowganda.

February 27th, 1920.

L. O. HEDLUND.

NOVA SCOTIA NOTES.

Dominion Coal Outputs.

The production of the Dominion Coal Company's Glace Bay Collieries during January and February compares with last year as follows:

	1920	1919
January (tons)	275,129	276,036
February tons)	248,338	262,876
	523,467	538,912

The inability of this Company to increase its production, notwithstanding the brisk demand for coal, is due to the continued shortage of coal producers, and the Company announces vacancies for 400 "shooters and loaders". Permission has been granted by the Department of Immigration for the admission of miners from abroad, but so far it has been found possible to secure only a limited number.

The amount of coal stored in bank at the end of February is stated to be about 60,000 tons, which is an unusually small stock for this time of year. The demand during the past two months has been in excess of the production of the collieries, and it has been necessary to fill coal from bank to meet current orders. Coal has been exported during the winter months from the Company's piers to Holland, Italy, Norway and Portland, Maine, in addition to usual winter shipments to Newfoundland and the Nova Scotia ports.

It is anticipated that the requirement of the Steel Works during 1920 will take at least one million tons of coal, and that if the hopes of the officials for increased production in the remaining months of 1920 are realized, about one and a half million tons of coal will be available for export to points outside Nova Scotia.

The change that has taken place in the distribution of the Dominion Coal Company's output of coal during the war period may be gauged from the following approximate figures.

In 1913 the coal was distributed about as follows:

	Tons	
Used in the manufacture of coke and for steel-making	1,550,000	or 21%
Sold to workmen, and used at Collieries and railways	726,000	or 10%
Sold commercially	4,987,000	or 69%

In 1918, the distribution was, approximately:

Used in the manufacture of coke and for steel-making	1,750,000	or 34%
Sold to workmen, and used at collieries and colliery railways	570,000	or 11%
Sold commercially	2,855,000	or 55%

The difference of 2,132,000 tons of coal sold through ordinary commercial channels, as between 1918 and the last pre-war year is almost entirely represented by the amount of coal sent to St. Lawrence ports during 1913.

A partial recovery of the Montreal market was made last year, and no doubt in 1920 more strenuous efforts

will be made to enlarge shipments to St. Lawrence ports. Allowing for the per capita increase in coal consumption, which is always growing in Canada, and the very large additions to manufacturing establishments that have in recent years been made in the Montreal district and along the whole valley of the St. Lawrence, there ought to be a potential market for Nova Scotian coal of at least three million tons annually in the market of which Montreal is the business metropolis.

Indications of a fire were detected in the Drummond Colliery of the Intercolonial Coal Mining Co. at Westville at the end of February. The district has been walled off, and a temporary loss of about 200 tons of daily output will be occasioned. Other sections of the mine are working as usual.

The session of the Nova Scotia Legislature which opened on March 4th is expected to deal with a number of important matters connected with the coal mining industry, and some action is anticipated in pursuance of the powers granted to the Government at the last session to re-adjust the submarine coal leases so as to ensure their more certain and speedy operation. The Speech from the Throne dealt with the anticipated recovery of the coal production, a matter of very considerable importance to the Province of Nova Scotia, which in recent years has found its royalty revenues much decreased through the lessened coal outputs.

The opening ceremonies of the 1920 Session were saddened by the absence of the venerable President of the Legislative Council, the Hon. Monson H. Goudge, who died just previous to the opening of the Houses of Assembly at almost 91 years of age. Mr. Goudge has been a member of the Legislature since 1873, with a short break between 1887 and 1884, and since 1903 has been President of the Upper House. Mr. Goudge's birth was exactly contemporaneous with the real beginnings of the coal trade in Nova Scotia, the General Mining Association having been formed in 1825 to take over the Duke of York's Lease. Men whose lifetimes span the whole of the Victorian era, and who have lived to see the new heaven and the new earth of these days and the ebb of the greatest conflict of history, are necessarily rare, but to his venerable and distinguished age, Mr. Goudge added many lovable qualities. To see the late President of the Council with his venerable aspect, seated in the Chair that has in its time been occupied by royal and distinguished visitors to Nova Scotia, and flanked by ancient oil paintings and mural tablets of as great, if not greater antiquity than can be seen elsewhere in America, was an impressive sight to which use had accustomed the Haligonians, but which always appealed to visitors from those provinces of Canada and the States of the Union that have shorter traditions than Nova Scotia.

Rossland, B. C.

A strike has been called at the Rossland Mines of the Consolidated Mining & Smelting Co., because the Company last Saturday (February 28th) laid off approximately 125 men, it being the intention to cease shipment of ore for a time. The company, it is explained, plans concentrating on development work. How the action of the men will affect the situation in the camp cannot be said at the time of writing.

Mineral Products of Canada as a Factor in Export Trade

The products of the mine exported from Canada in 1918 totalled \$75,668,875 out of the total of exports valued at \$1,586,169,792, which, considered in the light of these figures alone, would seem to indicate that the mineral production of Canada was not an important factor in exports. No correct estimation of the part played by the mineral industry is, however, possible on these figures alone, because under the general head of manufacturers is included exports totalling in value \$660,840,430 which are very largely the assembled and finished product of the mine, and more particularly of the motive power furnished by coal. For example, the production of steel in Canada during 1918 totalled 1,893,000 tons, all of which was the combined product of the mine, in the form of iron ores, fluxes and coal. This steel, in various forms, was used in Canada, together with the greater proportion of the production of Canadian coal, in making manufactures possible, and in transporting the manufactured goods to their export destination.

It is, therefore, not too much to say that without the product of the mine, in particular coal and iron, no exports of manufactures could be made by Canada.

World's Greatest Nickel Miner.

Canada has a great advantage economically and strategically, in possessing almost the exclusive world supply of nickel, which was exported in 1918 to the value of \$9,029,535. Canada is exceptionally well equipped to produce alloy materials, as our country possesses not only a preponderating quantity of nickel ores, but is also well provided with such materials as chromium, cobalt, manganese, titanium, and molybdenum, and has also the advantage of large and cheap supplies of electric current, generated from water-powers, a combination that favours the manufacture of ferro-alloys. The possession of these materials by Canada is important, not only as they may help to foster the growth of specialized metallurgy in Canada, but because they will ensure preferential treatment for Canada in export markets, if our advantage is safeguarded and wisely used.

Asbestos is also a mineral with which Canada is well supplied. As a producer of asbestos Canada now holds first place in the world, and there are very great possibilities in the possible industries connected with the fabrication and uses of asbestos in the arts. This wonderful mineral is now so much used in electrical appliances, and in manufacturing processes employing heat, that in its possession of large supplies Canada holds a strategic advantage similar, but not quite so great, as in the case of nickel.

Exports of Gold and Silver.

The production of gold and silver is a matter that enters into export business in a good many ways. Canada is becoming increasingly important as a producer of gold.

The actual production of gold has declined in recent years, because of the fixed selling price of gold, combined with a rising cost of all labor and materials, but the potential yield of gold from Canadian sources is steadily increasing by reason of a constant succession of new discoveries of gold-bearing areas, not the least important in which is Northern Manitoba.

The position of silver is not quite so certain, but at the present time the increased value of the white metal has had the effect of increasing the known silver re-

sources of Canada by making it profitable to work ore bodies that were too lean to be profitable when silver was selling at about one-third of its present value. There is every likelihood that the increased value of silver will be maintained for a number of years to come—at least until the value of the gold standard is restored to whatever may turn out to be the after-war scale of monetary values.

Our silver and gold production will prove of great assistance in maintaining Canada's exchange credit in foreign markets, and in this connection it would advantage Canadian business men as a whole if they would support the plea of the gold-miners that the Government should assist in some financial manner as increasing the production of gold, either by bonusing the gold mines, or by relieving them of all possible burdens of taxation. The increase of gold production is one way in which Canada's credit can be most effectively buttressed, and incidentally it would assist in the restoration of British exchange.

Importation of Coal.

The weakest spot in Canada's import and export trade balances, and in her internal prosperity and financial soundness, is the declining production of coal from Canadian Mines and the rapid and unparalleled increase in the tonnage of coal imported into Canada from the United States. Canada could produce quite easily, and could with greater ease consume within her own borders at least ten million tons more of soft coal from our own domestic collieries. The unnecessary, and indeed, inexcusable purchase of coal in the United States that could be mined in Canada has the effect of creating an adverse trade balance (so far as coal alone is concerned) of not less than \$100,000,000 annually. If this lopsided and humiliating arrangement were corrected we should not see Canadian funds at a ten per cent, discount in New York, for not only would our exchange credit benefit, but the increased employment and general impetus that would be given to our internal trade would be of even greater benefit than a correction of exchange values.

Summarizing the foregoing, it would appear that, except in some notable cases like nickel and asbestos, the mineral exports of Canada will not bulk largely in the general total of values, but, in proportion as the products of the mine are produced and utilized within Canada, so will our exports of manufactured goods increase in bulk and value; and, further, our possibilities in the export of the products of agriculture, of the forest and the fisheries, will increase just in proportion to the tonnage of coal that is mined, and the tonnage of steel that is manufactured to provide new avenues of transportation, by land and by sea.

It is not certain, moreover, whether it is desirable that Canada should unthinkingly and greatly increase the quantity of its mineral exports—merely as such. It is, however, most desirable, that Canada should so utilize her mineral resources as to provide the maximum of employment and the maximum of revenue within her own borders; and that, with regard to such "key" minerals as nickel, asbestos and coal, that we should use whatever strategic advantages they give us to make the best possible bargain for our exporters, and to secure that preferential treatment in foreign markets we are entitled to ask if we give of our best.—By the Editor in the "Grain Growers' Guide."

Our Northern Ontario Letter

THE SILVER MINES.

With the approach of spring it is evident that the coming summer promises to see realized the expected favorable influence upon the silver mining industry of Northern Ontario as a result of the continued heavy demand and high quotations for commercial bar silver.

One result of the present situation has been the complete depletion of any stock of bullion that may have been held in store at the mines. The high quotations for the metal, taken together with an additional 15 p. c. on New York exchange has caused the bullion vaults to give up every available ounce. A like condition is said to exist in other countries, with the result that the demand of the nations must be met entirely by production of new silver. That this cannot be done for some years appears to be certain. With no new silver producing area looming up, and with the mining industry of Mexico still more or less uncertain, the belief is expressed by metal experts as well as the operators of silver mines that the demand is **likely to continue greater** than the supply for many years.

The influence of the strong position of silver has been decidedly favorable on the mines of Cobalt. Not only has it encouraged the operators to intensify their efforts, but it has also added thousands of tons of ore to known reserves by lending to it the added value necessary to make it of commercial grade instead of waste rock. As a consequence the annual yield is greatly increased as well as the lives of the mines materially lengthened.

Another favorable influence, and one which seemed slow to materialize, but it nevertheless now a fact, is a general rejuvenation of interest in the outlying silver districts. These include, not only the outlying properties in the Gowganda district, but also affects the Elk Lake, South Lorraine and Casey Township silver areas.

In the Gowganda district, while production continues unremittingly at the Miller Lake-O'Brien, and another shipment is being assembled at the Castle property of the Thetheway Company, a number of other properties are getting under way. Among the properties to recently commence work is that known as the Big Four.

