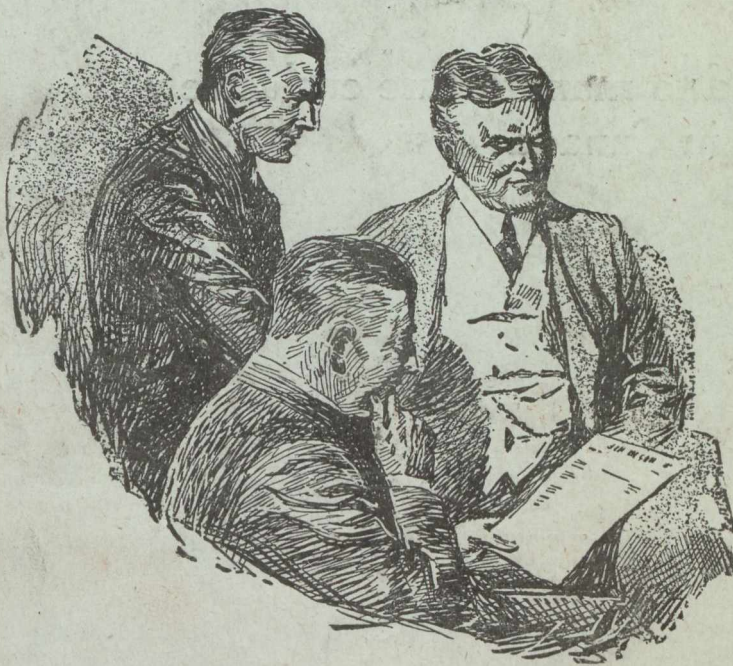


CANADIAN MINING JOURNAL

Vol. XLI.

Gardenvale, P. Q., July 23, 1920.

No. 29.



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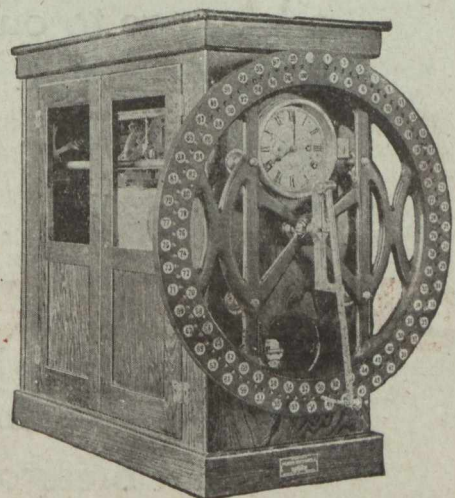
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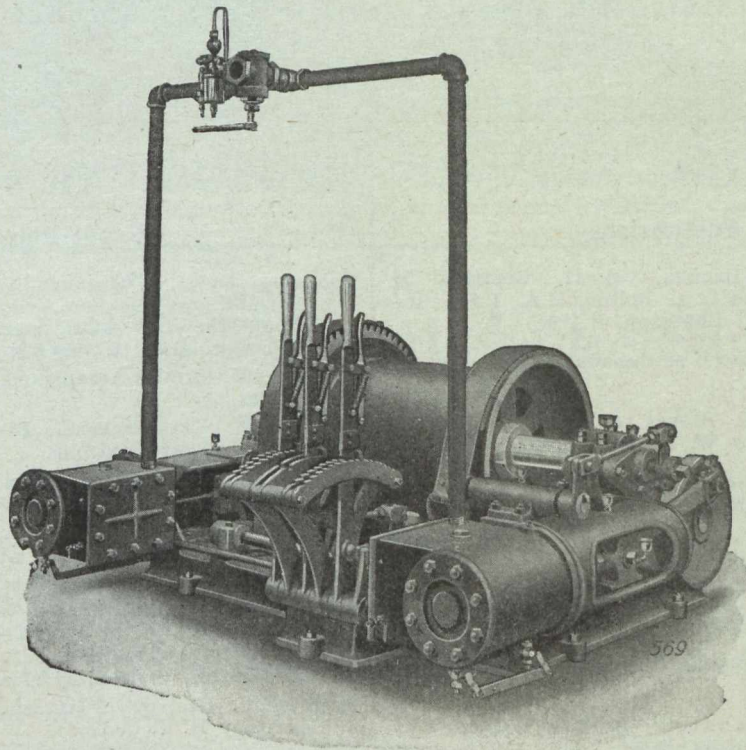
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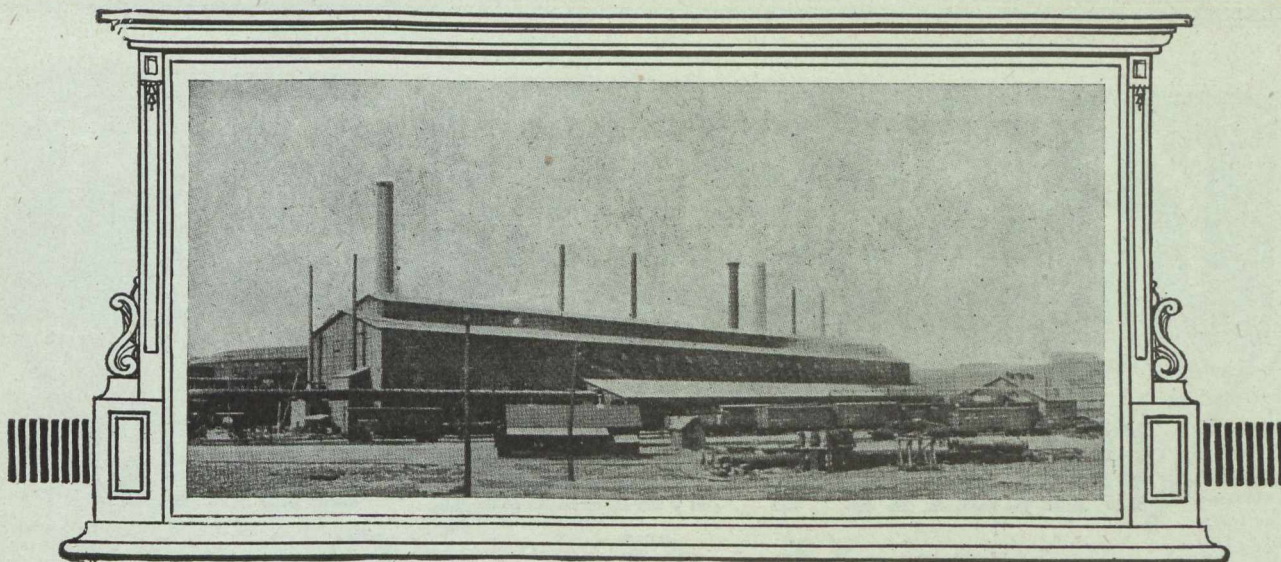
Recent Publications

- Iron Ore Occurrences in Canada, Vol. II. Compiled by E. Lindeman, M.E., and L. L. Bolton, M.A., B.Sc. Introductory by A. H. A. Robinson, B.A.Sc.
- The Copper Smelting Industry of Canada. Report on, by A. W. G. Wilson, Ph.D.
- Building and Ornamental Stones of Canada (British Columbia). Vol. V., by W. A. Parks, Ph.D.
- Peat, Lignite and Coal; their value as fuels for the production of gas and power in the by-product, recovery producer. Report on, by B. F. Haanel, B.Sc.
- Annual Mineral Production Reports, by J. McLeish, B.A.
- The Coal-fields and Coal Industry of Eastern Canada, by F. W. Gray.
- The Value of Peat Fuel for the Generation of Steam, by J. Blizard, B.Sc.
- Analyses of Canadian Fuels. Parts I to V, by E. Stansfield, M.Sc., and J. H. H. Nicolls, M.Sc.
- Clay Resources of Southern Saskatchewan, by N. B. Davis, M.A., B.Sc.
- Summary Report of the Mines Branch, 1918.
- 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 105. Amisk-Athapapuskow Lake district, by E. L. Bruce.
- Memoir 108. The Mackenzie River basin, by Charles Camsell and Wyatt Malcolm.
- Memoir 110. Preliminary report on the economic geology of Hazelton district, British Columbia, by J. J. O'Neill.
- Memoir 111. The Silurian geology and faunas of Ontario peninsula and Manitoulin and adjacent islands, by M. Y. Williams.
- Memoir 113. Geology and mineral deposits on a part of Amherst township, Quebec, by M. E. Wilson.
- Memoir 114. Road material surveys in the city and district of Montreal, Quebec, by Henri Gauthier.
- Memoir 115. Geology of Matachewan district, Northern Ontario, by H. C. Cooke.
- Memoir 116. Investigations in the gas and oil fields of Alberta, Saskatchewan and Manitoba, by D. B. Dowling, S. E. Slipper and F. H. McLearn.
- Memoir 117. Geology and ore deposits of Ainsworth mining camp, British Columbia, by S. J. Schofield.
- Museum Bulletin 30. Gabbros of East Sooke and Rocky Point, by H. C. Cooke.
- Map 164A. St. John, New Brunswick. Topography.
- Map 183A. Harricanaw-Turgeon basin; Abitibi, Timiskaming and Pontiac, Que. Geology.
- Map 185A. Sandon (Slocan and Ainsworth Mining Divisions). Topography.
- Map 1584. Blairmore, Alberta. Geology.
- Map 1691. Buckingham, Hull and Labelle counties, Quebec. Geology.
- Map 1705. Thetford-Black Lake area, Quebec. Topography.
- Map 1707. New Glasgow, Pictou county, N.S. Topography.
- Map 1712. Foothills of Southern Alberta, St. Mary river to Hig.wood river. Geology.
- Map 1724. Sheep River, Alberta. Geology.
- Map 1726. Athapapuskow Lake region. Geology.
- Map 1739. Portions of Bristol, Onslow, McNab, Fitzroy and Torbolton townships, Quebec and Ontario. Geology.
- Map 1742. Ainsworth, Kootenay district, B.C. Geology.
- Map 1793. Matachewan, Timiskaming district, Ontario. Geology.
- Applicants for publications not listed above should mention the precise area concerning which information is desired.
- The Geological Survey will, under certain limitations, give information and advice upon subjects relating to general and economic geology. Mineral and rock specimens, when accompanied by definite statements of localities, will be examined and their nature reported upon.
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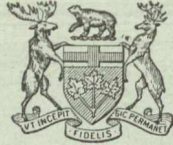
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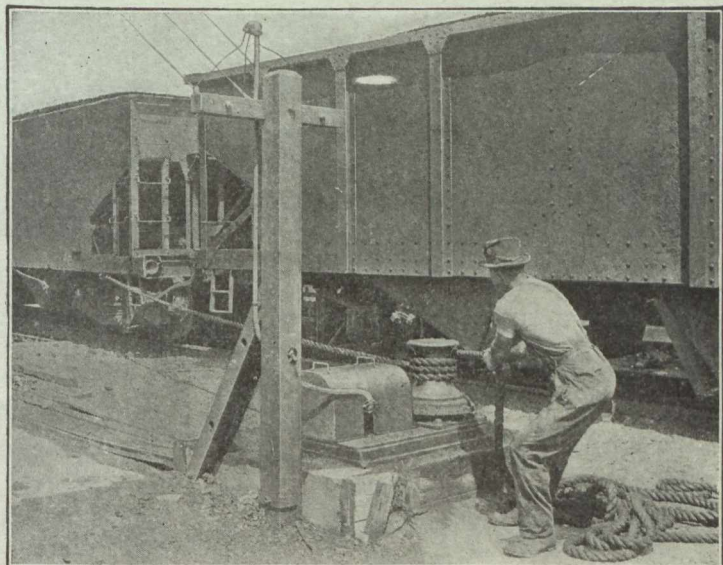
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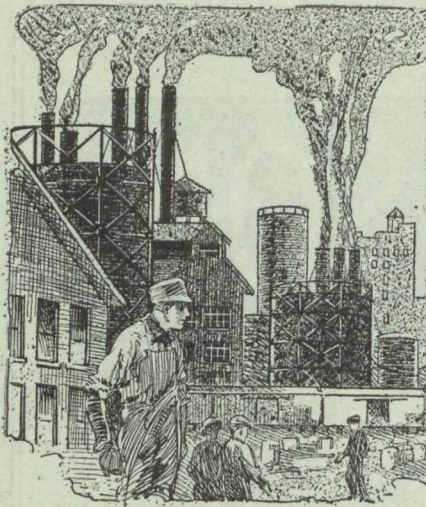
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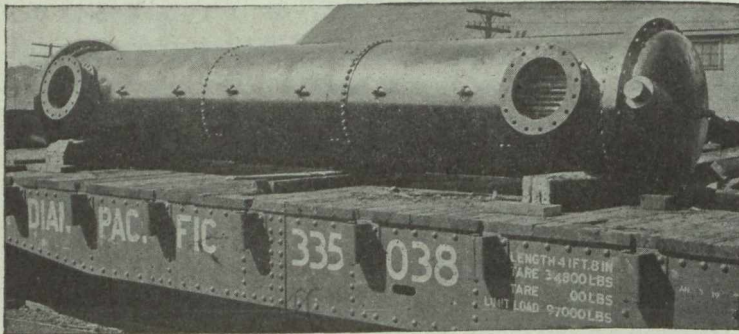
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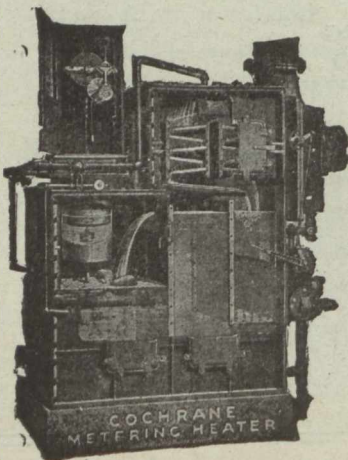
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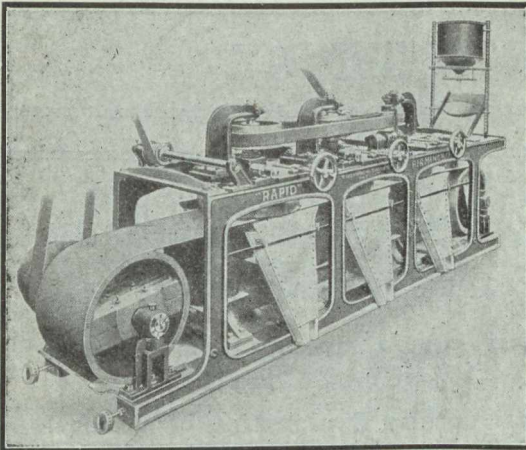
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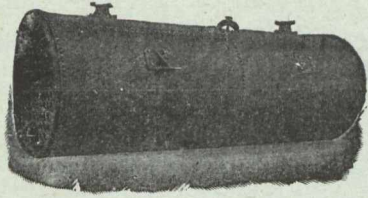
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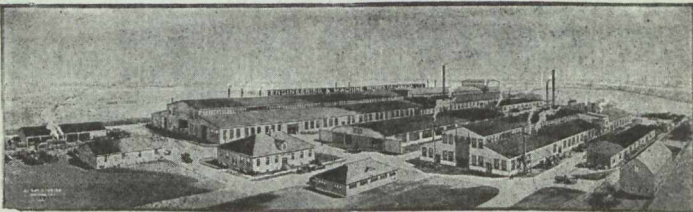
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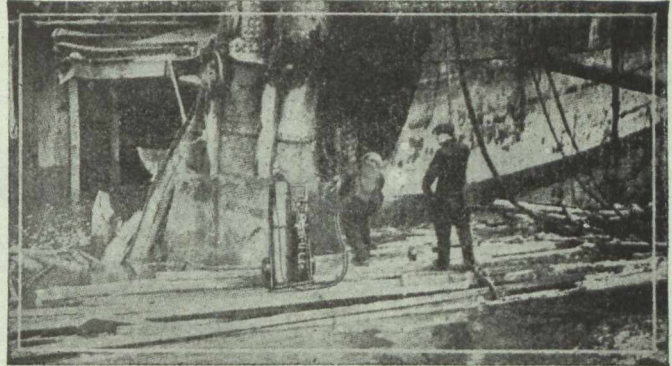
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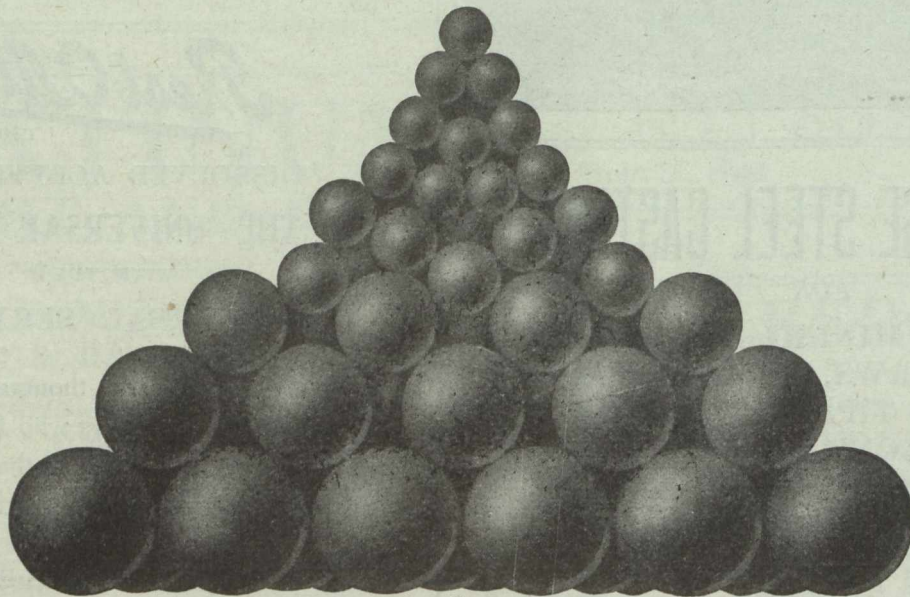
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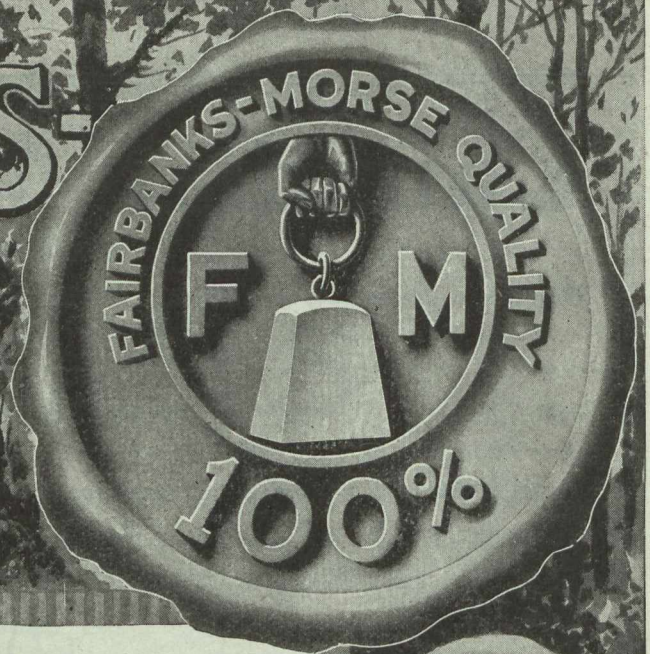
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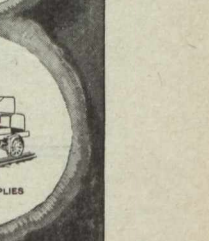
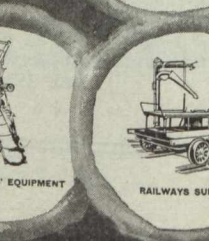
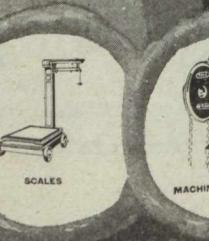
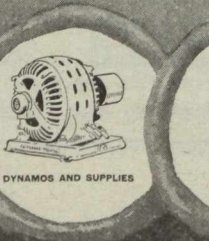
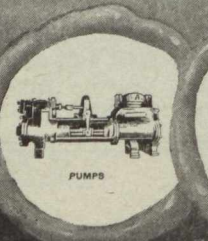
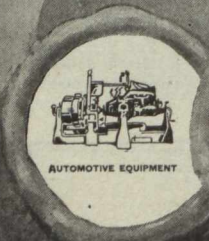
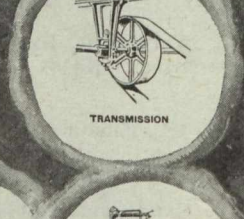
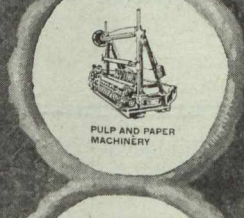
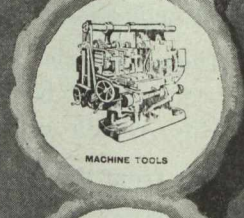
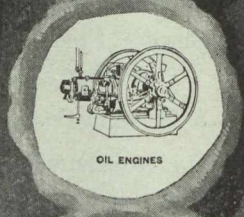
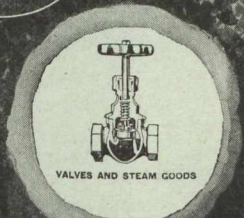
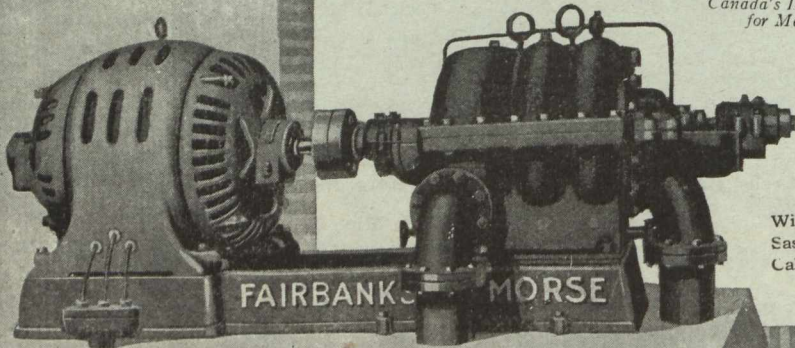
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EDITORIAL

