

CANADIAN MINING JOURNAL

VOL. XL.

March 5th, 1919

No. 9

How do YOU Solve "Labor Turn-over"?

An industrial authority writes:

"Modern industry must employ a hundred and fifty to five hundred men every year in order to keep a hundred positions steadily filled."



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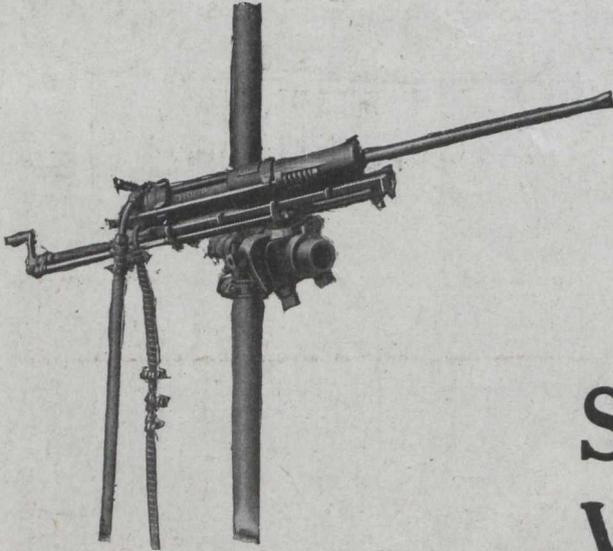
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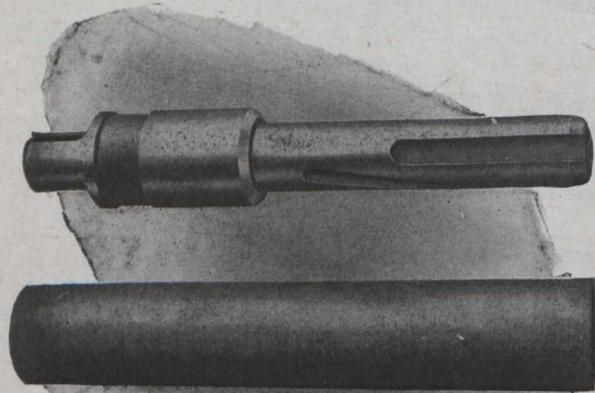
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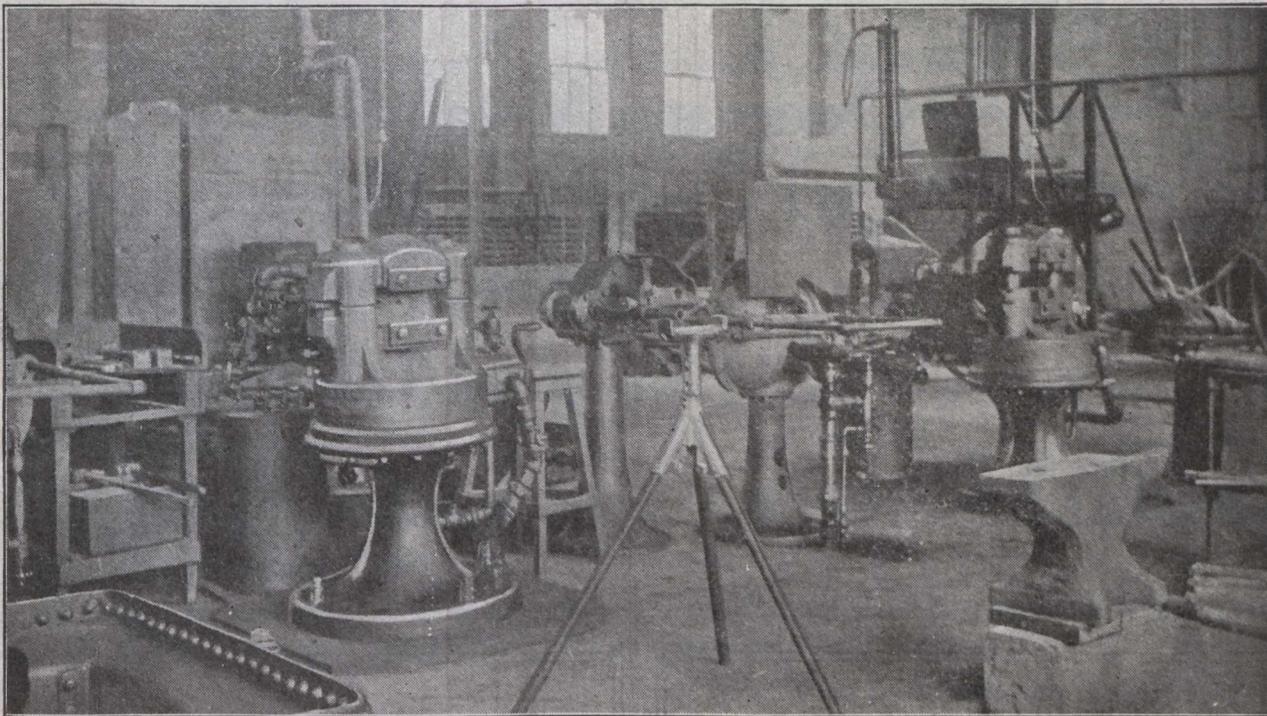




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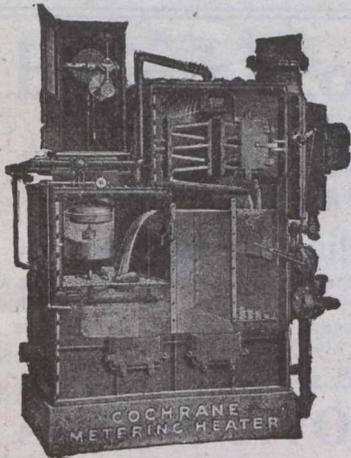
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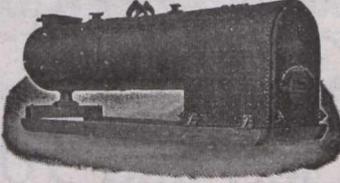
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THE FLOTATION PROCESS

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On December 11, 1916, the SUPREME COURT OF THE UNITED STATES unanimously adjudged our basic patent for air-froth-flotation to be valid, holding that this patent covers any process of froth flotation wherein the results obtained are such results as are secured by the use of a fraction of one per cent., on the ore, of an oily frothing agent in an ore-pulp, with agitation. Three of the thirteen claims which specified the use of "a small quantity of oil" and which the Court held to be invalid have since, by proper disclaimer, been brought within the scope of the Supreme Court's decision.

On May 4, 1917, in the UNITED STATES DISTRICT COURT OF MONTANA, the opinion of Judge Bourquin was filed in the case of Minerals Separation Ltd., and others against Butte & Superior Mining Company, and was followed by a decree on September 17, 1917, wherein it was adjudicated that the three claims which had been limited by disclaimer were valid and infringed, and that the seven claims adjudged to be valid by the Supreme Court of the United States were infringed. The acts thereby adjudged to be infringement included the use of mixtures of petroleum oils and mineral-froth-forming oils in a total amount exceeding one per cent. on the ore, and also the use of Callow pneumatic cells.

On May 24, 1917, the UNITED STATES CIRCUIT COURT OF APPEALS at Philadelphia, in the case of Minerals Separation, Ltd., against Miami Copper Company, unanimously sustained the validity and broadly construed a second basic patent, owned by us, for the use of all "Soluble Frothing Agents." In the same opinion, the Court also validated a third patent for the use of cresols and phenols in the cold and without acid. The defendants, Miami Copper Company, endeavored to avoid infringement of these patents by using Callow pneumatic cells, but the Court held that the operations of the defendant company infringed all three patents.

On November 11, 1918, the SUPREME COURT OF THE UNITED STATES granted the petition of Minerals Separation, Ltd., and others for a Writ of Certiorari to review the decree of the United States Circuit Court of Appeals at San Francisco which had reversed so much of the decree of Judge Bourquin in the suit against Butte & Superior Mining Company as adjudged to be infringements those acts which employed oil of any kind or character used in excess of one-half of one per cent. on the ore.

Prospective users of our flotation processes are earnestly requested not to be influenced by the views disseminated by interested parties that any of these BASIC PROCESS PATENTS can be evaded by a mere variation of apparatus for agitating and aerating the pulp, or by the simple addition of oils or other materials in excess of a fraction of one per cent. on the weight of the ore treated.

Minerals Separation North American Corporation

Head Office:
61 Broadway,
New York, N. Y.

Engineering Office:
220 Battery Street,
San Francisco, California.

Canadian Attorneys.

Messrs. Ridout & Maybee, Patent Solicitors, 156 Yonge Street, Toronto, Canada.

THE FLOTATION PROCESS

MINERALS SEPARATION NORTH AMERICAN CORPORATION

NOTICE

NOTICE is hereby given that we will enforce our patents and stop all infringements, but are prepared to grant licenses for the right to use all or any of our processes to those who wish to use them. To those who infringe or have infringed our patents, notice is given that a settlement for such infringement must precede the granting of licenses for the future use of same.

Notice is further given that no one is authorized to introduce our processes or apparatus into the United States, Canada or Mexico, without direct authority from us.

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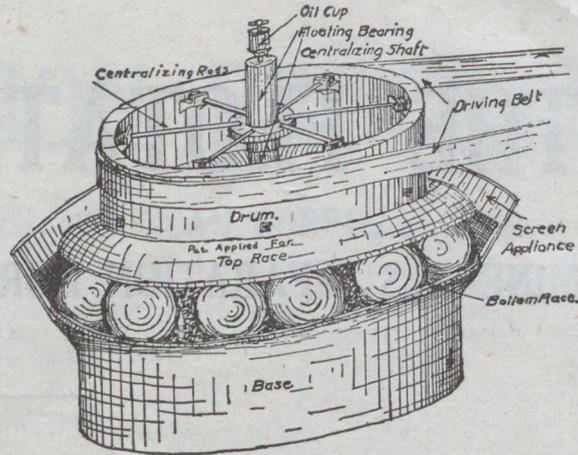
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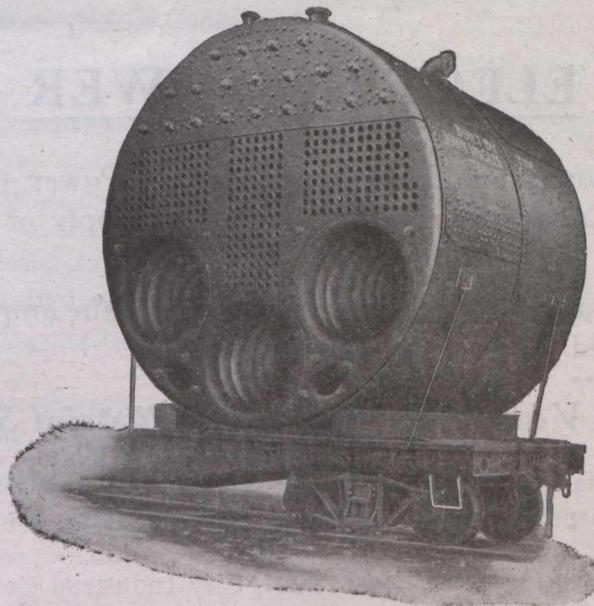
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VOL. XL.

