

CANADIAN MINING JOURNAL

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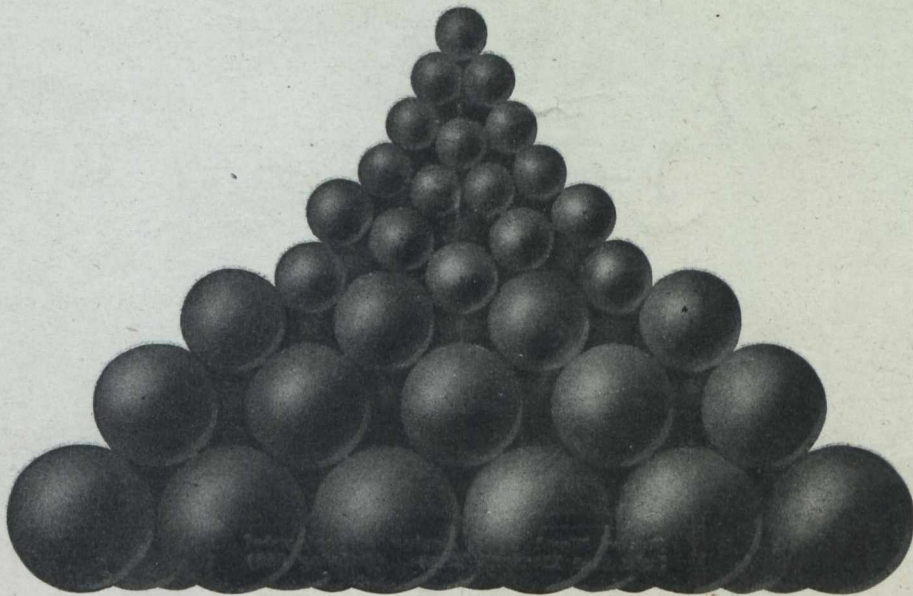
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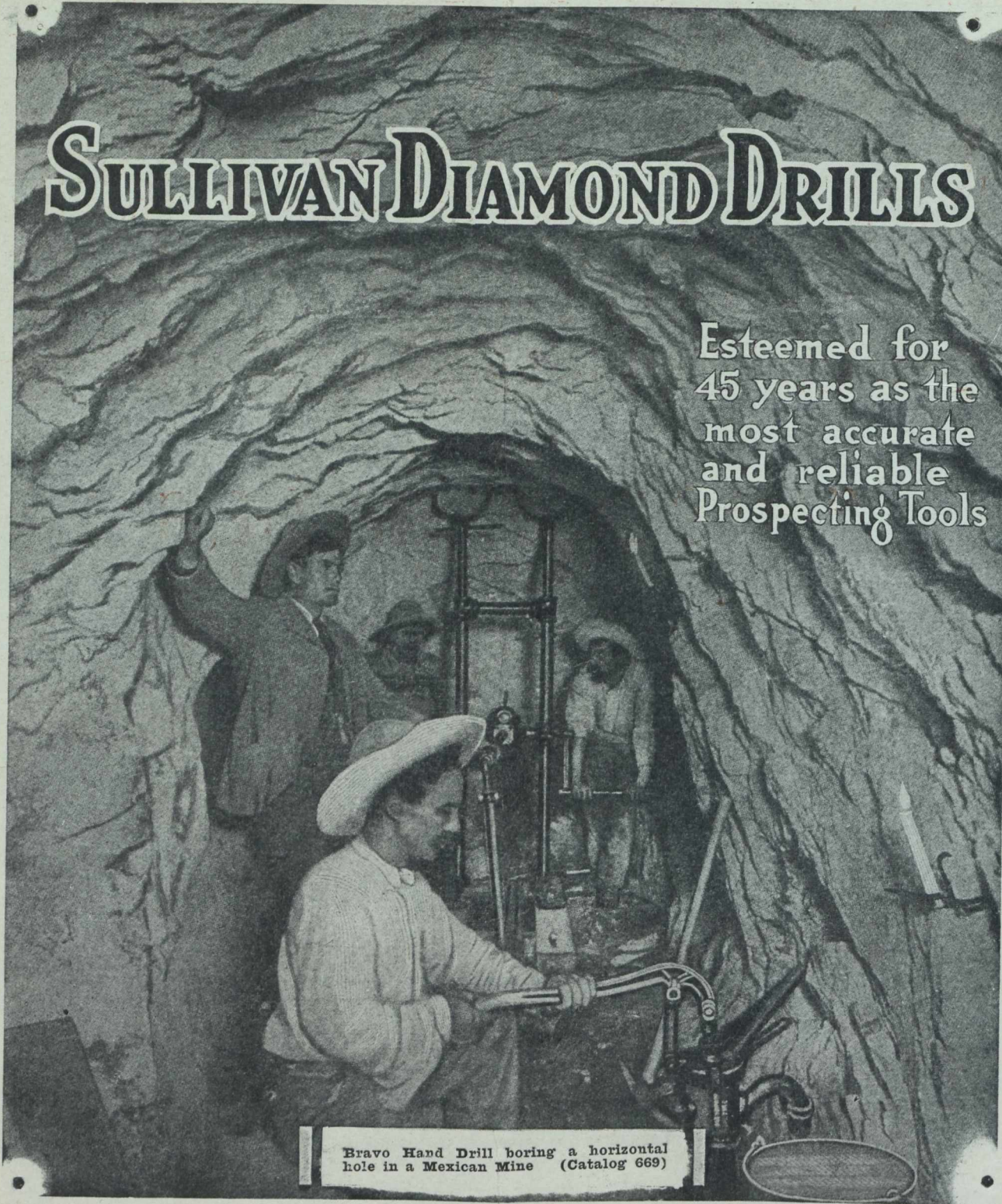
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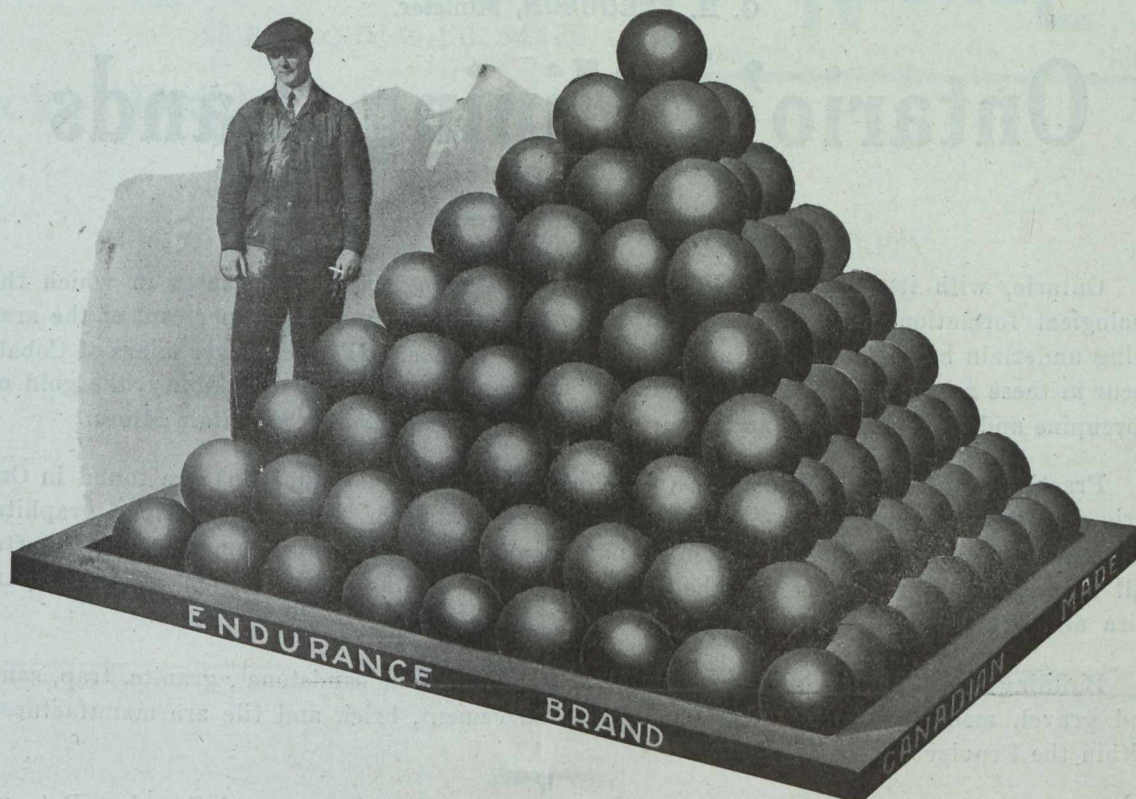
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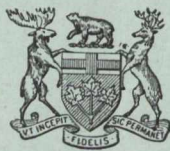
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Dividends and bonuses paid to the end of 1918 amounted to \$13,359,210 for gold mining companies, and \$74,810,521 for silver mining companies, or a total of \$88,169,733.

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Thos. W. Gibson,

Deputy Minister of Mines,

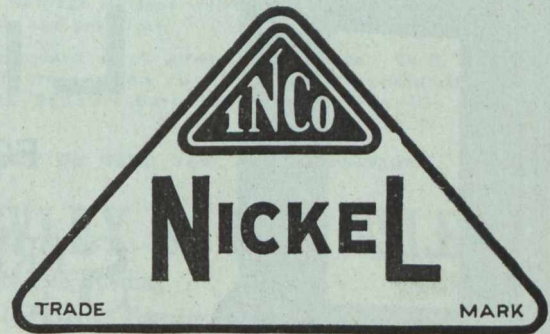
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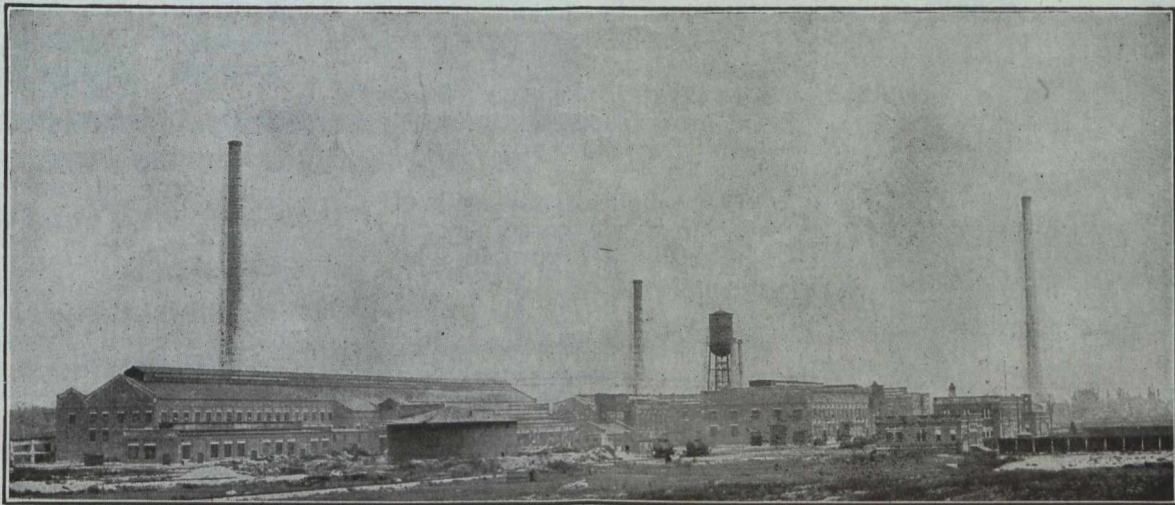
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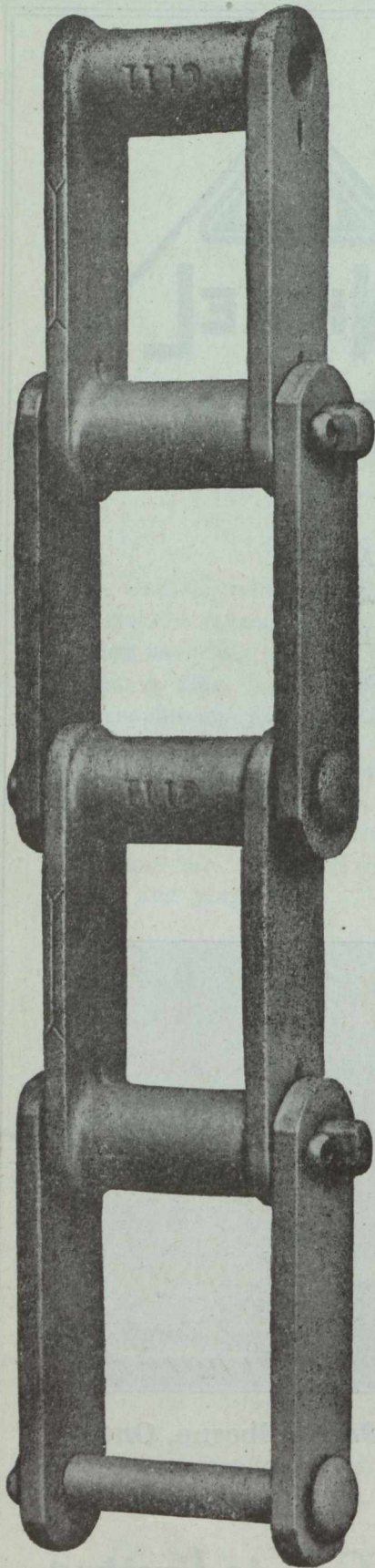
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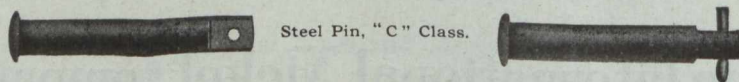
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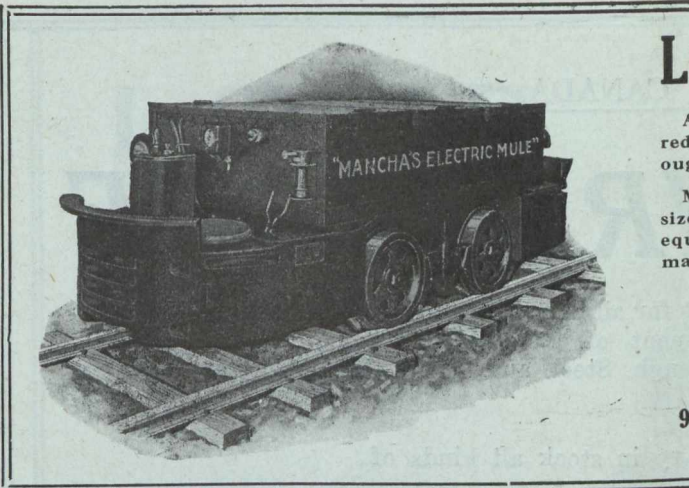
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1	60" x 14'	70	JOHN INGLIS	85 lbs.
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1	60" x 16'	85	GOLDIE & McCULLOCH	120 lbs.
2	60" x 16'	100	GOLDIE & McCULLOCH	100 lbs.
1	60" x 16'	100		75 lbs.
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1	66" x 14'	100		85 lbs.
2	66" x 15'	100		
2	66" x 16'	100	MURRAY IRON WORKS	125 lbs.
3	72" x 19' 6"	125	STEWART	140 lbs.
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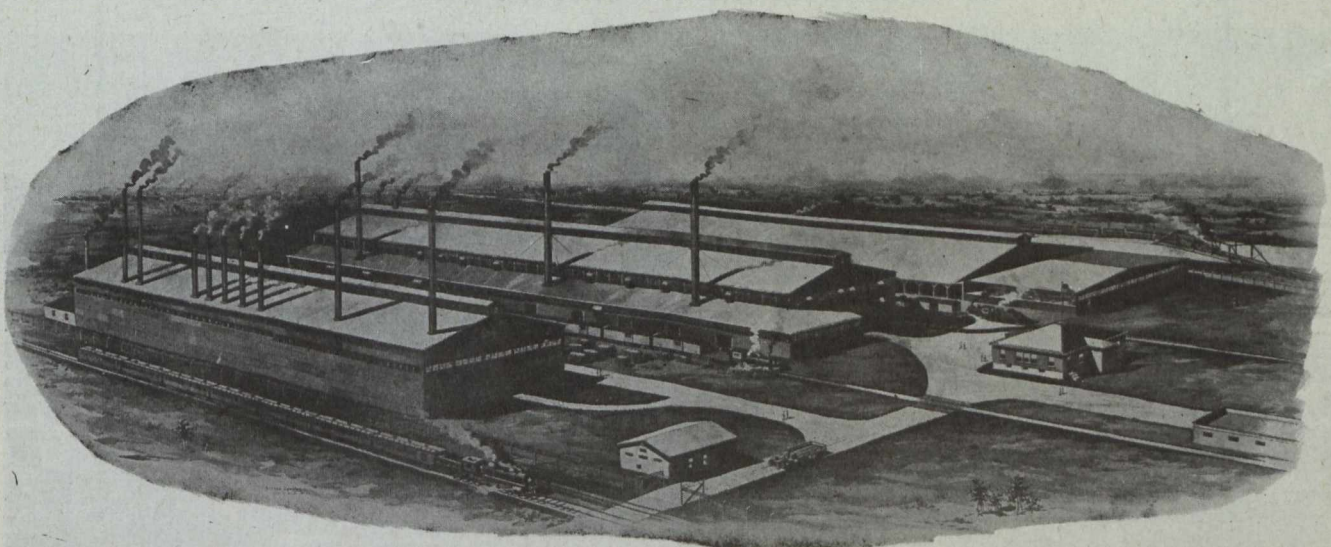
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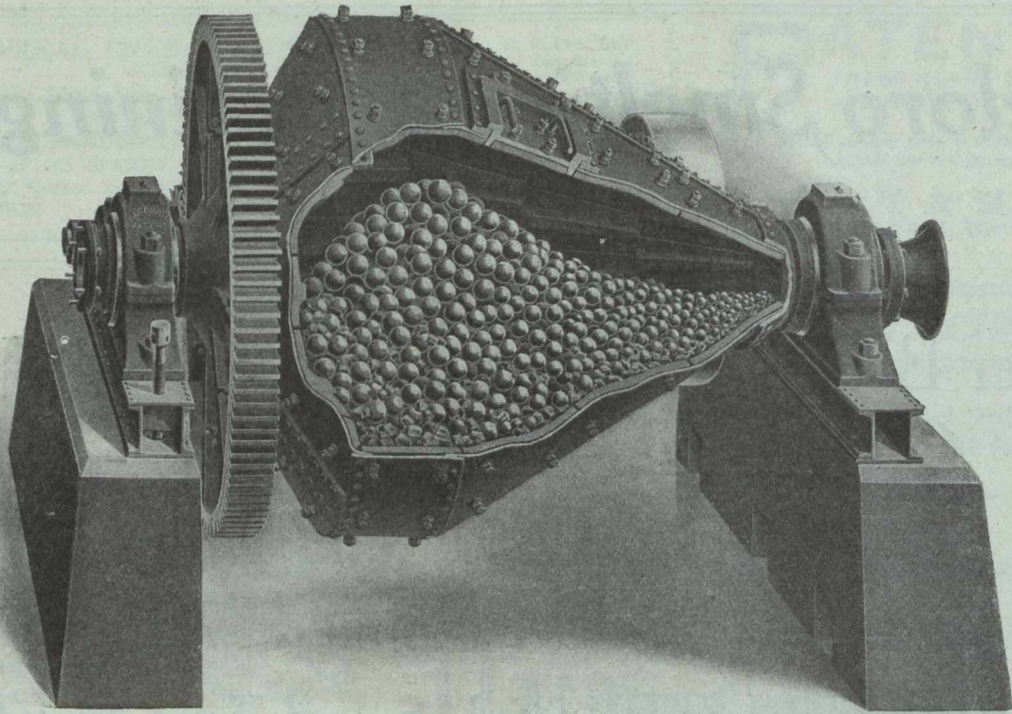