SIR JOHN WILLISON ON THE OUTLOOK FOR CANADA.

Sir John Willison recently delivered before the Canadian Club at Halifax an address on the outlook for Canada in which he strikingly expounded the necessity to turn our raw materials into finished products in Canada. "Those who have ears to hear, let them hear," says Sir John, "for surely there is no other national policy for the Canadian people, whatever may be the fiscal faith which they have inherited, or the economic creed which they profess. It would be a blessing of the gods for Canada if we could forget that we ever had a tariff controversy and if we could approach the questions that are vital to national unity, national expansion and national prosperity without the fettering and narrowing incubus of old racial quarrels and party animosities. Through war, the debt upon the estate has been increased from \$336,000,000 to \$2,000,000,000, and if we are to reduce the obligation we must maintain and expand the industrial fabric and conserve and develop the natural resources."

"During the four years of war the half of our population which was not engaged in agriculture carried \$83,379,099 of the war taxation, while the half engaged in agriculture carried \$389,011—or only half of one percent. In this comparison I am not making any covert attack upon the farmers."—and here Sir John makes what we conceive to be his main point—"but only emphasising the heavy contribution of finance and industry and suggesting the heavier burden which must fall upon agriculture and industrial workers if these special sources of taxation should be restricted or destroyed. . . . We get only one-tenth of the value of natural resources if they are exported for manufacture in other countries."

We believe that the single vision which arises from the unrelieved and therefore necessarily selfish dominance of agriculture is gradually being enlarged as the peaceful penetration of agricultural communities by manufacturers proceeds in the West. One has only to glance over the provincial incorporations to see how persistent is this expansion, nor does it require great perspicacity to realize that the capital accumulation of many wealthy agriculturists is arousing a desire to have this money put to work.

The complete agricultural occupation of Canadian lands has not yet arrived, but it is closer to the event

than ever before. Agriculturally we shall soon have reached the frontiers of settlement in Canada, but there will still remain vast territories for the exploitation of the prospector and the miner, with future centres of population that will grow up around mining developments that may extend the agricultural limits in a circumscribed way. We are approaching the time when the repercussion of more or less complete agricultural settlement will enlarge the urban districts of the West, and there will then proceed to evolve that increase in industrialism and the intensive development of natural resources which will follow the appearance of the wealthy son of the farmer—himself not a farmer as will naturally happen—and the presence of an urban population from which to obtain the workers in manufacturing industries and mining and quarrying.

In other words, Canada is past the point where she is to be regarded merely as the northern storehouse of raw materials to be used in the industries of the United States. We have lived long enough on our capital in Canada. As Sir John Willison points out there is no ethnical or geographical obstacle between ourselves and our neighbors such as determine nationalities and divert the routes of industry into national channels in Europe.

In their decision to be and to remain a separate nation in North America the citizens of Canada, so Sir John intimates, have undertaken a great political experiment, which can not succeed unless we enlarge the development of those basic industries which will enable us to export a greater value of finished manufactures than we import. Volume of exports, if consisting solely of raw materials, is like to the action of a spendthrift heir which precedes the bankruptcy of the estate.

EMPIRE STEEL'S DONATION TO DALHOUSIE UNIVERSITY.

The friends of education in Nova Scotia will be much heartened by the statement made by Mr. Roy Wolvin, President of the Dominion Steel Corporation, that \$250,000 will be given by the companies entering the British Empire Steel Corporation to Dalhousie University, with the idea of "definitely providing for professorships in research work in connection with 'the natural resources of the Province of Nova Scotia.'" The justification for this munificent gift is best stated

in Mr. Wolvin's own words, namely that any subscription to Dalhousie University at this time "will be well repaid year after year". Mr. Wolvin said that men who first undertook the founding of a coal and steel industry in Nova Scotia were men of vision, a tribute both accurate and deserved, but to none of the predecessors of those who are now directing the allied industries has there been vouchsafed a clearer vision of the right action at the proper time. The large coal and steel companies in Nova Scotia have themselves been the victims of the meagre facilities for technical research existing in Nova Scotia, and they will be the chief beneficiaries of enlarged facilities.

Mr. Wolvin's statement was made after consultation with Mr. D. H. Mc. Dougall and Mr. J. W. Norcross. At the Toronto Meeting of the Canadian Mining Institute, Mr. D. H. Mc. Dougall, as the retiring President said: "Efficient and full use of our resources is dependent upon the progress of science, which, applied to their limitations, and supplementing their deficiencies, will have the effect of increasing their quantity and duration." Mr. Mc. Dougall pleaded for a recognition of the importance of applied science to our young nation, and expressed his belief that it was necessary that the Canadian people should "entirely revise their valuation of the scientific worker."

It is therefore heartening to observe that the most pregnant re-arrangement of industrial forces which has recently taken place in Canada is headed by men who have the desire, as well as the power, to practice what they preach. The gift to Dalhousie University is timely, wise and good business.

A GERMAN COAL "KING."

Cabling from Berlin, as correspondent of the New York "Times", George Renwick sends a character sketch of Hugo Stinnes, whom he describes as a "soul-destroying success, sinister as his looks," a man to whom power is as the breath of life, and whose remarkable influence in European politics is attributed to his realization of the basic necessity for coal in this age.

"I build on coal", Stinnes once said to me in the days long before the war. 'From coal you go on to iron and steel and then to the various industries, to ships to commerce; and coal will lead you to woods and forests, to wood pulp and paper. Coal is King.' "

One may dissent from the ambitions of Herr Stinnes, but, so long as private ownership is acknowledged in Germany, there is no disputing the power of any man, who, being the possessor of many groups of coal mines, has also the vision of the material power

that accompanies such possession when followed to its ultimate application in the arts of civilization.

There was no doubt in the minds of those who followed the course of the war, and realized the part that coal played in the ambitions of European nations, that the movement of Germany's armies was dictated as much by the hand of the mining engineer as by the military chiefs. Had Germany won the war, and imposed the terms which we now know had been drafted, and of which the peace of Brest-Litovsk was a mere forerunner, it is apparent how, with the aid of Hugo Stinnes and others like him in Germany, the conquered nations would have been scientifically relieved of their basic materials and industries by men who have devoted their whole being to the worship of material power. Once more, neither for the first nor the last time, the imponderables and the intangible things of life defeated the scientific calculations of an armed nation arrogant in its mightiness, but victory would not have been possible to the Allies, no matter how righteous their cause, had they not been able to marshal the coal production of their countries against their enemies.

Herr Stinnes's recital of the structure built upon coal has its exact parallel in the course of events in Canada today. From coal to steel, from steel to ships and commerce, with the by-path to wood-pulp and paper is curiously reminiscent of the chief items of discussion in financial and political circles in Canada during the past few months.

ALBERTA GOVERNMENT ADVERTISES ALBERTA COAL IN WINNIPEG.

The "Winnipeg Free Press" of July 17th contains a three-quarter page display advertisement published by the Alberta Government in the interests of Alberta coal, urging the use of western coal during the coming winter, and its immediate purchase.

"Whether for hot water, hot air, steam, direct or indirect heating or the good old-fashioned stoves and heaters, there is a coal from Alberta that will give you full satisfaction, and any responsible dealer can get it for you." So runs a portion of the announcement. Publicity of this kind is the very best kind of business and in every way to be commended. What the eastern coal man finds it difficult to understand, however, is why it should ever have been necessary to urge western people to burn western coal.

METAL QUOTATIONS.

Fair prices for Ingot Metals in Montreal, July 22nd, 1920.

	Per lb.
Copper, Electro	24 $\frac{1}{4}$
Copper Castings	23 $\frac{1}{2}$
Zinc	10 $\frac{5}{8}$
Lead	10 $\frac{1}{4}$
Tin	56
Antimony	10
Aluminum	36

*Vide issue 19th March, page 209.

Northern Ontario, Between the National Transcontinental Railway and James Bay, along the Abitibi and Mattagami Rivers

ECONOMIC GEOLOGY OF THE PALEOZOIC AREA

(Illustrations loaned by the Ontario Bureau of Mines).

Part II of the 29th Annual Report of the Ontario Bureau of Mines, 1920, consists of a tri-partite description of that portion of Northern Ontario lying between the line of the Transcontinental Railway and the mouth of the Moose River in James Bay, as seen along the courses of the Abitibi and Mattagami Rivers, prepared by J. G. Cross of the Ontario Bureau of Mines. M. Y. Williams of the Geological Survey and Joseph Keele of the Mines Branch at Ottawa.

Mr. Cross has reported upon the pre-Cambrian rocks and iron-ore deposits in the Abitibi-Mattagami area, and Mr. Williams has described the geology of the Paleozoic area as seen in the cuttings of the two rivers. Mr. Keele deals with the clay and shale deposits.

The topographical character of the region is clearly recorded by Mr. Keele, as follows:—

The Blanket of Glacial Drift.

A great sheet of glacial drift covers the whole region drained by the Abitibi and Mattagami rivers from James Bay to some distance south of the National railway. It is composed principally of boulder clay or till gathered in the Hudson Bay basin, moved southward by land ice and spread like a huge poultice over the land surface, completely obliterating the topographic inequalities of the underlying rocks.

This thick drift sheet was derived principally from the Paleozoic and Mesozoic rocks bordering the southern part of the Hudson Bay basin and possibly in part from the sea bottom, extends southward and covers the pre-Cambrian rocks from the Paleozoic border to a distance from 20 to 40 miles south of the National Transcontinental line. The only field data we have at present concerning the southern limit of this thick clay drift is the presence or absence of lakes. Where the drift is thick and persistent, lakes and rock ledges are practically absent, but where this drift thins out and disappears to the southward, lakes and rock ridges become numerous.

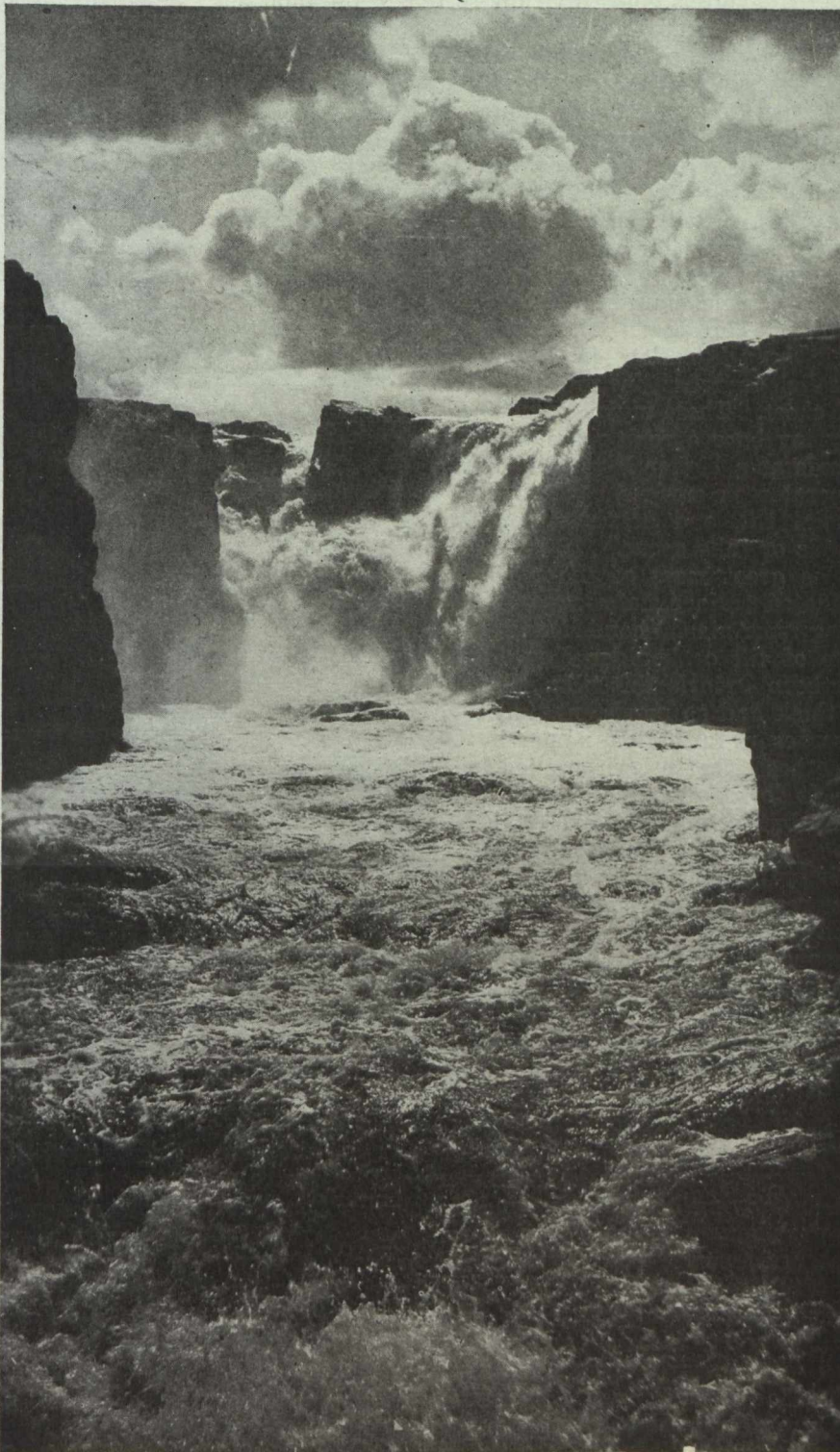


Photo by J. G. Cross.

SMOKY FALLS, MATTAGAMI RIVER.

These beautiful falls, with a drop of 86 feet, receive their name from the mist which continually hangs over the crest.

The pre-Cambrian rock surface yielded less material than the more easily eroded Paleozoic rocks and very little clay during glaciation, hence when the southward moving ice sheet exhausted its load of fat northern clay it could not gather much more as long as it moved only over the old crystalline rocks.

