

CANADIAN MINING JOURNAL

VOL. XXXIX

TORONTO

No. 17

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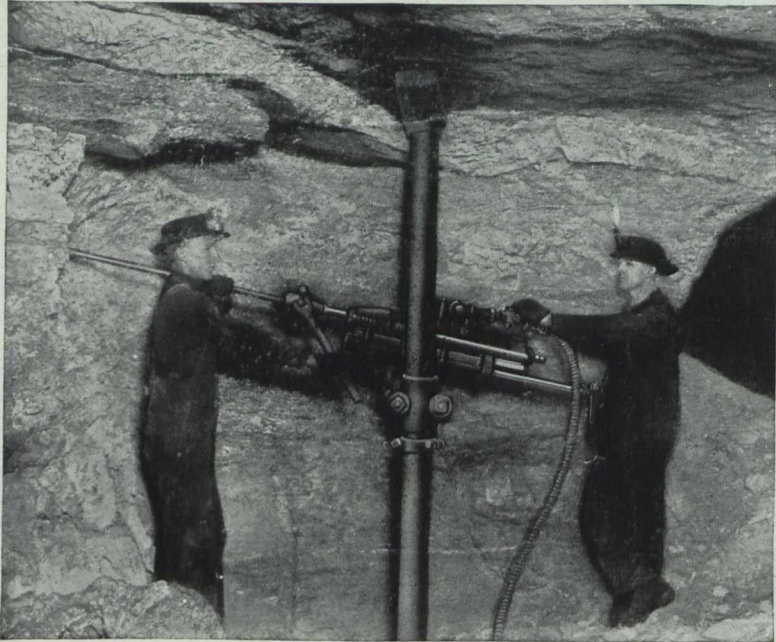
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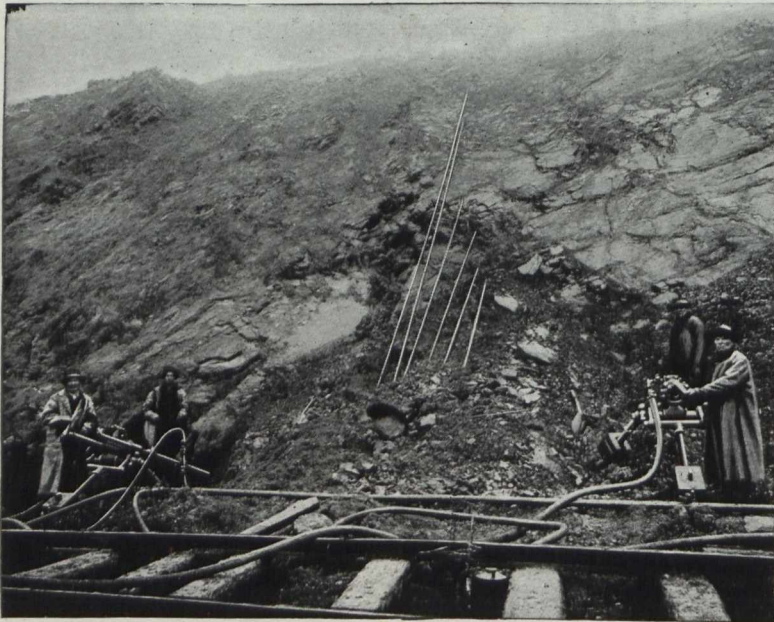
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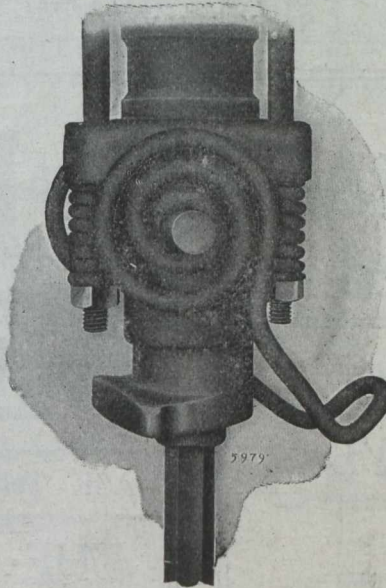


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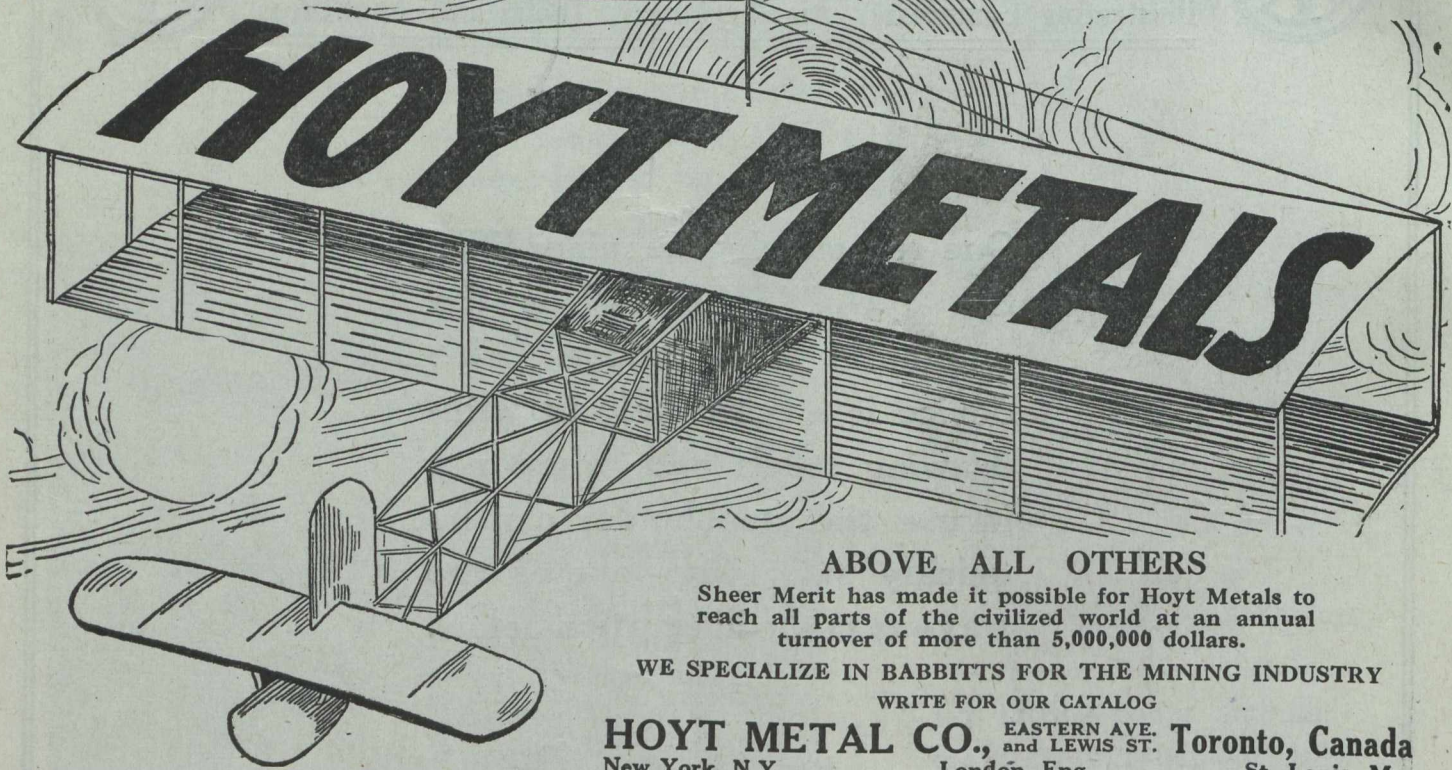
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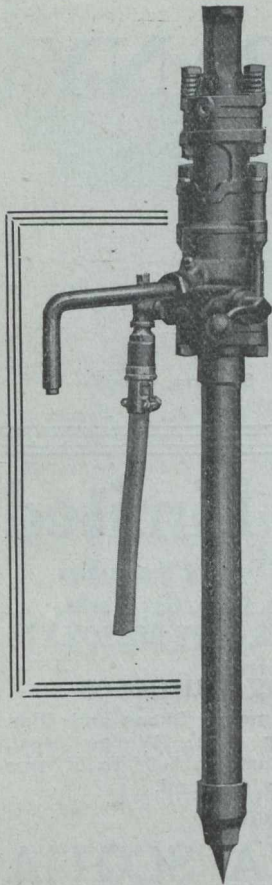
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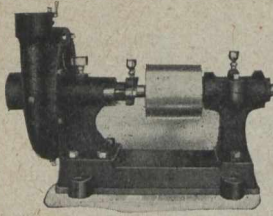


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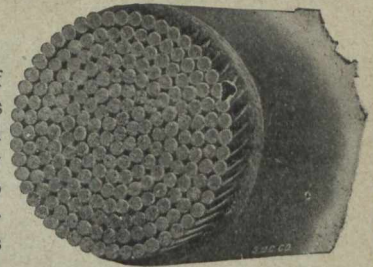
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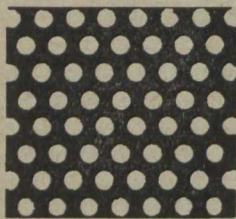
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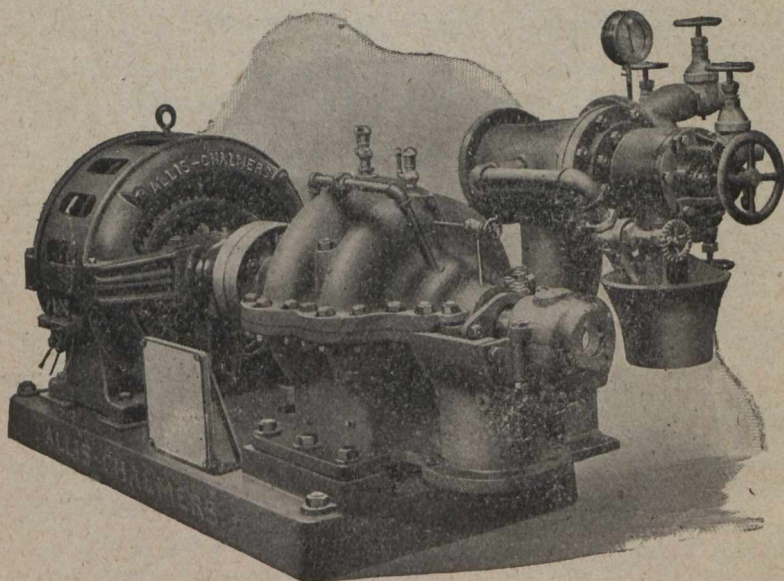
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Nova Scotia possesses extensive areas of mineral lands and offers a great field for those desirous of investment.

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

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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.

The Flotation Process

All patent and other rights to this process
in North America are now controlled by

Minerals Separation North American Corporation

who is the registered owner of the following Canadian patents: Nos. 76,621; 87,700; 94,332; 94,516; 94,718; 96,182; 96,183; 99,743; 127,397; 129,819; 129,820; 134,271; 135,089; 137,404; 142,607; 147,431; 147,432; 148,275; 151,479; 151,480; 151,619; 151,810; 157,488; 157,603; 157,604; 160,692; 160,693; 160,694; 160,846; 160,847; 160,848; 160,849; 160,850; 160,937; 163,587; 163,608; 163,707; 163,936; 165,390; 166,415; 167,474; 167,475; 167,476; 167,603.

On December 11, 1916, the SUPREME COURT OF THE UNITED STATES 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 and, at a recent trial in the United States District Court at Butte, Montana, Judge Bourquin admitted these claims as amended.

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.

Prospective users of our flotation processes are earnestly requested not to be misled by the mistaken 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.

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.

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Aggregate Value of \$558,560,715

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

Production During last ten years, \$284,916,993

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

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

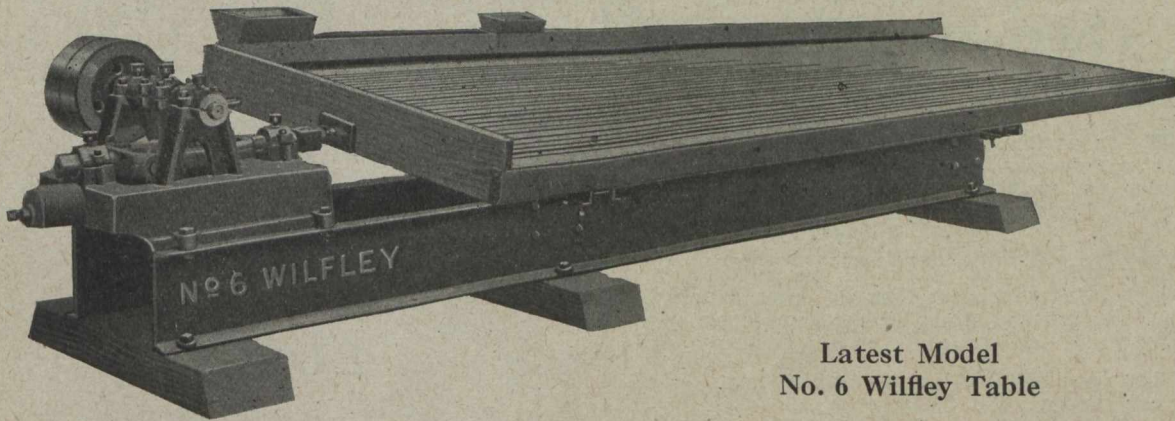
Mineral locations are granted to discoverers for nominal fees.

