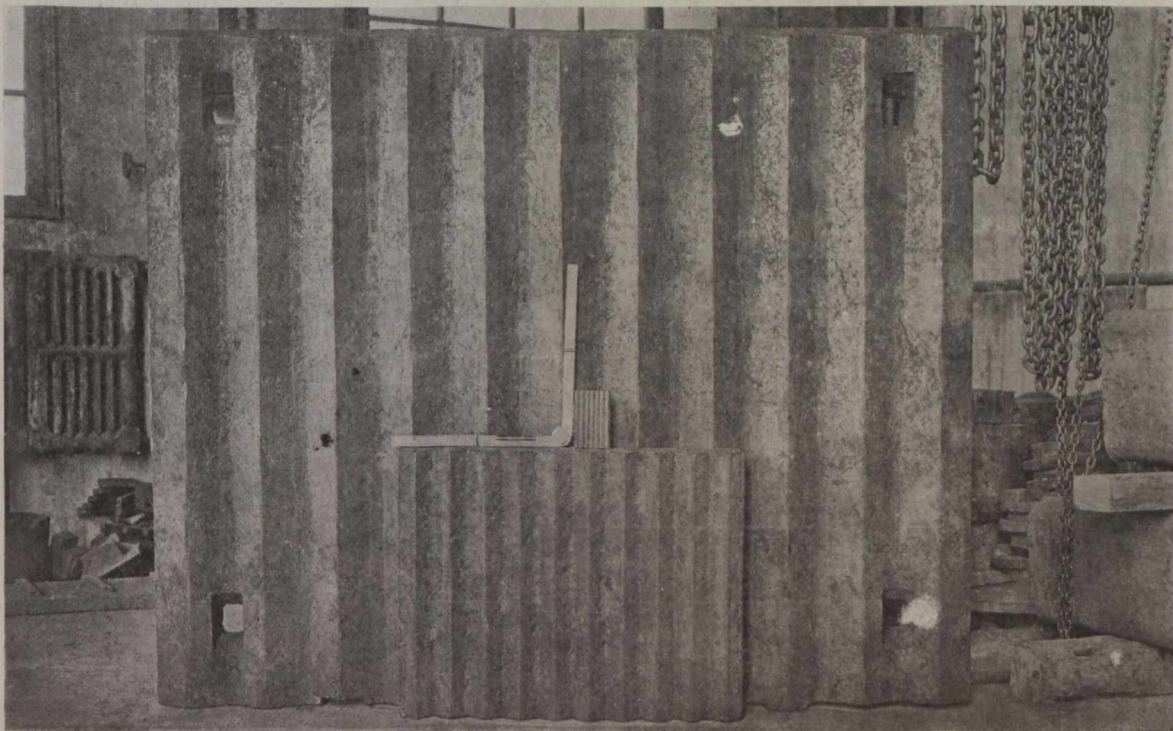


CANADIAN **MINING JOURNAL**

Vol. XLI

Gardenvale, P. Q., October 15, 1920.

No. 41.



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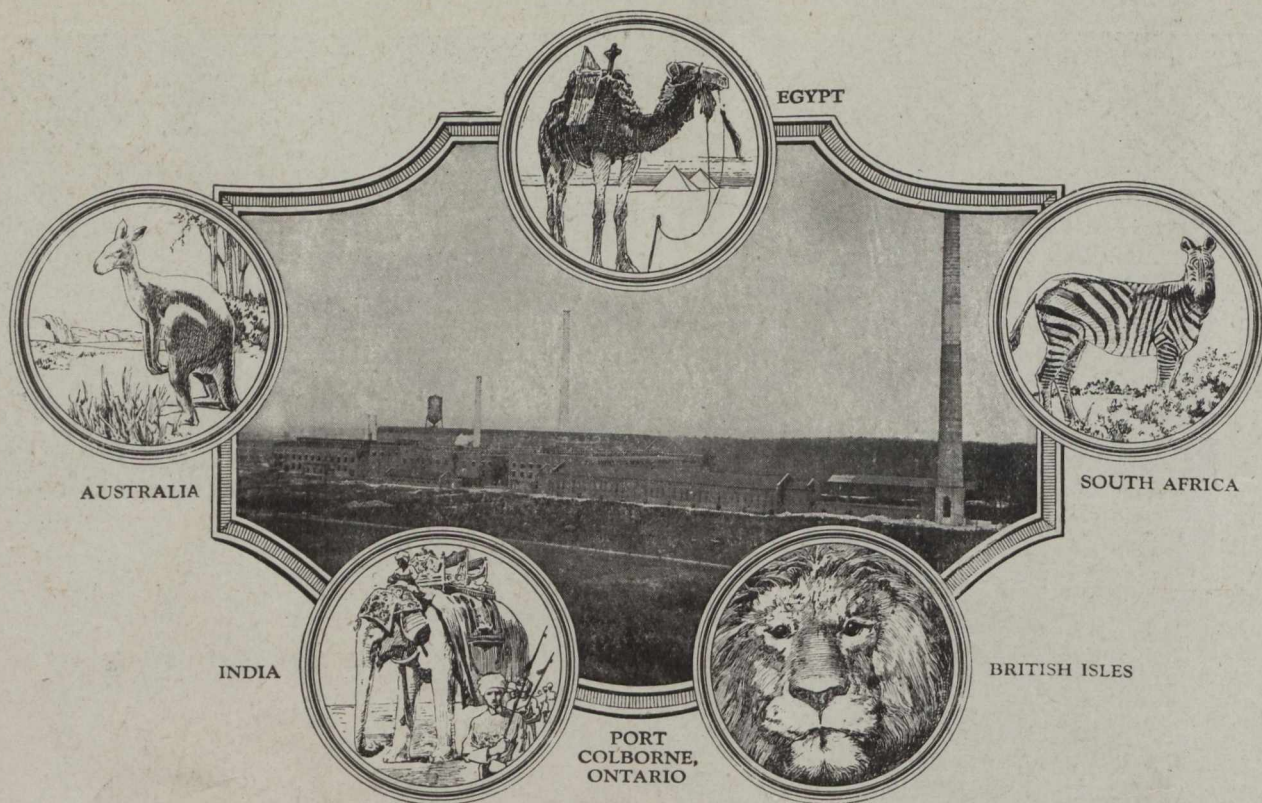
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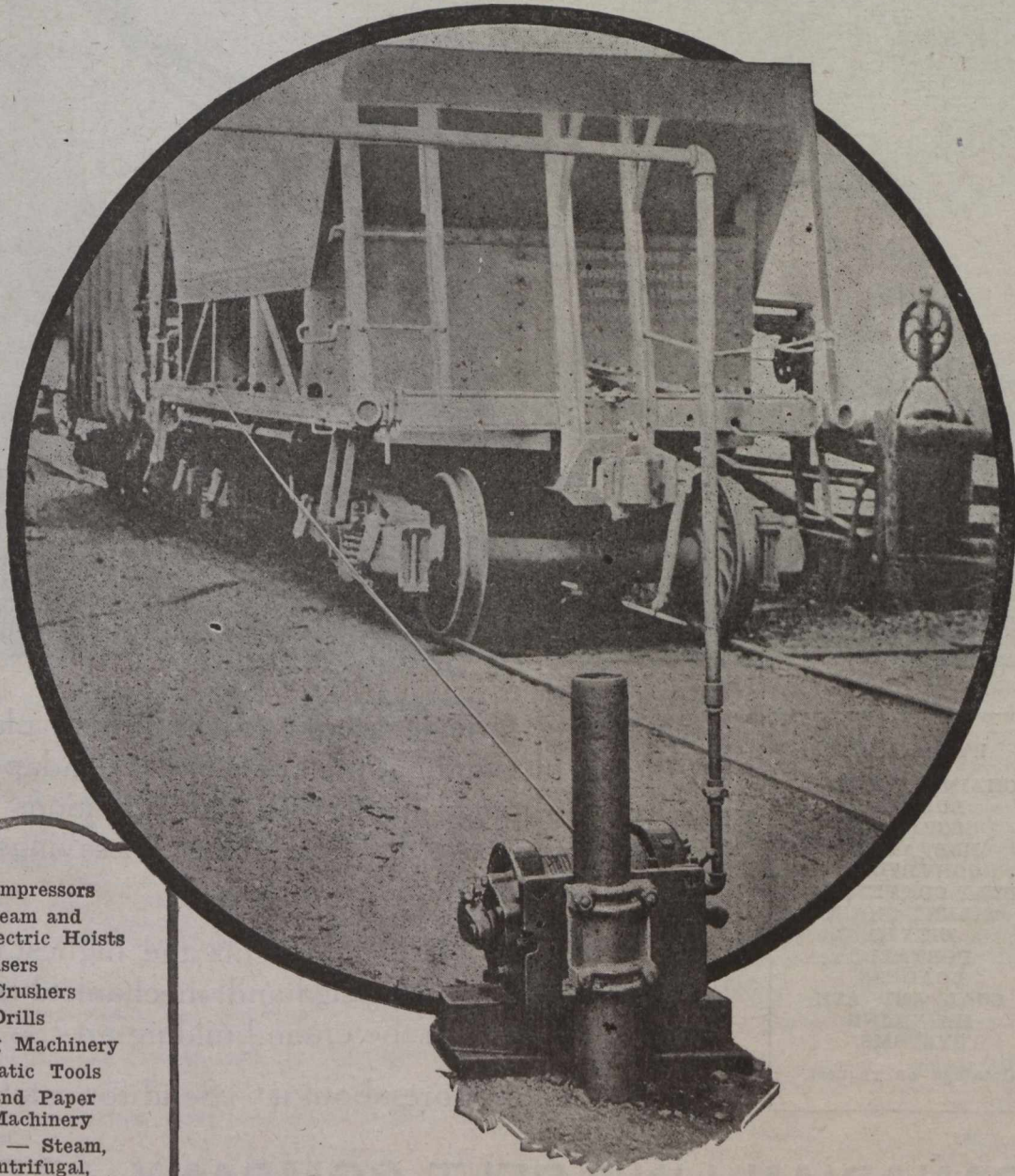
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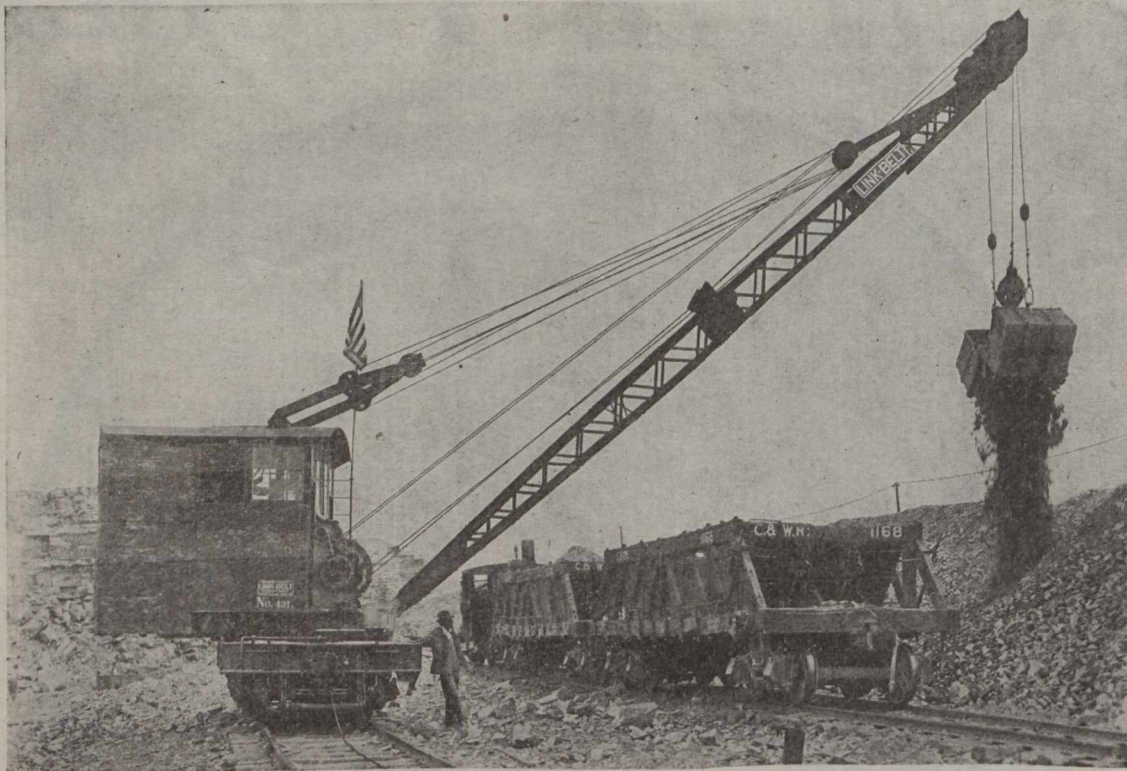
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Recent Publications

Results of forty-one Steaming Tests conducted at the Fuel Testing Station, by John Blizard and E. S. Malloch.

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

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

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

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

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

The Value of Peat Fuel for the Generation of Steam, by J. Blizard, B.Sc.

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

Graphite, by H. S. Spence.

Summary Report of the Mines Branch, 1918.

The Helium Sources of the British Empire, by D. J. McLennan and others.

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

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

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

GEOLOGICAL SURVEY

Recent Publications

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

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

Memoir 108. The Mackenzie River basin, by Charles Camsell and Wyatt Malcolm.

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

Memoir 111. The Silurian geology and faunas of Ontario peninsula and Manitoulin and adjacent islands, by M. Y. Williams.

Memoir 113. Geology and mineral deposits on a part of Amherst township, Quebec, by M. E. Wilson.

Memoir 114. Road material surveys in the city and district of Montreal, Quebec, by Henri Gauthier.

Memoir 115. Geology of Matachewan district, Northern Ontario, by H. C. Cooke.

Memoir 116. Investigations in the gas and oil fields of Alberta, Saskatchewan and Manitoba, by D. B. Dowling, S. E. Slipper and F. H. McLearn.

Memoir 117. Geology and ore deposits of Ainsworth mining camp, British Columbia, by S. J. Schofield.

Museum Bulletin 30. Gabbros of East Sooke and Rocky Point, by H. C. Cooke.

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

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

Map 185A. Sandon (Slocan and Ainsworth Mining Divisions). Topography.

Map 1884. Blairmore, Alberta. Geology.

Map 1691. Buckingham, Hull and Labelle counties, Quebec. Geology.

Map 1705. Thetford-Black Lake area, Quebec. Topography.

Map 1707. New Glasgow, Pictou county, N.S. Topography.

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

Map 1724. Sheep River, Alberta. Geology.

Map 1726. Athapapuskow Lake region. Geology.