The generally barren character of the pre-Cambrian upland when not enriched by the northern till, is exhibited along the Temiskaming and Northern Ontario railway line between North Bay and Cobalt, where the glacial drift consists of sand, gravel, and boulders only. The drift here is generally thin, so that it does not obscure the inequalities of the old pre-Cambrian surface, therefore rock ridges, small valleys or lakes are constantly in view of the traveller.

A very different aspect would open to an observer travelling on the proposed extension of the railway through the region north of Cochrane, where there is a marked absence of lakes and rocky ridges. So effectively has the till sheet levelled up the surface that if the whole area along and north of the National Transcontinental line were denuded of trees, it would be a rolling prairie country. The Abitibi and Mattagami rivers and their branches flow in roughly parallel trenches incised in the till sheet. These rivers occasionally lay bare a rock ridge which stands at a higher level than the general rock surface beneath the glacial till, and at these points rapids or falls occur.

The great mass of the unconsolidated surface materials originating from glacial conditions consists of till or boulder clay. In northern Ontario this till sheet is so thick and so persistent that it deserves a formation name, but none has hitherto been applied to it. It forms the greater part of the extensive clay belt over which the National Transcontinental railway is built, and includes a vast reserve of agricultural land.

This till sheet is not entirely continuous, but is interrupted by minor areas of sand or gravel which are the result of the washing and sorting of the boulder clay by streams of water issuing at the water issuing at the edges of ice sheets.

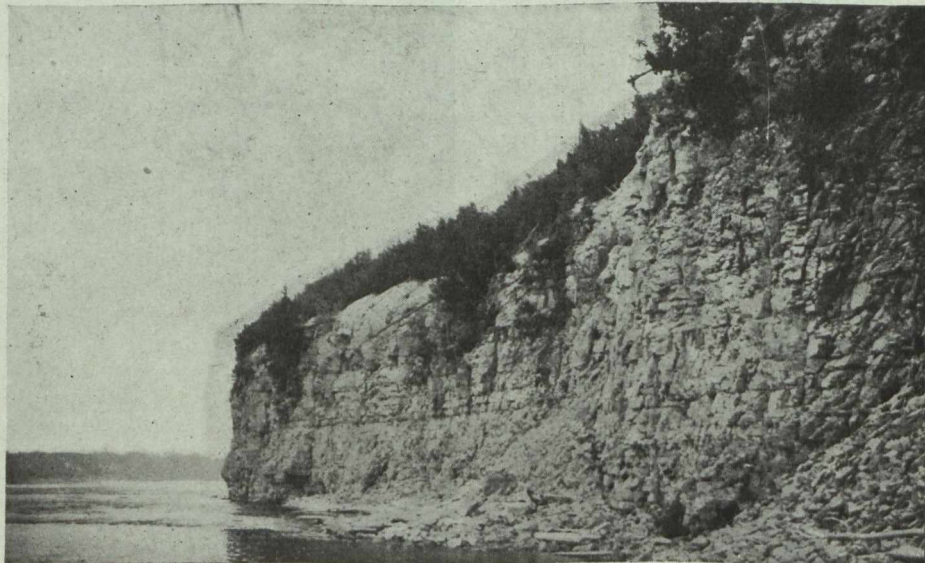
There are no large areas of the till sheet entirely level in these regions, but the surface exhibits a series of gentle undulations. The hollows are swampy, owing to the fact that water collects in them, and cannot escape on account of the impervious character of the underlying boulder clay and the small amount of evaporation. The hollows accumulate a deposit of peat, and in time may support a thin growth of stunted black spruce. The higher portion of the surface is dry, and supports a forest growth of poplar and birch in addition to spruce. Travelling in any direction, then, one passes alternately from wet to dry land.

No definite evidence of multiple glaciation during Pleistocene time was found in the region examined. In places stratified sands and clays are overlain and underlain by till, but such occurrences are probably to be explained as the result of minor retreats and advances of the ice-sheet. No fossils were found in

the stratified deposits interbedded with till, nor was any other evidence obtained which would suggest that inter-glacial warm climate conditions prevailed at any time during the Pleistocene in this region. It was found that the clay beds which occur on the Mattagami river, and which have been referred to by previous workers as inter-glacial in age, are pre-Glacial in age.

Observation Limited to River Channels.

All that is accurately known regarding this part of Northern Ontario—which comprises approximately 26,000 square miles—is confined to the observation possible in the river channels cut through the all pervading mantle of glacial till, and in this regard it resembles the knowledge of Ungava and the North-West Territories in being tantalisingly incomplete. The portion of Northern Ontario traversed by the Abitibi and the Mattagami, as may be seen from the map, constitutes only a small part of the little known territory surrounding Hudson Bay, and when one reads the



Section of Onondaga limestone in cliff 50 feet high, Long rapids, Mattagami river.

Photo by M. Y. Williams

statement of Mr. Cross regarding explorations in the muskeg along the Abitibi, where "an average of one mile an hour was considered good going," it is clear that little is known, and that little can be known for many years to come, either as to the feasible limit of economic settlement northwards in Canada, or of the mineral occurrences in unprospected continental areas.

Pre-Cambrian Rocks and Iron-Ore Deposits, Abitibi-Mattagami Area.

The mineral occurrences noticed by Mr. Cross's party are briefly noted as follows:

Metallic.

Numerous quartz and calcite veins were carefully examined for traces of gold and silver; none were observed.

Siderite.—At the head of Grand Rapids, Mattagami River, possibly in commercial quantities. Inferior metal at the foot of the Rapids.

Limonite.—Occurs sparingly with the above.

Chalcopyrite.—Occurs sparingly disseminated in a number of quartz veins examined, and similarly in the gabbro of the Abitibi Canyon.

Non-Metallic.

Peat.—Enormous areas of swamp and muskeg are underlain with peat. The depth is uncertain. The quality appears to be good.

Lignite.—Lignite beds occur along the lower stretches of the Abitibi and Mattagami rivers. These do not appear to have sufficient depth or lateral extent to be of economic importance.

Gypsum.—Gypsum similarly occurs along the Moose and Abitibi rivers.

Pyrite.—Pyrite, mixed with considerable quantities of pyrrhotite, occurs as irregular masses and lenses

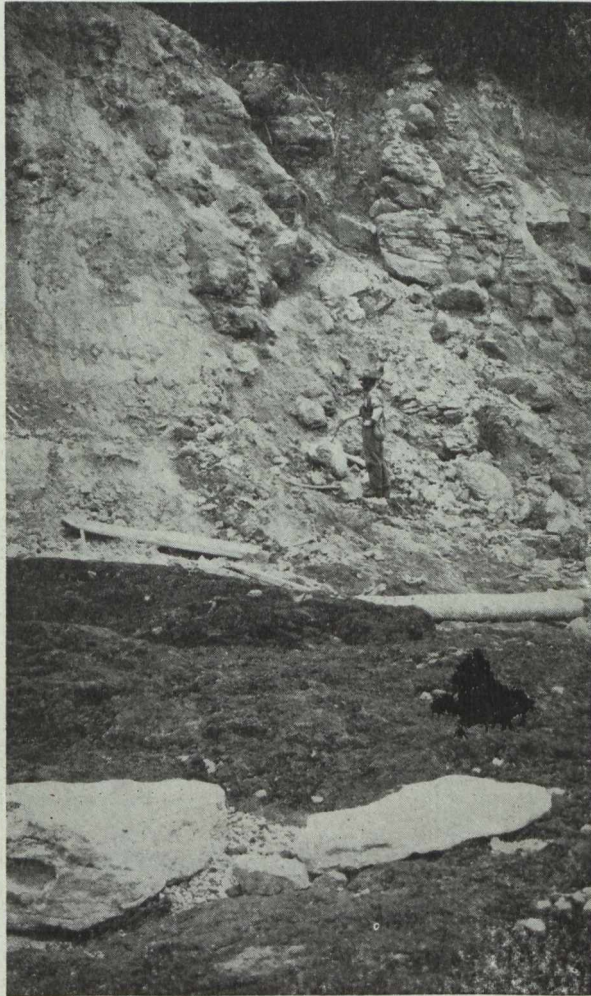


Photo by M. Y. Williams.

Deposit of iron ore on west side of Mattagami river at Grand rapids. The dark mass in foreground is the ore. Cliffs of weathered limestone rise in the background.

impregnating and replacing biotite gneiss, at the foot of Island portage, Mattagami river. The pyrite is not sufficiently rich to be considered an ore of sulphur. The sulphur content would probably not exceed 25 per cent.

Clay.—Clays of a refractory nature were observed, often associated with lignite along the Mattagami river, below Long portage.

Kaolin.—An interesting occurrence of highly kaolinized syenite gneiss, containing as impurities biotite and garnets, was observed in the Canyon of Long portage, Mattagami river.

Siderite Deposits, Mattagami River.

From an economic point the iron ore occurrence at Grand Rapids on the Mattagami, about 80 miles direct-

ly north of Mattagami Station on the Transcontinental, is the most interesting part of the report of the Cross party, which gives the following particulars:—

Description of the Ore.

The ore is essentially siderite, although limonite is occasionally present. The limonite is found in vuggy or nodular masses in the siderite, and also occasionally forms a casing around the margin of the larger siderite bodies. On the whole the limonite forms only a very small percentage of the ore.

Wherever exposed the surface of the siderite has been oxidised to limonite; hematite is also probably present, judging from the streak. This oxidation is very superficial, being seldom more than three inches in thickness. In the inferior grades of ore, where there is much silica and clayey material, the oxidation is more pronounced; nowhere, however, was extensive oxidation observed.

In colour the siderite varies from dark brown to nearly white. The different shades of colour are probably due to finely disseminated limonite, or organic matter. Often the organic matter is visible in fairly large pieces, and appears to be of a lignite nature, having the appearance of charcoal. The structure is compact and finely granular. The fracture is uneven. A light coloured, coarse grained variety was observed as float, farther up-stream. No ore of this nature was found in place, and it is assumed that this material came from other localities, not yet discovered. Speculation as to the origin of this float will be presented later.

Siderite occurs at both the head and the foot of Grand rapids, but it is only in the former locality where ore of commercial quality exists. This showed on analysis the following composition:—

Sample (6) chipped, 600 ft.

	Per cent
Iron	43.52
Silica	5.40
Alumina	2.63
Sulphur	0.74
Phosphorus	0.08
Manganese	0.00
Water	2.18
Carbon dioxide	30.40

The chief impurities in the ore are silica, clay, limestone, sulphur and organic matter. The phosphorus is not abnormally high for this class of ore. Silica in the form of sand and gravel was often observed in the inferior grades. The clay content is also very high in places, the silica and clay frequently forming the greater part of the outcropping. Limestone is also present, often forming a breccia, the cementing material being siderite of inferior quality. Sulphur is present in all the ore. Often this can be observed as small pockets of pyrites in cavities in the siderite, and occasional specks of pyrite can be seen, with the aid of the glass, in nearly every specimen observed. Organic matter is also contained in all the ore, but in varying quantity; some of the siderite contains so much organic matter that it is almost black in colour. The best quality ore contained 1.27 per cent. carbon. This organic matter is probably lignite, as occasional pockets and seams of lignite were observed in the ore.

From the foregoing analyses it is apparent that samples Nos. 1 to 5 represent ore of very inferior quality, while sample No. 6 represents siderite of good

commercial grade. The latter will be referred to as the main body, and the former as ore of inferior quality.

The main ore-body has a maximum width of approximately 600 feet but the exact extent of workable ore was not determinable.

The ore occurs in cavities in limestone of Corniferous age, and the larger the cavity the better appears to be the concentration of iron content in the ore. It is suggested the iron was deposited in the cavities from solutions, iron being present in the neighboring rocks, and streams in the vicinity being noted as heavily charged with iron in solution.

Some work has been done on the Grand Rapids deposit by the original owners, but, interesting as this occurrence is from many points of view, its present economic value is small.

The conclusions of the Report are, in part, as follows:—

Conclusions Regarding Ore Body

The analysis of sample No. 6 shows that the ore is a siderite of very good quality. This material when calcined gave a product that analysed 61.22 per cent of iron. The sulphur and phosphorus content are too high for a Bessemer ore, but the material should be well adapted for the manufacture of steel by the basic open hearth process, and for the manufacture of pig iron.

Regarding the possible occurrence of similar ore bodies, it would appear, judging from a superficial examination only, that these siderites may be quite widely distributed. The following reasons are ascribed for this assumption:—

(1) The occurrence of siderite elsewhere in the same general vicinity.

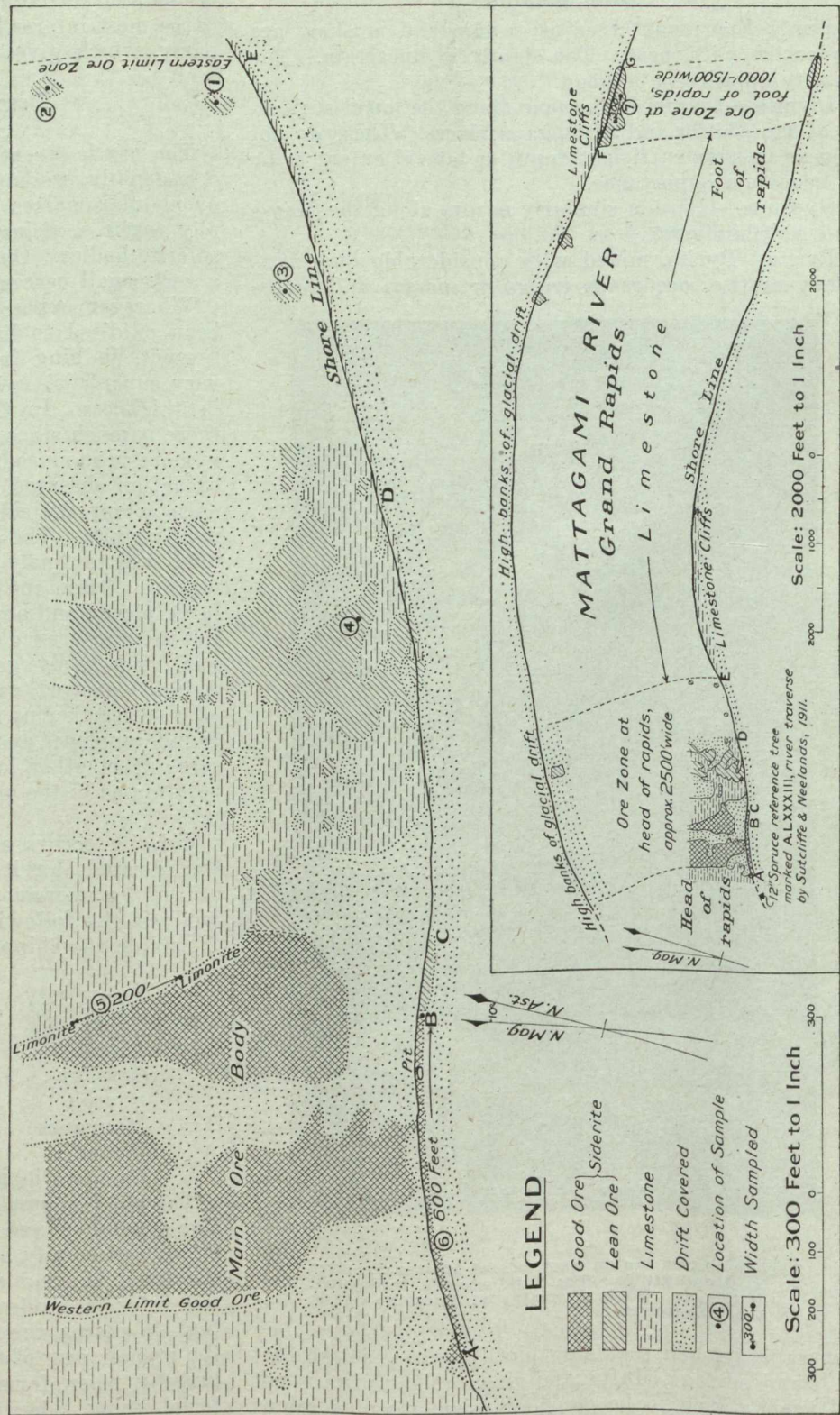
(2) The similarity to this area, geologically and physically, of other large areas in the locality.

(3) The great abundance of siderite boulder drift for many miles along the Mattagami river. The deposits described would not seem of sufficient size to supply this profusion of boulders.

(4) The occurrence of siderite drift greatly in physical properties from any observed *in situ*.

(5) The existence of a talus slope of sideritic material four miles further up-stream than the deposits at Grand Rapids.

Attention is called to the presence of siderite on the Opazatika River in limestones, as indicating probable wide distribution of these siderites.



Possible Occurrence of Oil in the James Bay Sedimentaries.

Dr. Williams reports on the geology of the Paleozoic rocks as they approach James Bay with particular reference to the possibility of the presence of petroleum. The Onondaga limestone is present, but mostly it outcrops, and only in a few localities of restricted area is it covered by impervious shales such are presumed to be necessary for the retention of the oil in this section, which has been uniformly productive of oil in southwestern Ontario.

Dr. Williams suggests that nowhere in the district is it likely that there exists a greater depth of Paleozoic strata than 600 to 700 feet. The possibility of oil is suggested by the presence of formations which have yielded oil in southwestern Ontario, but, from reading the Report, it is not possible to gather that any definite indication of the presence of petroleum has as yet been observed.

The presence of oil-shales is noted, of low oil-content, samples from the Long Rapids, on the Abitibi river showing respectively 1.6, 3.9 and 5.5 per cent of crude oil. The outcropping beds along the Mattagami are of limited extent "but there is evidence they are of Portage age, and, if they are, the whole Ohio shale section may be present."

Clay and Shale Deposits of the Abitibi and Mattagami Rivers.

Mr. Keele, whose knowledge of the geology of shales and clays in Canada is well known as accurate and extensive, has dealt at length with the sorting and deposition of the glacial debris into sands, gravels and varying classes of clays. While there are in the district under review a number of clays, sands and gravels that would be valuable in settled districts, it is necessary that before any economic value can attach to such materials when situated so far from centres of population that they should possess unusual merit, and the refractory pre-glacial clays found in this part of Northern Ontario show such excellent qualities that they may become of industrial value. The clays of particular value, the presence of which is verified by Mr. Keele, occur on the banks of the Mattagami, about 55 miles north of Kapuskasing Station on the Transcontinental. One clay is stated to have the composition and physical properties of the fireclays of New Jersey, and another clay is stated to approach English ball clay in character.

