

CANADIAN MINING JOURNAL

Vol. XL

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No. 37



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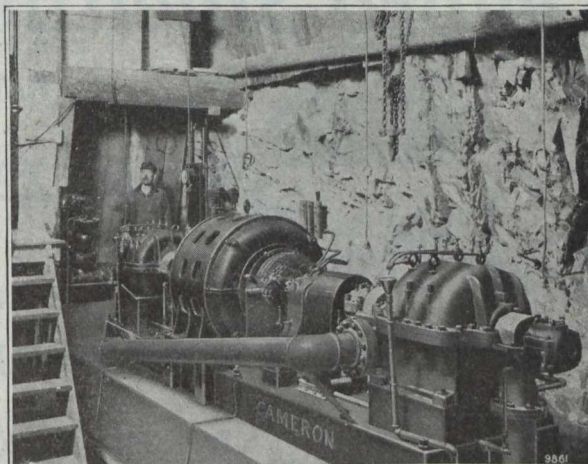
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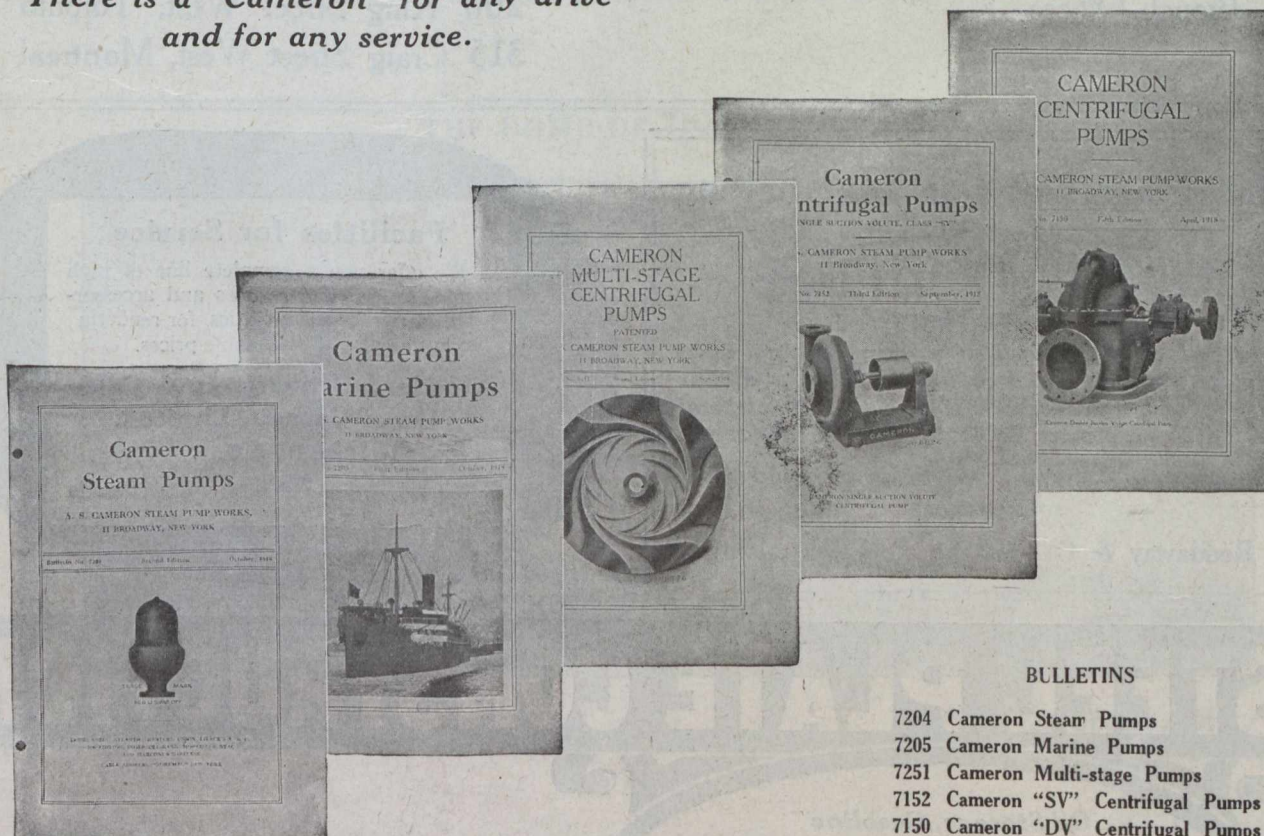
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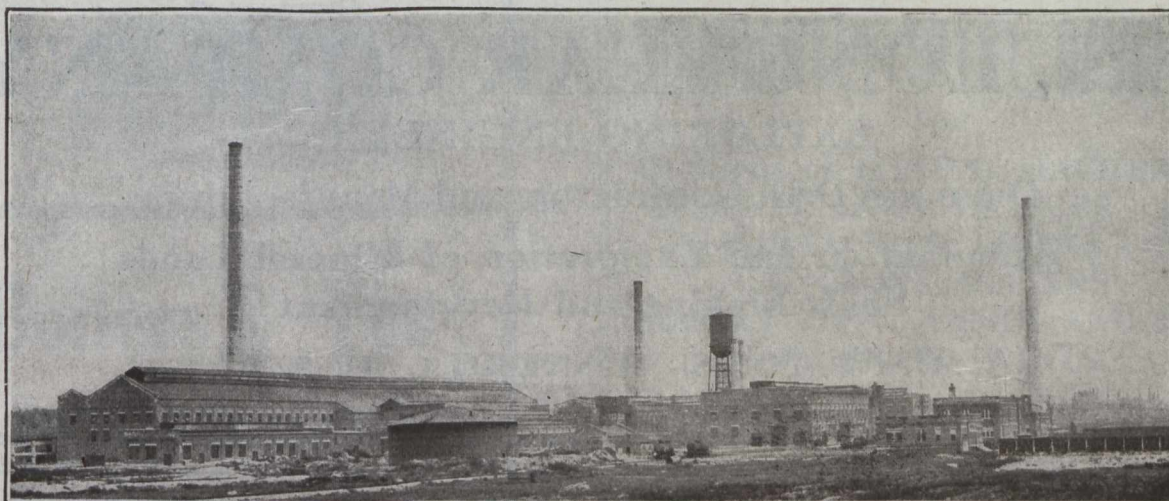
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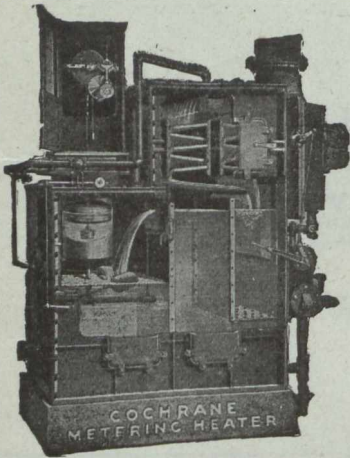
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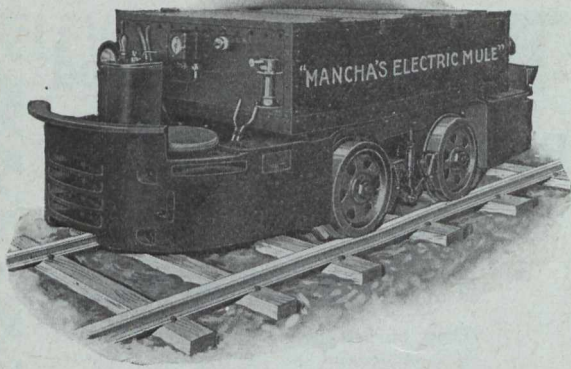
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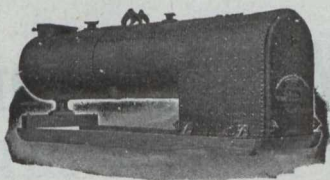
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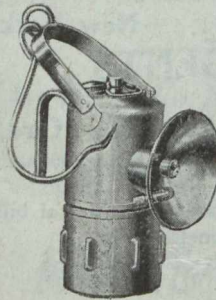
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Aggregate Value of \$595,571,107

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

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

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

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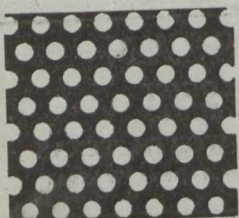
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Practically all economic minerals (with the exception of coal and tin) are found in Ontario:—actinolite, apatite, arsenic, asbestos, cobalt, corundum, feldspar, fluorspar, graphite, gypsum, iron pyrites, mica, molybdenite, natural gas, palladium, petroleum, platinum, quartz, salt and tale. This Province has the largest deposits on the continent of tale, feldspar, mica and graphite.

Building materials, such as ornamental marble, limestone sandstone, granite, trap, sand and gravel, meet every demand. Lime, Portland cement, brick and tile are manufactured within the Province.

Ontario in 1918 produced 45 per cent. of the total mineral output of Canada. Returns made to the Ontario Bureau of Mines show the output of the mines and metallurgical works of the Province for the year 1918 to be worth \$80,308,972 of which the metallic production was \$66,178,059.

Dividends and bonuses paid to the end of 1918 amounted to \$13,359,210 for gold mining companies, and \$74,810,521 for silver mining companies, or a total of \$88,169,733.

The prospector can go almost anywhere in the mineral regions in his canoe; the climate is invigorating and healthy, and there is plenty of wood and good water. Hydro-electric power is available in many parts of the Province, and many undeveloped water-powers remain to be harnessed. A miner's license costs \$5.00 per annum, and entitles the holder to stake out in any or every mining division three claims of 40 acres each. After performing 240 day's assessment work on a claim, patent may be obtained from the Crown on payment of \$2.50 or \$3.00 per acre, depending on location in surveyed or unsurveyed territory.

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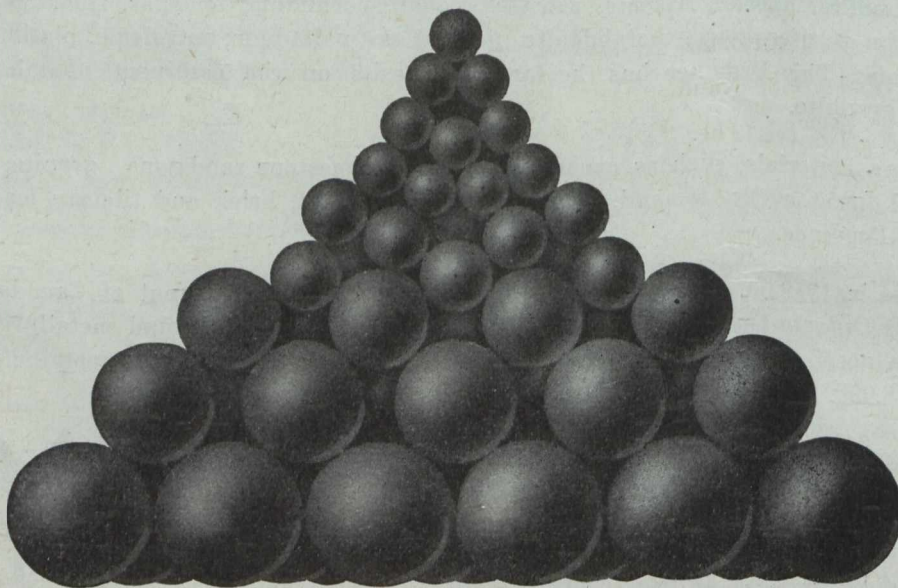
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CONTENTS

Editorial:

- Nanaimo Mine-rescue and First-aid Meet.... 691
The Port Colborne Elevator Explosion.... 691
Calculations on the Cost of Living..... 691

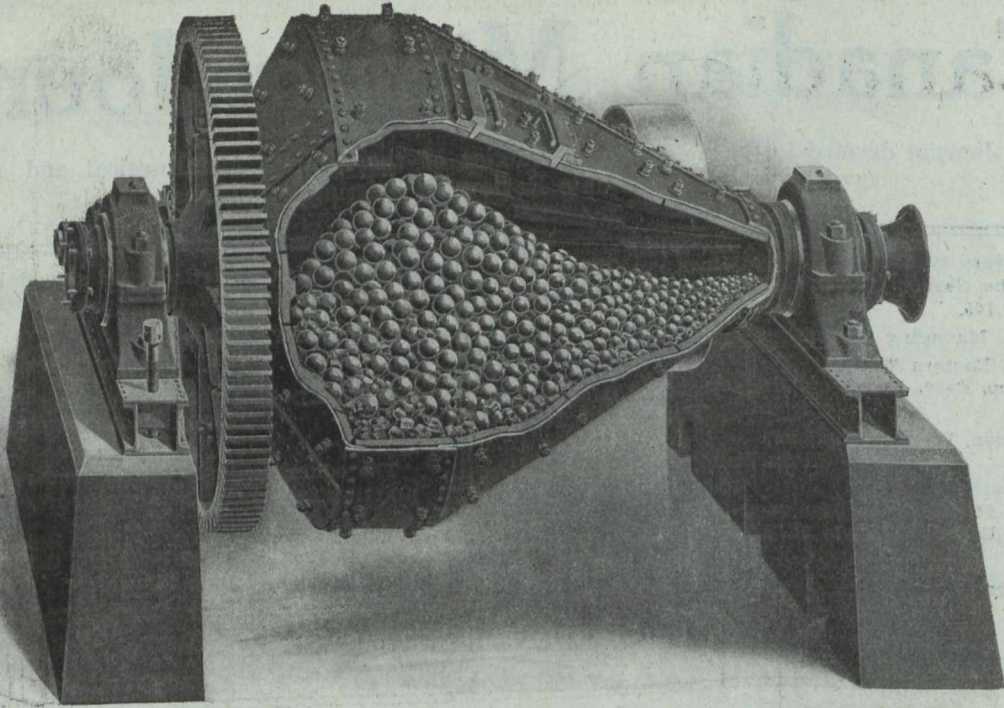
- Larder Lake District, Northern Ontario,
N. C. Pearce 693
A. I. M. & M. E. Meeting — Chicago, 22nd. Septr. 695
Metalliferous Production of Ontario. First Half
of 1919. Department of Mines Report 696

Nova Scotia Notes:

- Canadian "Coal Men". Alex McEachren and
Alex MacDonald 698
First International Mine-Rescue and First-Aid
Meet in the Pacific North West. By our B.
C. Correspondent 699

Special Correspondence:

- British Columbia 700
Northern Ontario 703



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Three 6 ft. x 22 inch cylinder, Hardinge Conical Mills were selected as the fine grinding unit for this new and up-to-the-minute flotation plant, a mill designed to handle 1200 tons per 8 hr. shift.

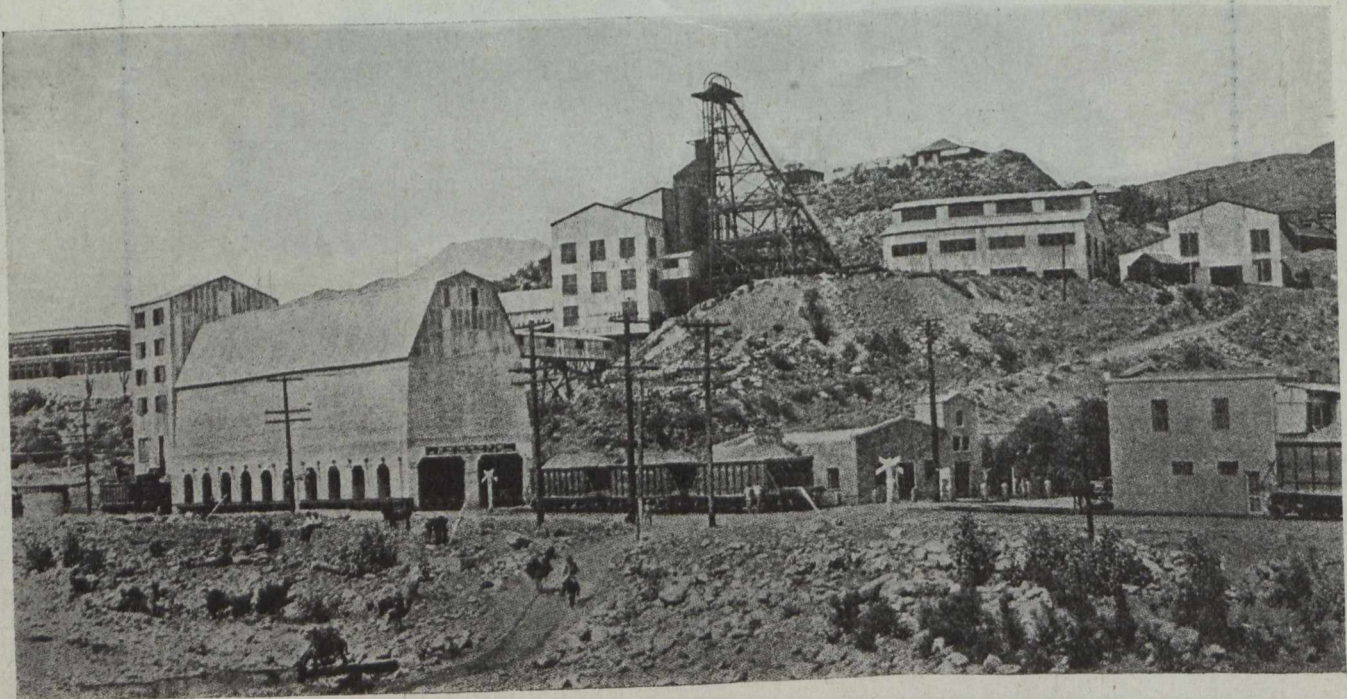
The Ray Hercules Plant has been in operation now for 10 months and their Hardinge Mills on a mixed ore consisting of mineralized granite, diabase and talcose schist are giving entirely satisfactory results.