Map 1739. Portions of Bristol, Onslow, McNab, Fitzroy and Torbolton townships, Quebec and Ontario. Geology.

Map 1742. Ainsworth, Kootenay district, B.C. Geology.

Map 1793. Matachewan, Timiskaming district, Ontario. Geology.

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

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

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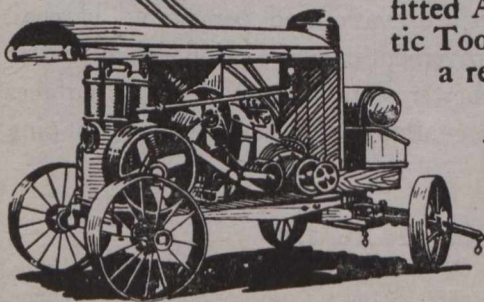
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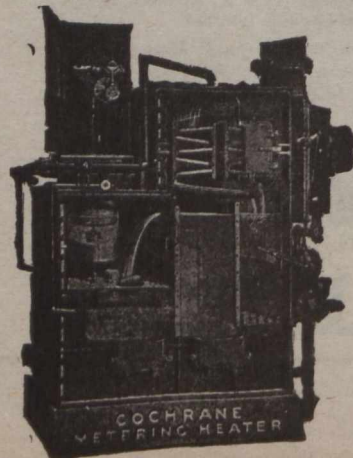
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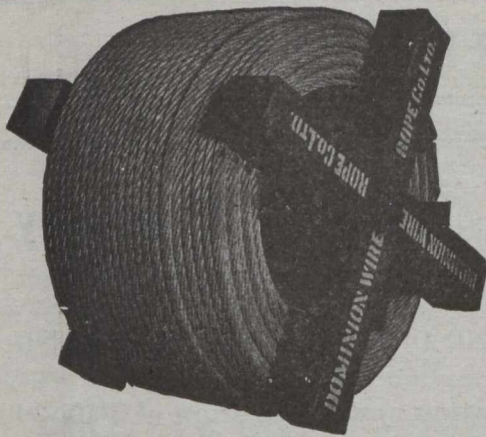
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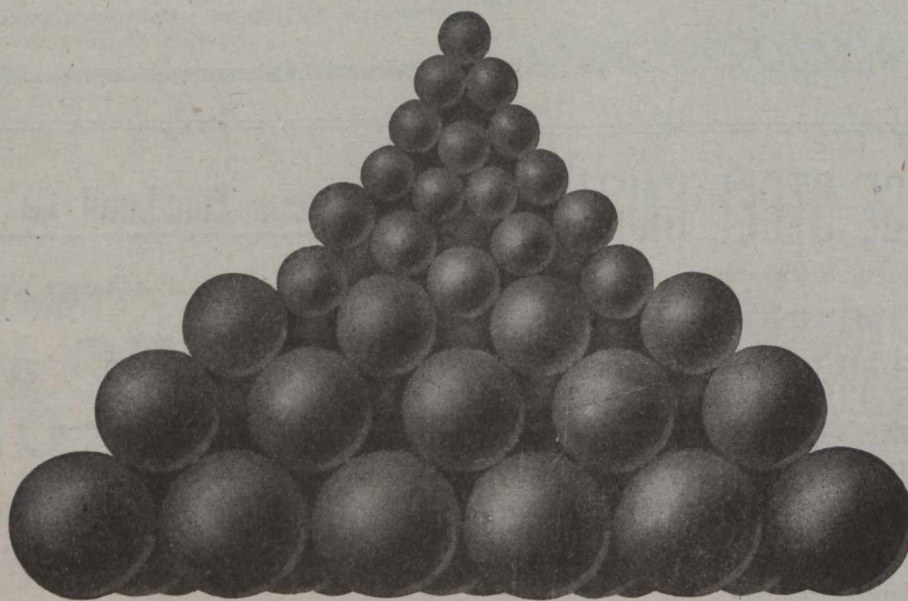
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VOL. XLI.

GARDENVALE, P.Q., October 15, 1920

No. 41

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Published every Friday by The Industrial and Educational Publishing Co., Limited, at the Garden City Press, Gardenvale, Que. 'Phone, Ste. Anne de Bellevue, 165.

J. J. Harpell, Managing Director.

A. S. Christie, Eastern Manager,
Room 205 Drummond Building, Montreal.
'Phone Uptown 7773.

H. W. Thompson, Western Manager,
1402 C.P.R. Building, Toronto.
'Phone Adelaide 3310.

F. E. Payson, Pacific Coast Manager,
528 Winch Building, Vancouver, B.C.
'Phone Sey. 3920.

Changes in advertisements should be in the Publishers' hands ten days before the date of issue.

F. W. GRAY, M. I. Min. E., Editor,
Gardenvale, Quebec.

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1403 C. P. R. Building, Toronto

The editor cordially invites readers to submit articles of practical interest which, on publication will be paid for.

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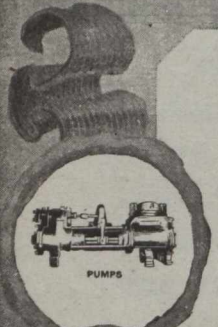
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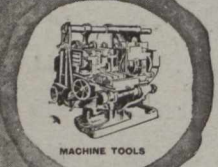
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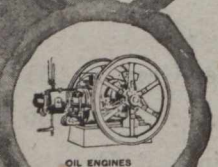
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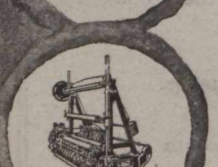
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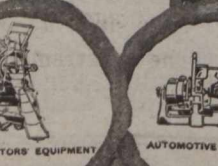
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EDITORIAL

THE NEED FOR MINE LABOR IN CANADA.

A typical utterance about the labor situation in Canada is noted in a financial letter emanating from the United States, which states: "Shortage of labor has been very evident in Canada, and there is unquestioned need for immigration, particularly for the type of settler who will colonize the land and aid in the development of Canada's agricultural possibilities."

The monotonous iteration of the need in Canada for agricultural laborers is irritating to those who know that an equally important requirement of Canada is labor for the mines, particularly as there is good reason to believe that the immigration authorities do not favor the incoming of that class of worker who is adapted to mine employment. As Mr. Balmer Neilly phrased it in his address to the visiting members of British Chambers of Commerce when these gentlemen were, recently entertained at Haileybury, we need immigration from countries "where the people are not socially above handling a pick and shovel".

One of the interesting features ascertainable from a perusal of W. S. Smith's recent "Study in Canadian Immigration" is the very small number of immigrants classed as miners and mine laborers that have entered Canada in recent years. It might be mentioned that the actual number of these men who were permanent recruits to mining work was even smaller than the immigration statistics would indicate, because it is a curious fact, rather incompatible with the complainings of agricultural advocates, that many of these men become farmers. It is a distinguishing characteristic of some of the unlettered European laborers who are not hampered by social aloofness from pick and shovel that they lust after a piece of land of their own, and graduation from the mine to the farm is a not unusual course in their evolution to full Canadian citizenship.

We submit that the mine laborer is as essential to Canada as the domestic servant or the farm laborer, and that his entrance into the country should be favored by the immigration authorities as positively as the other two classes of workers are favored.

At the same time, large scale importation of workers for our mines should involve as great responsibility for their housing and Canadianization as has usually been assumed to rest upon those who have originated large immigration of farm laborers and domestic servants. It is not for the profit of the mine-owners that additional labor is so much required

at our mines, but because the products of the earth are just as essential when developed by mining as when developed by agriculture. There is no real difference between farming and mining, for both are primarily productive and share the distinction of bringing something out of nothing that is usually considered to be the chief glory of agriculture.

The immigration authorities should enlarge their conception of essential industries to include mining, and should view the question of admission of mine labor not only from a critical viewpoint, but from a deliberately helpful viewpoint, as they do the admission of farm hands.

THE "EXTREME AGRICULTURIST". . . .

It is not easy in Canada to get a viewpoint upon the tariff issue that is free from political, economic or sectional bias, and therefore the opinion of a detached observer is of value to clarify the issue now so widely debated in Canada.

The following summary from a United States source is sufficiently detached to be impartial, and is quoted as being so.

"The strength of the opposition to a protective tariff comes from the agricultural party which is probably not sufficiently strong to carry an anti-protection program. One factor, however, which may have more influence than party alignment or other considerations is the present condition of Canadian exchange. The depreciation of the Canadian dollar in New York is felt by all parts of Canada and by all interests. It is a situation which seemingly hurts the pocket of every class of consumer. For this reason, alone, there is a feeling that many voters, whose fundamental belief is for free trade, will support a tariff program until conditions in the country's foreign trade have changed for the better. The probability is in favor of the continuance of a protective tariff with its degree of moderation pending upon the strength of the extreme agricultural group."

This sizes up the battle array succinctly.

The "extreme agricultural group" has stated that every industry that cannot adapt itself to Canadian environment is thereby proved unfit to survive, and to the extent that it is artificially sustained by protective duties it is parasitical.

It is further argued that the primary industry in

Canada is agriculture, that the protective duties have made it secondary, and have put manufacturing into an artificial and therefore essentially false position of priority.

These statements are plausible, and contain, as all plausible statements do, a certain amount of truth.

We would submit that agriculture is only the primary industry in the early stages of human development, and that it saw its completest exposition in the dawn of history. It is also the primary industry in undeveloped and partially civilized countries such as China, Bulgaria and Russia.

There is the special consideration in Canada that our frontiers march for four thousand miles with that country which has shown to the world the greatest combined development of agriculture and industry yet seen on earth.

A policy which would place agriculture in Canada in the preferred and entirely dominant position that the "extreme agriculturist" desires, and would regard all stimulation of manufacturers as an incitement to parasitical growth, would end by making Canada the "farm-laborer," the agricultural helot for the 105 million people to the south, who are perfectly willing to have forced upon them the profitable duty of providing us with boots, clothes, iron and steel, coal, and the vast array of the products of industrial arts for which our friends are so justly famous.

We believe that argument upon the relative status of agriculture and manufacturing industries is as futile as discussion of the relative glory of the sun and the moon, for they are complementary one to the other, and no evidence has been put forward to prove that the increased cost of household and other commodities caused by the tariff (which the agriculturist pays in common with all other citizens) has been greater than the increased purchasing capacity of the industrial community that the tariff has created.

The western farmer asks to be relieved of all tariffs that benefit the industrialist, and suggests that an income tax should be levied to make up for the lost customs revenues; intimating in making this suggestion that the farmer in all probability will be unable to pay income tax by reason of the chronic deficiency of his income. If the industrialist is to be doomed to extinction as a biological offense, because of that inadaptability to environment that forbids survival, it might be asked what will be the source of income taxes? Income tax is only possible where incomes exist.

The agriculturalist of the extreme variety also announces that any industry that cannot survive unaided at this time is in advance of the country's requirements. No industry can survive that does not fill a demand, and Canadian industries cannot be said to causelessly exist. If this is admitted, the debate is merely as to which side of the Canadian

border the industrialist shall reside. The conclusion the "extreme agriculturist" has arrived at then, is that it is immaterial to him which side of the line the goods he consumes are made so long as they are tax free, which, being interpreted, means so long as they are cheap. Unfortunately there is no guarantee of cheapness where there is no competition, and when the role of manufacturer is deliberately relinquished to sources that are outside the country and unamenable to our laws.

Canada has certain definite agricultural limitations that forbid the enthronement of this single industry to the exclusion of all other activities in Canada. It will always be necessary to supplement the production of the soil in vegetable growth, by the products of the mines, and these cannot be developed to perfection—and in many instances cannot be developed at all—without an industrial community, and without the evolution of industries which will manufacture and export articles that are primarily the product of the mine.

The western farmer cultivates a greater acreage of land, of greater virgin productivity than can possibly be allotted to an individual in a later and more developed stage of our national growth. He decreases year by year the fertility of the virgin soil, and thus reaps the benefit of a condition that is bound up with the youthfulness of the Canadian nation. Should he grumble at paying a just portion of the cost of fostering those other parallel activities of a well-rounded body politic that are not less essential to our political survival than agriculture?

REPORTED DISCOVERIES OF COAL IN ONTARIO.

From time to time, reports appear of the discovery of coal in Ontario, and the latest of these relates to a discovery of what is stated to appear to be anthracite near Shelburne, Ontario. A farmer, boring an artesian well, reports that at a depth of 100 feet, the drill encountered a hard black substance, the deposit being 25 feet in thickness. Property values are said to have jumped in the neighborhood, which is on the Owen Sound Branch of the C. P. Railway, northwest of Toronto about sixty miles.

Reference to the geological map shows that Shelburne lies approximately where undisturbed Silurian sediments pass conformably beneath the Devonian sediments that form the triangle of the Sarnia Peninsula. The finding of anthracite in strata of this age would be surprising. Fissile bituminous shales occur in this locality, and the occurrence reported may be of this character. There is no hope, from accepted geological standards, of the discovery of coal in any portion of Ontario, with the exception of the beds of inferior lignite reported by the Geological Survey as existing in inaccessible portions of the James Bay slope.

Recently, the "Journal" was asked to give an opinion on the advisability of boring for coal near King-

ston, Ontario. This last-named locality, like the Sarnia Peninsula, forms part of what the Canadian Geological Survey calls the St. Lawrence Lowlands. Kingston lies somewhat nearer the contact with the crystalline rocks, and is therefore rather more hopeless, from a coal-finding point of view, than Shelburne.

There would be every justification for an increase in property values in the vicinity of an occurrence of coal in Ontario, or Quebec, but the probability of such a discovery—apart from a few localised and valueless carbonized inclusions of vegetable drift—is so small in Ontario and Quebec as to be entirely negligible.

The substance known as anthraxolite has several times given rise to rumors of coal finds in Ontario, and on a number of occasions the Ontario Bureau of Mines has given a full explanation of the futility of looking for coal in Ontario.

ASSOCIATED GOLDFIELDS MINING CO.

Those who are interested in the mining news of Northern Ontario, a category that includes a large proportion of the readers of the "Canadian Mining Journal," cannot have failed to observe the very divergent opinions that prevail as to the merits of the shares of Associated Goldfields Mining Company from a dividend-earning point of view. Our advertising columns, in the issue of April 23rd, contained the report of the annual meeting of the Company, and the statement of the President to the shareholders. Two important statements were made by Mr. G. A. Mac Kay, namely that Dr. H. C. Cooke, late of the Canadian Geological Survey has been appointed as the Company's geological adviser, and that "the discovery and development of gold-bearing bodies has exceeded their (the Directors') most optimistic expectations." The shareholders manifested their confidence in the President and the Board of Directors by unanimously re-electing them to office.