GARDEN CITY PRESS
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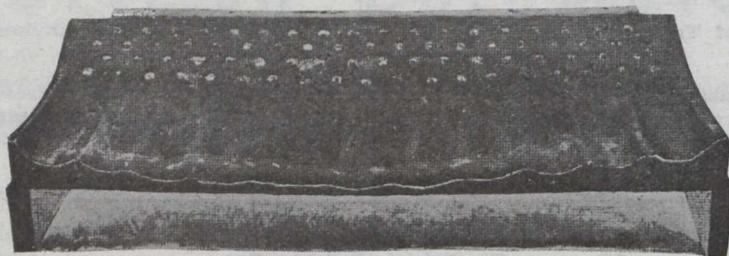
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EDITORIAL

THE GOLD MINES.

The interpretation of the recent report by Lord Inchape, head of the British Commission, which made what is considered to be a complete survey of the status of gold, is considered here as pointing toward the fact that this country is looked to as a factor that will prevent too great a decrease in the output of gold in the British Empire. That Porcupine and Kirkland Lake, as well as Boston Creek will at least do their share is already evident. The big way in which preparations are being made to carry on operations during the coming summer, appears to assure a greater production for 1919 than any previous record in the history of gold mining in Ontario. By the beginning of 1920 the standing of the yellow metal industry of this country will probably be an agreeable surprise for those not in direct contact with those directing mining operations, and in possession of facts concerning the big plans for the very early future.

ANNUAL MEETING CANADIAN MINING INSTITUTE

The 21st annual general meeting, to be held at the Windsor Hotel, Montreal, on March 5th-7th, 1919, should be very interesting to those who attend. During the war the meetings have been held regularly and have proven useful because the interchange of ideas was more than ever necessary, and because encouragement and inspiration for those facing many difficult problems resulted from the "getting together." The Institute is now faced with other problems that demand serious consideration; but most of those who attend the meeting this year may do so with lighter hearts.

During one short year depression, which was the natural result of the conditions at the front, has given place to the joy of a victory greater than any dared hope for. Some of our victorious army are home after years overseas. The Institute will give these men a suitable welcome. Not until the next meeting can we have a real reunion however, for the greater part of the Canadian army is still overseas.

It is very fitting that the Canadian Mining Institute should this year extend to members of the American Institute of Mining and Metallurgical Engineers an invitation to attend this meeting in Montreal. To the

Americans the Allies owe no small share of the victory, and none will be more ready to acknowledge it than Canadian mining engineers.

"NO GERMAN NEED APPLY".

Mr. H. V. Winchell, president of the American Institute of Mining and Metallurgical Engineers, speaking at the New York Meeting, commented on the treatment that prospectors from other countries receive in Canada. He pointed out that the United States mining rights are granted only to citizens or those who have declared their intention to become such. In Canada the right to develop minerals is open to all, whether British subjects or not.

Mr. T. W. Gibson corroborated the statements of Mr. Winchell, but in doing so made it clear that no alien enemy is entitled to such rights in Canada. Germans and other alien enemies will receive no mining licenses in this country. An endeavor should be made to see that they do not acquire rights in indirect ways.

LABOR AND CAPITAL.

There have always been discussions on the subject of 'labor and capital', and probably always will be. It is doubtful whether, in modern times at least, there has ever been such general interest in the discussion as at present. Even before the war there was a feeling that a storm was brewing in industry. There was not only dissatisfaction on the part of the employees, but there was a feeling on the part of the employers that there was reason for discontent. There was a good deal of doubt, however, as to what was the real reason for such discontent, and unreadiness to believe that it could be removed simply by increase in wages.

Throughout the period of the war there has been a rapidly growing idea that the real ground for discontent is that in our industries we are not truly democratic. There has been a tendency to degrade labor by making it uninteresting. The incentive to work has been to too great an extent measured only by the things that can be bought with the wages. The workman has not had a normal interest in his work. The removal of this cause of discontent is a task in which leaders of capital and labor can well join forces.

The problem and an outline of a scheme for solving it has been admirably pointed out by Mr. C. V. Corless. At the recent meeting of the American Institute of Mining and Metallurgical Engineers, Mr. Corless in an excellent, earnest address urged leaders in industry to

take up the problems with their employees. At the meeting of the Canadian Mining Institute this week there will be discussion of the subject.

In bringing this subject to the serious attention of the people, the Canadian Mining Institute, through Mr. Corless, has played a leading part. We trust that the discussions this week will show that the Institute is behind Mr. Corless and that it is not too far behind to be effective.

ITALY UTILIZES VOLCANIC POWER.

The present enormous price of coal in Italy, according to the Italian Bureau of Public Information, has resulted in the realization of an idea which at first thought seemed but a dream, but which instead has been developed in a marvelous manner, and is assuming quite considerable importance; this is the industrial exploitation of one of the features of vulcanism and that is the natural heat emitted from the soil in those regions more or less volcanic in character.

The first experiments along this line were made some years before the war by Prince Ginori-Conti in Tuscany at Larderello, near the salt mines of Volterra, a region extensively covered with volcanic formations, the most wonderful being the so-called "soffioni," which are certain volcanic vents emitting powerful jets of very hot steam containing boric salts and various gases used in the extraction of boracic acid. Instead of limiting the use of these steam-jets, as in the past, to extracting the salts contained in the exhalations of these natural vapor-vents, the ejection of the steam is stimulated by boring holes. In this way it is possible to obtain powerful jets at a pressure of two to three atmospheres, according to the locality, and in some exceptional instances as high as five atmospheres, the temperatures varying from 150 to 165 degrees Centigrade. These jets maintain their force and temperature unchanged for many years, and they are not affected even when other openings, not too near each other, are bored in the ground, proving that they do not influence each other reciprocally, so great is the underlying thermic energy below. In 1905, Prince Ginori-Conti applied this natural steam to a 40 H.P. engine, using only a small section of the Nenella fissure, which is the most powerful "soffione," the steam ejected having a pressure of five atmospheres.

The results obtained during several years of experimentation were satisfactory, so that he continued to make larger and deeper borings, measuring the force of the steam ejected; combined, this force could operate engines of many thousand horsepower.

In 1912 an experiment was made, very wisely on a more modest scale, but sufficient to obtain conclusive results, for which a 300 H.P. turbine-alternator was used.

Later, because of the enormous increase in the price of coal, the Prince decided to exploit the thermic energy of these soffioni on a much larger scale, but as other substances are emitted with the steam, among them sulphuric acid, which corrodes metals, particularly iron and therefore the pipes in which the

steam was to be collected, he attempted to use this steam only for heating. Three turbine-alternators of 3,000 kilowatts each were installed, fed by boilers at low pressure not heated by coal or other combustible fuel, but by the natural steam, superheated to 165° C., issuing from these soffioni and piped and carried to the boilers.

To-day the works at Larderello have a central plant of 16,000 H.P., operating without interruption and distributing current to Florence, Livorno and Grosseto; its capacity is soon to be increased.

Here we have a new and original utilization of Italy's natural wealth; current is generated not by the use of "white coal" (water-power), but by means of heat energy of volcanic origin.

As the natural steam available at Larderello and the surrounding country is, one might say, unlimited and depends upon the number of bore-holes made in the boraciferous soil, the great possibilities for further development are readily seen.

WOULD DEPORT ALL ENEMY ALIENS.

That all enemy aliens should be deported from Canada, and that the Canadian Government should be careful to retain full control of immigration to the Dominion, whatever other concessions may be granted at the Peace Conference, were the two chief points of the resolution unanimously adopted by the Legislature of British Columbia recently. The debate on this subject was of special interest to the coal miners and the workers of all industrial sections of British Columbia, but it was followed with particular keenness by the miners of Vancouver Island Coal Areas, because the employment of aliens in the mines has for years been resented by the English speaking classes of these sections. Hon. Wm. Sloan, Minister of Mines, who is the representative of the latter districts in the House, spoke strongly on their behalf, supporting the proposal that the Dominion Government should be asked to deport all enemy aliens and moving an amendment to the effect that "Canada's representatives at the Peace Conference be asked to adhere firmly to the principle that Canada shall always exercise full control over immigration to the Dominion." He not only wanted aliens put out of the country, but wished to be sure that, once out, they would be kept out. This was a matter, he said, of primary interest to his constituents. The coal miners of the Island, and in fact of the whole of the Province, had furnished considerable quotas to the Canadian Army. Their war record, as to fighting men provided and in every other respect, was one of which they were proud. Now those who had gone were coming back to find, in many instances, that while they fought for their country at \$1.10 a day, aliens had been filling their places at home at high rates of pay. Their demand was that all enemy aliens should be returned whence they came, and their places filled by returned soldiers as far as possible, and where not possible by British subjects. Recent statements indicated that the whole question of immigration was to be discussed at the Peace Conference. It was possible that, at such an international conference, a disposition was developed on the part of some delegates to make concessions. He felt that Canada should not give way in the slightest on the principle that her Government control the character of the tide of immigration which was bound to flow from the mixed populations of Europe and Asia.

Correspondence

The Leasehold System.

To the Editor of the Canadian Mining Journal:

Sir,—It would be futile to deny that the leasehold system as applied in Australia to the mineral lands, have proven a great success there. But if you expect a success for that system in Canada, you must also introduce the referendum and recall in the Dominion and Provincial Governments. That is the very thing that makes for success in Australia, and the lack of which spells failure whenever leasehold is applied in Canada.

May I call your attention to the fact that all mining lands in the Gowganda and portions of the Montreal River and Sudbury Mining Divisions can be acquired only under the leasehold system. Prospecting and staking can only be done under the authority of a special permit issued by the Department for a consideration, and no work on claims staked may be performed without a written permit from the Department.

As the first prospecting and staking for silver within the Gowganda began in 1907, and as staking has been carried on more or less continuously, I think it is fair to claim that the leasehold system as applied under Canadian system of Government, have been given a fair trial.

Some of us who have seen the population of the camp dwindle from some thousands in 1908-09 to the at present probable three hundred. We have seen a town represented by all lines of business, including three banks, seven hotels, a dozen stores, several assay offices, post office and mining recording office, dwindle to as at present, one assay office, post office, two stores, three hotels. We have seen the country surrounding Gowganda alive with prospectors, miners and representatives of mining companies busy trenching, building camps, bringing in and putting up machinery, everyone feeling elated over the promising possibilities of their different holdings. To-day we have four or five working properties, deserted and tumbled down camps, rotten camp equipment and tools, useless machinery, in all representing several hundred thousand dollars in capital and labor lost and destroyed.