The Silver Bullion Company, with property at Leroy Lake has purchased a partly used \$30,000 mining plant from a Nova Scotia Mining Company. The equipment is now in course of transportation to the property.

February production from the Kerr Lake mine approximated 100,000 ounces, and with silver quoted at around \$1.31 an ounce plus 15 p. c. on New York exchange the value of the output is estimated at about \$150,000. Basing estimates on achievements during 1919 the net profit on the month's operation amounted to at least \$100,000. It is unofficially reported that the ore bodies on the Kerr Lake are being found to extend well beyond their previously known limits.

The proposed consolidation of the Adenac and the Victory properties is not making very satisfactory progress. It is learned that some doubt now exists as to the likelihood of the merger being carried out. In the meantime, the Adenac having practically exhausted its chances of developing anything other than

more or less small patches of ore, is closed down and partly dismantled.

At the McKinley-Durragh current net earnings continue to cover current dividend disbursements at the rate of 3 p. c. quarterly. On April 1st the company will pay its regular 3 p. c. dividend, amounting to \$67,430. It is understood a financial statement will accompany the dividend checks and that a surplus of approximately \$500,000 will be shown. Total disbursements to date amount to 259 p. c. or \$5,754,163.

The Coniagas Mines has sold twenty-stamps together with some other equipment to the operators of the Keeley mine in South Lorain. The stamps and equipment are a part of that contained in the mill on the Tretheway property recently purchased by the Coniagas from the Tretheway Company. During the course of carrying on extensive development work on the Keeley mine, the mill will be transported to the property and installed. Work will be commenced today on the Keeley and for the time being will consist of dewatering the underground workings. By late summer the mine is expected to be turning out silver concentrates.

According to official advice, a syndicate composed of shareholders in the Casey Mountain Mining Company has subscribed \$30,000 to be spent within the next six months in further development work on the company's property situated in Casey Township. The proposed extension of the Nipissing Central Railway from New Liskeard to North Temiskaming is expected to encourage further work in that district. Such a line would pass along the southern boundary of the township of Casey. This, together with the encouragement offered by the big production record of the Casey-Cobalt mine as well as the present program of the Casey Mountain Syndicate is expected to attract considerable attention.

Hon. Harry Mills, Minister of Mines for Ontario, has submitted a favorable reply to the Cobalt branch of the G. W. V. A. in regard to their recent resolution in which they recommend the selection of a returned soldier to fill the vacancy on the staff of Ontario Mining Inspectors caused by the death last fall of A. H. Brown. The Minister states that the appointment will be based on merit, and that he is desirous of assisting the returned men to become re-established in civilian occupations. This being the case, it is thought that no difficulty will be experienced in appointing a returned man, for the reason that there are a large number who have had previous practical mining experience as well as a knowledge of engineering.

With Cobalt, the metal, valued around \$2 a pound, not a few mining men are investigating the possibilities of operating some of the outlying properties on which large veins occur. In the boom-days of Cobalt some of these properties were worked with the object in view of getting silver values. Very little attention was paid to the cobalt content of the veins other than in so much as it might indicate silver possibilities. It is now thought with the increased use of cobalt metal and the consequent higher quotations, some of these veins could be turned to profitable account.

The Coniagas Mines is still negotiating for the purchase of the Gamble-Thompson group of claims in the

Gowganda district. The deal has been under way for several weeks, and the prospects appear to be that it will shortly be closed. The group of claims are situated in the Miller Lake section of the camp and are regarded as being excellent prospects.

The annual meeting of the Right of Way Mines will be held on March 15th.

During the week ended March 5th two Cobalt companies shipped 148,274 pounds of ore. Following is a summary:—

Shipper	Cars	Pounds
Northern Customs	1	86,274
Dominion Reduction	1	62,000
—		
Total	2	148,274

During the corresponding period no shipments of bullion were made.

THE GOLD MINES.

A feature of the week with the gold mining industry of Northern Ontario is the ninth annual report of the Hollinger Consolidated Gold Mines. The report shows a total income of \$7,063,099.21, and is couched in the usual conservative terms. Working expenses absorbed \$3,222,617.11. Municipal, Provincial and Dominion of Canada taxes for 1918 and reserve for Dominion of Canada for 1919 taxes \$286,372.65, and depreciation and donations \$1,232,819.40, in all \$4,741,809.14, which leaves a net profit of \$2,321,280.07, out of which was paid \$1,722,000 in dividends, and added \$599,290.07 to surplus account.

It is interesting to note that during the year some \$600,000 was written off for depreciation. This compares with \$375,000 in 1918, \$100,000 in 1917 and \$150,000 in 1916. It will be observed that the 1919 figure is almost equal to the total for the three preceding years. Costs of operation average \$4.52 per ton, plus the amount spent on plant construction, bringing the total up to about \$4.77.

Ore reserves at the Hollinger are estimated to contain \$39,928,430 made up of 4,392,680 tons of ore containing an average of \$9.09 per ton. Of this immense reserve, some 1,921,640 tons containing \$17,350,100 is above the 425-foot level. Some 1,950,020 tons containing \$18,033,410 is between the 425-foot and the 800-foot level, while the small remainder is estimated in the ore bodies opened up below the 800-foot level and where but a limited amount of work has been done, and also includes a small estimate in veins as yet undeveloped below the 100-ft. level. Of these latter veins, and which in due time may become an enormous source of production, there are no less than 39, ranging in width from 3½ feet to 25 feet in width and containing values ranging from \$4 to \$20.10 per ton.

The work of completing the equipment in connection with the remaining 20 of the total of 200 stamps in the mill is nearing completion, and provided the desired number of men can be secured, the management hopes to get up to full capacity of 3,200 daily this year.

Following are interesting extracts from the annual statement:—

Average tons per day	1,950
P. C. of possible running time	70.5
Tons per 24 hrs. running time	2,766
Stamp duty per 24 hours	14.95
Mining Costs per ton	\$2.88

Mill costs per ton	\$1.21
General operating charges42

Another interesting feature is that the Hollinger Company during 1919 invested \$115,195.20 in oil and gas leases in Dickenson and Morris Counties, near Harrington, Kansas.

A meeting of the shareholders of the Dome Extension Company is being held March 10th for the purpose of considering, and, if approved, ratifying an agreement previously entered into by the directors authorizing the extension of an option on the property to the Dome Mines Company for six months. It is generally believed the extension will be ratified.

Before the end of the current month, according to progress already made, the Porcupine Crown Mine will once more be producing gold bullion. The requisite material and supplies are being rushed to the mine, and the desired force of men has been engaged. It is now thought that production may be continued without interruption. Prior to closing down in July 1918, the Porcupine Crown was a heavy producer and was disbursing dividends at the rate of 3 p. c. quarterly. Ore reserves are now estimated at around \$500,000 and the present surplus amounts to approximately \$200,000. The mill is in a first class state of repair.

Some of the leading interests involved in the Porcupine V.T.N. have commenced a movement calculated to bring about a more satisfactory degree of co-operation between the British and American interests involved in the Company, and between whom there has been a more or less pronounced degree of lack of cohesion. It is believed that favorable results may follow. While the financial position of the Porcupine V.T.N. is not very strong, yet the mine is equipped with a mill adequate to treat about 100 tons of ore daily, and by use of which the mine can be quickly made self-supporting. In addition to this is some 750,000 shares of unissued stock on which additional finances could be raised if necessary to do so. Provided the plan materializes it is proposed to continue operations from the present depth of 600 feet to the 1000-ft. level.

In the Kirkland Lake district, there is greater activity than ever before in the history of that district. The mines in the proven zone are not only increasing the scope of operations, but in all direction on outlying properties there is a steady increase reported in the amount of work being done, and the favorable results achieved. This is true, both of the Southern part of the camp where the Ontario-Kirkland appears to be developing into a probable mine, and where the result of work on the Canadian-Kirkland property is reported to be favorable, and in an Easterly direction in Label township where new incorporations comprise more than two thousand acres of promising mining territory, and where, as in the case of the Bidgood property, commercial ore has been found at outcrop. On the Bidgood, in the numerous veins opened up and which range from a few feet to 25 feet in width, while some of the veins have not yet been found to contain commercial ore yet according to official figures as much as 5½ feet in width of one of the most important veins has been found to contain average values of \$13.50 per ton at surface. It is also true, that West from Kirkland Lake in the direction of the McIvor property, as well as the Baldwin, and the township of Grenfell, considerable activity is in evidence, and the coming summer promises interesting developments in

that direction. The success so far achieved in the proven section, and with the visible prospective merit of the territory lying both East and West, the mining men and prospectors interested in the Kirkland Lake district appears to have every reason to be decidedly optimistic.

At Boston Creek, what is true of the Kirkland Lake district is true of this district, although as yet on a lesser degree. Taking the Miller Independence as the center of activity and in all direction operations of more or less important proportions are being carried on. At the Miller Independence itself, a contract for some 300 feet of cross-cutting at the 500-ft. level is soon to be let, while in the inclined shaft the work of developing ore is to be carried on.

On the Mondeau property, of the Peerless Mining Company a rich vein measuring over four feet in width was encountered at a depth of about 150 feet and which is said to be working satisfactorily and shaft sinking is preceeding at the rate of about five feet per day.

On the Boston Kennedy property, after completing the shaft to a depth of 100 feet it has been decided to spend another \$10,000 in continuing the shaft to a depth of 150 feet at which point it is proposed to carry out lateral work. A small sawmill has been purchased and shipped to the property where it will be installed for the purpose of cutting lumber and timber required in connection with further buildings and mining.

In Skead township a good deal of activity is reported. The Wisconsin-Skead and the Crawford-Skead are both being worked. The Minneapolis and St. Paul property is also to resume work soon, as also will the Allied Gold Mines on claims held in that district.

The outlook for the gold mining industry in this country is exceedingly bright, that is when measured by the results so far achieved and the extent of activity promised within the next few months. As to the economic conditions, the future alone will contain the verdict.

B. C. CORRESPONDENCE

Victoria, B. C.—That the many resignations received recently from members of the Geological Survey of Canada constitutes a serious situation in-so far as the Province of British Columbia is concerned because some of those who have been engaged in geological work in the Province for years have left the service without completing their important work, is recognized by the Provincial Government. The matter is to be brought before the Legislative Assembly, now in session, by Hon. Wm. Sloan, Minister of Mines, who has given notice of his intention to move the following resolution:

Whereas under the Terms of Union of this Province with the Dominion of Canada it is incumbent on the Dominion Government to maintain in British Columbia the Geological Survey:

And whereas from the pioneer work of Dawson to the present day the services of the Geological Survey have been of inestimable value to the mineral industry of this Province:

And whereas recent advices show that, out of a total number of twenty-one geologists available for field-work throughout the Dominion, eight already have tendered their resignations, and others are like-

ly to do so, thus leaving very few fieldmen for the whole Dominion:

And whereas during the six years prior to 1914 the Geological Survey maintained an average of nearly twelve geological and topographical field-parties in British Columbia alone, it becomes evident that it will be impossible for the survey to provide for work in British Columbia trained geologists from the remaining staff to continue the geological work so necessary to the mineral development of this Province.