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EDITORIAL

NANAIMO MINE-RESCUE AND FIRST AID MEET.

We are pleased to receive from the Journal's British Columbia correspondent an account of the first international mine-rescue and first-aid competition ever held in the Pacific North-West, which was a feature of the Labour Day Meet of the Vancouver Island Mine Safety Association at Nanaimo.

Nowhere is international co-operation and good fellowship more appropriately shown than in humanitarian endeavour and in the amelioration of industrial hazards.

The "Journal" is glad to second the suggestion that Vancouver Island teams should be sent to take part in the Pittsburgh Safety Meet. Mr. Sloan, the Minister of Mines of British Columbia, is apparently a Minister who is vitally interested in the Department under his charge, and in attending the Vancouver Island Safety Meet he has displayed a proper conception of his duties of his office. Even emulation in good works is apt to pall if official approval is not prominently displayed, and writing from a distance, the "Journal" desires to congratulate most heartily all those who helped to organize the competition and to defray the expenses connected with it. It is time and money excellently well spent.

The keenness of the tests on which the marks were accredited to the competing teams is also a welcome evidence of a realization on the part of the organizers of mine rescue teams equipped with breathing apparatus that rescue work should not be attempted without rigorous tests of the tightness and general safety of breathing apparatus. A defective apparatus spells only an additional casualty.

THE PORT COLBORNE ELEVATOR EXPLOSION.

The dust explosion at the Port Colborne elevator is a reminder that dust detonation is a danger not confined to coal mines, but that it is present wherever combustible matter is disseminated and suspended in the atmosphere as impalpable dust. Flour mills, grain elevators, mine screening-plants are not distinguishable from coal-mines in this regard, except in so far as the passages and workings of a dusty mine contain a percentage of inflammable gases. The dissemination of carbonaceous material through the atmosphere causes that intimate admixture with the oxygen of the air which gives every dust particle the potentialities of rapid combustion, accompanied by rapid expansion of liberated gases that constitute a truly explosive mixture. One of the singular features of coal mines regulation

has been the disinclination of mining men to believe in the explosive properties of floating coal-dust, and there are those even yet who are not fully convinced judging by the risks they take in lightly regarding the presence of coal-dust as a source of danger. The persistence of coal-miners in continuing to use black powder, with primitive methods of detonation, naked lights, bare electric wiring, and unenclosed electric motors in the presence of coal-dust, usually associated with a little gas and modern methods of copious and swiftly moving ventilation currents, is an anachronism that would be speedily corrected if coal-miners really believed that coal-dust will detonate.

Accumulations of inflammable gas are usually regarded as the predisposing cause of most disastrous coal mine explosions, but a little analysis of the circumstances accompanying colliery explosions will reveal that a significantly large proportion of them were brought about by improper methods of blasting the coal in the presence of coal-dust, and probably only a trifling percentage of gas.

Dusty roads, black powder, "squib" detonation, naked lights; these are the forerunners of the coroner's inquest on coal miners.

CALCULATIONS ON THE COST OF LIVING.

The tabulation contained in the monthly issue of the "Labour Gazette" showing the cost of food-stuffs, coal, rent and light, averaged over the representative population centres of Canada, has been a source of authoritative reference much used in the past five years, and those who have had occasion to follow the flight of living costs into the empyrean can bear testimony to the general accuracy of these figures. Their usefulness has however, been limited by the absence of comparative figures on the costs of boots and clothing, items of the weekly budget that are becoming of ever-increasing importance, not to say concern.

Calculations of the cost of living are invidious ones to make, and their accuracy can be impugned on a thousand categories, according as one is buying or selling labour. The percentage of living expenses borne by the individual items that compose them will vary according to social status, occupational requirements, and individual preferences. The bulking of the item of food-stuffs becomes larger and more menacing as the "margin of subsistence" is approached, but while in the case of the man with small wages and a large family in the dependent stage, the increase of the cost of food-stuffs by one hundred per cent may necessitate an increase of his wages by almost the same amount unless his relative financial position is to be impaired, this

becomes less the case as the expenditures outside of food-stuffs increase.

For this reason, among many others, the usefulness of cost of living statistics is nullified unless it includes all the necessary items of life, among which boots and clothing must be numbered.

If it should be that the index number is about to descend from its celestial expedition, the necessity for some unbiased and authoritative reference will become even more apparent.

It has recently been stated by Prof. Nicholson, a student of economics, that the real workingman stands to gain much more by the decline of prices than by further increases in wages, but the divergiment of opinion on this question, if prices ever do come down, will be just as wide as the gulf between Dives and Lazarus.

We would suggest for the consideration of the Department of Labour that it should attempt to increase the statistical value of the "Family Budget" tabulation by including the items of boots and clothing. The difficulties of doing this are great, admittedly great, but it seems quite necessary that the calculation should be a complete one.

In this connection it is interesting to note that the "Labor Gazette" for August contains a complete and detailed calculation of the average family budget for the periods 1908-10, 1913 and 1918, which include clothing item by item. This is a commendable innovation, and having gone so far, it should be less difficult to enlarge the scope of the familiar calculation of the "Weekly Budget."

It has been suggested by persons who had private axes to grind that the cost of living calculations of the Department of Labour were "faked," the reason given being partly political, and partly based on local price vagaries, but those who make such a statement betray their ignorance of the intricacy of the calculation, the interesting affect of the "mass average" in eliminating local error, and the practical impossibility of "faking" statistics of this kind. It is said that a liar must have a good memory, but the cost of living statistician who attempted to arrange his figures so as to achieve certain ends, regardless of the accuracy of such figures, would require to have not only a phenomenal memory, but would have to be the champion of liars.

We must realize that the wastes of war can only be made good by hard work and not by soft money.

With the abandonment of soft money the soft ways of making money must also be abandoned.

We must try to get back to the pre-war methods of larger production with narrower margins for profit. It is hopeless to tell labor to work more and produce more if there is to be artificial scarcity to secure higher prices.

If capital still tries to continue on the methods of scarcity and monopoly and high prices — I do not say all capital, but enough to be noticeable — there is a real danger of social insecurity.

Capital is asking in some quarters for governmental insurance against falling prices. I venture to say that falling prices are a necessary insurance for the security of capital in general.

A continuance of the raise in prices is not only dangerous to capital, because it may bring social revolution into the range of practical politics, but it is dangerous in a more particular way — the way namely of **foreign trade**.

The real working classes stand to benefit more by falling prices than by rising money wages.

Extracts from a letter given to the staff of Barclay's Bank, London, by Prof. J. S. Nicholson.

CONSOLIDATION OF CORUNDUM MANUFACTURERS.

The International Abrasive Corporation is making application for listing on the Boston Stock Exchange.

This consolidation is of interest to Canadian readers as it is comprised of the Superior Corundum Wheel Company, Dominion Abrasive Wheel Company, Harrison Supply Company, and National Abrasive Company with plant at Waltham, Mass., Amesbury, Mass., Niagara Falls, Ont., and Mimico, Ont. Three of these companies are successfully established. The National Abrasive Company is a new producer.

It is stated that the new Company will be the only producer of "Natite," said to be the most successful of manufactured corundums, and it is claimed that a ton of this patented product can be produced for \$14.25 against \$30 per ton of corundum by the ordinary bauxite process.

The situation of the plants of the Company in both Canada and the United States is expected to give maximum tariff advantages.

BRITANNIA MINING CO., HOWE SOUND, SHOWING RECORD PRODUCTION.

The mine and plant of the Britannia Mining Company, Howe Sound, are working to capacity, and the production records are the highest in the history of the company. The mill is treating about 2,500 tons a day and producing about 2,000,000 pounds of copper per month. The Britannia mine has now four levels extended through Britannia Mountain, connecting with the Empress group. During the past year new developments aggregated 24,595 feet. Diamond drilling was done to the extent of 26,682 feet. Raises are now being driven to connect the 2,700 feet level with the 4,100 or mill level, so that ore can be delivered by gravity to the ore cars on the mill level. This permits the underground transportation of all ore and overcomes winter interruptions to transportation.

Larder Lake District, Northern Ontario

By N. C. PEARCE.

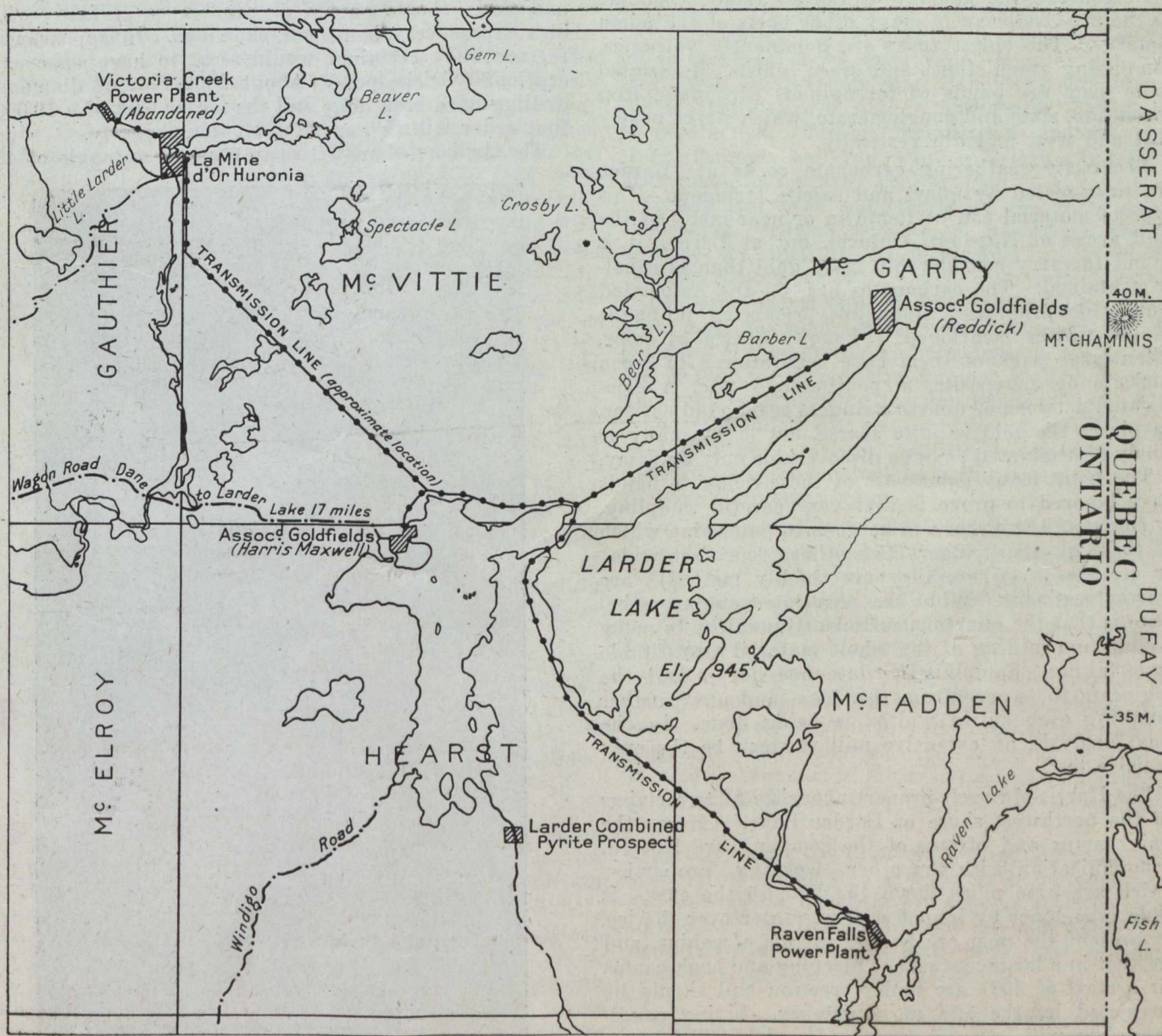
Going forward at Larder Lake is one of the really interesting mining enterprises of Northern Ontario. The program, now being worked out on the properties, calls for the development, the mining, and the milling of huge tonnages of low grade ore. The ore is of a character that has given rise to many opinions of its worth. The mining according to program, will be of the open-cut sort on ore bodies, 300 feet and more in width. The milling, if it is to have a success in keeping with the remainder of the ambitious plan, will be done in mills of capacity greater than anything in Northern Ontario, greater even than the units now being completed at the Hollinger, with their total of 3,500 tons daily. In fact, two mills, each of 5,000 tons, are talked of.

The company which has all these broad gauge plans in hand, is the Associated Goldfields Mining Company.

In the early stages before production, monetary strength of a company reflects confidence, and this company has \$550,000 of confidence, cashed, in the banks. With that much to go on their enterprise can be discussed with a feeling that it will be carried well forward and that we shall see a good trial of the worth of the big low grade ore bodies which are being developed.

The results are bound to be of extreme interest all through Northern Ontario for other bodies, more or less similar in character although not in size, exist in other parts. Some of these, as the writer knows were staked first a dozen years ago, allowed to lapse, and restaked since, and perhaps some are again even.

The properties being worked by the Associated Goldfields—their total holdings in Larder Lake being 2000 acres—are the Harris-Maxwell, Reddick and Kerr-



Scale of Miles
The Larder Lake Area.

Addison. These names, particularly the first two, are well known to those who remember the boom in Larder that followed the early exciting years of Cobalt.

At the Harris-Maxwell the ore body on surface was opened up across a width of 130 feet. It may be wider there for water on one side and deep overburden on the other cut off further investigation. At the 500 feet level cross cuts of more than 300 feet have failed to find either wall. This body is known to be 1000 feet long.

The Kerr-Addison and Reddick properties, which adjoin, our ore body that at surface outcrops 300 feet in width, and is indicated by diamond drill to be 500 feet wide in places. This can be traced on surface over a length of 1200 feet, and a recent strike in the underground work on the Reddick would indicate that its length is at least 2000 feet. These figures tell of the enormous prospects providing the ore bodies are found to contain commercial ore throughout their length and breadth.

In general, the geology of Larder Lake is similar to the pre-Cambrian in many other parts of the north country. The oldest rocks are dominantly volcanics, comprising green stones and green schists. Associated with them are bands of ferruginous carbonate, iron formation, slate and conglomerate, which strike nearly east and west and dip vertically.

The rusty-weathering carbonate rocks at Larder are inter-sected by quartz and calcite stringers. This type of material can be found in or near many of the gold areas of Northern Ontario, but at Larder it is found to carry considerably more gold than is usually contained. The carbonates are, on the Associated Goldfields properties, dolomites, occurring in bands of the widths mentioned. Usually brown in color, often large parts of them have been altered to green fuchsite or mariposite, serpentine and talc. A complicated network of quartz stringers is the gold carrier. In places the gold is quite coarse, but it is usually so finely disseminated as to be discoverable only by assay.

The point many examiners of these dolomite bands have labored to prove is that very careful sampling, in fine detail, will have to be done to determine which of these quartz stringers (sometimes four feet wide) or ore shoots (where they are thickly matted) are worth treatment. What the Associated engineers believe is that the quartz is sufficiently wealthy to make mining and milling of the whole material a profitable undertaking. Sampling to date has not caused the engineers to swerve from this idea, and now further sampling over entire widths is being done. In the final analysis, an extensive mill run can be the only decisive test.

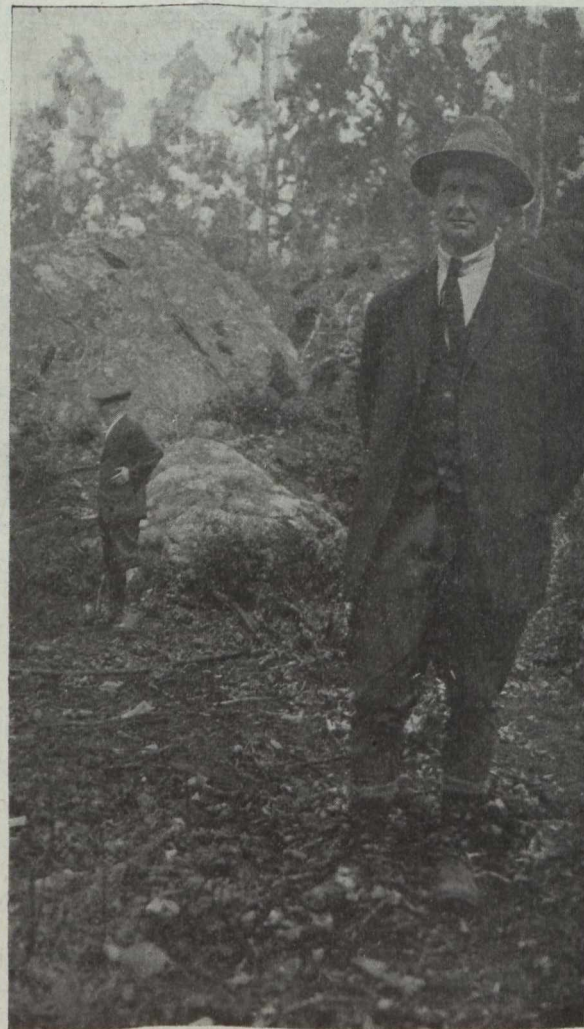
The Harris-Maxwell property consists of two claims on the northwest shore of Larder Lake. Here the main camps and offices of the company are located. Communication with the other working properties, which are nine miles down the lake to the east, is made in summer by launch and in winter over the ice. At present the men are housed in bits of cabins, and they eat in a large marquee. Sleeping and cook camps for a staff of 200 are under erection and should be completed by the end of September. Living conditions then will be much improved and it will be possible to attract a full working crew. As it is now, the company employs far more men than any other developing mine in Northern Ontario.