In the meantime nothing of a positive nature has transpired with regard to the estimated gold-content of the area controlled by Associated Goldfields, but several negative factors have remained unrelieved, to wit; the Company discouraged the Ontario Government in undertaking an expert examination of the property as a preliminary to the construction of a railway along the Kirkland Lake-Swastika route, which the Government was urged to undertake; the widely published desire of a group of shareholders for the detailed report of a mining engineer upon the property, accompanied by assay plans, has not been forthcoming, and the definite aspersions which are being cast upon the size and gold-content of the high-grade lenses and the low-grade ore-bodies, referred to in the annual report, have not been refuted.

The conduct of the affairs of the Associated Goldfields is distinctly the business of its shareholders and the only excuse that the "Journal" can give for re-

ferring to this much debated matter is, if the statements in the Company's annual report are correct, it should be a simple and easy matter to demonstrate their accuracy. At the same time, and while admitting that this paper may be accused of poking into private business, there is an aspect of the public welfare that justifies this recapitulation of the facts as they present themselves to a spectator. If the enterprise of Associated Goldfields, one of the largest and most ambitious yet projected in Ontario, should prove disappointing, it will adversely affect the gold-mining industry of Canada at large. As to possible loss or gain to individual shareholders, this is not a matter of public concern, being distinctly and entirely their own business.

THE PROJECTION OF TRADES UNIONISM INTO POLITICS.

Commenting on the threatened coal strike in Britain, and the probability of mutual accommodation of interests, the "Mining Journal" of London says:

"Troublesome as Trades Unions have become, and opposed as their methods are to traditional individual independence which the Englishman loves and values, there can be no doubt that they have gradually contributed largely to establish an industrial conscience in dealing with the livelihood of the working classes. The temptation at present is to project trades unionism into the political sphere, wherein the pursuit of theories emanating from the teaching of Carl Marx—entirely new theories of State organisation and relationships—are being constructed, based not on individualism, but on Communism, and practical men find themselves involved in the many curious contradictions such as those which the Labor Party has exhibited in the last few months, and the end of which is admirably exhibited by the gradual declination of the Central Russian Soviet."

THE GOAD OF NECESSITY.

In the dead forgotten days, when people went to church, it used to be said that it was a good thing for a congregation to be in debt for their edifice or other undertakings, because it gave them an incentive for work, and it is well established that the more fashionable and richer a religious society becomes, so it declines in missionary effort and altruism.

A parallel case in nations is suggested by a despatch from George Renwick describing the "amazing evidence of strength and recuperative power" in the German textile industry. Simultaneous despatches record long hours of work and heavy coal production in the Ruhr district. It may well be that the debt which Germany has incurred may have a similarly

disciplinary and salutary reaction upon this nation to that which stirred the French nation to quick repayment of the Prussian indemnity after 1871. It would of course be arguing against human nature to infer that the martial spirit of the German has suffered a mortal blow, any more than defeat in 1870 quenched the spirit of the French.

In industry it is well known that periods of greatest productivity follow periods of unemployment and what are popularly known as hard times, and conversely it is known that production is small following prolonged periods of effort and much accumulation of monetary savings, or even a temporary condition of comparative wealth among people unaccustomed to this condition.

During the recent war the actual participants in the fighting were, as unfortunately they always are in war, the young and the virile, not only in body, but in spirit, and the best of the race in intellect and all the human virtues. Those who remained behind were necessarily mediocre, from causes natural and physical, and not necessarily reflecting on their virtues as good citizens. Those who have survived the tempest of war bear the marks of its fury, in body and oftentimes in spirit. Those who remained behind have not always welcomed the men who have returned from the valley of the shadow of death, because it has meant a crowding of their temporary freedom, a diminution of their emoluments, and a disturbing sense of their secondary worth in the rough and tumble of life.

Where the fury of war has reduced nations of men to masterless beggars, and has destroyed all the conventions of civilization, leaving nothing but the elemental passions of hunger and the mere desire for survival, the formation of soldiers' and workers' committees has been but an indication of general and abysmal despair, and a seizure of power by those who possessed arms and physical strength. Theirs has been a combination of destruction, and the result has been an earthly hell.

In those countries where, despite the sickening losses of relatives and friends, the effect of war has been to cause a fictitious material prosperity, the result has been a lassitude and a general desire for ease and less exertion, a condition that only financial stringency will remove.

In countries like Germany, where the result of the war has been to destroy foolish visions of material power and archaic conceptions of sovereignty, without crushing the spirit of the people, or inflicting physical destruction upon cities and industrial works, the effect appears likely to be a spur to greater national effort, and, while Germany not unnaturally kicks against the goad, it may well compel her to a greater destiny.

If one truth is more emergent from the war it is

that nations and peoples cannot be suppressed.

It may be that Germany will ultimately benefit from the debt she has incurred. If it should be that she is spurred to greater productivity per head of her population that is the case in Canada, we shall surely be defeated in industry, regardless of our victory in arms.

In such opposition to the babel of Russia as is to be expected from our origins and achievements, the people of Canada may be expected to continue a combination of soldiers and workers, not for destruction, but for construction; but, with the best of intentions, it does not seem likely that we shall achieve the maximum of production in Canada except under the painful and urgent goad of necessity. There are signs that this is a condition not imminent, but approaching.

SOME THINGS THAT MIGHT BE DONE.

R. E. HORE

There has been evident of late an increasing interest in iron ores of Canada and suggestions are made that a policy should be adopted that would result in greater utilization of our iron deposits.

There are many ways of helping the establishment of such an industry. The most obvious way is to grant a bonus on production of iron ore in Canada. There are many, however, who will not be in favor of such action by governments. It would be much better if the industry could be established without such aid.

In a recent number of the "Journal" I have drawn attention to a process for treating Canadian ores that seems to warrant investigation. Would it not seem reasonable to ask the Ontario Government to look into the inventor's claims and determine whether something might be done to utilize the process, which appears to be one of great merit?

Another matter that seems to the writer to warrant investigation is that of the feasibility of utilizing the iron ore of the Belcher Islands. These are administered by the Federal Government and it would appear in the interests of Canada that the Federal Government should endeavor to find out what the possibilities of the Belcher Islands deposits are. The information now available may not be sufficient to convince the people of the country that the Belcher Island ore deposits are of great importance; but there is good reason to believe that they are worthy of investigation. Some reports that have been printed do not give a very favorable impression; but there are unprinted reports that show that important iron deposits have been found on the Islands. It would seem that the Department of the Interior would be well warranted in having investigation made as to the iron ore resources there and possible methods of turning them to account.

It may be argued that these matters can well be left to private interests. There is much in that argument, for there is little doubt that someday private interests will develop all our resources. The point I would bring out here is that if our governments are really desirous of assisting, in the establishment of iron mining industries in this country there are many ways in which they can help to hasten the day when importation of iron ore from the United States will be unnecessary.

Annual Report of the Mines Branch of Alberta, 1919

The Annual Report of the Mines Branch of Alberta, recently to hand, is a well-printed volume, containing very full and detailed statistics of the coal industry. The Report shows evidences of a well-organized system of reports, and much painstaking office work carried out under the direction of Mr. John. T. Stirling, the Inspector of Mines, who, the "Journal" regrets to state, has been compelled, by ill-health, to take leave of absence from his duties. Those who have watched the careful foundation that is being laid for statistical recording of what will some day be Canada's largest mineral industry, will wish Mr. Stirling speedy recuperation.

Items culled from the prefatory remarks of the Inspector that are of interest are as follows:

Miners' lamps in use include 2,424 Wolfe safety lamps, 2,372 portable electric lamps of Edison type, 550 of Wico type and 35 Ceag lamps. The increase in the number of electric lamps is accorded favorable comment by the Inspector.

There are three mine-rescue cars and six mine-rescue stations in the Province under a provincial officer. From March 1st 1919, the administration of all mine-rescue and first-aid work has been under the Workmen's Compensation Board.

The mines of the Province number 276 collieries, one copper-ore mine and two shale mines.

At the close of 1919, there were employed in the mining industry 12,027 persons, being an increase of 1,818 over the number employed in December 1918.

It is noted that, notwithstanding the increased consumption of coal in Western Canada during the last few years, development in the industry has been carried on to such an extent that the amount necessary to supply all requirements is only fifty per cent of the possible production. The increase has been from 346,649 tons in 1901 for the whole of the North-West Territories) to 6,148,620 tons for Alberta alone in 1918.

The Report states that "notwithstanding the large increase that has taken place in the production in Alberta during the past few years, there were approximately 2½ million tons imported from the United States during 1919 into territory which should undoubtedly be supplied entirely with Canadian coal. This would mean, therefore, that the possible market in Canada for coal produced in the Provinces of Alberta and Saskatchewan is from 7,500,000 to 8,000,000 tons per year."

"During the month of December 1919, 780,832 tons were produced in Alberta alone, which means that the mines in operation are capable of producing over nine million tons of coal per year with the present labor, development, equipment and plant. It will, therefore, be seen that we are in a position to produce over four million tons per year more than we apparently can find market for at the present time."

The working forces at the collieries show the following division of labor, namely:—

Surfacemen, including supervision	3,611
Underground labor, including supervision	3,232
Miners and helpers	5,184
	12,027

These figures disclose a healthy balance between non-producers and producers underground, but the surfacemen are extraordinarily numerous.

The consumption of blasting power is heavy, showing a yield of about 4.2 tons per pound of powder used in the domestic and anthracite fields, and 8.7 tons per pound of powder in the bituminous mines. Over 440 tons of powder of various grades was used in blasting coal in 1919. A circumstance worth noting is that in the domestic mines, which show an extremely heavy use of powder, 80 per cent was black powder. In the bituminous mines, only "permitted explosives" are used, and the tons produced per pound of powder show that blasting was not unduly indulged in.

Electricity was used at 42 mines in 1919, and 35 electrically driven coal-cutting machines were in use. No accidents connected with the use of electricity were reported during the year.

Coal-cutting machines using compressed air numbered 200, the tonnage of coal mined by electric and compressed air machines being respectively 526,744 tons and 928,722 tons.

The number of fatal accidents during 1919 was 21, comparing with an annual average of 21 during the four years period 1915 to 1918 inclusive. Three of the fatal accidents occurred above ground and 18 below ground.

The Report of the Superintendent of Mine-Rescue and First-Aid work states that the equipment comprises thirty oxygen breathing-apparatus, 25 of which are of "Proto" type and 5 of the "Gibbs" type. Twelve smoke helmets are also carried by the cars. Training in mine-rescue work has been given to 1,201 men, and 910 men have taken first-aid instruction. No calls were made on any of the cars or stations during the year.

The Report contains a list of coal mines in the Province giving particulars of names of operator, address, location, character of coal, and dates of opening, abandonment or re-opening of mine.

AN EXPRESSION OF SYMPATHY.

The "Journal" desires to express sympathy with the editor and proprietor of the "Maritime Mining Record," the Hon. Robt. Drummond, in the loss of his wife, who died in Scotland while on a visit. In his bereavements under circumstances that have turned a long-anticipated visit into an occasion of sorrow, Mr. Drummond will receive the sympathy of Nova Scotian friends scattered throughout Canada.

Much real Christianity at the present time is very unconventional and not at all inclined to advertise itself. But there must be a fund of lofty idealism and calm heroism among our people; it would be absurd to suppose that our best men were all killed in the war. Eight hundred thousand of them have been killed; but if 'the blood of the martyrs is the seed of the Church,' we may be confident that those who gave their lives for England will not be found to have died in vain.—Dean Inge.

The Lightning River Gold Mines, Ltd.

By J. A. McRAE.

Interest has again been attracted to the Lightning River Gold Area, on account of the decision of the Lightning River Gold Mines Co., Ltd., to resume operations on their property in that field, and the determination of this concern to develop its property in spite of the serious handicap of difficult transportation.

Mr. J. W. Lucy, president of the Company, announces to the "Journal," that arrangements have been completed to carry on operations throughout the coming winter, and toward this end, a force of men will leave Haileybury during the first or second week in October.

twenty-five miles east from the Munro township gold area, and about sixty-five miles due east from the Porcupine field.

A report issued a year or so ago by the Ontario Bureau of Mines, was such as to encourage prospectors and mining men to turn their attention to the Lightning River field, while the results achieved by the Lightning River Gold Mines Co. on their property has since supported the favorable government report.

At the time the first work was being done, supplies were taken in to the new district over a road some 30 miles long, from Matheson, on the main line of the T. & N. O. Ry. The excessive cost of transporting



The original discoverers in the Lightning Gold Area. From left to right: L. B. Hovey, G. E. Martin, R. Howey W. Cochenour.



Special car party of Shareholders visiting the property, in July.



Dr. Lucy, standing on the vein system, 220 ft. wide, 3/8ths. mile long, in Egan Township.



Site where Shaft now being Sunk on Sesekina property. Vein 5 ft. wide

The Lightning River Gold Area is situated in the township of Holloway, in Ontario, at a point about twelve miles south of Upper Lake Abitibi and less than ten miles from the inter-provincial boundary of Ontario and Quebec. The district is reached by boat route from LaReine, on the National Transcontinental Railway, as well as over a six mile trail, the entire trip entailing about eight hours travel under favorable conditions. The district is situated about thirty miles north-east in a straight line from Kirkland Lake,

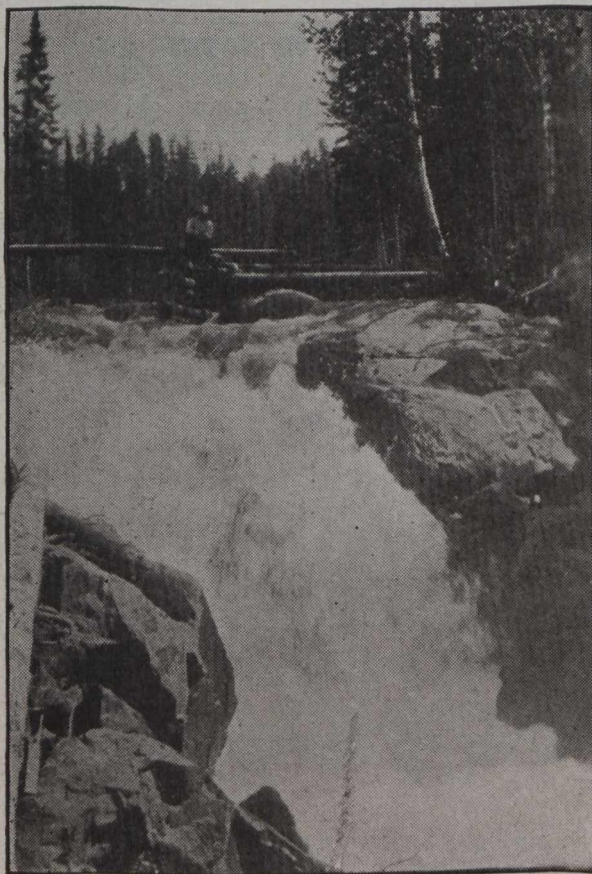
supplies over this route discouraged aggressive work, and in time led to the selection of the present more favorable water route.