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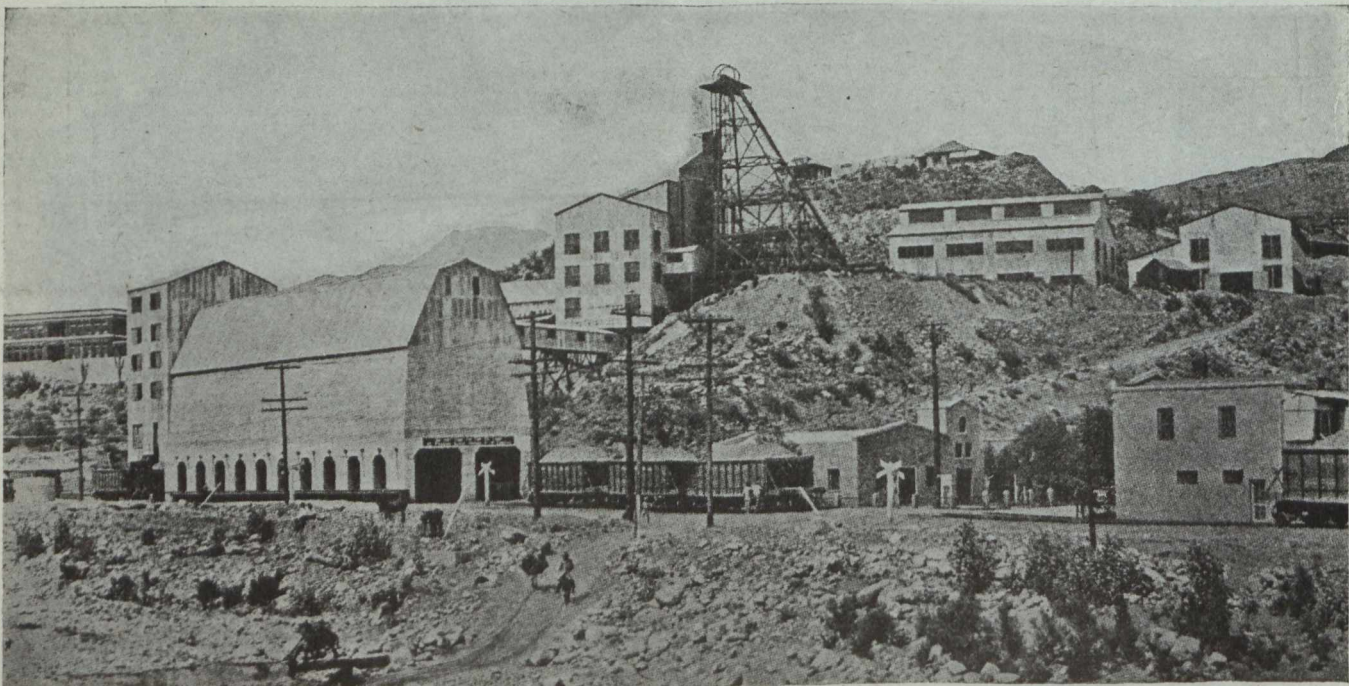
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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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No. 42

CONTENTS

Editorial:

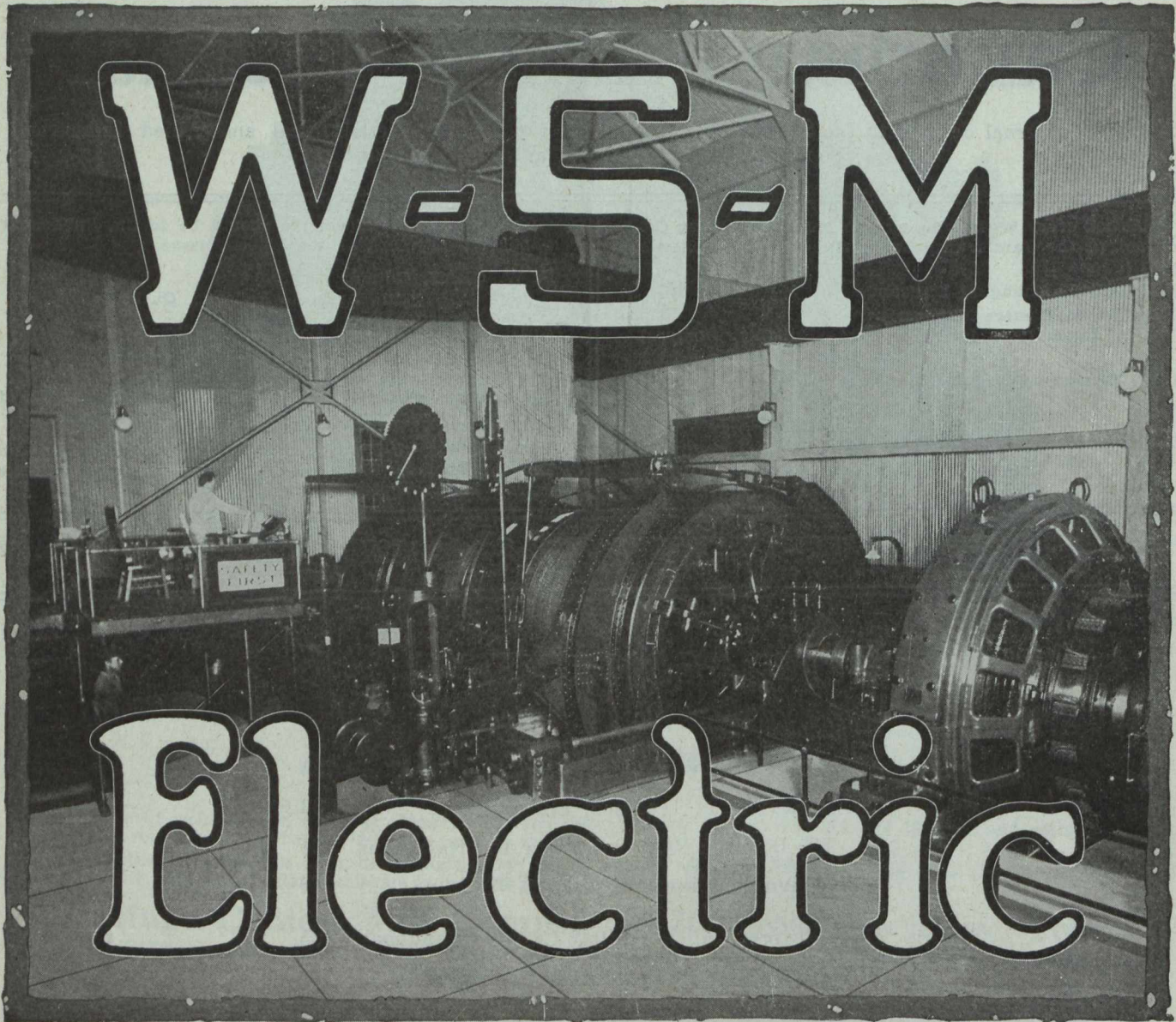
Herbert Hoover	783
A Revival in Technical Literature	783
The Boom in Pulp and Paper Incorporations	784
Activity in Nova Scotia Coal Trade	784

Book Review. Allen's Mill & Cyanide Handbook	785
A Lightning Visit to a Scottish Coal Mine by A. W. Swan	786

Mining News From all Provinces:

Alberta	787
Nova Scotia	787
Manitoba	788
British Columbia	789
Northern Ontario	796
Quebec — St. Remi Kaolin Deposits	798
Port Arthur District, Ontario	800

Limonite Deposit near Lillooet, B. C.	801
Obituary. Duncan Mc. D. Campbell, Halifax N.S.	798



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EDITORIAL

HERBERT HOOVER.

The engineering profession in the United States has conspired to do honor to Herbert Hoover. Canada also desires to be conjoined in appreciation of a man who has honored his calling, who has portrayed to the world the best and most lovable type of the citizens of the United States, and who is entitled to the admiration of brother engineers of any and all nationalities. As a successful mining engineer, as an author, and as a true friend of humanity, Herbert Hoover deserves all the honors that have been heaped upon him. The concluding words of the address of the Toastmaster at the dinner held in Mr. Hoover's welcome and honor, express a universal feeling.

"On behalf of this audience" said Mr. Saunders, "on behalf of all engineers, on behalf of a war-stricken people, who did not pray in vain 'give us this day our daily bread,' on behalf of all America, let me say to you in the words of John Milton, 'Servant of God, well done, well done!'"

A REVIVAL OF TECHNICAL LITERATURE.

During the past five years the entire absorption of the energies of the British peoples in the defeat of the Teutonic League caused a dearth of technical literature and a great shrinkage in the number of papers read before British societies. A glance at the comparative bulk of the annual transactions of learned and technical societies will show the disparity between the fat tomes of pre-war days, and the lean volumes issued during the war period. This hiatus can unfortunately never be filled in, for many of those who showed promise in scientific and technical investigation form part of the awful toll exacted by war, and will never again move amongst us. It is said that on the opening day of the 1916 Somme battles no less than 170,000 British casualties were recorded, and the flower of the nation died in that and other battles which—although we did not then know it—broke the power of the German army, henceforward only to be prolonged by collapse of our allies in other fields.

While a certain amount of scientific progress has been occasioned by the necessities of warfare, who can say how many undiscovered men of genius, how many inventions, and how much of value to science was destroyed by the deaths of war? This chapter can never be written, but we do know that the best, the bravest, and in many instances the wisest of our young men perished untimely.

Acknowledgment of this irreparable loss has formed the theme of resolution and memorial at all

our society meetings held since the war ended, and in looking forward to a revival of society transactions to an extent that will in some measure approach pre-war dimensions, we cannot forget that we shall never recover in the present generation of men, the labours and discoveries of those who have died in war.

We should however, expect very shortly to see the reading of a larger number of technical papers before British societies, and a resumption of that gift for individual observation and research which has enabled the British citizen to send home to the particular technical society to which he may be most particularly attached, accounts of technical progress in every quarter of the globe. This wide range of origin has always been a distinguishing feature of the transactions of societies within the Empire, whether they have their headquarters in South Africa, Canada, Britain, or elsewhere under the Flag.

One result of the war has been the description before our societies of war, adventure and shrewd commercial and technical observation combined, in the remotest and most primitive countries. Now our scattered armies are returned home, and men, after a period of unsettlement and re-action which varies according to the war experience and spiritual make-up of the individual, are settling down to the tasks of peace. Many men look upon the war period as so much time wasted, as a dirty business which had to be done; and which they have well performed, and they return to scientific occupations with renewed love. They will find in work the forgetfulness they desire of things that were unspeakable, and dear only to memory because of the comradeship, of those who fought side by side with them, and went through the same hell together. From these men we may expect great things, and not the least of their contributions to our life in peace-time will be their contributions to society transactions, and their presence at our society meetings, as was their wont in the days before the War.

The tremendous and sustained bulk of scientific transactions in the United States is an evidence of the comparatively smaller drain which the war made upon the man-power of that nation, added to which was the selective nature of the drafting for war, which purposely retained at the desk and the laboratory those whose scientific attainments and promise indicated the most effective manner in which these men could serve their country. The tragic feature of the war as it affected the British peoples was that before conscription was adopted, by a natural selec-

tion of the most discriminating kind, the golden youth of the Empire were placed in the forefront of battle, and died there.

That the transactions of our technical societies were kept going at all was in large measure due to the fathers of the societies, who renewed their youth and played the game at home by contributing papers, feigning thereby a detachment from the obsession of the war, which they did not feel, for in too many cases their sons were gone from them.

In the years to come the bound volumes of society transactions, as they stand in the bookcases, will remain a mute reminder of the manner in which the British peoples entered into a righteous but unwelcome war, and for the space of about five years did little else but fight and prepare for more fighting.

THE BOOM IN PULP AND PAPER INCORPORATIONS.

"Pulp and Paper Magazine" writes editorially:

"The future of our industries, dependent upon the forest crop, lies in the realization that timber is a crop, and that provisions must be made for raising trees according to scientific methods.*** Without an insistent and intelligent demand by the public for a proper administration of forest resources, we may expect one or two generations of prosperity, and a future of industrial pauperism so far as these industries are concerned."

In view of the tremendous activity of pulp and paper, and the extraordinary speculation now taking place on the Montreal Stock Exchange in pulp and paper securities, it is reassuring to know that such a prominent exponent of the industry as "Pulp and Paper" is courageous enough to speak a warning word.

Recently we were favoured by a call from an eloquent salesman of a pulp product, who enlarged enthusiastically upon the digestive capacity of his company's mills, on the enormous amount of timber they could chew up in a given time, but when asked what provision for reforestation was being made by his people, the salesman was significantly silent, and stated this matter did not concern his end of the business.

"Pulp and Paper" states that a number of the larger pulp companies are co-operating with provincial and federal authorities in the matter of reforestation, and it is to be hoped such co-operation is effective and will be extended to all places in Canada where the country is being stripped of timber. No one, we imagine, wishes to see Canada denuded of her timber and pulpwood to feed the insatiable maw of the printing presses of the United States, but there is the gravest danger that this will occur.

The coal-mining industry is very much interested in the preservation of timbered areas for the supply of pit-timber. The available supply of suitable pit-

prop timber is annually decreasing in the coal-mining districts of Canada, and its cost is annually increasing. As the facts regarding this phase of the question may shortly be the subject of official report, we do not at this time enlarge further upon the interest which coal companies should manifest in the provision of a future supply of pit timber.

Timber is a crop, a crop that is annually drawn upon in countries where scientific forestry is employed, but if ruthless stripping is indulged in, and no reforestation takes place, the possibility of future crops is destroyed, because the natural conditions of soil and moisture which are necessary to tree growth are irretrievably obliterated by methods which look only to immediate dividends and care not for the morrow.

ACTIVITY IN NOVA SCOTIA COAL TRADE.

For the first time since 1912 there are indications that some chastened optimism may be indulged in regarding the immediate future of the coal trade in Nova Scotia.

All the collieries report steadier work, and look forward to a fairly busy winter. Some of the reasons for better production may be reviewed.

Regarding the St. Lawrence market, the release of a number of the Dominion Coal Company's ships has permitted a certain tonnage of coal to be sent to the customary destination of Nova Scotia coal, and we look forward to a steady regaining of this market by Cape Breton mines, although the process will be a gradual one. The "Empress of France" recently bunkered at Quebec. As the "Alsatian" this vessel bears a proud war record, and many thousands of tons of Cape Breton coal did she burn in her frequent trips to Halifax. It was a strange commentary on the results of the war to see her being bunkered so far down the St. Lawrence as Quebec, with United States coal, under the supervision of officers all of whom bore some decoration or other reminder of their war services.

The European demand has helped the Nova Scotian mines, and the supplying of this market is hindered only by two factors, the availability of shipping and the matter of international exchange.

The resumption of production at the steel works, necessitating something approaching normal coke manufacture is probably the most important single factor in stimulating production. It was notable that during the recent short suspension of steel manufacture, the question of the disposal of slack coal assumed importance, and acted as a reminder that the genesis of the manufacture of steel in Cape Breton was a consequence of the necessity to dispose of the surplus slack coal associated with increased export shipments of coal.

The reflex of the demands of the bituminous coal-miners in the United States will have an important effect on the demand for Nova Scotian coal in Cana-

dian markets. Should a strike take place at November 1st, as seems now very probable, there will be grave interference with shipments of bituminous coal to Canada, but as the threatened strike is timed for first November, Nova Scotian collieries can not help very much, as River navigation will be closed, and the sending of coal to Montreal by rail is not a very feasible expedient.