Be it Resolved, That this Legislative Assembly of the Province of British Columbia expresses its appreciation of the great value of the work of the Geological Survey of Canada as assisting the mineral development of this province, and views with apprehension the depletion of the survey staff, especially at this time, when, with the world entering upon a period of reconstruction, it is most important to our mining industry that all possible knowledge of British Columbia geology shall be made available.

And be it further Resolved, That this Legislative Assembly of the Province of British Columbia does strongly urge the Dominion Government:—

- (1.) To take some immediate action to prevent further depletion of this most valuable branch of the Civil Service:
- (2.) To offer adequate inducements to engineering and scientific students of Canadian universities to undertake training with a view to employment on the Geological Survey of Canada, in order to provide trained men for the future:
- (3.) To complete and publish the results of the geology of such districts as have been topographically mapped:
- (4.) To adopt a policy assuring the maintenance on an adequate basis of the work of the Geological Survey of Canada in British Columbia, to the end that the letter and spirit of the terms of the "British North America Act" may be implemented and the development of British Columbia expedited.

And be it further Resolved That an humble Address be presented to His Honour the Lieutenant-Governor, praying that a copy of the preambles and Resolutions hereinbefore set out be transmitted to the Honourable Secretary of State (or other proper person) at Ottawa.

The developments which have given rise to the foregoing must have an unfortunate effect on this season's geological work in British Columbia. C. Camsell, in charge of the western branch of the Canadian Geological Survey, has left for Ottawa for the purpose, it is understood, of discussing the 1920 programme in Western Canada. Lack of competent men probably, in fact indubitably will necessitate a reduction of the number of field parties to the minimum.

J. W. Mulholland, President of the Prospectors' Protective Association of British Columbia, came from the Northwest Mining Convention at Spokane, Wn. to Victoria, B.C., in order to bring to the attention of the Minister of Mines a number of resolutions endorsed by the organization with which he is officially connected. The prospectors, he states, are banding themselves together throughout the Province. They are going to bring all the pressure of which they are capable to bear on the authorities to obtain the concessions set out in the resolutions which already have been reviewed in detail. Chief among

the desires of the prospectors are powder at cost, winter schools, district engineers' reports made public the subjecting of those caught despoiling miners' cabins and property to a severe penalty, and the shelving of the B. C. Engineers Bill. This latter is being vigorously fought by the prospectors as "class legislation," likely to interfere with the investment of foreign capital (with that of the United States in mind) in local mining proprietors. The Canadian Mining Institute also has taken a stand against the measure. Mortimer Lamb, the secretary, appearing before the Private Bills Committee of the Legislature and asking that it be laid over for a year, as the Institute did not consider the bill, as at present drafted, in the interests of the mining industry. This proposed legislation has not yet reached the House.

G. Lewis Casey, President of the Smelters Steel Co. Seattle, Wn., has undertaken to make a proposition to the British Columbia Government, through the Minister of Mines, for the establishment of an iron industry in the Province. This Company has acquired extensive iron ore deposits, together with a ten acre tract of land, at Dean Channel, a northerly arm of Burke Channel on which the town of Bella Coola is situated. Conditions for the extraction of ore, which assays 52½ per cent metallic iron with very small percentages of impurities, are ideal, it being possible to bunker the mineral at tidewater by gravity.

With the aid of the "Iron Bounties Act," assuring \$3 a ton on pig iron produced, and with the possibility of further assistance under the "Iron Ore Supply Act," Mr. Casey thinks the prospects of arranging for the installation of a plant in British Columbia are good. Two of the Company's chief problems in connection with operations in Seattle would be satisfactorily overcome, after the necessarily heavy initial outlay, by construction at Dean Channel. One was that of power. In Seattle this cost was high and only the high prices received counter-acted it. On Dean Channel there was water power ready for harness and there was timber for the production of charcoal. In Seattle coke, from the local gas works, had to be substituted for the latter and, as would be readily understood, the high ash content of this material very substantially increased the cost of production.

A quantity of British Columbia ore already has been shipped to the Company's plant at Seattle where by means of the electro-thermic method, it has been converted, in one operation into the highest grade of grey iron castings. The characteristic fine texture and close grain of the product for which there is a good market, there being unfilled orders on hand at \$65 a ton, is sufficient comment on the quality of the ore and the efficacy of the electrical form of treatment adopted.

Starting in a conservative way the Company has carried forward the problem of the treatment of the Magnetite Ores of the Coast to a point that appears to assure economic success. With one single-phased arc furnace they have produced 30 tons of the quality of grey iron described. Work now is proceeding on the completion of a four furnace unit, each furnace of a 440 K. V. A. capacity, which will be capable of a daily output of 15 tons. All the electrical equipment has been installed. The furnaces all are being provided with automatic regulators and recording pyrometers, so that the Plant, when finished, will be modern in every respect and designed along lines which ex-

periments have indicated as necessary in the satisfactory handling of the ores of British Columbia.

Under the Mineral Survey and Development Act of British Columbia the Minister of Mines has power to check up mining concerns placing stock on the market in respect to prospectus statements or other representations as to the value and prospects of their properties. At present, however, such companies are not required to file a prospectus with any official, the result being that there is no sure way for watching the activities of such enterprises. This condition has resulted in an amendment, now before the Legislative Assembly, requiring all joint stock companies, other than a private company operating under the Companies Act, which acquire mining properties or engage in mining to notify the resident engineer of the district in which the property is held, filing full particulars of the property and the work done and also as soon as issued a copy of every prospectus or statement in lieu of prospectus.

Dual control of the minerals within considerable areas of British Columbia has been a vexatious problem from an administrative standpoint for years. The Provincial Government is anxious that all the mineral zones affected should come under its sole jurisdiction. Prospectors and mining men have expressed their dissatisfaction most emphatically with respect to the mineral properties in the E. and N. Land Belt, a Vancouver Island section approximating 2,110,054 acres. At present the Province owns the precious metals and the E. and N. Ry. Co. the base metals. While the mine operator must conform, generally speaking, with the Provincial laws in taking up claims within this section the Company is in a position to impose any condition in connection with the extraction of minerals, other than gold and silver, that may seem good to it. Royalties have been exacted in some cases. Throughout the past year the Minister of Mines has been in negotiation with the railway officials in an endeavor to reach an agreement whereby the minerals of the belt aforesaid may be brought entirely under the control of the Department of Mines and the progress made in this direction will be discussed in the Legislative Assembly during the present Session. A somewhat similar condition, although not altogether parallel, is found within the limits of what is known as the Dominion Railway Belt, an area along the line of the C. P. R. on the provincial mainland about 17,050,000 acres in extent, and also in the Peace River Block of about 3,500,000 acres. An arrangement now subsists under which the prospector or miner may obtain title to both precious and base metals, and the surface rights necessary to operate, within the Dominion Belt, the prelude to this involving compliance with both Dominion and Provincial regulations. Although there is more red tape attached to this procedure than would be if the control were solely vested in the Province the conditions are not particularly onerous. However, Hon. T. D. Pattullo, Minister of Lands, is asking the Provincial Legislature to pass a resolution asking the Dominion Government to turn over its rights in these two latter areas to the Province. His argument is that the dual control of these lands makes satisfactory administration extremely difficult and that the development of the Province as a result, is being retarded.

Vancouver, B. C.

There is to be an international mining convention at Seattle, Wn., next month and an effort is being made to have Canadian currency accepted at par in that City for the convenience of delegates from north of the line. The Canadian Mining Institute, the Mining Bureau of the Board of Trade and the Vancouver Chamber of Mines are co-operating with a view to assembling a thoroughly representative delegation from British Columbia.

Nelson, B. C.

An international mining convention is to be held at Nelson, B. C. during the week of June 7th and 12th. The Kirby Group of five claims at Riondel is said to be showing up well with development, a 50 foot cross-cut having exposed a stringer of six inches of galena carrying ruby silver, widening to eighteen inches of spathic zinc and galena. This property is interesting old timers because it appears to contradict all theories respecting one of the oldest silver-lead camps of the Kootenays. The Blue Bell, which dates back to 1865 and the old Hudson's Bay Co. workings have produced old grade ores. The Yankee Girl Mine, near Ymir, has been inspected by A. W. Newmerry, of New York, who has returned to report to his principals. This property was a steady producer of gold-silver ore for many years, and has about \$400,000 worth of ore to its credit. The Highland Mine at Ainsworth has been closed down, owing to shortage of water necessary for its compressor. Some months ago the Mill had its last run and during the winter has been overhauled. This work still is in progress. The property was acquired some years ago by the Consolidated Mining and Smelting Co. of Canada. The Slocan Silver Mines Ltd. are proceeding with the development of their property near Nelson. A 50-ton Mill is to be installed as well as a Hydro-Electric Plant. A San Francisco firm is understood to have received the contract for much of the proposed installation. The recent strike reported on the property of the Nugget Gold Mines Ltd., Sheep Creek, which is said to be improving with development, has been followed by the announcement of the uncovering of a promising vein on the Tango Group, situated nearby in the same section. Seven feet of high grade ore is said to have been located at a depth of 210 feet below the surface outcropping.

Greenwood, B. C.

As a result of the operation of the British Columbia Taxation Act, 1916, many mining properties held without development and presumably for speculative purposes have reverted to the Crown. Some forty of these have been leased by officials of the government in the course of the last few months and as most of the applicants are mining men of Greenwood, it is expected that active development will be started. Confidence is felt that some will prove to be mines and that Greenwood is destined to again take a place among the leading mining centres of the Province. Among the active mines and prospects of the Greenwood district are the Providence, which has produced \$400,000 worth of mineral and from which about \$50,000 was taken last year; the Last Chance, Skylark, and Silver Cloud, the Bell, the Castor Fraction, the Bounty, the Rambler, Wellington and the Wallace Mountain Group.

Trail, B. C.

Ore receipts in gross tons at the Trail Smelter of the Consolidated Mining & Smelting Co. of Canada for the week from February 8 to 14, inclusive, were 7,872. For the week ending February 21st the receipts were 5,692 tons. This brings the total for the year to 47,842 tons, of which 2,139 tons were concentrates and 45,703 ore.

Barkerville, B. C.

The Lightning Creek Gold Gravels & Drainage Co. has a crew of forty men employed in sinking a shaft to develop the deep gravels of this creek which drilling has shown to be rich. Hitherto similar efforts have been unsuccessful owing to the tremendous water pressure. With a large capacity pumping plant, and all other modern equipment, this company is looking forward to achieving where others have failed. John S. Horgan, a well qualified engineer, is in charge of the work.—A. D. Whittier, having taken up 25 miles of dredging ground starting at the mouth of the Quesnel River, is reported to plan the installation of a dredge this season.—Key-stone drill prospecting by the Lightning Creek Hydraulic Mining Co. and preparations for a busy year by the Stouts' Gulch Hydraulic, owned by the Cariboo Gold Field Ltd., are among other activities in the district.

Victoria, B. C.