Every year has brought increased destruction to the forest by fires, until to-day it is almost impossible to travel through the area owing to dead and fallen timber.

Is there anyone, who dare say that the leasehold system as applied to Gowganda, has proven beneficial.

That the desertion of the camp was not due to lack of confidence in its mining lands, is attested by the unusual number of leased claims held in the camp.

When in 1911 the operators and others entrusted in the development of this section, called on the Government for the assistance that they felt entitled to receive, we were advised that the Government's policy was to protect its forest reserves rather than to encourage further prospectors, miners or railroads. The result of this was two-fold: Large numbers owning leased claims left the camp, others stayed and secured a lease, then left, their equipment going to waste; everyone interested in the development of the camp saw in every green bush an enemy to be destroyed, and the increasingly large areas of burnt country shows the result. Had mining been encouraged, dead timber would have been cut and used and a revenue derived therefrom. Also, the removal of dead timber would have proved a great factor in saving other green areas.

Therefore the Government's policy had proved destructive to both mining and forestry and given a black eye to the leasehold system which is apparently known by the people of Manitoba.

These conditions, as described existing in Ontario, could not exist anywhere under the Australian form of Government.

Of course, one mine has been able to carry on continuously and develop an enormous body of ore, besides being a continuous shipper. But it is well known in this section, that at several times during the first five years of its operation the engineer in charge advised closing down. He was overruled by the owner, whose capital and insistence to carry on have brought its well earned reward.

Investors who lost money at Gowganda blame the mining industry for the loss. The Government blames the industry for the destruction of the forests. But, as I have shown, the responsibility for both rests squarely on the shoulders of the Government.

Yours, etc.,

L. O. HEDLUND.

Gowganda, February 15th, 1919.

MINING NEWS FROM THE PAS.

The Pas, Feb. 14.—The Cameron-McKay group of eight claims on the east arm of Athapapnskow lake are being developed. Messrs. McKay and McFarland, of Regina, and nine men, went north last week with a full camp equipment. The showings on these claims are considered promising, and warrant vigorous investigation. A dyke of 42 to 70 feet wide has been located. Strong indications of copper sulphides are present.

Morgan has 175 teams hauling copper ore from the Mandy mine. The amount hauled is stated to be 6,000 tons so far.

Monday's Tamarack took a small body of prospectors to Hudson Bay Junction, to stake claims for oil and gas. Frank Moore says the indications are strong and samples of shale have shown high contents of oil. The place is about 80 miles south of The Pas.

The mining recording office remains in The Pas, and great satisfaction is felt everywhere. Mining Recorder F. Barker was so advised on Wednesday. It was intended to remove this office to Dauphin, but upon representations of The Pas Board of Trade, J. A. Campbell, M.P., Mayor Finger, Professor Wallace, Mandy Mining Company, J. W. Callinan and many others, the intention was abandoned. The office now remains here in the centre of mining.

The advice of Mr. Barker was that The Pas will remain a full mining recording office, with all books and documents retained here, and in this way things will go on as before. The rearrangement, therefore, makes The Pas a sub-agency for lands, and a full agency for mining claims and matters connected thereto.

To bring this desirable end about, it was necessary for all interests in the Northland to unite, as they did, and protest vigorously against removing the office. The Board of Trade took the lead, and the success of the movement establishes the board's right to command the interest and support of all. Telegrams of thanks were sent to Hon. Mr. Meighen. — The Pas Herald.

Instruction by Correspondence for Miners

Arrangements have been made by Hon. Wm. Sloan, Minister of Mines, and Hon. Dr. MacLean, Minister of Education, for the establishment of a system of instruction by means of correspondence which will give all miners who are British subjects and resident in British Columbia an opportunity to qualify for positions of trust and responsibility in connection with their chosen vocation.

In making this announcement it is pointed out that for some years the Department of Education has been conducting night schools for the benefit of men engaged in the mining industry with a view to providing that instruction which is necessary for thorough preparation for the examinations set by the Department of Mines for those aspiring to important charges in connection with the operation of mines.

The conditions of the shift system under which miners work heretofore has mitigated against that pronounced success which is so much desired by both the Mines and Education Departments and, in order to overcome this difficulty and to bring the opportunities of study within reach of a greater number of men the decision has been reached to conduct the classes and disseminate the required knowledge through the medium of correspondence. It is considered as probable, although no definite statement has been authorized as yet, that the correspondence will be augmented by personal visits on the part of instructors to the various sections of the Province for the purpose of giving at intervals such guidance and assistance to students as, perhaps, may not readily be obtained through the mail.

It is explained that, not only will those subjects be covered in which a mastery is necessary before British Columbia papers as shotlighters, overmen and mine-managers can be obtained, but a preparatory course also will be given. As the examinations referred to, which are conducted by the Mines Department, are only open to men not less than twenty-three years of age, it is proposed to provide means of study for youths between the ages of 14 and 23. If the years intervening between the time of attendance at day-school and the time when the young man is eligible to sit for his first test be wisely spent, the faculty for acquiring knowledge will be prevented from becoming dulled, the receptivity of mind being preserved. This, it is considered, will furnish the opportunity by which boys fresh from school may persistently and patiently pursue those studies which will lead them successfully to the final examinations.

It is felt that this change in the present system will be generally appreciated, having the effect of placing within the convenient reach of everyone interested the means of securing that training necessary for advancement. That the young men who take advantage of the course will be well rewarded is assured, as there is no question as to the benefits of the study-habit inculcated during adolescence and matured in adult manhood.

It is interesting, in this connection, to outline some of the courses proposed. Those of most importance are prescribed for the first year (preparatory), and fourth, fifth and sixth years. They follow:

First Year.

Preparatory work for boys and young men over fourteen years of age. Pupils should have a pair of compasses, a pair of dividers, a protractor, two set-squares, a

T-square, and accurate ruler graduated in inches and centimetres.

Arithmetic—Vulgar and decimal fractions; short methods of obtaining approximations; practical applications; square root; proportion, simple and compound; proportion expressed in a form of simple equation.

Mensuration—Measurement of lines; scales; use of compasses, dividers, set-squares, T-square; areas—rectangular, triangular, and circular areas; area of eclipse.

Drawing—Meaning of plan, elevation, section. Type-models—prism, cube, etc., to be draughted, and cut out of stout paper; plans, elevations, and sections to be drawn from them.

English—Penmanship; spelling; grammatical errors; letter-writing; personal and business composition; simple descriptions and narration relating to mines and mine operating; encouragement of home-reading.

Text-books—The Black Diamond Reader (Nelson) (a primer of coal-mining); the Fifth Reader; Arithmetic, Book III. (Milne); Drawing Book IVa. Books to be obtained from the Free Text-book Department on application.

These books should not be taken from the school-room, but may be purchased from the teacher. Fifth Reader, 50 cents; Third Arithmetic, 45 cents.

Fourth Year.

Course for the Fireboss, Shiftboss, or Shotlighter's Certificate (Third Class.)

Candidates must have at least three years' practical experience, be at least twenty-three years of age, and hold a First-aid Certificate.

Mining Arithmetic—First four rules of arithmetic; vulgar fractions; decimal system of notation; decimal fractions; percentage and simple interest; square root; simple ratio; proportion and variation.

Drawing—Scales; measurement of simple figures; the triangle; square and rectangle.

Metric System—Measurements by metric scales; simple tables of British and metric units.

Mensuration—Area of regular figures; the triangle, square, circle, and ellipse; area of irregular figures by Simpson's Rule; squared paper, use of squared paper, some simple graphs, and their practical applications.

Gases—Practical instruction in the properties of mine gases and in the means of their detection.

Theory of Mining—Composition of air; determination of the volume of the residual gas after removal of the oxygen by phosphorus; properties of the residual gas; preparation and properties of the following gases; oxygen, nitrogen, hydrogen, marsh-gas, hydrogen sulphide, carbon dioxide, and carbon monoxide; explosive mixture of fire-damp and of hydrogen with air and with oxygen; the effects on the intensity of the explosion due to increasing the percentage of either gas; experiments on the passage of flame through long glass tubes of various diameters; the propagation of the explosive wave; circumstances under which the several noxious gases are met with in mines; means of detection and removal; gaseous diffusion; its importance to the miner; atmospheric pressure; the barometer effects of changes of atmospheric pressure on the issue of noxious gases in mines; observations of the flame "caps" produced on several types of safety-lamps by known percentages of fire-damp; testing for carbon monoxide with the Simonis apparatus; blood test for carbon mon-

oxide; practical lessons in the measurement of an air-current by means of the anemometer; coal-dust, danger of; experiments with Vital's apparatus; shot-firing; mining explosives; duties and responsibilities of a mine fireman; how to make a report of an inspection.

The "Mining Act" and rules of the mine.

Fifth Year.

Course of Work for the Overman's Certificate (Second Class.)

Conditions.—Have at least five years' practical experience; be at least twenty-three years of age; hold a First-aid Certificate.

Shaft-sinking—Drainage; tests, theories, ventilation; principles of the fans; duplicate and auxiliary fans.

Colliery Explosions—Historical review; coal-dust; rescue-work and apparatus; methods of testing fire-damp; removal of accumulation.

Lighting—Safety-lamps, various types; cleaning, lighting, locking and relighting; flame and electric; handling and examining; regulations regarding safety-lamps.

Methods of Working—Shaft pillars, laying out; positions, number, inclination of main roads, pillar and stall; long-wall methods, working of various seams, roof-control, supports, boring, shot-firing, ventilation; distribution and control of air.

Transmission of Power—By steam, disadvantages of steam, steam-pipes, traps, expansive joints, condensers and condensation; by compressed air; by electricity, hydraulic power, the oil-engine; mechanical haulage.

Technical Electricity and its Uses for Safety—Properties of magnets, magnetic induction; lines of force, electrical currents, electric magnets, electric bells electrolysis, current measurement, Ohm's Law; measurement of resistance; Wheatstone's bridge; ammeters; voltmeters; wattmeters; direct currents; wiring circuits; dynamos and motors; alternating currents; the "Mining Act" and rules of the mine; duties of the various men.

Mathematical Calculations—Mining formulae; logarithms; use of squared paper, trigonometry.

Sixth Year.

Cover-Work for Mine Manager's Certificate (First Class.)

Conditions.—Be a British subject; have at least five years' practical experience; be at least twenty-five years of age; hold a First-aid Certificate.

Geology of Coal—Origin, varieties, stratified rocks, outcrop; strike and dip of bed; igneous rocks; coal-beds and mineral veins, rolls; faults; rules for finding continuation of seam beyond faults; cleavage of rock; cleat; lype, and reed of coal.