The fact that demand is improving does not mean that great prosperity is about to visit Nova Scotia. The production for 1919, notwithstanding the probability that the collieries will work to capacity during the remainder of the year, will still be the lowest in a decade, and it is only by virtue of lessened coal production elsewhere that a sharper demand for Nova Scotian coal is now being experienced. The inefficiency of the working organization which resulted from the war, and the greatly increased cost of production which it, and the increased cost of materials has occasioned, are still in evidence. When trade conditions become settled elsewhere, Nova Scotia coal must compete with other producing centres, and the present temporary revival of demand does not justify the granting of still higher wages and still shorter hours which it is hinted the mineworkers are about to ask.

The "Journal" offers its congratulations to Prof. F. H. Sexton, the Director of Technical Education in Nova Scotia, and head of the Nova Scotia Technical College, on the honorary degree of D. Sc. from Acadia University, and LL.D. from Dalhousie University at its centenary convocation. These degrees were given in recognition of his work in technical education in Nova Scotia and in the vocational rehabilitation of disabled soldiers. We congratulate also the Mining Society of Nova Scotia and the Canadian Mining Institute on the honour conferred upon a member.

This recognition of Prof. Sexton is well deserved. He has carried the work of helping lame dogs over stiles to a praiseworthy degree, and because of the personal enthusiasm, clear but optimistic vision, and the unremitting toil which he—and Mrs. Sexton also—have put into this self-imposed task of practical humanitarianism, few men in Canada have deserved better of this country.

The work commenced by Prof. Sexton in Canada early in the war has been a pattern on which similar work in the United States and in Britain has been modelled.

Some optimists are unreasoning and unpractical, but Prof. Sexton, in a superlative degree, combines optimism with a practical genius for getting useful work done.

Prof. Sexton's work in technical education in Nova Scotia has been very successful, considering the entirely inadequate monetary appropriation available for secondary education in the Province.

An intimation has appeared in Canadian newspapers that the well-known emblem of the Prince of Wales' feathers with the motto "Ich dien" is taboo. We are glad to notice that whoever is in charge of the decorations of the C. P. R., Windsor St. Station in Montreal has had the good sense to ignore this gratuitous advice. One might well object to the Latin mottoes on regimental crests because Nero was a Roman. The incident which gave rise to the adoption of the words "Ich dien" occurred, "as every schoolboy knows" in 1346, and the connection with the events of 1914 is not strikingly apparent.

The spirit of those who would erase all teutonic language and symbols from English is the spirit of the Pharaoh who erased the cartouches of his royal predecessors from obelisk and pyramid, or of that Chinese autocrat of low origin who ordered that all literature should be destroyed because he suspected the literati were laughing at his rustic manners—as they probably were. Those who fought the Germans and destroyed their military lunacies would be the last to advocate such infantile action. One of the most nauseating things of the war period was the jejune inscriptions that were placed under war photographs in the half-penny illustrated papers published in England. Their untruthfulness roused the incredulity of the kindergarten. By the way, why not delete this word from our language?

At the recent convocation of Queen's University, the honorary degree of LL.D. was conferred upon Mr. G. H. Duggan, President of the Dominion Bridge Company, and Chief Engineer of the St. Lawrence Bridge Company, during the building of the Quebec Bridge. Mr. Duggan is a past-President of the Canadian Mining Institute and of the Canadian Society of Civil Engineers, and congratulation has already been extended to Mr. Duggan by the Montreal Branch of the Engineering Institute of Canada, and will doubtless be forthcoming from the Canadian Mining Institute. The Faculty of Queen's is also to be congratulated on having observed, what has apparently been overlooked by more august but less discerning bodies, that the erection of the Quebec Bridge was an outstanding and notable achievement in Canadian engineering annals, and of much greater value than many breweries and many newspapers.

BOOK REVIEW.

MILL AND CYANIDE HANDBOOK, comprising Tables, Formulae, Flow-sheets, and Report Forms, for the use of Metallurgists, Mill-men, and cyanide operators. A. W. Allen, London. Charles Griffin & Company. 4 by 6¾ in. 6s. Od. net.

This addition to Messrs. Griffin's well-known series of technical handbooks is a practical compilation in handy form of the data required by those in charge of milling and cyaniding operations. A glossary and an index are added. A large part of the book is occupied by typical flow charts and by report forms.

A Lightning Visit to a Scottish Coal Mine

By A. W. SWAN.

The writer was recently able to visit one of the largest Scottish coal-mines while on a visit to the Old Country armed with an introduction from the Canadian Mining Journal to Mr. Kirkby, manager of the Wellesley mine of the Wemyss Coal Company. Mr. Kirkby was away at the time the letter was forwarded, but referred the writer to Mr. Brown, the colliery manager, and thanks are due to both gentlemen.

The Fifeshire coal-mines of Scotland are comparatively speaking, a new field, and have scarcely reached their full development. One of the largest companies operating the mines is the Wemyss Coal Company which works the rich mines on the property of the Earl of Wemyss on the Fifeshire coast of the Firth of Forth, the boundaries of the property being roughly from Dysart (Kirkcaldy) to Methil, the great coal-port, a distance of seven miles, and a couple of miles inland. The largest of the Wemyss mines is the "Wellesley pit," and it was to this pit that the writer was directed. A number of villages lie between Dysart and Methil, and as the train service is rather indirect from Edinburgh the writer took his trusty bicycle and followed the familiar road from Burntisland through the "Lang Toun" of Kirkcaldy. By the way, a native of Kirkcaldy in Montreal would have a touch of homesickness as he passed along Notre Dame towards Maisonneuve by the linoleum factory—Kirkcaldy manufactures a large proportion of the world's linoleum, and the factories have a smell that is almost as distinctive as that of a pulp-mill.

"Are you the American that was to see over the pit?" Thus Mr. Brown at the Wellesley pit office—on the discovery that the writer belonged to Edinburgh, had spent several summers on the Fifeshire coast, etc., relations became more cordial. "Tell the other girl to give the gentleman's bicycle a wee bit clean."

The Wellesley pit is not only one of the largest mines in Scotland, it is also extremely well equipped. The output of the mine is increasing, and the coal measures are not fully developed. As the present output is in the neighbourhood of 5,000 tons per day, it can be seen that this is no small mine.

In order to handle the double-deck cages with the maximum of dispatch, pithead and pitbottom are being equipped with two landings so that hutches can be unloaded and loaded for both decks simultaneously. At the pithead the hutches (half-ton) are distributed to the various tippers where their contents are discharged on to slowly moving belt conveyors. On these conveyors the coal is hand-picked, all the smaller coal going to the large washing plant. This work (picking) is done largely by women. The narrow gauge hutch tracks from the tippers meet, and the hutches are brought back to the "empty" side of the pithead by a chain creeper haulage. With this arrangement the hutches pass around the pithead without needing any physical work on the part of the workers beyond setting the switches, etc. At the pit-bottom the arrangement is somewhat similar, that is, there is a gravity distribution of the empty hutches around from the shaft to the various main galleries which are generally equipped with cable haulage. As the general slope of the main galleries is down towards the pit bottom, power is used only in

hauling the trains of empty hutches to the working face. With this extensive use of cable haulage there are few ponies used in the mine; at the time of the writers visit there were only thirteen in the Wellesley pit.

The engine equipment at the pithead is remarkably complete. Exhaust from the winding engine goes to a turbo-generator, and from this to the condenser. Superheated steam is used at 150 lbs. pressure, the equipment also includes economiser and spray cooling pond for the condensers. With such a complete equipment it is not surprising that power is generated at a remarkably low cost, the estimated cost of electric power being $\frac{1}{2}$ cent per K.W.H., which is somewhat remarkable at the present high pithead cost of coal.

The winding engine is of 4,000 H.P. constructed by a Kirkcaldy firm of engineers, cylinders 38 in. diameter (non-compound), and powerful enough to handle considerably in excess of the present maximum load. The present depth of working is 1500 ft., the time for the hoist being 50 seconds. The winding engine has the usual control of throttle, reversing gear and brake, the latter being compensated. A simple over-winding gear trips throttle and brake should the engineer fail to slow within a certain distance of the pithead. In addition to the Parsons exhaust steam turbo-generator there is a Curtis turbo-generator and also three Belliss and Morcom 500 H.P. generating sets, one of which has been in operation for fifteen years. The current is generated at 6,600 volts three phase alternating, and is stepped down in the pitbottom sub-station, the main use for the power below-ground being for pumps and the numerous haulages.

The descent in the cage to pit-bottom was remarkably smooth, quite as smooth as in any of the modern elevators in New York. Around the pit-bottom the main galleries are electrically lighted, but this system does not extend far from pit-bottom. The mine, like most of the East of Scotland mines, is free from gas, and the miners use little oil lamps which they usually wear in their caps. Near the pit-bottom is a large pump house containing a large steam plunger pump—supplied from the pithead boilers, and two electrically driven Sulzer centrifugal pumps of 500 G.P.M. capacity. At this point the writer was introduced to one of the "oversmen" or foremen who was to be guide at one of the working faces.

The Wellesley pit is for the most part under the Firth of Forth, the shaft being practically on the foreshore. As far as is known at present the Fife coal seams pass right under the Firth of Forth, re-appearing in the Haddingtonshire coal-mines on the south shore of the Firth. At present the workings reach out a considerable distance, but the problem is somewhat that of the Nova Scotia coal mines, in that the further the seam is followed the deeper the mine goes, with a corresponding increase in difficulty of winning the coal. However, the Wellesley pit is only in its early stages, and judging from the cross-section in the main office, there will be no lack of coal from this particular mine for a long time to come. As a rule the coal-seams in British mines are thin, but a number of the seams in the Wellesley run up to 4 ft., and sometimes more, so that they are frequently worked in two layers.

From pit-bottom to the working face of the Chemiss seam which the writer visited is a mile walk along one of the main galleries having one of the haulages. This seam is being worked on the retreating longwall system. Mr. Brown, the manager, has introduced "hydraulic scouring," which he finds very useful in reclaiming coal from the "red" or waste, and also very useful in case of any section taking fire. Although the mine is free from gas, fires will occur occasionally due to settlement, and in such an event the only remedy is to isolate the section.

Compressed air is not used to any great extent either in this or other Scottish coal-mines, there being only one small compressor near the pit-bottom to supply air to the hammer-drills used in tunnelling in the rock. The longwall system of coal-working is suitable to the chain and disc type of coal-cutters, and the Wemyss Coal Company has been experimenting with both, although the experiments have not yet reached the final stage, and the great bulk of the coal is mined by ordinary pick and shovel. However, as in many other industries in Great Britain it is not entirely fair to blame the management; the use or non-use of labor-saving machinery depending very largely on the attitude of the labor union heads. The Wemyss Company has just completed a twelve months' test of a chain coal-cutter, but has not found it satisfactory, and is now trying a disc machine manufactured in Scotland, so far with success. The writer did not have time to make a detailed examination of this machine, and the only light available was a smoky little oil lamp, but roughly speaking the disc machine is similar to the same type as manufactured in America, the body of the machine resembling a small mine locomotive, and the disc with its picks set in the periphery, projecting from the body. The feed is by a cam and ratchet arrangement, the amount of feed being varied by controlling the number of teeth caught at each move forward. The feed is also controlled by a clutch which is automatically thrown should the picks suddenly strike hard spots in the coal.

The working face "oversman," Mr. Briggs, took the writer for a quarter of a mile scramble through the working face.

The return to pit-bottom was made at one o'clock, "knocking-off time," and to get into the cage it was necessary to get a brass check from the office near the shaft, and wait for that number to be called out as only 16 men are allowed on each deck of the cage.

COAL NEWS FROM ALBERTA.

Coal Commission Sits in Edmonton.

Some interesting evidence was given recently at Edmonton, Alberta, before the Coal Commission, appointed to investigate conditions with reference to the available supply of this fuel, cost of production, etc. G. G. Sheldon, of the Humberstone Coal Co.; W. S. Cupples, of the Great West Coal Co.; H. C. Anderson, of the Twin City Coal Co.; L. E. Drummond, of the Mountain Park Coal Co.; and W. C. MacKay, of the MacKay Coal Co., were among those heard. All the operators were agreed that there was a great over-development of the mines in the district; the fact that they only work five or six months in the year was a big factor in the cost, for the upkeep during the remainder of the year had to be borne by the coal produced during the short producing period of the year. They also agreed that there would be much benefit in the marketing of coal by the standardization of screens,

and this was especially true when catering to a competitive market such as that of the Province of Manitoba. The quality of coal being shipped into Manitoba should be very carefully controlled. The operators felt that there was as much reason for the standardization of grades in coal as with wheat, butter, or other products made for export or even for home production, as the satisfaction of the consumer was so much greater. Another suggestion was the appointment of a Commission to regulate and control the opening and operation of coal mines in the Province of Alberta. There should be some man, it was argued, with authority along the lines of the Railway Commission. To this Commission one proposing to open a coal mine would have to show that he was financially able, not only to open the mine, but to sustain operation of the same for such period as might be considered necessary to get it on its feet. The standardization of export coal also would be a matter for the attention of this Commission. Evidence also was taken with reference to housing accommodation at coal mines.

GOVERNMENT RESERVE COAL AREAS IN SMOKY RIVER DISTRICT, NORTHERN ALBERTA.

With a view to creating a coal reservation in Northern Alberta, coal mining rights have been withdrawn in regard to a district near the junction of the Muskeg and Smoky Rivers. The order-in-council withdrawing mining rights states that a very large and valuable deposit of high grade coal on Dominion lands has been reported in the district, seventy miles from railway communication.

NOVA SCOTIA NOTES.

Nova Scotia Steel Co.

The officials of the Scotia Company anticipate that 1919 outputs will exceed those of 1918. The production of the collieries in 1918 was 502,018 tons, and indications now are that a total of 550,000 tons for the year may be reached for 1919. In this event, 1919 will show the highest production since 1914.

Dominion Coal Company.

It is announced that the Dominion Coal Company is proceeding further with the electrification of its collieries, a policy which was adopted about 1905. The application of the exhaust-steam turbine to electrical generation at the individual collieries is finding a wide application, installations of this kind being already in place at No. 2 Colliery, No. 1 Colliery, and in contemplation at No. 6 Colliery. The experience with an exhaust-steam turbine has been particularly good at No. 2 Colliery, where a Daniel Adamson turbine, driving a Brown-Boveri generator was installed about 1910 and has run steadily and satisfactorily ever since. The Dominion Company's experience with electric drive has been encouraging, and it includes application to underground pumping, colliery screening plants, ventilating fans, direct and auxiliary underground haulages, and hoisting engines for slope haulages. The greatest development of electrical power lies in the future in the winning of the undersea coal seams. The possibilities of the application of electric power to this problem are wide, and fascinating, and in Nova Scotia it will always be necessary to remember, in framing regulations for the governance of the use of electricity underground, that electricity, in the light of present knowledge, is the only motive power that will enable these vast submarine coal deposits to be won.

MANITOBA NOTES.

Mr. J. B. Tyrell has been retained to make an examination of the Gabrielle Mine in the Manigotagon. He will also report on the Gold Pan property.

A very general revival of interest in mining is reported in Manitoba, and Messrs. Milton Hersey & Co., through their Winnipeg office, report a great increase in the number of mineral samples submitted for examination.

The "Free Press" of Winnipeg states that the Beaver Lake, Saskatchewan, an older camp than either Flinflon or Mandy, is again coming to the fore. Messrs. G. A. Pow, Alexander Boyd and J. C. Collette have returned from a visit to a group of claims which Mr. Pow has held since 1915. The veins are enormous, but extremely low in grade, so that gold mining, though it may eventually be successful, will only be so if conducted on a large scale.

But Mr. Pow is showing some more interesting graphitic schist, samples of which, according to an analysis by Milton Hersey, run 8.17 per cent carbon and 0.28 per cent iron. This is a huge deposit. Where the body was trenched it measured 195 feet from wall to wall. Samples are being sent to Dixon and Co., of Newark, N.J., as well as to the Department of Mines, Ottawa to be reported upon.

DEVELOPMENT IN RICE LAKE GOLD AREA, NORTHERN MANITOBA.

Recent developments in the Rice Lake gold fields are being followed in a great deal of interest by those who claim that Manitoba has not yet awakened to her possibilities as a province very rich in gold deposits.

It is not generally known, but it is stated as a fact, that engineers representing an enormous amount of outside capital will, this winter, undertake very searching enquiries into the Rice Lake district. In the vicinity of Big Rice Lake it has been known ever since the Gabrielle was located that deposits of silver and copper exist as well as gold. This fact was known by the Gabrielle people back in 1912, and they hope to bring back to light several features by next summer which will amply prove the fact that Manitoba has not yet realized what her real wealth in mineral deposits is going to be.

As many already know the Gabrielle properties have been very exhaustively explored as far as the initial stage and they are now well advanced to the stage where further development is warranted on a much larger scale, and with more improved machinery. It is understood that their future plans of development work will be under the direct supervision of the best quartz mining engineer obtainable, and this decision seems to be quite warranted after Mr. Tyrell's remarks concerning the nature of rock existing in some of the world's richest quartz mines and which the Gabrielle people claim exists on their properties as well as one or two other claims which have been prospected to any considerable depth.

To the Gabrielle mine, which is the pioneer prospect of the Rice Lake district, the province may yet owe a great deal for the tenacious way they have stuck to their convictions that not only they, but several others, have what may yet prove to be very wealthy properties and which may eventually mean a great deal, not only to Winnipeg, but the West generally.

They do not lay claim to being the only prospect worthy of support by the people of Manitoba and the West, but they apparently quite firmly believe in a conservative and sound management with the eventual result that their original views on our wealth in the Rice Lake country and elsewhere will be amply confirmed, and that sanely conducted mining ventures will finally prove of enormous value to those whom it should—the shareholders.

LEFT OUT IN THE COLD; POOR LITTLE CINDERELLA!