That the Settlers' Rights Act, 1919, which has been disallowed by the Dominion Government, will be re-enacted at the present session of the Provincial Legislature has been announced by Premier Oliver. The settlers within the E. & N. Ry. Belt, Vancouver Island, will be given a further extension of time, in which to make application for title to the coal rights in connection with their lands. This assurance was given a delegation, representative of a large body of the claimants, which waited on members of the Government and the Legislature at the Capital City. It is to be expected that, in conformity with the policy of the Dominion Government, such legislation, if again placed on the statute books of British Columbia, will be disallowed again. However the Provincial Government express a determination to maintain the right of the settlers to a fair deal, and it seems likely that the question of jurisdiction between the two Administrations will come to a definite issue before long.

Discussing the coal development prospects in the northern part of the Province of Alberta George Macdonald, general manager of the Pacific Great Eastern Ry., said: "Imagine, if you can, a mountain of coal extending nearly two miles, with only a depth of three feet of earth to strip. It isn't a mine—it's a quarry. Coal can be loaded on cars as cheaply as gravel can be loaded in a ballast pit. No expenditure will be required for tunnels or shafts, no timbering, no skilled labor; and there are upwards of thirty million tons of the very best bituminous in sight."

Mr. Macdonald was referring to the Blackstone Coal Mine, near Jasper Park, about fifty miles southwest of Edison and some 700 miles from Vancouver. It is about 800 miles from Prince Rupert and 400 miles from Fort George.

"With the extraordinary and increasing demand for cars for lumber on the Pacific Coast the government railways can afford to give a rate of one-half a cent a ton per mile and make money. At present, coal at Prince George and Quesnel (both interior British

Columbia centres) stands about \$20 a ton. This coal should be laid down at Prince George for \$5 a ton, and when the Pacific Great Eastern Ry. is completed to that point it can be laid down at Quesnel at \$6 a ton. One cannot conceive of what this means to mining development in the north. Northern British Columbia and Northern Alberta are the future hope of Canada and cheap Alberta coal will be the medium bringing about such a condition.

"There has been nothing," he continued, "happen in western Canada since the Klondyke rush that is fraught with so much importance as this wonderful coal deposit.

"Now that the government has taken over the Grand Trunk Pacific Ry. it is confidently expected that low rates will be placed on coal from the mine to all western points. The president and chief owner of the property is Stuart Cameron, of the Pacific Construction Co. There already is a small town at Blackstone and a large number of men employed building dwellings, stores, offices, etc. Even at its present limited capacity the mine is capable of shipping 1,000 tons of coal a day, and this can be increased with ease to 5,000 tons."

A fatal accident occurred recently in No. 1 East Mine, Coal Creek, Crow's Nest Pass Collieries, when Frank Rigosta, a young Italian coal miner, was caught beneath a fall of top coal and instantly killed.

The Kettle Valley Ry. Co. has definitely announced its intention to construct a spur to Granite Creek, thus furnishing the Coalmouth Collieries with transportation facilities which were badly needed. At present the output of this mine is hauled by motor truck to the railway. With cars practically at the tippie it will be possible to develop the property with a view to the increasing of the output.

Trout Lake, B. C.

The Netty L., near Ferguson; the True Fissure, on Great Northern Mountain; and the Gold Bug, at Eight Miles, above Ferguson, are properties under development in this section. A promising vein has been struck on the Netty L. and tunnelling on the True Fissure has disclosed a body of concentrating ore carrying values in gold and silver. A rich strike was made some months ago on the Gold Bug and continuous development with satisfactory results has been in progress since that time.

Pendicton, B. C.

At a recent meeting of the directors of the Pendicton Development Co. it was decided to proceed with the development of the Company's property, the Torpedo Group, situated close to Okanagan Lake. A car load of ore was shipped last summer with satisfactory results and it is proposed installing a concentrator.

Lardeau, B. C.

The Mobbs and the Beaver Mineral Claims are among those of the district which are under development. The former is reported to have been bonded to a Vancouver syndicate for \$35,000 and the new operators propose letting a contract for 250 feet of tunnel work. It is planned that the tunnel shall reach a depth of 30 feet below the shaft, which is down 80 feet and at the bottom of which is a foot of silver-lead ore, averaging 250 ounces of silver and some gold. On the Beaver, the tunnel, which has been driven 150 feet, is reported to be in eight feet of mixed ore, containing two feet of clean ore.

Vancouver, B. C.

C. F. Caldwell, a British Columbia operator of prominence, is pursuing with determination the project of

a railway from Hyder into the Salmon River section of the Portland Canal District, northern British Columbia. Returning recently from a visit to Seattle he stated that he would accompany Governor Riggs, of Alaska, to Washington to forward the enterprise. The money, he said, was in sight and the proposed road would be an inestimable boon to the camp. Discussing the proposal of the Vancouver Board of Trade that a government ore dressing plant should be established on the Coast Mr. Caldwell disapproved of anything in the nature of a government operated smelter for the mines of British Columbia. What was wanted was some means of proving and remedying "the extortions that the octopus of the smelting interests." He advocated either a royal commission with wide powers of investigations or the appointment of an investigator, nominated by the mine owners but backed with powers by the government, who would be able to investigate results obtained at other smelters all over the country and compare their results and their charges with the figures we obtain in this Province.

J. T. Hillis, one of the best known of British Columbia's mining men, died recently. He came to the Province in 1900 from the State of Montana. With his partner he was one of the first interested in what now is the Britannia Mine property, Howe Sound. They did the preliminary development work, persevering in the face of much difficulty, until the possibilities were proved and capital was interested. Subsequently he became identified with a group of claims at Hidden Creek which later were to develop into the Hidden Creek Mines operated on a large scale by the Granby Consolidated Mining and Smelting Company.

THE SILVER ISLET MINE, LAKE SUPERIOR.

By J. J. O'CONNOR.

The prospective opening up of the famous Silver Islet silver mine, by Messrs. Jamison and Peacock, and their associates of Duluth, Minn. who have secured an option on the Wood Location which includes Silver Islet, naturally suggests the question; will Silver Islet come back? Will more of the rich bonanzas be encountered, that were met with in the former operations, and will it again take the place in the mining world that it formerly held, as one of the great mining enterprises of its period?

Jamison and Peacock are well known and successful explorers. Among other properties, they discovered the Croft Iron Mine, on the Cuyuna range, a high grade Bessemer producer.

The first steps to be taken will be to unwater the mine. This will likely be carried down, to at least the third level.

The main shaft was sunk to a depth of 1265 feet, with several thousands of feet of drifting. Good milling ore only, was found to any extent in the drifting. The two great bonanzas encountered at moderate depth, in the old operations encourages the belief that further rich bodies of ore will be met with in that zone, rather at greater depth.

It is not expected that any great difficulty will be encountered in keeping the mine free, while the rich silver known to be in the roof of the mine, is being extracted. The free use of concrete, should make this a comparatively simple matter. The foundations of the old cofferdams are still intact, a short way below the surface of Lake Superior, and may easily be brought back to their old form, and give ample protection to the contemplated operations.

When Nature got through with the Islet, it was about 90 x 90 feet, and the highest point on it was 9 feet above the Lake. It lies 3700 feet from the mainland, six miles east of Thunder Cape, Lake Superior and is therefore exposed to all the fury of its waters in time of storm.

Incredible as it may seem, Silver Islet, though only a small speck of rock, 90 x 90 feet, on the world's greatest body of fresh water, is richer in romance and has furnished more interesting mining history than many mining districts of the same size in miles.

The first deposit was discovered at the surface. It was pear shaped, very rich and produced a large amount of silver. The second deposit was met with on the third level. It was in the form of an inverted cone with a base of about fifty feet on the third level, and the apex down at the fifth level. This latter deposit was remarkable in its structure, a winze in the middle of it, for a depth of 60 feet was sunk literally through native silver, the metal sticking out in masses from the four sides of the winze.

In the breast of the drift it stood out in great arborescent masses, in the shape of hooks and spikes, in gnarled, drawn out and twisted bunches, with bands of animikite, and huntelite. This deposit was at the junction of the two veins on the Islet. The hanging wall is described as smooth, and as polished as a mirror.

The company that formerly operated Silver Islet was headed by Major A. H. Sibley, of New York, with Captain W. B. Frue, of Detroit, Mich. as superintendent. Captain Frue was the inventor of the Frue Vanner, well known to the mining fraternity. The invention was made at Silver Islet, the working models were set up in a building on the main land and the vanner was first used in the Silver Islet Stamp Mill, in 1874.

One of the principal shareholders at this time, was Captain Eber B. Ward, a well known vessel-owner of Detroit, Mich. History, tradition, or both, have it that his profits from Silver Islet went far to enable his daughter Clara Ward to purchase the title of Princess Chimay.

From where the vein outcrops on the Islet, 3700 feet from the main land, it is traceable a total distance of 9000 feet, or 6300 feet on the main land.

The gangue of the Silver Islet vein consists of calcite quartz and dolomite, the latter varying in colour from cream to pink, according to the amount of carbonate of manganese (rhodochrosite) it contained. The metallic minerals are native silver, (argentite) galena, blende, copper and iron pyrites, with marcasite, according to W. M. Courtice, Consulting Engineer for the Company. Thomas Macfarlane, also mentions tetrahedrite, domekrite, niccolite and cobalt bloom. According to Prof. Ingall, the two latter are probably oxidation products of a peculiar mineral called Macfarlane, and containing arsenic, cobalt, nickel and silver. Two new forms of silver were discovered in the ore, by Dr. Wurtz, and named huntelite, and animikite. The two latter are almost solid silver. Graphite also occurs in considerable quantity and seems to be connected in some way, with the occurrence of the silver. It has been observed, according to Richard Tretheway, Superintendent, that they never had silver without graphite, although they sometimes had graphite without silver.

The present Board of Commerce is but history repeating itself. Under the old management at Silver Islet, all kinds of goods and supplies were sold in

their well appointed store. They were very conscientious with their employees, a form of temperance was enacted and carried out, under which an employee could only obtain two or three drinks per day, these on credit, if he wished. Boarding houses were not permitted to charge more than a certain price, and in a general way, the best interests of the employees were carefully guarded.

MINISTER OF MINES OF BRITISH COLUMBIA PRESENTS RESOLUTION TO LEGISLATURE URGING ADEQUATE MAINTENANCE OF WORK OF GEOLOGICAL SURVEY.

Hon Wm. Sloan, Minister of Mines for British Columbia recently laid before the Legislature the following Resolution:

"Whereas, under the terms of union of this province with the Dominion of Canada, it is incumbent on the Dominion Government to maintain in British Columbia the geological survey;

"And whereas from the pioneer work of Dawson to the present day the services of the geological survey have been of inestimable value to the mineral industry of this province;

"And whereas recent advices show that, out of a total number of twenty-one geologists available for field work throughout the Dominion, eight already have tendered their resignations, and others are likely to do so, thus leaving very few fieldmen for the whole Dominion;

"And whereas during the six years prior to 1914 the geological survey maintained an average of nearly twelve geological and topographical field parties in British Columbia alone, it becomes evident that it will be impossible for the survey to provide for work in British Columbia trained geologists from the remaining staff to continue the geological work so necessary to the mineral development of this province.