With regard to the distribution of these clays, Mr. Keele writes:—

Prospecting for Fire Clays.

"Enough has been said about the qualities of these clays to show that they are of high grade and of extremely rare occurrence in the Province of Ontario, or indeed anywhere in Central Canada.

As already stated, small bodies of these high grade clays are visible at low water stages on the Mattagami river, and at about forty miles to the west of this locality on the Missinaibi river the most extensive known deposits of fire clays in the region are to be found.

There are no occurrences of fire clays reported from the Opazatika, a tributary of the Missinabi which intervenes between that river and the Mattagami, but then they have never been sought for on that stream.

In all probability the fire clays were originally spread over the large area extending between the two streams or beyond them, but glaciation must have removed some of the beds or scooped out the whole formation in places.

The clays as far as we know never overlapped the pre-Cambrian rocks, but are confined to the area underlain by Paleozoic rocks.

The persistent cover of glacial drift and forest growth retards considerably the prospecting of the

interstream areas, and the only thing to be done there is to put down borings at a venture in the hope of tapping the underlying fire clays, so this practically confines prospecting to the river banks for the present, until some nearer approach to the deposits is made by railway transportation.

Their distinctive colour is the principal clue to be used in prospecting for these clays, as they present a strong contrast to the monotonous drab of the ever present glacial clay. Dilute acid is a convenient field test, but it is not final, as some clays which do not show effervescence may not be fire clays. This test, however, prevents the burden of carrying useless samples.

The excessive overburden of glacial drift is one of the chief drawbacks to the exploitation of these clays. In regions where similar clays are mined it has been found that it is possible to remove one foot of overburden for every foot of good clay obtained, but it is not profitable to remove more than this."

Kaolin.

The presence of kaolin, or china clay, is not reported, but Mr. Cross discovered a kaolinized zone of rock below the Long portage on the Mattagami river, regarding which the Report comments:—"The discovery of a considerable body of rock well on its way to being a kaolin is of importance, as it may lead to the discovery of true kaolin in this region. The ever present burden of glacial drift, however, which makes prospecting so difficult has always to be reckoned with."

The presence of thin beds of lignite is several times mentioned in the report, but unfortunately there appears to be no possibility that in the region traversed any workable bodies of lignite exist. Peat-bogs exist in profusion, but their usefulness as a source of fuel supply is much smaller than peat-bogs nearer the frontiers of settlement, and, so far, experiments in the preparation of peat for use as a fuel have shown that it will not bear long-distance transportation.

GIFTS OF CANADIAN MINES TO PRINCE OF WALES ON EXHIBITION IN LONDON.

The Bulletin of the Imperial Institute states that the presents received by H.R.H. the Prince of Wales during his visit to Canada are now on exhibition in the Canadian Section of the Public Exhibition Galleries of the Institute. Included among the exhibits are specimens of cobalt, nickel and silver ores from Coniagas Mine, Cobalt; copper and gold ores from Drum Lummon Mine, Douglas Channel, British Columbia, native silver from the O'Brien Mine, Cobalt; gold quartz from the Hollinger Mines, Porcupine District, and coal from the Wellington Extension Mine, B. C.

The time has come for the people of this country to look the fuel situation squarely in the face and for public opinion to demand a course of action leading towards remedy. If any nation in the world cannot afford to trust to luck for the winter's coal that nation is Canada. Handling of the coal situation by frantic adjustments of succeeding crises ought to be a repugnant to the good sense as it is beneath the dignity of Canadians.—Montreal "Star."

Our Northern Ontario Letter

THE SILVER MINES

The mine operators in the silver producing areas of North Ontario, while free to admit that the decline in quotation for silver has been a disappointment, nevertheless are also mindful of the fact that even present quotations back in 1917 would have been sufficient to cause great enthusiasm. There is no sign of lessening activity, while the indications point to the likelihood of increased work in certain parts of the district.

During June the Cobalt mines shipped an aggregate of 1,497 tons of ore, as compared with 1,568 tons in May. The average price of silver during June was 90.95 cents an ounce, as compared with 102.58 cents in May. The lowest point reached in June was on the 16th when the metal was quoted at 80 cents an ounce. So far during July, the price has ranged well above 90 cents, and the July averages promises to exceed that of June. In addition to this price, the producing companies continue to receive payment in New York funds and are thus in receipt of an extra 12 or 13 per cent, making a total of more than \$1 an ounce for their product.

Negotiations between the Mining Corporation of Canada and the Penn-Canadian Mines, involving some 125,000 tons of tailings owned by the latter company, do not appear to be making much headway. The Penn-Canadian offered to dispose of the tailings at a time when quotations for silver were much higher than at present, having based its price on such figures. It is now believed that unless modified terms are presented, the negotiations will not terminate successfully.

For the first half of 1920 the properties of the La-Rose Consolidated are reported to have produced close to a quarter of a million ounces of silver, as compared with 269,000 ounces for the whole of 1919. At the present rate of output, the 1920 figures are expected to exceed 1919 by more than 50 per cent. It is also intimated that while production costs in 1919 amounted to \$1.05 for each ounce of silver produced, the reduction of exploration work this year is enabling the management to produce the metal at a much lower cost, and which leaves a satisfactory margin of net profit.

According to advice just obtained the mill of the Bailey Silver Mines, formerly the Northern Customs Concentrator, during the second quarter of the current year, earned \$50,477.65, made up of \$16,000 for April, \$17,000 for May and \$17,477.65 for June. It is also learned that the company is meeting with success in development work on the Bailey Mine itself, having opened up another rich ore-shoot in addition to developing additional milling ore. Prior to this development work, ore in sight was estimated at 23,000 tons of upwards of 20 ounces of silver to the ton. The higher grade ore is being assembled ready for subsequent shipment, while arrangements to install a railway siding and transport the milling ore to the Bailey Mill are proceeding satisfactorily.

Official advice to the "Journal" from the Canadian Light Railway Construction Company, of Toronto, conveys the information that twenty miles of the sur-

vey work from Elk Lake to Gowganda has been completed and that it is now possible to estimate the probable cost of construction work. It is also stated that survey parties are still engaged in making a survey of also tapping Boston Creek and the township of Kirkland Lake, and with the ultimate object in view of also tapping Boston Creek and the township of Skead. Financial arrangements consist of raising approximately \$1,500,000 for these projects, and the promoters of the enterprise appear to be confident of the outcome being successful. In the meantime, mining activity in the districts which the proposed lines are to serve is steadily increasing with indications of added impetus just as soon as rail transportation can be provided.

About 200 feet of underground work has been done on the property of the Cobalt 53 Mining Company, and consist chiefly of lateral work at a depth of 70 feet. The work is stated to have been financed personally by the promoters. The work done is for the purpose of endeavoring to open up the downward continuation of a vein which at surface contains encouraging quantities of silver.

The Thompson Powder Company is meeting with success in Cobalt and Porcupine in the sale of shares with which it is proposed to finance the manufacture of "Thompsonite," a comparatively new explosive. Former demonstrations were very satisfactory, so much so that quite a number of mining men in a position to pass on the merits of the explosives are stated to have subscribed quite liberally for shares in the company. It is planned to manufacture explosives in Toronto.

Although it was generally understood, at the time the deal was closed in which the Conigas Company took a working option on the Gamble-Thompson property at Gowganda that work would be carried on in an aggressive way, nothing much has so far been done. The property is rated as an excellent mining prospect.

In connection with the recent unofficial reports that the Nipissing Mining Co. contemplates making a capital reduction, in addition to regular dividend disbursements of 5 p.c. quarterly, it is learned by the writer in official circles that such a plan is not under consideration and that a circulation of such rumors merely serves to raise false hopes among the shareholders.

In recent years, the Nipissing has paid dividends at the rate of 5 p.c. quarterly, plus an additional bonus of 5 p.c. with the January dividend and a 5 p.c. bonus with the October dividend, making a total of 30 p.c. annually on the issued stock. In spite of this liberal rate of disbursement of profits, the company has accumulated a large surplus, the most recent financial statement showing over \$5,000,000 in quick liquid assets.

At a meeting this year, some of the shareholders made the suggestion that the rate of dividends should be increased. No action was taken on the suggestion, however, and, meanwhile, the treasury continued to grow. These facts appear to have been the basis of the recent reports that a capital reduction would be made. This report now receives official denial.

Following is an official statement from Arthur A. Cole, mining engineer for the T. and N. O. Railway, showing the total ore shipments from Cobalt over the railway for the month of June, in tons of 2,000 pounds:

SILVER ORE

Cobalt Proper	Tons
1. Conigas	86.90
2. Dominion Reduction	62.00
3. LaRose	73.60
4. Mining Corporation	301.52
5. McKinley-Darragh	82.28
6. Nipissing	793.22
7. O'Brien	32.00
8. Temiskaming	66.25

1,497.77

The above shipments were made to the following Companies:—

CANADA

Deloro Smelting & Refining Co., Deloro	
Marmora	1,232.34
Conigas Reduction Company, Thorold	153.15

UNITED STATES

American Smelting & Refining Co., Chrome	30.00
American Smelting & Refining Co. Perth Amboy	82.28

PRICE OF SILVER

June 16th. Lowest	80.000
June 2nd. Highest	99.625
Average	90.957

ORE AND BULLION SHIPMENTS.

During the week ended July 16th, six Cobalt companies shipped a total of six cars containing approximately 445,020 pounds of ore, a summary of which follows:—

Shipper	Cars	Pounds
La Rose	1	90,666
Nipissing	1	86,390
Temiskaming	1	82,366
Dominion Reduction	1	64,000
Coniagas	1	61,305
Hudson Bay	1	60,293
Totals	6	445,020

During the corresponding period, no bullion shipments were made.

THE GOLD MINES.

A most optimistic turn has taken place in Northern Ontario in connection with the gold mining industry, and some of the most conservative mining men in the business are found numbered among those who are openly predicting interest and activity during the remaining months of the current year that may actually attain boom proportions. They base this belief on the strength of the facts that conditions are becoming less abnormal, that ore reserves are the highest in the history of the mines and that labor is becoming more plentiful, all of which promises to permit the mines to utilize their milling facilities to full capacity and thus add enormously to output and to the rate of dividend disbursements.

Not since the recent war laid its adverse influence in the way of the industry have gold mine operators seemed so optimistic. Speculation in mining shares is becoming more pronounced, and almost on every hand appears to be a spirit of pent-up enthusiasm which may reasonably find vent almost any day. Such mines as the Dome, Hollinger, McIntyre and Lake Shore are the favorites among the big producers, while among the lower priced shares the Dome Extension, Porcu-

pine V.N.T., Schumacher, etc., appear to be favorites. These mines are expected to lead the way, and to signalize general interest in all mining properties of promise throughout the district, to the end that great incentive will be offered for more intensified exploration and development work on properties as yet in the prospective or development stage.

A dividend of 5 per cent. will be paid September 1st to shareholders of the McIntyre-Porcupine of record August 1st. The disbursement will amount to \$180,514 and will be the third made so far this year. Up to date the McIntyre has disbursed a total of 55 per cent. or \$1,985,655. The company is capitalized at \$4,000,000 made up of 4,000,000 shares of the par value of \$1 each. Some 3,640,283 shares have been issued.

As a result of the special general meeting of the Porcupine V.N.T. Mines held this week, it is estimated that a plan to underwrite a block of treasury shares finds favor and may be adopted as a means of raising finances with which to remodel and enlarge the mill, as well as increase the scope of underground operations. The company has 675,000 unissued shares still in its treasury. It is suggested that about 200,000 shares may be underwritten at about 15 cents each 200,000 at 30 cents and 200,000 at 50 cents and with the funds thus made available it will be possible to completely finance the work in connection with putting the mill in shape to handle from 150 to 160 tons of ore daily as well as greatly enlarging the scope of underground operations. The outlook for the mine is considered very favorable.

It is apparently the quite general belief in the Porcupine district that the Dome Mines Company will, on or before September 15th, be justified in exercising the option which it holds on the Dome Extension mine. The indications that one of the main zones of mineralization will extend from the Dome onto the Dome Extension at a depth of about 1,150 feet seems to be the chief basis for such a belief. Great importance is attached to the latest official statement from the Dome in which it is shown that one of the main ore bodies, (the first so far opened up at the 850-ft. level) is believed to prove this body to be one opened up at various upper levels and having a sharp dip to the East, from surface to the 8th level, on the slope, having a depth of about 1,800 feet. The indications are that this orebody continues to dip to the East and probably enters the Dome Extension at a depth of 1,150 feet. Following is an extract from the latest official statement, relative to the big orebody found at the 850-ft. level:—

“A cross-cut was driven north from 803 drift (8th level) on the course of diamond drill hole 261. This drill hole showed an intersection of 65 feet averaging \$8.20 and is the first disclosure of payable ore on the 8th level. The cross-cut confirmed the results had from the drill hole and showed a principal ore body averaging \$7.61 over which a width of 43.5 feet. A stope is being cut in this ore body and is maintaining the grade disclosed by the development on the level, as well as showing some excellent specimens of free gold, this being the ore referred to in a previous paragraph, as the probable downward extension of the 723 ore body.

“We attach considerable importance to the finding of this ore on the 8th level as it should

prove the continuity of the east-dipping ore-shoot without a break from the surface to the 850-ft. level, a distance on the slope of 1,800 feet."

At the Kirkland Lake Gold Mines, additional rich ore is being opened up, recent developments having added a considerable tonnage containing average values somewhat higher than the former general average in the mine.

As a result of surface exploration, a vein has been opened up on the Kirkland Lake Townsite property. The vein or "break" contains considerable well-mineralized quartz, and occurs in a well-defined contact between the conglomerate and porphyry formations.

Delays have occurred in connection with delivery of equipments for the Hunton-Kirkland plant. It is learned, however, that the Elliot-Kirkland may loan its transformers to the Hunton so as to enable the latter to utilize its plant before the end of July, as originally planned.

Samples taken from a test pit six feet deep on the Wood-Kirkland property in the township of Lebel, are stated to have shown a high average gold content across a width of nine feet. Three feet is said to average \$65 to the ton, while six feet averages \$6 to the ton. The samples contain no visible gold, but gold tellurides are present, the ore also containing an average of about two ounces of silver to the ton.

Mr. Frank Huth, president of the Ontario-Kirkland Gold Mines, has issued the following statement to the shareholders, as of July 8th:—

"In my letter of May 15th, I advised you that the shaft on the Company's property had reached a depth of 450 feet, and that cross-cuts had been commenced to intersect the veins on this level. Since sending this communication, two veins have been cut on the 450 foot level showing ore of excellent grade. Drifting operations have proceeded along the veins with most satisfactory results, and the values so far encountered are considerably in excess of the values found on the 300 foot level directly above thus indicating an increase in the value of the ore with depth. These developments are rapidly adding to the ore reserves and greatly increasing the value of the property.

"As you were formerly informed, the Company has made a contract with R. C. Coffey to design and erect a mill suitable for the treatment of the ore. The preliminary work of clearing the mill site and excavating for the foundations is now under way, and it is our intention to proceed with the erection of the mill as fast as conditions will permit. We will be unable to make as rapid progress as we had hoped owing to the fact that the mines of Kirkland Lake have been unable to secure an adequate supply of efficient labor. The Ontario-Kirkland, together with the other mines of Kirkland Lake, has granted an increase in wages amounting to an average of fifty cents per day, the effect of which has been felt, and we confidently expect a gradual improvement.

"The Shareholders and Directors who visited the property on the 7th of June, after carefully going over the entire situation and consulting with the Engineers in charge, decided that the best policy would be to continue the underground development work as rapidly as possible, and also proceed with the erection of the mill with all reasonable dispatch. This policy will mean the more extensive opening up of the ore bodies thus placing the property in a more advanced stage of development, which will greatly facilitate the extraction of ore in an economical manner when the mine is placed on a producing basis. Our progress must to a great extent depend upon the amount and efficiency of labor obtainable and, as noted above, the situation is showing signs of improvement.

"The amount of development work accomplished to date and the very favorable results are most gratifying, and places the Ontario-Kirkland in a high position among the mines of Kirkland Lake. Every effort will be made to continue the development work and advance the construction of the mill as above outlined. The success of the Company seems assured, and it is our intention to keep the shareholders duly informed of progress being made."

British Columbia Letter

Victoria, B. C.

That the development of coal lands and the obtaining of accurate information regarding all reported oil fields are serious responsibilities under present conditions is recognized by the authorities of the United States would appear to be indicated by an announcement from San Francisco, Cal., to the effect that Josephus Daniels, Secretary of the Navy, together with Secretary Payne, of the Interior Department, and Governor Riggs of Alaska, have left to investigate coal and oil possibilities of certain Alaska lands. In this connection Secretary Daniels is quoted as follows:—"We have an appropriation of \$1,000,000 for development of the Matanuska coal fields for naval purposes and we also believe it possible that productive oil fields may be discovered. The oil, however, is only a possibility, but we will look into it."

Lists of Crown-granted mineral claims which have reverted to the Crown because of non-payment of taxes, and now are subject to leave under the terms of the "Taxation Act" have been forwarded to the Gold Commissioners and Mining Recorders throughout the Province. This publication is of surprising size, containing thirty odd pages. Every mineral district of British Columbia figures in the tables it contains. As would be expected, the sections best known to miners, because they have been longest prospected and have yielded and, it may be said, still are yielding the bulk of the mineral wealth for which the province is responsible every year, have contributed to the Crown the greater number of delinquent mineral claims. The Rossland Assessment District, for instance, has provided something over 800 such properties, all of which, as stated, may be leased after compliance with the statutory formalities, the particulars of which will be furnished on application to the Assessor. The Slocan Assessment District, also, is well represented with about 300 such claims advertised for lease. Nelson has about 328; Fort Steele about 90; Kettle River 170 odd, and, coming to Vancouver Island, it is found that Nanaimo has some 28 of these, presumably abandoned, claims; Cowichan, 18; Comox 33; and Alberni 45. It is safe to assume that many, if not the majority, of these properties, have not been sufficiently developed to conclusively prove their merit, and that sooner or later they will be further explored and opened up with, at least in some cases, satisfactory results. On this point it is illuminating to contemplate the success of Clarence Cunningham, one of British Columbia's largest individual operators, in the exploitation of several groups of claims which their previous owners thought had given up paying ore to the full extent of their resources.