The plan now adopted, and which is calculated to reduce the transportation difficulty, is to ship equipment and the entire winter's supply of material by boat over Lake Abitibi and up the Lightning River to a point within six miles of the property. From here, a dog team will be employed to haul the material over

the first snow trail. Ample provision has been made to eliminate the necessity of wasting time during the winter months in transporting equipment over the long route by sleighs.

As regards the physical condition of the Lightning River property, this paragraph from the latest report of J. W. Morrison, consulting engineer for the company, and under date of Aug. 4th may be presented:

"A general examination of the interesting geological features of the property was made, and many pannings taken from different sections along the old discovery vein resulted in good tails of gold. Free gold was found in samples from the dump, and pannings taken from the rhyolite body, south of the vein, panned gold. In fact, any oxidized or altered section along this rhyolite body carries gold in good quantities. Additional float has been found to the eastward, confirming my opinion that a series of trenches should be cut in this locality, and an effort made to



Egan High Falls on the Watabeg River.

locate the vein. This should precede diamond drilling, and would probably give us information that would assist us in placing our holes."

Attention is directed toward the work and the property of the Lightning River Gold Mines Co., not for the reason of the extent of its operations, but due to the confidence shown and the determination to overcome the obstacles met with. It is to such effort on the part of pioneers that this great new land of Northern Ontario has to rely for speedy development, and which enterprise is deserving of a full measure of encouragement.

Not only has this company acquired the discovery group of claims in the Lightning River Gold Area, namely: the Howie-Willan-Couchenor group, but has also taken over a promising group of claims in the township of Egan as well as a group in the township of Maisonville in the Sesekinika Lake area. About this latter property, the Company consulting engineer says.

"The formation is to a large extent greenstone, with some sedimentary rocks, probably of the Cobalt series, and later intrusions of diabase and lamprophyre. The geology is rather complicated and needs careful study.

"The most important vein is in the greenstone near a dike of diabase. It is a highly shattered zone from two to six feet in width with a filling of quartz. The altered vein rock as well as the quartz, carry liberal quantities of mineral, such as pyrite, galena, sphalerite, stibnite and small quantities of another mineral which may or may not be telluride of gold. It, however, seems to be associated with gold, as all sample containing it give high gold values. Free gold is also in evidence, and hand samples taken from the vein gave very high results.

"The development so far has been confined to shooting along the top of the vein over a distance of 50 to 60 feet. Some good samples have evidently been taken from this section of ground, and the showings warrant sinking, which, I understand, had already begun. On its westerly strike, the vein enters a diabase dike, and I feel there is a possibility of finding good ore about the contact. In fact, these conditions are somewhat similar to the famous Croesus Mine in Munro township.

"As a prospect the property looks very promising, and other properties near by, which are working on a small scale, give evidence of having merit. During the past few years, gold has been found at many points in that district, and there is evidently an enrichment at some point which is awaiting development. I like the appearance of the property as a whole, and its location in respect to transportation is most favorable."

At the time of writing, a report is not available on the Company's Egan township property. However, a view of a waterfall on the Watabeg river is shown in connection with this summary, which is located about three miles from the Company's Egan property. This power has been secured by the Lightning River Gold Mines Co., and is estimated as capable of generating from 450 to 500 h.p. when harnessed.

COAL PRICES.

Toronto, Oct. 15.—The price range of hard coal is \$5. to \$9.50, American funds, depending on the quality or from \$12.00 to \$14.00 Toronto, Canadian funds. Conditions have somewhat changed. A month ago anything could be sold at the market prices but today the buyers are discriminating.

The car supply during the past week has been fairly good and transportation seems to be improving. Although a lot of coal has been offered, the erroneous impression seems to be abroad that all the problems connected with the coal supply have been solved, with the result that wholesalers has curtailed their shipments into Toronto. The effects of this will be felt later on. Smokeless coal is selling at from \$13.50 to \$14.50.

HOLLINGER INTERIM REPORT ANALYZED. ALEXANDER GRAY

The Hollinger Gold Mines Report for the January 1, September 8 period shows a daily average for the 252 days, of 1838 tons milled, or 463,176 tons in all. If that average is maintained until the end of the year then the Company will have milled 672,708 tons in 1920, a decrease of 39,174 tons when compared with 1919. This is accounted for largely by the fact that the average number of men employed this year was 1070, whereas the 1919 average was 1263. In view of this, the aggregate results contain a tribute to the administration and management. They are summarized as follows:

	1920.	1919.
Total income	\$4,866,597	\$4,839,845
Expenditure	2,285,223	2,431,636
Net profit	2,581,373	2,408,209
Exp. for plants	116,346	242,149
Divs. paid	1,476,000	1,230,000
Average No. of men employed:		
Mine	666	832
Mill	138	145
General	266	286
<hr/>		
Total	1,070	1,263
Ave. tons per day broken..	2,037	2,159
Milled	1,838	1,902

Close analysis of these items is made somewhat difficult in the absence of the actual tonnage treated, and the dissociation of total revenue from strictly mining and milling operations. If as it is claimed, the premium on gold which is disposed of to Ottawa on the basis of New York Funds, yielded about \$600,000 taking the daily milling average at 1838 tons, as stated, this premium amounted to about \$1.29 per ton. That being so, this extraordinary source of revenue neutralized the added cost of labor and assisted toward the payment of surtaxes. It is the first absolute evidence that gold mining has derived compensating benefit from exchange for adverse operating conditions. Including this premium and assuming that 463,176 tons were milled to September 8th, the average total profit per ton was \$5.573. With the total expenditure of \$2,285,223, applying that upon 463,176 tons, it would appear that the total of the average cost per ton milled, was \$4.93. Combining this cost and profit, as estimated, the grade of ore milled would figure out as \$10.50. If the premium on gold, however, enters into the totals as given—and they do no doubt—then the grade of ore milled was about \$9.21—which was \$0.52 less than the average for the whole of 1919.

While for the purposes of an interim report it is usually not considered necessary to detail the extraneous sources of contributory income, such as interest on bank balances and other liquid assets, these are in the case of Hollinger quite considerable, and will without doubt add to the satisfactory revenue showing for the entire year, when this is completed.

Approximate as these figures necessarily are, they serve to illustrate Hollinger doings. In 69 per cent. of the operating year, therefore, the net profit was 10.49 per cent, on issued capital, while the grade of ore was lower than was reported for all of 1919. Obviously labor conditions were the sole deterrents. The management acquitted itself in a manner that is most favorably impressive in the circumstances. How grievous are the handicaps is apparent, and it also is

understood that the sinking of the large Central Shaft was retarded by the inability or indisposition of three contractors to make adequate footage. Should the rate of total income as recorded be maintained until the end of the year, the grand total will be about \$6,375,000, compared with 7,063,099 in 1919. Without the premium on the gold, the contrast would be more disappointing. It would be apt to be downright discouraging, were it not for the positive knowledge that the Hollinger Mines are standing up to every test. Recent exploratory drilling—at a slight angle of dip—not vertically, was reassuring. The object was to feel out the southwestern extension of the main Hollinger series of veins. The drill intersected what looks like the extension of the exceptional No. 1 Vein, at a lateral distance of several hundred feet from the present working face. Naturally those most concerned are chary about committing themselves upon one intersection. The width of at least one ore body is understood to have been 11 feet, and the values noted better than an ounce.

TORONTO NOTES

An interesting visitor to Toronto this week was Col. Donald McGregor, the "grand old man" of the Yukon. Col. McGregor, who has not been in Toronto for thirty years, is on his way to his native county Glengarry, to see his aged sister and to superintend the erection of a memorial tablet at the village of St. Andrews, six miles north of Cornwall, to Simon Fraser, the discoverer of the great salmon river in British Columbia bearing his name. He is the only man living who saw the discoverer, and although ripe in years, is active and enjoys travel. He carries a cane presented to him by Mayor Gale, of Vancouver, for his services in president over the Children's Day exercises on the occasion of Greater Vancouver's peace day celebration on August 4th, of last year.

A well-know Northern Ontario mining man passed away at his home in Toronto this week in the person of Michael Lewis Foley, one of the promoters of the Foley-O'Brien Mine. Although ailing for nine months, Mr. Foley was not confined to his bed until the last ten days. He was born at Durham 51 years ago and went into Northern Ontario about 1905, during the construction of the Temiskaming and Northern Ontario Railway. He is survived by his wife and four daughters.

The purchase of the Blue Diamond Coal Mines, comprising 3,400 acres near Brule, Alberta, for \$450,000, and the Canadian Coalfields, Limited, owning 8,320 acres, for \$1,500,000, was ratified at the annual meeting of the McIntyre-Porcupine Mine and at the special general meeting of the Temiskaming Mining Company. Of the total purchase price \$600,000 has already been paid and the remaining \$1,000,000 is payable in 15 years from the earnings of the Canadian Coalfields Limited. The Blue Diamond mines are now producing at a profit, over 400 tons daily and by August 1921, it is expected, with the new machinery already ordered, the daily output will be 2,000 tons for which there is a ready market. The ratification means that McIntyre and Temiskaming each hold a half interest in both coal companies. The old board of directors on McIntyre was re-elected, with the exception of Sir Henry M. Pellat, who was replaced by Mr. Joseph Errington.

Coal Production in Britain

A Typical Instance. Production decreased thirty per cent. Workers increased seven per cent. Wages doubled and per ton cost of coal trebled.

BY THE EDITOR

Bolckow Vaughan's annual meeting elicited some figures regarding this company's Durham coal mines which go far to explain the stand pat of attitude of the British Government in the coal mines question.

Comparing 1914 with 1920, it will be seen that there is an increase in the number of men employed, a decrease in the tonnage of coal produced, a doubling of wages paid, a trebling of the ton cost of coal and no reduction in the quantity of coal consumed for colliery and domestic purposes. The figures, condensed and re-arranged from the remarks of the Chairman, are as follows:

	1914	1920
Number of workmen	8,844	9,487
Annual wages	£735,236	£1,589,036
Average annual wage	£83. 2s. 8d.	£167. 10s. 6d.
Tons raised	2,320,410	1,616,233
Tons saleable	2,137,832	1,426,135
Boiler and domestic coal	182,578	190,098
Percent of output consumed	7.9%	12%
Tons raised per man	262	170
Wages cost per ton raised	6s. 4.04d.	19s. 8d.

It would be interesting to know the number of men employed in actually mining coal in 1920 as compared with those so employed in 1914. The presumption is that it is this class of workers must have been decreased, otherwise the great falling off in output is not explainable. Neither is it easy to conceive of a balancing of the working forces that would permit of a drop in production of 30 percent with the workers increased by 7¼ percent.

The steadily mounting cost of overhead expense is illustrated by the item of boiler and domestic coal, which is not decreased by reason of the decreased output, and naturally has its percentage to the total production much increased. A slightly less than eight percent consumption of the coal produced for power raising and workmen's coal indicates a fair amount of economy in this inescapable item of colliery cost, but twelve per cent is a deplorably large proportion of the coal produced to be allotted to "company's consumption".

The tons raised per man, allowing only five working days weekly, only works out to 0.65 tons per man per day, which by comparison with transatlantic standards is a shockingly low rate of production.

The increase in cost per ton, and the increase in the rate of wages, while sufficiently serious, is merely incidental and secondary to the decreased output of coal.

No stronger arguments than the foregoing figures are needed to support the contention of the British Government that any future increases in wages must be contingent on an increased production of coal, which is what the "datum line" proposal really boils down to.

To illustrate the handicap under which the British coal operator now labors, as compared with the United States producer of coal, the following comparison is submitted as being approximately typical of the relative difference.

	Bulekow Vaughan's 1920 figures.	Typical United States bituminous colliery.
Coal production . . . tons	1,600,000	1,600,000
Company's consumption	190,000	144,000
Saleable coal	1,410,000	1,456,000
Tons raised per man	170*	650*
Workmen required	9,500	2,500
Wages cost per ton	\$5.00	\$2.00

* On basis of 260 working days a year.

This comparison, which is only given as a rough approximation, indicates that the United States producer can obtain the same tonnage of coal with less than one-third the number of workers required at a British colliery; that a lower percentage of the total production is required in the United States for boiler and domestic uses, which gives a correspondingly higher tonnage for profitable sale; and that the total cost of coal production per ton is probably in the United States less than one-third of what it is in Britain.

Add to all these advantages of the United States producer the exchange premium on U. S. funds, the infinitely greater tonnage of coal available in the United States, and its better physical quality, it would seem to be high time that British miners turned their thoughts from irresponsible discussions of the disposal of a hypothetical surplus from the controlled mining of coal in Britain, and from fine-spun theories that have been so fantastically intermingled with the thinking of the leaders of the British miners, to a consideration of the disastrous array of facts that analysis of the foregoing figures will reveal.

The leaders of the British miners have been leading them on a merry dance to commercial ruin, and the disposition of these men to meet the Government on a basis which will take primary cognisance of production, would indicate that some inkling of impending bankruptcy of the coal-mining industry has come home to them. Not inaccurately has Sir Robert Horne stated that the continued combination of increased wages and decreased production can end only in irredeemable ruin.

Whether the leaders who have misled their followers can explain their mistakes to the miners is another question.

METAL QUOTATIONS

Fair prices for Ingot Metals in Montreal, Oct. 13th, 1920. (In less than carload lots).

	Cents per lb.
Copper, electro	22¾
Copper, casting	22¼
Tin	51
Lead	81½
Zinc	91½
Aluminum	35
Antimony	81½

Wage Conditions at the Nova Scotia Collieries

Coal Costs Cause Deferment of Steel Plant Extensions.

The situation with regard to miners' wages at the collieries in Nova Scotia and New Brunswick has arrived at an impasse. The findings of the Royal Commission, which are regarded by those who have carefully counted the cost of putting them into effect, as so favorable to the miners as to be financially impossible of accomplishment by the operators, have been rejected by the vote of the union members in every essential particular except the wage increase of approximately one dollar per day. The operators take the ground that the recommendations of the Royal Commission must be accepted or rejected as a whole, and that if the union cannot accept the Commission's findings, the award of the McKinnon Conciliation Board stands. The Wage Scale Committee of the Union requested the operators to meet them at Truro on the 12th October to discuss a modified acceptance of the recommendations of the Royal Commission, but the larger companies have definitely refused.

The attitude of the operators was not unexpected, and is indeed an unavoidable one. The operators entered into an agreement with the union at the beginning of 1920, after negotiations of the most protracted character, during which every individual wage-rate was taken under review and adjusted to the satisfaction of the representatives of the workmen. The agreement contained a clause which provided for a quarterly revision of wage rates to conform with increases in the cost of living, and this clause was stated by the miners' leaders at the time of signing the agreement to be a most advantageous and satisfactory provision from the standpoint of the workmen. Thus the machinery existed for any adjustment of wages that increases in living costs might indicate as necessary.