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

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

THE HON. THE MINISTER OF MINES
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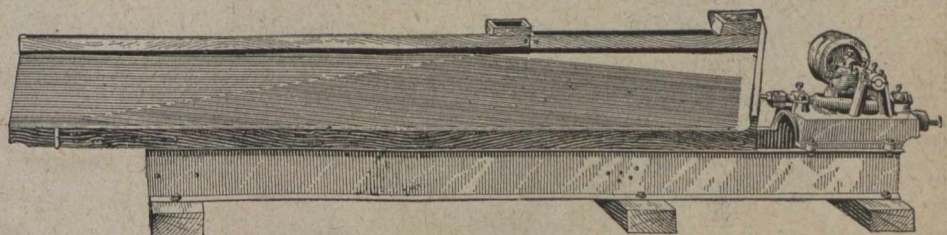
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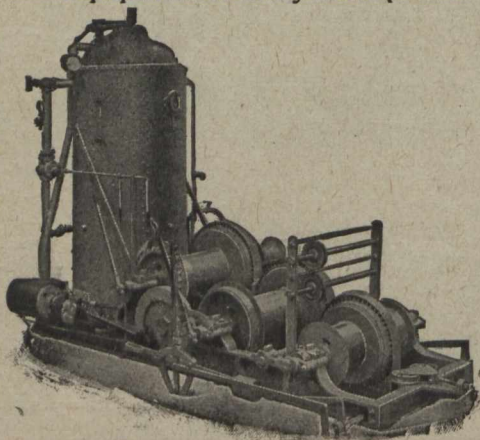
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Speaking at the opening of the National Exhibition at Toronto Lord Shaughnessy said: "It will be necessary to establish a good relationship between employers and employees, and a unity all round for the commonwealth. Everything that will enable us to overcome all difficulties must be closely studied, and, where changes are necessary to meet conditions, we may be relied upon to make them without delay." Better understanding between labor and capital is generally believed to be one of the big results of the war, and it is interesting to note that the head of our biggest corporation is taking a leading part in the endeavor to solve in the interest of Canada the problems of the immediate future.

U. S. MINERS TAKE PLEDGE.

"So long as the war lasts I'll stick to my job and do an honest day's work, six days a week and overtime if necessary. I'll do anything else the President of the United States asks me to do. So help me God."

This pledge has been taken in scores of great establishments in the United States and is being adopted in the coal regions. Recently at Butte it was taken by 10,000 men as the miners were lowered underground.

COAL THE KEY TO VICTORY.

During recent weeks there have been a number of interesting statements made concerning the part that coal is playing in the war. The message from Marshal Foch to the meeting of the Coal Miners' Federation at Southampton should help to divert more attention to the necessity of producing coal.

In England, Baron Calthorpe, the Coal Controller, says that the supply was 36,000,000 tons short this year and several million tons will be required annually for the American army in France. Increased output is being planned for and consumption will be kept down by a rationing plan.

In the United States the fuel administration has announced the appointment of 28 production managers. Each will have charge of the campaign for increased production in his district. To him will report a committee of six, three representing mine management and three representing workers. Where a mine is failing to produce maximum tonnage it will be up to the production committee to learn the cause and institute improvement. Each week the committee will post names of the men who have been absent, who have worked short hours or have loaded less than a fair amount of coal.

In the United States there is recognition of the fact that coal is a basic necessity in the manufacture of munitions of war. The War Industries Board is urging increased coal supply as one of the chief needs for improving the supply of steel, in which there is a great shortage. The enormously increased demand for steel must obviously result in a greater shortage of coal than has yet been experienced.

The situation in Canada is again reviewed in this number of the Journal by Mr. F. W. Gray. During the past three years Mr. Gray has time and again pointed out clearly the folly of ignoring the falling off in production of coal. He has drawn attention to the reasons for the decline and has particularly emphasized the inadvisability of taking so many experienced miners from their work just because they were so willing to share the dangers and hardships in the field of battle. He has repeatedly pointed out that these men, while excellent soldiers, would be better employed at mining coal. In this number he points out that Canada is more in need of a Fuel "Booster" than a Fuel "Controller."

Commenting on the coal shortage, "Saturday Night" says: "Our coal miners are working short hours for huge pay, with the result that they feel that they can afford to loaf a good share of the time, with the result that production is far below normal." "Saturday Night" should retract that statement. Our coal miners

are not responsible for the decrease in production. Many of the best of them are to-day in France. Those that are at their regular occupation are working faithfully and they are not getting "huge pay." Of necessity, on account of the heavy drafts of experienced miners, a larger than usual number of inexperienced men are employed in the coal mines and some experienced aliens are probably loafing; but, as Mr. Gray points out, the coal miners are doing very well and the statements of "Saturday Night" are inaccurate and misleading. The shortage of coal in Canada may be to some extent relieved by appealing to the miners to do more work than usual; but it is absurd to place on the shoulders of the men in the mines the responsibility for the shortage.

The National Exhibition at Toronto opened on August 26th. As usual one of the notable features is the exhibit of minerals of Ontario by the Provincial Bureau of Mines. The educational value of such an exhibit is very great, and it is to be hoped that other parts of the Dominion will be more adequately represented on future occasions.

While the Ontario Bureau of Mines does well in showing mine products at the National Exhibition, the Mining Industry is nevertheless very poorly represented. When we consider that, next to agriculture, mining is Canada's greatest basic industry, it is reasonable for visitors at this great exhibition to expect to see not only a collection of minerals but working models of mines and metallurgical works, and a big display of the machinery used in mining, milling, smelting, and refining operations. The Exhibition is a great success year after year, but it would be more instructive if more attention were given to mining and other basic industries. Is it too much to expect that there will some day be a building devoted to exhibits of the mining industry? We believe that an attempt to show methods used in mining and treating ores would not only be instructive; but would prove to be one of the most attractive exhibits on the grounds.

LIGNITE UTILIZATION BOARD APPOINTED.

According to a Canadian Press Despatch, dated Ottawa, Aug. 22, Hon. Martin Burrell, Minister of Mines, has announced the appointment of the Lignite Utilization Board, which will deal with the problems concerned with the further development and use of deposits of lignite coal in the west.

The appointment of this board, said Mr. Burrell, is the result of negotiations which took place some time ago between the Governments of Saskatchewan and Manitoba and the Federal authorities. The Council for Scientific and Industrial Research and the Department of Mines have for a long time past been closely investigating the possibilities of carbonizing and briquetting lignite coal to make it most suitable for household use, as well as the question of producing by-pro-

ducts such as oil, pitch, ammonia, sulphate and gas. A solution of these problems which would be a commercial success is most desirable. An order in Council was passed some time ago authorizing the Minister of Mines to enter into an agreement with the Governments of Saskatchewan and Manitoba, which should provide that they would contribute one hundred thousand dollars each and this Government two hundred thousand for the purpose of establishing an experimental plant and for investigating and experimental work whether before or after the establishment of the said plant, as might be deemed necessary or advisable.

The matter was somewhat delayed during the absence of the Prime Minister of Manitoba in England, but the agreement was accepted by all three Governments recently and a board has now been appointed. Its Chairman will be Mr. R. A. Ross, Consulting Engineer of Montreal, who, in addition to his wide experience as an engineer, has taken a keen interest in the problems under consideration and has been an active member of the Council for Scientific and Industrial Research. The other two members will be Mr. J. M. Leamy, of Winnipeg, Manitoba, Provincial Electrician, and Mr. J. A. Sheppard, a well-known business man of Moose Jaw, Sask.

THE PEACE RIVER DISTRICT.

The Peace River District has been for many years the subject of much interest and speculation. Alluring tales from adventurous pioneers, of its wonderful resources, charming climate and varying scenery, have long since lent to the district that charm of romance which distance and uncertainty blend with glowing promises. Now, however, the land so long famed by legend and mystery is being proved a reality, modern transportation having, so to speak, brought it to our very doors. A journey from Edmonton to the town of Peace River, for instance, which five years ago consumed nearly two weeks of toil and hardship, may now be made in less than twenty-four hours, in comfort at all times of the year. Trains to this latest settlers' Mecca, which is nearly 1,000 miles north of the international boundary line, carry both sleeping and dining car accommodation.

The Department of the Interior, through its Natural Resources Intelligence Branch, has prepared and is distributing a new illustrated report on the district based on investigations made by an official of that Branch during the season of 1917. The publication contains interesting information with regard to climate, soil, agriculture, minerals, game, water powers, transportation, and education. A map of the district showing general topography also accompanies the report.

The recent reservation in the interests of soldier settlement of available Dominion lands has also necessitated the preparation of a map which would show the area in Northern Alberta that had been reserved for such purpose. This publication is now available for distribution, and should prove of considerable value to the returned soldier who is considering the advisability of settlement in the Peace River country, likewise to the prospective homesteader, as it shows the area within which homesteads may be procured, also the total number of quarter-sections that are still available in each township within reasonable distance of a railway. A copy of the report, or map, or both may be procured free of charge upon application to the Natural Resources Intelligence Branch of the Department of the Interior, Ottawa.

The Coal Shortage

By F. W. Gray.

A disturbing amount of misinformation is being circulated about the shortage of coal in Canada and in the United States. The statements which are being made are characterized by bias and entire misconception, and it is therefore refreshing and at the same time reassuring to find that President Wilson correctly appraises the situation, as he seems able to appraise most situations. President Wilson's statement, in part, is as follows: "The existing scarcity of coal is creating a grave danger—in fact, the most serious which confronts us, and calls for prompt and vigorous action on the part of both operators and miners. Without an adequate supply of coal our war programme will be retarded; the effectiveness of our fighting forces in France will be lessened; the lives of our soldiers will be unnecessarily endangered, and their hardships increased, and there will be much suffering in many homes throughout the country during the coming winter."

President Wilson is not given to over-statement, or alarmist messages. When he states that the coal shortage situation is "the most serious which confronts us" it does not seem that his language could be exaggerated. Many serious situations confront the Allies, which it is unnecessary to enumerate, but here we have the executive head of a great and powerful nation stating that nothing is more important than coal.

Readers of the "Journal" will recollect that an identical statement has been made by the writer, and repeated almost 'ad nauseum' from time to time during the duration of the war. A few weeks ago we wrote: "Steel, wheat, ships, guns, shells, men, money—all these things and many others—are but a transmutation of coal, merely the finished product of materials that have been mined, assembled and manufactured with the help of coal. Coal is basic, fundamental. When will the fact be realized?" Lloyd George stated it three years ago. President Wilson has again stated it. And yet it would be difficult to point to any action on the part of our own Government or on the part of the Government of the United States, to remedy the shortage, or to attack the problem at its roots.

The Fuel Controller in Canada, the Fuel Administrator in the United States, and the Coal Controller in Great Britain, have done many and useful things in co-ordinating the transportation facilities, and by the adoption of zoning arrangements have done away with a great deal of overlapping and duplication of effort in the matter of transportation. Great energy has been expended on price fixing for the protection of the public in the matter of the cost of coal. In neither of these courses, however, has there been any attempt to increase the production of coal. Price fixing has in a good many instances had the direct effect of discouraging production. In the case of a product so fundamental as coal, great care should have been exercised—much greater care than has been exercised—to preserve the encouragement to production which always accompanies the retention of the element of gain and profit. It is far, far preferable that the public should pay more for its coal than that coal production should decline.

So far as Canada is concerned the very title "Fuel Controller" expresses a misconception, unless indeed the Government had more in mind the importation of coal from the United States than the encouragement of production at home. What we need in Canada is not a

Fuel "Controller," but a Fuel "Booster." The coal industry does not require controlling, or restricting in any way. It needs to be encouraged, to be enlarged and amplified to the utmost extreme.