W. Pellew-Harvey, of the firm of Pellew-Harvey & Co., London, England, is in Victoria, B.C., and intends it is stated spending some months in a general survey of the mining development and possibilities of the province. Mr. Pellew-Harvey is an engineer with practical experience in the Canadian West dating back some twenty years who subsequently made his headquarters in London. He is said to be here on a special mission on behalf of a syndicate of British capitalists and proposes, in pursuance of his commission, visiting all the mining camps and many reported promising prospects of the province.

Word received recently by mail from Dawson, Y.T., appears to confirm the recent report of a new silver strike in the Mayo District. The latest discoveries are on the slope of Mount Hinton, opposite Keno Hill. They are about five miles from Keno Hill, where was the first excitement, the water of Lightning Creek separating the two. When the news reached Mayo there was a stampede and the ground has been thoroughly staked. As to the Keno Hill properties, it is stated that the Yukon Gold Company have found a rich new silver deposit near where they have been working. A pioneer prospector, writing to a prominent resident, says: "I've been up Keno prospecting. I located three claims and hope to prospect for the remainder of the summer. I got in on the new stampede. It is located near the head of Lightning Creek and shows gold and galena. Everyone is away stampeding. Middlecoff Hydraulics are about closed, and the men are staking. They are opening up the biggest thing yet on Keno Hill, taking the ore out of the mud, five feet wide and got it stripped over 200 feet in length two days' ago. It runs 1,000 to 2,000 ounces to the ton, and they take it down to the frost about one foot deep, and there must be a big lead under. Words cannot express the big thing we got at Mayo. I believe it is going to astonish the world. Everyone who sees it says the same. The worst drawback at present is too many stakers and too few prospectors."

Stewart, B. C.

The Premier Mine, Salmon River, Portland Canal District, is the most talked of mining property of this province at present, and if the reports concerning the value of the ore shipped during the past winter and the results of diamond drill prospecting that has been under way are substantially correct, it is destined to continue to hold the attention of American mining men. As to shipments it is said that 1,500 tons have been extracted yielding an average of \$300 to the ton and that there is much milling ore on the dump awaiting treatment. Regarding development, the report is that the drills have cut the high grade ore at depth and that exploration in other respects is very satisfactory. The concentrator being installed is expected to be ready for operation next month.

The Provincial Department of Mines has sent two reconnaissance parties into the Unuk River country, north of the better known section of Portland Canal District, this summer. They were organized by Geo. Clothier, resident engineer at Prince Rupert, B.C., and will work along lines laid down by him. Commenting on the geology of this section, Mr. Clothier, in his report for the year 1918, says:

"Bordering the main granite mass on either side is a broad belt of altered sedimentaries, with unaltered sedimentaries farther away from the contact, through which have intruded dykes of all kinds, spurs, isolated peaks and short ranges from the main granite batholith, throughout which are ore deposits of every description. This district includes the west contact-zone, from Bella Coola north to the mouth of Portland Inlet, on the southern boundary of the Alaskan strip. The east contact belt extends from the Zymoetz (Copper) river near Terrace on the Grand Trunk Pacific Railway, north to the Alaska-British Columbia boundary line. The coast range is penetrated to the eastern contact by the Skeena river, the Naas River, Portland Canal and Observatory Inlet and through the Alaska strip by the Unuk river, the Stikine river (with its principal tributary, the Iskut) and the Taku river, admitting of a lot of prospecting north of the Portland Canal. The value of the eastern contact has already been demonstrated by the

discovery of such properties as the Hidden Creek Mines of the Granby Consolidated at Anyox the Dolly Varden Mines and others in the Alice Arm country, the Bush, Big Missouri and others of the Salmon River section of Portland Canal; and the Engineer Mine in the Atlin District. It should be noted that, almost without exception, the ore bodies occur in greenstones or andesites, more or less altered where mineralized, and carry all the mineral bearing metallics, such as gold, gold-silver, silver-lead, gold-copper, copper and silver."

One of Mr. Clothier's parties, on reaching the Unuk River, will work in a southeasterly direction, eventually meeting the other explorers, who will go in by the Salmon River, over the divide to the Naas Slope, and northwesterly along the line of contact.

Alice Arm.

Major J. A. McLennan, of Vancouver, B.C., president of a company organized to develop certain Alice Arm mining property, on his return from the North stated that work on the Royal Group of Mineral Claims, adjacent to the Dolly Varden, was giving satisfactory results. He asserts that the lead of the latter mine has been found on the Royal Group, that it has been traced for 400 feet, that a tunnel has been started on the 600 foot level where the vein is well defined. Major McLennan also states that while there still is snow in the gulches the season may be said to have opened. Every train leaving Alice Arm is well filled with prospectors bound for different parts of the interior.

Trail, B.C.

For the half year there has been received at the Trail Smelter of the Canadian Consolidated Mining & Smelting Co. a total of 147,389 tons of ore and concentrates. Receipts for the closing nine days of the month of June were 8,755 tons and five properties were added to the list of shippers in that period, namely, the Mandy, Le Pas, Manitoba, the Lookout, of Skagway; the Loon Lake of Loon Lake, Wn.; the Maestro of Ainsworth; and the Stemwinder, of Fairview, B.C.

Fifty-two claims have been made by farmers against the Canadian Consolidated Mining & Smelting Co. for damages to crops as a result of the injurious effects of the fumes from the Trail Smelter. The allegations of those who seek compensation of the company are being investigated by Judge J. A. Forin and a party of advisers, with some legal and others with agricultural experience as their qualifications. Before setting out on a tour of the farms said to have been affected Judge Forin and party made an inspection of conditions in an adjacent valley outside the smoke area.

Louis H. Biggar, a flotation engineer of Montreal, P.Q., claims to have developed a process for the treatment by preferential flotation of the silver-lead-zinc feed of the Standard Mine, Silverton, B.C. He now is engaged in the construction of a six-cell plant, which will be ready for operation in conjunction with the Standard Mill in two or three weeks. The process will be used first in the treatment of a 5,000 ton slime dump averaging 11 ounces silver, 3 per cent lead, and 7 per cent zinc, which was accumulated before the adoption of flotation at the Standard. As this material averages 50 per cent of 200 mesh the only way the silver and lead can be separated from the zinc is by a process of preferential or selective flotation.

With reference to his plans at the Standard Mine, Mr. Biggar is quoted as follows:

"The process has been successfully developed and the testing completed and the Standard Silver-Lead Company is now constructing a commercial sized machine, duplicating the laboratory machine, and it is hoped to operate the Mill, treating the slimes, within a few weeks.

"As the sump as been exposed for several years some of the lead has become severely weathered and oxidized and cannot be recovered by flotation. However, it is hoped to recover 50 per cent of the lead, carrying 60 to 70 per cent of the silver in a concentrate carrying only 10 to 15 per cent of the zinc. The remaining zinc also will be recovered in the usual manner, carrying the remaining silver and practically free of lead, as the oxidized lead that does not concentrate at first is carried through with the tailings.

"This process has been tried in the laboratory on several crude silver-lead ores with very successful results and it is also hoped to apply to these in due course."

There promises to be a representative attendance at the International Mining Convention to be held at Nelson, B.C., from the 20th to the 24th of July, inclusive. Governor Emmet D. Boyle, of Nevada, is reported to have accepted an invitation, as have also L. K. Armstrong American Institute of Engineers, Spokane, Wn.; M. J. Carrigan and Glenville A. Collins, Seattle, Wn.; and Hon. Wm. Sloan, provincial minister of mines, R. F. Green, member of Dominion Parliament for the Kootenay District.

Vancouver, B. C.

The Vancouver Chamber of Mines is engaged in assembling an exhibit of British Columbia ores that will be as far as possible, representative of the mineral wealth of the various mineral districts of the province. The display will be ready for the Vancouver Exhibition next September. It will be made a permanent exhibit, however, being transferred to the quarters of the Chamber of Mines later. The Boards of Trade of different sections, the different branch Prospectors' Associations, and the individual prospectors and mine operators are being communicated with to the end that their co-operation may be obtained.

R. W. Brock, Dean of the University of British Columbia, has taken a party into the Francois Lake country, southwest of the Bulkley Valley, on geological survey work. He expects to be in the field some two months.

KIND WORDS.

Those who were fortunate enough to attend the Canadian meeting of the American Institute of Chemical Engineers had the pleasure of seeing modern Canada teeming with ambition. The future city of Belleville may be taken as an example. There cannot be the slightest doubt that it will forge ahead, endowed as it is with creative citizens. Shawinigan Falls has accomplished most, and credit for it should not be of less pride to Canadians because they must share it with their neighbors the citizens of the States. For the very greatest heritages that are theirs also belong to these kinsmen of theirs to the south. The ownership of North America perhaps forms the greatest of all partnerships and the dividend of a greater language, a richer literature and a finer race of men shall be reared from North America, Inc. and Ltd. by the co-operating peoples who loyally love the Maple Leaf or American Eagle.—"Chemical and Metallurgical Engineering."

THE NOVA SCOTIA COLLIERIES.

Reported Transfers of Coal Properties.

Rumor is very busy with the coal properties in Inverness Co. The Inverness Coal and Railway Co. is said to have been purchased by Halifax interests, but no definite confirmation of this is available. Statements as to the sale of the Mabou property are also made, but nothing definite has transpired. There is of course no blinking the fact that the only hope for a profitable and permanent coal mining industry in Inverness County lies in the possibility that eventually the separate properties, developed and undeveloped, may be consolidated and come under the control of parties with large capital at their disposal.

A further unconfirmed newspaper statement reports the acquisition of the Loch Lomond coal areas by the Dominion Steel Corporation. The small synclinal outlier basin of the Sydney coalfield, while its tonnage content is not large, is understood to be underlain by seams of low sulphur coal, very suitable for metallurgical purposes, and, while the immediate operation of the coalfield is unlikely, it has some importance for future metallurgical requirements.

Coal Outputs.

Coal production is showing a disposition to increase in the Province, and an appreciable tonnage is likely to be added by the operations of small mines during the year. The coal mined by Malcolm Beaton and partners at Port Hood, Inverness Co., the contribution of the New Campellton Colliery at the Little Bras d'Or Entrance, and neighboring operations by a newly formed company on the Stubbert Seam, near Point Aconi, together with the enlarged production of the Indian Cove Coal Co., near North Sydney—all these being in Cape Breton Island—will in their aggregate amount to a substantial addition to last year's figures.

The Lanark Engineering Co. in the New Glasgow district and the Greenwood Coal Co. at Thorburn will both show a satisfactory output increase this year.

Later figures indicate that the estimated production of all the collieries in Nova Scotia, which in our issue of June 25th was placed at 5,400,000 tons, may, if present production rates are maintained and no labor troubles intervene, reach between 5,500,000 and 5,600,000 long tons, closely approximating the production of 1917, but still 1¾ million tons below pre-war production. The significant fact, however, is that production has now an upward trend for the first time in five years.

First Benefits of the Dominion Scotia "Merger".

Now that the Dominion Steel Corporation's shareholders have ratified the recommendation of the directors to enter the British Empire Steel Corporation, it is of interest to note that quick enlargement of production is possible from certain collieries in the Sydney Field where the working faces have for some years been prevented from advancing into the abutting solid coal because of the intervention of lease lines. This enlargement of the output capacity of the existing collieries without the necessity for additional or important capital expenditure will be the first benefit arising from single management of the coal properties. Anything that enlarges the "pit-room" of the collieries is important, because the restriction on development is one of the most serious effects of the reduction in the number of miners that was a direct result of heavy enlistments during the war. There are a

number of instances where quick access to favorably situated coal areas are possible under single management and harmonious policies which were not possible when, as the President of Scotia recently stated, the coal companies were "working at cross purposes along individual lines." The most striking advantages of the consolidation which now seems quite assured will proceed from the co-ordination and undivided purpose which it will be possible to attach to the technical operations of coal mining in the Sydney field.

Coal Outputs of the "Besco" Companies.

A review of the coal production of the proposed constituent companies of "Besco", which follows, indicates a probable increase in tonnage outputs of 400,000 tons in 1920 over the figure of 1919.

Dominion Coal Company.

	First Half 1919	First Half 1920	Year 1919 (Actual)	Year 1920 (Estimated)
Glace Bay Collieries:	1,539,328	1,615,713	3,087,638	3,300,000
Springhill Collieries:	187,690	220,000	393,441	430,000
Nova Scotia Steel Co.				
Sydney Mines:	244,655	315,329	552,044	625,000
Acadia Coal Co.	190,558	251,000	407,326	490,000
	2,162,231	2,402,042	4,440,449	4,845,000

During the week ending the 17th July, following a meeting of the shareholders of the Dominion Steel Corporation in Halifax on the 15th., when approval of the recommendation of the Board of Directors to enter the British Steel Corporation on the terms proposed by the promoters was given, a number of directors of the constituent companies and others interested have visited the coal and steel plants in Cape Breton. President Wolvin intimated that a statement regarding the new policies would be given out after inspection of the properties was complete.

At a Directors Meeting held in Sydney on July 17th., Mr. D. H. Mc. Dougall, President of the Nova Scotia Steel Co. and formerly General Manager of the Dominion Steel Corporation, and Dr. W. L. Mc. Dougald, President of the Ogdensburg Coal and Towing Co., and of the Century Coal Co. of Montreal, were elected directors of the Dominion Steel Corporation. Mr. Mc. Dougall's appointment as a director of the Company with which he has had such long and intimate connection coincided fortuitously and significantly with his resignation of the position of General Manager on the 17th July 1918. Mr. Mc. Dougall made the following statement to the newspapers following the meeting:

"My return to the Dominion Steel affairs, coinciding as it does with the date of my departure two years ago, is peculiarly gratifying and interesting to me. The association of the Scotia and Dominion companies together in addition is a development fraught with the greatest possibilities, not only to the Maritime Provinces, but also to the Dominion and the Empire at large. Working together instead of at cross purposes along individual lines, the possibilities ahead of us are invaluable. The British Empire Steel Corporation and its success with hereafter be our joint endeavor."

DOMINION COAL COMPANY ESTABLISHES DEPARTMENT OF INDUSTRIAL RELATIONS.

Mr. Angus W. Macdonald, employment agent of the Dominion Steel Corporation, has been appointed superintendent of Industrial Relations of the Dominion Coal Company. The new department will supervise and compile statistics in connection with accidents, health of workmen, housing, first-aid and accident prevention.

Mr. Macdonald is a life-long servant of the Dominion Steel and Coal Companies, and has a unique knowledge of employment conditions in the coal and steel plants and the ore and limestone mines and quarries. At the last meeting of the Mining Society of Nova Scotia, Mr. Macdonald read a brief, but extremely suggestive paper on labor turnover in industrial plants, which dealt with the high cost of hiring and "firing" men, and represented the crystallization of a lifetime of observation of this process, so fraught with happiness or disaster to those who are the involuntary pawns in the game.

As a fisher, both for men and trout and information, Mr. Macdonald has a well-deserved reputation for carefulness and patience and ultimate success, and there is most certainly ample scope for such activities as may be properly conceived to come under the newly created department in the widely extended operations of the Dominion Steel Corporation.

NOVA SCOTIA COAL AT COCHRANE, ONT.

"An all-rail shipment of 2,000 tons of Nova Scotia coal to a pulp mill 32 miles west of Cochrane on the National Transcontinental cost, including freight, about the same as Pennsylvania coal, plus duty, laid down at the same point. This apparently demonstrates that if the duty on bituminous coal remains, Nova Scotia coal can be shipped to southern Ontario at a profit even by rail, and much more advantageously by water."—*Toronto Globe*.

Presuming this shipment came to Quebec by water, it would give a total distance transported of roughly 1,125 miles, and if by rail, possibly 1,300 miles. The bituminous coalfields of Alberta are distant from Cochrane approximately 1,500 miles. The bituminous coalfields of the United States from which Ontario draws its fuel are from 700 to 800 miles distant from Cochrane, depending on the source of the coal. The distances are not so vastly divergent that Canada could not take her own coal pretty much where it was thought necessary in Canada, should it be regarded as proper national policy. The reason why United States coal can be cheaply transported to Southern Ontario, and the Head of the Lakes, is because coal is "stealing a ride," being largely an outward freight from the Pennsylvania fields for cars—which would otherwise travel empty—going north for Lake Superior iron ore.

Sir Robert Borden, in almost his last appearance as Premier, told the House that a committee of the Cabinet had the question under consideration. An adequate and permanent supply of fuel is of such vital consequence to Canada that the Government ought to adopt a broad and statesmanlike policy to assure it.—*Toronto Globe*.

Toronto Notes

Mr. Frank C. Loreing, of Toronto, is homeward bound on the S.S. Megantic, after having enlisted English capital for development purposes in the Canadian north country.

A. J. Bone, superintendent of the smelter at Anyox, B.C., who recently has been at Sudbury assisting in the starting up of the British-American Nickel plant, was in Toronto last week, and is now in New York.

Shareholders of Porcupine, V.N.T., held a special meeting in Toronto on July 14, when an offer was received from Hamilton B. Wills and a syndicate for 600,000 shares of treasury stock. The offer is 15c per share for the first 200,000, to be taken at once, an option of 30c for another block of 200,000 shares, and 50c for the third block of the same quantity. This would bring \$30,000 for immediate working capital and another \$160,000 later on. As the control of the company is held in England, news of the offer was cabled. The Porcupine V.N.T. has a 100-ton mill, and is regarded as a good property. It is a consolidation of the Vipond and North Thompson properties, and is situated adjacent to the Hollinger and Porcupine Crown Mines.