The workings at the Harris-Maxwell are confined to crosscutting and drifting at the 500 foot level, where in all about 1200 feet of work has been done. Stations were cut in the shaft at each 100 feet. The openings are all in silicified dolomite. To a depth of 440 feet the workings are largely in grey dolomite while below this the rock is quite green, being rich in fuchsite, and cut by quartz stringers which carry much tourmaline and pyrite. Quite coarse gold can be seen in several places, and it is often accompanied by the fine galena.

At the 500 foot level considerable faulting is to be observed, also a change in places back to grey dolomite from the green. The management make the statement that the ore body should produce millheads of at least \$5 a ton.

On the Kerr-Addison property, which many observers, lay and professional, will think is the prettiest looking of the set, the only work of consequence done is diamond drilling. A little trucking on surface, and a short tunnel near it, can be seen of the work performed in the early days. In these old workings a careless examination reveals free gold, and new shoots put in at random or surface will also expose very handsome showings. In appearance the ore body certainly would seem to have some exceptionally rich spots. About 2000 feet of diamond drilling have been done and the major part of a 10,000 foot order will be expended on this property.

The drill holes are set in to cross at an angle of 45



C. DAIMPRE,
Manager of the Associated Goldfields
Properties.

or 50 degrees first from one wall, then from the other. The first hole showed the dolomite band to be 300 feet wide, and a later hole, further along, had it at that place 500 feet wide. The body held its characteristics throughout. An interesting appearance, under surface, was a broad tongue of porphyry. No assays have yet been made of the cores.

Adjoining the Kerr-Addison, on the strike of its big ore body, is the Reddick property of the Associated Goldfields. This is the pioneer property of Larder Lake. It is the first on which gold was discovered, and also makes a bid for fame because of producing the material for the first gold coins minted in Canada.

The work at the Reddick is confined to the 100 foot level, and totals about 1200 feet of drifting and cross-cutting. About half of this was done by former owners, and was not especially expert. The later work has been more objective and resultful. The rocks consist of alternating bands of dolomite and green schists. Two ore bodies, one 50 feet, the other 10 to 40 feet, in width, have been explored. The values are reported to run \$10 to \$12 the ton.

In August, in a cross-cut to the north, ore closely resembling that on the Kerr-Addison was struck. The last information was that this cross-cut was 75 feet into the ore body and that the condition pertaining to the second round of shots, when free gold was brought out, had continued with every round. In the west drift, which had been following a 50 foot vein, the color and character of the ore changed last month, and as it was known to angle toward this place it is quite possible that the Kerr-Addison body has been picked up here also. The writer saw some of the ore from the later faces (the drift now being 50 feet into the new ore) and it is remarkably prolific as to coarse gold and general mineralization.

The great point is: what measure of success will the Associated engineers have in taking these ores bodies as a whole and milling them. Those who read reports a year old, or who have not visited the properties, may shake their heads wonderingly. But on the properties the observer sees so much coarse "sweetness" scattered through the quartz, sees the stringers matted in a tangled network of quartz and dolomitic material, that he quickly takes in some of the confidence and assurance of those who are footing the bills and adventuring in an enterprise whose rewards, to success, must be extremely high.

Cheap hydro power for "glory holing" mining methods abounds. The company has its own plant on Raven Falls, on the river which flows out of Larder Lake. The plan is to mine the bodies by electric shovels and run the ore to the mills, down inclines, by electric trams. It is an extremely cheap method, this form of open cutting.

As part of its activities the Associated keeps going a small lumber mill, which has cut all the lumber for the camps and mine buildings, and is now cutting material for mill buildings.

Not a handicap, but assuredly a great difficulty to be overcome, is the condition of the road from Dane, on the T. & N. O. Railway, to Larder Lake. Some work was done on it during the summer but that work consists largely of scraping the road-bed into a loose mass and then putting it back and patting it down smooth. The autumn rains have played havoc with it already and it is, if possible, worse than before.

Other interests are working in the Larder Lake district, notably Nipissing, Crown Reserve, and other silver companies, and the old La Mine D'Or Huronia is being put into shape for a resumption of milling within a few weeks. But this article was intended only to take up the "glory hole" plans for the three leading properties.

A. I. M. & M. E. MEETING, SEPT. 22nd AT CHICAGO.

Practically every subject of importance to the American mining world will be discussed at the 120th. meeting of the American Institute of Mining and Metallurgical engineers, which convenes here for a five-day session on September 22nd. This is the 120th. meeting of the Institute and the attendance will include all those prominent in mining, United States Government officials and leaders of industry.

The fact that mine taxation, conservation of coal and new developments in the measurement of high temperatures are subjects to be thoroughly discussed at this meeting has excited great interest among mining engineers. On account of the number of subjects to be presented, a good part of the five days is given up to technical work from which it is expected that there will be developments of considerable moment.

The Institute will take a number of special trips to points near Chicago, including a steamer trip to Gary, Indiana, and rail trips to North Chicago and Milwaukee and nearby coal fields.

It has just been announced by the Institute that Charles M. Schwab will be in attendance and will address the Institute at a banquet on Wednesday evening, September 24th.

The principal session on the opening day will deal with mine taxation and representatives of the U. S. Treasury will be present to participate in the discussion and to gain the cooperative opinions of the mine owners and engineers. During the day technical sessions will take up non-ferrous metallurgy and metallography; coal and gas; milling; industrial organization and geology. In the evening there will be a smoker at the Chicago University Club.

On the second, September 23rd. the Institute will take an excursion by boat to the plant of the United States Steel Corporation at Gary, Indiana, with technical sessions en route on the subject of iron and steel. In the evening, sessions on oil and iron and steel will be held.

On the third day, September 24th. several hours in the morning and afternoon will be given over to conferences on sulphur in coal, iron and steel and mining and local resources. In the evening President Horace V. Winchell of Minneapolis will hold a reception at Congress Hotel, to be followed by a banquet and dancing.

On Thursday, the interest of the Convention will be centred on pyrometry, a study of high temperatures, and some of the members will take an all-day excursion to the La Salle District to view the coal fields, cement manufacturing, three big zinc works and other industrial developments related to mining.

The Weekly Bulletin of the Department of Trade & Commerce states that a Sheffield (England) importer desires Canadian quotations on cobalt, nickel and ferro-alloys.

Ontario's Metalliferous Production, First Half-Year, 1919

Department of Mines Report.

Returns received by the Ontario Bureau of Mines for the six months ending June 30th, 1919, are tabulated below, and for purposes of comparison the quantities and values are given for the corresponding period in 1918.

Unfortunately the strike at the Kirkland Lake camp, which began on June 12th, is still effective, and that source of gold supply is shut off for the time being. At Porcupine, however, the output is increasing, more particularly at the Hollinger, Dome, and McIntyre

PRODUCT.		Quantity.		Values.	
		1918	1919	1918	1919
Gold	ounces	229,421	231,729	4,648,164	4,666,759
Silver	"	8,736,002	5,744,172	8,267,624	5,951,362
Platinum	"		13.6		818
Palladium	"		16.4		987
Cobalt (metallic)	lbs.	118,889	59,337	249,045	93,157
Nickel (metallic)	"	208,802	5,147,745	83,332	1,825,347
Nickel Oxide	"	21,768	5,503	5,551	1,567
Cobalt Oxide	"	259,371	202,912	339,052	301,791
Cobalt Sulphate & Hydroxide	"		26,289	27,505	16,164
Nickel Sulphate & Carbonate	"	222,039	133,732		15,531
Molybdenite, concentrates	"	32,656		45,845	
Lead (pig)	"	776,711	1,481,204	66,630	54,802
Copper (blister)	"		3,080,492		452,055
Nickel in matte (*)	short tons	21,393	7,072	12,385,950	3,535,915
Copper in matte (*)	" "	10,708	4,341	4,283,040	1,128,753
Copper ore	" "	16		318	
Iron Ore, exported (†)	" "	30,741	5,804	138,018	44,309
Iron, pig (x)	" "	38,130	24,095	1,034,517	670,512
Total				31,574,591	18,759,829

* Copper in matte was valued at 20 cents and nickel at 30 cents per pound in 1918. For 1919 the values have been placed at 13 and 25 cents per pound respectively. The total matte produced contained 10,605 tons of nickel and 5,911 tons of copper. See heading "Nickel-Copper" for explanation.

† Total output of iron ore was 70,955 short tons worth \$307,645.

x Total output of pig iron was 305,577 tons valued at \$8,503,644. Figures in the table represent proportional product from Ontario ore.

General Remarks.

As a result of after-war conditions there was a material reduction in Ontario's metalliferous production for the first six months of 1919 as compared with the corresponding period of 1918. This is due chiefly to the curtailed production of nickel-copper matte to about half that of 1918, when there was the greatest production of these metals that this Province has ever known. The silver output continues its natural decline, although the price of the metal has been rising steadily. Gold, however, shows a slight increase over both the 1917 and 1918 production. Molybdenite, for lack of a market, is not being mined. The precious metals, platinum and palladium, are now recovered at the Port Colborne refinery of the International Nickel Company of Canada, Ltd. Lead along with most other metals has fallen in price since the close of the war.

Gold, Platinum and Palladium.

Gold production, 231,729 ounces, shows an increase but is still a little under the figures for the first half of 1916, when 235,060 ounces were recovered. Unfor-

mines. During the half year 490,523 tons of ore were milled, of which 465,407 were treated at Porcupine and 25,116 tons at Kirkland Lake for a recovery of 212,895 and 18,637 ounces respectively. As a by-product of nickel-copper refining at Port Colborne gold to the value of \$3,921, also platinum and palladium in small quantities as shown in the table of production, were recovered.

Silver.

Despite the high price of silver, which averaged 103,677 cents per ounce for the half year, production from Cobalt declined nearly three million ounces as compared with 1918. There were 28 properties from which shipments were made; those marketing one-quarter million ounces or over are named in descending order; Nipissing, Mining Corporation of Canada, McKinley-Darragh-Savage, Kerr Lake, Miller Lake-O'Brien, Coniagas, O'Brien and Buffalo. On July 23rd a strike was called by the Miners' Union. A settlement in the near future is probable as representatives of both miners and managers are meeting in conference. Even with an early resumption of work

the year's output will be materially reduced by the strike. Of the total output 42,900 ounces were recovered from gold ores and 11,714 ounces from the refining of nickel-copper matte. The Miller Lake-O'Brien and Crews-McFarlan mines at Gowganda contributed 409,344 ounces of the total, the balance coming from Cobalt proper and Casey township. Seven shippers were paid for the Cobalt content of the silver ore, receiving therefore \$16,737. The ore testing and sampling plant at Cobalt, formerly operated by Campbell & Deyell, was purchased by the Ontario Government on May 8th, and since that date has been under the management of A. A. Cole, Mining Engineer of the T. & N. O. Ry. Commission.

Silver-Cobalt Refineries.

In addition to metallic cobalt and nickel and various compounds of these metals, as noted in the table, Southern Ontario refineries recovered 2,659,569 ounces of silver and marketed 1,949,280 pounds of white arsenic. This production came from plants located at Deloro, Thorold, Welland and Chippawa. Nickel metal from these refineries to the extent of 106,023 pounds was marketed for \$37,119.

Nickel-Copper.

Since July 1918, when the production of refined nickel and blister copper by the International Nickel Company of Canada, Limited, began at Port Colborne, Ont., the total quantities of nickel and copper in matte do not appear in the table production. The figures given represent the shipments of matte to the United States and Wales. The close of the war found the nickel companies over-stocked, and consequently the price fell and production was curtailed. Until the surplus stock has been absorbed nickel-copper matte production will not increase even to a pre-war basis. Ore smelted in the period totalled 370,541 tons as compared with 717,119 tons for the corresponding period in 1918. Ore shipped from the Alexo mine to the Mond Company smelter was 2,215 tons and the British America Nickel Corporation on June 30th had 46,814 tons stock-piled.

Iron-Ore and Pig-Iron.

Of the total output of iron ore 65,151 tons went to Ontario blast furnaces, and 5,804 tons were shipped out of the Province. The Magpie and Moose Mountain mines were the chief producers.

Four iron furnaces at Sault Ste. Marie, two at Hamilton and one each at Midland, Parry Sound, Port Colborne and Deseronto were in blast. Foreign ore smelted in the period was 598,581 tons and Ontario ore 31,238 tons. The total output of pig-iron was 303,577 tons worth \$8,503,644; steel 296,081 tons worth \$8,770,717 and 23,955 tons of spiegel valued at \$868,148. The Algoma Steel Corporation now makes in its own ovens all the coke required in its plant, the output being 183,970 tons for the period.

Nova Scotia Notes

Coal Export Business Developing.

Some indications of a return to pre-war operating conditions are shown by recent news from the collieries in Nova Scotia.

An export trade in coal is being done, which is understood to consist largely of coal delivered to vessels calling for cargo. There have been newspapers reports of large contracts made with European buyers,

but so far the bulk of the new business has been done in the supplying of cargo to foreign owned vessels that have been compelled to come to this side for coal because of the European shortage.

In this connection shipping is a more important consideration than the coal supply itself, and there is an unlimited market in Europe at the present time, and for an indefinite period to come, open to Canadian coal companies that possess vessels free to trade to Europe. The Nova Scotia Steel Company is understood to be taking advantage of the opening, having put the S.S. "Wascana" into the coal trade, together with another freighter the operation in which was obtained by the purchase of the coal-shipping plant of the Imperial Ministry of Shipping at the Terminal Wharf in Halifax.

The Scotia Company have sold a number of cargoes for Italian and French destinations.

The Dominion Coal Company are also obtaining considerable export business for Holland delivery and for Scandinavian ports. It may be taken for granted that the Nova Scotia companies have absolutely no intention of relinquishing the business in the Montreal market which they have been at such pains for so many years to cultivate, and a larger quantity will be delivered in the Montreal district before the ice forms than has been sent up the River since the 1915 season, but at the present time, if freights are obtainable, the European market offers more profitable sale and it will be surprising if the Nova Scotian operators do not take full advantage of it.

Colliery Extensions.

Another encouraging sign is the commencement of development work, after an almost complete cessation for five or six years. If development work had been much longer delayed, the aspect of the future of the Nova Scotia coal industry would be worse than it is, and even with new extensions and developments pushed to the utmost during the next five to ten years, it will not be found possible to make up the leeway that has resulted from the complete discontinuance of new developments during the war period.

Dominion Coal Company.

It is understood that the Dominion Coal Company are re-opening the No. 17 Colliery—more familiarly known as the Old Victoria Mine. This is one of the collieries that was acquired by the Dominion Company when it was incorporated. Along with the Gardiner Mines and others it was closed down when the Company developed its policy of working only the Phalen seam collieries concentrated in the district of Glace Bay. Just previous to the war, the mine was pumped out, and the main haulage way was re-timbered and some development work done at the foot of the deeps. An extensive surface layout was planned, and a few buildings were erected, but when the needs of the army commenced to shorten the available labour supply, the extension work was discontinued, and only sufficient force was kept at work to maintain the mine in order and to keep it ventilated and pumped out.

The production of No. 17 was brought up to about 2,000 tons monthly just previous to the outbreak of war, and it will not be possible to increase the output beyond a few hundred tons daily until the surface equipment is installed. The lower workings of this colliery are dipping quite steeply, between 30 and 40 degrees, and the conditions of operation will be found probably more difficult than in any of the other collieries of the Dominion Company.

The coal is of excellent quality, and in the days when the mine was independently operated, "Victoria Mines" coal had a wide reputation.

A large colliery village had been erected before the war, and is available to house any new workers obtained. The houses are of modern design, well spaced and most healthily situated, the surrounding country being a pastoral and long-settled farming district.

The Dominion Coal Company is also making preliminary investigations, of a prospecting and testing nature, to determine the advisability of re-opening the Gardiner Seam. This is a seam of good quality, about 4' 6" in thickness, well adapted for longwall operation. It underlies the whole land and submarine areas of the Dominion Company in the Glace Bay District, and has mined only to a very small extent. This is one of the seams that was reserved for future development when the Dominion Company in 1893, as previously mentioned, concentrated its operations on the thicker and more accessible seams on its properties.

The Dominion Coal Company also controls the properties of the North Atlantic Collieries at Port Morien, where there is a very large submarine area of coal awaiting future development. This submarine area may in years to come assume importance second only to the submarine tract off Glace Bay and Waterford.

As previously mentioned, the Dominion Company are also sinking a new shaft to the Phalen Seam near No. 2 Colliery, and are understood to contemplate a second new shaft to develop the submarine area off Glace Bay tributary to the Caledonia Colliery area.

Nova Scotia Steel and Coal Company.

The Scotia Company is testing the Stubbert seam near Point Aconi, but nothing beyond a preliminary operation is as yet contemplated.