As an example of complete misconception of the cause of the coal shortage witness the Hon. Frank B. Carvell's recent statement that the miners in Canada are only working 75 per cent. of their time, and are getting such large wages that they can afford to loaf the rest of the time. This is a sweeping, and evidently unconsidered statement. So far as Nova Scotia is concerned, the record of the miners will bear comparison with that before the war. As the writer has only recently pointed out in the "Journal," the tons produced per miner per day is exactly what it was for years before the war. Their performance shows an average efficiency, or perhaps a slightly increased efficiency when compared with pre-war records.

The reply of the miners of Nova Scotia to Mr. Carvell very properly resents his reflections upon them, but here again we find mis-statements and bias. The miners state that the coal companies are unable to take away the coal produced by the miners "on account of shortage of material, such as rails, nails, sleepers, boxes, etc., compelling experienced miners to lose time occasionally on this account."

This statement is full of inaccuracies and a moment's reflection will show that this is so, because no coal operator, whose business and sole occupation is the production of as much coal as possible, would tolerate a condition that limited the output of coal if it were within his power to remove it.

The fact we have just quoted, namely, that the coal miners are producing exactly the tonnage per man that they produced as an average performance for years before the war, and also during the war, is sufficient refutation of any statement to the effect that there is restriction of the production of the individual miner at the coal face.

What, then, is the truth regarding the coal shortage and its cause? No situation is entirely simple, and there are a number of causes which have assisted to bring about the decline in coal production, but the chief cause—the cause that is so outstanding in its effect as to belittle all the other accessory causes—is the enlistment of miners. By miners we mean men actually engaged in digging coal at the working face. The men employed on the surface and in the same proportionate numbers as the mining coal class.

What is the remedy? Unfortunately, there is no remedy. Palliation of the evil is all that is possible. Some little can be done by the introduction of mechanical devices in substitution for manual labor, but this course can only have a very limited application. Some help can be given by transferring surface employees and auxiliary workmen underground into the mining coal class, but not much is possible in this direction, because the men who are not to-day employed in mining coal are of such a category physically and as to age as to debar them from the work of mining coal. More can be done by closing down small collieries, and concentrating the miners in the larger and more economically worked collieries. This course will throw some men out of employment more or less permanently, but it would give more coal and cheaper coal if followed out rigorously and logically. This is about as far as palliative measures can be carried.

As it is manifestly impossible at this stage of the war to return to the mines the miners who have been enlisted in the armies, it is also manifestly impossible to restore the coal production to pre-war figures during the further duration of the war. One course is possible, namely, to stop all further enlistments of miners. In 1915 and 1916 the writer pointed out on many occasions that the enlistment of miners was going on to an alarming degree, and out of all proportion to the rest of the population of Canada, and stated that the damage thereby being affected was irremediable for the further duration of the war. Nevertheless, in the application of the Military Service Act the authorities did not except miners, and notwithstanding the dangerous reduction in coal production which had taken place by October, 1917, a large number of coal producers have been since taken by the selective draft. The Canadian Government properly said they considered the military danger was such as to overshadow the necessities of industrial production, and they refused the application of the farmers who made such dramatic and persistent attempts at Ottawa to have farm workers excepted. But coal production is not an industrial matter to-day—and, moreover, since this war started it has never been an industrial matter. It is a military matter, the first of all military matters in a modern war. Look back over the history of the war. In 1914 the first step after the mobilization of the fleet—which, it is to be remembered, was mobilized by the aid of coal—was to guard the Empire's credit and exchanges. The most important single item in the matter of maintaining Britain's credit and the exchange rate has been coal, for coal and gold are interchangeable terms when exchanges are in question.

In 1915 we were told the chief need was for high explosives and artillery. The munitions question is merely a phase of the coal supply, for whether guns, shells and high explosives were made in England or America, their origin, manufacture and transport was all a matter of coal supply.

In 1916 and 1917 the submarines of the Central Powers placed Britain in a dangerous position, and the cry was then for ships, and more ships. Ships again are but an outgrowth of coal production.

The submarine brought England to a dangerous pass through food shortage, but this shortage did not arise from any real failure of food supplies throughout the Empire, but was caused by the shortage of freighting steamers. Ships cannot be built, nor can they cross the seas without coal.

Recently the question of man-power has been apparently paramount. But what is the use of large bodies of soldiers, and great reserves of man-power, if they cannot be mobilized, fed, trained, armed and sent to the field of battle. And yet none of these things can be accomplished without coal.

Coal and iron have been lodestones to the Germans throughout the war. Iron is useless without coal to smelt it, so the matter resolves itself again into a question of coal supply. Why did the Germans venture their slim expeditions into the Don Cossack country and push their way to Ekaterinslav? Because there are to be found valuable deposits of anthracite. Why did they desire the district around Lodz in Poland? What did they seek in Belgium, and in France north of the Somme? What do they lust after yet in that part of Holland which borders on the Campine coalfield? Coal supply, because they know its value as no other nation knows it.

The general public is not aware of the straits to which France was reduced by the Germans gains made this spring in the northern coalfields of France, nor how greatly these gains increased the strain upon the transportation facilities of England. What is the overpowering, crying need of the Scandinavian countries, of Holland and Spain? Not wheat or food, but coal. The greatest lever that yet remains to Germany in her dealings with the small neutrals that surround her is her ability to give them a coal supply. Italy, Greece, the whole Mediterranean littoral, is dependent on Britain and America for coal. Britain's effort has been stupendous. The effort of the United States is already great, and will probably reach unexampled dimensions, but it is doubtful if any but the smallest percentage of the citizens of Britain or America realize the part that coal has played, any more than they realize the part that coal has played, any more than they realize the limitations that will be imposed on these efforts if coal is not forthcoming in the necessary quantities.

Is it too much then to say that the production of coal is not an industrial matter, but a department of national defence?

A great deal has been said and written about the suffering which may result in North America from a coal shortage among the civilian population, and properly so, but if the coal output should prove insufficient for the requirements of the armies and the navies of the Allies, the needs of the civilian will receive scant consideration. He may, indeed, freeze to death, and he will be allowed to freeze to death, before the Allied Governments will allow the movement and the munitionment of their armies to be imperilled.

It is about time that responsible people ceased to talk about the hours worked by the miners, or to worry about the supposedly high wages he is earning, or the supposedly high selling prices received by the coal operators, and got down to a realization of the fact that the coal production has been reduced **exactly in proportion to the miners who have enlisted**, and that it can only be restored by bringing back the men who have gone, or such of them as are left alive.

In face of these facts, it is stated that the citizens of Winnipeg are still debating whether they can stand the annoyance of using soft coal mined in Canadian collieries in place of anthracite imported from the United States. When it is considered that practically nothing but soft coal is used in Nova Scotia, and that anthracite is unknown in Britain and Europe as a domestic fuel, the attitude of the Winnipeg people is amusing, in August, but it will be a tragic recollection next January.

The production of coal in Nova Scotia is two and a half million tons per annum below pre-war figures. The production of coal in the Canadian West has increased, but it also is still far below pre-war figures, and also, like Nova Scotia, far below the capacity of the existing collieries. There are said to be collieries in the Canadian West that are not working full time because of lack of outlet. This is not the case in Nova Scotia. There the coal shortage is altogether a matter of labor. There is market and to spare, for Nova Scotia used to send two million tons of coal per year to Montreal, but for several years the Province has exported little or none at all to St. Lawrence ports. If there is any Canadian colliery that is not working every day to the full capacity of the men that are left to work in it, this is a question that demands the immediate attention of the Government. Questions of cost and trans-

portation are of secondary, and even negligible importance to-day where coal supply is concerned. All previous ideas of economics and trade channels should be scrapped in this matter if they interfere or lessen coal production. Everything, price, wages, transportation costs, convenience, vested interests, custom and precedent should give way to the paramount necessity of increasing the available supply of the most important munition of war.

It is a sample of our topsy-turvy conceptions of war needs that we have Ministers of Blockade, Ministers of Propaganda, Ministers of Munitions, of Shipping; and Bureaus and Departments without number, but the creation of a responsible Minister of Mines with some real powers has not occurred either to Canada, the United States or Great Britain. Neither does there appear to have been in the legislatures of any of the Allies men with scientific and mining knowledge sufficient to place the question of coal supply before our Governments in its true importance. There was really no need, had such representations been made and heeded, for the decline in coal production that has actually taken place, for the number of men employed in the coal mining industry—particularly those men employed at actual coal digging—is numerically small compared with the all important influence of coal supply on all other industries, and the retention of these men in the collieries would have been of greater advantage from a military standpoint than the advantage gained by their enlistment.

In making this statement the writer does not wish to be understood as belittling the value of the miner as a soldier. He makes the very best of soldiers, and the armies are glad to get the miner, because he is fitted by his training and his inherited physique for the arduous calling of the soldier. All this is well known and admitted, and yet the coal miner cannot be more advantageously employed, if the winning of the war is desired, than in mining coal.

Canadian territory has not been invaded, or even threatened. Our man-power has not been called to the ranks in anything like the proportion of French and English experience, and yet our coal production has shown proportionately the most disappointing decline of any part of the Empire. This is not as it should be, and it is not a pleasant thing to contemplate.

PLANNING FOR MORE COAL.

The Wall Street Journal says: The fuel administration has adopted a plan whereby it hopes for a material increase in coal production. Briefly, this comprehends a director of production; under him, 28 production managers, one for each coal-producing district. These managers will have charge of production committees formed for most of bituminous mines, committees of six being divided equally between representatives of mines and operators. Each committee is to look after production of its own mine, locate blame for a weekly production less than maximum and report to the local production manager.

As our coal requirements now run about 80,000,000 tons ahead of normal output, every possible means of increasing the supply should be employed. Not a gun or a shell can be made without coal. Manufacture and transportation of everything going to make up and maintain an army depend upon coal.

But however good this plan may be, it seems as if there is room for improvement. There would be no need of any further suggestions if every miner were aroused to the issues of the war. Many are. There

are men of intelligence and good education mining coal to-day. One of the most eloquent orators of the Methodist Episcopal church, now a bishop, was once a Pennsylvania coal miner. John Mitchell was a coal miner. One member of President Wilson's Cabinet worked for years with pick and shovel in the Pennsylvania coal mines. There are many more such laboring now in the mines of the United States.

But, likewise, there are many more that could not tell whether the United States is governed by a king or president. They do not speak the language of the United States. They do not know what liberty or self-government means, and perhaps do not care. America represents to them a place where they can get more pay for a day's work. The war means nothing to them.

We talk about the melting pot. Yet we have never done anything but fill it to overflowing. We expected the material to fuse without any fire beneath the pot. Now is the time to melt this material. It is being done in other callings.

OPENING GRANBY COLLIERY NO. 1 ON VANCOUVER ISLAND, B.C.

Under this heading the Granby News recently published information relative to the Granby Consolidated Co.'s coal-mining property and operations at Cassidy, Vancouver Island, British Columbia, as follows:

"Cassidy, Vancouver Island, is the latest instance in British Columbia of a community being built along modern and progressive lines, and while the development is ultimately to serve the ends of production, at the same time benefit accrues to both the individual and the company. Cassidy is not what might be termed a 'war town,' that is, a community where some munition or other war necessity is being manufactured or produced, and which, when this present and urgent demand shall fall off, may have a decline in both activity and population. On the contrary, while industrial necessity is the prime cause of its establishment, its activity promises to steadily increase, and the work being carried out there assures it a prosperity for the present and an augmentation of prosperity in the future. For at Cassidy the Granby Consolidated Mining, Smelting, & Power Co. is mining coal, the first object of which is to supply material for the manufacture of coke for the company's big copper smeltery at Anyox. Incidentally, what surplus coal shall be available will be disposed of in the general market. Already shipments have been made for storage in bunkers at Ladysmith harbor, so that an adequate supply will be available when the coke-manufacturing plant at Anyox shall be ready to receive it. Work on the coke and by-products plants is being rushed, but it will be some time yet before the company will be producing coke for its own purposes.

"Six months ago the site at Cassidy was the usual British Columbia timbered ground. To-day, from an area of 85 acres the timber has been removed, stumps as well, various industrial and residential buildings have been erected or are in course of construction; a circular radial brick chimney 125 ft. high has been erected by the Custodis Chimney Company of New York, and coal is being mined at the rate of 100 tons a day. About 1,250,000 ft. of timber was taken off the property and this is being cut by the company's sawmill, which has a capacity of about 20,000 ft. a day, 750,000 ft. having been cut to date. To meet building requirements, 2,500,000 ft. of lumber has been purchased from Vancouver Island lumber companies, prin-

ipally from the Victoria Lumber and Manufacturing Company at Chemainus, the Ladysmith Lumber Company, and the Frank Beban Lumber Company, all operating in the district.