Announcement was made at the annual meeting of the Davidson Consolidated Gold Mines, Ltd., in Toronto, on July 15th, that operations would be discontinued at the mine for the time being, pending plans for carrying them out on a much larger scale later on, when present plans for financing have been completed. It was stated by President G. C. Crean that in the absence in England of the managing director H. H. Sutherland, the affairs of the mine had been under the supervision of F. C. Sutherland. The managing director, he said, had been in England negotiating to provide money to make large scale operations at the mine possible. "At the present time," he said, "I am not in a position to make a definite statement regarding the matter. However, I may say that the success of these negotiations seems assured. I feel confident that if you will continue to be patient for a little while longer, everything will work to the best interests of all concerned."

It was stated by the President that during the ten months since the Davidson Consolidated took over the property and plant of the Davidson Gold Mines, Ltd., results from development work had been highly gratifying. It is now proposed to sink a large compartment shaft to cut the ore body at a depth of 1,000 feet, and to provide facilities for handling a large daily tonnage of ore for milling, as well as permitting the carrying out of mining operations at the minimum cost. The old board of directors were re-elected and Col. Robert Starke of Montreal, who joined the board recently, spoke briefly, stating that he was in entire accord with the policy of discontinuing operations for the present.

La Rose Mines, Limited, have entered an action at Osgoode Hall, Toronto, against the Mining Corporation of Canada, Limited, and the Cobalt Reduction Company, to recover damages for the alleged conversion by the defendants of tailings from the plaintiffs' ore deposited by the Northern Customs Concentrator on the bed of Cobalt Lake or on lands leased by the Cobalt Townsite Mining Company, Ltd., and the Northern Concentrator, Limited. The lease of the property

was subsequently acquired by one of the defendants, and is now owned by the other defendant. In the alternative the plaintiffs ask that they receive a proper proportion of the tailings deposited on these lands.

According to an Order-in-Council just passed by the Ontario Government, the Gillies timber limit, on the French River, will shortly be thrown open to the mining prospector. These limits were withdrawn from prospecting, but practically the whole area, with a reservation in the south, may now be entered by prospectors after July 20th. The lands are added to the Timiskaming mining division. Those lands still withheld by the Crown against prospecting include the right-of-way of the Cobalt Power Co., and the right-of-way of the Cobalt Hydraulic Company's transmission line, both 100 feet wide. The Crown also reserves land one chain deep along both banks of the French River. There has been a constant demand for the opening of the area and some members of Parliament from the north have brought the matter up in the House.

PROHIBITION—SOCIAL REVOLUTIONIST.

While ours may not be a voice crying in a very arid wilderness, it shall once more be lifted to record what we believe to be an indisputable fact—that prohibition is responsible in greatest degree for the acute labor unrest and growing world hatred that permeates certain productive strata of society. We believe that mining men, above all others, will appreciate the truth of that statement. Explain it as the prohibitionists may, there is no manner of doubt that labor conditions have grown worse since the eighteenth amendment became the law of the land. And, what is worse, hatred, deep and indefinable, seems to actuate a great majority of those forced to earn their living by manual work.

We think that the experience of one mining operator, in this particular vicinity will illustrate our point. He has been the victim of extensive sabotage throughout all departments of his operations. New hose has been left to be shattered by the blast; tools have been thrown down abandoned stopes; a machine drill was dumped into an ore shoot to emerge two weeks later when the ore was drawn, and many other vicious, persistent and contemptible outrages have been committed. One man was caught in the act, after three weeks' on the payroll, and given his "time." He truculently admitted that he was to blame and asked if his employer wished to know why. He did. And the explanation was that all the avenues of enjoyment, or what he considers enjoyment, had been closed to the worker and that he now had no choice but to sit around killing time until he hates the world and himself. No fault was found with the scale of wages paid; in fact, miners are earning six and a half dollars a day in that particular mine, but the monotony of the daily grind, coupled with the elimination of what has hitherto been held as the prerogative of every man who pays his way, has led to bitter and unreasoning hatred of so-called upper classes, that to all appearances still find fair enjoyment in life.

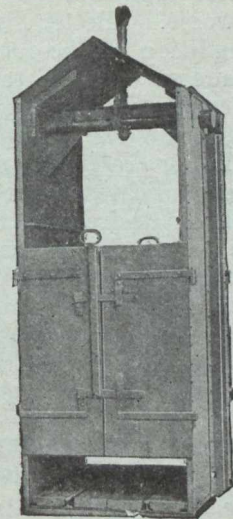
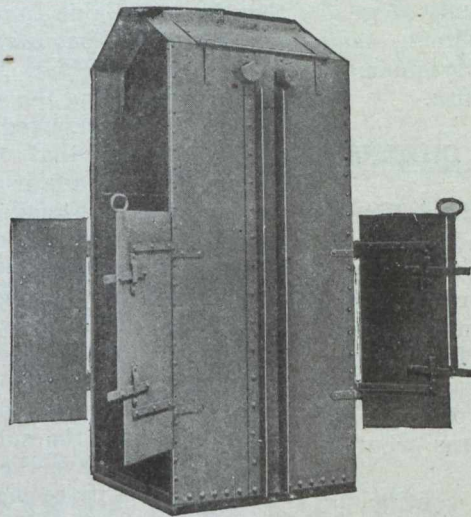
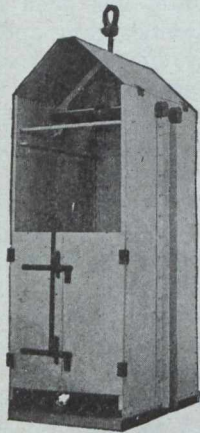
To us it seems that the time has come to meet the situation fairly and squarely and quit indulgence in idle theories that call for enforcement of sumptuary laws interfering with man's right to live as he pleases. The present condition of unrest is the greatest question before the American people. The employment of

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force or the imprisonment of a few misguided leaders will not eradicate the trouble, in fact will but make it worse. Better by far to meet it with the same recognition of the fact that human nature cannot be made to conform to the ideals of the fanatic of any breed, even if recognition leads to restoration of privileges now banned upon the statute books. Regulate the liquor traffic if you will, and as severely as good reason indicates, but restore to the working man that which he desires. Give him a chance to enjoy himself as he sees fit, so long as he does not encroach upon the rights of others, and brush from the statute books laws that make criminals of thousands of good citizens. Then, and only then in our opinion, shall we be on the way to real solution of the problem of industrial unrest.—Northwest Mining Truth.

STATE IRON AND STEEL WORKS IN QUEENSLAND, AUSTRALIA.

In connection with the State Iron and Steel Works which it is the intention of the Queensland Government to install at Bowen, a seaport town on the Eastern Coast of Australia, about 600 miles north of Brisbane, the General Manager Mr. J. W. Brophy, accompanied by the Engineer for Harbours and Rivers, and the Chief Inspector of Mines for Queensland, have left Brisbane on a tour of inspection of iron lodes in Western Australia, the option on which was secured by the Government a short time ago.

These deposits are situated on islands contiguous to Yampi Sound on the north west coast of Australia, are very extensive, and are described by the State Mining Engineer for Western Australia, as "the richest and most accessible of their kind in the World."

The grade of the ore is 69 per cent metallic and it is estimated that there are nearly 100 million tons available above Sea level; while the mining problem present no difficulties as the ore can be quarried by the inexpensive open cut method, and delivered from the bins direct on the ship, the lode running right into the sea, and thereby offering every facility for cheap and efficient handling and shipping.

The Queensland Government is considering the recommendation of Mr. Brophy, that they should purchase for this trade, two steamers of the Lake Superior type, this class of vessels being specially built and equipped for the carrying of iron ores, and possessing great tonnage capacities.

It is the intention to blend those with the Queensland ores of 57 per cent metallic, which it is considered will make excellent iron, and enable the Queensland State Works to successfully compete with any other Iron Works either in Australia or elsewhere.

THE BASEMENT COMPLEX.

Modern children are precocious, and it is only natural that they should pick up words and phrases used by their elders. The seven-year-old daughter of an erst-while geologist, playing with a bedraggled but cherished kitten, was asked what her pet was called. "Well," she replied, with a pedantic air, "there is considerable divergence of opinion. Daddy calls her a segregation from an intrusive magma of doubtful genesis; mother refers to her as the basement complex; sister Bessie insists that she is a typical example of secondary impoverishment; but I just call her my dear little Kitty."—"Engineering and Mining Journal."

IRON ORE.

By J. J. O'Connor.

A notable forward step in the direction of utilizing Canada's vast deposits of low grade iron ores, has been made in the results obtained by Prof. Alfred Stansfield of McGill University.

The announcement, just made, by The Honorary Advisory Council for Scientific and Industrial Research, Ottawa, that the task allotted to Prof. Stansfield of determining the best method to pursue in bringing these ores to merchantable grades, has resulted so satisfactorily, and at such small cost, that if they had available funds at their disposal, they would undertake a demonstration on a commercial scale.

James W. Moffat, M.E.I.C., Toronto, has been experimenting along the same lines for some years, and is said to have perfected an extremely simple and successful process, that offers great possibilities in the future of low-grade iron ores. Mr. Moffat has taken out patents in Canada, and various other countries, on both the processes and apparatus.

The announcement of the Advisory Council, coming as it does, from the highest scientific body in Canada, should be sufficient warrant for the Government to furnish the money necessary to carry out this most important investigation. In lieu of this, they should make the whole question of the utilization of our low-grade iron ores the subject of departmental investigation. They have the necessary machinery in the Mines Branch, if the matter be not left to the Advisory Council to carry out.

This question has been urged upon the government by representatives of the mineral and industrial interests, by deputations of Members of Parliament, representing all classes. All has been said, that very well can be said, in urging some form of government assistance in developing an iron industry in Canada. It is now time for action. The results obtained by Prof. Stansfield clears the decks for that action, and it should no longer be deferred.

The Government that had the courage to stop borrowing, impose luxury taxes, and pay its debts out of its own resources, so as to make Canada and Canadians self reliant, should have the courage to take one more step, and make Canada independent in the matter of iron ore.

Operations are now being carried out on the eastern Mesabi range, in Minnesota, by the Mesabi Iron Company, on ores similar to much of our own, where millions are being expended in erecting a plant, and constructing the town of Babbitt. The first unit of this plant will cost three million dollars, and have a capacity of 3000 to 4000 tons of magnetic ore daily. All of this is being done after the most careful investigation, and the expenditure of over half a million dollars in a testing plant at Duluth, under the supervision of experienced engineers. This operation, of itself, should be sufficient stimulus to the Government to, at least, make the question a subject of investigation.

In Minnesota, where the greatest known deposits of high-grade ores in the world, are being exploited, the iron operators are taking steps to meet the conditions that are bound to arise as their high-grade ores near exhaustion. Every season sees an increased amount of beneficial ores shipped from the Minnesota ranges, until now it runs into millions of tons annually.

Skilling's "Mining Review," an authority on Minnesota iron ores, has this to say regarding the low-

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grade ores: "Non-merchantable iron ore of the Mesabi range is the greatest potential tonnage asset of the State. The fact is that the known deposits of merchantable ore compose but a fraction of the tonnage that will be shipped from the range, unless some short-sighted policy, such as a tonnage tax, makes its appearance to discourage capital and inventive genius from converting non-merchantable ores into merchantable ores."

There is no question in the minds of Minnesota operators, but that their lean ores can be profitably converted into commercial grades, if they are not taxed out of the market by faulty legislation. What is true of the Minnesota ores of low iron-content, is equally true of Ontario ores of similar character.

Therefore, in the light of Prof. Stansfield's determinations, the Government should take this matter in hand without unnecessary delay, should pursue it to a definite conclusion, and settle the question of its commercial feasibility.

GUIDE TO NORTHERN BRITISH COLUMBIA.

We have received a copy of the Northern British Columbia Index and Guide and City Directory of Prince Rupert, published by F. S. Wright of Prince Rupert. This compendium of information regarding Northern British Columbia is printed on paper of extraordinary strength made from British Columbia timber in northern mills, and is of interest and value to any person concerned with the mining industry of the Prince Rupert District, as it contains a list of mining properties and companies, together with information on Post Offices, Banking points, telegraph offices and settlements. Names and addresses of owners of properties are given, and those mines that are shipping ore are indicated.

The Guide states that Northern British Columbia contributed 96 per cent. of the placer gold, 40 per cent. of the lode gold, 28 per cent. of the silver and 47 per cent. of the copper mined in British Columbia in 1919.

For a town which twelve years ago was a wilderness of bush and scrub Prince Rupert is making wonderful progress.

REQUIRED for Mine in Northern Ontario.—Second hand 5-ton Storage Battery Locomotive. (in good order), 60 to 66 A 10 Edison Cells Preferred; Maximum overall length not to exceed 136"; width, not to exceed 42"; height, not to exceed 46"; 30 and 35 lb. rail; 24" gauge; Maximum Curve 20 ft. radius. Reply:—Box 505 South Porcupine, Ont.

GILLIES LIMIT TO BE OPENED FOR STAKING July 20TH.

Postponment of Date of Opening Urged by our Correspondent.

Despatches this week which carry the information that the Ontario Government has passed an Order in Council which will throw the Gillies Limit open for prospecting on July 20th comes both with welcome and disappointment to prospectors throughout Northern Ontario. It has been known for some time that this matter has been under consideration, but it had generally been expected that at least thirty days notice would be given. The first intimation of definite action came on Saturday, July 17, only three days ahead of the date of opening.

Many prospectors throughout Northern Ontario have spent more or less time in The Gillies Limit so as to be well posted as to its merit and prepared to stake claims at such time as it might be thrown open. A large number of these men who are giving the best part of their lives towards exploring the mineral lands of Northern Ontario are at this season scattered far and wide over the vast stretches of virgin territory in Northern Ontario as well as in Northern Quebec and Northern Manitoba. These men may not learn for several days and possibly weeks of the Limit having been thrown open, and are thus denied an opportunity to share in any advantage arising from such a step. These men, in preference to all others, appear to be entitled to at least an even chance. Therefore, in view of the circumstances, it may still be found possible for the Ontario Government to rescind the date set and to extend it for another thirty days.

General satisfaction is expressed that the new Minister of Mines, Hon. H. Mills, has been able to announce success in arranging to have the Gillies Limit opened, and it is plainly obvious on every hand that great appreciation would be added provided the minister is able to correct the unfortunate circumstances of a hasty opening and perhaps defer the date until August 20th instead.

The Gillies Limit is a large strip of territory lying immediately adjacent to the silver-bearing area of Cobalt. Its opening is expected to result in much added exploration work, and offers promise of commercial deposits of silver being opened up.

Personal.

Mr. Gerald M. Ponton has opened an office as consulting engineer and metallurgist at 14 Place Royale, Montreal.

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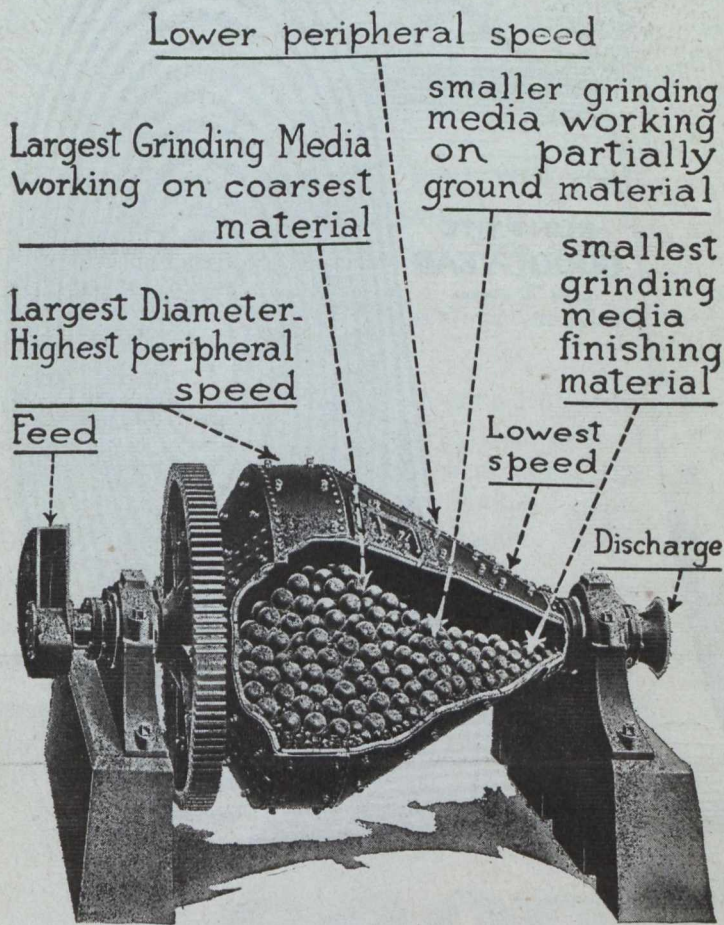
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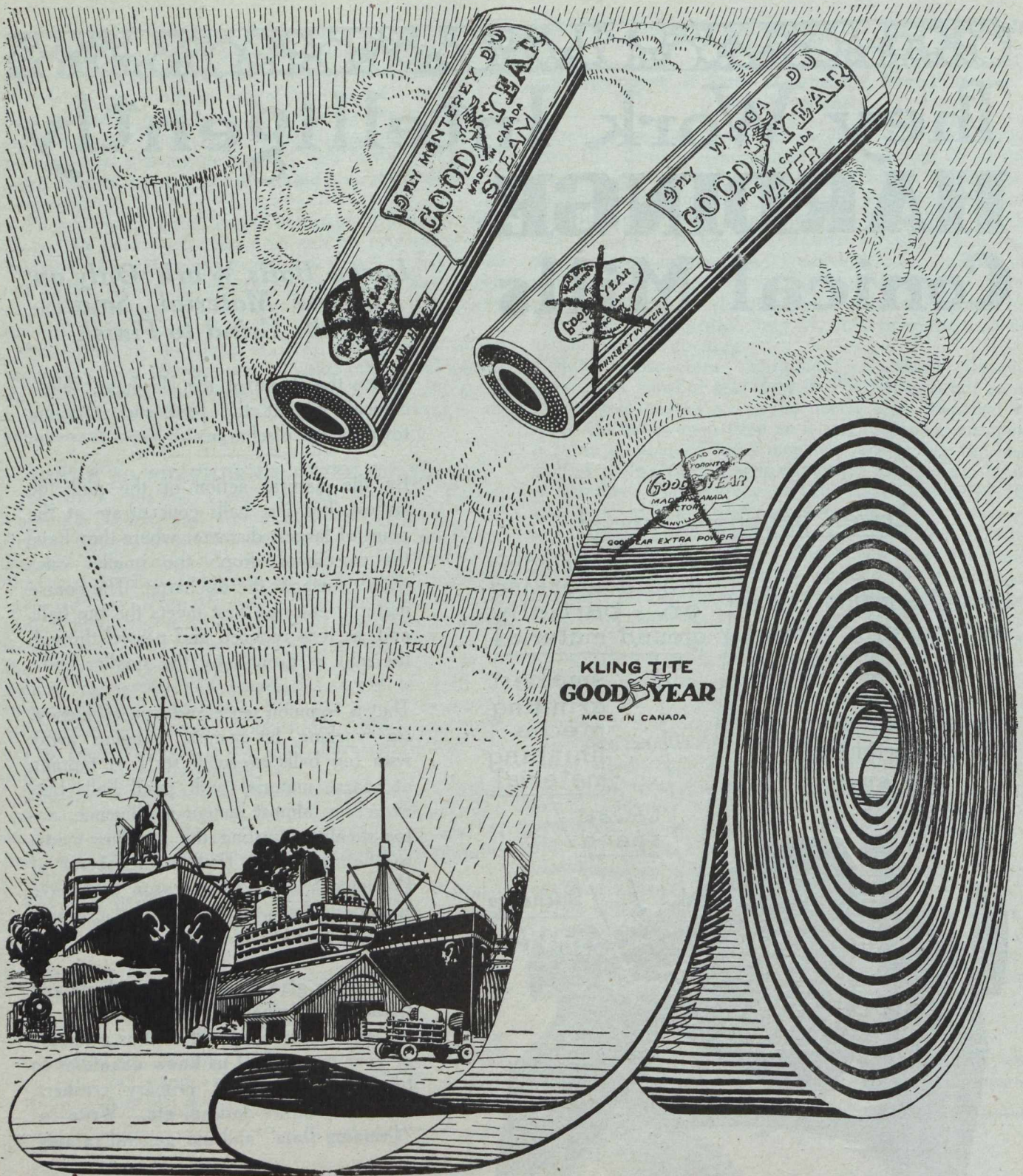
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The familiar brand names of Goodyear belting, hose and packing have been changed so that each of these products may be called by the same name in Australia, Europe, South Africa, India, Japan, China and other countries, as in Canada.