Shaft-sinking—Drifts, slopes, and shafts; surface arrangements; supplies, precautions, timbering; Kind-Chaudron method and modifications; Pattberg and hydraulic methods; sinking through running ground by piling and spiling; Caisson sinking; Triger's and Poetsch's methods.

Methods of Working Coal.—Laying out pit-bottoms; size of shaft pillar; direction of main roads; tools and appliances used underground; boring and drilling machines; pick and undercutting machines; power used; considerations of thickness and inclination of seam; liability to spontaneous combustion; faults; conditions of roof; depth of working; supporting excavations, effect of thrust and creep; methods of timbering.

Hoisting and Haulage—Geared hoisting-engines; direct- and alternating-current hoists; ropes; size of engine for output; engine foundations and specifications;

hoist indicators; drums and reels, rope wheels and fastenings; clutches; brakes; sheaves; skips and cages; buckets; car-locks; car-guides; landing-fans; head-frame; signalling.

Mine Drainage—Surface and underground drainage; fault and inclined deposits above and below water-level; tapping and draining abandoned workings; mine-dams; siphons; water-hoisting; hoisting *versus* pumping water.

Ventilation, Theory, and Practice—Properties of gases; behaviour and detection of mine gases; fire-damp, after-damp, ignition of gases; mine explosions; prevention of explosions; brushing gas out of pockets and old workings; sealing off fires; precautions in approaching old workings; form and size of airways for ventilation; measuring velocity of air and ventilating pressure; natural ventilation, furnace ventilation, types of fans, fan-installation doors; principles of fan design; fans of the propeller type; secondary ventilation, installation of auxiliary fans; regulators, brattice, air-crossings, stoppings, air-splitting.

Lighting—Lighting of pit-bottom; naked lights; forms of safety-lamps; cleaning, lighting, locking, and relighting; flame and electric lamps; fire-damp indicators; regulations regarding safety-lamps.

Surveying—Practical geometry and trigonometry, properties of angles, triangles, and common plane figures, logarithms, areas, construction and reading of verniers; surveying with chain alone; construction, adjustment, and proper use of compass, level, transit, etc.; surveying with the transit, forms and field-notes, levelling; connection of surface with underground surveys; putting on lights; methods of keeping underground notes.

Mechanics—Definitions and illustrations of force, mass, weight, motion, kinetic and potential energy, momentum, equilibrium, centrifugal force, law of conservation of energy; forms of energy, representation of forces, levers, transmission of power by pulleys and belts; by rope drive; laws of friction, co-efficient of friction; steam and compressed air.

Boilers—Various types, Cornish, Lancashire, and Galloway; water-tube boilers, Babcock and Wilcox, Heine, Stirling; boiler construction and testing.

Steam-engine—Properties of steam; types of valves; operation and care of engine; steam connections; condensers.

Air-compressors—Construction of air-cylinders, pistons, and valves; single and duplex, simple and compound compressors; isothermal and adiabatic laws; energy losses; Rearell's hot transmission system; compressed-air locomotives; compressed-air drills and coal-cutters.

Pumps—Simple hydraulics, static head, calculation of flow of liquid through pipes; siphon; types of pumps, calculation of horse-power; setting up pumps; packing; priming; their operation and care.

Electricity—Relative advantages of direct and alternating current for mining purposes; mining switch-gear; transformers and transformer stations; voltage regulations; load diagrams; application of electric power to machine-driving in mines; specifications of mining motors; rating; plate and other protection; upkeep of electrical plant; electric winding, Siemens-Ilgner and Westinghouse systems.

Preparation of Coke—Suitable coals; principles involved in coking; coke-making in bee-hive and retort ovens; nature of by-products and their recovery.

Laws relating to coal-mining in British Columbia.

Market Conditions

A Recently Issued Statement of the N. S. Bureau of Mines Contains the Following Comments on Market Conditions:

Pyrite and Sulphur.

The pyrite and sulphur industries of the United States are now in a transition stage from a war to a peace basis, and as a result there is considerable dislocation of the industry, owing primarily to the uncertainties of the markets, and the prices that may prevail. The cessation of hostilities and the abrogation of war contracts found the large consumers of pyrite and sulphur with large reserves on hand, and naturally, until these reserves are absorbed the demand for new material will be greatly curtailed.

Another consideration is that many of the acid manufacturers, especially those engaged in the manufacture of fertilizers, are not anxious, at this time, to enter into any new contracts for either pyrite or sulphur, anticipating that the present prices of these products will be materially lower in the course of the next few months.

The high rates of 35 to 40 shillings per ton on Spanish pyrite, which prevailed during 1918, have been substantially reduced since the close of the war, and recently rates as low as 20 shillings per ton have been quoted. The pre-war rates ranged from 8 to 10 shillings, but it is not likely that these low rates will again prevail for some time to come.

During 1918, the price of imported pyrite delivered at Atlantic ports varied widely, depending largely on ocean rates. The prices varied from 25 to 35 cents per unit of sulphur, with an average of perhaps 30 cents. A recent quotation at New York is 16½ cents per unit, on the basis of a 10-shilling ocean freight.

Graphite.

The U. S. War Trade Board has removed all restrictions on graphite importations, notwithstanding the recommendation of the Director of the Bureau of Mines to continue them until July, 1919. The French Government has authorized the export of 1,500 tons of graphite from Madagascar to the United States during the first half of 1919. Some weeks ago 1,000 to 1,500 tons was offered f.o.b. Madagascar at 5½ cents per pound. Large stocks exist in France.

Copper.

There appear to be considerable stocks of both refined and blister copper. There is no free market for the metal, the price fixed by the United States Government being no longer operative and selling conditions are consequently unstable. There was recently announced the personnel of a commission which proposed going abroad for the purpose of surveying the foreign copper market and if possible negotiating sales. This commission is composed of men representing the large producers.

Since the signing of the armistice curtailment of production by all the large mines has been in order and recent reports are to the effect that Anaconda is running at a 40 per cent curtailment. The position of Anaconda is a pretty good barometer of the other large domestic producers. The cost of producing copper has risen materially in the past eighteen months owing to the increase in wages and supplies, decreased efficiency of the men, and general disorganization arising out of war conditions.

Magnesite.

The United States production of magnesite prior to 1915 (back to 1909), amounted annually to about 10,000 short tons. The domestic production in California greatly increased with the cutting off of supplies from abroad which came principally from Austria and Greece. Washington began to produce late in 1916 and since that time production in that State has increased rapidly. In 1917 the total production from California and Washington was 317,000 tons, and it is estimated that it will be about 225,000 tons in 1918. Increased freight rates, shortage of cars which reduced the demand by hindering deliveries, shortage of labor, restricted building operations, increased importation of Canadian magnesite, and the use of dead burned dolomite are the main reasons for the decreased production in 1918.

The magnesite industry, owing to the use of the mineral as an accessory in making steel and copper, has been considered a war mineral. Because of its importance, the domestic industry deserves close attention at this time to tide it over what may be for it an emergency period. It is said that certain of the large companies, through their control of distribution and consumption, have sufficient stocks on hand to meet domestic requirements until well into the present year, after which they expect to begin importing from their own deposits abroad.

All import restrictions have been removed. It is reported that magnesite is permitted by the Italian Government to leave Trieste, if destined for the United States. The stocks in Trieste are not definitely known, but the presumption is strong that there are several thousand tons there and possibly stocks at other European ports as well.

Several of the consumers of domestic magnesite have, during the past year, expressed themselves as satisfied with the domestic material but afraid that with the return to normal conditions American magnesite may not be able to compete with the foreign article. Foreign labor is cheap, and this mineral comes over at low rates. The principal centres of consumption are nearer the Eastern seaboard than are the Western sources of supply. High freights may prove disastrous to the domestic industry.

Potash.

A serious crisis developed in the potash industry during January. Recent estimates indicate that about 100,000 tons, gross weight (equivalent to 25,000 tons K₂O), of potash salts produced in the United States during 1918 is still in the hands of the producers, who apparently can find no market for their product. The larger part of this material has come from the Nebraska lakes.

The explanation of this situation lies largely in the high war prices which have been about \$4 per unit. The farmers are not buying potash salts except to a small extent, apparently in the hope that prices will drop before spring, or with the intention of not using potash until next fall. Unless the market improves quickly the potash can not be sold in time for manufacture and use for this spring's crops of cotton, wheat, potatoes and truck.

The potash producers report that inquiries were just beginning to come in for potash when Chairman E. N. Hurley, of the Shipping Board, made his announcement that tonnage would be available for the immediate import of Alsatian potash. This statement caused the market for domestic potash to disappear almost en-

tirely. The matter was taken up by the War Trade Board through its foreign representatives with the result that on January 25 the following statement appeared as public announcement in the Commerce Reports:—

“The War Trade Board announces that it has received authentic and official information from the French High Commission in the United States to the effect that France will be unable, at least until April, to ship potash from the potash mines of Alsace. These advices further indicate that for the next few months practically the entire potash output of the Alsatian mines will be urgently required for agricultural purposes in France. It is the view of the War Trade Board, based upon this information, that even under the most favorable circumstances, no potash from Alsace could be available in the United States for agricultural uses before June, 1919, and that, therefore, it will be necessary that the United States rely entirely upon its domestic production for the coming season.”

Chrome.

The production of chrome ore is at low ebb and while there are no market quotations, there are a few shipments presumably upon existing contracts.

Ferrochrome is not quoted in market reports; there are, however, some movements of stocks of ore and alloy. On January 19, ferrochrome was selling for 40 cents per pound.

Lead and Zinc.

During the world war political jurisdiction was rather generally invoked in the allied countries to restore control of national resources and industries to citizens of a given country or its allies. This movement was particularly marked in the British Empire wherein there now exists an extremely centralized joint political and commercial control of the zinc industry in particular, based on the large production of zinc concentrates in Australia and expected production in Burma. In Australia, Tasmania, India, and the British Isles there has been Governmental participation in the producers' and sales organizations, and in the financing of power and smelting equipment.

In France this movement has taken the form of “consortiums” or associations of the principal factors in each industry, recognized by the Government and made the arbiters of all questions affecting their particular industry. The consortium of the mineral industry has been perfected into the “Societe Mineraux et Metaux,” 154 Boulevard Haussmann, Paris. The official announcement states that this Society is organized under the auspices of the French Government in order to group the French metal producers operating both at home and abroad into a co-operative association for the purchase and sale of metals and metallurgical products.

The mining and metallurgical companies participating in the society comprise the principal companies in France producing or refining metals and also the lead, zinc, copper, iron, and smelting companies controlled by French capital in Spain, Algeria, Tunis, Mexico, and Peru. Thus, there is brought about a highly centralized organization of that portion of the mining and metal industry under French control for mutual protection and advantage in competition with

other nationalities. This development is worthy of special note by everyone interested in the mineral industry.