It is also reported that the Scotia Company intend to erect a by-product coking plant at Sydney Mines, and to further develop the system of electrical operation of its collieries by the power derived from waste gases which it has followed for a good many years. While it is known the Scotia Company have for some time been studying plans for such a coking plant, no official confirmation of the report has been announced, and it may therefore be presumed that future plans are as yet only in a formative stage.

The coal production of the Scotia Company has shown a marked improvement of late. An aggressive policy is being pursued by the management. A good many additions to the official staff of the Company have recently been made, and the collieries are working practically full time. The production of the Florence Colliery has in particular been increased.

THE HUNTINGDON MINE.

..Mr. F. M. Connell has returned to Toronto after being for some time at the Huntingdon copper mine at Eastman, Quebec. He reports that very satisfactory results are being obtained. Shipments of concentrate are being made regularly. A first class compressor which had been installed during the war on a chromite property near St. Cyr has been purchased by Mr. Connell's company, the Eastman Mining & Milling Co. Ltd., and will be installed at the Huntingdon.

CANADIAN COAL MEN.

**Alexander Mc. Eachren, and Alexander MacDonald,
Asst. General Superintendents of the Dominion Coal
Company.**

The operating officials of the Dominion Coal Company have usually been selected from amongst the employees of that Company, who in turn have been, and are still very largely, recruited from amongst the descendants of Scotch Highlanders who settled in Cape Breton Island, and have left an indelible impress on the place-names of the Island and the racial characteristics of its population.

At one time, almost without a single exception, the mine managers and superintendents of the Dominion Coal Company were born in Cape Breton Island, or at any rate not outside of Nova Scotia, and boasted the hereditary prefix "Mac" as part of their names.

The skill of these men as coal-miners was in the first instance inherited from their fathers, and perfected by early acquaintance with the "coal-face". No better examples of practical miners are to be found than these same Nova Scotians, who have made their mark, not only in New Scotland itself, but in every mining camp of this Continent, from Mexico to the Yukon. The gold nugget worn as a personal souvenir, with the blue scars of coal-dust in old cuts and abrasions, added to other signs that the initiated may recognise in the free masonry of the miner, tell the history of some Nova Scotia's wandering sons, who, by the way, wandered in just the same old way, and with the same old spirit into the fighting in France, and left their marks on "Fritz" for a change.

That, however is another story, which someone may someday gain fame by relating, for the story is one that will bear embellishment.



ALEXANDER McEACHREN.

Among the sons of Cape Breton who made their mark at home, being both beyond the military age but not nevertheless of pacifist disposition — at least not remarkably so — are Alexander MacDonald and Alexander McEachern, in the differing spelling of whose paternal prefix there is written much history.

Alexander McEachern has filled every capacity in the employment list of a colliery, having commenced as a trapper boy and risen through successive grades to the position of Assistant General Superintendent of the Dominion Coal Company. He has taken a leading part in the mining schools of Cape Breton, having assisted both as teacher and by his personal interest and influence to make this form of instruction as adequate as the appropriation of the Local Government will allow. Mr. Mc. Eachern has always been a student of mine safety, and in this respect has kept well in advance of his times.

He is a member of the Standing Examination Committee of the Province for the granting of certificates of competency, and a Councillor of the Mining Society of Nova Scotia. Previous to being appointed to his present position, Mr. McEachern was for eight to nine years Superintendent of the Waterford district of the Dominion Collieries, which includes the Collieries Nos. 12, 14, 15, 16 and 17.

Alexander MacDonald, likewise, has had a life-long experience in the Cape Breton collieries, and previous to being appointed to his present office was for nine years a Superintendent of No. 3 District, and before that was Manager of Caledonia Colliery for about nine years.

Both the subjects of this sketch have had experience in the harder tasks of a colliery official's life, having

been intimately concerned with mine fires and explosions, and were it not that we defer to the general objection of conscientious mine officials to public announcement of their virtues, we could say many things that would sound like flattery, but would be merely a plain recital of incidents that are part of the ordinary duties of the responsible colliery official, and which the profession does not advertise.

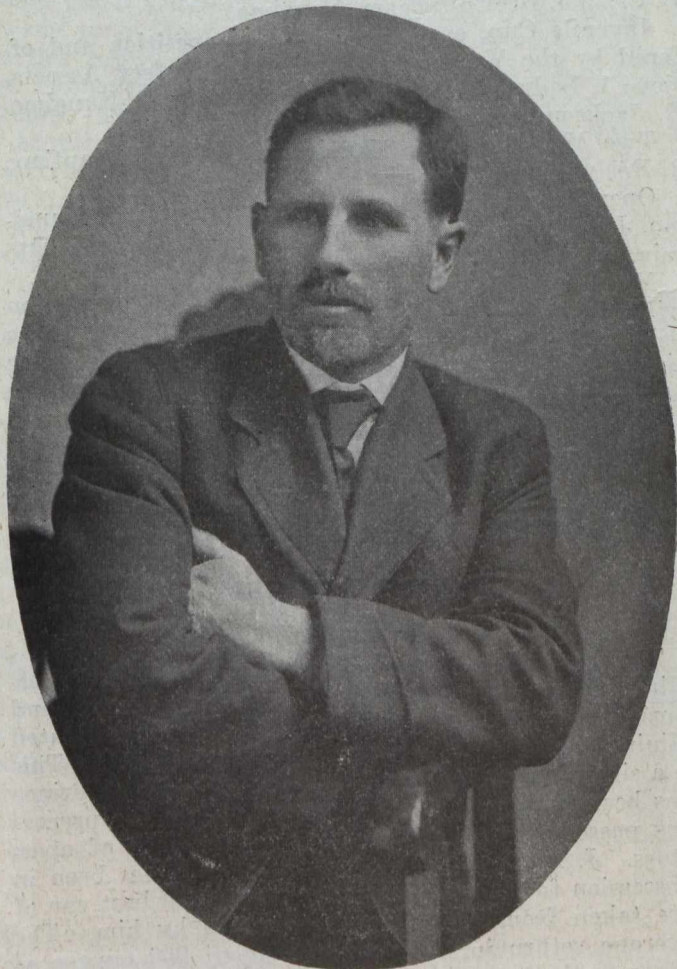
The "twa Sandies" of our text are bound for the "top level" by different routes, but the writer imagines that before the Great Assize they will both obtain certificates of competency. At least he would not mind taking a chance with either for company.

FIRST INTERNATIONAL MINE-RESCUE AND FIRST AID MEET IN THE PACIFIC NORTH WEST

(Reported by our Special Correspondent.)

An international competition in Mine Rescue and First Aid Work took place on Labor Day, the 1st. of September, under the auspices of the Vancouver Island Mine Safety Association, at Nanaimo, B. C. As it was the first held in Western Canada to be attended by representatives of the coal mining districts of the States of Washington and the first for a number of years to bring teams from the Crow's Nest Pass Coal Field, Eastern British Columbia, the event attracted unusual attention and the added interest stimulated those entering to special training. The result, it is admitted frankly, was a disappointment to the Canadians. The men from the Pacific Coast Coal Company won the British Columbia Championship Shield and second place was taken by the team representing the Roslyn Fuel Company. Consequently the trophy has left the Province for the first time. It must not be supposed that the British Columbians were anything but good losers. They congratulated the victors spontaneously and warmly, their sentiments being well expressed by Hon. Sloan, Minister of Mines, when, in the course of the presentation of the prizes, he said that, while the visitors unquestionably had won on their merits and so were entitled to the hearty congratulations of which they had been the recipients, they would find the Canadians back next year determined to reverse the present decision.

There were nine teams entered. Besides the two from Washington State the Canadian Western Fuel Company, of Nanaimo, B.C., had three, the Crow's Nest Pass Coal Company, Fernie, B. C., one; the Granby Company's Collieries, Cassidy's, one; and the Canadian Collieries (D) Ltd., two; one from the Extension and the other from the Cumberland mines. Of these the Cumberland team only was equipped with the Draeger Apparatus. Those from the Roslyn Company and from the Canadian Collieries (D) Ltd. (Extension) used the Paul while the remaining six teams were provided with the Gibbs. The usual boarded structure represented the mine and the problem, which was not varied, was that an explosion had occurred and the miner to be rescued had barricaded himself in against the gas, the ventilation, of course, having been cut off. It was simply stated that the said miner was alive, nothing being given as to whether he was injured or overcome. For this reason it is interesting comment that all the teams bore the patient from the mine on a stretcher, none taking advantage of the opportunity



ALEXANDER MacDONALD.

to merely walk him through the bad air to the surface with a breathing machine as protection. The judges were James Bagley, State Mines Inspector for Washington; R. Schonning, manager of the United States Bureau of Mines Staff, Washington State; George Wilkinson, Chief Inspector of Mines for British Columbia; and Dudley Michel, Instructor in First Aid and Mine Rescue Work for the Provincial Department of Mines.

An analysis of the marking of the judges is illuminating because it shows that the competition was won and lost, not in actual mine rescue work but on the testing benches where the judges, Messrs. Michel and Schonning, presided and where the apparatus of the contesting teams was subjected to a rigorous test prior to being buckled on the men. The Fernie Team was the first to go through. They had no trouble with the Gibbs machines, escaping without a deduction because of "loose joints or connections." In mine work, however, thirty-six points were lost. A leak cost the Roslyn Team, ten points, while twenty-four were dropped in the mine. The Pacific Coast Coal Company's Team, Black Diamond, winners of the Shield and Championship, were penalized ten points for a leaky point or connection and fifteen for their performance in the mine. Laird's Team, of the Western Fuel Company, lost sixty points for leaks in apparatus and five in mine work. The Extension Team dropped ninety points for leaks in apparatus and forty-five for their work in the mine. The remainder may be summarized as follows:—

	Loose Joint or Connection.	Mine Work
No. 2 Team, Western Fuel Co., Nanaimo	30	40
Cumberland Team, Canadian Collieries (D) Ltd.	70	35
Granby Collieries (Cassidy's)	100	49
No. 3 Team, Western Fuel Co., Nanaimo	30	20

It will be seen from the above that there were two teams which stood, in actual performance in the mine, head and shoulders above the others, viz., that the Pacific Coast Coal Co., Black Diamond, and No. 1 (Laird's) Team of the Western Fuel Company, Nanaimo, B. C. Although, as stated at the outset, the Canadians are not disposed to withhold any of the credit due those who came from the other side and took the honors they, quite naturally, feel that it is rather too bad that the decision should have gone against them solely because of minor leaks in apparatus, located through the severe tests of soap suds and penalized, when found, to the maximum extent. Mr. Laird and his men point out, too, that the apparatus which they used had previously been through the test, in the hands of the Fernie team, without a leak being found and that that experience no doubt accounted for what looseness subsequently developed. Of this there cannot be any doubt: that the Black Diamond and the Nanaimo Teams were the best in actual mine rescue work on their showings in the competitions under review and that the Laird Team, apart from the discrepancy found in their apparatus, must be congratulated on their performance in the mine. They did so well that it has been suggested that they should be sent to Pittsburg for the forthcoming international meet. In passing it may be observed that the "soap sud" test no doubt was the result of

the very keen competition between the Gibbs and the Paul apparatus and their representatives on the Pacific Coast. The former was represented by H. H. Sanderson, the western manager of the Mine Safety Appliance Co., and George Riggs, the factory expert; and the latter by A. G. Menny, of the American Atmos Corporation.

Other prominent coal mining men who watched the contests with interest were Stephen H. Green, manager of the Pacific Coast Coal Co.; Harry Freeman, superintendent for the same company at Black Diamond; Wm. Shaw, superintendent of the Roslyn Fuel Company; Thomas Graham, General Superintendent of the Canadian Collieries (D) Ltd; J. J. Grant, manager of the Nanoose Collieries Ltd.; John Hunt, superintendent of the Canadian Western Fuel Co.; and officials of the B. C. Department of Mines. Among the guests of honor was Hon. Wm. Sloan, Minister of Mines, through whose influence as a member of the government a substantial grant had been obtained to defray the expenses of the event. Mr. Green, of the Pacific Coast Coal Co., was delighted with the success of his men and has no hesitation in predicting that they may be depended upon to bring honor to the west at Pittsburg.

In the First Aid Competitions the honors were fairly evenly divided, the results being as follows:—

Department of Mines Cup: 1, J. W. Jemson's Team, Nanaimo, B. C.; 2, George Carson's Team, Nanaimo, B. C.

One Man Event: 1, J. S. Murphy, Pacific Coast Coal Co., and Julius Tonda, patient; 2, R. Charnock, Nanaimo, and J. McCourt, patient.

W. L. Coulson Cup: 1, Jeo Barton's Team, Nanaimo, B. C.; 2, J. Brown's Team, Nanaimo.

Juvenile Cup, open for annual competition and offered by the Vancouver Island Mine Safety Association: 1, Ladysmith, R. Ferguson, captain; 2, Nanaimo, R. Jackson, captain.

Two Men Event: 1, Nanaimo, A. McNeill, captain; 2, Roslyn Fuel Company.

Open Event, (open to all working miners): 1, Nanaimo, Joe Barton, captain; 2, Nanaimo, A. McNeill, captain.

Mr. Sloan, in an address delivered in connection with the prize distribution, stated that as long as he held office he would do his utmost to assist mine safety competitions, believing them to be important in advancing the welfare of the coal miners. He was proud to have been identified with the first international Meet of the kind in the Pacific Northwest.

Special Correspondence

BRITISH COLUMBIA.

Slocan, B.C.

The first shipment this season from the Black Prince Mine, situated on the divide between Lemon and Springer Creeks, has been sent to the Consolidated Mining & Smelting Co.'s smelter at Trail, B.C. This is a silver-lead property of promise. The Black Prince has been developed to some extent and in the process has passed through the hands of a number of operators. J. E. Tipping, the present owner, has been in possession for the past four years and the best car of ore taken from the mine was shipped by him. The average return in this case was about 200 ounces of silver to the ton.

Nelson, B.C.

Reports reaching here are to the effect that work is proceeding on the Lucky Boy and the Security Mines of the Erie District which, together with the Second Relief Property, suffered by fire on the 16th of July last. S. L. Myers, superintendent of the two former properties, is engaged in getting out timber for a new bunkhouse and for other buildings. In the meantime Mr. Myers is camping in the tunnel of the Lucky Boy.

There is considerable activity at the Eureka Mine, Eagle Creek. W. M. Myers, the superintendent, is surveying preparatory to the installation of a new aerial tramway from the upper terminal of the Granite-Poorman Mine tramway to the lower adit of the Eureka workings, which will be about 3,000 feet in length. The Granite-Poorman Mine tramway, running between the mill and Granite siding, a distance of 3,000 feet, is being dismantled and the material will be put in the new line. The tramway being removed was utilized originally to facilitate shipment to the smelter. The Granite mill is running steadily on two shifts, handling ore from the upper levels of the Eureka. A crosscut is being driven on the latter property which will give 450 feet depth on the vein. There have been a number of visitors to the Eureka from Walla Walla recently, among whom were Mr. and Mrs. C. E. Nye, the former being the president of the Inland Mining Company, which is responsible for the work outlined.

J. W. Evans, manager of the Mountain Chief Mining Company, announces that a shipment of 200 tons is being made to the Consolidated Mining & Smelting Co.'s smelter at Trail, B.C., this being the first ore to go from this copper property under its present management. Development has been underway since last February. The ore body, which at first was chalcopyrite, acquired a substantial percentage of bornite as the shaft made depth. It now is being developed by a lateral drift, which was started at a depth of 60 feet, with a face of 9 feet. The general character of the ore is being maintained.

Lardeau, B.C.

Antimonial lead ore is said to have been struck on the E and M claim, Cascade Creek, Lardeau District. The vein averages six feet in width and carries a sixteen inch streak of dense sulphide that is reported to assay 21.5 per cent lead and 7.4 ounces of silver per ton. The ore was found while sinking for a rich silver vein that was worked two years ago.

The Panama, a dry-silver property situated at Bear Lake, Lardeau District, has been re-opened after an idleness of 18 months by H. Giegerich, of Kaslo, B.C. A long drift on the ledge, which is designed to get under the showings above, is being continued. The tunnel now is in a distance of 370 feet and it is estimated that it still has about 200 feet to go to reach the ore body. The Panama is opposite the Lucky Jim Zinc property. It was owned for fifteen years by the late J. P. Miller and Giegerich and, on the former's death, passed to the latter, who now is the sole owner.

Sandon, B.C.

Work on the Ruth Mine at Sandon, B.C., which has been prosecuted on the lower or mill level, has resulted in cutting the veins about 600 feet from the portal of

the tunnel. At that point the vein is about eight feet wide and there is every indication that further development will show up a good ore body.

Edgewood, B.C.

A quantity of rich ore was uncovered in the course of the performance of assessment work on the claim of W. J. Banting, Lightning Peak. It is expected that active development will result. The outcome was a rush to the district by prospectors and the staking of all ground adjacent to the Banting claim. It is reported that on the Waterloo Mineral claim rich carbonates, running from 4,000 to 9,000 ounces of silver to the ton, have been discovered and that the owners have about a ton of it ready for shipment.

Salmon River, B.C.

The operators of the Premier Mine, Salmon River, propose to experiment with a motor-sled to transport ore over the snow during the coming winter.

Dawson, Y.T.