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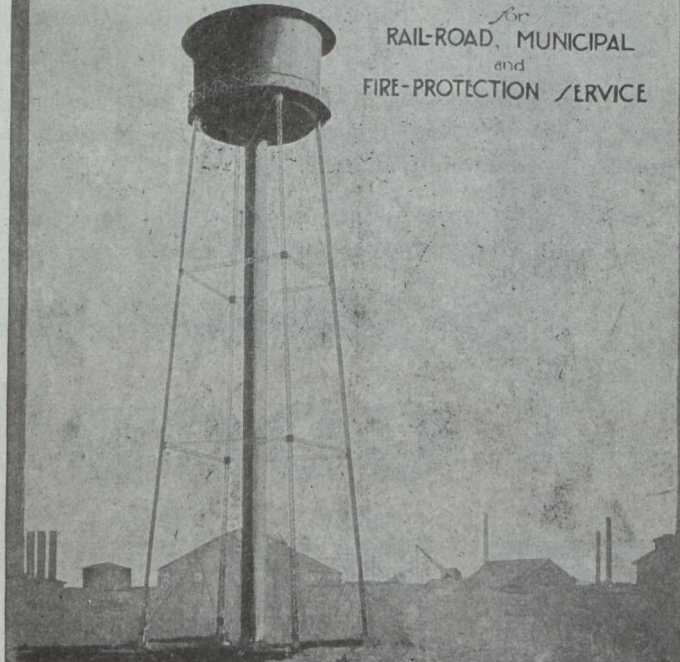
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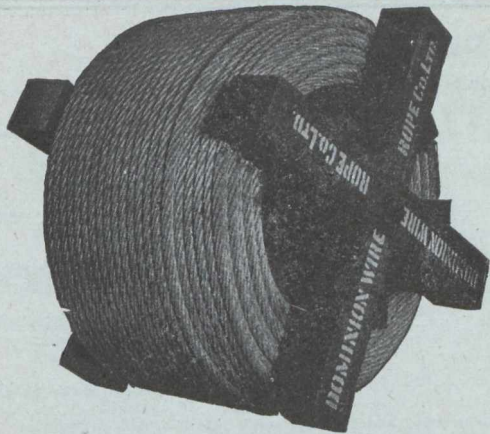
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Nova Scotia Steel and Coal Co., Limited

Proprietors, Miners and Shippers of SYDNEY MINES BITUMINOUS COAL. Unexcelled Fuel for Steamships and Locomotives, Manufactories, Rolling Mills, Forges, Glass Works, Brick and Lime Burning, Coke, Gas Works, and for the Manufacture of Steel, Iron, Etc. **COLLIERIES AT SYDNEY MINES, CAPE BRETON.**

Manufacturers of Hammered and Rolled Steel for Mining Purposes

Pit Rails, T Rails, Edge Rails, Fish Plates, Bevelled Steel Screen Bars, Forged Steel Stamper Shoes and Dies. Blued Machinery Steel 3-8" to 1-4" Diameter, Steel Tub. Axles Cut to Length, Crow Bar Steel, Wedge Steel, Hammer Steel, Pick Steel, Draw Bar Steel, Forging of all kinds, Bright Compressed Shafting 5-8" to 5" true to 2/1000 part of an inch. A full stock of Mild Flat, Rivet Round and Angle Steels always on hand.

SPECIAL ATTENTION PAID TO MINERS' REQUIREMENTS. CORRESPONDENCE SOLICITED.

Steel Works and Head Office: **NEW GLASGOW, NOVA SCOTIA**

The Minerals of Nova Scotia

THE MINERAL PROVINCE OF EASTERN CANADA

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

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

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

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

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

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

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

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

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

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

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

Commissioner of Public Works and Mines

C. X. L.

Service Department

To assist and advise in blasting operations we maintain a staff of technical experts.

These men are at your service—at any time—and without cost to you.

They will help you to solve your blasting problems.

They will confer with you, or if you desire will go to the job and direct operations till all trouble is removed.

Make use of this department. We maintain it for your special benefit.

Phone or write—

Technical Department,

Canadian Explosives Limited

Head Office, Montreal

Main Western, Office Vancouver



District Offices :

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Toronto	Timmins
Ottawa	Edmonton
Victoria	Prince Rupert
Cobalt	Sudbury
Winnipeg	Vancouver
	Nelson

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 Vaudrueuil, Que.
 Windsor Mills, Que.
 Waverly, N. S.
 Nanaimo, B. C.
 Northfield, B. C.
 Bowen Island, B. C.
 Parry Sound, Ont.

The Canadian Miners' Buying Directory.

- Acetylene Gas:**
Canada Carbide Company, Ltd.
Canadian Fairbanks-Morse.
Prest-O-Lite Co. of Canada, Ltd.
- A.C. Units:**
MacGovern & Co.
- Agitators:**
The Dorr Co.
- Air Hoists:**
Canadian Ingersoll-Rand Co., Ltd.
Mussens, Limited.
- Alloy and Carbon Tool Steel:**
H. A. Drury Co., Ltd.
International High Speed Steel Co., Rockaway, N.J.
- Alternators:**
MacGovern & Co.
Spielman Agencies, Regd.
- Aluminium:**
- Amalgamators:**
Northern Canada Supply Co.
Mine and Smelter Supply Co.
Wabi Iron Works.
- Antimony:**
Canada Metal Co.
- Antimonial Lead:**
Pennsylvania Smelting Co.
- Arrester, Locomotive Spark:**
Hendrick Manufacturing Co.
- Arsenic White Lead:**
Coniagas Reduction Co.
- Assayers' and Chemists' Supplies:**
Dominion Engineering & Inspection Co.
Lymans, Limited
Mine & Smelter Supply Co.
Pennsylvania Smelting Co.
Stanley, W. F. & Co., Ltd.
- Ash Conveyors:**
Canadian Link-Belt Company
- Ashes Handling Machinery:**
Canadian Mead-Morrison Co., Limited
Canadian Link-Belt Co., Ltd.
- Assayers and Chemists:**
Milton L. Hersey Co., Ltd.
Campbell & Deyell
Ledoux & Co.
Thos. Heys & Son
C. L. Constant Co.
- Asbestos:**
Everitt & Co.
- Balls:**
Canadian Foundries and Forgings, Ltd.
Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works.
The Hardinge Conical Mill Co.
- Ball Mills:**
Hardinge Conical Mill Co.
Hull Iron & Steel Foundries, Ltd.
Mine and Smelter Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Wabi Iron Works.
- Balances—Heusser:**
Canadian Fairbanks-Morse Co., Ltd.
Mine and Smelter Supply Co.
- Babbit Metals:**
Canada Metal Co.
Canadian Fairbanks-Morse Co., Ltd.
Hoyt Metal Co.
- Ball Mill Feeders:**
Fraser & Chalmers of Canada, Ltd.
Hardinge Conical Mill Co.
Hull Iron & Steel Foundries, Ltd.
- Ball Mill Linings:**
Hardinge Conical Mill Co.
Hull Iron & Steel Foundries, Ltd.
- Belting—Leather, Rubber and Cotton:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
The Mine & Smelter Supply Co.
Northern Canada Supply Co.
Jones & Glasco.
- Belting:**
R. T. Gilman & Co.
Gutta Percha & Rubber, Ltd.
- Belting—Silent Chain:**
Canadian Link-Belt Co., Ltd.
Hans Renold of Canada, Limited, Montreal, Que.
Jones & Glasco (Regd.)
- Belting (Transmission):**
Goodyear Tire & Rubber Co.
- Belting (Elevator):**
Goodyear Tire & Rubber Co.
- Belting (Conveyor):**
Goodyear Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
- Blasting Batteries and Supplies:**
Canadian Ingersoll-Rand Co., Ltd.
Mussens, Ltd.
Northern Canada Supply Co.
Canadian Explosives, Ltd.
Giant Powder Co. of Canada, Ltd.
- Bluestone:**
The Consolidated Mining & Smelting Co.
- Blowers:**
Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Co., Inc.
Northern Canada Supply Co.
Fraser & Chalmers of Canada, Ltd.
- Boilers:**
Northern Canada Supply Co.
Canadian Ingersoll-Rand Co., Ltd.
Marsh Engineering Works
MacGovern & Co., Inc.
R. T. Gilman & Co.
Fraser & Chalmers of Canada, Ltd.
The John Inglis Company
Wabi Iron Works.
- Blue Vitriol (Coniagas Red):**
Canadian Fairbanks-Morse Co., Ltd.
- Bortz and Carbons:**
Diamond Drill Carbon Co.
- Boxes, Cable Junction:**
Standard Underground Cable Co. of Canada, Ltd.
Northern Electric Co., Ltd.
- Brazilian Rough Diamonds:**
Diamond Drill Carbon Co.
- Brazilian Mica:**
Diamond Drill Carbon Co.
- Buggies, Mine Car (Steel)**
Hendrick Manufacturing Co.
- Brazilian Ballas:**
Diamond Drill Carbon Co.
- Brazilian Rock Crystal:**
Diamond Drill Carbon Co.
- Brazilian Tourmalines:**
Diamond Drill Carbon Co.
- Brazilian Aquamarines:**
Diamond Drill Carbon Co.
- Bridges—Man Trolley and Rope Operated—Material Handling:**
Canadian Mead-Morrison Co., Limited
- Bronze, Manganese, Perforated and Plain:**
Hendrick Manufacturing Co.
- Buckets:**
Canadian Ingersoll-Rand Co., Ltd.
Canadian Mead-Morrison Co., Limited
The Electric Steel & Metals Co.
R. T. Gilman & Co.
Hendrick Manufacturing Co.
Canadian Link-Belt Co., Ltd.
Marsh Engineering Works
Mussens, Ltd.
MacKinnon Steel Co., Ltd.
Northern Canada Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Buckets, Elevator:**
Canadian Link-Belt Co., Ltd.
Hendrick Mfg. Co.
- Cable—Aerial and Underground:**
Canada Wire & Cable Co.
Northern Canada Supply Co.
Standard Underground Cable Co. of Canada, Ltd.
- Cableways:**
Canadian Mead-Morrison Co., Limited
Fraser & Chalmers of Canada, Ltd.
Mussens, Ltd.
The Wabi Iron Works
R. T. Gilman & Co.
- Cages:**
Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.
Northern Canada Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
The Mine & Smelter Supply Co.
Mussens, Ltd.
The Wabi Iron Works



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 J. E. PERRAULT,
MINISTER OF COLONIZATION, MINES AND FISHERIES, QUEBEC.

BRITISH COLUMBIA

The Mineral Province of Western Canada

Has produced Minerals valued as follows: Placer Gold, \$75,436,103; Lode Gold, \$97,121,786; Silver, \$46,839,631; Lead, \$42,294,251; Copper, \$145,741,069; Other Metals (Zinc, Iron, etc.), \$13,278,058; Coal and Coke, \$187,147,652; Building Stone, Brick, Cement, etc., \$28,843,272; Miscellaneous Minerals, \$651,759; making its mineral production to the end of 1918 show an

Aggregate Value of \$637,353,581

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; for the year 1918, \$41,782,474.

Production During last ten years, \$313,976,022

Lode-mining has only been in progress for about twenty years, and not 20 per cent. of the Province has been even prospected; 800,000 square miles of unexplored mineral bearing land are open for prospecting.

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

Mineral locations are granted to discoverers for nominal fees.

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

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

THE HON. THE MINISTER OF MINES
VICTORIA, British Columbia

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.
Osborn, Sam'l (Canada) Limited.
R. T. Gilman & Co.
- Cable Railway Systems:**
Canada Wire & Cable Co.
Canadian Mead-Morrison Co., Limited.
- Cam Shafts:**
Canada Foundries & Forgings, Ltd.
Hull Iron & Steel Foundries, Ltd.
- Car Dumps:**
Sullivan Machinery Co.
R. T. Gilman & Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
- Carbide of Calcium:**
Canada Carbide Company, Ltd.
- Cars:**
Canadian Foundries and Forgings, Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
John J. Gartshore
MacKinnon Steel Co., Ltd.
The Electric Steel & Metals Co.
Northern Canada Supply Co.
Osborn, Sam'l (Canada) Limited.
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
Hull Iron & Steel Foundries, Ltd.
John J. Gartshore
Marsh Engineering Works, Ltd.
Osborn, Sam'l (Canada) Limited.
The Electric Steel & Metals Co.
The Wabi Iron Works
- Carriers (Gravity):**
Jones & Glassco
- Castings—Brass**
The Canada Metal Co., Ltd.
- Castings (Iron and Steel)**
Burnett & Crampton
Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
Osborn, Sam'l (Canada) Limited.
The Electric Steel & Metals Co.
The Wabi Iron Works
- Cement and Concrete Waterproofing:**
Spielman Agencies, Regd.
- Cement Machinery:**
Northern Canada Supply Co.
Hadfields, Limited
Hull Iron & Steel Foundries, Ltd.
Osborn, Sam'l (Canada) 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.
Canadian Link-Belt Co., Ltd.
Greening, B., Wire Co., Ltd.
- Chain Drives:**
Jones & Glassco (Regd.)
- Chain Drives—Silent and Steel Roller:**
Canadian Link-Belt Co., Ltd.
Hans Renold of Canada, Limited, Montreal, Que.
- 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
- Clutches:**
Canadian Link-Belt Co., Ltd.
Hans Renold of Canada, Limited, Montreal, Que.
- Coal:**
Dominion Coal Co.
Nova Scotia Steel & Coal Co.
- Coal Cutters:**
Osborn, Sam'l (Canada) Limited.
Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.
- Coal Crushers:**
Canadian Mead-Morrison Co., Limited
Canadian Link-Belt Co., Ltd.
- Coal Mining Explosives:**
Canadian Explosives, Ltd.
Giant Powder Company of Canada, Ltd.
- Coal Mining Machinery:**
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd
Osborn, Sam'l (Canada) Limited.
Canadian Ingersoll-Rand Co., Ltd.
Sullivan Machinery Co.
Marsh Engineering Works
Hadfields, Ltd.
Hendrick Mfg. Co.
Fraser & Chalmers of Canada, Limited
Mussens, Limited
R. T. Gilman & Co.
- Coal and Coke Handling Machinery**
Canadian Mead-Morrison Co., Limited.
Canadian Link-Belt Co., Ltd.
- Coal Pockets:**
Canadian Mead-Morrison Co., Limited.
- Coal Pick Machines:**
Sullivan Machinery Co.
- Coal Screening Plants:**
Canadian Link-Belt Co., Ltd.
Canadian Mead-Morrison Co., Limited.
- Cobalt Oxide:**
Coniagas Reduction Co.
Everitt & Co.
- Compressors—Air:**
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.
MacGovern & Co., Inc.
R. T. Gilman & Co.
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
The Mine & Smelter Supply Co.
- Concrete Mixers:**
Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.
Gould, Shapley & Muir Co., Ltd.
MacGovern & Co., Inc.
Mussens, Limited
R. T. Gilman & Co.
- Condensers:**
Canadian Fairbanks-Morse Co., Ltd.
Smart-Turner Machine Co.
Northern Canada Supply Co.
MacGovern & Co., Inc.
- Concentrating Tables:**
The Mine & Smelter Supply Co.
Deister Concentrator Co.
The Wabi Iron Works
- Converters:**
Northern Canada Supply Co.
MacGovern & Co., Inc.
- Conveyors—McCaslin Gravity Bucket:**
Canadian Mead-Morrison Co., Limited.
- Contractors' Supplies:**
Canadian Fairbanks-Morse Co., Ltd.
- Consulters and Engineers:**
Hersey Milton Co., Ltd.
- Conveyors:**
Canadian Link-Belt Co., Ltd.
The Mine & Smelter Supply Co.
Jones & Glassco (Regd.)
- Conveyor Belts:**
Gutta Percha & Rubber, Ltd.
- Conveyor Flights:**
Canadian Link-Belt Co., Ltd.
Hendrick Mfg. Co., Ltd.
- Conveyor—Trough—Belt:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Hendrick Mfg. Co.
Mussens, Limited
Jones & Glassco (Roller, Belt and Chain)
Hendrick Mfg. Co.
The Wabi Iron Works
- Conical Mills:**
Hardinge Conical Mill Co.
- Copper:**
The Canada Metal Co., Ltd.
Consolidated Mining & Smelting Co.
- Couplings:**
Hans Renold of Canada, Limited, Montreal, Que.
- Cranes:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Canadian Link-Belt Company
R. T. Gilman & Co.
Smart-Turner Machine Co.
- Crane Ropes:**
Allan Whyte & Co.
Canada Wire & Cable Co.
Greening, B., Wire Co., Ltd.
- Crucibles:**
Canadian Fairbanks-Morse Co., Ltd.
The Mine & Smelter Supply Co.
- Crusher Balls:**
Canada Foundries & Forgings, Ltd.
Hull Iron & Steel Foundries, Limited, Hull, Que.
Osborn, Sam'l (Canada) Limited.
- Crude Oil Engines:**
Swedish Steel & Importing Co., Ltd.
- Crushers:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
Hardinge Conical Mill Co.
Osborn, Sam'l (Canada) Limited.
The Electric Steel & Metals Co., Ltd.
R. T. Gilman & Co.
Lyman, Ltd.
Mussens, Limited