The present annual output of the companies participating in the Society is about 200,000 metric tons of lead, 50,000 metric tons of zinc, and 40,000 metric tons of copper.

WILL ADOPT WHITLEY SYSTEM FOR MINES.

London, February 21.—The Mining Association of Great Britain, which comprises all the leading colliery owners, according to the Evening Standard, has decided to invite the formation of joint councils of miners and employers to manage mines in certain defined districts. These joint councils would arrange and fix the standard of wages, labor costs, management and interest on capital. The miners also would be brought into intimate contact with all problems relating to selling prices and costs.

At a conference of Government officials and representatives of a number of trades unions held to discuss the application of the Whitley system to Government establishments, the Minister of Labor declared that the Government was ready to apply the system giving workmen a share of the management in all Government workshops and yards. The object of the scheme is to ensure grievances being handled immediately they arise, thus preventing a strike and securing harmony in the industry.

A committee representing the engineering, shipbuilding and other trades was appointed to draft a constitution for the proposed Whitley councils.

The Miners' Federation has decided to accept the invitation to attend the industrial conference which the Government has called for February 27. It has decided also to communicate with Premier Lloyd George and inform him that the executive committee has not passed any resolution concerning the proposed miners' strike on the lines recommended by him, but will leave it to the delegates to the miners' conference to arrive at a decision.

NOVA SCOTIA MINERS AND OPERATORS CONFER.

Sydney, N.S., Feb. 21.—Closing one of the most harmonious sessions ever held between operators of the coal areas of Cape Breton and their employes last night two of the three concessions asked for by the workers were granted.

These were for permission to affiliate with the United Mine Workers of America and the granting of an eight-hour day for the underground workers of the mines. The third item in the routine business for discussion was that of wages, but as most of the associations are under contracts with the operators for a time yet this matter was not taken up seriously, only with a view of paving the way for the discussion which will come after these contracts have expired. Mr. Fergie, Mr. Tonge, Mr. Grev and other of the officials when questioned about the conference, stated that they had never attended a session where the spirit of good-will and tolerance was so manifest. There were many tangles to be unravelled and to be discussed, but while each side presented their respective cases with decision there was no actual ill-feeling and both sides are satisfied with their conclusion.

Special Correspondence

NORTHERN ONTARIO.

Increasing Activity in Boston Creek Gold Area.

Activity in the Boston Creek district is increasing, and large numbers of claim owners are making arrangements for the aggressive development of their properties during the coming spring and summer months. Preliminary arrangements are under consideration for the building of a light railway from Boston Creek station to the Miller-Independence mines. At the same time the government is being asked to construct a good wagon road from the station at Boston Creek to the centre of activity.

The shaft on the Allied Gold Mines property has reached a depth of 50-ft., and it is planned to continue this working to a depth of 100-ft. immediately. With this end in view additional men are being employed. Developments up to the present point of operation have been very satisfactory. Arrangements are being made at this latter property for the installation of an electric mining plant in the spring.

Will Develop Crawford Property.

A deal for the Crawford property in the Skead township section has just been completed. These claims are located next to the Costello group, on which spectacular showings of gold have been found. More or less energetic development has been under way in the district for the past two years. The purchasers of the Crawford claims anticipate commencing operations as soon as possible. The general outlook for this section of the gold area is very promising at the present time, and, in addition to considerable development now in progress, several other mining companies and private property owners are making arrangements for doing further work.

Will Install Plant at Chaput-Hughes Property.

Active mining operations have been commenced on the property of the Chaput-Hughes Mines, in the Kirkland Lake district. Ore broken in the first few shots is said to be of a commercial grade. A shaft has been sunk on the north-east corner of the property on a strong and well mineralized vein which can be traced the full width of the claim. A small mining plant will be installed on the property as soon as possible.

Developing Rich Ore at Bourkes Mine.

Rich ore is being developed in a shoot on the west drift of the Bourkes Mines at the 100 and 200-ft. levels. A winze is being put down from the 200-ft. level and the values are proving consistent in this working. Although the high grade ore at this property in the past has not proven altogether consistent, the present ore-body is standing up well under development. The property is situated at Bourkes Siding on the T. & N. O. Ry. A number of other prospects in the vicinity will receive further development when the snow has left the ground.

Alexo Nickel Ore Shipments.

During the first week of the current month the Alexo mine at Porquois Junction shipped three carloads of ore containing approximately 280,000 pounds. This makes a total of about 680,000 pounds so far this month and it is estimated the mine will produce about a million and a quarter pounds of ore for the present month. The ore is shipped direct from the property to the smelter at Coniston.

10 Tons Ore From Foster Netted \$90,000.

The operators of the lease on the Foster property at Cobalt are prosecuting development work at the 60-ft. level of the mine for the purpose of cutting a number of veins which are known to parallel the one in which the rich ore shoot was recently encountered. It is now learned that the value of the recent shipment of ten tons of ore from this rich shoot netted the leasees between \$90,000 and \$95,000, which shows a silver content of upwards of 9,000 ounces to the ton. The possibilities of opening up other valuable ore shoots are considered good, while a considerable amount of good grade ore has been mined at the property in taking out the high grade shoot.

Stopping Ore at Adanac.

The stope recently started at the 310-ft. level of the Adanac property has been put up about fifteen feet and the ore being encountered continues rich in silver. A considerable quantity of this is of sufficiently high grade to make bagging necessary and this is taking place in the working. Additional shipments of high grade as well as medium grade ore will be sent out in due course. Additional working forces have been taken on at the property and the work is being speeded up.

Ore Sampling Plant at Cobalt.

Efforts are under way to have the ore sampling plant of Campbell & Deyell, at Cobalt, which has announced its intention of discontinuing operations early in March, supported by either the Federal or Provincial Government. This is the only customs sampling plant in the large mining district of Northern Ontario, in fact, so far as known it is the only one doing a solely customs business in the Dominion. Its value to the mining industry generally can hardly be over-estimated, and the suspension of operations by the concern would be a serious blow to the industry throughout the whole north country, causing no end of inconvenience and delay in estimating the returns of ore which is now sampled by this concern previous to treatment in the various smelters. The value of the plant to mines in the prospective stages of development where small test runs of ore are required is also of the utmost importance. Thus energetic measures are being taken to encourage the continuance of the plant's operation.

Wettlaufer.

According to the terms of the agreement between the Wettlaufer and Pittsburg-Lorrain Mining companies of South Lorrain, the latter company is obliged to resume work on the Wettlaufer property about the end of next month, provided the terms of lease now in force are complied with. It is understood the two companies are bearing an equal portion of the light expenses incurred while the plant is not in operation. During the year 1918 the mine and mill of the Wettlaufer were operated more or less satisfactorily under lease to the Pittsburg-Lorrain. At the present time there are no operating mines in this once busy section of the country.

Trethewey.

The annual report of the Trethewey Silver-Cobalt Mines for the year 1918 shows a net value of production of \$250,534. As the operating cost was \$147,166, net operating profits amounted to \$103,368. Dealing with the physical condition of the mine, the report

says: "The productive area of the property comprises less than six acres, which is limited by the Keewatin formation to a depth of 250-ft. Up to the end of 1917 a total of 25,639 ft. of development work had been done, confined almost entirely to the above-mentioned area, leaving no territory where development could be carried on with promise. Consequently no development work has been done during the past year. The ore reserves at the end of 1918 show a decrease of 2,428 tons as compared to 1917. Blocked ore increased 1,581 tons, while broken ore increased 4,009 tons, the net decrease in tonnage amounting to 12 per cent. The estimated ounces of silver in the ore reserves decreased from 264,044 to 159,172, a decrease of 104,872 ounces, or 39 per cent. A total of 24,614 tons of ore was broken in the stopes at a cost of \$54,268.26, or \$2.21 per ton. As in the preceding years the ore was broken from the walls of old stopes and was of a very low grade, only the favorable price of silver, making possible the extraction of this silver at a profit. The revenue account showed that \$135,748 had been carried forward from the previous year. This with the year's profits and \$1,751 from readjustment, brought the total for appropriations to \$244,372. Depreciation took \$39,376, dividend (5 per cent) \$50,000, reserve for taxes \$3,604, leaving an increased balance to carry forward into the current year of \$150,391.

The Trethewey company has taken up 370,000 shares of the Castle Mining Company's stock and the balance sheet shows \$78,230 spent on the property. Current assets stood at \$171,600, as against current liabilities of \$20,000. The oil flotation parts were delivered late in the year, but operations from October forward showed a profit of \$1.50 per ton. As there are 58,000 tons of dump the company expects to recover a nice profit from reclaiming operations.

Dealing with the Castle property in Gowganda, the report says: "The installation of machinery on the Castle property was completed in June. The plant consists of two boilers having a combined capacity of 110-h.p., a 360-720 straight line compressor, and an 8 x 10 hoist, pumps, etc.; the equipment being entirely suitable for the proposed development. The shaft reached a depth of 310-ft. in October, labor shortage causing serious delays. During November and December lateral work was carried on both the 200 and 300-ft. levels. Several promising veins were encountered, but none of them were followed up, the policy being to drive to the contact first. From what information it has been possible to gather best results will be obtained near the contact. Therefore, the work during the early part of 1919 is looked forward to with considerable expectation. The general geological conditions to date have been of a nature most favorable to the deposition of ore." Since the foregoing report was compiled, some very encouraging developments have taken place at the Castle property.

Porcupine Crown Plans Diamond Drilling.

According to advice to hand this week it is the intention of the Porcupine Crown Mining company to carry on extensive diamond drilling operations on their property. The known ore reserves of the property at the present time are estimated at \$500,000, and it is generally expected that these will be considerably augmented. The main workings of the mine have been carried to a depth of 1,100-ft., and it is estimated that this ore body will persist on the Porcupine Crown to a depth of perhaps 1,400-ft. The mill on the property

is one of the most efficient in the country and within a comparatively short time should be producing large profits. The company began the year 1919 with a credit balance of \$271,955. It has been decided to recommence milling operations as soon as possible, and it is altogether probable that net earnings will soon be ample to resume dividend disbursements at the former rate of 12 per cent per annum, without drawing on the present substantial cash surplus.

Hollinger Increasing Production.

The Hollinger-Consolidated Gold Mines of Porcupine is reported to be increasing the production of the mill during the past week. This indicates that the production will probably be in excess of half a million dollars monthly, and should permit of profits in excess of \$246,000 per month. The consensus of opinion in the north country is that the Hollinger-Consolidated will soon resume its regular disbursement of 13 per cent per annum, with fair promise of even this rate being exceeded, perhaps, by the beginning of another new year. The resumption of construction work, including the construction of a large number of new houses for the employes will be rushed through at once.

Will De-Water Schumacher Mine.