"Be it resolved, that this Legislative Assembly of the Province of British Columbia expresses its appreciation of the great value of the work of the geological survey of Canada as assisting the mineral development of this province, and views with apprehension the depletion of the survey staff, especially at this time, when, with the world entering upon a period of reconstruction, it is most important to our mining industry that all possible knowledge of British Columbia geology shall be made available.

"And be it further resolved, that this Legislative Assembly of the Province of British Columbia does strongly urge the Dominion Government:

"(1) To take some immediate action to prevent further depletion of this most valuable branch of the civil service.

"(2) To offer adequate inducements to engineering and scientific students of Canadian universities to undertake training with a view to employment on the geological survey of Canada, in order to provide trained men for the future;

"(3) To complete and publish the results of the geology of such districts as have been topographically mapped.

"(4) To adopt a policy assuring the maintenance on an adequate basis of the work of the geological survey of Canada in British Columbia, to the end that the letter and spirit of the terms of the 'British North America Act' may be implemented and the development of British Columbia expedited.

"And be it further resolved, that an humble address be presented to His Honor the Lieutenant-Governor, praying that a copy of the preambles and resolutions hereinbefore set out be transmitted to the honorable secretary of state (or other person' at Ottawa."

Ottawa, Ontario.

Dr. James S. Stewart, who has been in charge of the Edmonton Office of the Geological Survey Branch, Dominion Mines Department, has tendered his resignation, after ten years service. Dr. Stewart has been specializing in geological investigation of the gas and oil of the great plains of the Province of Alberta and the Canadian Northwest.

ANNUAL REPORTS OF MINING COMPANIES.

Hillcrest Collieries.

Net profits and amount available for common stock dividend after deduction of bond interests and preferred dividends in 1919 compare with previous years as follows:

	1917	1918	1919
Profits	\$91,211	\$110,295	\$112,641
Available for common stock dividend ..	25,562	60,288	72,581
Percent earned on			
common	2.55%	6.02%	7.25%

As 1919 was marked by a number of serious recurrent labor troubles, resulting in long periods of idleness the showing is regarded as highly satisfactory.

Internation Coal Mining Co., Westville, N. S.

Profits for 1919 totalled \$152,449, being very slightly in excess of those of 1918 and about \$30,000 less than the profits of 1917. After deducting depreciation—for which increased allowance was made—provision for income tax and preferred dividends, there remained for application to common stock dividend \$58,464 against \$77,280 in 1918. The sum of \$10,644 was carried forward to profit and loss, bringing the total surplus to \$254,831.

Canadian Salt Co.

Gross and net profits compared with 1918 as follows:

	1919	1918
Gross operating Profits	\$226,881	\$223,342
Net Profits	136,286	136,565

After paying bond interest, and making provision for depreciation, sinking fund and interest on overdraft, the sum of \$72,286 was added to surplus making a total to credit of this item \$595,858. During the year great difficulty was experienced in obtaining fuel, and interruptions occurred in operation due to failure of the hydro-electric supply.

Hollinger Consolidated Gold Mines, Ltd.

Comparisons with 1918 are as follows:

	1919	1918
Tons of ore milled	711,822	578,755
Average value per ton	\$9.73	\$10.24
Net value of gold recovered . . .	\$ 6,722,000	\$ 5,752,000
Ore Reserves (tons)	4,392,000	4,439,000
Computed Value	\$39,928,000	\$41,080,000
Average number of men employed	1,207	1,061
	1919	1918
	\$	\$
Total income	7,063,000	5,908,000
Working expenses	3,222,000	2,857,000
Depreciation taxes and donations	1,232,000	462,000
Net profit	2,321,000	2,588,000
Dividends paid	1,722,000	1,230,000
Addition to surplus	599,000	1,358,000
Balance carried forward	2,670,000	2,071,000
Total assets	27,644,000	26,821,000
Current assets	3,602,000	2,296,000
Bullion shipped	6,979,000	5,720,000

Ore Reserves.

General Manager A. F. Brigham, dealing with the matter of ore reserves, says that ore of a value in ex-

cess of \$10 to the ton has been depleted about \$1,500,000, while ore of \$80 to \$10 tenor has increased by more than \$2,000,000. Ore below \$8 a ton shows a decrease of \$1,850,000. He remarks: "It will be seen that our development efforts have been principally directed towards the maintenance of reserves approximating the value of the tonnage milled during the year. We find it very difficult to determine a definite program while labor conditions are so unsettled, and mining supplies and machinery rising from levels already abnormally high. The lower grade veins could be profitably developed and exploited if a tolerably sure combination of stable conditions obtains, but it is useless to exhaust our resources upon such, unless we can be assured of a fair return from them."

Mr. Brigham, dealing with the company's efforts to sell foodstuffs, clothing and other necessities to employes at net cost, makes the interesting announcement that the reduction at present is 15 per cent. below the price obtained on August 1, 1919.

Other statements made by the general manager are: "The net value, \$9.40 per ton milled, was determined by the selection of such ore as would yield a close approximation to the average value of the ore reserves. Should labor become more plentiful and mining supplies fall to a rational level, this figure can be further reduced. The wisdom of this latter course is obvious.

"The mine is ready to supply the mill to maximum capacity, namely, 3,200 tons per day, when a sufficient number of miners can be secured to break the ore. Remodeling the last four tanks in the continuous decantation plant and some minor details connected with the remaining twenty stamps are rapidly nearing completion.

"Mining machinery and supplies continue to advance, and any advantage which we secured in the small reduction in the price of cyanite and explosives has been more than absorbed by the advance in timber alone. Only the most drastic economy will prevent an increase under this head during the coming year.

Mr. Timmins says pre-war labor efficiency has not been attained, and that there is still a serious shortage of labor. Relations with employes continue satisfactory. He goes on to make this significant comment:

"The demand for gold, to provide an adequate backing for the highly inflated issues of paper money now outstanding, already great, becomes daily more insistent. We are ready to supply this demand, and to add to the gold reserves of Canada to the fullest extent of our ability and the capacity of the mine, but before we do so the disadvantages from which the gold mining industry has suffered since the commencement of the war must be improved or entirely removed. There must also be a more abundant supply of efficient labor and an appreciable reduction in the cost of all materials and supplies used by us, otherwise it will not be possible to greatly increase our output along sound economic lines, which is the only policy we would feel justified in attempting to carry out."

Northland Gold Mines, Limited, has been granted Ontario incorporation with a capital stock of two million dollars and head office at Haileybury. The company is empowered to carry on a general mining business and the provisional directors are W. A. Gordon, P. C. Montgomery, E. M. Ferguson, Pearl Hunton, and A. M. McLean.

MINING NOTES FROM TORONTO.

Frank C. Loring M. E. on the mining situation in England—Death of an aged mining expert—An interesting mining case in the courts.

(From Our Toronto Correspondent).

That England is ripe for a big educational campaign and propaganda in the interests of Canada's mineral resources, is the opinion of Frank C. Loring, Mining Engineer, Sun Life Building, Toronto, who has just returned from a business trip to the Old Land. "Canada received a rather bad reputation through the failure of one or two of its mines," said Mr. Loring to the "Canadian Mining Journal", "and unfortunately they appear to know rather more about these than they do about the many good mines. What is needed in London is a first class mining exhibit, with maps and data showing the wonderful mineral resources of this country and particularly Ontario. Particularly is this needed now when the country is showing a great speculative spirit in industrials and is also greatly interested in gold and silver mining. This is evidenced by the fact that the five million pound exploration company recently formed in London had its stock over-subscribed almost before it was thoroughly organized. General Sims, Canada's representative in Great Britain, is doing good work, and it is not his fault that the Canadian trade office in London does not compare sufficiently with the trade offices of the other British colonies. In my opinion the same attention that is being paid to the agricultural resources of Canada in the London office should be devoted to educating the British public to our wonderful mineral resources with a view to enlisting British capital for Canadian mining enterprises. There is no doubt that there is a large amount of money in England ready for investment in Canada and with effective propaganda work much of this can be diverted to Canada. Already several companies are being formed to exploit Canada, and real exploration and development will take the place of the cursory work done in the past. Now that the South African production is falling off and gold and silver is in such great demand there is a great opportunity for Canada to place her wonderful resources before the investing public of Great Britain."

Mr. Loring returns to England shortly on business connected with various mining enterprises. Since his return he visited the Dome, Hollinger and other mining properties in the north country. He is the consulting engineer for the Hughes McElroy mine.

BOOK REVIEW

The Kent Coalfield, its Evolution and Development, by A. E. Ritchie. Published by the "Iron and Coal Trades Review" London, England. 5 by 7½ Cloth, 302 pp. map and index.

This little volume is collected from a series of articles which appeared in the "Iron and Coal Trades Review."

Except to Englishmen, Mr. Ritchie's recital of the long story of the evolution of the Kent Coalfield from a shadowy scientific hypothesis to a producing coalfield is not absorbingly interesting, but the proved existence of numerous seams of workable coal of good

quality in the south-east of England will exert a far-reaching influence on the future of England, and in importance is only approached, but not exceeded, by the proved extension of the Midlands coalfield south and east of what were supposed to be its extreme limits of workability and persistence.

To non-English readers the chief interest in the Kent Coalfield resides in the testimony it bears to the value of geological speculation and deduction. The first suggestion of a buried coalfield in the south-east of England came from Sir Henry de la Beche, head of the Geological Survey in 1846, and in the same year similar conjectures as to an extension of the French coalfield of the Nord into the Pas de Calais district were confirmed by the accidental discovery of coal in an artesian well.

In 1855 Godwin-Austen read before the Geological Society a paper that made history on "The Possible Extension of the Coal Measures beneath the South-Eastern part of England." Godwin-Austen's reasoning was chiefly based on his belief that the axis of the Ardennes was continued into England and represented by the Mendip Hills. Unfortunately, Godwin-Austen's theories were opposed by other geologists, particularly by Sir Roderick Murchison, then head of the Geological Survey. The borings which were later put down are stated by Mr. Ritchie to have been useful chiefly in proving where coal was not, and he remarks that if Godwin-Austen's recommendation of 1858 had been acted on the evolution of the coalfield to a producing stage would have been advanced by fifty years.

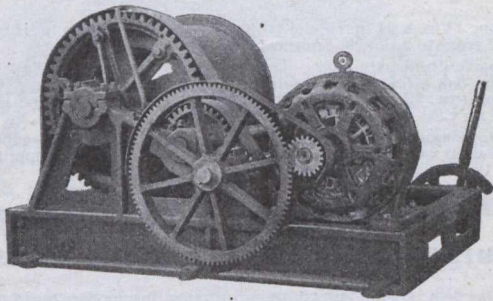
Mr. Ritchie's volume is one long record of a process of trial and error, chiefly error, and periodically he compares the lack of progress and clashing of opinions which delayed the finding of coal in Kent, with the business-like manner in which the French engineers opened up the deep mines of the Pas de Calais field, making incidentally many persons very rich. It would be profitless to review this record, but it should be proper to point out that if in so old a country as England, a country in which the science of geology was born, it is possible to discover hidden coalfields in these latter days the possibilities of study of our own coal measures are very great. Even in England, the full implications of the finding of coal in Kent have not been realised, and in years to come the prolongation of the coal measures of Kent, under the Thames Valley in the direction of the Somerset coalfield may prove to be more than a mere hypothesis.