Manitoba is the Cinderella of the Canadian sisterhood, so far as the Geological Survey is concerned. The survey seems to have a fixed idea that British Columbia is the land of promise, and to that favored province go geologists in gangs, while we get but a stray one. Of course, B.C. is attractive; the climate is in most parts delightful, the scenery grand in the extreme; possibly science there finds its surroundings more conducive to the correct attitude of mind for the unravelling of complicated stratigraphical problems. No doubt, no doubt. Yet poor old Manitoba is trying to tell the world that as regards mineral wealth she can do her bit, and more than her bit, is given a chance, and we should be so thankful if the powers that be would send us a nice big flock of experts next season. Please do!

In Ontario the Dominion and provincial authorities seem to take delight in duplicating one another's work. P. C. Hopkins examines Larder Lake for the Ontario Bureau of Mines; shortly after, Dr. H. C. Cooke hastens there to read its riddles for the Dominion survey. A. G. Burrows reports on the Matachewan area, for Toronto, and forthwith Ottawa sends Dr. Cook to investigate what is in the same map sheet. To those that have much shall be given.

As for B.C. she is the petted darling of the G.S., if not its first love, certainly its latest. Eight parties have been assigned to the province during the summer, and a ninth took over the Mayo country, Y.T. J. J. O'Neill has been in charge of the party studying Salmon Arm, Portland Canal; B. R. McKay has investigated the placers of Cariboo; L. Reinecke passed weeks estimating the value of the soda lake between Clinton and Quesnel; the Slocan attracted M. F. Bancroft; the wild west coast of Vancouver Island yielded a wealth of information to V. Dolmage; S. J. Schofield seems to have discovered a new mining property which the Review calls "Brittania," S. C. McCann accumulated material for a map of the Bridge River country; and, lastly, Charles Camsell, the O.C. of the brigade, paid particular attention to the Coquilla section.

What are our members at Ottawa doing? Are they asleep? We have known men who would have got up on their hind legs and roared long ago.—C.A.B., in the Manitoba Free Press.

MANITOBA PERSONALS.

Gordon McTavish has gone up to the Gold Pan with J. B. Tyrell, M.E. The property will be thoroughly sampled.

G. A. Pow of the Copper King group, has returned from a journey to Beaver Lake, Saskatchewan, where he is interested in the Little Nell and other gold quartz claims.

Major Wheeler, of the city, is back from a trip through western end of The Pas district and the extreme easterly part of that of Prince Albert. He is said to be astonished at what he saw.

Special Correspondence

BRITISH COLUMBIA. Grand Forks B. C.

Silver-lead ore of good quality has been found on a number of properties situated on Lightning Peak and, as a result operators and prospectors are showing some concern over the solution of the transportation problem. This peak is at the watershed of Cherry and Fire Valley Creeks and the north fork of the Kettle River. Hitherto the Fire Valley route has been regarded as affording the best transportation. Now, however, it is advocated that the camp should be opened by way of the Kettle River and Franklin Camp, it being contended that the grade will be better although the distance is greater than it is via Fire Valley.

Slocan B. C.

The Silversmith Mine, formerly known as the Slocan Star, a property over which there has been considerable costly litigation, was the subject of a recent deal of some importance. J. M. Harris, of Sandon, gave an option to B. Cohen, of Spokane, on 250,000 shares of common stock for \$60,000, retaining his preferred stock. This is 20 cents a share and would make the total valuation of the Silversmith about a million dollars. It is suggested that John White, of Spokane, is behind the purchase and that the stock will be listed in New York.

Rossland B. C.

There now is no doubt that the Consolidated Mining & Smelting Co. of Canada will build a concentrator at Rossland B. C., having a capacity of 1500 tons a day and costing in the neighborhood of \$750,000, for the purpose of treating the milling ores of the Company's Rossland properties. Mr. S. G. Blaylock, general manager, conferred with the municipal authority of Rossland recently in regard to the obtaining of a water supply and it was arranged that the necessary steps would be taken immediately to compile data as to the cost of such alterations to the waterworks system as will permit the impounding at the present reservoir of 78,000,000 gallons of water. This means the construction of a dam and a flume and the Company has offered the city the use of its engineering staff to facilitate the preparations of this data. Mr. Blaylock has given his assurance that, in the event of the city having to issue debentures to take care of the expenditure, the company will expect to assist. He however, has made it clear that the company's plant shall not be subject to ordinary city taxation.

Trail B. C.

Not only is the Consolidated Mining & Smelting Co. extending the scope of its operations at Rossland B. C. but, if reports as yet unofficial are to be credited, it promises the installation of a concentrator of large capacity at Kimberley B. C., to treat the ores of the Sullivan Mines, and is considering a similar plant, of smaller size of course, at the Sunloch Copper Mine, situated on the West Coast of Vancouver Island. The latter would have a capacity of about 500 tons. In this connection it is interesting to note that the new mill of the Canada Copper Co., Allenby B. C., is expected to be ready to commence operations early in the new year, the plan being that its concentrates shall be shipped for smelting to the Trail Smelter of the Consolidated Company.

The Consolidated M. & S. Company has abandoned the Fitzsimmons Group at Alta Lake on the Pacific Great Eastern Ry. on which it took a bond for \$200,000 in the fall of 1918, established a camp, and started work which was suspended for the winter. There was a question of reducing the purchase price this Spring. No arrangement could be reached satisfactory to both parties and the Company has withdrawn. The owners now are in negotiation with other operators.

Ore receipts in gross tons for the week from September 22nd to Sept. 30th, inclusive, at the Consolidated Mining and Smelting Company's smelter, Trail, were 5,199, making the total for the year up to the date indicated 258,323 tons. Again the Mandy Mine, Le Pas, Manitoba, was the largest independent contributor shipping 558 tons. The Quilp, Republic Wn., sent 487 tons; the Lone Pine, Republic, 104 tons; the Blue Bell, Riondel B. C., 156 tons; the Josie, Rossland, 116 tons; and the North Star, Kimberley, 98 tons. Of the Company's properties the Centre Star, Rossland, shipped 1884 tons and the Sullivan, Kimberley contributed 1377 tons of zinc ore.

An interesting circular was issued recently by the Consolidated Company to the lead ore shippers to the Trail Smelter. It reads as follows:

"There has been a desire expressed by some of our shippers for a settlement for lead on a more definite date than is possible with a continuance of the present pooling scheme.

"Stocks are still considerable but are more nearly approaching normal and now that we are no longer supplying munition orders the demand can be depended upon to be more uniform than in the past.

"We are still suffering severe competition from Mexican lead and have to meet such prices as are made by those selling this lead. The so-called Montreal price is merely the St. Louis price plus freight and duty. There is practically no lead saleable in Canada at this price under present conditions. In addition to the Mexican competition for Canadian domestic business, considerable quantities have had to be exported at the open market price to reduce stocks and take care of current production. This was due to the light Canadian demand. In spite of these adverse features we have been able to average in each month's sales considerably more than the New York price for lead. We are therefore changing our method of lead settlement commencing with shipments received here on October 1st, and are amending Schedule "C" as follows.

"All the provisions on page 2 respecting payments for lead are cancelled and the following substituted:

"Lead—The lead contents will be determined by the wet method of analysis, deducting one and one half units to arrive at the dry assay. Lead will be accounted for on the dry load assay to the extent shown by the above assay; provided, however, that in no case will the deduction from the said dry lead assay be less than one unit, or twenty pound per dry ton of ore.

"The price for lead to be used in settlement will be our average sales price delivered at destination in Canada, for the second calendar month succeeding the date of sampling, or the A. S. & R. Co's New York average quotation for the said second calendar month, whichever is the greater, less a deduction in either case of one and one-half cents per pound for refining and marketing.

"There will be deducted also from the settlement price, \$2.30 per ton on sales at Toronto and common points, and \$4.50 a ton on sales at Montreal and common points, and similar differentials to other points. This freight adjustment is to cover actual increases in freights; e.g. should sales in any month be 2,000 tons, and say 1200 tons for delivery at Toronto and 800 tons at Montreal, the freight adjustment would be three-fifths at \$1.30 and two-fifths at \$4.50, or \$3.18 per tons of lead."

Paragraphs A, B, and C, on Page 4 under the heading "Settlement" are cancelled and the following substituted:

Settlement a.—Shortly after sampling, an advance payment of 90 per cent of the apparent value will be made. The prices used in estimating the apparent value will be the New York price for lead.

Settlement b,—Shortly after the close of the second calendar month after sampling, when the data is available, the final value will be computed and any adjustment necessary will be made between the Smelter and the mine."

"You will note that the least you can get is the price the United States smelters decide upon, and we will use every effort to make it as much more as we can. This is, of course, in our interest as much as in yours, as we are producing the bulk of the lead.

"Settlements for monthly receipts prior to October will proceed under the pooling scheme until further liquidated."

Kimberley B. C.

No sign of a settlement of the strike of the metalliferous miners, employed in the Sullivan and North Star Mines, was apparent on Saturday, October 11th, last. The men are out for an increase of \$1 per diem in their wages and the management of the Consolidated Mining & Smelting Co., the Company chiefly concerned, has refused to negotiate the issue until the men repudiate the One Big Union. The committee representing the strikers has said that the men are out as a body of employees having no affiliations with any established miners' organization. This, however, they were unable to put in writing and judging by the attitude of Mr. S. G. Blaylock, the Company's manager, the latter is preparing for a long drawn out fight.

The contention that the O. B. U. is behind the walk-out appears to be confirmed by a report published in the "Federationist", a labor paper published in Vancouver, of a convention of District No. 1, metalliferous miners of the O. B. U. held at Nelson on September 21 and 22. Here it is stated that the chairman, T. B. Roberts, despite the fight for jurisdiction put up by the International Union of Mill, Mine and Smelter Workers, the O. B. U. had made splendid progress, all the local unions, with the exception of that of the City of Sandon, being in the fold.

The statement continues:

"The camps at Trail and Rossland had been granted 50c. per day increase owing to activity of the O. B. U. Kimberley unit had put in a demand for \$1 per day increase, and having been turned down, had struck. This action was deplored by the executive committee who wanted the local units to live up to the demands of the general constitution. In this respect the demands should have been presented to the district executive board, and the chairman stated that if the units persisted in taking hasty action, the ultimate result would be the crippling of the organization.

"The executive recommended an active campaign against unsanitary camp conditions, and the Convention concurred in the report and recommended that pressure be brought to bear on all candidates seeking election to Provincial and Federal parliaments to have this remedied.

"The Convention decided to put a referendum of the membership in the employ of the Consolidated Mining & Smelting Co. the question of demanding \$1 per day increase or a strike to enforce the demand."

The West Kootenay Power and Light Company will build a high power line from Bonnington, near Nelson B. C., to Kimberley, a distance of 100 miles. It will also build a line to the Rock Candy Mine of the Consolidated Company.

Riondel B. C.

A new strike of silver-lead-zinc ore has been made close to the old Blue Bell, Riondel. The vein is of fissure variety, cutting across the country formation of bedded schists and granite intrusions and has been traced for three-quarters of a mile. The ground has been staked and re-staked in the past because of its proximity to the oldest metalliferous mine in the Province but has never before been developed to any ex-

tent. It is the intention of the discoverers, R. D. Hearn and D. L. Eastman, to continue their open cut for a short distance, which has gone through eight feet of ore and still is in it, after which work will be continued on a tunnel nearby with the aid of a gasoline power drilling outfit.

Nelson B. C.

Exceedingly favorable reports have been received concerning the Iva Fern Property, situated on Cultus Creek, which is being developed by the Consolidated Mining & Smelting Co. It is stated that No. 2 Vein is known to extend over five miles, that it is more than 50 feet wide in places, and carries good percentages of gold, silver, lead and copper. J. Riley, a well-known prospector who is working a group of claims across the Creek from the Iva-Fern, states that all the development on the chief veins of the latter has been by open cuts and that there are large showings of good ore. J. W. Mulholland, the manager, is now driving a crosscut, designed to give a depth of some two hundred feet on No. 2 Vein, as well as to cut all the leading veins. Up to the present there are no facilities for the shipment of ore outside of a pack trail.

His Royal Highness, the Prince of Wales, in the course of his recent tour of British Columbia, made short stays at Nelson and other mining centres of the interior. For his benefit Fred A. Starkey, commissioner for the Associated Boards of Trade of Eastern B. C., E. W. Widowson, J. J. Currie, and other mining men and members of the Board of Trade, had placed on board the boat which took the Prince from Nelson to Balfour, (a soldiers' convalescent home on Kootenay Lake) a collection of specimens of the ores of the Kootenay—Boundary Districts. H. R. H. was much interested and listened with close attention to those who expounded the mineral resources of the Eastern sections of the Province, pointing their observations with the samples shown. Among the properties represented were: Standard Silver Lead, Index, McPhail's copper, Nickel Plate, Perrier, Bayonne, Kootenay, Gold, Gold Plate, Columbia Copper Gold, Sirdar, Lockhart, Le Roi, Bond Holder, Freddie Lee, Carpenter King, Meteor, Lightning Peak, Silver Cliff, Kootenay Belle, California, Black Prince, Hudson's Bay.

Some curiosity is shown with mining men with reference to some strips of crystallized nickel-sulphate, which were a part of the exhibit of ores and smelter products of the Consolidated Mining & Smelting Co. shown at the recent Vancouver B. C. Exhibition. One of these has been presented to a Nelson mining man. The crystals, of a greenish cast, are formed upon a lead strip which was hung in the solution from which they were deposited. Although the Company has not yet disposed of any of this nickel commercially it has accumulated a considerable quantity of it and it is stated that this by-product is being formed all the time. This is taken as establishing that notwithstanding statements to the contrary nickel does exist, in small quantities at least, in the rocks of the eastern part of British Columbia.

In the course of a tour through the mining sections of the Kootenay and Boundary Districts of the Province Hon. Wm. Sloan, Minister of Mines, met members of the Board of Trade of Nelson on Monday evening, the 6th inst., when the question of the French Complex Ore Reduction Co. and of the Ore Testing Plant,

which the Dominion Government proposes establishing in British Columbia, were discussed. In regard to the French Reduction Company it was stated by Mr. Sloan that, the process of treating the complex silver-lead-zinc ores of the Kootenays by the electrolytical process having been successfully demonstrated, the government's object in tendering the Company financial support was accomplished. The plant, it may be explained, now is idle and the government, by virtue of having guaranteed interest on bonds to the amount of \$65,000, holds a mortgage covering all the Company's assets. As to the future of the property the Minister said that the government would have liked to see the plant utilized and made the basis of a big commercial enterprise. He thought that it ought to be possible to find some use for it and observed that, in this matter, the government would be guided by the opinions of the Board of Trade and the mining men of the district. He added that the shareholders in the Company, who had invested their money, had his sincere sympathy and it was agreed that they should have a clear month in which to make a start at re-organization. The Minister thought it might not be necessary to go through a foreclosure, or, if such a thing were deemed desirable, that it might be a friendly one, the Company assigning its assets to the government. J. O. Patenaude, speaking for the shareholders of Nelson, said that various mining men had made enquiries as to whether the plant would be available for treating their ores and it was possible that the Company might be able by putting an engineer in charge with the necessary training, to establish a commercial enterprise and at least recoup what had been lost. With reference to the Dominion Government's Ore Testing Plant, Mr. Sloan stated that Hon. Martin Burrell, Minister of Mines for the Dominion, had told him that the Plant would not go to the University of British Columbia at Vancouver. This being so it would not surprise him, he asserted, if it were to be won by the Interior. Answering Mr. F. A. Starkey, commissioner for the Eastern B. C. Boards of Trade, he said that the Provincial Government would be glad to permit the use of the present French Company Plant by the Dominion Government for an ore-testing installation in the event of the Company being unable to organize. Another subject discussed was that of having cabinets of minerals, particularly including specimens of those not familiar to mining men and prospectors of the district, displayed at different points for the instruction of all interested. Mr. Sloan thought it a good idea and said that already it had been adopted in a small way, all the mining engineers having such cabinets at their headquarters. He hoped to extend this to the offices of gold commissioners and mining recorders. The Minister also stated that the matter of supplying prospectors with powder at cost, by means of the same arrangement as that under which the farmers get explosives for clearing the land, was under consideration.

Victoria B. C.

The announcement of the awarding of a contract by the Canadian Pacific Ry. Co. for the extension of its Vancouver Island Ry., the E. & N. from Alberni to Great Central Lake has raised the hopes of mining men interested in the development of the mineral resources of the Island interior. There are a number of properties situated close to Great Central Lake of considerable promise. One of these is the Big Interior which, from

engineer's report, consists of a large body of good ore, and the development of which has been much handicapped because of lack of transportation facilities. The proposed new line is 10½ miles in length and will not only open up a promising mineral zone but will tap virgin forests and open to the general public one of the finest sections, scenically, of western Canada.

Vancouver B. C.

Some information was given shareholders as to the development of the Nugget Gold Mining Property, Sheep Creek, at the annual meeting of the Company held recently at Vancouver. It was stated by President A. C. Burdick that the water problem for the Compressor had been solved by restoring the the North Fork Flume and that the Compressor would be operated hereafter full time instead of one shift a day. This would mean better progress in the driving of the cross-cut now underway. This now was in 850 feet and would be carried on for the full distance of 1200 feet at the rate of eight and one half feet a day. The crosscut is being driven from the workings of the Motherlode, on the Sheep Creek side of the mountain, under the old Nugget workings on the Fawn Creek side at a depth 600 feet greater than was obtained by former development on the Nugget.

Wilmer B. C.

An option has been given on the Dolphine Silver Lead Property by Randolph E. Bruce, of Wilmer B. C., to delay. The property is situated on the Delphine Mountain, on the north fork of Toby Creek. There are various workings, the principal system consisting of a 30-foot shaft with a right drift 146 feet long, reaching the surface by an incline raise and a left drift 70 feet long, a shallow winze being sunk from this level and other drifts carried from the foot of the winze. The original ore body is stoped out but the formation is such as to promise ore bodies at no great distance. Ore shipped formerly ran about \$100 a ton in silver and lead.