Arrangements are being made for the de-watering of the Schumacher mine, preparatory to a resumption of operations at the property. The Schumacher has been developed to a depth of 700-ft. and the mill on the property is the fourth largest in the gold camp. The company is well financed, having a surplus of around \$80,000 and having authorized the sale of 100,000 shares of treasury stock at not less than 45 cents per share. This, taken together with the operation of the 180-ton mill, will allow for the continuation of the main shaft to a depth of 1,00-ft., as well as the increasing of the mill from 200 to 300 tons' capacity per day.

Mill Additions for Davidson.

A number of additions have been made to the milling equipment of the Davidson gold mining company at Porcupine. These enlargements are said to have been made necessary by the opening up of large orebodies at the 500-ft. level of the property. During the installation of the new equipment it was necessary to close down the pumps for a time, which permitted a quantity of water to accumulate in the workings. These are now being de-watered. When this work is completed energetic efforts will be made in the development of the new orebodies recently located at the 500-ft. level of the property, from which the management expects important results.

Sinking Shaft on Ontario-Kirkland.

After considerable delay in securing electric power the Ontario-Kirkland Mining Company has at last commenced its extensive plans of development, and the shaft on the property is being sunk to a depth of 300-ft. Ample funds are said to be in the treasury for the carrying out of 1,500-ft. of underground work which will be done in drifting on the main vein and cutting parallel veins at the 300-ft. level of the property. Judging by the assay reports on the veins uncovered on the surface of the property, the Ontario-Kirkland is a property of considerable merit, and the development of these ore bodies at depth means much to this section of the Kirkland Lake gold area. The veins on the surface are wide and remarkably consistent in value.

Proposes a 44 Hour Week.

A Bill has been introduced to the British Columbia Legislature providing for the application of a 44-hour week to all industrial workers of British Columbia. Its sponsor is Mr. James Hawthornwaite, the member for Ladysmith, B.C. There are on the statute books of British Columbia two Acts passed in 1918 through the instrumentality of Hon. Wm. Sloan, Minister of Mines. One sets the hours of labor for all employed above ground in connection with coal mines of this Province at eight hours, thus placing this class of employee on the same basis as underground workers, except that the latter's working day begins the moment they leave the surface. The other gives miners engaged in metalliferous mines, above or below ground, the eight-hour day. Both these enactments are effective on the 31st of March, 1919. If Mr. Hawthornwaite's measure is endorsed, therefore, it means that, in addition to the eight-hour day, the miners of British Columbia will have a half holiday on Saturday.

Control of Coal Prices in B. C. Has Ceased.

Mr. C. A. Magrath, Fuel Controller for Canada, has announced that the control of coal prices in British Columbia by the department of which he is the head ceased on the 11th February last. The collieries of the West, therefore, are put back on the old competitive basis. They once more are in a position to make their own prices, based on their own estimates of cost of production. That costs vary materially on the Vancouver island was strikingly proved when, as a result of a close investigation, the Fuel Controller authorized all collieries of the district to increase their sale prices to a certain figure, excepting only the Canadian Western Fuel Company. It will be interesting, therefore, to watch developments, the controlling hand of Government being withdrawn.

In making known the determination of the Fuel Control Department as stated, Mr. Magrath explains that the United States Government abandoned control of prices at the mines on the 31st January. He explains that the reasons influencing his action are that the country's war activities, calling for greater and still greater quantities of coal for war industries, are at an end; that an exceedingly mild winter is being enjoyed in Canada, considerably reducing even normal demands for coal; and that the early return from Europe of many of those that formerly worked in coal mines should make easier the maintenance of production.

Addressing the western operators, he says:

"This great conflict through which we have passed has been a time of stress in mining operations, but I have reason to believe that between miners and operators in Canada, there now exists a far better understanding than in pre-war times. That is my experience in the adjustment of their differences in the Maritime Provinces. I have not had the same intimate relations with the industry in British Columbia, for the reason that in your district my official powers did not include such adjustments.

"As to the future, I have full confidence that both you and your employees fully appreciate your combined responsibilities to the country and that whenever differences arise you will frankly and openly meet each other in a spirit of fairness.

Carbondale and Coleman Miners Want Political Prisoners Released.

Conditions in the coal mining camps of parts of the Province of Alberta and Eastern British Columbia reflect, in a minor sense, the unrest prevalent in labor circles of Great Britain at present. This is indicated by the proceedings at a recent joint meeting of the local unions of Carbondale and Coleman, U. M. W. of A., Alberta, called for the purpose of hearing the report of delegates to the Alberta Federation of Labor Convention and also discuss a circular asking that the unions support a protest against the continued incarceration of political prisoners.

The debate on the latter subject resulted in the passage of the following resolution:

"What we endorse the action taken by the Alberta Federation of Labor Convention at Medicine Hat, demanding the release of all political prisoners, incarcerated during the war, and are ready to fall in line with any action the Executive of the A. F. of Labor may take, NO MATTER HOW DRASTIC, to attain that end."

Strong comment is reported to have been caused by the report of the arrest and conviction of Thomas Shannon, secretary for Diamond City Local, for having in his possession banned literature and other correspondence in connection with the Local. It was argued that if such a state of things were allowed to exist, all secretaries for organized bodies would be placed in a precarious position and liable to arrest at any time.

The following resolution was carried:

"Unanimously resolved that we urge upon all Locals in the District to take immediate action in this matter, fix a date as early as possible, and all cease work until Bro. Thom Shannon is released from prison."

The resolution passed in convention at Medicine Hat demanding free speech, free assembly, and the ban entirely lifted from all literature was also endorsed.

No Russian Coal Miners Needed.

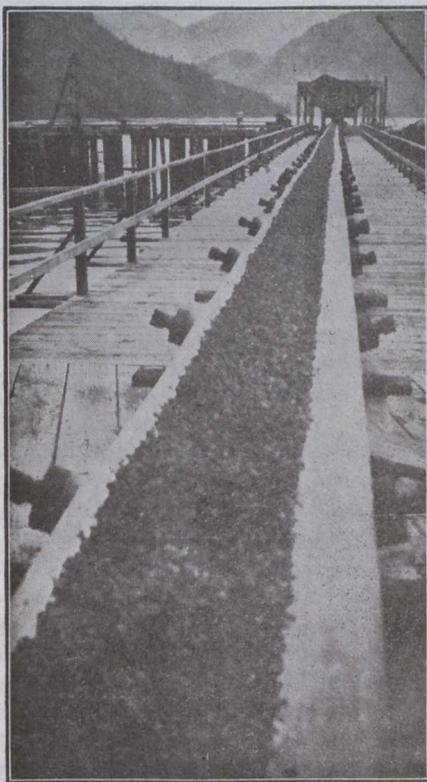
Considerable feeling was created recently in some British Columbia and Alberta coal mining centres through a report that operators were arranging for the importation of Russian coal miners in order to enable the fullest possible development of the mines of the districts affected. The rumor was denied at the time, but it persisted and was taken up with the Department of Labor, Ottawa. The result is the following explanatory letter from Hon. G. D. Robertson, Minister of Labor, flatly refuting the statement:

Ottawa, Ont., Dec. 14, 1918.

W. F. McNeil,
1015 Herald Bldg.,
Calgary, Alta.

Your letter December 10th. On November 11th the Department received notice that the Canadian Pacific Railway Company was negotiating with the Western Coal Operators' Association respecting the importation of four hundred Russian miners and that several of the Western mines were not then working to full capacity through lack of orders. My wire of November 11th stated that inquiry was being made immediately respecting the supply and demand for miners. That inquiry confirmed the statement that mines were not fully occupied through lack of orders, that there was no necessity of importing Russian miners. The Canadian Pacific Railway Company was accordingly

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asked to discontinue any negotiations in this connection. Subsequently the railway advised that there had been no negotiations in progress, which fact was later substantiated from other sources. Your letter indicates that an utterly incorrect interpretation was placed upon the telegrams exchanged.

G. D. ROBERTSON,
Minister of Labor.

B. C. Chamber of Mines.

Vancouver, B.C.—The Vancouver Chamber of Mines has decided to change its name to that of the "British Columbia Chamber of Mines." This step has been agreed to in order that the influence of the organization may be extended to include the whole province. At the last election of officers a selection was made of some representative mining men outside of Vancouver, it being felt that, if the Chamber of Mines is to make its work beneficial to the industry of British Columbia, it must be understood to be a body belonging, not to any particular locality or community, but to the whole of the province and pledged to advance, wherever possible, the interest of all or any of its districts. Good progress is being made in preparations for the International Mining Convention to be held in March and the effect of which, it is hoped, will be the creation of a complete understanding between the mining men of Western Canada and the Western States and generally the engendering of a spirit of healthy optimism.

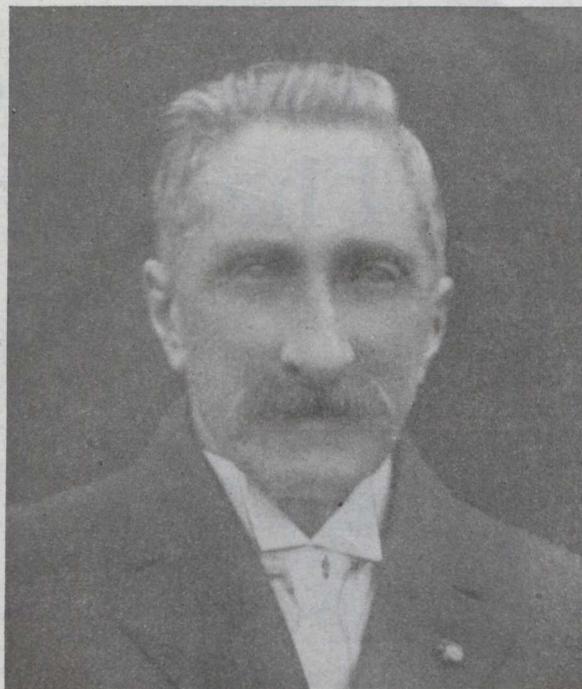
To Manufacturers

Valuable economic minerals, of which the people of this country as a rule have little knowledge, are distributed in various sections served by the Canadian National Railways. The field of utility for these minerals is constantly expanding and entering more and more into the realm of manufacture.

Information on this subject can be obtained by writing:—

**The Industrial and Resources
Department Canadian National
Railways**

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THE LATE JAS. CUMMING,
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Granby.

An unconfirmed report is in circulation to the effect that the Granby Consolidated Mining & Smelting Co. proposes suspending operations at its Grand Forks, B.C., smeltery. The statement emanates from New York and is creating some uneasiness in the Boundary District of the Province, which already has been somewhat seriously affected by the closing down of the Canada Copper Corporation's plant at Greenwood, B.C. Those on the ground, however, are hopeful that no definite decision of the character indicated has been reached. They point out that the company has other properties which might contribute to the smelter, among them being the Velvet, near Rossland, B.C. on, which considerable development has been done.