When in the early part of 1918, largely at the earnest request of the Minister of Labor, the operators agreed to recognise the jurisdiction of the United Mine Workers in Nova Scotia, it was agreed, both by the Nova Scotia executive and by the Indianapolis officials present at the Montreal conference, that at no time should the rate of wages in the United States, or the incidence of increases given to the miners in the United States be made the basis for similar demands in Nova Scotia. The agreement on this point read as follows:

"After having had the assurance of the Executive of the Amalgamated Mine Workers of Nova Scotia, and the representatives of the Federation of Labor, confirming the statement made in Montreal by Mr. Harlin of the United Mine Workers of America, that the desire of the A. M. W. of Nova Scotia does not arise from any intention to make the wage rates and working conditions of Nova Scotia conform to those obtaining in other districts of the U. M. W. of America, and that local districts will receive complete autonomy, and also that the limitations of Nova Scotia in regard to outside competition in the sale of coal are recognized by the incoming U. M. W. of America, and will always be borne in mind in the future, the operators agree to the extension of the U. M. W. of America into Nova Scotia, if that should be the desire of the majority of the mine workers."

The leaders of the U. M. W. in Nova Scotia, following the demand which the bituminous mine-workers in

the United States made early in 1920 for a 27 per cent increase in wages, announced their intention to follow this lead, and made a similar demand as from the first of May 1920. If this demand was made because of happenings in the United States it was ruled out of court on two points, namely the foregoing clause in the 1918 understanding, and by virtue of the agreement of January 1st 1920.

If the demand were based on increases in the cost of living, then recourse should have been had to the provision incorporated in the January 1920 agreement, which was admitted by the miners' leaders to be all that was required.

Notwithstanding the clear violation of two signed agreements, the operators in Nova Scotia, actuated by a desire to preserve harmonious relations, consented to submit the points at issue to a Royal Commission. At the time the Minister of Labor made it clear that he considered the appointment of such a Commission was unnecessary, and made the acquiescence of the operators a prerequisite to the appointment of a body that was in fact superogatory to the undischarged McKinnon Conciliation Board.

The Royal Commission reported, and, notwithstanding the onerous burden which acceptance of their findings would place on the operators, they signified willingness to accept and carry out the recommendations.

It is, therefore, not over-stating matters to record that the operators have carried their policy of conciliation to great lengths, and have manifested a forbearance of most unusual nature.

Steel Manufacture Prejudiced by Unsettled Conditions at Collieries.

The attitude which the coal companies have now taken, while fully justified by the foregoing history, is, however, a direct result of the readjustment now taking place in commodity prices, and in particular is a result of the trend of the steel market. Mr. Wolvin, the President of the Dominion Steel Corporation, has stated that an increase in the cost of finished steel of four dollars per ton of steel, and this is by no means an over-statement. The cost of coal production is already so high in Nova Scotia as to place the coal mines of the Province at a desperate disadvantage, and the further increase in steel costs which appears eminent would definitely rule out Nova Scotia from markets that are now an important outlet for steel products. It is not too much to state — as has been previously stated by the "Journal" — that the chief pre-occupation of steel manufacturers in Nova Scotia is, and has been for a number of years, their increasing fuel costs. From an operating standpoint, the whole steel industry of Nova Scotia is based on the availability of moderately priced fuel. The closely adjacent occurrence of a large deposit of iron-ore is incidental, for iron-ore is always taken to the coal. The iron-ore of Wabana is a great asset to the companies that own it, but it is no asset to Nova Scotia if coal costs there advance to a prohibitive figure. Wabana ore can be smelted in Britain with equal facility, and it should be remembered that while the greatest stimulus that ever was given to the coal trade of Nova Scotia came from the steel industry, that industry is primarily a by-pro-

duct of the presence of coal. Coal that is not available at a moderate price is, for the purposes of the steel industry, non-existent.

As a direct result of the small production and high cost of coal production in Nova Scotia, and of the uncertainty as to increase of production or reduction of the per-ton cost of coal the Dominion Steel Corporation has announced its intention to defer projected capital extensions at the collieries and steel works.

The situation in Nova Scotia is analogous to that in Britain, and in the case of both countries, the only hope for continuance of wage rates even approximating to those now existing lies in greater per capita production of coal. In both countries the miners have been asked to accept a wage award that would definitely tie up the increased rate of earnings to an increased production of coal. It is of course fairly obvious that the only revenue of a coal mine comes from coal, and that if little coal is produced little revenue will be available to pay wages with, but it is a point that is persistently obscured by irrelevant argument. The miners of Nova Scotia know full well where the trouble lies, and they know also that they themselves are the only persons that can bring about that re-establishment of the balance of the working forces at the collieries that must precede increased coal production and per-ton costs that will permit the coal companies to stay in business. The wage question is secondary to production. More coal means more money for all hands. Less coal means less money for all hands, and no money for some people.

"NEW MONEY" AWAITS MORE LABOR: LESS TAXATION.

ALEXANDER GRAY, Montreal.

"Unless one has unlimited capital — and things are at a standstill here so far as new money is concerned — for the outlook industrially is rotten — there is danger of getting bogged also in Canada in a slough of labor, taxation and transport."

As a reflex of London technical opinion, the foregoing merits reproduction. The writer is eminent in his profession as a mining engineer; he has been to Canada where he passed upon various new propositions in outlying districts, and he is as keen as his kind in quest of opportunities for profitable operations. Probably he overstates the London situation, because the Burma Corporation recently obtained another million sterling; but that enterprise has the backing of the influential Mining Corporation, represented in Canada by Mr. J. B. Tyrrell. He exaggerates difficulties of "transport" — since discoveries provide their own transportation — if they are not behind Beyond. As to the "slough of labor and taxation": that is a double-barreled deterrent — and the sooner the matter is remedied, the sooner will the "outlook" hereabouts be less "rotten." So long as the mines are surtaxed and labor is inadequate, while supplies are mostly, constructive capital will decline to be "bogged" — and "things" mining will remain at a "standstill," notwithstanding the clamor for more of the precious and special metals. Double and treble taxation, as at present, plus manifold operating handicaps, veto initiative. What adversely affects gold mining the world over, is accentuated in Canada, where there is no "cheap" labor and official solicitude is scantily bestowed. Even where "native" labor is available, as in South Africa and Mexico, the supply

is unsatisfactory, hence the urgency of the petitions for increased gold production.

Were it not for the premium upon gold, owing to existing disparities in international exchange, half of the gold mines would shut down, or their operations would be sacrificial. Politicians contend that the premium upon gold neutralizes the abnormal taxation and costs. That is only a half truth — and the argument is reversed by cost sheets and curtailed outputs. Insufficiently and inefficiently manned, mulet-ed for materials, factors of economy have to be ignored or flouted. Nor are the gold mines deriving as much from the premium upon their gold as are their contemporaries elsewhere. Take the New Modderfontein, at the Witwatersrand, for example. It is the second largest gold mine in the world. In the year ended June 30, it earned a net profit of £1,518,187 and paid dividends of 82½ per cent. Of that profit, £464,657 came from the premium upon gold. The proportion of unearned profit, as it were, was 31.11 per cent. Of the total revenue of £2,555,466, the receipts from the premium represented 18.18 per cent. of the gross. This percentage is a third or so more than any of the Ontario gold mines realized on account of the premium. Of course ten or twelve per cent added to the value of the total of the bullion when refined, is a very welcome solace; yet it is impermanent, and operating companies would rather have normal conditions and ample labor. Were the companies enabled to import labor — mostly unskilled — the greater tonnage milled automatically would effect economies in costs. Then the modification of surtaxes would be incentive for speeding up production. Until practical remedies are forthcoming Canada cannot set the pace in increased outputting of the yellow metal. Lower-grade mines find it impossible to prosecute development and work for the Government, machine men and "muckers."

In the language of the lawgivers: "An Emergency Exists." No "new money" is being risked in an economic muskeg.

CANTEENS AND SCIENTIFIC FEEDING FOR MINERS.

A paper on this subject was read by Mr. Wm. Maurice, of Sheffield, at a meeting at the University College, Nottingham, of the Midland Counties Institution of Engineers. There could be no doubt as to the importance of scientific feeding, observed Mr. Maurice. It seemed to be a self-evident proposition that the provision of suitable food would have a readily recognisable effect upon the day's output. Such provision should include the supply of energy for the whole shift, say two meals, otherwise the treatment was only going half-way and would produce less than half its possible advantage. The first meal would be taken at the canteen before starting work. The second should be taken at the proper physiological time, but the workman would take it with him on leaving the canteen. Both should be hot meals, and the underground meal should therefore be contained in food-carriers of the thermos-flask type. The meals should be charged for at cost, to preserve the respect of the workers, and to remove any suspicion of charity or personal interest. No great capital outlay was necessarily involved in the scheme, and the cost per meal to the workers, even today, need not exceed a few pence. He considered the subject was worthy of careful consideration and experimental test.

British Columbia Letter

THE METAL MINES.

Atlin, B.C.

The question of ownership to the Engineer Group of Mineral Claims, Atlin District, will be brought before the Courts for decision. Because the property is valued at considerably more than \$1,000,000, being rated as one of the most promising of the lode gold mines of the Province, the suit will be followed with more than usual interest. The section has other unusual features. In the first place the original stakers will seek to establish their right to title. Precisely what their position is cannot be stated at present but it is understood that it will be alleged that the late Capt. Alexander, the accepted owner during his lifetime and whose heirs will be the defendants, occupied the ground before it had become vacated. S. S. Taylor, a distinguished lawyer of Vancouver City, will represent them. In addition to this claim one will be presented to the Courts by W. Pollard Grant, another lawyer resident of Vancouver, for a one-fifth interest in the property. For some weeks agents of the plaintiffs have been busily engaged in scrutinizing records at Atlin and it is stated that some sensational evidence will be adduced in the course of the forthcoming trial which is expected to be opened about the 20th of October.

Stewart, B.C.

The first signs of Winter have appeared in the Portland Canal Mining Division. Snow now mantles the mountains, Jack Frost has touched the atmosphere with his icy finger, and the prospectors are beginning to seek the shelter of the permanent camps. The season has been notable in two respects, viz., the number of new discoveries that have been recorded and the extent of the work done on promising prospects. It would appear, from reports received from operators who have come south recently, that this northeastern section of British Columbia now may fairly be considered on its feet as a mineral producer and that it may reasonably be expected in the course of a few years at any rate to take a leading part among the productive mining regions of the Province.

It perhaps is but natural that those asked to explain conditions in this Country should dwell first on the Premier Mine. Almost enough, it would seem, has been said about this property. There is no doubt that it is outstanding. Equally true is it that much high grade ore has been taken out but whether the prediction that 3,000 tons of ore will be brought to the Coast and thence to the Smelter this Winter, the returns on which will aggregate \$1,000,000, will prove justified may be open to some question. However a large quantity of ore, carrying high silver values, will be brought out over the snow. It should be remembered, that the owners of the Premier based their hopes for its future, not so much on its high grade ore, as on its large quantities of the lower grades which are to be treated in the Concentrating Mill now in course of construction.

Notwithstanding that development on the Big Missouri Mine has ceased for the time—and here let it be borne in mind that some of the old timers stubbornly adhere to belief in this property—the prac-

tical miners, and the prospectors, retain their optimism. The announcement of one adverse report on one prospective mine has not dampened their ardor nor stayed the energy displayed in their work and their confidence in its result. They point, not alone to the Premier, but as well to the Spider Group, the latter being one of the holdings of the Algonian Syndicate, and to many other prospects which so far have shown promising indications and which are likely to be shipping soon. In regard to the Spider it is said that a vein running between two and three feet in width has been struck that contains high values in silver; that the tunnel now is at the 600 foot level; and that the formation is augite porphyrites and the mineralization principally argentine with lesser amounts of freibergite in quartz.

Among the many other prospects on which special reports have been received are the Divide Group, Salmon River, owned by the Mahood Mines Ltd. This was located only last year and only a small amount of work has been done but some rather remarkable assays have been obtained and, if the showing continues at depth, there is no doubt that more will be heard of this property. From the Silver Tip some very high grade ore will be shipped, this having been taken from stringers bearing, in parts, the native silver. The Hercules Group is to be the scene of activity throughout the Winter according to General R. G. Edward Leckie, who is acting for the holding Company. It is hoped that considerable useful development will be accomplished in the next few months. From the Alaska side of the Salmon River comes the news that the New Alaska is likely to be worked during the winter.

As to new discoveries it would appear that the policy of the Provincial Government in grub-staking returned soldiers has not been without result in the Portland Canal area. In the vicinity of Tide Lake, about twelve miles from Long Lake, it is reported that such parties have uncovered a number of narrow high-grade veins of silver bearing mineral, some of the samples from which assay as high as \$700 to the ton.

George Clothier, government mining engineer, recently returned from an inspection of the Bear River region, which suffered most from the effects of the heavy rains of the Summer, bridges being washed away, trails damaged, and the commonly used avenues of transportation generally made impassable, and his report is being awaited with interest. While the storms referred to interfered with development, repairs were carried out by the Province without delay, and much work has been done on many of the properties of the Marmot River, Bitter Creek, etc.

One of the well-known mining operators of the District sums up the situation well when he says:

“There has been more legitimate mining done here this season than ever before, and there will be some shippers when properties now under development are opened up. What is wanted badly is sampling works, where inspectors could take small quantities of ore and make enough to go on with. There is no boom and we don't want it and the mining population do not care much what tradesmen and transient workmen say about the country. They have never been out in the hills and look at things from their own viewpoint.”

Prince Rupert, B.C.

The Graham Island Oil Development Co., has been organized for the exploration and development of lands, believed to be oil bearing, situated on Graham Island of the Queen Charlotte Group. The Company claims to have four sections covered by oil leases, staked before the war, and comprising 2,560 acres. It is planned to commence drilling as soon as financial arrangements are completed.

Arrangements have been made for the shipment by the Canadian Robert Dollar, when she arrives from the Orient, or 1,000 tons of blister copper from An-yox, the British Columbia smelter centre of the Granby Consolidated Mining and Smelting Co., to New York. Officials of the Granby Company state that this will be the first shipment of this metal from the Province by water and explain the change in transportation plans by the assertion that recent increases in railway freight rates have made the maritime charges so much lower that the difference cannot be overlooked. With the Panama Canal open the factor of the time also appears to favor the freighter, at any rate under present conditions, as it is stated that a car of copper would be delivered at the Long Island refinery in sixty days while by the water route it will reach there in forty five days. The Company ships from 1200 to 1500 tons of blister copper a month.

Hazelton, B.C.