Portland Canal

Mr. George Clothier, Government Mining Engineer for the Northeast section of British Columbia, is completing his season in the field by a visit to the Marmot River District. This section has produced some rich silver-gold ore. The first shipments were from the two Marmot Properties—North Fork Basin, owned by William Fraser and Associates the Montana, owned by H. C. Magee and George Bruggie. Lack of transportation facilities made these shipments costly although the properties were only a short distance from tidewater. A number of new locations have been made along the Marmot during the summer and what development has been done has given satisfactory results. It is likely that Mr. Clothier will go into the Bear River section before returning to his headquarters at Prince Rupert.

The newly organized North Coast Branch of the Canadian Mining Institute held a meeting recently at Stewart B. C. with Major Angus Davis, general manager of the Dolly Varden Mine, as chairman and E. J. Conway, field engineer for the Granby Consolidated Mining & Smelting Co. as vice-chairman. Roy Clothier, of Stewart, acted as secretary.

E. E. Campbell, mine manager at Anyox for the Granby Company, in the course of an address, referred to the re-awakening of interest in the Portland Canal District said that he looked to Stewart and the adjacent mineral zone to develop into a really exceptional camp. While it was not generally known, the Granby Hidden Creek Mine was the biggest copper mine in the British Empire. The Dolly Varden, at Alice Arm, was a fine property in a splendid section and he looked for big things there. "I am not given to making prophecies" Mr. Campbell continued "but I prophesy that Stewart will become the chief mining centre in northern B. C. I travelled all over the northwest from Washington to Alaska when I was in the field for the Granby and I never saw a district with the possibilities that this has." Speaking of the aims and objects of the Institute and of work which it might undertake Mr. Campbell mentioned the matter of the removal, or at least the lowering of, the tariff on mining machinery. This duty was one of the chief obstacles to development, especially in the initial stages, the time when mining property required every encouragement.

Barkerville B. C.

Placer gold production in the Cariboo District this season has been considerably in excess of that of last and with development promised on Proserpine Quartz claim, which recently was acquired by eastern Canadian interests, considerable mining activity is assured next year. With reference to the quartz properties, R. A. Bryce who is in charge of the work of opening them up, states that about forty men will be employed during the winter. Word also comes from Stanley that what is described as an important gold strike was made by the Lightning Creek Hydraulic Limited where they are operating above the mouth of Amador Creek. The discovery was made by sinking a shaft about five hundred feet ahead of the face. Here they struck a channel apparently overlooked by the old timers. Manager L. A. Bonner states that the gold is heavy lead-gold and typical of the channel gold of this section. Although the season is well on he expects to make a substantial recovery before operations cease.

Grand Forks B. C.

The four units of the decrepitating plant of the Rock Candy Mill Mine which is situated some 20 miles from Grand Forks, have been installed and, A. R. Robertson, the superintendent, states, are giving entire satisfaction in operation. The Mill is working to capacity, ore, which is transported to the Mill from the mine by means of an aerial tramway, being handled at the rate of 100 tons daily. For the most part the flourspar is being shipped to chemical plants of the State of Indiana and other of the United States, although, of course, sufficient is diverted for the use of the Consolidated Mining & Smelting Co's Smelter, Trail B. C., this Company being the owner of the Rock Candy. A bunker of considerable capacity has been placed at the Mill from which the concentrates are loaded on cars for shipment and it is expected that the output henceforth will average eighteen cars a week.

Camborne B. C.

Development is to be continued on the Beatrice Mine and other properties of the New Era Mining Company throughout the winter. W. E. Morphy, managing director of the Company, has laid in the supplies neces-

sary to maintain the camp for the next six months and states that preparations are being made for much more extensive operations in the Spring.

Mr. Yip, Mining Engineer, a Chinese graduate of Camborne Eng., has been visiting the mines at Camborne. He has been engaged in a personal investigation of mining operations in the district with a view to the obtaining of practical knowledge that may be turned to account in the development of important mining leases held by his father in China.

Nelson B. C.

Hon. Wm. Sloan, Minister of Mines, visited the Slocan District in the course of a tour he has been making of the Eastern Mining Districts of the Province. He inspected a number of the well-known silver-lead properties of the district, among which was the Silver-smith, formerly known as the Slocan Star. Entering on the tenth level, where a good ore shoot was opened up last year, he explored the workings up to the eighth level. Mr. Sloan reports that the new concentrating plant, installed at Alamo by Clarence Cunningham is working well. Good process also is being made on the 200 ton concentrating plant at the Noble Five Mine, it being similar in type to that at Alama. On the Standard, formerly the banner producer of the district, new areas of promise are being developed. The McAllister, Surprise and Ivanhoe are other prospects mentioned by the Minister as being promising. Mr. Sloan stated that he always had been an optimist where the Slocan was concerned and now was more than ever convinced that his faith was justified. Mine operators took advantage of his presence to represent the desirability of the construction of a road connecting the communities of New Denver and Sandon and also of providing means of transportation by wagon road with Nelson by way of Slocan City. Mr. Sloan expressed his appreciation of the benefit these works would be to the mining industry and promised to do all he could to assist in securing the necessary appropriations.

The Evening Star Property, Dayton Creek, near Slocan City, is being opened up with satisfactory results according to William Moore, the Manager. The mine buildings are completed and winter supplies are now being transported to the mine, which is situated at an altitude of 5,000 feet. In the workings the tunnel found the ledge, which now is being followed in the direction that eventually will bring the tunnel under the shaft. A granite dyke 20 feet in width, materially cut down the rate of progress in the drift but the face is again in the vein and two shifts of hand drillers are making good progress. It was Mr. Moore's intention to re-open the Silver Nugget, an adjacent property, this year but it has been decided to defer this work to next season.

That immediate action should be taken by the Dominion Government towards the establishment in the Province of an Ore Testing Plant is the strong and unanimous opinion of members of the Nelson Board of Trade, as well of the mine operators generally throughout the Kooteney and Boundary Districts. The Government has already provided the finances for the enterprise but as yet has taken no steps to construct necessary buildings and install the plant. There has been some discussion as to the most suitable site but it is thought that Nelson, now that it does not seem likely to go to the B. C. University, Vancouver, will

be chosen. Arguments for the proposed testing plant are well set out in a telegram forwarded by the Nelson Board of Trade to the Ottawa authorities which, in part, reads as follows:

"It is imperative that the Government should take up the question of the treatment of complex ores. Hon. Mr. Sloan, Provincial Minister of Mines, in discussing the matter, referred to the instance of the Consolidated Company of Trail, who have for years been experimenting with the ore from their Sullivan mine, spending several thousand dollars in the work and who now have made a complete commercial success of the treatment of these ores. It also was shown that such properties as the Slocan Star, the Cork-Province, the Rosebury-Surprise, and the Noble Five are now in a position to treat their ores to the best advantage, but only after constant, tedious and expensive research and experiment.

"It is self-evident that while wealthy corporations such as those mentioned can afford to undertake the risk of making large expenditures in that direction it is quite beyond the means of smaller concerns and individual owners to do so. It may be well to state here that the aggregate of the holdings of that class of owners covers by far the larger part of mining properties of the Province, which could be made productive on a paying basis.

"Therefore the meeting, after listening to the possibilities of the mining industry from competent authorities was unanimous in claiming that it was the duty of the Government to provide a suitable Plant, which will give the smaller concerns the necessary facilities for ascertaining the proper and most economical treatment for their complex ores."

Among other improvements decided upon by the Nugget Mines Ltd. in connection with the development of their properties at Sheep Creek is the re-building of the broken portion of the pipe-line from the north fork of Sheep Creek, only the line from the south fork having been in use since the new Company took over the Nugget and the Motherlode mines. This condition led to a water shortage at the Motherlode Compressor during the recent dry season which it is not intended shall be experienced again.

At the annual meeting of the Eureka Copper Mines Ltd., held recently at Nelson, officers were elected as follows: President, J. J. Malone; secretary-treasurer, J. G. Bunyan; directors, J. A. Gibson, L. K. Larsen, and J. G. Bunyan, of Nelson, and S. G. Campbell, of Vancouver. The property of the Company, the Eureka Gold Mine, Eagle Creek, is under lease and bond to the Inland Mining Company, of Walla Walla Wn., which has grouped it with the Granite-Poorman Property, the mill of which is crushing Eureka ore.

In this connection it is interesting to note that the Granite-Poorman Mill is to have its capacity increased from 50 to 150 tons, that the right-of-way now is being cleared on the line recently surveyed for the new 6000-foot link of aerial tramway from the Eureka workings to the upper terminal of the Granite-Poorman tram, and that the offices of the Vincent Development Company, which is developing and operating the properties for the Inland Mining Co., are to be moved from Walla Walla to Nelson. The Mill, which has been operating for months on ore taken from No. 2 or the main working level of the Eureka, is to be closed down in order to undergo a thorough overhauling and also to permit the extension proposed. The existing Granite-Poorman tramways also is to be put in shape, so that it will be ready to operate in conjunction with the Eureka section when the latter is completed.

A development of the last two months is the opening up of a new ore body on the main working level, which has been explored by drifting a distance of 150 feet, with the face still in ore. The closing of the Mill will not interfere with the continuance of development

on this new ore body nor the work of the crosscut on No. 4 level, which is now in 500 feet.

Trail B. C.

Much interest has been aroused among British Columbia mining men by a statement made in London England recently by J. J. Warren, president of the Consolidated Mining & Smelting Co. of Canada. Mr. Warren is engaged in negotiating the sale of the company's zinc output. He said that the market possibilities for the company's product in Europe, South Africa and India are unlimited as regards the disposal of zinc. Canada can supply 10 per cent of the world's demand, equal to 780,000 tons of zinc, and is only producing 25,000 tons. Mr. Warren further stated that the impression he has gained is that the condition of the market warrants expansion to supply these 780,000 tons and he foresees no difficulty in arranging for increasing smelting facilities.

This statement, taken with the recent pronounced activity of the Consolidated Mining & Smelting Co. in British Columbia, is regarded as significant. For instance there is the report, as yet unconfirmed officially but believed to be authentic, that the Company proposes to install a large concentrating plant at Kimberley for the purpose of treating the ores of the Sullivan Mines, which are the largest producers of zinc ore in this Province and which possess almost unlimited reserves of such ore. It is the opinion of competent mining men that if the Company decided to work these mines on a big scale, and encouraged considerable increases in production on the part of independent owners of silver-lead-zinc properties, the production of British Columbia could be brought to the point indicated. In considering this matter it should be borne in mind that the Company's metallurgists at Trail B. C. have solved, according to official announcement, the problem of economically treating the complex ores of the Kootenay Districts.

Ore receipt in gross tons for the week from October 1 to the 7th inclusive at the Trail Smelter of the Consolidated Company aggregated 4,072, making a total for the year of 262,395 tons. The largest independent shipper was the Josie Mine, Rossland, with 502 tons. Next came the Mandy, of Le Pas Manitoba, with 468 tons. Other considerable contributors were the North Star, Kimberley, with 404 tons; the Black Bear, Rossland, with 231 tons; the Blue Bell, Riondell, with 183 tons; the Lone Pine, Republic Wn., with 114 tons; and the Highland, Cedar Creek, with 104 tons. The effect of the strike of miners at the Sullivan Mine, Kimberley, owned by the Company, is clearly evident, shipments having dropped to 62 tons, so that the only Company mine shipping in quantity is the Centre Star, of Rossland, which shipped 1400 tons of ore.

Prince Rupert B. C.

V. H. Todd, one of the engineer's staff with the Granby Consolidated Mining & Smelting Company, has returned to the coast after spending the season in charge of diamond drilling operations on properties in which the Company is interested on the Eestall River, about 30 miles south of Port Essington B. C. Mr. Todd says that there are a number of men employed there at present but that the work will be closed down shortly for the winter. There are a number of promising prospects on the Eestall and it is likely that the Company will start operations on a large scale next year.

Atlin B. C.

The gold output of the Atlin (B. C.) District for the season of 1919 is placed at \$250,000, a considerable decrease in comparison with the usual production of approximately \$400,000. Lack of men is given as the reason for this falling off by Frank Mobley M. P. P., who returned recently from Atlin, and who is the owner of the Discovery Mining and Power Company. He stated that the output of this Company will total \$25,000. It is situated on Pine Creek and has been in operation all summer. Mr. Mobley does not expect that the profits will be great because of the increased costs of labor, equipment etc. He further asserts that only about 150 placer miners have been at work in the district this season, most of whom were engaged on Spruce Creek.

With reference to the Engineer Mine, one of the best known and probably the richest lode property of the Province, Mr. Mobley explains that, owing to the drowning of its owner Capt. Alexander and his wife when the Star "Princess Sophia" was wrecked last year and to the subsequent death of his heir at Pittsburg, no work has been done this year.

Dawson Y. T.

Navigation on the Yukon River was closed on the 8th of October. The movement of Yukoners to the Coast for the winter was not as great as usual, owing chiefly to reports of unrest on the outside and to the fact that silver mining prospects are very bright in Mayo, Twelve Mile and Fairbanks camps, where many will be engaged. The usual winter gold mining also requires many men.

Robert Leeson, a sourdough of the Klondyke, has left Dawson for Ulster, Ireland, to claim the title and estate of the Earl of Milltown, which is reported to carry with it an ancient castle and many valuable properties. Leeson is a member of the Yukon Order of Pioneer. He has been engaged for years in placer work in the Yukon and all this summer wielded a 20 pound sledge in the Guggenheim mines. No big strike came the way of Leeson who left to claim his heritage clad in a brown woollen shirt, hobnailed boots, and with his baggage slung over his shoulder.

Nome, Alaska

Prospectors recently returned to Nome report an interesting discovery near the head of Norton Sound of a large deposit of red ochre, valuable for its paint making properties. Natives say that their people have used as material for coloring purposes for generations. The same prospectors also found a vein of hematite seven miles from Norton Bay Mission. A tunnel some fifty feet deep, penetrating into the cliff side, and exposing at its extreme depth a ledge of ore about 10 feet wide, was disclosed by the clearing away of debris at the entrance. The theory is that this property was the scene of ancient mining operations, although none of the natives seemed to know anything of such work there during their lives nor to have any knowledge of any legend relating to the same.

Salmon River B. C.

In the Salmon River District, Portland Canal, Northern British Columbia preparations already are being made for winter by the various mining companies. It may seem early for this but the snow comes early and

stays late in the hills of this region. While it is impossible as yet to say just how many men will be employed in the various camps throughout the winter it is certain that there will be a substantial payroll and that the centres of Stewart and Hyder will continue to be quite bustling and active throughout the closed season.

Among the companies which will continue to operate are the Premier, Bush, Big Missouri, Forty Nine, Mineral Hill and the New Alaska, the latter being on the Alaska side of the boundary line. These all are in the Salmon River section. On Bear Creek it is expected that the Lakeview, recently bonded by P. Welch and associates, and possibly the George Copper Properties, will maintain operations. While all these properties are reported to be in such shape that work can be continued through a hard winter the mainstay will be the Premier on which a considerable force will be employed. During the summer the efforts of the Premier Company have been devoted to a large extent to road building, and this necessity to ready transportation will be completed soon. On the Big Missouri diamond drill operations thus far are said to have been highly satisfactory. A similar report comes from the Forty Nine Property on which drilling is in progress. It is said in regard to the latter, that the short tunnel which was driven to intersect the vein encountered high grade ore which is being drifted on.

Generally those interested in Salmon River Properties are satisfied with the season's work. The development on many properties has been almost all that was hoped for—it would be difficult to get results that would be 'all that was hoped for'—and mine operators and prospectors are looking forward to next summer.

With reference to the Lakeview it is announced that work again has started on this group of claims. Spokane interest had the property optioned but let the property go after a little work. P. Welch and H. J. Fetter then took up the bond and development will proceed under the direction of Al. Harris, superintendent of the Mineral Hill. The Lakeview is situated on the north fork of Glacier Creek, about two and a half miles from Bear River. At the outcrop the vein is nine and a half feet wide. It is considered a promising property.

It would appear from the reports of prospectors who have been engaged on the Naas River side of the slope, as well as from samples with which they have returned, that the Salmon River formations and character of ore extends further than was originally figured. The Spider prospect, which is said to be very promising, is in this area. Besides miners have brought specimens from claims staked nearby which are shot with native silver. Some high grade ore also have been brought from the late discoveries across the glacier from the Big Missouri. There are a number of locations there and on property known as the Motherlode Group a wide vein of this ore has been uncovered. George Clothier, government engineer, intends visiting this ground before returning south.

Slocan B. C.

The concentrating mill in connection with the Noble Five Mine at Cody B. C. is in shape for the installation of the machinery. When completed it is expected to be the most complete mill in the Province.

THE COLLIERIES.

Returns of the production of a number of the Vancouver Island Collieries for the month of September follow:

No. 1 Mine, Canadian Western Fuel Co.	27,340
Harewood Colliery, "	19,302
Reserve Colliery, "	5,453
Modern Colliery, Pacific Coast Coal Mines . .	5,501
Jingle Pot Colliery, B. C. Coal Mines Co. Ltd.	3,344
Grant Colliery, Nanoose Coal Mining Co Ltd.	2,306

From the above figures it will be seen that the Reserve Mine, of the Canadian Western Fuel Co., although re-opened, is not yet up to normal in its output.

The coal mines of the Crow's Nest Field, Eastern British Columbia, are gradually being brought back to normal in point of production, although it need scarcely be said that it takes time to recover lost ground after a strike such as that through which the district has passed. The output now is about 80 per cent of what it was and an improvement is being shown each month. The coke ovens at Fernie are idle and it is thought likely they will remain so for some time. Those of Michel B. C. are operating only on a limited scale, the demand for the product being comparatively light at present.