It is estimated that the total gold output of the placer camps of the Yukon Territory and of Alaska will be \$5,250,000. To this may be added half a million dollars if the districts of Atlin, Northern British Columbia and of Nome, Alaskan Coast, are included, each of these sections being given credit for a quarter of a million. This computation is up to the close of navigation which will take place next month. Another half a million may be yielded by other scattered camps throughout the north so that it is possible that the aggregate will reach \$6,250,000 for the year 1919. All northern camps are led by the Klondyke, with Dawson as the center, its season production being placed at \$2,000,000. Second place is taken by the Tanana Valley as Fairbanks, Talovana and the Hot Springs are credited with \$1,500,000 or more. On his return from a tour of the posts controlled by the Northern Commercial Company, Volney Richmond, the company's superintendent, estimates the season's placer gold yield as follows: Dawson, \$2,000,000; Fairbanks, \$800,000; Iditarod, \$750,000; Talovana, \$700,000; Kuskokwim, \$250,000; Circle, \$225,000; Ruby, \$125,000; Kuyukuk, \$100,000; Marshall, \$75,000; Hot Springs, \$60,000; Ophir, \$50,000; Rampart, \$25,000; Chandlar, \$20,000.

Vancouver, B.C.

On his return from a tour of Northern British Columbia, in the course of which he visited Alice Arm, Anyox, and other mining centres, Hon. Dr. King, Minister of Public Works, stated that he noted a marked increase in mining activity and that a spirit of optimism was apparent, which had been lacking in recent years. He inspected the Dolly Varden Mines and the railroad operating between tidewater at Alice Arm and the mines, a distance of eighteen miles, construction of which was authorized by the Provincial Government. Dr. King states that it is the intention of the Taylor Engineering Company to extend the road for four miles next year, thus affording transportation facilities to other properties now being developed and which are making excellent showings. There is promise of a large tonnage being offered the railroad and the management is anxious to handle as much as possible, not only that the mineral deposits of the country may be made to yield, but that the railroad may be made to pay running expenses.

Alice Arm, B.C.

When Hon. Dr. King visited this centre he met the members of the Alice Arm Commercial Club to discuss the report that the Taylor Mining Company had refused to accept freight for transportation by the Alice-Dolly Varden Railroad from any source save the Dolly Varden mines. A. J. T. Taylor, manager of the company, also was present. When asked whether the railway would be able to take ore from outside sources Mr. Taylor stated that much would depend on how the road and equipment stood up under the tests soon to be made, but if he could possibly see his way clear in the face of the many complications involved he certainly would help out prospective shippers to the limit of his ability.

Subsequently Mr. Taylor reported that the Dolly Varden Mines were making a daily production of 100 tons of good grade ore and that regular shipments were being made over the new road to tidewater and thence by boat to the Anyox smelter of the Granby Consolidated Mining & Smelting Company. This would continue as long as weather permitted. Under Majors Young and Davis, both mining men recently returned from overseas, splendid progress had been made at the mine. A steam compressor and a 2,000-foot aerial tramway were in operation and the whole property now was as fully equipped mechanically as the difficulty in obtaining machinery would permit. It had been necessary first to complete the railroad and the aerial tramway before opening the mine to any extent.

Discussing conditions in the Alice Arm District, Mr. Taylor said that more engineers and prospectors had gone into the country than during any five years preceding.

Cowichan, B.C.

The B.C. Manganese Co., Ltd., are making good progress in the development of their properties at Hill 60, some twelve miles west of Duncan. Two carloads of ore, containing fifty tons each, already have been shipped and it is expected that a carload will go forward every three or four days. In the first instance the ore was brought down the hill by teams. Subsequently, however, motor trucks were put on the work and the results are said to be satisfactory. In its initial stages the mining was of a quarrying nature. Recently however, a steam plant was installed and production has been materially increased.

Victoria, B.C.

After a two weeks' trip through the country of the Kokahala River, British Columbia, Charles Camsell, of the Dominion Geological Survey, has returned. He surveyed gold deposits along the line of the Kettle Valley Railway from Hope to Jessica, and reports having found some quartz veins rich in gold. The "Emancipation Mine," however, is the only lode being worked in the section and, although it contains high grade ore, it is being operated in a small way, this being due to the excessive cost of labor and machinery. The same veins, he said, run across the Fraser River above Yale and have been prospected to some extent. They have supplied in the slow process of erosion much of the gold which has been taken from the placers of the Fraser and other streams.

Grand Forks, B.C.

The Canadian Consolidated Mining & Smelting Company is installing three decrepitating furnaces and

rotary kilns at the Rock Candy Fluorspar mine near Lynch Creek, near Grand Forks, B.C. Since the completion of the concentrator at the property early this year experiments have been in progress in the treatment of this ore and it is said that Supt. A. A. Robertson, who is in charge, has met with success with the decrepitating process, something new for this Province, and which generally speaking consists of the breaking of the ore by means of a decrepitating furnace and rotary kiln, crude oil being used as fuel. One unit of the process was first installed and the results being satisfactory it was decided to instal three more. When these are operating it is expected that the plant will handle about 100 tons daily and it is anticipated that the demand for fluorite assures the continuous operation of the mine and plant.

No Reason For Stampede in Koyukuk Region.

From Fairbanks comes the report the prospects uncovered on Bettles River last spring do not warrant a stampede to that district at this time. All the ground on the creek has been staked but there will probably be no more work done until next winter.

From all indications there is a good chance that the country will turn out all right, but it will have to be developed in the future as nothing definite in the way of pay has been lined up.

This is no time for a stampede as everything is staked now and if anything develops during the winter, lays can be secured next year. Men going to the Koyukuk should have \$1,000 in cash or its equivalent in grub as it will take that amount to run them through the winter.

Good prospects are also reported recently on the Hog River. About thirty-five men are preparing to spend the winter on this river, which is 300 miles from the mouth of the Koyukuk. Old timers are convinced that something good will be found there next winter.

The Yukon.

News from Mayo states there has been a strike in that vicinity. This is supposed to be the new silver find on Lightning Creek made by Louis Bouvett.

No definite news has come out up to the present writing.

Rich Strike Reported From Taku.

Reports from Juneau are that there has been a rich strike in the Taku district. Inklin is the present head of transportation on the Taku River, and is about 75 miles from the Coast.

University of British Columbia Has Two New Professors.

The University of British Columbia has added two new professors to its force of instructors. Professor H. H. Thompson, Bachelor of Science from McGill University comes to the chair of Metallurgy. The larger portion of M. Thompson's time since leaving McGill has been taken up with professional work in Canada and the United States. He was chief Metallurgist for some large mineral interests in Arizona and Utah for some time. Mr. Thompson is a Canadian and his desire to return to Canada and educate his children here has influenced him to accept the professorship.

The other appointment is Mr. George A. Gillies, M. Sc., to be assistant professor in Mining. M. Gillies is also a McGill man, who has a great deal of experience with the mechanical branch of the mining industry.

NORTHERN ONTARIO**The Gold Mines.**

Hollinger Mine.—Producing at a rate of well over \$7,000,000 annually, and soon to increase this output to an average of perhaps \$10,000,000 a year, the reducing plant of the Hollinger Consolidated Gold Mines represents one of the largest and most modern of its kind in existence. Certain additions being made to the plant will increase its capacity from about 2,800 tons to not far under 3,500 tons daily. The ore contains an average of over \$6 to the ton and may be estimated to yield profit approximate half that amount. The company is capitalized at \$25,000,000. Producing at the rate of \$10,000,000 a year and realizing a net profit of \$5,000,000 a year it can be seen that dividends at the rate of about twenty per cent are indicated for the not far distant future. Even producing at such a rate there is already ore blocked out and in sight sufficient to keep the mill running at full capacity for over four years. In addition to this it is considered not improbable that the new ore developed from year to year may for some time exceed the amount taken out with the result that ore reserves should be maintained for several years ahead of production and for a good many years to come. It is the ambition of General-Manager A. F. Brigham to establish a five-year record that will surpass in volume any previous record set by any other gold mine in the world.

The next few months will see the completion of the construction work. The amount of money being spent on construction each year by the Hollinger is very considerable. This has been an important factor in adding to the operating costs. With this factor reduced to ordinary upkeep of the equipment, the reduction in costs should be considerable.

It is considered not improbable that during 1920 the higher degree of efficiency as a result of more satisfactory working forces, taken together with lower cost of supplies and the elimination of construction work, the average cost of production might reasonably be reduced perhaps as much as a dollar a ton as compared with the past year. Treating 3,000 tons daily or nearly 1,100,000 tons of ore annually, it can readily be seen that this saving would alone amount to over four per cent on the company's issued capital.

Estimates recently made as to the earning capacity of the Hollinger and which indicated about 18 to 20 per cent net profit appear to have failed to take the foregoing facts into consideration.

Dome Mine.—As near as can be ascertained the Dome Mines is now realizing a net profit at the rate of about thirty per cent on its issued capital. It is stated, as pointed out last week in these columns, that about 900 tons of ore was being treated daily and an output of about \$250,000 being recorded monthly. Of this, it is estimated about fifty per cent. is net profit, or to be conservative about \$100,000 should represent net profit.

Capitalized at 500,000 shares of the par value of \$10 each and with only 400,000 shares or \$4,000,000 issued, the Dome need only earn \$66,600 net profits monthly to meet its former rate of dividends of 20 per cent. Provided the company is actually earning \$100,000 net profit monthly, the return is equal to 30 per cent. on the company's issued capital.

This record is being achieved at a time when the mill is running at about 65 per cent capacity. In due course, when running at full blast, it is not unreasonable to anticipate an achievement bordering on the

sensational. Even now it is evident that the percentage of net profit being realized on the Dome Mines is higher than any other gold mine in Canada. This is made possible due to the low capitalization, a condition which appears certain to shower exceptional advantages upon the holder of Dome shares.

McIntyre-Porcupine.—It is expected that the annual report of the McIntyre-Porcupine will be mailed almost immediately to the shareholders. The company's year ended June 30th. In order to comply with the law it is necessary that the report shall be issued within ninety days after the ending of the year. Thus, September 30th would be the last day. The current fiscal year of the company already shows signs of being the best in its history. It is expected that for the first time, the current year's output will exceed the two million dollar mark. Development work at depth continues exceedingly favorably according to reports just to hand.

Shareholders of the Plenaurem Mines, which is under option to the McIntyre-Porcupine Company, are evincing a good deal of uneasiness. To them, or at least to a good many of the minority holders, the terms of the agreement remain somewhat of a mystery.

Rumors are current to the effect that a change in terms is under contemplation. It will be recalled that last fall an extension of time was secured. The time will soon again be up, hence the speculation as to what will be done. In some quarters it is rumored that the 500,000 shares of the Plenaurem may be made exchangeable for shares in the McIntyre on a basis of one share of Plenaurem for two shares of the McIntyre.

Tough-Oakes' Gold Mines.—According to current rumors, all is not running as smoothly as might be desired among certain of the interests involved in the Tough Oakes' Gold Mines. It is believed, however, that any differences that may arise will not imperil the company holdings, but, rather, may be confined to individual controversy. The prolonged litigation between the present Tough-Oakes' control and the Foster interests is still fresh in the memory of mining men of this district, particularly the shareholders of the company. The affair was regrettable in every sense of the word, having retarded the development of the mine itself and having been a draw back to the Kirkland Lake Camp. With the past experience still fresh it is thought that every reasonable effort to agree will be exhausted by those concerned in the present rumored dissension.

Dr. H. C. Cooke, geologist in the service of the Dominion Government is in the Larder Lake field where it is understood he will remain for the balance of this season. The field work being done by Mr. Cook will of necessity have to deal with that area recently covered by Percy C. Hopkins for the Ontario Bureau of Mines and covering which the Ontario Bureau issued a very recent report. Considerable wonder is being expressed as to the object which the Governments have in mind. For instance, last year the Ontario Bureau of Mines issued a report on the Matachewan Gold Area, the field having been done by A. G. Burrows. A few months later the Federal Government covered the same ground by sending in Dr. Cooke. A repetition of this procedure in the Larder Lake district, therefore, could not do otherwise than to add to public curiosity.

At a time when numerous gold finds are being reported in various parts of the Dominion, prospectors of this country should bear in the mind the fact that the best place to search for mines is in the vicinity of the known mines, is the assertion made to the writer by a prominent geologist. Far away fields look green, and in a good many instances may prove to be as they appear, or they may not. The mineral wealth of Northern Ontario, he declared, has been demonstrated to be enormous and offers opportunities for the prospector. Everything is in its favor. Transportation, geological conditions and proven merit all combine to make it more attractive perhaps than any other field in the world.

Not to mention the leading camps of Porcupine, Kirkland Lake and Boston Creek, and make reference only to the prospective camps in this district such as Fort Matachewan, Larder Lake, West Shining Tree, Bourkes, Lightning River, etc., it is probably true that any one of these if found in some far away field would cause a large number of prospectors to leave this country. Therefore the words of caution offered by the geologist referred to above should not be taken lightly by Northern Ontario prospectors.

One point which has been exceedingly noticeable of late is the fact that finds which cause sensational reports to circulate in new and far away fields is found to receive but ordinary notice in Northern Ontario. The fact is that so rapid is the growth of the industry in this district that favorable developments have become quite commonplace with the result that they receive but passing mention whereas finds in new districts stand out more prominently.

The Silver Mines.

McKinley-Darragh.—During the first seven months of the current year the McKinley-Darragh realized net earnings almost sufficient to cover the full year's dividend disbursements of 3 per cent. quarterly. As a consequence of the labor strikes during the third quarter of the year the financial position of the company was not seriously impaired. Allowing the balance of September to gradually work back to normal production, a full quarter will still remain in which to accumulate a surplus over this year's dividend requirements, and thus still further strengthen the treasury for the coming year.

It is significant to learn that during the first half of 1919 the cost of producing silver at the McKinley-Darragh averaged less than 60 cents an ounce as compared with an average of over 68 cents an ounce during 1918. Not only would this tend to indicate a gradual decline in the cost of material but would also indicate a higher degree of efficiency.

Using the first half of 1919 as a basis of calculation it is very interesting to note that the cost of producing silver declined at a number of the important producing mines of Cobalt. The impression seems to be that the peak was reached during 1918 and that from now on the lower cost of material and the higher working efficiency will for some time serve to permit the realization of an increasing margin of profit.

As a result of the favorable turn in the economic situation as already demonstrated, the dividend record of the mines may be expected to swell. With silver

maintaining the highest average in Cobalt's history and with the cost of production on the decline, a prosperous period appears to be in store.

THE NORTHERN LABOR SITUATION.

Co-operation in the Porcupine Camp.

The mine workers in the Porcupine fields have reason to feel keen satisfaction over the outcome of the contest waged by labor in other mining centres throughout the country. Without any sacrifice on their part beyond reasonable co-operation with the representatives of the mining companies, the workers of Porcupine won the advantage of a very satisfactory minimum wage. Not only that but they are to participate in a system of insurance against illness as well as share the advantages of co-operative stores being operated by the leading mining companies.

The attitude of the workers of Porcupine throughout the period of industrial unrest has been doubly commendable for the reason that their course was chosen as a result of their own judgment and not as a result of examples set by other bodies of workmen in this country. From the beginning they appeared to recognize that the mining companies, like the individuals, were battling for an existence and that a solution lay not through a clash of ambitions but by wholehearted co-operation. In this way they have achieved the maximum wages and the minimum of hours and every reasonable concession that could be borne by the mining industry which supports the community,—all this without needless sacrifice.

Their attitude throughout has been business-like. Recognizing that it would be impossible to take blood from a stone, they at once began to plan a way in which the greatest good could be derived from their source of income. In sharp contrast to this is the manner in which the men of the Kirkland lake camp took an attitude of total disregard for the welfare of the companies. Incidentally they stopped at its source the means of livelihood of upwards of 500 men. The Kirkland lake strike has been in force exactly three months, and may continue for some time. Also, it is certain that when it does end, the workers will not be in as favorable a position as when they lay down their tools three months ago. The affair will represent a loss of time and much sacrifice, and with nothing gained for the reason that there was nothing that could be gained in that the industry was already paying all that could be borne.

The Strike Collapse at Cobalt.

The strike of the Cobalt Miners' Union collapsed on August 7th, after having lasted forty-six days. The thing was doomed to fail at its beginning. The men have returned to work without the Union having gained its chief demand for recognition, the number of working hours remains the same, and the combined wage and bonus amounts to the same as before the strike was called. Like all other affairs of the kind, it collapsed under the sheer weight of its unjust cause, and it probably marks the grave of the Western Federation of Miners' in this country.

As the workers of Cobalt return to their employment for which they receive higher pay than that obtainable for similar work in any other part of the country, they are likely to turn about and take stock of that lies in the immediate past. They see a loss of time amounting in the aggregate to close to one

hundred thousand work-days; they see a loss in payroll of close to half a million dollars; and, perhaps worst of all, they no longer see a reserve fund which they had formerly built up at some sacrifice. Their financial reserve in many instances has gone. The Savings accounts in the banks show this. Winter is coming on, with fuel to buy and with store bills overdue.

Paid agitators cost the workmen of Cobalt close to half a million dollars. For this the workers gained nothing. The agitators did not suffer, their salary going on during the progress of the strike. The pity Cobalt Miners' Union cannot read English and cannot see these facts recorded. They are "fed-up" with phrases coined for their consumption by the agitators, and are blinded to the folly of the way into which they are being led. It is among the illiterate that the erstwhile alleged leader Jimmy McGuire found his chief support and which element will in the future constitute the last shreds of the remnant of Western Federationism in this country. The educated worker has re-awakened and will probably no longer lend his support to that organization.