Ore Receipts at Trail.

The month of January established the best record for some time in point of ore receipts at the Trail Smeltery of the Consolidated Mining & Smelting Co. of Canada. A total of over 35,000 tons of ore and concentrates were unloaded at Trail in that period. Forty mines shipped to Trail in January, four being located in the United States, one in the Yukon, one in Manitoba and the balance in British Columbia.

UNITED MINE WORKERS AT CALGARY.

It was stated at the annual convention of District 18, United Mine Workers of America, which is being held at Calgary, Alberta, that there are 2,000 miners in the district without work, and that 3,000 others are only working part of the time. The seriousness of this situation, it was said, became accentuated when it was remembered that the slack time of the year was approaching.

CHEAP OXYGEN FOR METALLURGICAL PURPOSES.

At a meeting held at the Chemists' Club, New York, January 17, at which Dr. Frederick G. Cottrell, Chief Metallurgist of the Bureau of Mines, Department of the Interior, was presented with the Perkin medal for distinguished service in chemical research, Dr. Cottrell, in accepting the honor, outlined certain investigations now being undertaken by the Metallurgical Division of the bureau, which, if successful, will result in a real revolution in the fundamental industries of the country.

Dr. Cottrell, in telling the chemists of this important work, said in part:

"When, at the suggestion of Sir William Ramsay, the British Admiralty first studied the possible use of helium for balloon purposes, they felt that the expense of production would be prohibitive. First, on account of the great scarcity of the element and the very great dilution in which it was found in the atmosphere (1 vol. in 250,000) and in other gases; and, second, because of the expense of the processes of separation then known to the Admiralty.

"When this information came to the U. S. Bureau of Mines it was remembered that some of the natural gases of Kansas has been found by Dr. H. P. Cady, of the University of Kansas to have over 1 per cent. of helium in them. The separation of helium from these gases could best be accomplished by the same general processes of liquefaction and distillation as are used to separate air into its nitrogen and oxygen for industrial purposes.

"It so happened that the Metallurgical Division of the Bureau of Mines had been making a study of these processes in the hopes of finding a way to sufficiently cheapen the production of oxygen from the air to allow its general use in metallurgical furnaces and other large scale chemical and industrial operations. If this were possible it would work a real revolution in these fundamental industries. Take, for instance, the smelting industry alone. We now concentrate everything that goes into the furnace (coke, ore, fluxes, etc.), except the oxygen of the air which we add with four times its volume of inert nitrogen and thus undo much of the effect of the concentration of the other constituents. If we could use pure oxygen, or more concentrated air, a great saving could be effected, and we could do in combustion furnaces much which is now only possible in the electric furnace.

"One of the processes which the Bureau had felt had much promise in this direction had not, up to this time, received an ylarge scale development, but now these facts were all called to the attention of our army and navy, who immediately jointly appropriated first \$100,000 and afterwards further sums now aggregating over \$1,000,000, for trying out the project not only along the line of the new process but also parallel therewith by the older and better known processes as well, and entrusted the general direction of this work to the Bureau of Mines.

"The plants on the older processes are already producing helium in large quantities and the one on the new and what it is hoped may prove several times more economic basis is just about to have its practical production test.

"If it fulfills anticipations, its significance is far wider than the production of helium, for it will open the possibility of oxygen in quantities at costs undreamed of by most chemists and metallurgists."

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MINING CONVENTION AT VANCOUVER.

On March 17, 18 and 19 there will be held in Vancouver the first International mining convention on the Pacific Coast so far as Canada is concerned. Some months ago it was considered by prominent mining men connected with the Chamber of Mines that the holding of a convention would give a filip to the industry in British Columbia, accordingly arrangements were made to bring it off in January last. Several causes led to the date being set back, but the above have now been definitely agreed upon, and the largest assemblage of mining experts on the North American continent will foregather in the city on Burrard Inlet.

The object of the convention is to give the citizens of British Columbia who attend, and those resident outside the province, an idea of the tremendous mineral resources of British Columbia and in that way to advance the interests of the mining industry in British Columbia as far as it is possible to do so. Those who are interested financially and otherwise in mining are of the opinion that there is a bright future ahead and that the coming convention will be the means of making the wealth of British Columbia better known to the world. In order to impress on visitors the splendid resources of British Columbia in minerals, a great col-

lection of ores will be shown, and the mechanical section will not be the least interesting part of the display.

The treatment of ores in the various stages will be demonstrated from the moment they leave the workings until they appear as the well known metals, such as silver, gold and iron, and special attention is to be given to this department by a committee. No effort will be spared to make this a fine exhibition. In themselves, these exhibits will be a splendid object lesson of the manner in which ores are treated.

It is proposed to invite prominent engineers and geologists from all over Canada and the United States. Already, invitations have been issued and a general acceptance is anticipated. Men who are identified with the largest mining corporations have already commenced to make inquiries regarding the convention. It is expected that the attendance will be of a thoroughly representative character.

The programme will include addresses by the district mining engineers as well as by at least six prominent mine operators. A trip to a large mining centre is being arranged. The details of this programme will be given in a few days. Meanwhile, everything points to the convention being an unqualified success.

FINANC



DEPARTMENT

DOMINION INCOME WAR TAX ACT**TO WHOM APPLICABLE.**

Every person who in 1918 resided or ordinarily resided in Canada or was employed in Canada or carried on business in Canada including corporations and joint stock companies

WHO SHOULD FILE RETURNS.

1. Every unmarried person or widow or widower, without dependent children under twenty-one years of age, who during calendar year 1918 received or earned \$1,000 or more.
2. All other individuals who during calendar year 1918 received or earned \$2,000 or more.
3. Every corporation and joint stock company whose profits exceeded \$3,000, during the fiscal year ended in 1918.

FORMS TO BE FILLED IN AND FILED.

FORM T1. By individuals, other than farmers and ranchers

FORM T1A. By farmers and ranchers.

FORM T2. By corporations and joint stock companies.

FORM T3. By trustees, executors, administrators of estates and assignees.

FORM T4. By employers to make return of the names of all directors, officials, agents or other employees to whom was paid \$1,000 or more in salaries, bonuses, commission or other remuneration during the calendar year 1918

FORM T5. By corporations, joint stock companies, associations and syndicates to make return of all dividends and bonuses paid to shareholders and members during 1918.

Individuals comprising partnerships must file returns in their individual capacity.

GENERAL INFORMATION.

All returns must be filed **IN DUPLICATE.**

Forms may be obtained from the Inspectors and Assistant Inspectors of Taxation and from the Postmasters at all leading centres.

Returns should be filed immediately

Postage must be prepaid on letters and other documents forwarded by mail to Inspectors of Taxation.

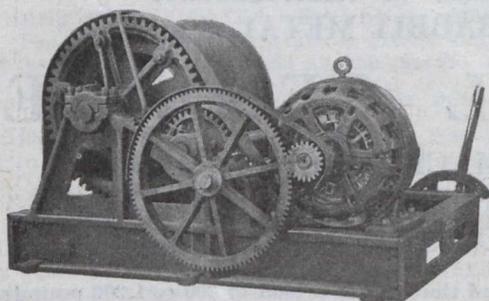
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This is only one of the many styles of Mine Hoists we make. Our Catalog shows many others. Have you a copy?

We make any of our Mine Hoists for either Steam, Electric, or Belt Drive, as desired. We make them with either one or two drums, and supply any diameter of drum up to 48 inches.

In any style Hoists we give you a choice of seven sizes, 10 H.P., 15 H.P., 20 H.P., 25 H.P., 32 H.P., 40 H.P., and 50 H.P.

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MR. ROBBINS RESIGNS.

Montreal, Feb. 20.—The annual meeting of the Hollinger Consolidated Gold Mines Company was held at Montreal, the President, N. A. Timmins, presiding. After the meeting it was announced that the Board of Directors had been reduced from seven members to six, P. E. Robbins, who is now in California, being no longer a member of the board, which is now made up only of members of the old board.



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The Minerals of Nova Scotia

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GRAPHITE, ARSENIC, MINERAL PIGMENTS, DIATOMACEOUS EARTH.

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

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

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

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

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

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

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

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

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

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

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

Commissioner of Public Works and Mines



PROVINCE OF QUEBEC

MINES BRANCH

Department of Colonization, Mines and Fisheries

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

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

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

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

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

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

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

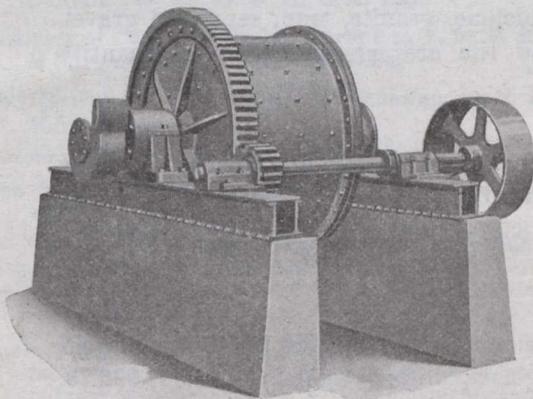
MINING CONCESSION. Notwithstanding the above, a mining concession may be acquired at any time at the rate of \$5 an acre for SUPERIOR METALS, and \$3 an acre for INFERIOR MINERALS

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

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

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

HONOURABLE HONORE MERCIER,
MINISTER OF COLONIZATION, MINES AND FISHERIES, QUEBEC.



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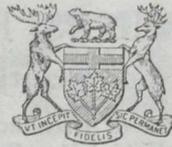
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PROVINCE OF ONTARIO



BUREAU OF MINES

Ontario's Mining Lands

Ontario, with its 407,262 square miles of area contains many millions of acres in which the geological formations are favorable for the occurrence of minerals, 70 per cent. of the rocks being of pre-Cambrian age. The phenomenally rich silver mines of Cobalt occur in these rocks; so also do the far-famed nickel-copper deposits of Sudbury, the gold of Porcupine and Kirkland Lake, and the iron ore of Helen, Magpie and Moose Mountain mines.

Many other useful minerals, both metallic and non-metallic, are found in Ontario:— actinolite, apatite, arsenic, asbestos, cobalt, corundum, feldspar, fluorspar, graphite, gypsum, iron pyrites, mica, molybdenite, natural gas, palladium, petroleum, platinum, quartz, salt and talc.

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

Ontario in 1917 produced 46 per cent. of the total mineral output of Canada. Returns made to the Ontario Bureau of Mines show the output of the mines and metallurgical works of the Province for the year 1917 to be worth \$72,093,832, of which the metallic production was \$56,831,857.

Dividends and bonuses paid to the end of 1917 amounted to \$11,486,167.45 for gold mining companies, and \$70,821,829.34 for silver mining companies, or a total of \$82,307,996.79.