The seams in the Kent Coalfield have not been correlated, but a study of the aggregate thickness of coal seams over three feet in thickness already, proved in numerous boreholes, and actually yielding coal from six collieries, will reveal the tremendous importance of the field. The analyses are surprisingly good. For example, in the Ripple boring of the Kent Coal Concession, Ltd., ten feet of coal is proved having the following analysis; Volatile, 10.71%, Fixed Carbon, 84.24, Sulphur 0.63%, Ash 4.40%.

The volume is prefaced by a quotation from George Stephenson, which was never more opposite than today. "The strength of Great Britain lies in her iron and coal beds; the Lord Chancellor now sits upon a bag of wool, but wool has long since ceased to be emblematical of the staple commodity of England. He ought to sit upon a bag of COALS."

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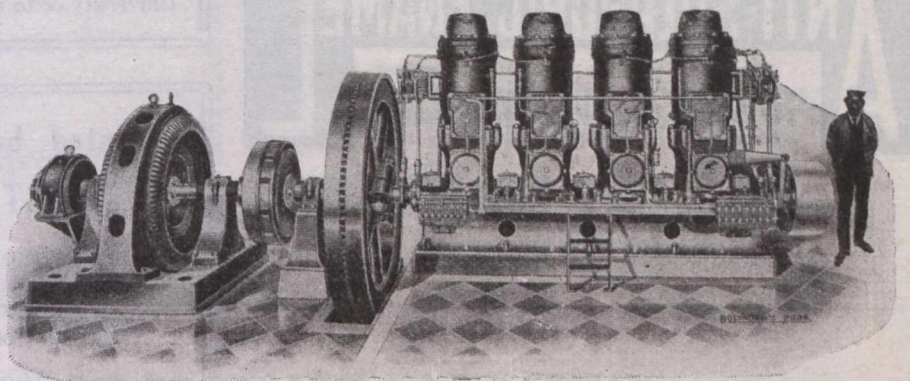
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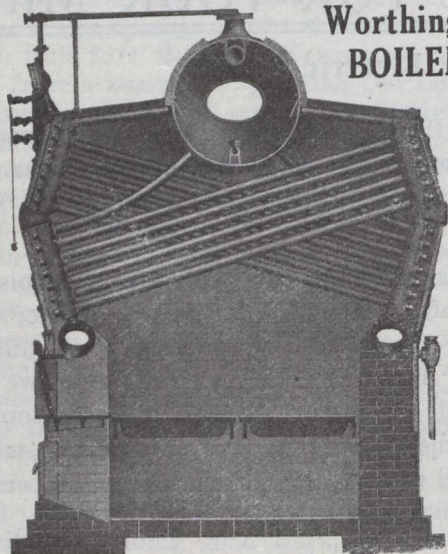
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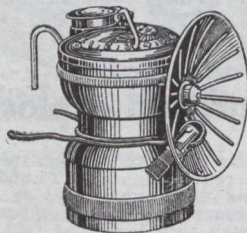
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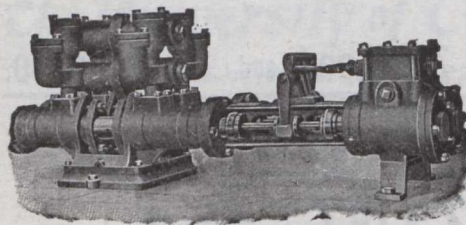
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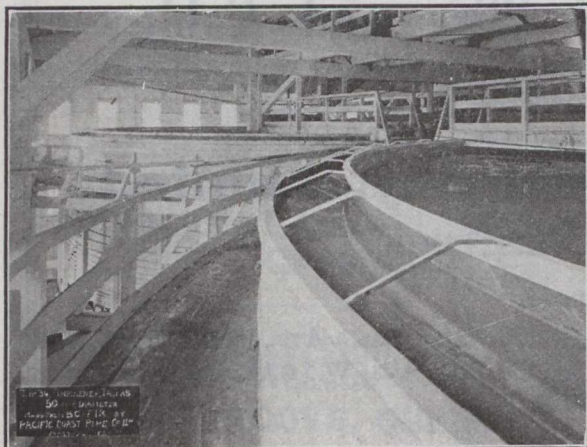
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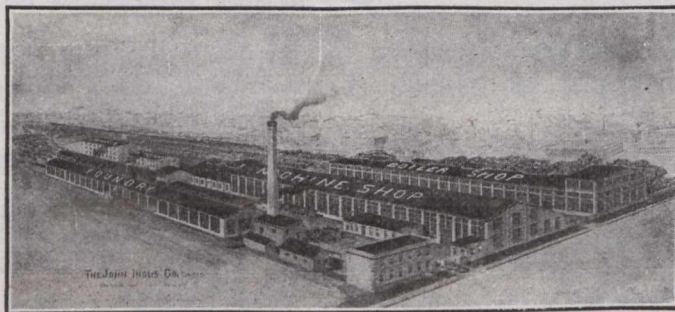
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- Coal Cutters:**
Osborn, Sam'l (Canada) Limited.
Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.
- Coal Crushers:**
Canadian Mead-Morrison Co., Limited
- Coal Mining Explosives:**
Canadian Explosives, Ltd.
- Coal Mining Machinery:**
Osborn, Sam'l (Canada) Limited.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Sullivan Machinery Co.
Marsh Engineering Works
Hadfields, Ltd.
Hendrick Mfg. Co.
Fraser & Chalmers of Canada, Limited
Mussens, Limited
R. T. Gilman & Co.
- Coal and Coke Handling Machinery**
Canadian Mead-Morrison Co., Limited.
Link-Belt Co.
- Coal Pockets:**
Canadian Mead-Morrison Co., Limited.
- Coal Pick Machines:**
Sullivan Machinery Co.
- Coal Screening Plants:**
Canadian Mead-Morrison Co., Limited.
- Cobalt Oxide:**
Coniagas Reduction Co.
Everitt & Co.
- Compressors—Air:**
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.
MacGovern & Co., Inc.
R. T. Gilman & Co.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
The Mine & Smelter Supply Co.
- Concrete Mixers:**
Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.
Gould, Shapley & Muir Co., Ltd.
MacGovern & Co., Inc.
Mussens, Limited
R. T. Gilman & Co.
- Condensers:**
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
Northern Canada Supply Co.
MacGovern & Co., Inc.
- Concentrating Tables:**
The Mine & Smelter Supply Co.
Deister Concentrator Co.
The Wabi Iron Works
- Converters:**
Northern Canada Supply Co.
MacGovern & Co., Inc.
- Conveyors—McCastin Gravity Bucket:**
Canadian Mead-Morrison Co., Limited.
- Contractors' Supplies:**
Canadian Fairbanks-Morse Co., Ltd.
- Consulters and Engineers:**
Hersey Milton Co., Ltd.
- Conveyors:**
The Mine & Smelter Supply Co.
- Conveyor Flights:**
Hendrick Mfg. Co., Ltd.
- Conveyor—Trough—Belt:**
Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Co.
Hendrick Mfg. Co.
Mussens, Limited
Jones & Glassco (Roller, Belt and Chain)
Hendrick Mfg. Co.
The Wabi Iron Works
- Conical Mills:**
Hardinge Conical Mill Co.
- Copper:**
The Canada Metal Co., Ltd.
Consolidated Mining & Smelting Co.
- Cranes:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Link-Belt Co.
R. T. Gilman & Co.
Smart-Turner Machine Co.
- Crane Ropes:**
Allan Whyte & Co.
Greening, B., Wire Co., Ltd.
- Crucibles:**
Canadian Fairbanks-Morse Co., Ltd.
The Mine & Smelter Supply Co.
- Crusher Balls:**
Canada Foundries & Forgings, Ltd.
Hull Iron & Steel Foundries, Limited, Hull, Que.
Osborn, Sam'l (Canada) Limited.
- Crude Oil Engines:**
Swedish Steel & Importing Co., Ltd.
- Crushers:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
Hardinge Conical Mill Co.
Osborn, Sam'l (Canada) Limited.
The Electric Steel & Metals Co., Ltd.
R. T. Gilman & Co.
Lymans, Ltd.
Mussens, Limited
The Mine & Smelter Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works

Surplus Machinery and Equipment Property of U.S. Government

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Canadian Industrial Organizations are offered the opportunity of securing new and used machinery and equipment at attractive prices.

ACCUMULATORS	GENERATORS	SHAPERS
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CHUCKS	MOTORS	TANKS (Quenching, Oil, Storage)
CIRCUIT BREAKERS	PRESSES	TAPS
DIES	PUMPS	TRANSFORMERS
DRILLING MACHINES	PULLEYS	TENSILE MACHINES
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	SCALES	WELDING EQUIPMENT

We issue a weekly Bulletin, which shows the materials available for sale at date of issue. If you are not on our Mailing List, we request your name and address.

**Toronto District Salvage Board,
Ordnance Dept., U.S. Army**

39 Adelaide St., E.,

TORONTO, Ontario

Canadian Miners' Buying Directory.—(Continued)

Cyanide:

American Cyanamid Company.

Cyanide Plant Equipment:The Dorr Co.
The Mine & Smelter Supply Co.**D. C. Units:**

MacGovern Co.

Derrieks:Smart-Turner Machine Co.
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
R. T. Gilman & Co.
Canadian Fairbanks-Morse Co., Ltd.
Mussens, Limited**Diamond Drill Contractors:**Diamond Drill Contracting Co.
E. J. Longyear Company
Smith & Travers
Sullivan Machinery Co.**Diamond Tools:**

Diamond Drill Carbon Co.

Diamond Importers:

Diamond Drill Carbon Co.