Some credit is due to James Lord, representative of the Mining Department of the American Federation of Labor. But for the visit of Mr. Lord it is probable that the radicals would have held sway for some time longer. However, perhaps no one recognized the futility of the effort and the unjust cause of the Cobalt Miner's Union better than did Mr. Lord. He at once appeared to see that recognition can never be won by the Western Federation of Labor. He could not help but see that wages and conditions were all that could be expected. It was his visit coming just at a time when the Cobalt Citizens' Committee took up the question with the men that caused the vicious attempts of the radicals to collapse. In the light of these events McGuire representing the W. F. M. stands condemned as a failure, and the executive of the Cobalt Miners' Union wins a just reward for its utter incompetency.

Cobalt Situation May Re-Act at Kirkland Lake.

There is considerable speculation in Kirkland Lake with regard to what the future action of the Kirkland Lake Miners' Union will be now that the labor strike at Cobalt has terminated. It is generally conceded that the strike at Kirkland Lake was brought on unnecessarily and involved an aggregate of mines which were the least able to bear up under increased demands. Furthermore, the mine managers sent the full limit and met their employees in open conference, yet in spite of frank discussion the Union declared the strike on June 12th.

After making careful inquiry concerning the present situation, the writer has learned that the directors are a unit in supporting the management at the leading mines in their present stand. Also, according to official advice, the majority of the directors have long since been of the opinion that money would be saved by remaining closed until the spring or summer of 1920. In spite of this, however, it is believed that if the workers of Kirkland Lake would follow the lead set by the workers at Cobalt and at a representative meeting decide to return to work on the old conditions, a number of the companies might be found to make a new beginning this fall. However, even this

would be very difficult on account of a shortage of coal, etc., and with cold weather not far off. It is the consensus of opinion that unless a beginning is made within the next thirty days there would be exceedingly small hope of any extensive operations being attempted until the winter passes.

The time seems to have arrived when the business men of Kirkland Lake might make an organized attempt to induce the men to gather in conference, and, in view of the termination of the Cobalt strike, and harmonious conditions in Porcupine, discuss the entire situation afresh and reconsider the present difficult task of waging a long contest.

Larder Lake, Ont.

Associated Goldfields.—Outside of the producing mines of this district, perhaps no other property in the development stage is attracting greater interest than is the Associated Goldfields, of Larder Lake. Conservative mining men have been inclined to criticize the enterprise adversely, chiefly for the reason that favorable "reports" appear to be almost unlimited, while essential information on which to intelligently weigh the merits or demerits of the property are almost entirely lacking.

The Associated Goldfields Company has adopted a method of financing which appears to be at once unique and at the same time effective. "Missionary" work is carried on systematically at points where there appears to be a likelihood of fair number of speculators. Those found sufficiently interested in the proposition are gathered into groups and taken north by special car to see the property. At times these special car excursions are almost weekly occurrences. The visitors, it is understood, are each required to pay his or her share of the cost of the special car. The visitors are shown over the property. They are permitted to see with their own eyes spectacular showings of native gold. They are told about the great plans for the future, the building of one of the greatest reducing plants in the country, etc., and they leave convinced that the Associated Goldfields is indeed destined to become a world-famous gold mine. "What do we care for the opinion of mining engineers?" they have been heard to declare, "can we not see the gold for ourselves!" Thus, laboring under the delusion that visible native gold in spectacular patches constitutes a gold mine, they return south and purchase shares. As a result of this the company is now "reported" to have upwards of half a million dollars in its treasury.

So far as the public is concerned there is no detailed assay sheet in existence which shows the average grade of the ore as developed to date. The alleged ore bodies for all any man appears to know may prove to actually be so many millions of tons of waste rock. Here it is that an exceedingly important point arises, which is this: If the property actually contains large deposits of low-grade, but nevertheless, commercial ore, then it would be a great pity to hinder the promoters in their effort to secure funds with which to carry on the proposed development work. On the other hand, in view of the fact that the opinion of leading engineers of this country has not been sought and no report issued along the usually recognized lines, serious doubt arises, and, in the opinion of the writer and in all sincerity the purchaser of shares in the Associated Goldfields takes one of the wildest gambles imaginable.

Up to the present not far under one million dollars

has been spent on the property, or, at least, not far under a million dollars has been spent by the company. In recent months the proposition has been referred to in this country as the North's "mystery" mine. This appellation is coined from the fact of the mystery as to where the money has been spent and the mystery concerning what has been developed.

It can therefore be seen that whether or not the property of the Associated Goldfields will ultimately develop into a profitable mining proposition cannot be intelligently estimated at this time. The absence of essential information appears to be ample reason for discouraging the public from risking finances in the enterprise.

One contention heard in the North concerning the company is that if the property is all that it is claimed to be, then it would only remain for the company to engage a leading mining engineer with proven and recognized ability in this country and present a report to the public. If such great things are in store as gossip would tend to indicate, then stock in this company would not go begging for buyers at \$1 per share. Neither would it be necessary for the Associated Goldfields to dispose of its shares subject to pool. It is generally recognized that this method of financing (that of selling shares which the purchaser is obliged to hold in person for a given time) is borne of the fear that to-day's purchaser may be tomorrow's seller, hence the restrictions.

The fact is that those connected with the company are spending broadcast rumors which cannot be definitely contradicted perhaps for the all-important fact that no definite knowledge is obtainable as to the amount and the average grade of the ore. Until such information is forthcoming in an authentic way it would perhaps be folly to class the proposition as anything else than a wild gamble to say the least. This, not for the reason that the writer knows it to be such, but for the reason that no evidence is forthcoming to prove that it is not.

In a report recently issued by the Ontario Bureau of Mines after referring to the geological conditions, P. E. Hopkins, geologist, says in part: "Although this association of rocks and mineral solutions is not known to form ore in many parts of the world, still there is resemblance to the ore bodies on the Rawhide mine, southeast of Angels Camp, Cal. Small, medium-grade ore shoots do occur, as on the 83-foot level of the Red dick, and 500-foot level of the Harris-Maxwell. But they are isolated with little to indicate where they will be found, and what will be their extent." Mr. Hopkins further states: "Since the known richer shoots are small and scattered, the success of mining will depend upon the mining of extremely large bodies of low-grade ore which will necessitate much capital and very detailed mining."

Therefore, if the success of mining is to depend upon the mining of low-grade ore the question is this: How much low-grade is there actually in sight and what is the average gold content per ton? Also, what will it cost to treat the ore, and upon what calculations are the estimates based? Companies which in the past have gone to the public with such a proposition have made it a practice to present a report in detail. This the Associated Goldfields has not done.

It would be wrong to conclude without making it clear that there is no desire on the writer's part to dis-

credit the efforts of the promoters of the Associated Goldfields. Neither is it a pleasant task to advise the public to keep out of the proposition. But unless or until authentic statements can be secured, it would be rank folly to advise otherwise. This, whether or not the property ultimately develops into an important gold mine or turns out to be the wildest of Northern Ontario's wildeats.

Notes.

The operations of the Gold Nugget Products' Company, Limited, is attracting considerable interest. The property is situated in the township of Henwood, a short way south from the Elk Lake branch of the T. & N.O. Ry, and was discovered by A. T. Stone. The Gold Nugget Products Company was formed for the purpose of purchasing the property from Mr Stone and proceeding with the manufacture of various products. It is stated that the rock before manufacture is so hard it will cut glass, but when ground and treated by special process produces the very finest wet hand cleaner, dry hand cleaner, goldfish sand, cleanser for household use, poultry and bird grit, washing powder, coarse and fine pumice, etc.

An interesting display of the product was to be seen at this year's Canadian National Exhibition.

Harry Oakes, president of the Lake Shore mine, has returned to Toronto, after having paid a brief business visit to the north.

A. Ferland left this week for Texas where he will be the guest of David Fasken. Mr. Ferland expects to visit the oil fields in Texas during his three weeks' visit in the South.

According to current reports, the decision is expected very shortly concerning the boundary dispute between the O'Brien Mine and the Violet property of the La Rose Company.

DEATH OF INSPECTOR OF MINES A. H. BROWN.

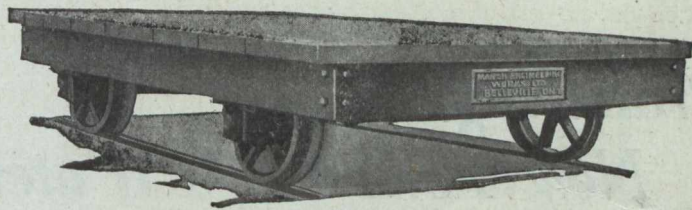
The recent death of Mr. A. H. Brown, at Owen Sound, has caused considerable regret in the north country, particularly among the mining fraternity, where he was well known and respected. Deceased had an interesting career since his graduation from the University in 1899. Until 1903 he was assistant chemist and assayer at Deloro, Ont., also in charge of the bromo-cyanide plant. From 1903 till 1905 he had charge of the 40-stamp mill and cyanide mill and cyanide annex for the Daly Reduction Co., at Hedley, B.C. Following this he was prospecting in the Cobalt district for two years, and took two years preliminary work re-erection of cyanide plants. He superintended the installation of an experimental plant to treat arsenical gold ore for the Canadian Exploration Co. at Naughton, Ont. From July to December, 1911, he was manager of the Pike Lake mines, Swastika, and in 1912 accepted the position of manager of the Hudson Bay mines. From January, 1914, to April, 1916, he was manager of the Dome Lake Mining and Milling Co., South Porcupine, and in 1917 was manager of the Green Meehan mine. He has been connected with the Department of Lands, Forests and Mines since the beginning of the present year.—Cobalt Nugget.



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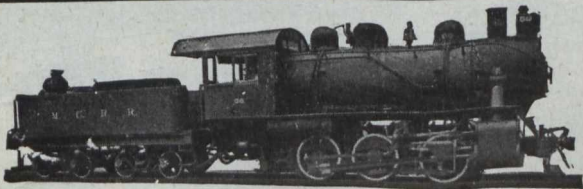
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PERSONALS.

Mr. Galen Stone, of Hayden Stone & Company, recently visited the Wabana iron-ore mines in company with Mr. D. H. McDougall of the Scotia Company.

Mr. C. E. Weed, manager of the Hancock Copper mine, Michigan, is in Toronto. He has just returned from a trip to Mexico and the South Western States.

Mr. Geo. R. Rogers was in Toronto for a few days after spending several weeks at the properties in the Wasapika gold area which are being developed under his direction. He has returned to Wasapika.

RECENT MINING INCORPORATIONS.

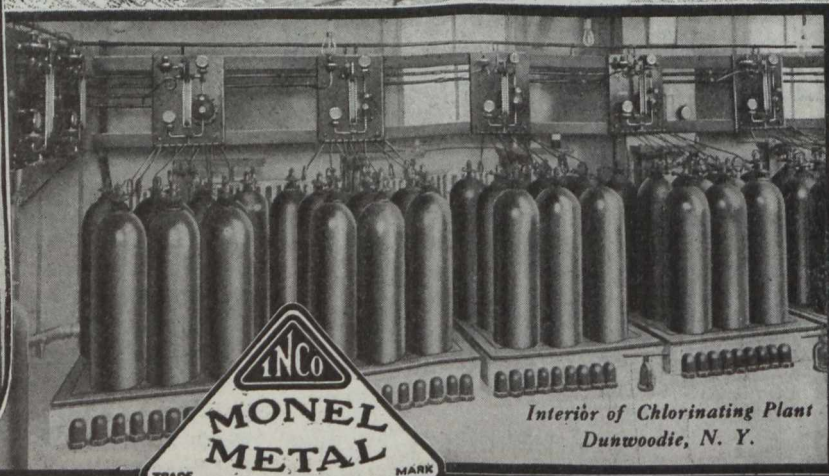
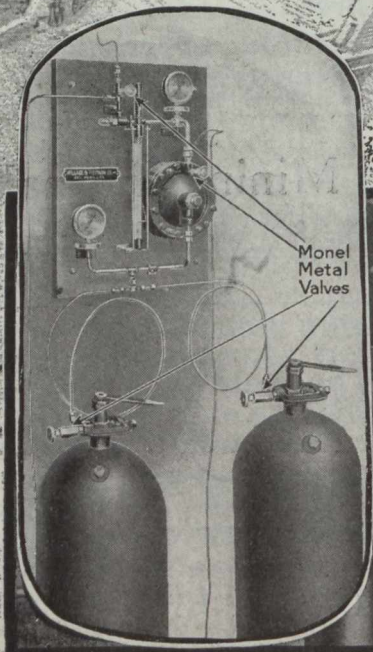
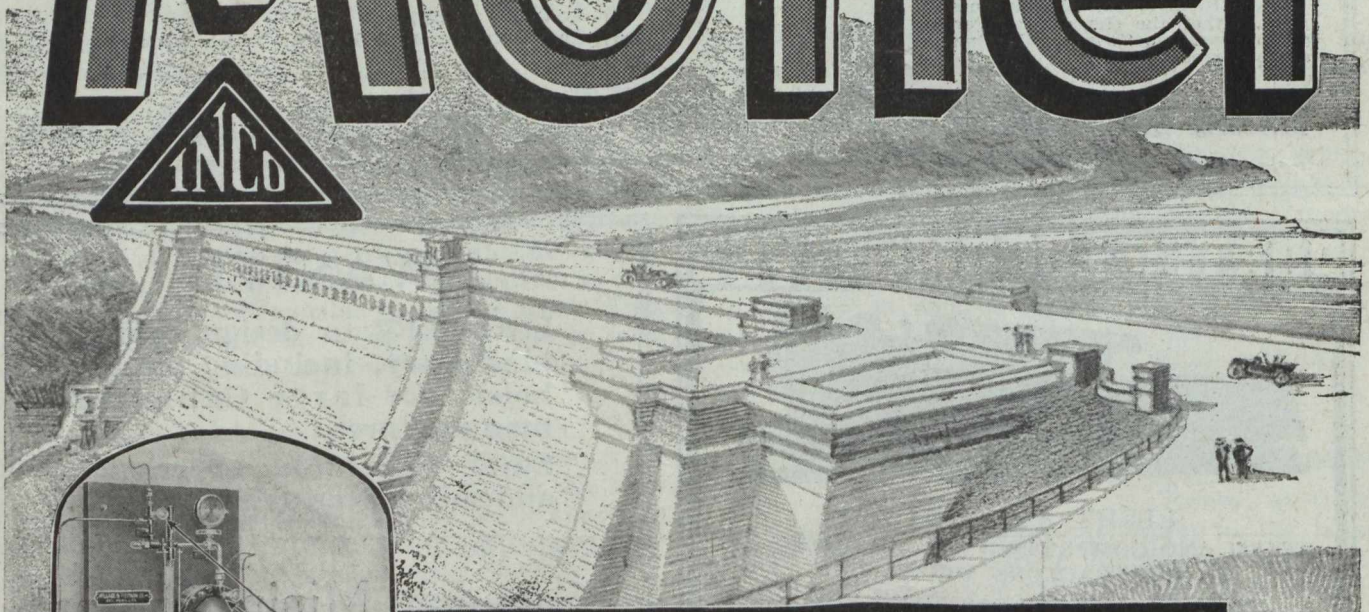
North Cliff Mines, Limited (No personal liability.) Incorporators: Mary Elizabeth Cherrier and Florence Gordon, stenographers; Edward Thomas Boland, company manager; John Francis Boland, barrister-at-law; and Charles Henry Bowyer, student-at-law— all of Toronto. Capital \$100,000, divided into 100,000 shares of \$1 each. Head office, Toronto.

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

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

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

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

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

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

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

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

Summary Report of the Mines Branch, 1917.

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

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

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

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

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

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

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

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

GEOLOGICAL SURVEY

Recent Publications

Summary Report. 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 95. Onaping Map-Area, by W. H. Collins.

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

Memoir 107. Road materials in the vicinity of Regina, Saskatchewan, by L. Reinecke.

Memoir 108. The Mackenzie River basin, by Charles Cam-sell and Wyatt Malcolm.

Memoir 109. The Harricanaw-Turgeon basin, northern Quebec, by T. L. Tanton.

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

Memoir 112. Geology of the district belt of southwestern Alberta, by J. S. Stewart.

Map 42A. Duncan sheet, Vancouver Island. Geology.

Map 44A. Sooke sheet, Vancouver Island. Geology.

Map 115A. Sheep river, Alberta. Topography.

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

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

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

Map 1585. Mackenzie River basin. Geology.

Map 1680. Portions of Grenville, Harrington, Chatham and Wentworth townships, Argenteuil county, Quebec. Geology.

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

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

Map 1702. Klotassin, Yukon Territory. Geology.

Map 1708. Bridge river, Lillooet district, B.C. Topography.

Map 1710. Bothwell-Thamesville oil region, Kent county, Ontario.

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

Map 1714. The Niagara peninsula, Ontario. Geology.

Map 1715. The Ontario peninsula. 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.

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

Canadian Miners' Buying Directory.—(Continued)

Cables—Wire:

Standard Underground Cable Co. of Canada, Ltd.
Canada Wire & Cable Co.
Fraser & Chalmers of Canada, Ltd.
Northern Electric Co., Ltd.
R. T. Gilman & Co.

Cam Shafts:

Canada Foundries & Forgings, Ltd.

Car Dumps:

Sullivan Machinery Co.
R. T. Gilman & Co.
Canadian Fairbanks-Morse Co., Ltd.