The collieries of Vancouver Island are working steadily, there being no signs at the moment of anything but the best of feeling between the employed and the employer. Generally speaking the miners are working on the understanding that, with further increases in the cost of living, their wages advance. This applies to most with the exception of the Canadian Western Fuel Co., and the relationship between the latter and its men, as a result of the recent adjustment of the wage question, is of the best. The product, for the most part, is being used to care for the domestic demand which now is heavy because of the approach of the winter. From North Vancouver and other district comes the report that difficulty is being experienced in obtaining sufficient to take care of current orders. For this reason there is a belief that a shortage of coal may be experienced before the spring. This, however, is speculation. Responsible opinion appears to be that the collieries can be depended upon to take care of the local situation and, in any event, there is no serious shortage as yet.

At the annual meeting of the Mine Rescue and Ambulance Association of the Canadian Western Fuel Co., which was held recently at Nanaimo, J. Thompson was elected president; E. V. Paterson, secretary-treasurer, with J. W. Jensen as assistant; and to the Executive Committee, in addition to the chairman of the various committees, were appointed W. H. Moore, George Yarrow and George Moore. A feature of the proceedings was the presentation of \$100 to the winners of competitions at the Labor Day Meet in Nanaimo under the auspices of the Mine Safety Association of Vancouver Island. Mr. Moore explained these prizes were not in the nature of payment but were provided by the Company in recognition of the hard work to which the men had been subjected in preparation. The recipients were members of teams captained by J. W. Jensen, George Carson, J. Barton, J. Brown, A. Mc-

Neill, R. Channoek, J. McCourt, and M. Guinniss. It was decided that a paper on first-aid work would be delivered monthly before the members of the Association. This is only one of the arrangements made to sustain interest during the ensuing few months and to promote the object of the Association, namely, the equipping of every miner for practical help in case of need.

The Coalmont Coal Mining Co. is producing about 150 tons a day. The coal is shipped to the Kettle Valley Ry. by truck. Negotiations are in progress for the construction of a railway spur to the property which has turned out well under development.

The recent litigation with reference to the title to coal rights within the foreshore lands of the Eastern Coast of Vancouver Island, which now is declared to lie with the Province, and the report that steps may be expected towards the opening up of the coal deposits of Suquash and vicinity on an extensive scale, have made the reports of Dr. Charles H. Clapp and Dr. B. D. Dowling, the two principal geologists to investigate this area, of special interest. Dr. Clapp in his report on the industry in Memoir 51 of the Geological Survey Series, says:

"The future of the coal industry is very promising, although thinner and deeper coals will have to be mined in the near future. As already stated, two new shaft mines have reached the Douglas seam in area of 181 square miles."

In his estimate of coal resources Dr. Clapp places the production at 24,500,000 tons up to 1912 and it recently estimated that the figure now would stand at about 30,000,000 tons. Dr. Dowling places the probable resources of the Nanaimo field at 1,340,000,000 tons.

The coal occurs chiefly in the lower part of the Nanaimo series in three seams, the Wellington, the Newcastle and the Douglas. The lowest seam, the Wellington, lies at the base of the Extension formation and rests on the East Wellington sandstone, and is about 700 feet above the base of the Nanaimo series. The Newcastle seam occurs at the base of the Newcastle formation, and overlies the Wellington seam by about 800 to 1,000 feet. The Douglas seam is contained in the Newcastle formation and from 25 to 100 feet above the Newcastle seam.

The coals of the various mines are as a whole much alike, and are high volatile bituminous coals of fair quality. The amount of fixed carbon in the best quality ranges from 45 to 60 per cent and the ash from 5 to 10 per cent. The coal, especially that from the Wellington seam, coke readily.

The aerial tramway from the Sovereign Mine to Sandon is in operation, having been completed about two weeks ago. The designing and building was carried out under the direction of E. O. White. The length of the tram is 8000 feet, the longest span 1700 feet, and the highest tower 98 feet. It is one of the finest aerial tramways in the Slocan District and was commenced on May 8th last.

WANTED—Young man with mining or chemical engineering education, to take laboratory position with opportunity for advancement. Reply giving full particulars and references to care, Secretary, Canadian Mining Institute, 503 Drummond Bldg., Montreal.

The Board of Trade of the City of Prince Rupert is bringing to the attention of the Canadian Government the importance of the construction of a branch railway to connect the Grand Trunk Pacific Ry. with the Groundhog Mountain Coal Fields of British Columbia. A recent resolution asks that an investigation be made of the most feasible route for such a railway and gives many reasons why the authorities should interest themselves in the enterprise. Among the latter is that the Groundhog coal field, which lies undeveloped, "embraces an area of between forty and seventy square miles in which competent geologists report are situated extensive coal deposits, the quality of the coal varying from bituminous to a high class anthracite, not surpassed by the best Pennsylvania products." Also that within the same area are important metal mining possibilities at present dormant and that the question of fuel supplies under the protection of the British flag has an important bearing on our national life.

NORTHERN ONTARIO.

The Prince Visits Cobalt.

The Cobalt mining camp on October 16th extended a fitting welcome to His Royal Highness the Prince of Wales. Miners, prospectors, ladies, children, business men and northerners of many different tongues, races and creeds mingled in great masses on the principal streets and along the route of the Royal procession as it wended its way through the silver city and to the mines. Never before in the history of the North has such a scene been witnessed. Never in this country's past has the citizenry paid such tribute to even a Royal personage, and never has the people so long noted for their lack of impulse been seen to throw their traditional reserve aside and offer spontaneous welcome. It was a scene unprecedented in the North and a fitting tribute to their future King.

Following the addresses of welcome and the presentations the Royal party was conveyed in a long train of automobiles, first to the Coniagas mine and had a brief view of the silver ore in process of milling. After this, the refinery of the Mining Corporation of Canada was visited, where His Royal Highness witnessed the molten silver being poured out into bars. The party next proceeded to the O'Brien Mine, by way of the McKinley-Darragh and Kerr Lake mines. At the O'Brien the Prince was taken into the mine and permitted to view in person the underground workings and see in actual application by which the silver mines of Cobalt have added more than three hundred million ounces of silver to the wealth of the British Empire.

THE GOLD MINES.

Hollinger Production.

When during the twelve weeks ended Sept. 9th, the Hollinger mine produced \$1,673,220.12, it showed an average of \$557,740.40 every four weeks of which some \$295,373.48 was net profit.

For the year to date, according to official figures the output has averaged \$537,760.61 every four weeks. Taking the latter figures as a basis of calculation the output for the current year will approximate \$7,000,000. The rate of gross production as shown in the last twelve weeks covered by the report just issued would approximate \$7,246,287.10 a year.

During the year to date the mill of the Hollinger has been running at only 69 per cent. of possible running time due to the shortage of labor. As evidence of a higher rate of earnings, the company realized a net profit of \$295,373.48 every four weeks during the twelve weeks ended Septmbr 9 as compared with an average of \$267,320.82 every four since the beginning of the year. This would indicate a net profit of \$3,475,170.66 for the whole of the current year, and by utilizing equipment at only a little over two-thirds capacity This is at the rate of about fourteen per cent. on the companies issued capital. From this must be deducted about \$300,000 at the cost of expenditures for the plant, thus reducing net profit to about 12½ per cent.

It can therefore be seen that the predicted 1 per cent. dividend every four weeks instead of every eight weeks as at present will depend upon whether or not more men can be secured. In order to disburse 1 per cent. four-weekly, a net profit of \$246,000 is necessary every twenty-eight days, after making due allowance for expenditure on plant as well as providing for depreciation of plant. Only a slight increase in output is all that is necessary to see this realized, and as the end of the year approaches interest is centering keenly on the outlook for a greater quantity of labor.

A group of claims owned formerly by the Boyce Syndicate in the Porcupine district, has been taken over by new interest and will be known as the Gold Centre Mines Ltd., with an authorized capital of 3,000,000 shares of the par value of \$1 each.

The property consists of 160 acres and lies about one mile east from the productive area of the Hollinger Consolidated, and is in a section of the camp where only a limited amount of work has been so far undertaken. Statements emanating from Porcupine declare that the property adjoins the Hollinger. While this is true, it is mis-leading for the reason that the part of the Hollinger which the property adjoins is a fraction about one mile in length which stretches straight east from the main group of the Hollinger. This easterly strip of Hollinger territory has never been productive. The property is also situated about three-quarters of a mile from the productive area of the McIntyre-Porcupine.

The Gold Centre has the advantage of being situated on the railway, and also has the transmission line of the Northern Canada Power Company passing over it. Due to only a limited amount of work having been previously carried on in that section, its exploration would be important inasmuch as it would tend to indicate the possibilities of carrying on successful work on a number of other promising properties in that area.

THE SILVER MINES.

During the last six days in September the Nipissing mine produced an average of about \$11,000 a day, or a total of \$66,395, the mill having been opened on the 24th.

In his regular monthly report to the president and directors, H. Park, manager says.—The recent strike, called by the Western Federation of Miners on July 23rd, was called off on September 8th. Dewatering the several shafts was commenced immediately and by September 24th sufficient levels were accessible at the 73 shaft to start the low grade mill, which has been running at capacity ever since. General opera-

tions underground will gradually be increased to normal as lower levels become available.

During the month of September the company mined ore of an estimated value of \$66,395 and shipped bullion and residue from Nipissing and custom ores of an estimated value of \$648,737. The lowgrade mill treated 1721 tons of low grade ore. The new high grade plant treated \$130 tons. The refinery shipped 525,695 ounces of fine bullion.

The following is an estimate of production for the month of September:—

Low grade mill	\$49,907
Washing Plant	616,488
<hr/>	
Total	\$66,395

During the month of September the Kerr Lake mine produced upwards of 60,000 ounces of silver. The strike was called off only on Sept. 7th, after which date it can be seen that production averaged not far under \$3,000 every twenty-four hours, or an almost normal average. This represents one of the quickest recoveries from the effects of the strike some of the leading mines have occupied from one to three weeks to recover.

The foregoing achievement appears to indicate a probability of the current fiscal year being quite profitable for the Kerr Lake.

The Lake Shore Mine has already secured sufficient men with which to resume production at full blast. But for the necessity of installing a conveyor to transport ore from the surface dump to the mill pending the completion of the pumping out of the mine, production would have been reached a few days earlier.

No further labor difficulties are anticipated in that the men have broken away from the influence of the Western Federation of Miners' and have decided to cooperate with the company for the best interests of themselves and of the mining industry.

The correspondent of the "Journal" is officially informed that as the result of exploration work on the Gans lot of the Temiskaming mine, considerable success has been met with, some rich patches of ore being encountered.

In the South end of the Gans area, where a considerable amount of development work had been previously done without any successful results, the discovery of silver-bearing ore was made on April last, upon which efforts have since been concentrated in the endeavor to prove its extent and value.

The occurrence exists in the 506 vein where a small patch of ore was first found in a raise put up above the 500-ft. level. Three raises have since been driven to a height of 70 feet and at 35 feet above the 500-ft. level a sub drift has been extended for a length of 115 feet. The vein, which is showing for this length, averages 3 inches in width but is of very uncertain character, occasional rich patches of ore alternating with barren sections so that it has been impossible, so far, to make any definite statement with regard to its possibilities from a productive point of view.

The policy adopted by the company endeavoring to prove its prospective value before publishing information was done entirely in the interests of the shareholders, says an official, and results have shown that

any premature announcement of the discovery would have been advisable in view of the possible disappointment.

Further development work is being actively prosecuted by continuation of three raises at intervals covering a length on the vein of 220 feet, and the extension of the South drift at the 400-f. level to connect these.

While the work above described has been in progress, exploratory work in the older workings at the South end of the 575-ft. level, in the vicinity of the Keewatin-diorite contact has proved successful in locating a body of good grade milling ore. In addition, one or two small pillars of high grade ore have been extracted which have helped to maintain the output on a paying margin during development of the 506 vein in the Gans section.

COLLAPSE OF THE KIRKLAND LAKE STRIKE.

The decision to resume production at the Lake Shore and at the Teck-Hughes mines, at Kirkland Lake, marks the complete collapse of the labor strike which commenced there on June 12. The statement of D. L. H. Forbes, manager of the Teck-Hughes mine published in the "Journal" of last week makes the situation quite clear. In referring to the men now being engaged, and the efforts of the radicals to dissuade them from going to work, Mr. Forbes used this crisp phrase:—

"Our answer to this is that the men we are now engaging are the real employees who will have permanent employment in this district, and, the socialists, by their unfair tactics and greedy scheme to create a monopoly of labor here, have forfeited any right they may ever have had to be considered as our workmen."

Such appears to express the general sentiment of the mine operators in the Kirkland Lake field, and, indeed, represents the sentiment of a majority of the employees. For considerable time these men have expressed a desire to return to work but have been prevented from doing so by the radical minority.

In regard to the question of wages and hours, which already compare favorably with other gold mining camps in the Dominion, Mr. Forbes has this to say:—

"Any alterations and adjustment of the wage scale or working hours must come as a result of conference and cooperation by the Workmen actually in their (the companies) employ and not as a result of a strike precipitated by socialist agitators most of whom were merely parasites on the real workmen of the district."

In the light of the foregoing assertions, the labor strike in the Kirkland Lake field has been a success not alone for the mining companies, but equally so for the real workmen of the camp. By reason of the ridiculous situation created by the radicals the workmen have become freed from the insidious presence of the "red element" which has made Kirkland Lake its rendezvous for the past two or three years. The real workmen are now in a position to discuss questions with the mine managers and join whole heartedly in the general invitation to cooperate for the general good of the mining industry. This puts the companies in a position where they may lay their future plans with a knowledge that they will be dealing with intelligent men and not with disciples of Bolshevism and irresponsible persons.

It is interesting to note that, following the decision of the mines to resume work and break the strike, the union has decided to call off the strike.

ST. REMI KAOLIN DEPOSITS, AMHERST TOWNSHIP, QUE.

Memoir 113, just issued by the Department of Mines, describes the geology and mineral deposits of the southern part of Amherst Township, Labelle County, Quebec, with especial reference to the occurrence of kaolin near St. Remi. The Memoir is the work of M. E. Wilson of the Geological Survey.

The introduction to the Memoir states that although deposits of china clay are known to occur in numerous localities in Canada, they are of small extent and not of commercial importance. Furthermore, since kaolin commonly occurs in such relationships as to indicate that it has been formed as a product of surface weathering, and throughout a large part of Canada, the products resulting from such alterations have been, for the most part, removed by the erosive action of the continental glaciers, it is probable that deposits of kaolin, on the whole, are less abundant in Canada than in parts of the world where Pleistocene continental glaciation did not occur. The St. Remi occurrences are therefore of unusual importance to Canada.

A history of the development of the China clay deposits is given, which is as follows:

In the summer of 1894, Milion Thomas, while digging a well on the farm of Philibert Tasse, encountered kaolin at a depth of 15 feet and sent a small quantity of the material to Richard Lanigan of Calumet, who identified the sample as kaolin and purchased the right to mine the material from the owner of the property. No attempt was made to determine the extent of the deposits at that time, however, and it was not until 1911 that actual development work on the deposits was commenced.

In the autumn of 1909, Mr. F. R. Lanigan, of Montreal, acquired from the government the mining rights to parts of lots 4, 5, 6, 7 and 8, range VI, south, Amherst township, and in 1911, having leased these rights to Mr. J. C. Broderick of Montreal, formed the St. Remi Kaolin Company, to take over the ownership of the property. In 1911, some development work was performed and the construction of a washing plant begun by Mr. Broderick, and in 1912 the Canadian China Clay Company was organized to continue mining operations under the terms of Mr. Broderick's lease. In 1913 the Canadian China Clay Company purchased the mining rights to parts of lots 4 to 8, range VI, south, Amherst township, from the St. Remi Kaolin Company; the mining rights to parts of lots 2 and 3 and additional parts of lots 2 to 8, range VI, south, Amherst township, from the government; and the surface rights to all these lots, from the local owners. Since that time the washing plant on the property has been enlarged, some trenching, stripping, and drilling for the purpose of developing the deposits completed, and several thousand tons of kaolin produced. Prior to 1916 the washed product had to be transported by wagon to Huberdeau, the terminus of the Huberdeau branch of the Canadian Northern railway, but in that year the railway was extended to the china clay deposits so that the cost of transportation from the mine has been greatly reduced.

The only known deposit of kaolin in the district, outside the area owned by the Canadian China Clay Company, occurs near Pike creek, on lot 8, range 4, Amherst township, and is owned by Mr. A. Lanigan of Calumet. This deposit, which had been known to Mr. Lanigan for a number of years, was staked by him in December, 1911.

The St. Remi occurrence of kaolin is unusual in that it appears to have been deposited within a fracture zone, and the indications are that the mineral was not developed in place, but was carried into the fractured zone from an outside source. Since the deposit is largely hidden by the boulder clay the extent of the mineral present is not even approximately known, but the enormous size and abundance of the kaolin leads so far bare by trenching and stripping indicate "that there are good prospective possibilities for the discovery of enormous masses of the material.

In the St. Remie district there is also some graphite, associated with a ridge of Grenville limestone, but apparently the deposits are too irregular and discontinuous to be profitably mined.

The Memoir is accompanied by a number of good photographs, and two maps. The general geology of the district and the rock characteristics are exhaustively described.

HAIL HOOVER!

Old Abou Ben Adhem, in his "deep dream of peace"
Had nothing on Bert Hoover with his war bread recipes;

For Abou loved his fellow men, according to the scribe,
While Hoover loved and fed them too, of every race and tribe.

Through war's dread reign he garnered grain in all the seven seas;

To every famine-stricken land he sent his argosies.

That he's our leading dough-boy is clearly manifest;
In head-lines and in bread-lines "his name led all the rest."

Then cheer, cheer for Hoover, the mining engineer,
Philanthropist and statesman and matchless financier!
No chronicle of history a worthier feat narrates.