"As soon as clearing had been sufficiently advanced, the sinking of three slopes—a main hoisting slope, a return airway, and a travelling way—to cut the coal, was commenced. Sinking operations on the main hoisting slope and the return air way were begun, working one shift, on March 7, 1918, and the material was excavated by the open-cut method up to March 15, when three 8-hour shifts were started and the first car of sand and gravel hoisted.

"The drift material which overlies the coal measures at the point where the three slopes are sunk is a delta deposit and is known geologically as the Colwood sands and gravel, and which in this coal area attain a maximum thickness as great as 200 or 250 feet. The character of the deposit at this point is a free running sand, with absolutely no cementation whatever, which makes it a very difficult ground to handle. It became necessary from the commencement of sinking operations to use forepoling or piling which were driven skin to skin ahead of the face on the top, bottom, and sides, with a heavy battering ram, and the face of slope also had to be breast-boarded closely to prevent the loose sand running in at that point. Water was encountered at a depth of 15 ft. below the surface where the coarser sands gradually gave place to finer until at a depth of 2 ft. the material was a fine quicksand. From this point until the coal measures were reached a special type of spiling was used. This consisting of 4 by 6 in. fir lumber, grooved and tongued, to make a perfectly tight joint. The special spiling was necessary to prevent the inflow of sand which ran through between the joints of the ordinary 4 by 6 in. spiling when driven skin to skin. With this groove and tongue spiling and considerable quantities of horse-manure, the faces were kept open until the permanent sets of timber were placed. Sinking through ground of this nature is exceedingly slow and difficult, and at times 18 in. in 24 hours was considered a good rate of advance.

"The main hoisting slope was sunk a distance of 145 ft., through gravel and quicksand, at which depth the coal seam was encountered, and the first car of coal was hoisted on June 29. This, however, was not the first coal hoisted from the mine; that occurred on April 20, when coal was taken from the travelling slope or manway.

"The sinking of the travelling slope was not nearly so difficult as that of the two other openings, as there the sand contained very little water. Sinking of this slope was commenced on April 3, and the top of the coal seam was encountered on April 29 at a distance of 95 ft. from the portal.

"Coal is being mined from what is known as the Douglas seam, one of three seams of high-grade bituminous coal existent on Vancouver Island, the two others being the Newcastle and Wellington seams. The company has 800 acres of this coal land, with a 10-ft. seam, assuring a supply which will last for many years. While the present output is but 100 tons a day, this is only of coal being taken out in the course of development and getting the mine ready for an ultimate production of 1,000 tons a day of 8 hours.

"Transportation facilities are very convenient. Cassidy is situated on the Esquimalt & Nanaimo railway, which runs from Victoria through Nanaimo to Courtenay and Port Alberni, while a spur provides connection with the Granby Co.'s colliery.

"To produce 1,000 tons of coal per shift, 500 or more men will be employed. Hygienic arrangements for this number of men will be as perfect as modern methods will permit. The change-house, supplied with hot and cold water, showers, baths, etc., is situated conveniently to the three slopes mentioned, these being but a short distance from and parallel to each other. Right at hand, too, will be the mine-rescue station, mine office, and supply house. These essential surface buildings have been arranged as a result of practical experience and it is expected they will tend to the utmost efficiency.

"The rooming-house, a two-story fireproof building, will give to the single men accommodation unexcelled by any building of its kind. It will be 100 by 140 ft., built in the shape of a double L, with 76 rooms, all opening to the outside. Each room will have hot and cold water and, in short, every convenience common to the ordinary household. The mess-house, 75 by 125 ft., will be situated handily, and in this, too, practical experience has been turned to account, so that construction and facilities are to the end of best service.

"For the employees who have families, dwellings are being erected. These are of no fixed design, but the style of architecture is the same as may be seen in the newer parts of Vancouver and Victoria. The houses are handsome in appearance and contain every convenience, such as hot and cold water, bath, cooling chamber in connection with pantry, electric light, etc. These dwellings range in size from three to eight and ten rooms, their cost ranging from \$2,500 to \$7,000 each.

"Water for domestic purposes is obtained from the Nanaimo river, which runs near by, the water being pumped from a filter basin to storage in tanks on an elevation which gives a gravity pressure of 65 lb. Sewage disposal is by means of septic tanks, the soil being admirably adapted for this purpose, being light with much gravel.

"One of the striking industrial features on the surface is the radial brick chimney, which the Custodis Company erected in the very short period of 12 days. At its base the boiler and power-house are being built. The boiler-house will contain two 350 h.p. water-tube Stirling type boilers made by the Babenhausen Company and fitted with automatic stokers. The equipment of the power-house will consist of two direct-connected generators, one of 400 and the other of 250 kw. capacity; a cross-compound compressor, capacity 2,500 ft. of free air per min.; and pumps for fire protection, etc. Electric energy from this power-house will drive the various units about the mine, including a fan of 150,000 cu. ft. capacity, machine-shop, carpenter-shop, tibble, mine-haulage, pumping and lighting for the industrial part of the plant and for the dwellings.

"The carpenter, machine, and blacksmith shops are situated convenient to the top of the slopes. Here will be constructed the mine cars in which coal will be hauled from the mine up the hoist slope, proceeding thence by gravity to a chain haul which will elevate them to the tibble into which the coal will be dumped for cleaning and classifying and then loading into railway cars.

"In charge as superintendent is Mr. Geo. L. Fraser, whose experience in connection with coal-mining has been extensive and varied. He is an old Granby Company employee, well known in both Boundary and Anyox districts. Assisting him is Mr. J. W. Powell, mine manager. To both these men credit is due for their cordial assistance in presenting these facts concerning the colliery at Cassidy to their associates in the employ of the Granby Company."

CANADA'S PRODUCTION OF MUNITIONS OF WAR.

The following figures give a summary of Canada's accomplishments, during the last four years, in the production of munitions of war:

Total number of shells produced	60,000,000
Approximate number of components represented by above, for which Imperial Munitions Board has let separate contracts	670,000,000
In addition to the 60,000,000 of shell produced, there have been a great number of components exported, such as forgings, cartridge cases, primers, copper bands, time and graze fuses, exploder containers, friction tubes, etc. In the production of this war material steel has been used to the amount of	1,800,000 tons
(About 75% of this steel is Canadian product.)	
Quantity of high-grade explosives and propellants produced	100,000,000 lb.
Value of orders placed by the British Government through the Imperial Munitions Board	\$1,200,000,000
Amount of orders already executed	\$1,000,000,000
(This figure represents the actual amount of cash disbursements.)	
Amount furnished by Imperial Government for above purpose from sources outside of Canada	\$400,000,000
Amount loaned to the Imperial Government by the Government of Canada and by the Banks in Canada for purposes of the Imperial Munitions Board	\$600,000,000
Approximate number of contractors in Canada amongst whom contracts for munitions have been distributed	1,000
Number of workers engaged in war contracts	200,000-300,000
Approximate number of persons employed in handling stores in transportation and other collateral organizations	50,000
Approximate total number of workers	350,000

The following is a brief sketch of the growth of the munitions industry in Canada:

Shortly after the outbreak of war, inquiries were made of the Department of Militia and Defence by the War Office as to the possibility of obtaining a supply of shell from Canada. Ensuing negotiations led to the appointment by the Minister of Militia, in September, 1914, of an honorary committee, known as the Shell Committee, to undertake the task of supplying shrapnel shell to the Imperial Government. Its status was nominally that of contractor to the British Government, but really that of agent for the purpose of placing contracts on behalf of the War Office.

Basic steel, the only kind of steel made in Canada, was found by experiment to be suitable for the manufacture of shells. The first shipments of shell from Canada, in fulfilment of the orders placed by the Shell Committee, were made in the month of December, 1914—a little over three months from the inception of the undertaking. By the end of May, 1915, approximately four hundred manufacturing establish-

ments in Canada were engaged in the manufacture of shells or the component parts thereof.

By November, 1915, the Imperial Government had placed orders in Canada for munitions to the amount of, approximately, \$300,000,000. This represented such a great volume of business that it was considered desirable to form a Board directly responsible to the Imperial Ministry of Munitions. The operations of the Shell Committee, therefore, were passed over to the Imperial Munitions Board. The general policy of the Committee, maintained by the Board, was that of eliminating the middleman and dealing as far as possible with those who would actually perform the work. In pursuance of this policy raw materials of every description were purchased and passed on from contractor to another, each being paid successively for his labor. This plan had the advantage of saving the contractor large investments of capital otherwise necessary to produce complete shell, and at the same time of enabling a proper distribution of the materials available so that the maximum production might be secured. Contractors were given the opportunity to pay for their necessary investment of capital from the profits derived from their contracts. Generally speaking, this has been accomplished. Subsequently the business was placed upon a competitive basis.

The work of the Board is carried on by the Chairman, who has full administrative and executive authority. He is assisted by a Board, of whom four members give constant service. Business men have been asked to take charge of the various departments, numbering about twenty. These Directors carry on their duties in Ottawa, in Toronto, in Vancouver, and in Victoria. The following are details regarding the most important of these departments:

1. The Purchasing and Steel Department buys all the materials entering into munitions, arranges for the forging of steel, and distributes the forgings and components to the machining plants situated in the various Provinces.
2. The Shipbuilding Department purchases and supervises the construction of engines and boilers for the wooden ships referred to below, purchases the timber and supplies for the hulls, and has an operating section which installs the engines, boilers, and equipment in these vessels.
3. The Explosives Department operates the National plants producing nitrocellulose, cordite and T.N.T., with the necessary acid plants, and operates the plant producing acetone and methyl-ethylketone.
4. The Forging Department operates the National plant in which the steel turnings are melted in electric furnaces, and the steel thus produced subsequently converted into forgings.
5. The Aviation Department operates the plant producing aeroplanes, and in its constructional section builds all aerodromes, machine shops, barracks and officers' quarters at the various camps, and purchases all supplies and equipment for the Royal Air Force.
6. The Timber Section producing aeroplane spruce and fir, conducts logging operations in British Columbia, and operates tugs for the delivery of logs to mills which cut them for account of the Board, under supervision of the Board's officer. These logging operations call for the production of 248,000,000 feet of logs in 45 camps placed in a territory extending over 600 miles, north and south.
7. The Fuse Department operates the National plant where time fuses are loaded.

8. The Engineering Department checks and rectifies all gauges, keeping for this purpose a staff of engineers and an operating force of expert tool-makers working in machine shops under their direction.

9. The Inspection is all carried out under the Director of Inspection, a British officer, responsible to the Director-General of Inspection in Great Britain. Several thousands of inspectors are required to do the work.

10. The administrative staff comprises from 1,000 to 1,500 men and women, the number varying with the degree of urgency.

The operations of the Board have gradually been extended into lines of war material other than steel, and the Imperial Munitions Board is now endeavoring to explore and make available for war purposes those natural resources of the country hitherto undeveloped. The forests of Northern British Columbia have been called upon to provide spruce for aeroplane purposes and for wooden shipbuilding. To a lesser extent the timber resources of Ontario, Quebec, and New Brunswick, have been drawn upon for the same purposes. The mines of British Columbia are producing copper, zinc and lead. The Province of Quebec is supplying asbestos, aluminum, carbide, and other mineral products in large quantities. Ontario is providing nickel, silica, and carbides, and in collaboration with the Canadian Department of Mines there has been an extensive production of alloys to be used in the manufacture of high-speed tool-cutting steel.

The development of the explosive and propellant industry in Canada has been an important achievement. It has been the policy of the Board to establish National plants for the purpose of stimulating any important line of production which private enterprise was unwilling or unable to carry on, and at the present time seven of these plants, representing a capital investment of \$15,000,000, are being operated under the immediate direction of the Board. The two largest manufacture explosives, and these, with privately owned plants, have produced up to June 30th upwards of 100,000,000 pounds of high-grade explosives and propellants.

The Shipbuilding contracts placed by the Board have a value of some \$70,000,000. These represent 43 steel ships and 58 wooden ships aggregating 360,000 tons. These contracts are distributed by value as follows:

To British Columbia \$35,000,000; Ontario \$20,000,000; Quebec, \$12,000,000, and to Nova Scotia and New Brunswick the balance.

One National plant is devoted to the manufacture of aeroplanes for training purposes (over 2,500 of which have already been produced), and latterly to the construction of bombing planes for the United States Navy. Aeroplane engines of high-grade are now being manufactured, and will shortly be produced in large quantities for use in fighting machines at the front.

The Board acts as general and exclusive purchasing agent on behalf of the War Office and Admiralty, and the British Timber Controller, Department of Aeronautics, and Ministry of Munitions. In addition, it acts as agent for the United States Ordnance Department in arranging contracts for munitions and supplies, placed by the United States Government in Canada. At the present time American contracts amount to upwards of \$70,000,000, and orders are coming forward in rapidly increasing quantities.