The Cascade Group of Mineral Claims on Hudson Bay Mountain is being extensively developed, a contract having been awarded for the continuance of the tunnel for a further one hundred feet in depth. The theory is that the main ore body, which appears to dip heavily, will be struck within that distance. If the owners' hopes are realized the property will be one of the steady shippers of the Province within a short period.

One of the properties inspected by John D. Gallo-way, Resident Mining Engineer, headquarters Hazelton B. C., during the Summer is the Mica Property owned by what is known as the Mica Syndicate of Tete Juane Cache B. C. and Calgary, Alberta, the holdings of which are situated on Mica Mountain, eastern B. C. There are five claims and the main showings are on Reliance Mountain. Some adjoining Crown Granted Claims are owned by New York Interests. Work was started by the Syndicate, under S. E. Beveridge, in May of this year and consisted chiefly in the construction of roads and the building of quarters for mine officers and men. The dominating rock of Mica Mountain is described as a coarse-grained garnetiferous mica-schist, which has been classified by the Geological Survey as highly metamorphosed sedimentary material and provisionally placed in the Shuswap Group of the Pre-Cambrian. The schists are intruded by granite rocks varying from normal granodiorite to pegmatite and these pegmatite dykes contain the mica, which is of the muscovite variety. The mica is transparent and in thin flakes almost white with a slight greenish tint. On the surface mica was found a bit rusty but is expected to become much clearer with depth. There are crystals of "books" ranging from 4 x 4 inches to 12 x 12 and still larger are found. These are said to be

abundant. They have a thickness of one-half to two inches and, having an excellent basal cleavage, are easily split into as fine flakes as may be desired.

Trail, B.C.

The attitude of the management of the Consolidated Mining and Smelting Company with respect to protection against metal imports was forcibly presented to the Canadian Tariff Commission which recently toured this Province. P. P. Warren, president of the Company, complained of the removal of the 7½ per cent war tax, asserting that, in the confident belief that this impost would remain in force, the Company had made investments of a substantial character. Over \$250,000 had been expended in developing flourspar deposits and commitments of equal amount had been assumed in the construction of a rod mill and other additions to the plant at Trail. He declared that there was no protection against Great Britain or the United States and, while competition from the latter source was not keen at present owing to properties having been overworked and little development having been done during the war, under normal conditions the competition for the Canadian market would be active. The United States duty was \$1.50 per ton and he felt that Canada should have at least the same protection.

The Company's output in lead was 100 tons, about equal to the Canadian consumption. Until 1919 the Canadian tariff was the normal 15 per cent plus the 7½ war tax as against a United States rate of 25 per cent. Last year the whole was removed and a specific duty of one per cent per pound imposed.

The lead producer in this Country was seriously menaced by lead produced in Spain, offered here as a British product. The United States has protection of two cents per pound and notwithstanding was faced with competition from Mexico, Germany and Spain via England. The exchange situation presented another difficulty in competing with foreign countries.

Answering Sir Henry Drayton, chairman of the Commission and Canadian Minister of Finance, it was stated by Mr. Warren that the industries were overburdened with taxes. The Province took ten per cent of their gross income, less certain deductions, which did not include depreciation of mine property or take into account money borrowed by the Company outside the Province. His Company had paid in 1919 in taxes \$150,000, over 16 per cent of the net income. Half a million of the ten per cent dividends had been taken from reserve funds.

The increase in railway freight rates Mr. Warren contended was a great contribution to the railways because no corresponding increase in selling price could be made.

The Trail Board of Trade submitted to the Commission a memorandum emphasizing the importance to the Trail Smelting Industry of adequate protection. While there were only between 2,000 and 2,500 men actually employed at the smelter it was argued that at least 20,000 people were dependent on the successful operation of the plant. Many of the large and small mines of the interior of the Province were dependent upon it. Reference was made to the notable part played by the Company during the war in supplying the zinc requirements of the Empire for which purpose a large plant had been installed at enormous expense. An extended account was given of the

Company's diversified mining activities and its enlargements and improvements at the smelting centre. That protection against outside competition was essential if this industry was to grow, if the work it is doing in the development of the mineral resources of the Country is to continue, was the point clearly brought to the attention of the Commissioners.

Receipts at the Trail Smelter for the week ending September 21 totalled 8810 tons, bringing the aggregate for the year up to 238,991 tons. During Company's diversified mining activities and its contributing mines. These were the Yankee Girl, which is being opened up by the Mining Corporation of Canada, and the Ruth and Skyline, of Ainsworth.

Nelson, B.C.

Satisfactory reports are received from the Spokane Group of the Bayonne District which is under development and at which there recently was constructed an arrastra for experiment. Some 15 tons of ore have been run through and, while a good concentrate is made, comparatively little of the free gold is saved on the plate. It is asserted by the management that there is a large quantity of ore in sight, its value being estimated at \$100,000, if an economic method of transportation could be secured. To remove this difficulty it is understood to be the intention to ask the Provincial Government to construct a 15-mile pack trail on a wagonroad grade down Canyon Creek to Kootenay Lake. It is stated that such a road would serve to open up a considerable section of the Bayonne.

The West Kootenay Power and Light Co. has completed and tested out the power line extending from the City of Greenwood to the Copper Mountain Mines of the Canada Copper Co. This makes one of the longest transmissions in Western Canada, the distance from Bonnington Falls, the source of the power, to Copper Mountain being 190 miles. The extension is a single 110,000 volt line of H. Frame construction and the distance from Greenwood to Copper Mountain is 108 miles. The Company's intention is to operate this line at 60,000 volts until power requirements necessitate going to a higher voltage. At Greenwood the line is fed by duplicate 60,000 volt transmission lines from the generating stations at Bonnington Falls.

Invermere, B.C.

Somewhat novel methods are being adopted in the opening up of the Bunyan Mine by Captain E. J. Fader, manager of the Silver Ores Incorporated of New York. Recently a match was applied to four leads connecting with a charge of several tons of 60 per cent dynamite embedded in the face of Bunyan Mountain. This was the culminating point of many weeks of hard work, consisting of tunnelling, driving and other underground operations, and the results, judging from reports, appear to have justified the effort. It is said that the face of the mountain for over 100 feet longitudinally, for 30 feet or more in width, and for a depth of over 30 feet was loosened. It is estimated that some 10,000 tons of ore was thrown up and that the face of the ledge has been so exposed that it will be possible to continue operations by quarrying. This property is situated about seven miles from the town of Wilmer and

has an elevation of 1500 feet above Windermere Lake.

Silverton, B.C.

The statement of the Standard Silver-Lead Mining Co., operating the Standard Mine, near Silverton, Sloean District, shows a cash surplus of \$367,996 as on July 31st last as compared with \$341,825 as on March 31, 1920 and \$298,010 on December 31, 1919. Profit for June of this year was \$10,952; May showed a loss of \$4,340 while April had a net gain of \$18,959. Nothing is being done at this time on company account owing to unsatisfactory labor conditions. The old Wellington Camp is being prospected but nothing official is given out as to results.

Revelstoke, B.C.

The Bernière Mines, situated near Scott Creek, Camborne, are being opened up and a contract has just been let for the construction of cabins, a blacksmith shop, etc., it being the intention to continue work this winter.

The Beatrice Mines, of the same District, are shipping silver-lead ore to the Trail Smelter.

Victoria, B.C.

Among the recently incorporated British Columbia Companies is the Lowox Steel Company, with an authorized capital of \$500,000 and head office in Victoria. Its business is described as steel makers, colliery owners, and operators and along other lines of the iron and steel manufacturing industry.

Dr. V. Dolmage, of the Canadian Geological Survey, has returned after a summer's field work which has resulted in the obtaining of the information necessary to complete the geological map of the west coast of Vancouver Island.

He found fossils at Malksope Inlet of an interesting character scientifically. The impressions of sea shells of these rocks confirm the conviction that the whole of the northwestern continent, as it is now known, dates back to a very early period in geologic history. The shells give evidence of several periods of submersion by the sea, and may enable the dates of the glacial periods to be determined with more accuracy than has hitherto been possible.

Dr. Dolmage's survey started at Uleulet Arm and embraced Calyoquot Sound, Sidney Inlet, Hesquiart Harbor, Kyuquot Sound, and Quatsino Sound. At Sechart he examined mercury deposits of the commercial value of which no opinion is expressed. He also covered the ground on which the Tidewater Copper Co. is operating at Sidney Inlet and at Nootka Sound encountered deposits of Magnetite. Copper is common, he states, at Kokshttle Arm and some gold deposits have been discovered on the shores of Kennedy Lake.

Dr. C. H. Clapp and Dr. G. N. Dawson already have completed the geological survey of the southern and northern sections of the west coast of the Island.

Vancouver, B.C.

The re-definition of the Alaska-Canada Boundary Line, particularly in the Portland Canal and Salmon and Unuk River Regions, made considerable progress during the past Summer. J. D. Craig, head of the Canadian party, has returned and states that he worked in North and Westward from the town of Stewart while United States surveyors, led by Jesse

Hill, worked south by the Unuk River. The duty of these parties was to clearly indicate the boundary by means of monuments and by the cutting of timber where there is timber. It is stated that some miners and prospectors have made the mistake of staking in American territory and recording the same with Canadian officials and that the error has been as frequently made conversely.

THE COLLIERIES.

An amendment passed at the last Session of the Provincial Legislature to the Semi-Monthly Payment of Wages Act, providing for twenty-six pay days per annum in connection with the coal mining industry and that these pay days shall fall on a Saturday, became effective on the 1st of October last.

The original Semi-Monthly Payment of Wages Act of British Columbia applied to lumbering, fishing, and mining. It established the principle of a payment twice every month to the workers in connection with the industries enumerated.

The amendment referred to is effective only in respect of coal mines and, while it has met with opposition in some quarters, it is the opinion of Hon. Wm. Sloan, Minister of Mines, who is responsible for it, that the sentiment in its favor among those benefitted is so unanimous that it will be generally accepted as a satisfactory step towards the general improvement of working conditions.

A tie-up of the coal mining industry of eastern British Columbia and of the Province of Alberta threatened during the past two weeks but, from last reports, the crisis appears to have been successfully passed. There are two union organizations in these fields, viz., the O.B.S. and the U.M.W. of A. The One Big Union called a strike to force the elimination of the "check-off" system, whereby payment of the miners' U.M.W. of A. dues is taken from their pay envelopes, while at the same time the U.M.W. of A. demanded of the Operators that their recent contract be re-opened to permit of an increase of \$1.50 per day to be given day-wage men, thus placing the latter, as it was argued, on an equal footing with miners of the mid-competitive field in the United States, who lately were granted an additional advance. The situation was dealt with by Senator Robertson, Canadian Minister of Labor, who happened to be in Alberta with the Canadian Tariff Commission; W. H. Armstrong, director of Coal Operations for the Canadian West; and other government officials. While the O.B.U. strike was ordered and a percentage of the miners left work it would seem that the mediation endeavors of the government representatives have been, on the whole, successful. None of the mines was at any time completely closed down and the latest reports are to the effect that the industry soon will be in a normal condition. At Coal Creek and in other sections of British Columbia the mines are working as usual. The claims made of a defeat for the leaders of the O.B.U. movement seem to be justified but what adjustment has been made, if any, between the Operators and the U.M.W. of A. in respect of the latter's demands on behalf of the day-wage men, cannot be stated at present.

Senator Robertson, Minister of Labor, made the interesting statement while in Calgary recently that

during the first seven months of this year there were produced in Alberta coal fields more than one million tons of coal in excess of the 1919 production and that quite substantial reserves of both bituminous and lignite coal have been accumulated during the Summer.

Discussing the situation in England and its bearing on Canada, the Minister said: "There is no danger that Canadian miners will strike in sympathy with a walkout in England. At present they are working under an agreement by which they would have to get the consent of the International Union Headquarters in Indianapolis before they could strike. The International Union would never let them go out in sympathy with the British miners, though they might allow the miners to refuse to mine coal for export to Great Britain—coal which would be used to ease the situation there.

An acute coal shortage is reported in Australia and New Zealand, the condition being attributed to the "go slow" policy of the miners of those countries. It is suggested as a probability that the collieries of British Columbia will be called on to fill orders from the consumers of the Antipodes.

In the increase in freight rates permitted the Railways of Canada by the Board of Railway Commissioners coal is one of the articles of universal consumption on which the full rate advance is not permitted. The Board of Trade of Nelson, B. C. has asked that coke be placed in the same class, arguing that coke is a much used domestic fuel and that in the British Columbia interior the coke product of the ovens of the Crow's Nest Pass Coal Co. is essential in the maintenance of the important smelting industry of the Consolidated Mining and Smelting Co. at Trail.

The municipal authorities of the City of Vancouver have adopted regulations for the protection of the coal consumer against being short-weighted in his purchase. One of the most striking of these is that a purchaser, who may be doubtful as to whether he is getting a full ton when a ton has been ordered, is given the privilege of sending the coal to the nearest scales to be weighed. If his suspicions prove well founded the dealer must pay the expense but should it be shown that he was wrong the expense of carting and weighing is added to the first cost. Another interesting provision is that the dealer who sells coal in small quantities must carry in his vehicle scales, properly tested, and capable of weighing such quantities as he is engaged in selling.

The City of Prince Rupert B. C., Pacific Coast Terminal of the Grand Trunk Pacific Railway, is asking the Dominion Government to construct large coal bunkers at that port, the contention being that the result would be a saving of at least \$1.00 a ton to the consumers, large and small, of the northwestern section of the Province.

E. Floyd has resigned his position as manager of the Nanoose-Wellington Collieries Ltd., Nanoose Bay, Vancouver Island.

Northern Ontario Letter

THE SILVER MINES.

The Cobalt Field.

The labor shortage in Cobalt has become acute during the past few weeks, and all the leading mines are experiencing considerable difficulty in securing underground workers. Surface men are fairly plentiful, but muckers, trammers and even machine runners are scarce. In some instance the shortage amounts to more than 25 per cent of requirements.

A movement is under way to encourage the Ontario Government to look into the situation with a view toward taking steps to induce men to seek employment at the precious-metal mines. Figures presented, and based upon the opinion of employers, goes to show that at least 1,500 men could be quickly absorbed in the silver and gold mines of Northern Ontario, and that about 2,500 could be absorbed by early next summer. It is felt that any effort the government may make, would not only benefit the mining industry, but would encourage men to enter this district to the extent of several thousand, some to find employment in the pulp and paper industry and some in agricultural pursuits.

A fourth vein has been encountered on the surface at the Kerr Lake mine, in close proximity and running parallel to the three high-grade veins reported in these columns a week ago. The annual report of the Kerr Lake shows that during the fiscal year ended August 31st, produced 956,049 ounces of silver and 42,654 pounds of cobalt. The cost of production amounted to 56.04 cents an ounce. The output continues at present at the rate of over 50,000 ounces monthly, any increase above this amount depending on the question of the extent of the new high-grade deposits just being opened up.