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

For list of publications, illustrated reports, geological maps and mining laws, apply to

G. H. FERGUSON,

MINISTER OF LANDS, FORESTS AND MINES,

Toronto, Canada.

CANADA

DEPARTMENT OF MINES

HON. MARTIN BURRELL, *Minister*

R. G. McCONNELL, *Deputy Minister*

MINES BRANCH

Recent Publications

Iron Ore Occurrences in Canada, Vol. II. Compiled by E. Lindeman, M.E., and L. L. Bolton, M.A., B.Sc. Introductory by A. H. A. Robinson, B.A.Sc.

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

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

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

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

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

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

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

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

Summary Report of the Mines Branch, 1917.

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

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

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

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

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

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

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

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

GEOLOGICAL SURVEY

Recent Publications

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

Memoir 95. Onaping Map-Area, by W. H. Collins.

Memoir 98. Magnesite Deposits of Grenville District, Argenteuil County, Quebec, by M. E. Wilson.

Memoir 101. Pleistocene and recent deposits in the vicinity of Ottawa, with a description of the soils, by W. A. Johnston.

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

Memoir 106. Road materials in a portion of Vaudreuil county, Quebec, and along the St. Lawrence river from Quebec boundary to Cardinal, Ontario, by R. H. Picher.

Map 63A. Moncton Sheet, Westmoreland and - Albert Counties, New Brunswick. Topography.

Map 132A. Southwestern portion of Rainy River district, Ontario. Soils.

Map 135A. Lower Churchill river, Manitoba. Geology.

Map 145A. Timiskaming county, Quebec. Geology.

Map 154A. Southwestern Yukon.

Map 157A. East Sooke, Vancouver Island, British Columbia. Topography.

Map 165A. Windermere, Kooteney district, B.C. Topography.

Map 174A. Blairmore, Alberta. Topography.

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

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

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

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

Map 1702. Klotassin, Yukon Territory. Geology.

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

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

Map 1714. The Niagara peninsula, Ontario. Geology.

Map 1715. The Ontario peninsula. Geology.

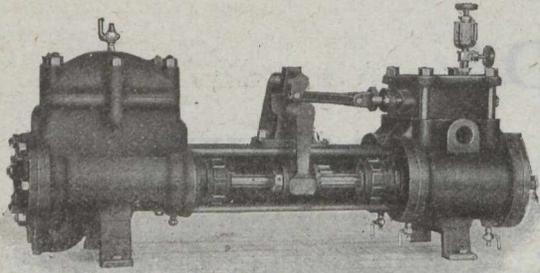
Applicants for publications not listed above should mention the precise area concerning which information is desired.

Maps published within recent years may be had, printed on linen, at the nominal cost of ten cents each.

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

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

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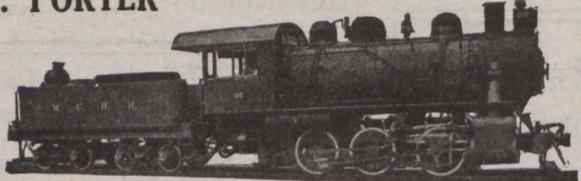
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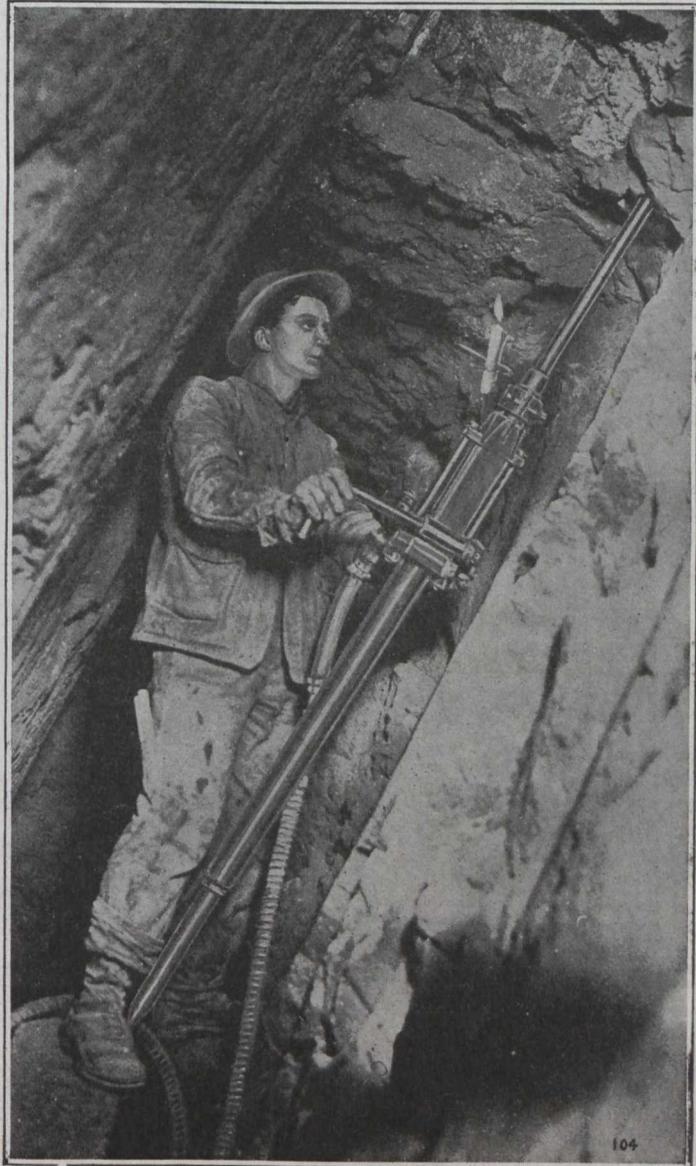
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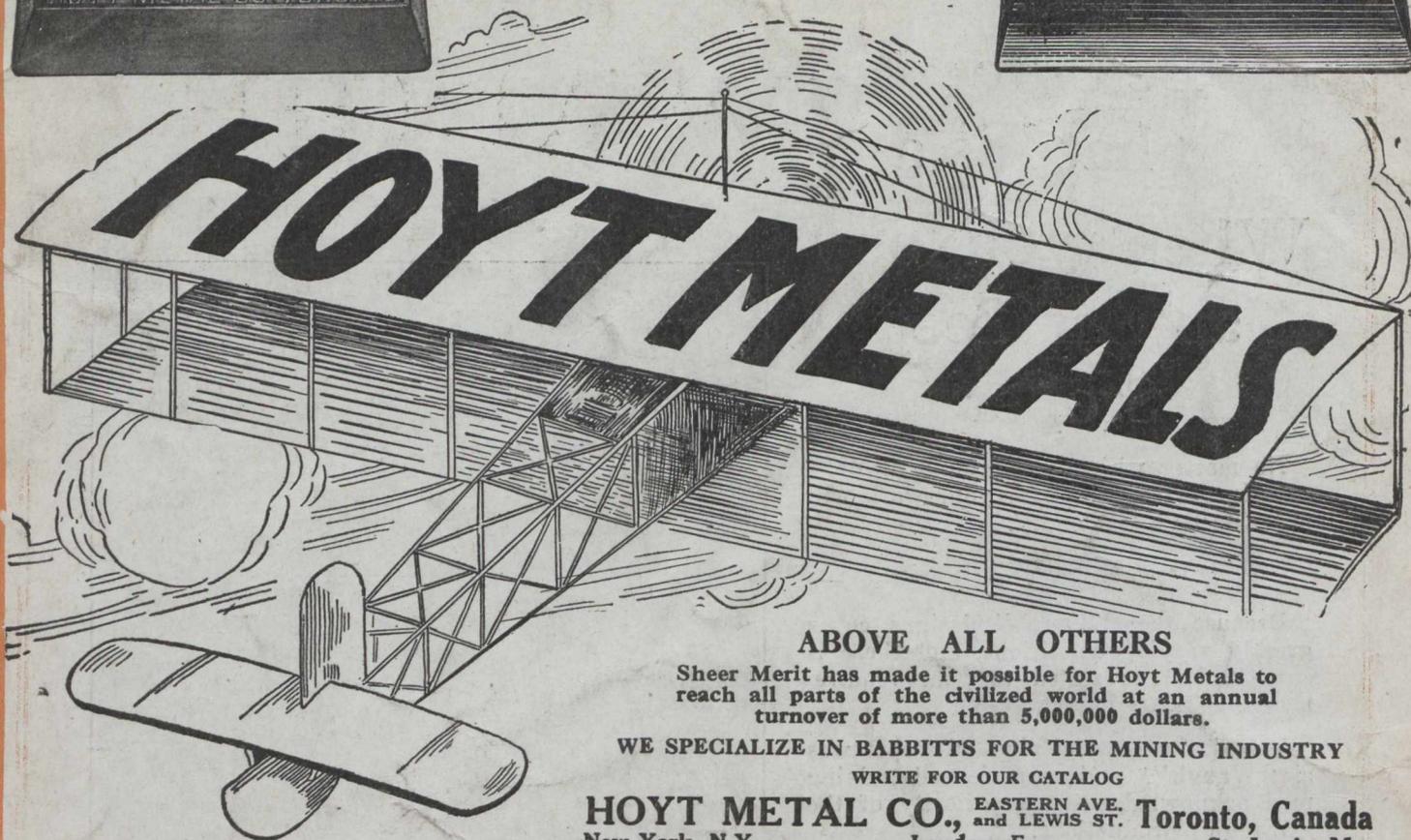
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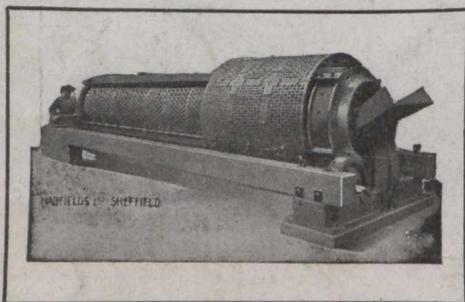
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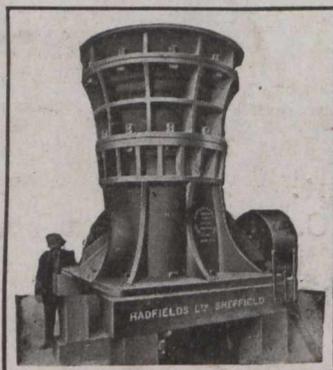
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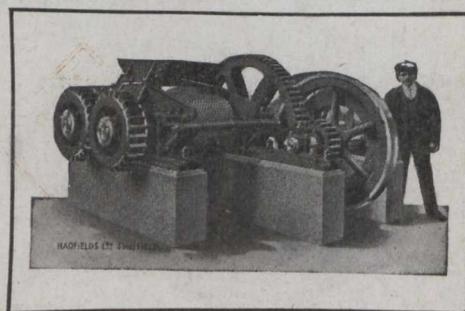
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