In the report issued by the Imperial War Cabinet for the year 1917, Canada's services to the Empire in the production of munitions are referred to as follows:

"Canada's contribution during the last year had been very striking. 15 per cent of the total expenditure of the Ministry of Munitions in the last six months of the year was incurred in that country. She has manufactured nearly every type of shell, from the 18-pr. to the 9.2 in. In the case of the 18-pr., no less than 55 per cent of the output of shrapnel shells in the last six months came from Canada, and most of these were complete rounds of ammunition which went direct to France. Canada also contributed 42 per cent to the total 4.5 shells, 27 per cent of the 6 in. shells, 20 per cent of the 60-pr. H.E. shells, 15 per cent of the 8 in. and 16 per cent of the 9.2 in. In addition, Canada has supplied shell forgings, ammunition components, propellants, acetone, T.N.T., aluminum, nickel, nickel matte, aeroplane parts, agricultural machinery and timber, besides quantities of railway materials, including no less than 40 miles of rails torn up from Canadian railways which were shipped direct to France."

ORES USED FOR MANUFACTURE OF SULPHURIC ACID.

For the production of all the grades of sulphuric acid in the United States in 1917 the following quantities and kinds of ore were used:—

	Sulphur.	Pyrites.	Gold and Silver bearing pyrites & galena.	Copper-bearing sulphides.	Zinc-bearing sulphides.
Domestic	463,364	376,955	17,380	708,502	584,100
Foreign	20,463	880,183	.....	147,531	152,811
	483,827	1,257,138	17,380	856,033	736,911

In the column headed "Pyrites" are tabulated all the sulphide ores used that are not treated further for their copper, lead, zinc, gold, or silver content. Much of this material doubtless contains small quantities of these metals, but inasmuch as they are not recovered, their presence in the ore is of no economic importance.

A comparison of the different kinds of ore used in 1917 and in 1916 shows that over 210,000 long tons more sulphur, 90,000 tons more copper-bearing sulphides, and 110,000 tons more zinc-bearing sulphides, but 220,000 tons less pyrites were used in 1917.

PUMPING SANDS FROM COBALT LAKE.

Everything is in readiness at the plant of the Mining Corporation of Canada to commence pumping sands and slimes from the bed of Cobalt Lake. The operation is perhaps the largest of the kind ever undertaken in Canada. Upwards of half a million tons of sands and slimes from past operations have accumulated in the bed of Cobalt Lake. The material contains several ounces of silver to the ton, and with silver at \$1 an ounce the value of the whole is large.

The pumping equipment is the most powerful in Cobalt. It consists of two eight-inch pumps one driven with a 100 h.p. motor and the other by a 125 h.p. motor. The capacity of these pumps is estimated at from 1,000 to 1,200 tons of sands and slimes every twenty-four hours.

Changes already completed in the mill will allow of the treating of about three hundred tons daily. This will be gradually increased until a capacity of about 650 or 700 tons daily is reached.—The Mining Review.

SPECIAL CORRESPONDENCE

NORTHERN ONTARIO.

Good Progress at the Patricia Gold Mine.

From a raw prospect to a producing mine in less than nine months is a record that any mining property might well be proud of. This is the actual accomplishment at the Patricia Syndicate property in the Boston Creek District. Before being taken over by Mr. Charles O'Connell and Montreal interests, the property was known as the Boston Hollinger. Since the latter time the company has installed a 40-ton mill and partially developed the property to a depth of 200 feet. Two shipments of gold bullion have been made and a third one is expected to be sent out in a short time.

The new mill is one of the most compact and efficient of its kind in the north. The ore is first crushed to a three-inch ring and fed to a ball mill, where it is ground to the desired fineness. It then passes over the primary plates where about 72 per cent. of the gold content is recovered. After passing over the primary plates it is classified, the oversize going back through the mill while the remainder passes down over the concentrating tables. A total recovery of from 92 to 94 per cent. is obtained by this process. This is made possible by the free-milling character of the ore dealt with.

The grade of ore being encountered at the mine is very high and mill heads of from \$20 to \$22 per ton are considered very ordinary, while assays often run several hundred dollars to the ton. Taken as a whole, the general run is perhaps the highest of any producing mine in the Dominion.

The main vein has been developed to a depth of 200 feet, at which point the average values show a considerable increase over that obtaining at the 100 ft. level. For the entire distance the vein will average about two feet, while at places it widens out to as much as four feet. The vein matter is a bluish quartz, heavily mineralized and containing spectacular quantities of free gold, while the general run of the ore is decidedly free milling.

Miller-Independence Discovery is Important.

During the past few weeks one of the most important developments in the mining industry in the north country has taken place at the Miller-Independence mine in the Boston Creek district. The discovery of a rich vein on the north side of the property with a southerly dip for the first 70 ft. at an angle of 55 degrees and later straightening up to about 62 degrees, and ranging in width from 9 to 12 ft., has given this property a place of prominence, and has added greatly to the general interest and activity of the district. The new shaft being sunk on this vein has now reached a depth of 175 ft., at which point phenomenally rich gold tellurides are in evidence. The tellurides contain approximately 42 per cent. gold.

The Miller-Independence was purchased three years ago by Mr. George Miller and a number of American associates, since which time something like \$300,000 has been spent on the property, including the purchase price. Until the present summer, efforts were centred on the development of a high grade vein, which at times looked like a winner; but this deposit was found to lack the requisite consistency of a profitable producer. A new vein or outcropping was found early this summer by Mr. W. R. Adams, mill superintendent, who was constantly making a study of the geology

of the property. It is a remarkable fact that the discovery was made at a point where the main road crosses the property.

It is proposed to continue the main shaft to a depth of 200 ft., and drive drifts both east and west as was done at the 100 ft. level. This will give four faces in ore to provide feed for the forty ton mill, which is being made ready for operation. A number of additions are being made to both the milling and mining equipment.

The Renaud group of claims, lying adjacent to and south of the Miller-Independence at Boston Creek, was last week reported as taken over by Mr. Robert Norrington, representing Detroit interests. The deal is understood to be still pending. The purchase price is said to run up in six figures and is the first big deal since the recent rich discovery on the Miller-Independence. Exploration work is to be commenced at once, provided no serious hitch occurs. Mr. S. Renaud, who is in charge of the work, is one of the original owners of the property, along with Mr. A. Cullen, both of Haileybury. The trend of the large vein on the Miller-Independence is north of east and it should pass across the southwest part of the Renaud group. Several other veins have been opened up on these claims and in a number of them gold has been found to occur. The geology on the Renaud group is very similar to that of the Miller-Independence.

Electric Power for Boston Creek.

The Northern Ontario Light and Power Company has entered the Boston Creek field. Arrangements are being made for supplying the Patricia Syndicate and Miller-Independence with electric power. The transmission line of the power company supplying the Kirkland Lake mines passes through the Boston Creek field. It will be a comparatively simple matter to connect up with the operating mines of the new camp. The new switch tower has already been completed.

Improving Transportation Facilities at Boston Creek.

A new station is being erected at Boston Creek and a telegraph and ticket office together with a baggage room will be enclosed in a building forty feet in length. In the meantime two freight cars are being used to serve the purpose of a station. A new site has been chosen where the ground is more level than the previous station site and already a number of merchants are moving their places of business to the new location. The roadway leading to the Miller-Independence and Patricia property as well as other promising claims in the district, is fast being put in shape, and the camp is showing signs of general activity.

Developing Lightning River Claims.

Samples taken at a depth of twenty feet on the vein at the Howie-Couchenour Williams claims in the Lightning River district is said to have resulted in commercial gold values being shown. The vein is two feet in width and well mineralized, while the wall rock from one to two feet on either side of the vein carries commercial values. The fact that from four to five feet of ore has been developed by the limited amount of work done, would appear to hold out considerable encouragement for other property holders in the neighborhood. More or less removed from railways and good roads, the opening up of the Lightning River area is necessarily slow. However, should present good results continue to attend the development of properties, it is highly probable a remedy will be found for the present unfavorable transportation facilities.

Encouraging Results in Skead Township.

Late advices from the Skead township gold area are

of a very encouraging nature. Samples taken from the Crawford claims which adjoin the Costello group, show spectacular quantities of free gold. It is also said that mineral having the appearance of tellurides has been found in the vein, which is composed of highly mineralized quartz and red porphyry. The vein is from five to six feet wide.

Work is also being done on the Fidelity property here and the results are said to be proving very encouraging, with the result that the development plans will be still further enlarged. On the property of the Wisconsin Skead Development Company work has not been resumed as yet. On the Martin group nearby, satisfactory results are being met with. The recent discovery on the Crawford claims, taken together with that of the Cook-Myles group and strengthened by the finding of calaverite on the Miller-Independence, less than ten miles to the west, all tend to lend considerable importance to the trend of developments in the Skead township gold area.

Nipissing Production Continues Large.

According to the monthly report of the Nipissing Mining Company, ore to the value of \$304,694 was mined during the month of July, and bullion and residue of an estimated net value of \$877,231 was shipped. Underground operations continued to be of the usual nature and extent. Several new small veins of low assay were encountered in shaft No. 73. The high grade mill treated 172 tons and shipped 842,870 fine ounces of silver. The low grade mill treated 7,058 tons. The following is an estimate of production for the month of July:

Washing plant	\$118,243
Low grade mill	186,451
Total	\$304,694

For the month of July, 1917, the company's production amounted to \$272,490. The total production for the year 1917 amounted to \$3,358,972; while for the first seven months of the current year the production of the property has amounted to \$2,223,928.

Kerr Lake's Banner Year.

During the month of July the Kerr Lake Mining company produced approximately 231,000 ounces of silver. This compares with a corresponding output of 189,392 ounces for the corresponding month of the previous year. With the exception of the month of May, which was the highest in the history of the company, July shows the highest production for the current fiscal year which ends August 31st. The current year is expected to prove the banner year in the company's operations. For the eleven months just ended the output amounted to 2,364,122 oz. Provided the output equals that of July the total production for the current fiscal year will equal over 2,595,000 ounces of silver. The production for the past eleven months in detail has been as follows:

Month.	Ounces.
September	210,398
October	213,802
November	205,522
December	203,400
January	204,641
March	207,100
April	201,000
May	268,213
June	210,000
July	231,000
Total	2,364,122

The strong financial position of the company has led to various reports regarding the likelihood of an extra disbursement of the funds of the company being made with the next regular dividend.

Developing Indian Peninsula Molybdenite Mine.

Work on the Indian Peninsula property in the Huronian river district which was recently purchased by the Penn-Canadian Mining Company of Cobalt, is making satisfactory progress. About three carloads of material for the new mill and a number of horses were shipped to the property last week. Every effort is being made to commence the production of molybdenite at the earliest date possible.

Nipissing Tramway Again in Operation.

The aerial tramway of the Nipissing Mining company which was used for conveying ore from the Meyer and Fourth of July shafts on the west side of Cobalt Lake, was put out of commission during a recent fire in Cobalt and took several days to repair. It is again in good working order.

Nipissing in Matachewan Area.

The Nipissing Mining Company has purchased the outfit being used by the Mining Corporation of Canada in the exploration of a group of claims which they had under option in the Fort Matachewan district. The Nipissing will use the machinery for the exploration of a property adjoining the Otisse.

Shipping Ore from Foster Property.

Ore is being shipped from the old Foster mine dump, by the interests which recently acquired control of it. It is planned to ship ore at the rate of about twenty-five tons per day for the first week. This will gradually be increased to between fifty and seventy-five tons per day. Teams will be used for hauling the ore to the railway. It is understood the ore will be treated at one of the local customs mills.

Developing Cochrane Mine from the Temiskaming.

The Temiskaming Mining Company has taken an option on the old Cochrane property, and already work has been extended onto the latter property from the lower ground workings of the Temiskaming. The operations on the Cochrane will be carried on under most favorable conditions, with the aid of the Temiskaming's powerful mining machinery. Under the terms of the agreement the Temiskaming is obliged to spend a minimum of \$1,000 per month in the development of the property. Development work on the Cochrane has been carried to a depth of 500 ft., the last operators of the property being the Crown Reserve Mining Company. The main vein is one of the strongest in the camp, but silver values have so far proven very erratic.

Keeley Mine Sold.

The old Keeley Mine in South Lorrain has been purchased for \$100,000 by the Goldfields Consolidated Mining Company of West Australia, which is an English concern. The property is now being worked with considerable vigor, operations being under the supervision of Mr. H. Black, formerly of the Porcupine V. N. T. property. The English interests decided on the re-opening of the property following an inspection of the property by Dr. J. McIntosh Bell early in the summer. Several tons of ore shipped from the property were said to contain from one to two thousand ounces of silver to the ton. Already a vein has been opened up on the first, or 60 ft. level, which is about five inches in width and is said to be the old No. 8 vein. This vein in places carries ore as high grade as 2,000 ounces to the ton. Owing to the results obtaining on the Keeley and in the South Lorrain section generally, increasing activity is evident.