In the arrangement between the Peterson Lake and the Dominion Reduction Company, it is learned the Dominion Reduction first takes off the actual cost of treating the old tailings pile, and receives an additional bonus of 35 cents on each ton treated. Of any remaining net profit, the Peterson Lake gets two-thirds while the Dominion Reduction Company gets one-third.

Negotiations under way in connection with the Victory Silver Mines, formerly the Hylands property, offer fair promise of this property being operated this fall. It lies a short way south of the Adanae.

The Mining Corporation has suspended operations on its property in the township of Butt, in the district of Nipissing, on which exploration work was carried on during the summer in an effort to determine the extent of the deposits of radium-bearing ore. It has been found that while radium-bearing ore occurs in patches, it is too erratic to be of commercial value.

In regard to the tailings pile being treated at Cobalt by the Mining Corporation, a misunderstanding has gone abroad that this material contains about five ounces of silver to the ton. The correct figures approximate four ounces to the ton, the misunderstanding having arisen due to the five-ounce point having been reached on a small part of the pile.

The shareholders of the Temiskaming Mining Corporation Company at a meeting on Oct. 7th, ratified a deal in which the company joins the McIntyre-Porcupine in the purchase of the Black Diamond Coal

mine in Alberta for \$600,000 and another large coal property in that vicinity for \$1,500,000. J. P. Bickell, president of the Temiscaming and the McIntyre, brought the deal to a head.

An interesting decision has just been rendered against J. P. Bickell & Co., of Toronto, in favor of Mr. Barthelmes, a former client of the Bickell firm. Barthelmes was a client of the Bickell firm, and was trading in the New York stock market. At the time J. P. Bickell retired from his brokerage business, Barthelmes had a balance due him of \$62,455, and Bickell claimed this balance was in Canadian funds. Barthelmes sued to recover the American exchange on this account and after a two day trial before Mr. Justice Middleton, he has received a judgment against Bickell for \$10,105 and costs, a stay of ten days being specified. This is important as showing that the Canadian broker is obliged to pay his clients any exchange which he receives on his transactions.

Deals are being negotiated on three properties in the South Lorrain silver area. The Forneri property is said to have been optioned by R. T. Shillington and his associates with the object in view of mining the cobalt metal which occurs on the property, as well as carrying on exploration work for silver. James Harkness is said to have about completed a similar deal on the Haileybury Silver as well as on the Haileybury Frontier. These properties all lie not far from the Keeley Silver Mines.

In the meantime, the Keeley is making good progress and is expected to have its mill ready for operation by the end of November.

Although the price of silver has declined to below 90 cents an ounce this week, the Canadian producers, in receiving payment in New York funds and thus getting the current premium, are in reality being paid an amount about equal to the American producers who market their products under the terms of the Pittman Act and which calls for 99½ cents an ounce.

Mining Commissioner T. E. Godson, K.C., will hold his regular monthly sittings at the Court House, at Haileybury on October 12th. A total of six mining disputes are on the list, the following being an official summary:

Babayan vs. Summers, regarding claim L. S. 147, and being an application under section 81 of the Mining Act.

Darroch vs. McDonald, being an application for an interest in mining claim No. L. S. 464.

Lieut. M. L. Bouzan vs. R. M. Devlin, an application under section 81 of the Mining Act in respect of mining claim L. 3096, 3097 and 3098.

Giroux vs. Blanchfield, a dispute in respect of mining claim T. 19001 situated in the Gillies Limit.

Giroux vs. Billington, a dispute in respect of mining claim T. 19007 situated in the Gillies Limit.

O'Neill vs. Brooks, being an application in respect of mining claim C. 1397.

Returned soldiers who recently lost their interests in mining claims owing to a misunderstanding among mining recorders as to the intent of an order issued late in 1919 by the Minister of Mines, are to be given full protection of their property up until the beginning of 1921. This will probably mean that applications recorded in the meantime will be thrown out, and the former holders fully re-instated.

In his regular monthly report to the president and

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directors of the Nipissing Mining Co., Hugh Park, manager, says that during the month of Sept. the company mined ore of an estimated value of \$225,100 and shipped bullion and residue from Nipissing and custom ores of an estimated net value of \$658,296.

"The amount of exploration and development work done during the month was very much less than normal, due to the scarcity of underground labor. There are enough men for surface work and the running of the mill but it is impossible to keep up our regular force of muckers and machine men. The great demand and the high wages paid by the pulp and lumber companies in this district are making it increasingly difficult to operate the Cobalt mines economically.

Stoping of vein 109 in the 96 tunnel workings, is proceeding satisfactorily. The vein is high grade and is fully coming up to expectations.

The high grade mill treated 211 tons and the low grade mill put through 6,753 tons. The refinery shipped 598,940 ounces of bullion valued at \$561,319. Residue shipments amounted to 622 tons, valued at \$96,976.

Estimated production for the month is as follows:—

Low grade mill	\$120,541
Washing Plant	104,559

Total \$225,100

The price of silver is estimated at 91 cents, which is 3½ cents less per ounce than last month's production estimate.

During the week ended Oct. 9, six Cobalt companies shipped an aggregate of eleven cars containing approximately 864,025 pounds of ore. The Nipissing was the leader with nearly a quarter of a million pounds, and with the Mining Corporation a close second.

Following is a summary:—

Shipper	Cars	Pds.
Nipissing	3	240,660
Mining Corporation	3	233,487
Coniagas	2	131,549
Dominion Reduction	1	88,000
McKinley-Darragh	1	85,592
Temiskaming	1	84,737
Totals	11	864,025

During the corresponding period, the Mining Corporation was the only bullion shipper, sending out 98 bars containing 100,799.60 fine ounces.

THE GOLD MINES.

The Porcupine District.

Labor shortage continues to retard progress at the gold mines, but in spite of this handicap, a remarkably good showing is being made. The Hollinger Gold Mines Report (which is elsewhere analyzed in this issue by Mr. Alexander Gray) is the subject of much congratulatory comment.

The Porcupine V. N. T. Mines is waiting for more money before deciding to resume operations. An executive staff has been gathered together, and the date of opening is deferred only until such time as the underwriters take up the second block of 200,000 shares. The underwriting arrangement involves 600,000 shares, some 200,000 of which were taken up at 15 cents a share, and with the second block of 200,000 shares due to be taken on in a few months at 30 cents each. It is learned the underwriters may take

up this second block a little ahead of time, in which case operations might resume within the next month or so.

At the annual meeting of the McIntyre-Porcupine held in Toronto, Oct. 7th, the General Manager R. J. Ennis, spoke optimistically in reference to the new ore-body recently encountered south of vein No. 5, and it is quite evident the potentialities of the mine have been greatly added to.

Following a discovery of gold on a group of claims in the township of Jamieson, situated west and north-west of Porcupine, interest has again been renewed in that district where prospectors some years ago met with considerable encouragement.

Diamond drilling operations are under way on the Porcupine-Miracle property situated about twelve miles south-east from Porcupine, and a large vein is reported to have been cut. The average mineral content of the vein has not been announced.

Arrangements have been made to resume operations on the Premier-Langmuir barite mine, situated south of Night Hawk Lake, in the township of Langmuir. A force of men have been placed at preliminary work and it is planned to overhaul and remodel the mill. The vein is about six feet in width, the barite being of high grade quality. A peculiar occurrence is the presence of native silver, in patches along one wall of the vein. An effort will be made to recover this metal as a by-product.

On the Clifton-Porcupine, where underground operations were discontinued on May 15th, diamond drilling is being done, and a report recently issued to the shareholders states the property is in condition to continue development when deemed advisable.

The diamond drilling is expected to give exact information as to the contact area north of the existing workings and to disclose the most advantageous direction for future work.

Official announcement is made to the Journal that the Argonaut mine at Beaverhouse Lake, east of Kirkland Lake, has opened up its main ore shoot at the 200-ft. level to a length of 250 feet, showing a width of about five feet. About 40 men are on the pay-roll, and arrangements are to be made as soon as possible to continue the shaft to a depth of 500 feet.

PLATINUM CONTINUED SCARCE IN 1919.

The United States is still dependent on foreign countries for its supply of platinum. The small output of crude platinum from domestic mines increased from 647 ounces in 1918 to 824 ounces in 1919, but the total quantity of refined platinum and allied metals recovered from foreign and domestic ores by domestic refiners decreased from 59,753 ounces in 1918 to 45,109 ounces in 1919. Only 11,759 ounces of refined platinum was derived from domestic ores in 1919. On the other hand, the imports of platinum and allied metals increased from 56,753 ounces in 1918 to 68,054 ounces in 1919, nearly half of which came from Colombia. The estimated world's production increased from 62,283 ounces in 1918, the lowest recorded output, to 67,180 ounces in 1919, but was still far below that of preceding years.

Returned soldier prospecting parties, grub-staked by the Government, have recorded promising copper prospects on Mount Diadem, near Jervis Inlet, lower mainland of B. C.

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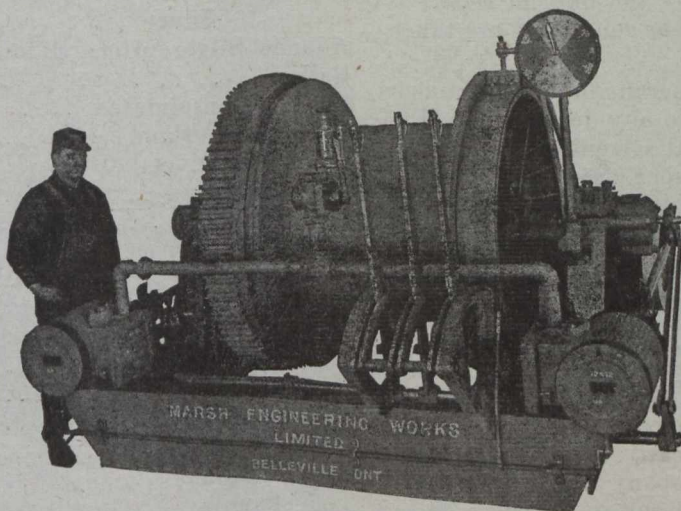
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ASSOCIATED GOLDFIELDS AFFAIRS.

ALEXANDER GRAY

It is no secret the character of the Associated Goldfields of Larder Lake is sub judice. Certain owners of shares having considerable amounts tied up, exercised their right to investigate the status of their mines. They are "Missourians"—and properly so.

Therefore, it would be unbecoming for anyone deliberately to prejudice the case. Dr MacKay, the President, is entitled to an impartial opinion. Shareholders who entrusted their money with him, also deserve a judicial decree.

As usual, it is rather late for such an inquiry as is now proceeding. After developing a water power, erecting and equipping a mill, and prosecuting work underground to a point where the President intimated the value of the ore indicated to the shallow depth attained exceeds that of any gold mine on this mundane sphere: it is almost ludicrous to have it announced that the merits or demerits of the mines are questioned. Ordinarily the treasury surplus of a million or more should be concrete evidence of the sanity of the management and shareholders, reinforced by the fact that every share sold to a confiding public is pooled. Then there was an Advisory Committee whose province it was to counsel with the administration while more shares were being disposed of. Furthermore there has been talk of a railway, a 10,000-ton mill—all of which was productive of speculative inebriation.

Singularly enough the collection box was passed without much pulpit oratory or publicity. Provincial

geologists were admonitory. Otherwise mild persuasion swelled the lists of subscribers—and "still the wonder grew" that the greater masses did not arise and empty their horns of plenty into the coffers of the company concerned. Perhaps the larger public was ungrateful. If the nominal capital be increased, as is proposed; the roster of the pooled may yet make Ponzi appear to be a "piker"—and Sheldon a mere "shoe-string" Not that the record shows malfeasance on the part of the responsible directors. Doubtless they are culpable in that they have ignored essentials vital to the proposition. It was their duty to obtain the more competent judgment of recognized engineers. Failing that they are censurable—and it devolves upon the shareholders to husband what cash there is on hand, if the Mines do not measure up to Dr. MacKay's story.

To infer that the Associated Goldfields properties, reckoning only to the 500 foot vertical attained, has ore to the value of \$159,000,000—or a tenth of that fully demonstrated—courted the inquiry in progress. A year or so ago, Mr. Hopkins of the Provincial Geological Staff distinctly stated that the proposition called for detailed mining, which involves accurate sampling and thorough development before venturing upon estimates of ore reserves. Mr. Hopkins dwelt upon the unrelated enrichments, as distinct from the mass of very low grade ore. It may be that development along the contact will disclose a substantial tonnage of profitable grade, but that awaits demonstration. Associated Goldfields must have another character witness, or abstain from further appeal to the public.

SOME NOTES ON THE PORCUPINE GOLD MINES.

R. E. HORE

Hollinger Gold Mines.

The performance disclosed by the interim report is one of great merit, when the labor conditions are taken into account.

This mine has developed numerous ore-bodies and it has not been necessary yet to do any deep mining. Exploration work has been done at some depth below the present stoping levels and deeper development work will doubtless be soon undertaken in order to keep far ahead of the ore breakers. It is understood that the management intends soon to deepen the central shaft which is now 850 ft. deep. There are so many working places on levels above this that no pressing need exists for deeper development at this time.

McIntyre

The development of the McIntyre at depth continues to give results that contrast greatly with those obtained in the early days of the Company's operations. The reports of drill-hole exploration and of the mine openings at the lower levels are of a nature that speak well for the company's future. At present it suffers like the other companies from shortage of labor; but its smaller plant is being operated at nearer full capacity than its big neighbor. The company is making good progress and is assured of a long profitable life.

Dome

The exercising of the option on Dome Extension by Dome Mines is generally regarded as a very important step forward in the making of a great mine at the Dome. The resources of the companies being now combined, the development of the Dome Extension property at depth is assured. It is understood that the results thus far obtained are such that the purchase of the Extension property greatly increases the possibilities of a long and profitable life for the Dome.

Work was suspended for some time at the Dome mine during the war, and the record of production during the war period and since is not a fair indication of the mine's capacity. With the additional property now taken over and with capacity operation of the mine and plant, the magnitude of the enterprise will become more obvious.

Murray-Mogridge

It was announced some weeks ago that the final payment on the Murray-Mogridge gold property at Bourkes station on the L. & N. O. Ry. had been paid. Publicity has been recently given to some reports on this property which show that it is one of much promise. It is now stated that J. R. L. Starr and W. I. Banfield of Toronto have joined the board of directors of the company, Mr. Starr has been for some time president of one of the producing silver mines at Cobalt, Mr. Banfield is a successful manufacturer.

Recently the Ontario Bureau of Mines has undertaken to make a geological examination of the Bourkes area, Mr. C. W. Knight, Assistant Provincial Geologist, is now at Bourkes in charge of this work.