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St. Catharines - - - Ontario

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Nickel, Oxide and Metal

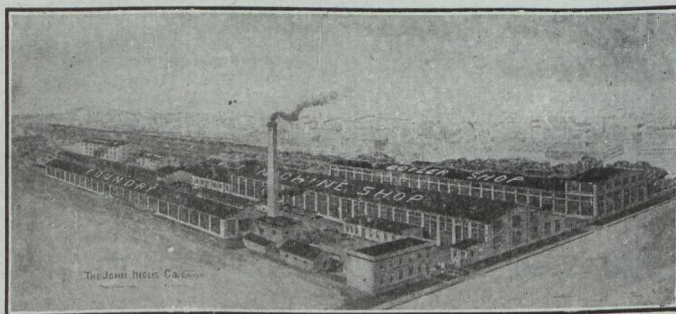
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J. W. ANDERSON, 7 Bank Street Chambers

Canadian Miners' Buying Directory.—(Continued)

- The Mine & Smelter Supply Co.**
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Cut Gears:**
Hans Renold of Canada, Limited, Montreal, Que.
- Cyanide:**
American Cyanamid Company.
- Cyanide Plant Equipment:**
The Dorr Co.
The Mine & Smelter Supply Co.
- D. C. Units:**
MacGovern Co.
- Derricks:**
Smart-Turner Machine Co.
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
R. T. Gilman & Co.
Canadian Fairbanks-Morse Co., Ltd.
Mussens, Limited
- Diamond Drill Contractors:**
Diamond Drill Contracting Co.
E. J. Longyear Company
Smith & Travers
Sullivan Machinery Co.
- Diamond Tools:**
Diamond Drill Carbon Co.
- Diamond Importers:**
Diamond Drill Carbon Co.
- Digesters:**
Canadian Chicago Bridge and Iron Works
- Dies:**
Canada Foundries & Forgings, Ltd.
Hull Iron & Steel Foundries, Ltd.
- Dredger Pins:**
Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
The Electric Steel & Metals Co.
Hadfields, Limited
- Dredging Machinery:**
Canadian Steel Foundries, Ltd.
Canadian Mead-Morrison Co., Limited.
Hadfields, Limited
Hull Iron & Steel Foundries, Ltd.
R. T. Gilman & Co.
- Dredging Ropes:**
Allan, Whyte & Co.
Greening, B., Wire Co., Ltd.
R. T. Gilman & Co.
- Drills, Air and Hammer:**
Canadian Ingersoll-Rand Co., Ltd.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Sullivan Machinery Co.
Northern Canada Supply Co.
Osborn, Sam'l (Canada) Limited.
The Mine & Smelter Supply Co.
Mussens, Limited
- Drills—Core:**
Canadian Ingersoll-Rand Co., Ltd.
E. J. Longyear Company
Standard Diamond Drill Co.
Sullivan Machinery Co.
- Drills—Diamond:**
Sullivan Machinery Co.
Northern Canada Supply Co.
E. J. Longyear Company
- Drill Steel—Mining:**
H. A. Drury Co., Ltd.
Hadfields, Limited
International High Speed Steel Co., Rockaway
Osborn, Sam'l (Canada) Limited.
Mussens, Limited
Swedish Steel & Importing Co., Ltd.
- Drill Steel Sharpeners:**
Canadian Ingersoll-Rand Co., Ltd.
Canadian Rock Drill Co.
Denver Rock Drill Mfg. Co., Ltd.
Northern Canada Supply Co.
Sullivan Machinery Co.
Osborn, Sam'l (Canada) Limited.
The Wabi Iron Works
- Drills—Electric:**
Canadian Fairbanks-Morse Co., Ltd.
Sullivan Machinery Co.
Northern Electric Co., Ltd.
- Drills—High Speed and Carbon:**
Canadian Fairbanks-Morse Co., Ltd.
Osborn, Sam'l (Canada) Limited.
H. A. Drury Co., Ltd.
Hadfields, Limited
- Dynamite:**
Canadian Explosives
Giant Powder Company of Canada, Ltd.
Northern Canada Supply Co.
- Dynamos:**
Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Company
- Ejectors:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.
- Elevators:**
Canadian Mead-Morrison Co., Limited.
Canadian Link-Belt Co., Ltd.
Sullivan Machinery Co.
Northern Canada Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
Jones & Glassco (Regd.)
Mussens, Limited
The Wabi Iron Works
- Engineering Instruments:**
C. L. Berger & Sons
- Engines—Automatic:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
Fraser & Chalmers of Canada, Ltd.
- Engines—Gas and Gasoline:**
Canadian Fairbanks-Morse Co., Ltd.
Alex. Fleck
Fraser & Chalmers of Canada, Ltd.
Osborn, Sam'l (Canada) Limited.
Sullivan Machinery Co.
Gould, Shapley & Muir Co., Ltd.
MacGovern & Co., Inc.
The Mine & Smelter Supply Co.
- Engines—Haulage:**
Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.
Canadian Mead-Morrison Co., Limited.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.
- Engines—Marine:**
Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Co., Inc.
Swedish Steel & Importing Co., Ltd.
- Engines—Steam:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Mead-Morrison Co., Limited.
R. T. Gilman & Co.
MacGovern & Co., Inc.
Fraser & Chalmers of Canada, Ltd.
- Engines—Stationary:**
Swedish Steel & Importing Co., Ltd.
- Engineers:**
General Engineering Co., New York
The Dorr Co.
- Ferro-Alloys (all Classes):**
Everitt & Co.
- Feed Water Heaters:**
MacGovern & Co.
- Fire Fighting Supplies:**
Gutta Percha & Rubber, Ltd.
- Flashlights—Electric:**
Spielman Agencies, Regd.
- Flood Lamps:**
Northern Electric Co., Ltd.
- Flourspar:**
The Consolidated Mining & Smelting Co.
Everitt & Co.
- Forges:**
Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.
- Forging:**
Canadian Mead-Morrison Co., Limited.
Canadian Foundries and Forgings, Ltd.
Hull Iron & Steel Foundries, Ltd.
Smart-Turner Machine Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
- Frogs:**
Canadian Steel Foundries, Ltd.
Hull Iron & Steel Foundries, Ltd.
John J. Gartshore
- Frequency Changers:**
MacGovern & Co., Inc.
- Furnaces—Assay:**
Canadian Fairbanks-Morse Co., Ltd.
Lyman, Limited
Mine & Smelter Supply Co.
- Fuse:**
Canadian Explosives
Giant Powder Company of Canada, Ltd.
Northern Canada Supply Co.
- Gaskets:**
Gutta Percha & Rubber, Ltd.
- Gears:**
Hans Renold of Canada, Limited, Montreal, Que.
Jones & Glassco (Regd.)
- Gears (Cast):**
Hull Iron & Steel Foundries, Ltd.
Canadian Link-Belt Co., Ltd.
- Gears, Machine Cut:**
Canadian Fairbanks-Morse Co., Ltd.
Canadian Steel Foundries, Ltd.
The Electric Steel & Metals Co.
The Hamilton Gear & Machine Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works
- Granulators:**
Hardinge Conical Mill Co.
- Grinding Wheels:**
Canadian Fairbanks-Morse Co., Ltd.
- Gold Refiners**
Goldsmith Bros

Canadian Miners' Buying Directory.—(Continued)

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

Canadian Miners' Buying Directory.—(Continued)

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

Nails:
Canada Metal Co.

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

Nickel Anodes:
The Mond Nickel Co., Ltd.

Nickel Salts:
The Mond Nickel Co., Ltd.

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

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

Oil Analysts:
Constant, C. L. Co.

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

Ore Sacks:
Northern Canada Supply Co.

Ore Testing Works:
Ledoux & Co.
Can. Laboratories
Milton Hersey Co.
Campbell & Deyell
General Engineering Co., New York
Hoyt Metal Co.

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

Packing:
Canadian Fairbanks-Morse Co., Ltd.
Gutta Percha & Rubber, Ltd.

Paints—Special:
Spielman Agencies, Regd.

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

Permissible Explosives:
Giant Powder Company of Canada, Ltd.

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

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

Pillow Blocks:
Canadian Link-Belt Company

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

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

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

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

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

Platinum Refiners:
Goldsmith Bros.

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

Powder:
Giant Powder Company of Canada, Ltd.

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

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

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

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

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

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

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

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

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

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

Pumps—Diaphragm
The Dorr Company

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

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

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

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

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

Refiners:
Goldsmith Bros.

Riddles:
Hendrick Mfg. Co.

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

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

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

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

Canadian Miners' Buying Directory.—(Continued)

Rope—Wire:

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

Rolls—Crushing

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

Samplers:

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

Scales—(all kinds):

Canadian Fairbanks-Morse Co., Ltd.

Screens:

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

Screens—Cross Patent Flanged Lip:

Hendrick Mfg. Co.

Screens—Perforated Metal:

Hendrick Mfg. Co.

Screens—Shaking:

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

Screens—Revolving:

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

Scheelite:

Everitt & Co.

Separators:

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

Shaft Contractors:

Hendrick Mfg. Co.

Sheet Metal Work:

Hendrick Mfg. Co.

Sheets—Genuine Manganese Bronze:

Hendrick Mfg. Co.

Shoes and Dies:

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

Shovels—Steam:

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

Ship Bunkering Equipment:

Canadian Mead-Morrison Co., Limited.

Silent Chain:

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

Silent and Steel Roller:

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

Silene:

Coniagas Reduction Co.

Saline Refiners:

Goldsmith Bros.

Smelters:

Goldsmith Bros.

Sledges:

Canada Foundries & Forgings, Ltd.

Smoke Stacks:

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

Special Machinery:

John Inglis Co., Ltd.

Spelter:

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

Sprockets:

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

Spring Coil and Clips Electric:

Canadian Steel Foundries, Ltd.

Steel Barrels:

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

Stamp Forgings:

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

Steel Castings:

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

Steel Drills:

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

Steel Drums:

Smart-Turner Machine Co.

Steel—Tool:

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

Structural Steel Work (Light):

Hendrick Mfg. Co.

Stone Breakers:

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

Sulphate of Copper:

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

Sulphate of Nickel:

The Mond Nickel Co., Ltd.

Surveying Instruments:

C. L. Berger

Switches and Switch Stand:

Canadian Steel Foundries, Ltd.
Mussens, Limited.

Switches and Turntables:

John J. Gartshore

Tables—Concentrating:

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

Tanks:

R. T. Gilman & Co.

Tanks—Acid:

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

Tanks (Wooden):

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

Tanks—Cyanide, Etc.:

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

Tanks—Steel:

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

Tanks—Oil Storage:

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

Tanks (water) and Steel Towers:

Canadian Fairbanks-Morse Co., Ltd.
Canadian Chicago Bridge & Iron Works
Gould, Shapley & Muir Co., Ltd.
MacKinnon Steel Co.
Mine & Smelter Supply Co.
The Wabi Iron Works

Tires—Auto, Truck and Bicycle:

Gutta Percha & Rubber, Ltd.

Canadian Miners' Buying Directory.—(Continued)

Tramway Points and Crossings:
Canadian Steel Foundries, Ltd.
Hadfields, Limited

Transits:
C. L. Berger & Sons

Transformers:
Canadian Fairbanks-Morse Co., Ltd.
R. T. Gilman & Co.
Northern Electric Co., Ltd.

Transmission Apparances:
Jones & Glassco (Regd.)

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

Troughs (Conveyor):
Hendrick Manufacturing Co.

Trucks—Electric:
Canadian Fairbanks-Morse Co., Ltd.

Trucks—Hand:
Canadian Fairbanks-Morse Co., Ltd.

Trucks:
Canadian Fairbanks-Morse Co., Ltd.

Tubs:
Hadfields, Limited

Tube Mills:
The Electric Steel & Metals Co.
Fraser & Chalmers of Canada, Ltd.
Hardinge Conical Mill Co.

Tube Mill Balls:
Canada Foundries & Forgings, Ltd.
Fraser & Chalmers of Canada, Ltd.
Hull Iron & Steel Foundries, Ltd.

Tube Mill Liners:
Burnett & Crampton
Fraser & Chalmers of Canada, Ltd.
Hull Iron & Steel Foundries, Ltd.

Turbines—Water Wheel:
MacGovern & Co.

Turbines—Steam:
Fraser & Chalmers of Canada, Ltd.
MacGovern & Co.

Twincones:
Canada Foundries & Forgings, Ltd.

Uranium:
Everitt & Co.

Weighing Larries:
Canadian Mead-Morrison Co., Limited.

Welding—Rod and Flux:
Prest-O-Lite Co. of Canada, Ltd.
Imperial Brass Mfg. Co.

Welding and Cutting—Oxy-Acetylene:
Prest-O-Lite Co. of Canada, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Imperial Brass Mfg. Co.

Wheels and Axles:
Canadian Steel Foundries, Ltd.
Hadfields, Limited
The Electric Steel & Metals Co.
The Wabi Iron Works

Winches—Power Driven:
Canadian Mead-Morrison Co., Limited.

Winding Engines—Steam and Electric:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
Mussens, Limited
R. T. Gilman & Co.
The Wabi Iron Works

Wire:
Canada Wire & Cable Co., Ltd.
Greening, B. Wire Co.

Wire—Bare and Insulated:
Canada Wire & Cable Co.

Wire Rope:
R. T. Gilman & Co.
Canada Wire and Iron Goods Company.
Canada Wire & Cable Co.
Dominion Wire Rope Co., Ltd.

Wire Rope Fittings:
Canada Wire and Iron Goods Company.
Canada Wire & Cable Co.

Wire Cloth:
Northern Canada Supply Co.
Greening, B. Wire Co.
Canada Wire & Iron Goods Company

Wire (Bars and Insulated):
Standard Underground Cable Co. of Canada, Ltd.
Northern Electric Co., Ltd.

Wolfram Ore:
Everitt & Co.

Woodworking Machinery:
Canadian Fairbanks-Morse Co., Ltd.

Zinc:
Everitt & Co.

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

Zinc Spelter:
Canada Metal Co., Ltd.
Joyt Metal Co., Ltd.

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Goldsmith Bros., Smelting & Refining Co., Ltd. 12		
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Sullivan Machinery Co.		
Swedish Steel & Importing Co.		
T		
Toronto Iron Works 8		
Tyrrell, J. B. 11		
U		
University of Toronto 0		
W		
Whitman, Alfred R. 11		

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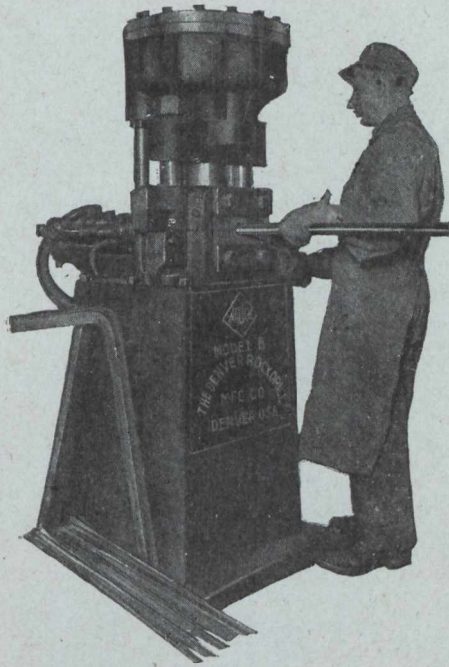
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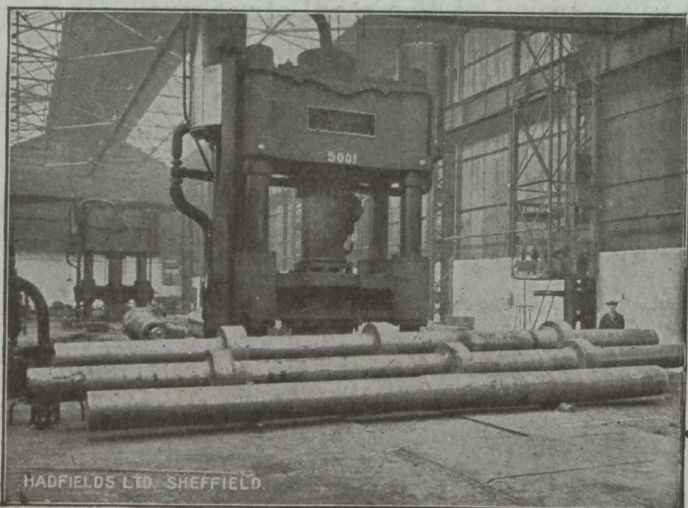
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