Digesters:

Canadian Chicago Bridge and Iron Works

Dies:Canada Foundries & Forgings, Ltd.
Hull Iron & Steel Foundries, Ltd.**Dredger Pins:**Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
The Electric Steel & Metals Co.
Hadfields, Limited**Dredging Machinery:**Canadian Steel Foundries, Ltd.
Canadian Mead-Morrison Co., Limited.
Hadfields, Limited
Hull Iron & Steel Foundries, Ltd.
R. T. Gilman & Co.**Dredging Ropes:**Allan, Whyte & Co.
Greening, B., Wire Co., Ltd.
R. T. Gilman & Co.**Drills, Air and Hammer:**Canadian Ingersoll-Rand Co., Ltd.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Sullivan Machinery Co.
Northern Canada Supply Co.
Osborn, Sam'l (Canada) Limited.
The Mine & Smelter Supply Co.
Mussens, Limited**Drills—Core:**Canadian Ingersoll-Rand Co., Ltd.
E. J. Longyear Company
Standard Diamond Drill Co.
Sullivan Machinery Co.**Drills—Diamond:**Sullivan Machinery Co.
Northern Canada Supply Co.
E. J. Longyear Company**Drill Steel—Mining:**H. A. Drury Co., Ltd.
Hadfields, Limited
International High Speed Steel Co., Rockaway, N.J.
Osborn, Sam'l (Canada) Limited.
Mussens, Limited
Swedish Steel & Importing Co., Ltd.**Drill Steel Sharpeners:**Canadian Ingersoll-Rand Co., Ltd.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Northern Canada Supply Co.
Sullivan Machinery Co.
Osborn, Sam'l (Canada) Limited.
The Wabi Iron Works**Drills—Electric:**Canadian Fairbanks-Morse Co., Ltd.
Sullivan Machinery Co.
Northern Electric Co., Ltd.**Drills—High Speed and Carbon:**Canadian Fairbanks-Morse Co., Ltd.
Osborn, Sam'l (Canada) Limited.
H. A. Drury Co., Ltd.
Hadfields, Limited**Dynamite:**Canadian Explosives
Northern Canada Supply Co.**Dynamos:**Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Company**Ejectors:**Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.**Elevators:**Canadian Mead-Morrison Co., Limited.
Sullivan Machinery Co.
Northern Canada Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
The Wabi Iron Works**Engineering Instruments:**

C. L. Berger & Sons

Engines—Automatic:Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Fraser & Chalmers of Canada, Ltd.**Engines—Gas and Gasoline:**Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Alex. Fleck
Fraser & Chalmers of Canada, Ltd.
Osborn, Sam'l (Canada) Limited.
Sullivan Machinery Co.
Gould, Shapley & Muir Co., Ltd.
MacGovern & Co., Inc.
The Mine & Smelter Supply Co.**Engines—Haulage:**Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.**Engines—Marine:**Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
MacGovern & Co., Inc.
Swedish Steel & Importing Co., Ltd.**Engines—Steam:**Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
R. T. Gilman & Co.
MacGovern & Co., Inc.
Fraser & Chalmers of Canada, Ltd.**Engines—Stationary:**

Swedish Steel & Importing Co., Ltd.

Engineers:

The Dorr Co.

Ferro-Alloys (all Classes):

Everitt & Co.

Feed Water Heaters:

MacGovern & Co.

Flashlights—Electric:

Spielman Agencies, Regd.

Flood Lamps:

Northern Electric Co., Ltd.

Flourspar:The Consolidated Mining & Smelting Co.
Everitt & Co.**Forges:**Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.**Forging:**Canadian Mead-Morrison Co., Limited.
Canadian Foundries and Forgings, Ltd.
Hull Iron & Steel Foundries, Ltd.
Smart-Turner Machine Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.**Frogs:**Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
John J. Gartshore**Frequency Changers:**

MacGovern & Co., Inc.

Furnaces—Assay:Canadian Fairbanks-Morse Co., Ltd.
Lymans, Limited
Mine & Smelter Supply Co.**Fuse:**Canadian Explosives
Northern Canada Supply Co.**Gears (Cast):**Hull Iron & Steel Foundries, Ltd.
The Link-Belt Co.**Gears, Machine Cut:**Canadian Fairbanks-Morse Co., Ltd.
Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
The Hamilton Gear & Machine Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works**Granulators:**

Hardinge Conical Mill Co.

Grinding Wheels:

Canadian Fairbanks-Morse Co., Ltd.

Gold Refiners

Goldsmith Bros.

Canadian Miners' Buying Directory.—(Continued)

- Gold Trays:**
Canada Chicago Bridge & Iron Works
- Hose (Air Drill):**
Goodyear Tire & Rubber Co.
- Hose (Fire):**
Goodyear Tire & Rubber Co.
- Hose (Packings)**
Goodyear Tire & Rubber Co.
- Hose (Suction):**
Goodyear Tire & Rubber Co.
- Hose (Steam):**
Goodyear Tire & Rubber Co.
- Hose (Water):**
Goodyear Tire & Rubber Co.
- Hammer Rock Drills:**
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Osborn, Sam'l (Canada) Limited.
Mussens, Limited
The Mine & Smelter Supply Co.
- Hangers and Cable:**
Standard Underground Cable Co. of Canada, Ltd.
- High Speed Steel:**
Canadian Fairbanks-Morse Co. Ltd.
H. A. Drury Co., Ltd.
Osborn, Sam'l (Canada) Limited.
Hadfields, Limited
International High Speed Steel Co., Rockaway, N.J.
- High Speed Steel Twist Drills:**
Canadian Fairbanks-Morse Co., Ltd.
H. A. Drury Co., Ltd.
Northern Canada Supply Co.
Osborn, Sam'l (Canada) Limited.
- Hoists—Air, Electric and Steam:**
Canadian Ingersoll-Rand Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Jones & Glassco
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
Northern Canada Supply Co.
Mine & Smelter Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works
R. T. Gilman & Co.
Mussens, Limited
Link-Belt Co.
- Hoisting Engines:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
The Electric Steel & Metals Co.
Mussens, Limited
Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.
The Mine & Smelter Supply Co.
- Hoisting Towers:**
Canadian Mead-Morrison Co., Limited.
- Hose:**
Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.
- Hydraulic Machinery:**
Canadian Fairbanks-Morse Co., Ltd.
Hadfields, Limited
MacGovern & Co., Inc.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Industrial Chemists:**
Hersey, M. & Co., Ltd.
- Ingot Copper:**
Canada Metal Co., Ltd.
Hoyt Metal Co.
- Insulating Compounds:**
Standard Underground Cable Co. of Canada, Ltd.
- Inspection and Testing:**
Dominion Engineering & Inspection Co.
- Inspectors:**
Hersey, M. & Co., Ltd.
- Jacks:**
Canadian Fairbanks-Morse Co., Ltd.
Can. Brakeshoe Co., Ltd.
Northern Canada Supply Co.
R. T. Gilman & Co.
Mussens, Limited
- Jack Screws:**
Canadian Foundries and Forgings, Ltd.
- Laboratory Machinery:**
Mine & Smelter Supply Co.
- Lamps—Acetylene:**
Dewar Manufacturing Co., Inc.
- Lamps—Carbide:**
Dewar Manufacturing Co., Inc.
- Lamps—Miners:**
Canada Carbide Company, Limited
Canadian Fairbanks-Morse Co., Ltd.
Dewar Manufacturing Co., Inc.
Northern Electric Co., Ltd.
Mussens, Limited
- Lamps:**
Dewar Manufacturing Co., Inc.
- Lanterns—Electric:**
Spielman Agencies, Regd.
- Lead (Pig):**
The Canada Metal Co., Ltd.
Consolidated Mining & Smelting Co.
- Levels:**
C. L. Berger & Sons
- Locomotives (Steam, Compressed Air and Storage Steam):**
Canadian Fairbanks-Morse Co., Ltd.
H. K. Porter Company
R. T. Gilman & Co.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
- Link Belt**
Canadian Fairbanks-Morse Co. Ltd.
Northern Canada Supply Co.
Jones & Glassco
- Machinists:**
Burnett & Crampton
- Machinery—Repair Shop:**
Canadian Fairbanks-Morse Co., Ltd.
- Machine Shop Supplies:**
Canadian Fairbanks-Morse Co., Ltd.
- Magnesium Metal:**
Everitt & Co.
Hull Iron & Steel Foundries, Ltd.
- Manganese Steel:**
Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
Hadfields, Limited
Osborn, Sam'l (Canada) Limited.
Hull Iron & Steel Foundries, Ltd.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Metal Marking Machinery:**
Canadian Fairbanks-Morse Co., Ltd.
- Metal Merchants:**
Henry Bath & Son
Geo. G. Blackwell, Sons & Co.
Coniagas Reduction Co.
Consolidated Mining & Smelting Co. of Canada
Canada Metal Co.
C. L. Constant Co.
Everitt & Co.
- Metallurgical Engineers:**
The Dorr Co.
- Metallurgical Machinery:**
The Dorr Co.
The Mine & Smelter Supply Co.
- Metal Work, Heavy Plates:**
Canada Chicago Bridge & Iron Works
- Mica:**
Everitt & Co.
Diamond Drill Carbon Co.
- Mining Engineers:**
Hersey, M. Co., Ltd.
- Mining Drill Steel:**
H. A. Drury Co., Ltd.
Osborn, Sam'l (Canada) Limited.
International High Speed Steel Co., Rockaway, N.J.
- Mining Requisites:**
Canadian Steel Foundries, Ltd.
Dominion Wire Rope Co., Ltd.
Hadfields, Limited
Osborn, Sam'l (Canada) Limited.
Hull Iron & Steel Foundries, Ltd.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works
- Mining Ropes:**
Dominion Wire Rope Co., Ltd.
- Mine Surveying Instruments:**
C. L. Berger & Sons
- Molybdenite:**
Everitt & Co.
- Monel Metal (Wire, Rod, Sheet and Foundry Metal):**
International Nickel Co.
- Motors:**
Canadian Fairbanks-Morse Co., Ltd.
R. T. Gilman & Co.
MacGovern & Co.
The Mine & Smelter Supply Co.
The Wabi Iron Works

Canadian Miners' Buying Directory.—(Continued)

Motor Generator Sets—A.C. and D.C.
MacGovern & Co.

Nails:
Canada Metal Co.

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

Nickel Anodes:
The Mond Nickel Co., Ltd.

Nickel Salts:
The Mond Nickel Co., Ltd.

Nickel Sheets:
The International Nickel Co. of Canada
The Mond Nickel Co., Ltd.

Nickel Wire:
The Mond Nickel Co., Ltd.
The International Nickel Co. of Canada

Oil Analysts:
Constant, C. L. Co.

Ore Handling Equipment:
Canadian Mead-Morrison Co., Limited.

Ore Sacks:
Northern Canada Supply Co.

Ore Testing Works:
Ledoux & Co.
Can. Laboratories
Milton Hersey Co.
Campbell & Deyell
Hoyt Metal Co.

Ores and Metals—Buyers and Sellers of:
C. L. Constant Co.
Geo. G. Blackwell
Consolidated Mining and Smelting Co. of Canada
Oxford Copper Co.
Canada Metal Co.
Hoyt Metal Co.
Everitt & Co.
Pennsylvania Smelting Co.

Packing:
Canadian Fairbanks-Morse Co., Ltd.

Paints—Special:
Spielman Agencies, Regd.

Perforated Metals:
Northern Canada Supply Co.
Hendrick Mfg. Co.
Canada Wire and Iron Goods Company.
Greening, B., Wire Co.

Pig Tin:
Canada Metal Co., Ltd.
Hoyt Metal Co.

Pig Lead:
Canada Metal Co., Ltd.
Hoyt Metal Co.
Pennsylvania Manufacturing Co.

Pipes:
Canadian Fairbanks-Morse Co., Ltd.
Canada Metal Co., Ltd.
Consolidated M. & S. Co.
Northern Canada Supply Co.
R. T. Gilman & Co.

Pipe Fittings:
Canadian Fairbanks-Morse Co., Ltd.

Pipe—Wood Stave:
Pacific Coast Pipe Co.
Mine & Smelter Supply Co.

Piston Rock Drills:
Mussens, Limited
Mine & Smelter Supply Co.

Plate Works:
John Inglis Co., Ltd.
Hendrick Mfg. Co.
The Wabi Iron Works
MacKinnon Steel Co., Ltd.

Platinum Refiners:
Goldsmith Bros.