Carbide of Calcium:

Canada Carbide Company, Ltd.

Cars:

Canadian Foundries and Forgings, Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
MacKinnon Steel Co., Ltd.
The Electric Steel & Metals Co.
Northern Canada Supply Co.
Marsh Engineering Works
Mine and Smelter Supply Co.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
R. T. Gilman & Co.
The Wabi Iron Works

Car Wheels and Axles:

Canadian Car Foundry Co., Ltd.
Burnett & Crampton
Marsh Engineering Works, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works

Carriers (Gravity):

Jones & Glassco

Castings (Iron and Steel)

Burnett & Crampton
Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works

Cement Machinery:

Northern Canada Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
The Electric Steel & Metals Co.
R. T. Gilman & Co.
Burnett & Crampton

Chains:

Jones & Glassco
Northern Canada Supply Co.
Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Co.
Greening, B., Wire Co., Ltd.

Chain Drives:

Jones & Glassco

Chemical Apparatus:

Mine and Smelter Supply Co.

Chemists:

Canadian Laboratories
Campbell & Deyell
Thos. Heyes & Sons
Milton Hersey Co.
Ledoux & Co.
Constant, C. L. Company

Chrome Ore:

The Electric Steel & Metals Co.
Everett & Co.

Classifiers:

Mine and Smelter Supply Co.
Mussens, Limited
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
R. T. Gilman & Co.
The Dorr Company

Coal:

Dominion Coal Co.
Nova Scotia Steel & Coal Co.

Coal Cutters:

Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.

Coal Mining Explosives:

Canadian Explosives, Ltd.

Coal Mining Machinery:

Canadian Ingersoll-Rand Co., Ltd.
Sullivan Machinery Co.
Marsh Engineering Works
Hadfields, Ltd.

Hendrick Mfg. Co.
Fraser & Chalmers of Canada, Limited
Mussens, Limited
R. T. Gilman & Co.

Coal and Coke Handling Machinery

Link-Belt Co.

Coal Pick Machines:

Sullivan Machinery Co.

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:

Mine & Smelter Co.
Deister Concentrator Co.
The Wabi Iron Works

Converters:

Northern Canada Supply Co.
MacGovern & Co., Inc.

Contractors' Supplies:

Canadian Fairbanks-Morse Co., Ltd.

Consulters and Engineers:

Hersey Milton Co., Ltd.

Conveyor Flights:

Hendrick Mfg. Co., Ltd.

Conveyor—Trough—Belt:

Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Co.
Hendrick Mfg. Co.
Mussens, Limited
Jones & Glassco (Roller, Belt and Chain)
Hendrick Mfg. Co.
The Wabi Iron Works

Conical Mills:

Hardinge Conical Mill Co.

Copper:

Consolidated Mining & Smelting Co.

Cranes:

Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Co.
R. T. Gilman & Co.
Smart-Turner Machine Co.
M. Beatty & Sons, Ltd.

Crane Ropes:

Allan Whyte & Co.
Greening, B., Wire Co., Ltd.

Crucibles:

Canadian Fairbanks-Morse Co., Ltd.
Mine and Smelter Supply Co.

Crusher Balls:

Canada Foundries & Forgings, Ltd.

Crushers:

Canadian Fairbanks-Morse Co., Ltd.
Canadian Steel Foundries, Ltd.
Hardinge Conical Mill Co.
The Electric Steel & Metals Co., Ltd.
R. T. Gilman & Co.
Lymans, Ltd.
Mussens, Limited
Mine and Smelter Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works

The Minerals of Nova Scotia

THE MINERAL PROVINCE OF EASTERN CANADA

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

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

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

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

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

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

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

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

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

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

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

HON. E. H. ARMSTRONG, HALIFAX, N.S.

Commissioner of Public Works and Mines



PROVINCE OF QUEBEC MINES BRANCH

Department of Colonization, Mines and Fisheries

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

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

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

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

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

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

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

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

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

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

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

HONOURABLE HONORE MERCIER,

MINISTER OF COLONIZATION, MINES AND FISHERIES, QUEBEC.

Canadian Miners' Buying Directory.—(Continued)

Cyanide Plant Equipment:

The Dorr Co.

D. C. Units:

MacGovern Co.

Derricks:

Smart-Turner Machine Co.
M. Beatty & Sons, Ltd.
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.

Dredger Pins:

Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
Hadfields, Limited

Dredging Machinery:

Canadian Steel Foundries, Ltd.
M. Beatty & Sons
Hadfields, Limited
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.
Sullivan Machinery Co.
Northern Canada Supply Co.
Canadian Rock Drill Co.
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:

Hadfields, Limited
Mussens, Limited

Drill Steel Sharpeners:

Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.
Sullivan Machinery Co.
Canadian Rock Drill Co.
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.
Hadfields, Limited

Dynamite:

Canadian Explosives
Northern Canada Supply Co.

Dynamos:

Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Company

Ejectors:

Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.

Elevators:

M. Beatty & Sons
Sullivan Machinery Co.
Northern Canada Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
The Wabi Iron Works

Engineering Instruments:

C. L. Berger & Sons

Engines—Automatic:

Canadian Fairbanks-Morse Co., Ltd.
Fraser & Chalmers of Canada, Ltd.

Engines—Gas and Gasoline:

Canadian Fairbanks-Morse Co., Ltd.
Alex. Fleck
Fraser & Chalmers of Canada, Ltd.
Sullivan Machinery Co.
Gould, Shapley & Muir Co., Ltd.
MacGovern & Co., Inc.
The Mine & Smelter Supply Co.

Engines—Haulage:

Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.

Engines—Marine:

Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Co., Inc.

Engines—Steam:

Canadian Fairbanks-Morse Co., Ltd.
M. Beatty & Sons
R. T. Gilman & Co.
MacGovern & Co., Inc.
Fraser & Chalmers of Canada, Ltd.

Engineers:

The Dorr Co.

Ferro-Alloys (all Classes):

Everitt & Co.

Feed Water Heaters:

MacGovern & Co.

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:

M. Beatty & Sons
Canadian Foundries and Forgings, Ltd.
Smart-Turner Machine Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.

Frogs:

Canadian Steel Foundries, Ltd.

Frequency Changers:

MacGovern & Co., Inc.

Furnaces—Assay:

Canadian Fairbanks-Morse Co., Ltd.
Lymans, Limited
Mine & Smelter Supply Co.

Fuse:

Canadian Explosives
Northern Canada Supply Co.

Gears (Cast):

The Link-Belt Co.

Gears, Machine Cut:

Canadian Fairbanks-Morse Co., Ltd.
Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
The Hamilton Gear & Machine Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works

Granulators:

Hardinge Conical Mill Co.

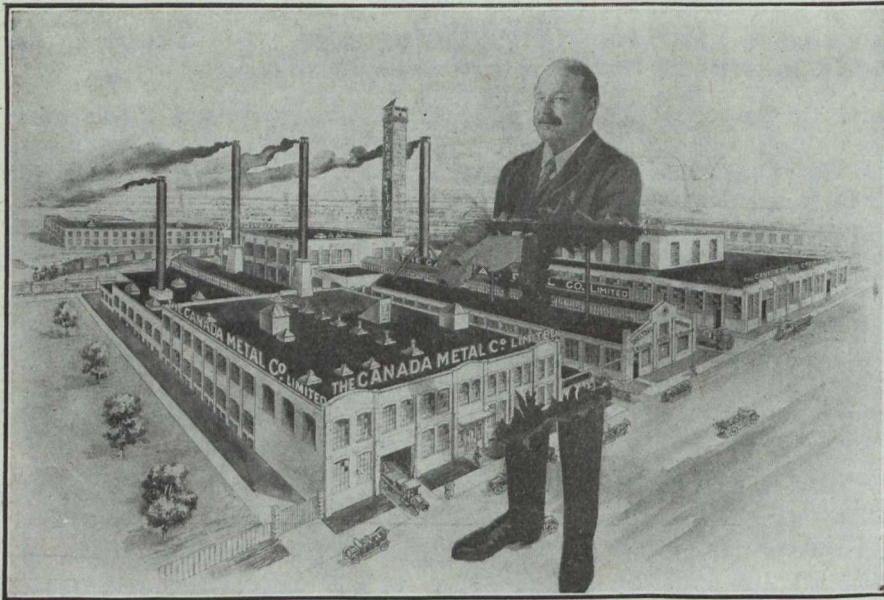
Grinding Wheels:

Canadian Fairbanks-Morse Co., Ltd.

Gold Refiners

Goldsmith Bros.

It is a great responsibility to recommend a BEARING METAL where human life depends upon it.



W. G. Harris

President.

Tell us of your difficult Bearing Problems. We can help you.

Imperial Genuine Bearing Metal

For High Speed, heavy Engine bearings.

Harris Heavy Pressure

For General Machine bearings.

Aluminoid Bearing Metal

For Light countershaft work.

THE CANADA METAL COMPANY LIMITED

TORONTO

MONTREAL

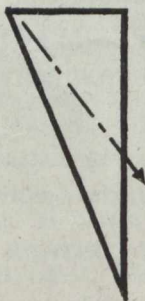
WINNIPEG

VANCOUVER

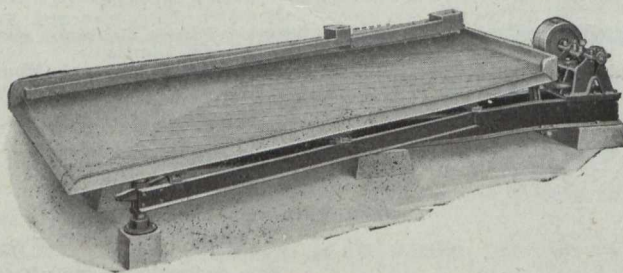
Deister-Overstrom Diagonal Deck Concentrating Tables

Which has the greater area, one triangle or two?

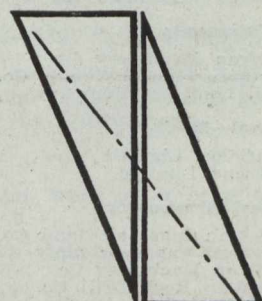
The arrows represent direction of pulp flow. Note the greater length of travel, and the greater percentage of table surface utilized on Deister-Overstrom Diagonal Deck Tables.



This route good as far as it goes



BUT



Is this not better?

PRACTICALLY ALL OF THE TABLE SURFACE IS USED EFFECTIVELY

The deck area of a Deister-Overstrom table is so disposed as to take the greatest possible advantage of the oblique pulp flow. Shallower riffles can therefore

be used, thus permitting a freer inter-movement of the particles, a better stratification, and consequently a better separation of the mineral from the gangue.

NET RESULTS

A higher extraction of values
A higher grade concentrate

Greater capacity
Minimum percentage of middlings

Write for Bulletin No. 3 illustrating our Deister-Overstrom Diagonal Deck Tables

THE

DEISTER CONCENTRATOR COMPANY

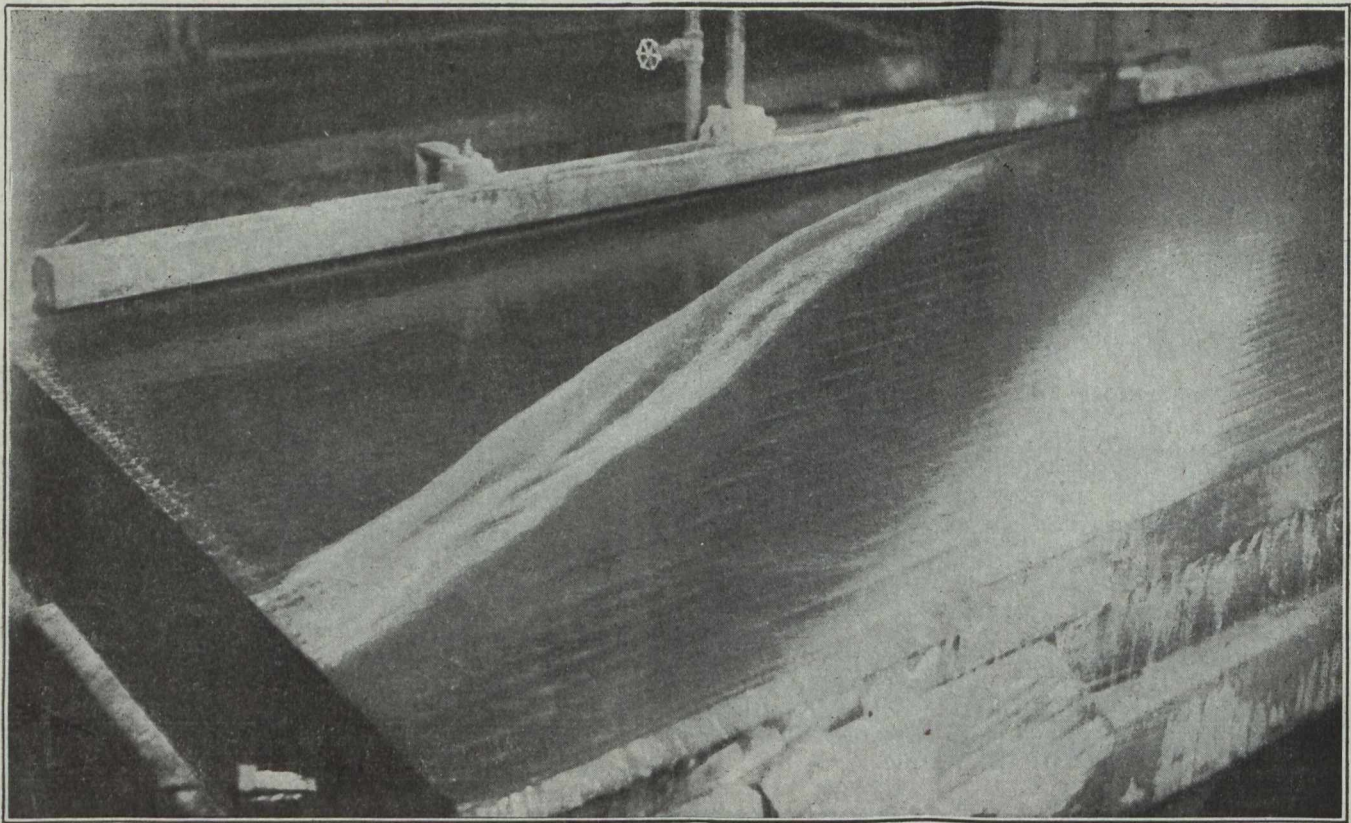
Manufacturers of Deister and Deister-Overstrom Tables

MAIN OFFICE, FACTORY AND TEST PLANT—FORT WAYNE, IND.

CABLE ADDRESS "RETSIED"

Canadian Miners' Buying Directory.—(Continued)

- Gold Trays:**
Canada Chicago Bridge & Iron Works
- Hose (Air Drill):**
Goodyear Tire & Rubber Co.
- Hose (Fire):**
Goodyear Tire & Rubber Co.
- Hose (Packings)**
Goodyear Tire & Rubber Co.
- Hose (Suction):**
Goodyear Tire & Rubber Co.
- Hose (Steam):**
Goodyear Tire & Rubber Co.
- Hose (Water):**
Goodyear Tire & Rubber Co.
- Hammer Rock Drills:**
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.
Hadfields, Limited
- High Speed Steel Twist Drills:**
Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.
- Hoists—Air, Electric and Steam:**
Canadian Ingersoll-Rand Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Jones & Glassco
M. Beatty & Sons
Marsh Engineering Works
Northern Canada Supply Co.
Mine & Smelter Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works
R. T. Gilman & Co.
Mussens, Limited
Link-Belt Co.
- Hoisting Engines:**
Canadian Fairbanks-Morse Co., Ltd.
The Electric Steel & Metals Co.
Mussens, Limited
Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.
M. Beatty & Sons
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.
The Mine & Smelter Supply Co.
- Hose:**
Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.
- Hydraulic Machinery:**
Canadian Fairbanks-Morse Co., Ltd.
Hadfields, Limited
MacGovern & Co., Inc.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Industrial Chemists:**
Hersey, M. & Co., Ltd.
- Ingot Copper:**
Canada Metal Co., Ltd.
Hoyt Metal Co.
- Insulating Compounds:**
Standard Underground Cable Co. of Canada, Ltd.
- Inspection and Testing:**
Dominion Engineering & Inspection Co.
- Inspectors:**
Hersey, M. & Co., Ltd.
- Jacks:**
Canadian Fairbanks-Morse Co., Ltd.
Can. Brakeshoe Co., Ltd.
Northern Canada Supply Co.
R. T. Gilman & Co.
Mussens, Limited
- Jack Screws:**
Canadian Foundries and Forgings, Ltd.
- Laboratory Machinery:**
Mine & Smelter Supply Co.
- Lamps—Acetylene:**
Dewar Manufacturing Co., Inc.
- Lamps—Carbide:**
Dewar Manufacturing Co., Inc.
- Lamps—Miners:**
Canada Carbide Company, Limited
Canadian Fairbanks-Morse Co., Ltd.
Dewar Manufacturing Co., Inc.
Northern Electric Co., Ltd.
Mussens, Limited
- Lamps:**
Dewar Manufacturing Co., Inc.
- Lead (Pig):**
Consolidated Mining & Smelting Co.
- Levels:**
C. L. Berger & Sons
- Locomotives (Steam, Compressed Air and Storage Steam):**
Canadian Fairbanks-Morse Co., Ltd.
H. K. Porter Company
R. T. Gilman & Co.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
- Link Belt**
Canadian Fairbanks-Morse Co. Ltd.
Northern Canada Supply Co.
Jones & Glassco
- Machinists:**
Burnett & Crampton
- Machinery—Repair Shop:**
Canadian Fairbanks-Morse Co., Ltd.
- Machine Shop Supplies:**
Canadian Fairbanks-Morse Co., Ltd.
- Magnesium Metal:**
Everitt & Co.
- Manganese Steel:**
Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Metal Marking Machinery:**
Canadian Fairbanks-Morse Co., Ltd.
- Metal Merchants:**
Henry Bath & Son
Geo. G. Blackwell, Sons & Co.
Coniagas Reduction Co.
Consolidated Mining & Smelting Co. of Canada
Canada Metal Co.
C. L. Constant Co.
Everitt & Co.
- Metallurgical Engineers:**
The Dorr Co.
- Metallurgical Machinery:**
The Dorr Co.
- Metal Work, Heavy Plates:**
Canada Chicago Bridge & Iron Works
- Mica:**
Everitt & Co.
Diamond Drill Carbon Co.
- Mining Engineers:**
Hersey, M. Co., Ltd.
- Mining Requisites:**
Canadian Steel Foundries, Ltd.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works
- Mine Surveying Instruments:**
C. L. Berger & Sons
- Molybdenite:**
Everitt & Co.
- Monel Metal:**
International Nickel Co.
- Motors:**
Canadian Fairbanks-Morse Co., Ltd.
R. T. Gilman & Co.
MacGovern & Co.
The Wabi Iron Works