Gold from Northern Ontario



This specimen, shown actual size, is from the Atlas Property, MacMurchy township, Sudbury Mining Division.

The specimen has been cut and polished, and the polished surfaces are shown above. The lower view is of the natural rough surface.

An Opportunity for Prospectors

The mineral wealth of Northern Ontario is enormous. From a few developed areas a very large output of nickel, copper, silver and gold is being made. Many promising areas are awaiting the prospector and miner.

One of the greatest factors in development of mineral areas is the provision of transportation facilities. Railways and the mining industry have together played a very important part in the development of Northern Ontario.

The Canadian Northern Railway, recently constructed across Northern and Western Ontario, has opened up for prospecting a large territory. Easy access to many promising areas is now available. Geological maps of some of these areas can be obtained from the Geological Survey, Ottawa.

The gold specimen shown on the other side of this page is from MacMurchy township, an area most easily reached from the new line of the Canadian Northern Railway. Discoveries of other metals, including iron, copper and zinc, have been reported from points served by the Canadian Northern.

THE DEPARTMENT OF RESOURCES CANADIAN NORTHERN RAILWAY

The Department of Resources, Canadian Northern Railway Building, Toronto,
will be pleased to furnish information about the districts served.

Chambers-Ferland.

The old number two shaft of the Chambers-Ferland mine of the Aladdin-Cobalt mining company has been pumped out, but without revealing any ore. The early work done in this shaft was accomplished in the early days of the Cobalt camp and no records of the work had been kept.

Adanac.

As the north drift of the Adanac continues at the 310 ft. level, the vein is maintaining a width of several inches and the mineralization is increasing. Considerable cobalt ore and nicolite is present in the vein and the outlook is considered very promising. In the meantime the crosscut to the east is being pushed ahead, through ground the geology of which is considered highly favorable for the occurrence of commercial ore. The Adanac is one of the newer operations of the camp and is considered to have good chances for developing into a mine. The aggressiveness of the management and directors of the company in their efforts to locate ore bodies are highly commendable. The work being carried out is on the advice of Mr. Alfred R. Whitman, geologist, and to date has proven up to his general expectations.

Doherty Claims May be Recorded at Haileybury.

A rearrangement of the boundaries of the Temiskaming Mining division took place recently and the new area which is now known as the Doherty district has been included in the aforementioned division with the recording office at Haileybury. This new order went into effect on the first of August and was hailed by mining men and prospectors interested in the Doherty district with much satisfaction. The change removes the necessity of delay and inconvenience in the recording of work in Toronto which was hitherto the case.

Buffalo Reduces Capitalization.

The Buffalo mining company of Cobalt decided at a recent meeting on the reduction of the capitalization of the company by another quarter of a million dollars. Originally the capitalization was one million dollars. In 1917 it was reduced from one million to three quarters of a million dollars, while the present reduction just decided on will leave the capitalization of the company at half a million dollars. Up to the end of 1916 the company had reimbursed the shareholders to the extent of \$2,787,000, and with the two payments made since that date the total returned to the shareholders amounts to \$3,287,000.

The company is treating a number of old dumps which contain ore of low grade, while a considerable tonnage of good grade mill ore is coming from the underground workings of the mine. The huge sand pile is also being treated in the oil flotation plant. A considerable profit is being made in the treatment of this material.

New Vein on Hudson Bay Yields High Grade Ore.

The new vein, containing about four inches in width of high grade silver, discovered last month on the old Hudson Bay property, while cleaning up some old workings of the mine, is yielding quite a large amount of high grade ore. The vein is running in the direction of the Trethewey boundary. The more or less accidental discovery of such a vein may be taken as conclusive evidence of the big possibilities of opening up new high grade veins in other mines of the camp during the course of mining the present known ore reserves, and thus adding materially to the value of the properties.

\$1,500,000 in July.

During the month of July the Cobalt mines shipped approximately three million pounds of silver ore; and during the same period upwards of a million ounces of bullion. With the price of silver at one dollar an ounce the value of the refined silver shipped was approximately one million dollars, while it is conservatively estimated that the three million pounds of ore shipped contained another half million ounces of the white metal. Thus the production of the camp is running at the rate of about \$1,500,000 per month, or eighteen million dollars per annum. The year 1918 bids fair to surpass the previous high record in point of value, which was that of 1912.

High Costs of Production is Closing Down Gold Mines.

In the Porcupine Camp operations being carried on at the McIntyre Porcupine Mine, the Hollinger and the Dome Lake Mines, as well as the Davidson, is resulting in a very material gold output. At the first two mentioned properties the output is being maintained at a rate sufficient to pay dividends at more or less regular intervals, and in all probability this will continue to be the policy of these two companies. However, at the Schumacher, Porcupine Crown, Porcupine V. N. T., and the Dome mines (with the exception of the development under way on this property at the 1,250 ft. level), operations have been suspended, and while the physical condition of the various properties is generally known to be better than at any previous time in their history, the economic conditions make the suspension of operations the most profitable policy. How long this condition will persist is a matter of much conjecture, but in all probability it will continue until the economic pressure is relieved by the cessation of hostilities in Europe. In the meantime the ore reserves of the various mines in which operations have been suspended are not depreciating in value, and will be available when the war is over.

Diamond Drilling at Ankerite.

An extensive diamond drilling campaign is being planned for the exploration of the Ankerite property at depth. Two large parallel ore bodies are in evidence on the Ankerite, which lies a mile or so south from the Dome Mines, Porcupine.

Cotter Property Sold.

According to late advice, the Cotter property has been purchased by interests identified with the Bourk's Mines, at Bourk's Siding. The principals are Toronto men. For a time it was feared difficulties were taking form, in that although the deal was supposed to have gone through last week, a hitch occurred which held up its successful consummation until this week. The Cotter property lies east from the Miller Independence, in Boston Creek.

Encouraging Results at Savage Mine.

Results obtaining at the Savage property of the McKinley-Darragh give reason for more or less optimism. High grade ore has been encountered from time to time, and recently the deposition of silver has shown a tendency toward better consistency, according to unofficial reports. While the Savage has heretofore been found to contain more or less erratic silver deposition, there would appear to be no geological reason why more consistent shoots should not occur. During the past several weeks an aggressive development program has been followed.

Prospecting Doherty Area.

Up to the present, interests identified with the Buffalo Mines have been the most aggressive operators in the Doherty silver area. On the group of claims held

by that company, surface work has been carried on sufficient to more than cover assessment work requirements for the first two years. As yet developments have shown the area to be of prospective value.

Mining Corporation Re-treating Tailings.

The Mining Corporation of Canada has commenced the pumping of the sands and slimes from previous operations back to the mill from the bed of Cobalt Lake for further treatment. The operation is perhaps on the largest scale even undertaken in Canada, upwards of half a million tons of material being available for treatment. This contains several ounces of silver to the ton.

The pumping equipment is the most powerful in the Cobalt camp and consists of two eight inch electrically driven pumps with a capacity of from one thousand to twelve hundred tons of sands every twenty-four hours. Changes already completed in the mill will permit of the treatment of about 350 tons per day and this will be gradually increased to about 700 tons per day. After being pumped from the lake the sands and slimes will be dealt with in three classifiers with a combined capacity of 1,200 tons daily.

The slimes will be treated in the low grade cyanide mill while the sands will be passed on to the tube mills for regrinding and will then go over the concentrating tables to two Groch flotation machines which have been installed. A large surplus of the material from the lake is being pumped up for use in the winter months, when the lake is frozen over. Meantime from underground the Mining Corporation continues to yield large quantities of silver and with the treating of sands and slimes under way the entire plant is again being placed in operation. The company has already produced an amount of silver in excess of the reserve estimated at the close of the last fiscal year, but it is anticipated that heavy production will be continued for some time.

The financial position of the company is exceptionally strong, the quick assets being in the neighborhood of \$3,500,000 and when the probable profit on the known ore reserves is taken into account it is conservatively estimated another million dollars may be added to this amount.

Recently the company discontinued work on the claims which it had under option in the Rickard township district, and according to reports has commenced the removal of the machinery. The claims which were being examined in the Fort Matachewan district were also given up, as has also been the Waldman property, which was being explored by the company. Last week it was announced that the Kennedy claims in the Boston Creek district were to be worked by the Mining Corporation, while it is now said the company are taking an option on control of the Ophir property. Besides their activities in Northern Ontario, a fluorspar property is being developed under the management of this concern in the Madoc district near the town of Peterboro and regular shipments of this mineral are being made in increasing quantities.

Bucke Township Attracts Attention.

Considerable scouting is being done by prospectors in various sections of the township of Bucke. The movement has received added impetus since the successful operation of the Green Meehan, and since the commencement of diamond drilling on property recently acquired at North Cobalt by the Mining Corporation of Canada.

Genesee.

The Genesee has been handicapped during recent weeks by a heavy flow of water at the 500 ft. level, and

progress has not been as rapid as was anticipated. However, additional pumping equipment has been secured and will be pressed into service at once. This will enable the management to proceed with the proposed extensive exploration program along the fault zone encountered early in the summer.

Considerable ruby silver was in evidence along the fault plane during the course of the limited amount of exploration work carried on.

Staking Claims in Thackery.

Considerable claim staking has been going on during the past two weeks or so in the township of Thackery. Quartz veins carrying gold values occur in that area, which fact seems to be attracting a number of prospectors. Gold was found in Thackery upwards of one year ago. The township lies east of the Temiskaming and Northern Ontario Railway, in a direct line between Bourk's Siding and the Lightning district.

According to late advice, the power plant at Sandy Falls, on the Matagami River is being run at reduced capacity, and that during July it served to meet the requirements of the Poreupine mines while repairs and extensions were being made at the Wawiatin plant.

There is no question, however, but that when conditions in the gold camp become more normal, both plants will be taxed to their utmost capacity to meet the requirements of the Poreupine mines.

We were informed here last week that the Sandy Falls plant was now closed.

Mining Ore at Savage Mine.

Three machines are employed on development and breaking ore at the Savage property of the McKinley-Darragh-Savage mine, at Cobalt. Later on it is expected additional forces will be added. As a result of the present work on the Savage a substantial amount of mill rock is being broken down.

ALBERTA COAL PRODUCTION.

The Toronto "Globe" recently published the following: In the Edmonton district of the Alberta coal-fields the mines have been running on low output recently. The Humberstone Mine, which has been producing 550 to 600 tons a day out of a total capacity of 1,000 tons, had to shut down for a week recently on account of lack of orders. Unwarranted reports that anthracite would be shipped to Manitoba from the East caused a falling-off in orders, it was stated by mining men. The Deputy Fuel Controller denied the authenticity of these reports, and re-affirmed the original decision that anthracite would not be shipped to the West. The mining industry of the West has suffered considerable damage as a result of the conflicting reports, as consumers had held off from ordering Western in the expectation of securing anthracite. The lack of orders has had an unfavorable effect on the industry, causing shutdowns. The facts of the case are that no coal will be shipped from the East, for any point except Winnipeg, and even this city will receive very little.

A comparison of the total output of coal in Alberta for the first six months of 1917 and 1918 is as follows:

	1917.	1918
January	514,974	646,338
February	459,408	481,407
March	467,453	435,094
April	211,901	407,087
May	100,165	414,075
June	104,779	*430,000
Total	1,858,680	2,814,001

* Estimated.

Minerals of British Columbia

By E. Jacobs.

The more important mineral products of British Columbia in regard to value of production, are gold, silver, lead, copper, zinc, and iron, among the metaliferous minerals, and coal and coke, the most prominent of the non-metallic products.

Perhaps iron should not be included in this summary, since it has not yet been produced in very considerable quantity, but that it will yet be is the confident expectation of many. In this connection the following excerpt is made from the Report of the Canada Munition Resources Commission, published several months ago: "The people of British Columbia have been making an effort to awaken interest in the establishment of an iron industry in that province, and while it can be shown that ores of merchantable quality exist, and that there is a supply of both fuel and limestone for smelting purposes, there is a notable hesitancy on the part of capital to launch such an undertaking. This condition is perhaps due to the fact that British Columbia does not at present possess a sufficient market to absorb the products of such an industry, and the success of the venture would perhaps rest with the ability of the operators to market their product in the neighboring states of Washington, Oregon, and California."