Thrice welcome, Herbert Hoover, home to United States!

Anon.

—From the A.I.M. & M.E. Bulletin.

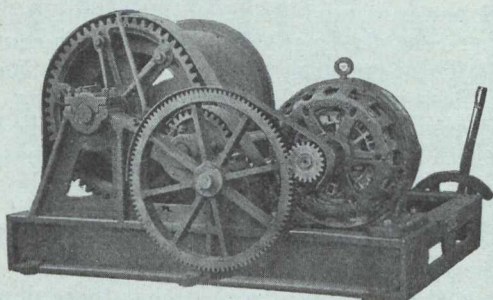
MINERAL OUTPUT OF THE U.K.

The statistics of the mines and quarries in Great Britain and Ireland during the year 1918 are dealt with in the report of the Chief Inspector of Mines, and issued as a White Paper by the Home Office.

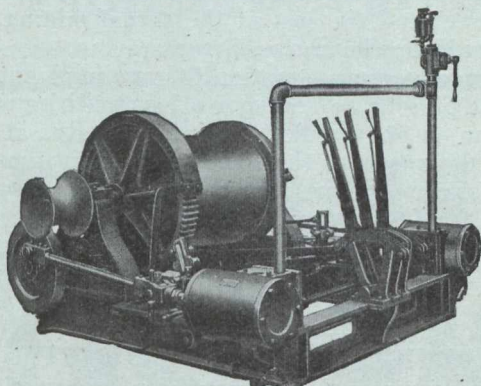
The principal outputs of minerals were: Coal, 227,748,654 tons, as against 248,499,240 tons in 1917; iron ore, 14,613,032 tons, as against 14,845,734 tons; and limestone, 10,156,603 tons, as against 10,454,717 tons. The grand total output of all minerals was 273,988,449½ tons, as compared with 295,401,139½ tons for 1917.

OBITUARY.

We regret to record the death at the age of 40 of Duncan McD. Campbell, B.A., B.Sc., a member of the Provincial Board of Nova Scotia, and formerly Engineer of the City of Sydney. Mr. Campbell, in his professional work as a civil engineer, has taken an important part in the civic engineering associated with and arising out of the industrial development of Sydney, Nova Scotia. He was highly regarded by brother engineers in Nova Scotia, and although of a retiring and studious nature, is widely regretted by all who had occasion, through personal acquaintance, to know how conscientiously he carried out his professional duties, and his sterling personal character.



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Choice of 7 sizes in either Electric or Steam Hoists, ranging from 10 H. P. to 50 H. P.

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LIMONITE DEPOSIT NEAR LILLOOET, B.C., FROM OUR B.C. CORRESPONDENT.

Large deposits of limonite iron ore, carrying high percentages of mineral with small percentages of impurities, and suitable in a superlative degree for fluxing with the known extensive magnetite iron deposits of the Province in the production of pig iron, were reported some months ago on the Taseko (Whitewater) River, Clinton Mining Division. The exact location, it was ascertained subsequently, is some miles from Lillooet, not many miles from the Pacific Great Eastern Railway.

In compliance with the application of the stakers, and acting under the authority of the Mineral Survey & Development Act, Hon. Wm. Sloan, Minister of Mines, instructed Wm. Brewer, one of the government mining engineers, to visit and submit a report on these properties. This he has done and his findings, while his conclusions are general and his estimates no more than approximations owing to the short time he was able to spend on the ground, are of so favorable a character that Mr. Sloan felt further investigation to be important. To this end, with the approval and the consent of Hon. Martin Burrell, Minister of Mines for the Dominion, the services of S. J. Schofield, senior geologist with the Geological Branch, Ottawa, were secured. Mr. Schofield and party, accordingly, have left for the Whitewater, the former's instructions being to make as thorough an examination of geological and local conditions and to prepare a report at as early a date as possible. As this report may have a considerable influence on any action that may be taken by Capital towards the establishment of an iron and steel industry in the Northwest it is satisfactory to know that Mr. Schofield is a geologist of the highest attainments, commanding the confidence of the mine operators of America. He surveyed the Cranbrook Map Area, has done other important work in British Columbia and in Canada, and was engaged in a geological survey of the Britannia Geological Field of the time he was requested to make the trip to the iron deposits in question.

Mr. Brewer, referring to the quantity of ore on the Whitewater, states that "the superficial area covered by the various exposed deposits examined—is roughly estimated at four hundred acres, but there is a possibility of this extent being much larger because in places there are indications of ore deposits at present covered by tallus, grassy hummocks or hidden by timber. In estimating tonnage of actual ore, meaning thereby such quantity as development has exposed as measurable and immediately available, the only method to adopt in the absence of development work, is to credit the various deposits with an estimated average thickness, judged from experience in mining similar deposits." He then proceeds to estimate, with the foregoing qualification, as follows:

Actual Ore—7,200,000 tons carrying above 40% metallic iron.

Probable Ore—15,000,000 tons carrying above 40% metallic iron.

Possible Ore—50,000,000 tons carrying above 40% metallic iron.

"No consideration," it is added "is given to samples of partly mineralized rock which assayed 20.2 and 16.4 per cent iron."

Discussing the quality of the ore, Mr. Brewer states that assays of samples taken during the examination show that the material classed as ore contains from 41

to 50 per cent metallic iron; that four out of nine of these samples contained only traces of phosphorus, one sample 0.04 per cent, and the remaining four 0.23 per cent, 0.21 per cent, 0.85 per cent and 0.52 per cent, respectively. These results place five of the samples within the Bessemer limit, with the remaining four above the Bessemer limit, but not in excess for the basic or open hearth process of making steel. "These results," he continues, "show that the ore can be used either in a blast furnace as the entire charge of iron ore or will make a most desirable mixture for combination with the magnetite ore of the Province."

As to the cost of mining it is said that these deposits of limonite are so located and made up of such comparatively friable material that they can be mined with a steam shovel and the cost of the actual mining, it is figured, should not be above 25 cents a ton.

In reference to transportation it is pointed out that there are at present no transportation facilities nearer than Mission on the Pacific Great Eastern Ry., at least sixty miles distant from the occurrences of iron ore described. Therefore, before any statements can be made, relative to the future facilities, surveys are necessary to determine the most feasible route as well as the location of the manufacturing plant for treatment of the ore.

PORT ARTHUR DISTRICT VERY ACTIVE.

There are unmistakable symptoms of renewed mining activity in the mineral areas tributary to Port Arthur.

Iron and silver ores are the two most active factors in the revival. For the first time in twenty years this district will get credit for silver production, at least four mines will be operated continuously during the winter, and several others are being investigated.

Smith & Travers, of Sudbury, are diamon~~d~~ drilling the Leitch iron lands, and are meeting with extraordinary results. These lands are situated 130 miles east of Port Arthur, and about six miles north of the Canadian National Railway, at Beardmore station. Particulars of the results cannot be divulged at present. The drilling is being done for United States interest.

The Little Long Lake iron lands, principally owned by Capt. H. E. Knobel, J. W. Wolvin and John A. McKechnie, are on the same range as the Leitch lands. This tract has recently been examined by an Engineer of national reputation, who was greatly impressed by the length and breadth of the deposit, and the character of the ore showing on the surface. Diamond drilling has been recommended, with every certainty that large bodies of merchantable ore will be disclosed. The occurrence of specular hematite, so intermixed with medium and high grade magnetite as to bring up the tenor very perceptibly, makes this deposit very interesting.

Amongst the prominent Mining Engineers and Corporation representatives who have recently visited the Port Arthur area, are, Prof. H. E. T. Haultain, Toronto University, G. C. Bateman, La Rose Mining Co. Cobalt, W. L. Hughes, Mining Corporation, Cobalt, J. P. Sparks, Temiskaming Mining Co. Cobalt, R. G. McConnell, Deputy Minister of Mines, Ottawa, M. Davis, The M. J. O'Brien Corporation, Ottawa, R. Y. Taylor-Blount, London, Eng., J. B. Tyrell M. E., The Anglo-French Corporation, London, Eng., C. W. Knight, Assistant Provincial Geologist, Toronto, Mr. Spence-Thomas, Cardiff, Wales, Mr. J. C. Murray M. E., and many others.

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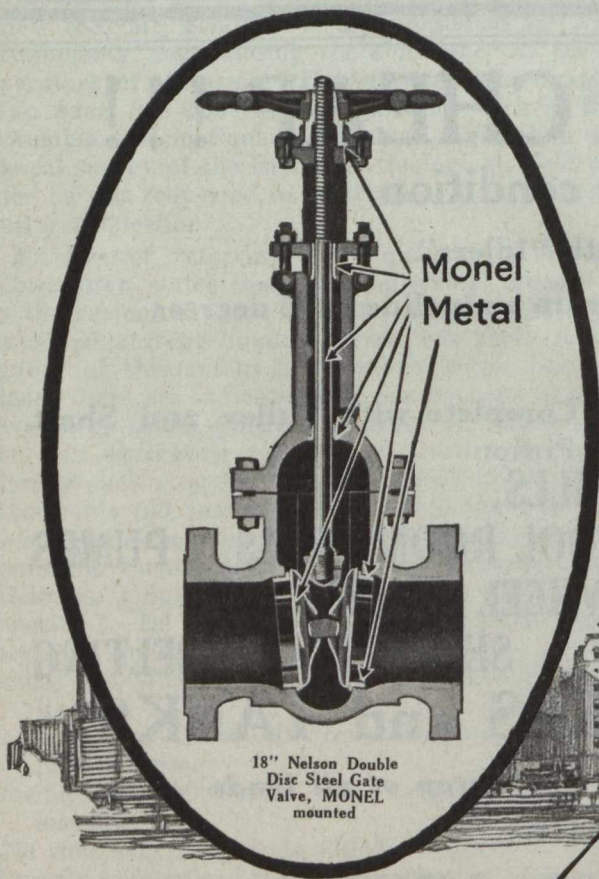
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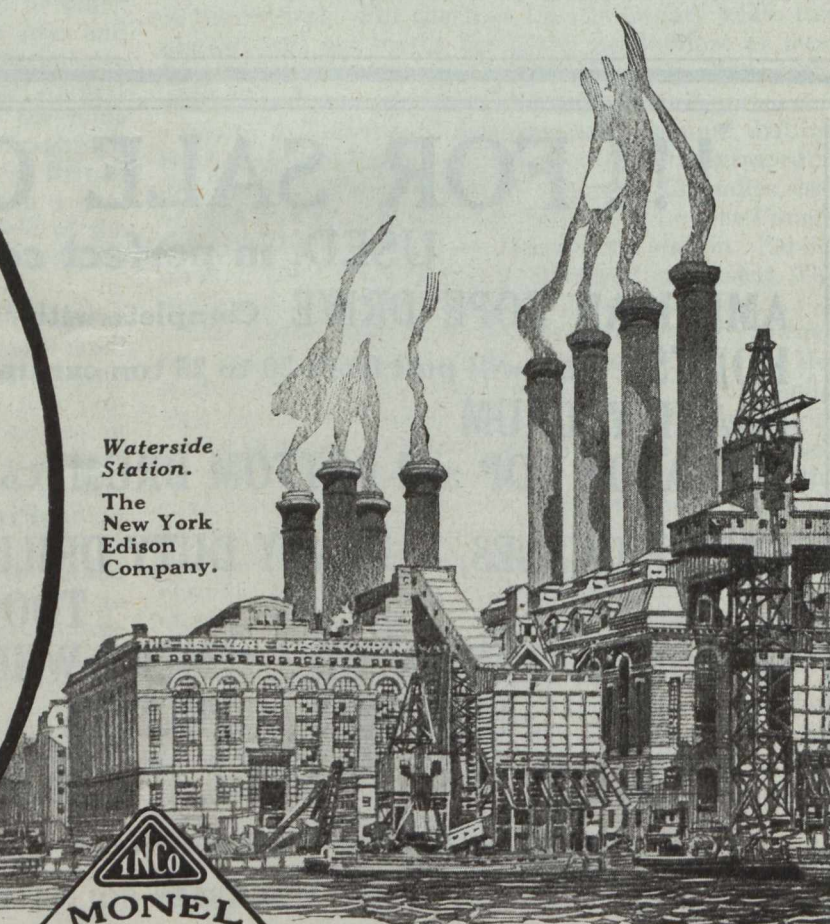
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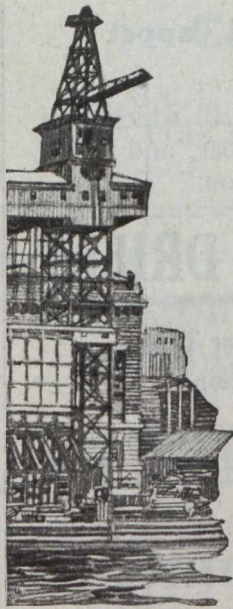
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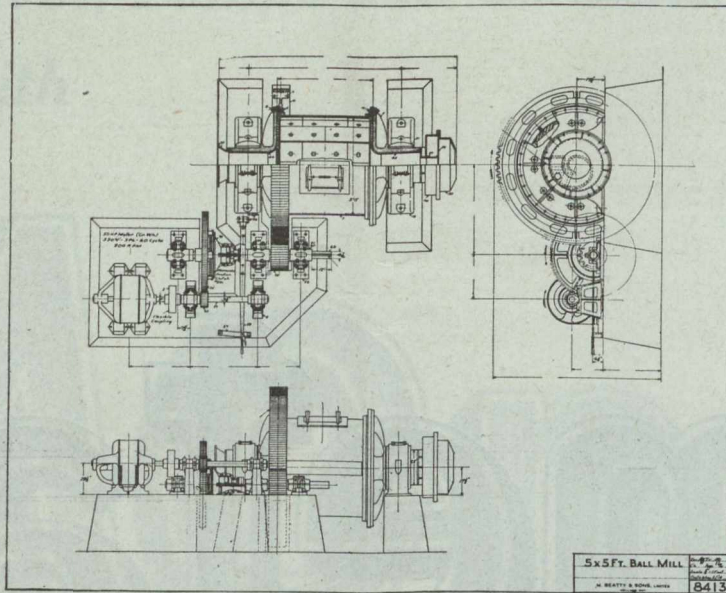
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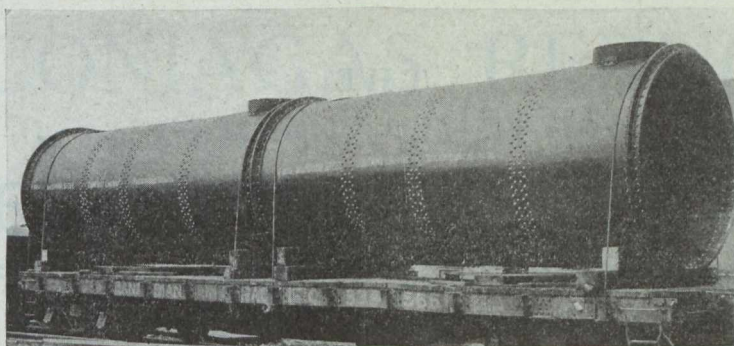
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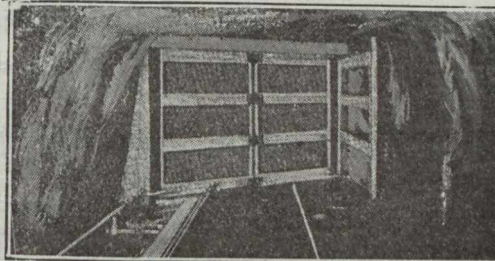
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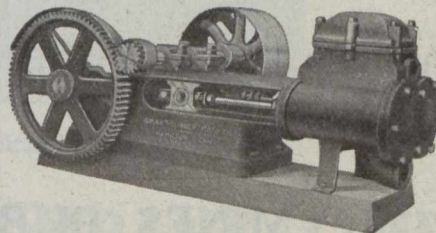
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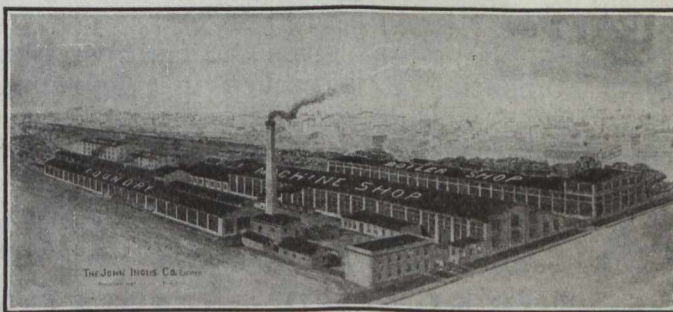
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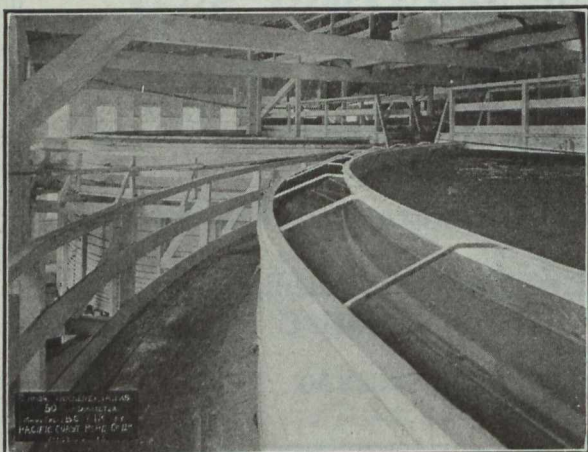
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Northern Canada Supply Co.
E. J. Longyear Company**Drill Steel—Mining:**Hadfields, Limited
Mussens, Limited**Drill Steel Sharpeners:**Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.
Sullivan Machinery Co.
Canadian Rock Drill Co.
The Wabi Iron Works**Drills—Electric:**Canadian Fairbanks-Morse Co., Ltd.
Sullivan Machinery Co.
Northern Electric Co., Ltd.**Drills—High Speed and Carbon:**Canadian Fairbanks-Morse Co., Ltd.
Hadfields, Limited**Dynamite:**Canadian Explosives
Northern Canada Supply Co.**Dynamos:**Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Company**Ejectors:**Canadian Fairbanks-Morse Co. Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Northern Canada Supply Co.**Elevators:**M. Beatty & Sons
Sullivan Machinery Co.
Northern Canada Supply Co.
Hadfields, Limited
Fraser & Chalmers of Canada, Ltd.
Mussens, Limited
The Wabi Iron Works**Engineering Instruments:**

C. L. Berger & Sons

Engines—Automatic:Canadian Fairbanks-Morse Co., Ltd.
Fraser & Chalmers of Canada, Ltd.**Engines—Gas and Gasoline:**Canadian Fairbanks-Morse Co., Ltd.
Alex. Fleck
Fraser & Chalmers of Canada, Ltd.
Sullivan Machinery Co.
Gould, Shapley & Muir Co., Ltd.
MacGovern & Co., Inc.
The Mine & Smelter Supply Co.**Engines—Haulage:**Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.
Marsh Engineering Works
Fraser & Chalmers of Canada, Ltd.**Engines—Marine:**Canadian Fairbanks-Morse Co., Ltd.
MacGovern & Co., Inc.**Engines—Steam:**Canadian Fairbanks-Morse Co., Ltd.
M. Beatty & Sons
R. T. Gilman & Co.
MacGovern & Co., Inc.
Fraser & Chalmers of Canada, Ltd.**Engineers:**

The Dorr Co.