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.
Jones & Glassco
R. T. Gilman & Co.

Prospecting Mills and Machinery:
The Electric Steel & Metals Co.
E. J. Longyear Company
Standard Diamond Drill Co.
Mine & Smelter Supply Co.
Fraser & Chalmers of Canada, L.
The Wabi Iron Works

Pumps—Pneumatic:
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
Sullivan Machinery Co.

Pumps—Steam:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
The Electric Steel & Metals Co.
The Mine & Smelter Supply Co.
Mussens, Limited
Northern Canada Supply Co.
Smart-Turner Machine Co.
R. T. Gilman & Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works

Pumps—Turbine:
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
Canadian Ingersoll-Rand Co., Ltd.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works

Pumps—Vacuum:
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
The Wabi Iron Works

Pumps—Valves:
Canadian Fairbanks-Morse Co., Ltd.

Pulleys, Shaftings and Hangings:
Northern Canada Supply Co.
Canadian Fairbanks-Morse Co., Ltd.
The Wabi Iron Works

Pulverizers—Laboratory:
Mine & Smelter Supply Co.
The Wabi Iron Works
Hardinge Conical Mill Co.

Pumps—Boiler Feed:
Smart-Turner Machine Co.
Northern Canada Supply Co.
Canadian Fairbanks-Morse Co., Ltd.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
Mine & Smelter Supply Co.

Pumps—Centrifugal:
Canadian Fairbanks-Morse Co., Ltd.
The Electric Steel & Metals Co.
Smart-Turner Machine Co.
Canadian Mead-Morrison Co., Limited.
Canadian Ingersoll-Rand Co., Ltd.
Mine & Smelter Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works

Pumps—Diaphragm
The Dorr Company

Pumps—Electric
Canadian Fairbanks-Morse Co., Ltd.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
Smart-Turner Machine Co.

Pumps—Sand and Slime:
Canadian Fairbanks-Morse Co., Ltd.
Fraser & Chalmers of Canada, Ltd.
Mine & Smelter Supply Co.
The Electric Steel & Metals Co.
The Wabi Iron Works
Smart-Turner Machine Co.

Quarrying Machinery:
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.
Hadfields, Limited
Mussens, Limited
R. T. Gilman Co.

Rails:
Hadfields, Limited
John J. Gartshore
R. T. Gilman & Co.
Mussens, Limited

Railway Supplies:
Canadian Fairbanks-Morse Co., Ltd.

Refiners:
Goldsmith Bros.

Riddles:
Hendrick Mfg. Co.

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

Rope—Manilla:
Osborn, Sam'l (Canada) Limited.
Mussens, Limited

Rope—Manilla and Jute:
Jones & Glassco
Northern Canada Supply Co.
Osborn, Sam'l (Canada) Limited.
Allan, Whyte & Co.

Canadian Miners' Buying Directory.—(Continued)

Rope—Wire:

Allan, Whyte & Co.
 Dominion Wire Rope Co., Ltd.
 Greening, B. Wire Co.
 Northern Canada Supply Co.
 Mussels, Limited

Rolls—Crushing

Canadian Steel Foundries, Ltd.
 Fraser & Chalmers of Canada, Ltd.
 Hull Iron & Steel Foundries, Ltd.
 Osborn, Sam'l (Canada) Limited.
 Hadfields, Limited
 The Electric Steel & Metals Co.
 Mussels, Limited
 The Wabi Iron Works

Samplers:

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

Scales—(all kinds):

Canadian Fairbanks-Morse Co., Ltd.

Screens:

Greening, B. Wire Co.
 Hendrick Mfg. Co.
 Mine & Smelter Supply Co.
 Canada Wire and Iron Goods Company.
 Link-Belt Co.

Screens—Cross Patent Flanged Lip:

Hendrick Mfg. Co.

Screens—Perforated Metal:

Hendrick Mfg. Co.

Screens—Shaking:

Hendrick Mfg. Co.

Screens—Revolving:

Hendrick Mfg. Co.

Scheelite:

Everitt & Co.

Separators:

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

Shaft Contractors:

Hendrick Mfg. Co.

Sheet Metal Work:

Hendrick Mfg. Co.

Sheets—Genuine Manganese Bronze:

Hendrick Mfg. Co.

Shoes and Dies:

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

Shovels—Steam:

Canadian Foundries and Forgings, Ltd.
 Canadian Mead-Morrison Co., Limited.
 Osborn, Sam'l (Canada) Limited.
 R. T. Gilman & Co.

Ship Bunkering Equipment:

Canadian Mead-Morrison Co., Limited.

Siline:

Coniagas Reduction Co.

Saline Refiners:

Goldsmith Bros.

Smelters:

Goldsmith Bros.

Sledges:

Canada Foundries & Forgings, Ltd.

Smoke Stacks:

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

Special Machinery:

John Inglis Co., Ltd.

Spelter:

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

Sprockets:

Link-Belt Co.

Spring Coil and Clips Electric:

Canadian Steel Foundries, Ltd.

Steel Barrels:

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

Stamp Forgings:

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

Steel Castings:

Canadian Brakeshoe Co., Ltd.
 Canadian Steel Foundries, Ltd.
 Fraser & Chalmers of Canada, Ltd.
 Osborn, Sam'l (Canada) Limited.
 Hull Iron & Steel Foundries, Ltd.
 The Electric Steel & Metals Co.
 Hadfields, Limited
 The Wabi Iron Works

Steel Drills:

Canadian Fairbanks-Morse Co., Ltd.
 Canadian Rock Drill Co.
 Denver Rock Drill Mfg. Co., Ltd.
 Sullivan Machinery Co.
 Northern Canada Supply Co.
 The Electric Steel & Metals Co.
 Osborn, Sam'l (Canada) Limited.
 Canadian Ingersoll-Rand Co., Ltd.
 Mussels, Limited
 Swedish Steel & Importing Co., Ltd.

Steel Drums:

Smart-Turner Machine Co.

Steel—Tool:

Canadian Fairbanks-Morse Co., Ltd.
 H. A. Drury Co., Ltd.
 N. S. Steel & Coal Co.
 Osborn, Sam'l (Canada) Limited.
 Hadfields, Limited
 Swedish Steel & Importing Co., Ltd.

Structural Steel Work (Light):

Hendrick Mfg. Co.

Stone Breakers:

Hadfields, Limited
 Fraser & Chalmers of Canada, Ltd.
 The Electric Steel & Metals Co.
 Osborn, Sam'l (Canada) Limited.
 Mussels, Limited
 R. T. Gilman & Co.
 The Wabi Iron Works

Sulphate of Copper:

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

Sulphate of Nickel:

The Mond Nickel Co., Ltd.

Surveying Instruments:

C. L. Berger

Switches and Switch Stand:

Canadian Steel Foundries, Ltd.
 Mussels, Limited.

Switches and Turntables:

John J. Gartshore

Tables—Concentrating:

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

Tanks:

R. T. Gilman & Co.

Tanks—Acid:

Canadian Chicago Bridge & Iron Works
 The Mine & Smelter Supply Co.

Tanks (Wooden):

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

Tanks—Cyanide, Etc.:

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

Tanks—Steel:

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

Tanks—Oil Storage:

Canadian Chicago Bridge & Iron Works
 The Mine & Smelter Supply Co.

Tanks (water) and Steel Towers:

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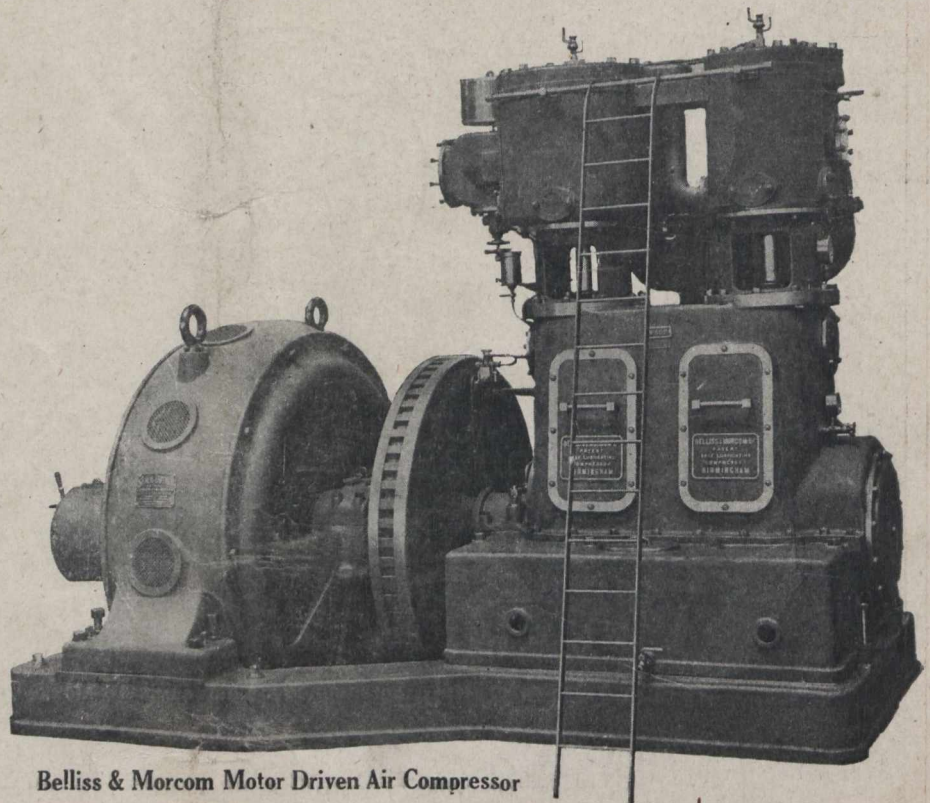
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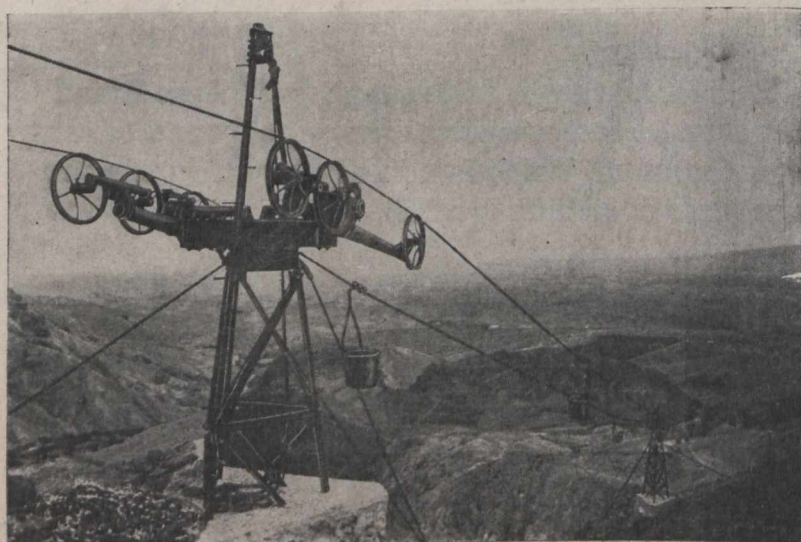


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