As there is abundant official information easily obtainable relative to the occurrences and production of the other minerals above mentioned, except, perhaps, zinc, which had not been continuously produced in comparatively large quantity prior to quite recent years, it is not intended to here give information concerning those minerals, an exception being made of zinc so that a quotation may be made from the Report of the Canada Munition Resources Commission, as follows:

"Heretofore the chief source of zinc has been the by-product zinc blende of the British Columbia silver-lead mines in the Slocan, which usually contains silver in varying quantities somewhat increasing its value. The blende is not in sufficient quantity or purity for the usual retorting in Belgium ovens. There has been too much of it to be ignored by the mine owners, and too little of it to make an attractive source of supply for the smelters. This condition has been investigated by spelter producers and committees, all of whom seem to have arrived at the conclusion that such ores of zinc were unsuited to the ordinary retorting processes and that the supply is not sufficient to justify the establishment of retort smelters in British Columbia, especially under the existing conditions of high fuel and labor costs.

"The matter is reviewed in the 'Report of the Commission appointed to investigate the Zinc Resources of British Columbia, and the conditions affecting their exploitation,' and in a report by Dr. A. W. G. Wilson on 'Production of Spelter in Canada,' both published by the Mines Branch, Ottawa, in 1906 and 1916, respectively. Some of the features which must be considered with the stimulation of increased prices for spelter and the desire of producers to reduce their own zinc ores instead of marketing them in the United States at little or no profit, are: (1) A desire to make the most of the undesirable blende by-product of the silver-lead mines; (2) the establishment of an electrolytic zinc refinery at Trail, B.C., which promises in time to offer a better market than American smelters; (3) the large existing reserves of complex zinc

ores which it is expected can be treated at Trail; (4) the probability of new discoveries now that complex or dirty zinc ores are within the possibility of a profitable market."

While there are incidental allusions to one or two minerals occurring in Alberta and Yukon Territory, respectively, practically all the information that follows relates to those of British Columbia. It is not claimed that the list, as here given, is complete, but it is believed to be sufficiently full to be likely to prove of some value to those who are or shall be interested in ascertaining what minerals are known to occur in British Columbia, and who may not wish to go to the trouble of examining for themselves the various official and other publications from which the greater part of the information that follows has been taken.

Actinolite.—A list of occurrences of actinolite (silicate of calcium, magnesium, and iron) in British Columbia is given in Geological Survey Memoir 74, "A List of Canadian Mineral Occurrences," Robt. A. A. Johnston (No. 1497), D.3.

Alunite and Pyrophyllite.—The mining recorder for Quatsino division, Vancouver Island, in one of his official reports (see "Annual Report of Minister of Mines, B.C." 1914, p. K 377): "Besides some development work done, the San Juan Mining and Manufacturing Co. has shipped 75 tons of natro-alunite ore from its property situated on Kyuquot Sound, and has now 250 tons ready for shipment." This occurrence of alunite and pyrophyllite was considered of sufficient interest for the reprinting in the "Annual Report on the Mineral Production of Canada," 1914 (Mines Branch, Ottawa), as pp. 177-182, of a long extract from the report of Chas. H. Clapp, in the "Summary Report" of the Geological Survey of Canada, 1913, p. 109.

Antimony.—In the "Annual Report on the Mineral Production of Canada," 1914 (Mines Branch, Ottawa), p. 57, it is stated that: "In British Columbia some of the lead ores contain a small percentage of antimony—about one-third of one per cent. Some refined antimony was recovered at Trail in 1907 and 1909." During a number of years the antimony in the lead ores treated at Trail was not saved, the cost of recovery having been higher than the then obtainable price.

Probably the best known occurrence of antimonial ore in British Columbia was one in Slocan mining division, West Kootenay district, on a claim situated at a high altitude and distant about ten miles north or northwest of Three Forks. A second attempt to mine ore there on a commercial scale was made in 1915; one carload was shipped to Great Britain and another to Chicago, but results were not made public. More work was done in 1916, and ore was packed down to Three Forks for shipment, but the operator did not meet with much encouragement to continue his venture. Specimens of the ore exhibited contained much antimony. It is understood that Dr. W. F. Ferrier, of Toronto, examined this occurrence of antimony, but, if so, his report is not at hand.

Other occurrences in British Columbia have been reported from Wilson Creek, which flows into Slocan lake at Rosebery, and in the neighborhood of San Juan, Vancouver Island.

Arsenic.—It was reported last year that arsenic had been recovered from a gold-bearing ore mined and milled in Camp Hedley, Similkameen district, but if so

no authentic information has been obtained concerning it. Mr. Chas. Camsell deals fully with the arsenical iron ores of that camp in one of the Geological Survey reports on his geological investigations in Similkameen district.

Asbestos.—From time to time the discovery of asbestos has been reported but, so far as known, no commercial asbestos has yet been found in British Columbia.

Barytes.—The occurrences of this mineral as a pigment of commercial value does not appear to be known in the province. Gold-copper ore with a barytic gangue has been mined in considerable quantity in mines on Mt. Sicker, Vancouver Island; in fact, the smelting of that ore was a successful achievement of Mr. Thos. Kiddie, after he had built the Tyee Copper Co.'s smelting works at Ladysmith, favorably commented on in one of his published official reports by the Provincial Mineralogist for British Columbia.

Cobalt.—The occurrence of Cobalt in a gold-bearing ore found in Omineca mining division, along the Grand Trunk Pacific railway, has been reported in quite recent years, but whether in recoverable quantity commercially has not been ascertained.

Chromite.—Chromite has not been, until recently, of economic importance in British Columbia. It is mentioned that in Tulameen district minute diamonds have been discovered associated with chromite, which is an accessory constituent of the peridotites there (see Geological Survey Memoir No. 26, "Geology and Mineral Deposits of Tulameen," Camsell, pp. 146-153). Recently some chromite has been shipped from Cascade, Mr. P. B. Freeland reported last year that on one claim at Cascade there are lenses of ore carrying 30 to 50 per cent. chromium, while the rock carries 3 to 10 per cent. chromium.

Fluorite.—An occurrence of fluorite near Nelson, West Kootenay, was some time ago investigated as a possible source of production of this mineral, but no commercial result followed.

Early in July of the current year the Grand Forks Gazette reported the acquirement, under lease and bond, by the Consolidated Mining and Smelting Company of Canada, of a fluorspar property situated about 20 miles from Grand Forks, Boundary district, on Kennedy Creek, a tributary of the north fork of Kettle river, into which it flows from the west near Lynch creek. The Gazette made the following comment: "The showing of fluorspar is said to not be equalled by any other property on the continent, and the Consolidated Co. has manifested its confidence by acquiring possession. It intends doing considerable development work and may install a diamond drill to test the immense deposit."

Among other uses is that in the manufacture of hydrofluosilicic acid, employed as an electrolyte in the electrolytic refining of lead. In 1916 the Consolidated Co. resumed at its works at Trail, West Kootenay, the manufacture of hydrofluosilicic acid for use there. Figures showing imports to Trail of this acid during five years, 1910-1914, are printed on p. 244, "Annual Report on Mineral Production of Canada," 1914.

See also "Fluorite," Geological Survey Memoir 74, "Canadian Mineral Occurrences," p. 96.

(Concerning the demand in Canada for fluorspar, Mr. John McLeish, Chief of the Division of Mineral Resources and Statistics, Mines Branch, Ottawa, in the "Preliminary Report on the Mineral Production of Canada," 1917, stated that "there is an annual consumption of fluorspar in Canadian steel furnaces of

from 10,000 to 15,000 tons," while he showed the production in the Dominion to have been 4,249 tons in 1917 as compared with 1,284 tons in 1916.)

Graphite.—Newspaper reports of the finding of graphite have been published, but there has not yet been any production of this mineral in the province.

Gypsum.—Small production was made in British Columbia in 1911 and 1913, but the industry is still in its infancy. In "Economic Minerals of Canada," (Mines Branch, Ottawa, No. 322), on p. 44, the following note is printed: "Gypsum is found in British Columbia at the following places: Salmon river, in the southern part of the Kamloops mining division; Spatsum, on the main line of the Canadian Pacific railway, about 189 miles to the northeast of Vancouver; on the banks of the Thompson river, about 20 miles north of the town of Kamloops; at Merritt, in the Nicola valley, and in Tulameen district, on Granite creek, about 10 miles up the Tulameen river from the town of Princeton."

The Provincial Mineralogist, in the "Annual Report of the Minister of Mines," 1907, pp. L 134-135, briefly describes the deposit at Spatsum. The closing paragraph follows: "The deposit may be said to have a length of at least 2,000 ft., with a thickness of more than 40 ft. The layers comprising the bed are of varying hardness and purity, but there appears to be no doubt that the deposit is capable of providing a large tonnage of very pure mineral. The property is so situated that the mineral could be delivered by aerial tramway directly to the Canadian Pacific Railway track at Spatsum, on the opposite side of the Thompson river."

Hydromagnesite.—In Memoir 74, "Canadian Mineral Occurrences," it is stated, on p. 127, that extensive deposits of earthy hydromagnesite occur in the neighborhood of Atlin; also that hydromagnesite has been met with in considerable abundance in the vicinity of the 180-Mile House, on the Cariboo road.

In the "Annual Report of the Minister of Mines, B.C." 1915, p. K-28, it is noted that a deposit of hydromagnesite near the town of Atlin was worked to some extent in 1915 by Armstrong & Morrison, of Vancouver. It is known that a few hundred tons were shipped, but details regarding the shipment were not received. This occurrence of magnesite was fully described in the "Report of the Minister of Mines, B.C." for 1904.

The following brief reference to the Atlin deposit is made in the Report of the Canada Munition Resources Commission: "Certain deposits of hydromagnesite are found at Atlin, in Northern British Columbia, but their inaccessibility has so far prevented their utilization except for experimental purposes. They would, however, become active producers if steel works should be established on the Pacific coast."

Magnesium Sulphate.—"A deposit of magnesium sulphate, near Kruger mountain, Osoyoos mining division, was worked for a time during 1915. The mineral occurs in a flat depression known as Spotted lake, which is a partially dried-up lake containing alternate circles of water and dry places. The magnesium sulphate occurs as a layer all over the lake bottom, covering a considerable area and said to be of exceptional purity; the thickness of the deposit has not been definitely ascertained. Some 300 tons was extracted and shipped to New York, where a market at a good price was obtainable. The material is used in the drug trade. The nearest town to the deposit is Oroville, Washington, U.S.A., which is distant about six miles." (See "Annual Report of Minister of Mines, B.C." 1915, p. K 28.) No information has been received relative to later operations, if any.

In 1917, newspaper reports told of the discovery of an occurrence of this mineral in Clinton mining division, but no particulars have been obtained.

Manganese.—A little information is given in the Report of the Canada Muniton Resources Commission relative to manganese ores of Alberta and British Columbia, as under:

"In the early summer of 1917 certain manganese deposits in Southern Alberta were examined by the Geological Survey of Canada at the request of the Commission. The geologists who made the investigation reported the existence of some deposits, from calcareous springs, which contained less than ten per cent. of manganese. The deposits are not regarded as a valuable source of manganese ore.

"Some activity has been displayed in developing an occurrence of manganese ore near Kaslo, on Kootenay lake, British Columbia. This locality was also examined for the Commission by the Geological Survey. Indications at first gave the impression of a small tonnage of 40 per cent. ore, but subsequent development work has uncovered more ore, and the operators have secured license to export several hundred tons to the United States." (Note.—This deposit is situated alongside the Kaslo and Slocan railway, about six miles west of Kaslo. The property is under bond to Seattle, Washington, men who commenced shipment of the ore in June. A district newspaper stated at the beginning of July that "first shipments of manganese ore from the Kaslo district were made two weeks ago, and now ore is being shipped at the rate of two to three carloads a week. The ore goes to a ferro plant at Lebanon, Pennsylvania, for treatment. It is said that the product will ultimately reach the works of the Carnegie Steel Co." So far as known, this is the first time manganese ore has been shipped in bulk from British Columbia.)

Mercury.—There was a small production of mercury from deposits of cinnabar at the western end of Kamloops lake in 1895-1897, but none since. The deposits consist of quartz veins containing pockets of cinnabar in a zone of decomposed Tertiary volcanic rocks. (See "Annual Report of Mineral Production of Canada," 1914, p. 135.)

Some prospecting work was done several years ago in the neighborhood of Sidney inlet, west coast of Vancouver Island, where indications of the occurrence of cinnabar were found. It has lately been reported that the Canada Department of Mines has arranged for one of its officials to examine this occurrence this season.

Several other occurrences in British Columbia are known (see Geological Survey Memoir 74, "List of Canadian Mineral Occurrences," p. 71 and p. 155).