Ferro-Alloys (all Classes):

Everitt & Co.

Feed Water Heaters:

MacGovern & Co.

Flood Lamps:

Northern Electric Co., Ltd.

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

MacGovern & Co., Inc.

Furnaces—Assay:Canadian Fairbanks-Morse Co., Ltd.
Lymans, Limited
Mine & Smelter Supply Co.**Fuse:**Canadian Explosives
Northern Canada Supply Co.**Gears (Cast):**

The Link-Belt Co.

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

Hardinge Conical Mill Co.

Grinding Wheels:

Canadian Fairbanks-Morse Co., Ltd.

Gold Refiners

Goldsmith Bros.

Canadian Miners' Buying Directory.—(Continued)

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

Canadian Miners' Buying Directory.—(Continued)

Motor Generator Sets—A.C. and D.C.

MacGovern & Co.

Nails:

Canada Metal Co.

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

The Mond Nickel Co., Ltd.

Nickel Salts:

The Mond Nickel Co., Ltd.

Nickel Sheets:

The Mond Nickel Co., Ltd.

Nickel Wire:

The Mond Nickel Co., Ltd.

Oil Analysts:

Constant, C. L. Co.

Ore Sacks:

Northern Canada Supply Co.

Ore Testing Works:Ledoux & Co.
Can. Laboratories
Milton Hersey Co.
Campbell & Deyell
Hoyt Metal Co.**Ores and Metals—Buyers and Sellers of:**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.

Perforated Metals:Northern Canada Supply Co.
Hendrick Mfg. Co.
Greening, B., Wire Co.**Pig Tin:**Canada Metal Co., Ltd.
Hoyt Metal Co.**Pig Lead:**Canada Metal Co., Ltd.
Hoyt Metal Co.
Pennsylvania Manufacturing Co.**Pipes:**Canadian Fairbanks-Morse Co., Ltd.
Canada Metal Co., Ltd.
Consolidated M. & S. Co.
Northern Canada Supply Co.
R. T. Gilman & Co.**Pipe Fittings:**

Canadian Fairbanks-Morse Co., Ltd.

Pipe—Wood Stave:Pacific Coast Pipe Co.
Mine & Smelter Supply Co.**Piston Rock Drills:**Mussens, Limited
Mine & Smelter Supply Co.**Plate Works:**John Inglis Co., Ltd.
Hendrick Mfg. Co.
The Wabi Iron Works
MacKinnon Steel Co., Ltd.**Platinum Refiners:**

Goldsmith Bros.

Pneumatic Tools:Canadian Ingersoll-Rand Co., Ltd.
Jones & Glassco
R. T. Gilman & Co.**Prospecting Mills and Machinery:**The Electric Steel & Metals Co.
E. J. Longyear Company
Standard Diamond Drill Co.
Mine & Smelter Supply Co.
Fraser & Chalmers of Canada, 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.
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.
M. Beatty & Sons
Canadian Ingersoll-Rand Co., Ltd.
Mine & Smelter Supply Co.
Fraser & Chalmers of Canada, Ltd.
The Wabi Iron Works**Pumps—Diaphragm**

The Dorr Company

Pumps—ElectricCanadian 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:**Sullivan Machinery Co.
Canadian Ingersoll-Rand Co., Ltd.
Hadfields, Limited
Mussens, Limited
R. T. Gilman Co.**Rails:**Hadfields, Limited
John J. Gartshore
R. T. Gilman & Co.
Mussens, Limited**Railway Supplies:**

Canadian Fairbanks-Morse Co., Ltd.

Refiners:

Goldsmith Bros.

Riddles:

Hendrick Mfg. Co.

Roofing:Canadian Fairbanks-Morse Co., Ltd.
Northern Canada Supply Co.**Rope—Manilla:**

Mussens, Limited

Rope—Manilla and Jute:Jones & Glassco
Northern Canada Supply Co.
Allan, Whyte & Co.

Canadian Miners' Buying Directory.—(Continued)

Rope—Wire:

Allan, Whyte & Co.
Greening, B. Wire Co.
Northern Canada Supply Co.
Mussens, Limited

Rolls—Crushing

Canadian Steel Foundries, Ltd.
Fraser & Chalmers of Canada, Ltd.
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.
Link-Belt Co.

Screens—Cross Patent Flanged Lip:

Hendrick Mfg. Co.

Screens—Perforated Metal:

Hendrick Mfg. Co.

Screens—Shaking:

Hendrick Mfg. Co.

Screens—Revolving:

Hendrick Mfg. Co.

Scheelite:

Everitt & Co.

Separators:

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

Shaft Contractors:

Hendrick Mfg. Co.

Sheet Metal Work:

Hendrick Mfg. Co.

Sheets—Genuine Manganese Bronze:

Hendrick Mfg. Co.

Shoes and Dies:

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

Shovels—Steam:

Canadian Foundries and Forgings, Ltd.
M. Beatty & Sons
R. T. Gilman & Co.

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:

Link-Belt Co.

Spring Coil and Clips Electric:

Canadian Steel Foundries, Ltd.

Steel Barrels:

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

Stamp Forgings:

Canada Foundries & Forgings, Ltd.

Steel Castings:

Canadian Brakeshoe Co., Ltd.
Canadian Steel Foundries, Ltd.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
Hadfields, Limited
The Wabi Iron Works

Steel Drills:

Canadian Fairbanks-Morse Co., Ltd.
Sullivan Machinery Co.
Northern Canada Supply Co.
The Electric Steel & Metals Co.
Canadian Ingersoll-Rand Co., Ltd.
Mussens, Limited

Steel Drums:

Smart-Turner Machine Co.

Steel—Tool:

Canadian Fairbanks-Morse Co., Ltd.
N. S. Steel & Coal Co.
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.
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

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
MacKinnon Steel Co.
Fraser & Chalmers of Canada, Ltd.
The Electric Steel & Metals Co.
Hendrick Mfg. Co.
The Wabi Iron Works

Tanks—Oil Storage:

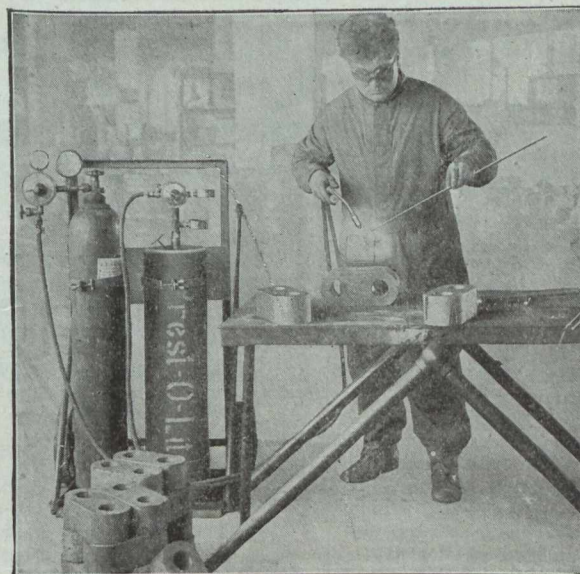
Canadian Chicago Bridge & Iron Works

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

- 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 Apparatus:**
Jones & Glassco
- Troughs (Conveyor):**
Hendrick Manufacturing Co.
- Trucks—Electric:**
Canadian Fairbanks-Morse Co., Ltd.
- Trucks—Hand:**
Canadian Fairbanks-Morse Co., Ltd.
- TTrucks:**
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.
- Tube Mill Liners:**
Burnett & Crampton
Fraser & Chalmers of Canada, Ltd.
- Turbines—Water Wheel:**
MacGovern & Co.
- Turbines—Steam:**
Fraser & Chalmers of Canada, Ltd.
MacGovern & Co.
- Twincones:**
Canada Foundries & Forgings, Ltd.
- Uranium:**
Everitt & Co.
- 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
- 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 Rope:**
R. T. Gilman & Co.
- Wire Cloth:**
Northern Canada Supply Co.
Greening, B. Wire Co.
- 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:**
The Canada Metal Co., Ltd.
Consolidated Mining & Smelting Co.
- Zinc Spelter:**
Canada Metal Co., Ltd.
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THE CANADIAN MINING JOURNAL
ALPHABETICAL INDEX TO ADVERTISERS

A
Allen Whyte & Co. 49
American Zinc Lead & Smelting Co. 8

B
Balbach Smelting & Refining Co. 10
Blackwell, G. C., Sons & Company 12
Beatty, M. & Sons 36
Berger C. L. & Sons 12
Brigstocke, R. W. 11
British Columbia, Province of 12
Burns, L. P., Ltd. 40
Burnett & Crampton 40

C
Canadian Allis-Chalmers, Ltd.
Can. Chicago Bridge & Iron Works
Canadian Explosives, Ltd. 16
Canadian Fairbanks-Morse Co., Ltd. 16
Canadian H. K. Porter 7
Canadian Milk Products 31
Canadian National Railways
Canadian Laboratories, Ltd. 12
Canadian Link-Belt Co. 6
Canadian Ingersoll-Rand Co., Ltd.
Ltd. 3-10
Canada Wire & Cable Co. 8
Canadian Rock Drill Co.
Canadian Steel Foundries
Canada Carbide Company 40
Canada Metal Co. 9
Canadian Brakeshoe Co 7
Canadian Sirocco Co.
Capper Pass & Son, Ltd. 12
Consolidated Mining & Smelting Co. 37
Coniagas Reduction Co. 39
Constant, C. L. & Co. 7

D
Deister Concentrating Co.
Denver Rock Drill Mfg. Co.
Deloro Smelting & Refining Co. . . 13
Department of Mines, Canada
Dewar Mfg. Co.
Diamond Drill Carbon Co. 48
Diamond Drill Contracting Co. . . . 12
Dominion Coal Co., Ltd. 36
Dorr Co. 11
Dresser, Jno. A. 11
Dwight & Lloyd Sintering Co. Inc. 12
Dominion Engineering & Inspection
Co. 10

E
Electric Steel & Metals Co.
Engineering & Machine Works of
Canada 33
Everitt & Co.

F
Fleck, Alex. 12
Ferrier, W. F. 11
Fasken, Robertson, Chadwick &
Sedgewick 10
Fraser & Chalmers of Canada, Ltd. 50

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

H
Hadfields, Ltd.
Hall, G. C. & Co. 37
Hamilton Gear & Machine Co. . . . 10
Hardinge Conical Mill 14
Hassan A. A. 11
Hendrick Mfg. Co. 12
Hersey, Milton Co., Ltd. 11
Heys Thomas & Son 11
Hull Iron & Steel Foundries, Ltd. 1
Hore, Reginald E. 11
Hoyt Metal Co.

I
Imperial Bank of Canada
Imperial Oil Co. 37
International Business Machines . .
International High Speed Steel Co. 13
International Nickel Co. of Canada,
Limited 5
International Nickel Co. 34-35
Inglis, J. & Co. 39

J
Johnston, Matthey & Co. 10
Jones & Glassco 49

L
Laurie & Lamb 50
Ledoux & Co. 10
Lindsey, G. C. S. 11
Longyear, E. J. Company
Lyman, Ltd.

M
McDonald, M. P. 11
MacGovern & Co., Inc. 7
MacKinnon Steel Co., Ltd. 37
Marsh Engineering Works 31
McEvoy, Jas. 11
Mine & Smelter Supply Co.
Mond Nickel Co. 33
Mussens, Ltd. 36

N
Northern Canada Supply Co. 37
Northern Electric Co., Ltd.
Nova Scotia Steel & Coal Co.
Nova Scotia Government

O
Ontario, Province of 4
Oshawa Development Co. 31

P
Pacific Coast Pipe Co., Ltd. 40
Peacock Bros., Ltd.
Pennsylvania Smelting Co. 10
Powley & Townsley 7
Prest-O-Lite Co. of Canada, Ltd. . . 47

Q
Quebec, Province of

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

S
Shayne & Jaffe Co., Ltd. 33
Smart-Turner Machine Co. 37
Smith & Travers Company 10
Standard Underground Cable Co.
of Canada, Ltd.
Stewart, Robert H. 11
Sudbury Diamond Drilling Co., Ltd. 10
Sullivan Machinery Co. 2
Swedish Steel & Importing Co. . . .

T
Toronto Iron Works 32
Tyrrell, J. B. 11

U
University of Toronto 31

W
Wabi Iron Works 8
Whitman, Alfred R. 11


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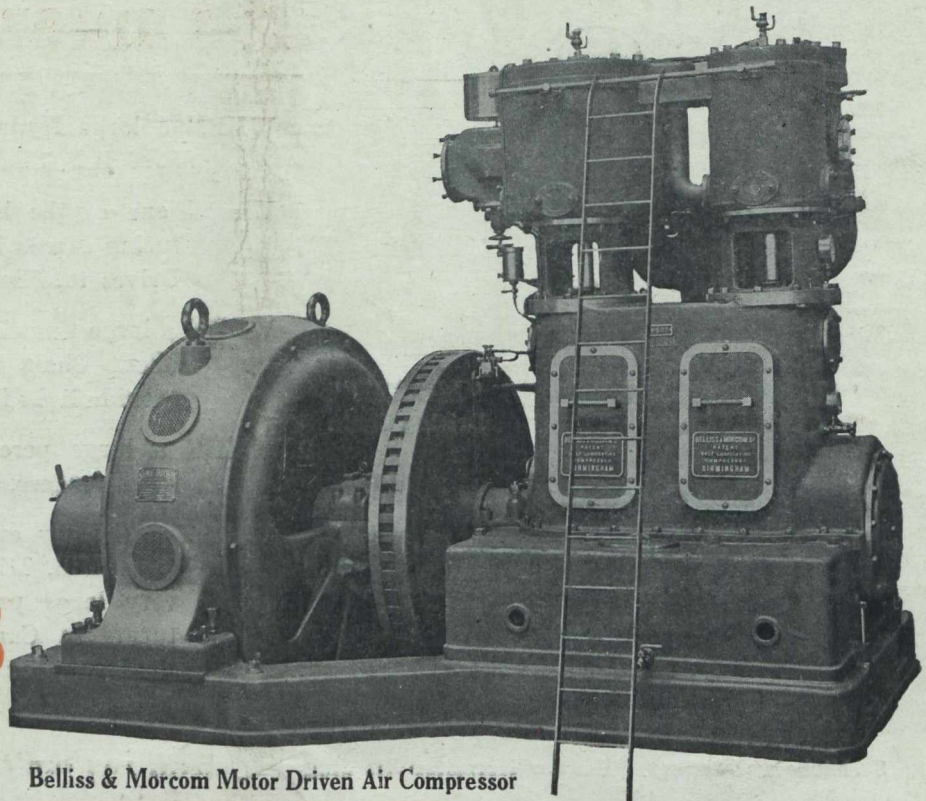
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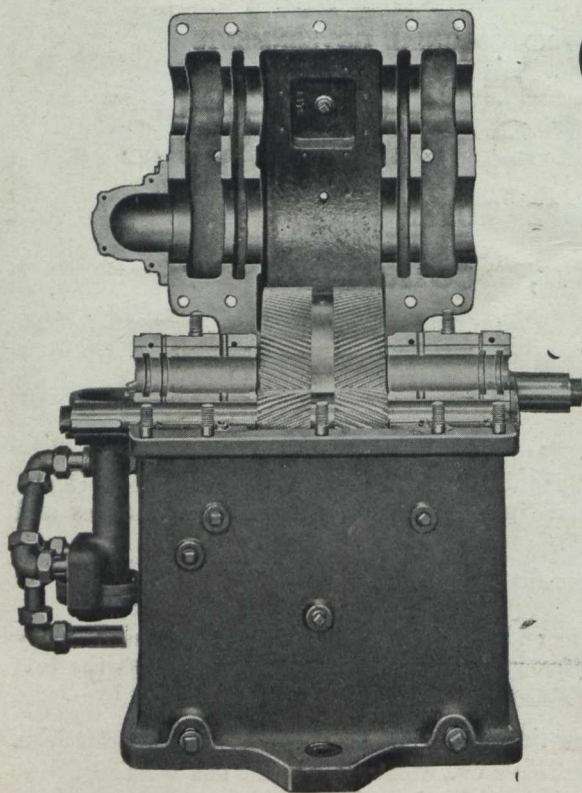
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