From the caption "Aluminum, Automobiles and Arkansas" which is to be found in a recent press bulletin of the United States Geological Survey, it is a fair assumption that somebody is attracted by "alliterations artful aid."

TORONTO MINING STOCKS.

Following are of average quotations for active gold, silver and miscellaneous stocks on the Standard Mining Exchange for the week ending 9th October 1920.

	High	Low	Last
Silver			
Adanac Silver Mines, Limited.	3 1/8	2 3/8	3
Bailey	5	5	5
Beaver Consolidated	40	38	38 1/4
Chambers-Ferland	5	5	5
Cobalt Provincial	48 1/2	47	48 1/4
Crown Reserve	29	26	27
Gifford	1 5/8	1 1/4	1 3/8
Great Northern	2 1/2	2 1/2	2 1/2
Hargraves	1 7/8	1 7/8	1 7/8
La Rose	32	30 1/2	30 1/2
Lorrain Con. M. Ltd.	5	5	5
McKin.-Dar.-Savage.	56	51	51
Mining Corp. of Can.	1.64	1.60	1.60
Nipissing	9.50	9.25	9.50
Ophir	2	2	2
Peterson Lake	14 1/2	13 1/2	13 1/2
Temiskaming	32	32	32
Trethewey	26 1/2	24	25
Gold			
Apex	2 1/4	1 1/2	1 1/2
Atlas	11	10 1/4	10 1/2
Dome Extension	40 1/2	39	40
Dome Lake	5 1/2	5	5 1/2
Dome Mines	12.50	12.50	12.50
Gold Reef	3 3/4	3 1/4	3 1/4
Hollinger Cons.	5.75	5.60	5.64
Hunton Kirk'l'd G.M.	12	11	12
Keora	18 1/2	16 3/4	16 3/4
Kirkland Lake	49 1/2	46	46
Lake Shore M. Ltd.	1.10	1.08	1.08
McIntyre	2.06	2.00	2.00
Moneta	12	12	12
Newray Mines, Ltd.	7	6	7
Poreupine Crown	24	22	23
Poreupine Tisdale	1 1/2	1	1
Poreupine V.N.T.	26 1/2	24 1/2	25
Preston East Dome	3	2 1/2	2 1/2
Schumacher	22 1/4	21	22
Teck-Hughes	8 3/4	8	8 1/2
Thompson Krist	8 1/2	8 1/4	8 1/2
West Dome	7	6 1/4	6 3/4
West Tree Mines Ltd.	5	5	5
Wasapika Gold M. Ltd.	10	10	10
Miscellaneous			
Petroy New	44	44	44
Vacuum G.	26	24 1/4	25

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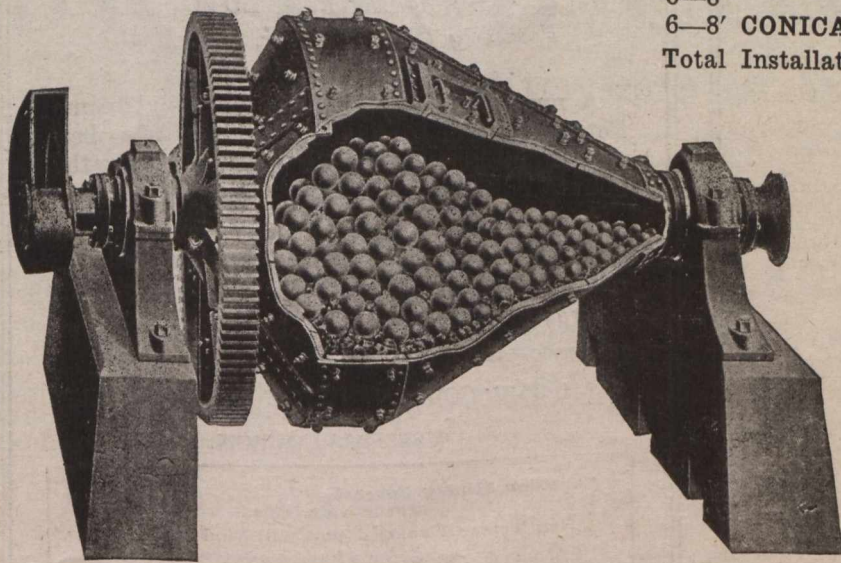
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2-8'	Conical Ball Mills	December	1915
2-8'	" " " "	July	1916
2-8'	" " " "	August	1916
6-8'	" " " "	June	1917
6-8'	CONICAL BALL MILLS	JUNE	1920
Total Installation — 18 Hardinge Conical Mills.			



The first repeat order was the result of a direct competitive test.

The last repeat order (just placed) is the result of another competitive test under different conditions.

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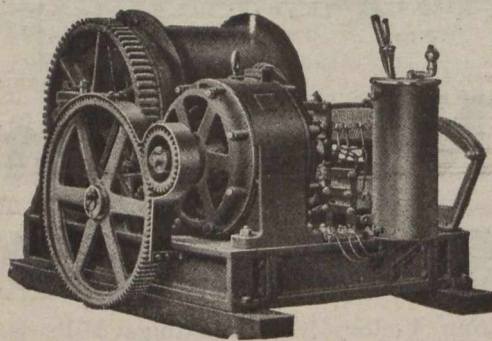
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Hendrick Manufacturing Co.

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Mine and Smelter Supply Co.

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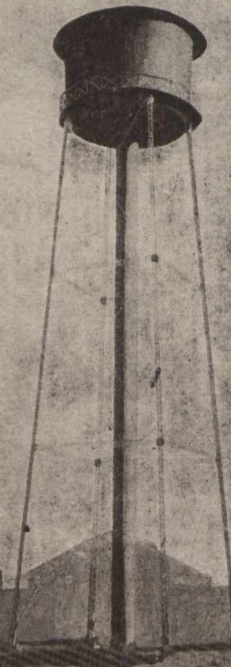
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- Coal and Coke Handling Machinery**
Canadian Mead-Morrison Co., Limited.
Canadian Link-Belt Co., Ltd.
- Coal Pockets:**
Canadian Mead-Morrison Co., Limited.
- Coal Pick Machines:**
Sullivan Machinery Co.
- Coal Screening Plants:**
Canadian Link-Belt Co., Ltd.
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—McCaslin Gravity Bucket:**
Canadian Mead-Morrison Co., Limited.
- Contractors' Supplies:**
Canadian Fairbanks-Morse Co., Ltd.
- Consulters and Engineers:**
Hersey Milton Co., Ltd.
- Conveyors:**
Canadian Link-Belt Co., Ltd.
The Mine & Smelter Supply Co.
Jones & Glassco (Regd.)
- Conveyor Belts:**
Gutta Percha & Rubber, Ltd.
- Conveyor Flights:**
Canadian Link-Belt Co., Ltd.
Hendrick Mfg. Co., Ltd.
- Conveyor—Trough—Belt:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
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.
- Couplings:**
Hans Renold of Canada, Limited, Montreal, Que.
- Cranes:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Canadian Link-Belt Company
R. T. Gilman & Co.
Smart-Turner Machine Co.
- Crane Ropes:**
Allan Whyte & Co.
Canada Wire & Cable 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.
- Swedish Steel & Importing Co., Ltd.**
- Brushers:**
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.
Lyman, Ltd.
Mussens, Limited

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Bar Silver—Electrolytically Refined

Arsenic—White and Metallic

Cobalt Oxide and Metal

Nickel, Oxide and Metal

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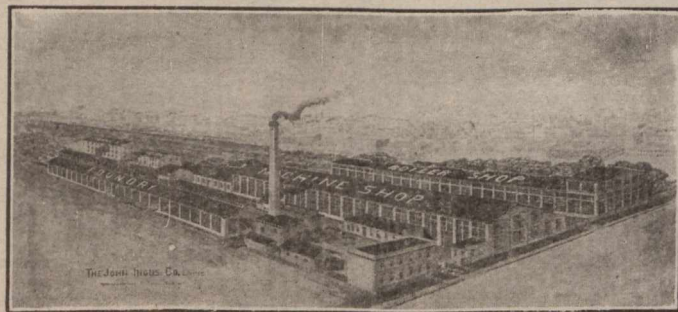
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Canadian Miners' Buying Directory.—(Continued)

- The Mine & Smelter Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Cut Gears:**
Hans Renold of Canada, Limited, Montreal, Que.
- Cyanide:**
American Cyanamid Company.
- Cyanide Plant Equipment:**
The Dorr Co.
The Mine & Smelter Supply Co.
- D. C. Units:**
MacGovern Co.
- Derricks:**
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., Rockawa
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
Giant Powder Company of Canada, Ltd.
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.
Canadian Link-Belt Co., Ltd.
Sullivan Machinery Co.
Northern Canada Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
Jones & Glassco (Regd.)
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.
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.
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.
- Engines—Marine:**
Canadian Fairbanks-Morse Co., Ltd.
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—Stationery:**
Swedish Steel & Importing Co., Ltd.
- Engineers:**
General Engineering Co., New York
The Dorr Co.
- Ferro-Alloys (all Classes):**
Everitt & Co.
- Feed Water Heaters:**
MacGovern & Co.
- Fire Fighting Supplies:**
Gutta Percha & Rubber, Ltd.
- 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
Giant Powder Company of Canada, Ltd.
Northern Canada Supply Co.
- Gaskets:**
Gutta Percha & Rubber, Ltd.
- Gears:**
Hans Renold of Canada, Limited, Montreal, Que.
Jones & Glassco (Regd.)
- Gears (Cast):**
Hull Iron & Steel Foundries, Ltd.
Canadian Link-Belt Co., Ltd.
- 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.
Gutta Percha & Rubber, Ltd.
- Hose (Fire):**
Goodyear Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
- Hose (Packings):**
Goodyear Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
- Hose (Suction):**
Goodyear Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
- Hose (Steam):**
Goodyear Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
- Hose (Water):**
Goodyear Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
- 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
- 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
Canadian Link-Belt Co., Ltd.
- 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.
Gutta Percha & Rubber, Ltd.
Northern Canada Supply Co.
- Hose (Steam, Air, Water):**
Gutta Percha & Rubber, Ltd.
- 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.
Hoyt Metal Company.
- 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.
Canadian Link-Belt 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.
Hoyt Metal Company.
- Metallurgical Engineers:**
General Engineering Co., New York
The Dorr Co.
- Metallurgical Machinery:**
General Engineering Co., New York
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.
- 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.
Canadian Link-Belt Co., Ltd.

Ore Sacks:
Northern Canada Supply Co.

Ore Testing Works:
Ledoux & Co.
Can. Laboratories
Milton Hersey Co.
Campbell & Deyell
General Engineering Co., New York
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.
Gutta Percha & Rubber, 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.

Permissible Explosives:
Giant Powder Company of Canada, Ltd.

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

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

Pillow Blocks:
Canadian Link-Belt Company

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.
R. T. Gilman & Co.

Powder:
Giant Powder Company of Canada, Ltd.

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.

Balls:
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.

Roller Chain:
Hans Renold of Canada, Limited, Montreal, Que.
Canadian Link-Belt Co., Ltd.

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.
Canada Wire & Cable Co.
Dominion Wire Rope Co., Ltd.
Greening, E. Wire Co.
Northern Canada Supply Co.
Mussens, 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.
Mussens, Limited
The Wabi Iron Works

Samplers:

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

Scales—(all kinds):

Canadian Fairbanks-Morse Co., Ltd.

Screens:

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

Screens—Cross Patent Flanged Lip:

Hendrick Mfg. Co.

Screens—Perforated Metal:

Hendrick Mfg. Co.

Screens—Shaking:

Canadian Link-Belt Co., Ltd.
Hendrick Mfg. Co.

Screens—Evolving:

Canadian Link-Belt Co., Ltd.
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.

Silent Chain:

Canadian Link-Belt Co., Ltd.
Hans Renold of Canada, Limited, Montreal, Que.

Silent and Steel Roller:

Canadian Link-Belt Co., Ltd.
Jones & Glassco (Regd.)

Silver:

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

Solder—Bar and Wire:

Hoyt Metal Company.

Special Machinery:

John Inglis Co., Ltd.

Spelter:

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

Sprockets:

Hans Renold of Canada, Limited, Montreal, Que.
Canadian Link-Belt Co., Ltd.
Jones & Glassco (Regd.)

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.
Mussens, Limited
Swedish Steel & Importing Co., Ltd.

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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):

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

Sulphate of Copper:

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Coniagas Reduction Co.

Sulphate of Nickel:

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Surveying Instruments:

C. L. Berger

Switches and Switch Stand:

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Mussens, Limited.

Switches and Turntables:

John J. Gartshore

Tables—Concentrating:

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The Electric Steel & Metals Co.

Tanks:

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Tanks—Acid:

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The Mine & Smelter Supply Co.

Tanks (Wooden):

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Pacific Coast Pipe Co., Ltd.
Mine & Smelter Supply Co.
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Tanks—Cyanide, Etc.:

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MacKinnon Steel Co.
Fraser & Chalmers of Canada, Ltd.
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Tanks—Steel:

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

Tanks—Oil Storage:

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The Mine & Smelter Supply Co.

Tanks (water) and Steel Towers:

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Canadian Chicago Bridge & Iron Works
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Transmission Machinery:
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Trucks—Hand:
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Trucks:
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Tubs:
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Tube Mills:
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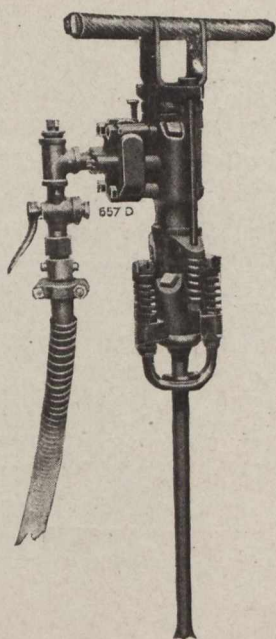
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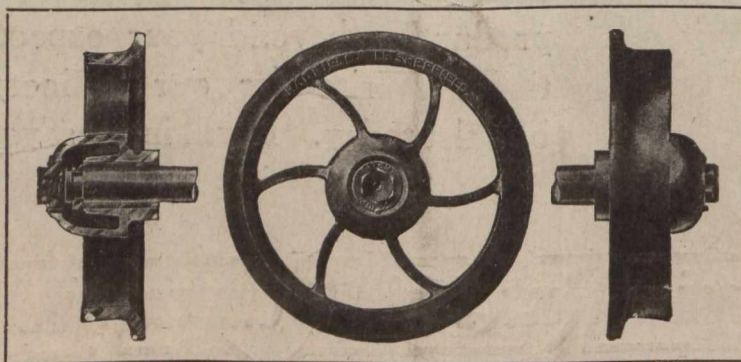
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