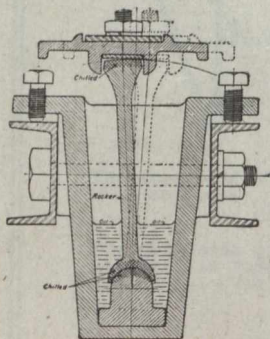


“Minerals fairly walk out— on a Wilfley table”

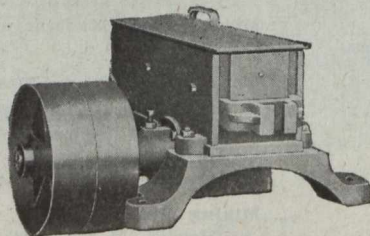
said one enthusiastic user. Of course “Wilfley’s” always have been good tables—we couldn’t have sold 20,000 if they had not consistently maintained definite superiority—but his remark was occasioned by the performance of our latest model equipped with the

New Wilfley Head Motion

No. 1623 Riffling and Improved Rocker Bearings



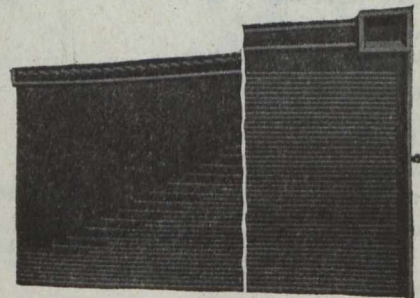
Improved Rocker Bearing,
with Straight Line Motion



Wilfley Improved Self-Oiling
Head Motion

Another reason for Wilfley success lies in its simple and substantial construction. It is the simplest table made—and the strongest.

*Our engineers give every problem
individual attention*



No. 1623 Riffling for High Capacity and
Clean Separation of Complex Ore

Wilfley Tables are manufactured in Canada by The Wabi Iron Works, New Liskeard, Ont.

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A Service Station Within Reach of You

Denver

Salt Lake City

El Paso

New York Office: 42 Broadway

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 Mond Nickel Co., Ltd.

Nickel Wire:
The Mond Nickel Co., Ltd.

Oil Analysts:
Constant, C. L. Co.

Ore Sacks:
Northern Canada Supply Co.

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

Ores and Metals—Buyers and Sellers of:
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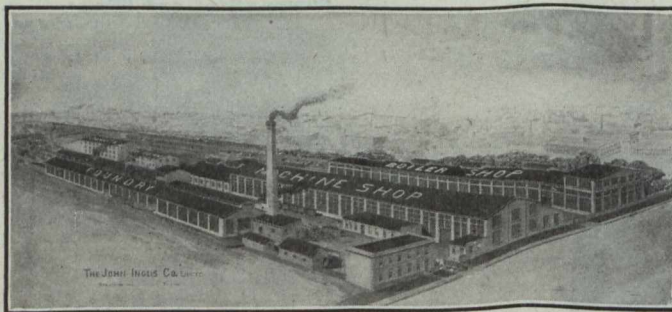
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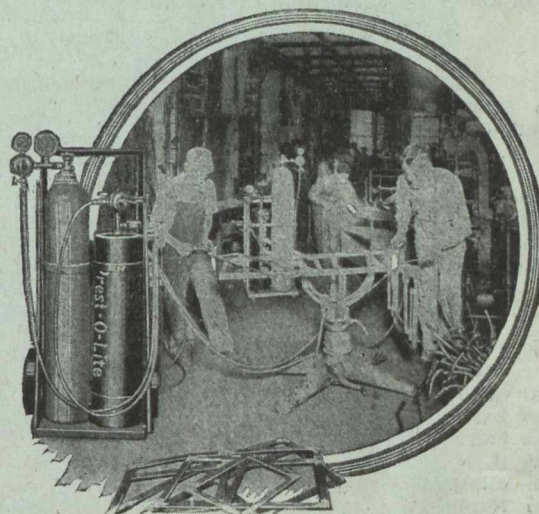
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ALPHABETICAL INDEX TO ADVERTISERS

A

Allen Whyte & Co. 10
 American Zinc Lead & Smelting Co.

B

Balbach Smelting & Refining Co. 10
 Blackwell, G. C., Sons & Company 12
 Beatty, M. & Sons 12
 Berger C. L. & Sons 11
 Brigstocke, R. W. 9
 British Columbia, Province of. 12
 Burns, L. B., Ltd. 12
 Burnett & Crampton

C

Canadian Allis Chalmers, Ltd. 6
 Can. Chicago Bridge & Iron Works
 Canadian Explosives, Ltd. 36
 Canadian Fairbanks-Morse Co., Ltd.
 Canadian H. K. Porter 21
 Canadian Milk Products 31
 Canadian National Railways 8
 Canadian Laboratories, Ltd. 12
 Canadian Link Belt Co.
 Canadian Ingersoll Rand Co., Ltd.
 Canada Foundries & Forgings,
 Ltd. 10
 Canada Wire & Cable Co. 39
 Canadian Rock Drill Co. 1
 Canadian Steel Foundries 30
 Canada Carbide Company 7
 Canada Metal Co. 12
 Canadian Brakeshoe Co. 34
 Canadian Sirocco Co. 7
 Capper Pass & Son, Ltd.
 Consolidated Mining & Smelting Co.
 Coniagas Reduction Co.
 Constant, C. L. & Co.

D

Deister Concentrator Co. 30
 Denver Rock Drill Mfg. Co. 39
 Deloro Smelting & Refining Co. 4
 Department of Mines, Canada 26
 Dewar Mfg. Co. 8
 Diamond Drill Carbon Co. 38
 Diamond Drill Contracting Co. 12
 Dominion Coal Co., Ltd.
 Dorr Co. 11
 Dresser, Jno. A. 11
 Dunlop Tire & Rubber Co., Ltd.
 Dwight & Lloyd Sintering Co. Inc. 12
 Dom. Engineering & Inspection Co.,
 Ltd. 10

E

Electric Steel & Metals Co. 1
 Engineering & Machine Works of
 Canada 7
 Everitt & Co.

F

Fleck, Alex. 11
 Ferrier, W. F. 10
 Fasken, Robertson, Chadwick &
 Sedgewick 10
 Fraser & Chalmers of Canada, Ltd.

G

Gartshore, John J. 12
 General Engineering Co. 8
 Gilman, R. T. 10
 Goldie & McCullough
 Goldsmith Bros., Smelting & Refin-
 ing Co., Ltd. 10
 Greening, B. Wire Co.
 Goodyear Tire & Rubber Co. of Can-
 ada, Ltd.

H

Hadfields, Ltd. 40
 Hall, G. C. & Co. 10
 Hamilton Gear & Machine Co. 16
 Hardinge Conical Mill. 11
 Hassan A. A. 12
 Hendrick Mfg. Co. 11
 Hersey, Milton Co., Ltd. 11
 Heys Thomas & Son 14
 Hull Iron & Steel Foundries, Ltd. 11
 Hore, Reginald E. 40
 Hoyt Metal Co.

I

Imperial Bank of Canada 8
 Imperial Oil Co.
 International Business Machines
 International High Speed Steel Co.
 International Nickel Co. of Canada,
 Limited 5
 International Nickel Co. 22-23
 Inglis, J. & Co. 34

J

Johnston, Matthey & Co. 10
 Jones & Glassco

L

Laurie & Lamb 10
 Ledoux & Co. 11
 Lindsey, G. C. S. 6
 Longyear, E. J. Company 9
 Lymans, Ltd.

M

McDonald, M. P. 11
 MacGovern & Co., Inc.
 MacKinnon Steel Co., Ltd. 21
 Marsh Engineering Works, Ltd.
 McEvoy, Jas. 32
 Mine & Smelter Supply Co.
 Mond Nickel Co. 24
 Mussens, Ltd.

N

Northern Canada Supply Co.
 Northern Electric Co., Ltd. 6
 Nova Scotia Steel & Coal Co. 28
 Nova Scotia Government

O

Ontario, Province of 13

P

Pacific Coast Pipe Co., Ltd.
 Peacock Bros., Ltd. 10
 Pennsylvania Smelting Co. 7
 Powley & Townsley 37
 Prest-O-Lite Co. of Canada, Ltd.

Q

Quebec, Province of 28

R

Ridout & Maybee 12
 Rogers John C. 11
 Rogers, Geo. R. 11
 Reddaway, F. & Co. 4

S

Smart-Turner Machine Co.
 Smith & Travers Company 10
 Standard Underground Cable Co.
 of Canada, Ltd. 4
 Stewart, Robert H. 11
 Sudbury Diamond Drilling Co., Ltd. 10
 Sullivan Machinery Co. 2
 Swedish Steel & Importing Co.

T

Toronto Iron Works 4
 Tyrrell, J. B. 11

U

University of Toronto 7

W

Wabi Iron Works
 Whitman, Alfred R. 11

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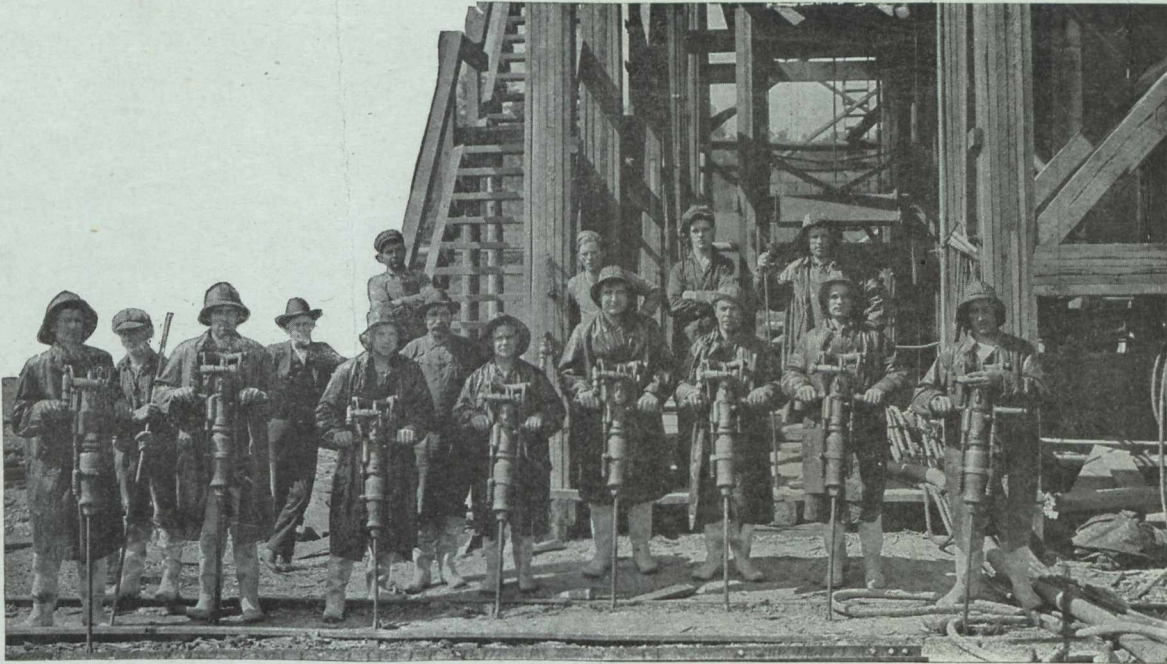
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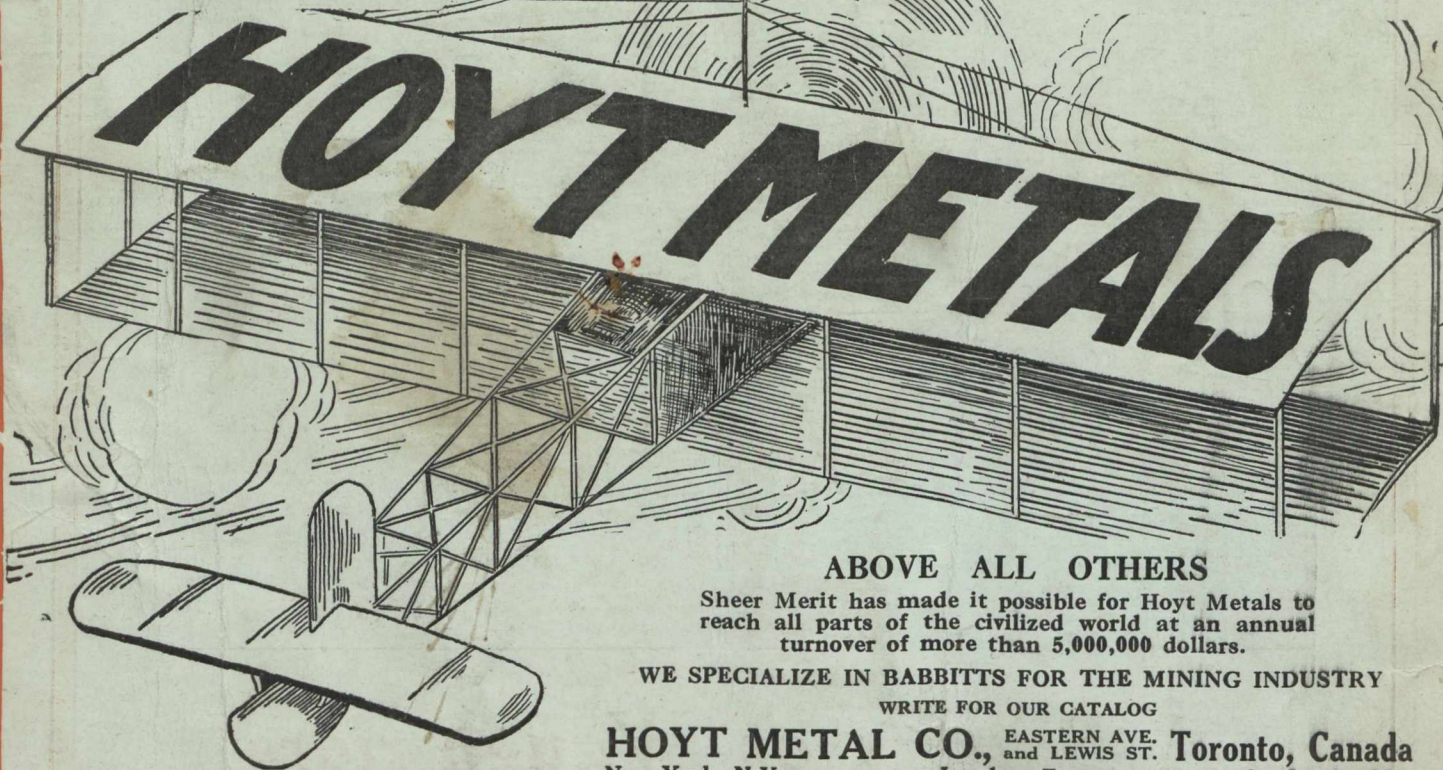
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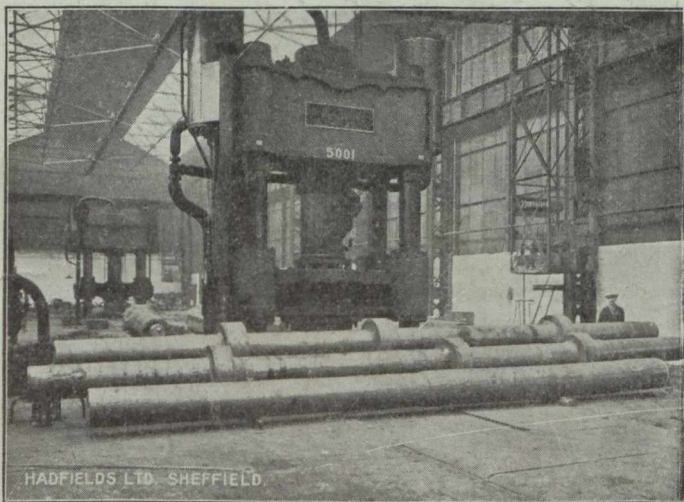
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