Mica.—Muscovite is found in various places in British Columbia in pegmatite dikes. Some notes on "Mica at Tete Jaune" are printed on pp. K 56-57 of the "Annual Report of the Minister of Mines, B.C." 1915, giving information obtained by the Assistant Mineralogist when in the district several years ago. Tete Jaune is in the northern part of Cariboo district, on the Grand Trunk Pacific railway. The mica claims are situated high up on the rocky ridges of the mountains, on the south bank of the Fraser river, at altitudes of from 5,000 to 7,000 ft. "A very large pegmatite dike, or series of dikes, which is said to be 25 miles long and varying in width from 25 to 1,800 ft., is intrusive into the older rocks along the axis of the range, and extends from below Tete Jaune to Albreda summit, near to Canoe river. This pegmatite is, of course, not exposed continuously along this length, but is sufficiently

so to consider that the various outcrops are linked together, at least not far below the surface. This pegmatite is the usual typical one consisting of large crystals of mica, feldspar, and quartz, with in places a fine-grained intergrowth of feldspar and quartz. The mica occurs in sheets up to 10 in. square and with a thickness, of numerous sheets together, of one inch to two inches. The Albreda group was worked for a time in 1915, and in seven weeks three men took out two tons of mica from a surface quarry. This mica was taken down to Tete Jaune, where it was stored and it was seen by the writer. . . . About 50 per cent. of the two tons taken out would trim into pieces about three by five inches with, of course, some larger than that; the remainder would average about two by three inches. It is certainly good commercial mica, but it is not of the highest quality. It has an excellent cleavage and is not brittle, and would be easy to trim as desired. It is mainly a muscovite mica, but some of it is considerably stained with iron."

See also "Mica, Its Occurrences, Exploitation, and Uses," by H. S. de Schmid, Mines Branch, Department of Mines, Ottawa, No. 118.

Molybdenum.—The first production of molybdenite in British Columbia, so far as official records show, was that from the Molly molybdenite group, on Lost creek, in Nelson mining division, West Kootenay. For particulars of this occurrence of molybdenite see "Transactions of The Canadian Mining Institute," 1915, Vol. xviii., pp. 247-255, or the "Monthly Bulletin" of the Institute, No. 43, for November, 1915, pp. 872-880, by the late Dr. Chas. W. Drysdale, of the Geological Survey of Canada, who stated that Mr. R. A. A. Johnston, Mineralogist of the Survey, reports that there are 20 different localities in British Columbia where molybdenite is known to occur. About 50 tons of molybdenite ore had been shipped from the Molly property up to the time of Dr. Drysdale's visit to it. Later, further development of the property was undertaken, with 16 men employed. A Vancouver, B.C. syndicate had an option of purchase and it proposed to equip the property with a small concentrating plant, but, so far as known, the enterprise was not carried to the point of regularly maintaining shipment of ore.

The Provincial Mineralogist mentions, in the "Annual Report of the Minister of Mines, B.C." 1915, p. K 27, another property, on Alice arm of Observatory Inlet, Skeena mining division. Particulars of this property were obtained in September, 1916, for the Canada Muniton Resources Commission, by Prof. J. C. Gwillim, of Kingston, Ontario. In the published report of the Commission it is stated that "Mr. Gwillim was instructed to proceed to British Columbia in the Fall of 1916 for the purpose of reporting on the possibility of the increased production of the ores of molybdenum, tungsten, and zinc. . . . Complete reports on his work, illustrated with maps, photographs, and line drawings, have been filed with the Commission, but publication in full at this time is undesirable from the point of economy. It is probable, however, that arrangements will be made with the Canada Department of Mines to publish the reports at a later date."

See "Annual Report on the Mineral Production of Canada," 1915 (Mines Branch, Ottawa), p. 337, for notes on the Molly mine, mentioned above. Also, see "Report on the Molybdenum Ores of Canada," No. 93, Mines Branch, Canada Department of Mines, Ottawa. Particulars of the Alice Arm property are included in the "Annual Report of the Minister of Mines, B.C.," 1916, and of molybdenum in Lillooet mining division, B.C., in Geological Survey publications.

Petroleum.—A note by the Provincial Mineralogist in the "Annual Report of the Minister of Mines, B.C." 1915, p. K 27, is that "prospecting for petroleum by means of boreholes has been in progress in Southeast Kootenay, and on the Queen Charlotte islands, and elsewhere, but oil in commercial quantities has not yet been encountered."

In the provincial "Annual Report" for 1914 there is reprinted, on pp. K 238-242, a report made for the Flathead Oil Syndicate on "The Oil Possibilities of the Flathead District, B.C." (which district is in Southeast Kootenay), by Mr. Ralph Arnold, a well-known geologist, of Los Angeles, Southern California, who for some years has made a special study of oil fields.

Platinum.—"In past years the chief source of the platinum production of Canada was the placer gravels of British Columbia, principally in the Similkameen (Tulameen) district. . . . More attention is being paid to the recovery of this metal, especially in the Similkameen, where it is proposed to re-work some of the old placers. One or two companies operating in the Quesnel River district (Cariboo), report small quantities of platinum with placer gold, but the information is not sufficiently definite for record." (See "Annual Report on the Mineral Production of Canada," 1914, Mines Branch, Ottawa, p. 147; also for table of production.)

The Provincial Mineralogist reported for 1915 (see "Annual Report of Minister of Mines, B.C.," p. K 27): "A small quantity of crude placer platinum has been recovered on the Tulameen river, in the Similkameen district, estimated at about \$2,000 in value. This was obtained from placer-gold workings being carried on, and the results are considered encouraging." Some platinum was recovered in 1915 on the main Tulameen river, and some from Granite creek and probably other tributary streams.

Dr. W. F. Ferrier and Mr. Chas. Camsell paid a very brief visit to Tulameen in November, 1917, when passing through the district from Nicola to Princeton. The former included in his report to the Munition Resources Commission the following notes on platinum: "New work on the Tulameen, B.C., platinum deposits was investigated, but reports of the results obtained were found to be much exaggerated. The year's production was somewhat less than 200 oz. of platinum. The claims of the Contact Consolidated Gold Mines, Ltd., near Paulson, B.C., were examined. Here platinum was reported to occur in the quartz veins and associated dikes. The results of the examination will be handed to you later after the necessary assays have been made."

Information relative to platinum may be found in Geological Survey Memoir 26, "Geology and Mineral Deposits of the Tulameen District, B.C.," (No. 1206) by Chas. Camsell, who made extensive geological investigations during several field-work seasons spent in the district. Brief excerpts from his report follow: "The platinum recovered from the gravels of this district has been variously estimated at 10,000 to 20,000 ounces, and at one time this district was the principal producer of platinum on the North American continent." Above Slate creek "the placers of the Tulameen contain both gold and platinum. . . . The proportion of platinum to gold is greater here than in any of the other localities, and in mining it was found to increase upstream as far as the mouth of Eagle creek, where the greatest quantity was obtained. At hydraulic workings a short distance below the mouth of Eagle creek the proportion of platinum recovered was greater than that of gold, and nuggets of platinum which weighed from

one-fourth to one-half an ounce each were often found." Mr. Camsell's report gives, on p. 143, a table showing the amount and value of platinum recovered from Tulameen river.

Prof. J. F. Kemp, of the faculty of Columbia University, New York, in 1900 spent three months investigating the source of the Tulameen platinum. His report and conclusions were printed in "Bulletin of the United States Geological Survey," No. 193.

Pyrites.—Dr. Alfred W. G. Wilson, in "Pyrites in Canada," (Mines Branch, Department of Mines, Ottawa, No. 167), states that the mineral pyrites is reported from many localities in British Columbia. Of these, two deposits are worthy of special mention, namely, one on a tributary of Ecstall river, and the other, the Hidden Creek mine, Observatory inlet, both in Skeena mining division. It was reported last year that a shipment of pyrites was made by the Granby Consolidated Co. from the latter deposit to works in the neighborhood of Vancouver, B.C.

Salt.—A salt deposit, discovered in 1910-11 in a basin on the Kwinitza river, which flows into the Skeena near the 46th mile-post on the Grand Trunk Pacific railway, is described in the "Annual Report of the Minister of Mines, B.C.," 1913, pp. 85-87.

Scheelite.—The tungsten-bearing mineral, scheelite, occurs at several different places in British Columbia. In Cariboo mining division it is found with tungstite at Hardscrabble creek, and in the placer deposits of Antler, Lowhee, and China Creek claims. In Nelson mining division, West Kootenay, it occurs with tungstite and wolframite at the Kootenay Belle mine, Sheep creek, and at the Granite-Poorman mines, near Nelson city. In Slocan City mining division, also in West Kootenay district, its occurrence has been noted in quartz veins in the Meteor mine, on Springer creek. It is not produced commercially in the province.

Under the subhead "Tungsten," the Report of the Canada Munition Resources Commission includes notes respecting tungsten in British Columbia and Yukon Territory, as follows:

"There have been no important developments since Dr. T. L. Walker's 'Report on the Tungsten Ores of Canada' was published by the Mines Branch, Ottawa, in 1909. The occurrences there described in the Kootenay Belle (Sheep creek), Granite-Poorman (Nelson), and Meteor (Slocan) mines, West Kootenay district, and that on St. Mary's creek, East Kootenay district, were inquired into, and no developments of commercial value seem likely.

"There has been no production from the deposit on Hardscrabble creek, in the Cariboo district, but the property has been further developed and kept open. At the time of Dr. Walker's inspection 'the mine was idle, but from those interested it was learned that a shaft had been sunk about 30 ft. in the rock and drifting along the tungsten zone had been carried about 50 or 60 feet.' The Provincial Mineralogist of British Columbia entered these workings, which are below the creek level, and inspected them as far as conditions would allow, the rock faces showing small veins or veinlets of scheelite. Mr. J. A. McPherson, of the Cariboo-Chisholm Creek Mining Co., Ltd., Van Winkle, B.C., writing on November 24, 1916, describes this property and appends a sketch of the workings. He states that the deposit is 11 miles from Barkerville, 50 miles from Quesnel, and six miles from the main Cariboo road. From further examination and analysis since Dr. Walker's inspection he finds 'the zone of payable ore containing about 10 per cent. tungstic acid will be 12 ft. in width; oxidized ore in the new tunnel work

17.9 per cent WO_3 ; general value of the sides of the new tunnel 12.3 per cent WO_3 . The property was put in first-class shape in September, 1915.

"Dr. W. F. Ferrier reported to Mr. J. C. Gwillim the occurrence of wolframite at the head of Mud creek, on Rocher Deboile mountains, near Hazelton, which has been described in the 'Report of the Minister of Mines, British Columbia,' for 1916. It is there stated that the wolframite is distributed through mineralized stringers from 3 in. to 2 ft. 6 in. in width which occur in granite.

"A few hundred pounds of scheelite and wolframite have been shipped from placer workings in the Yukon, and more may be saved during the coming season. The late Dr. Cairnes has presented information on this subject in the 'Summary Report of the Geological Survey' for the year 1916."

Sodalite.—A fine, blue sodalite, which is a silicate of alumina and sodium, and is used in the fine arts and in jewellery, occurs near Ice river, in Golden mining division, Northeast Kootenay.

Tripolite.—Tripolite, or diatomaceous earth, is known to occur in several places in the province. In the "List of Canadian Mineral Occurrences," it is given as occurring in Cariboo, Clinton, New Westminster, and Quesnel mining divisions, and on Vancouver Island. A deposit of unknown size was reported from Queen Charlotte Islands in 1914. A deposit within ten miles of the city of Victoria is briefly described by Mr. Chas. H. Clapp in Geological Survey Memoir 36, "Geology of the Victoria and Saanich Map-Areas, Vancouver Island," pp. 171-172.

Dr. W. F. Ferrier reported to the Canada Munition Resources Commission that "information and samples were obtained of a large deposit of very fine-grained diatomaceous earth, of a pure white color, at Deadman lake in the Kamloops district. Several polishing powders now on the market are composed of a similar material."

Miscellaneous.—In his notes, published in the report of the Canada Munition Resources Commission, Dr. W. F. Ferrier includes the following:

"A mineral which I found to contain strontium was handed to me in the field and is now being analyzed. It was too late in the season to visit the locality.

"A sample of nickel-ore was given to me at Keefer, B.C., but it proved to be chromite. It is said to occur in the country west of Kanaka, on the Fraser river, but I have not yet ascertained the precise locality.

"The report of a discovery of potassium salts in the Nicola Valley, which I was instructed to investigate, proved to be without foundation."

It may be added that several years ago a discovery of tin-bearing ore was reported to have been made in the neighborhood of Fish river, probably in Lardeau mining division, but the locality was not easily accessible, and little has since been heard of it.

Structural Materials and Clay Products.—Three works for the manufacture of Portland cement have been erected and equipped in British Columbia—at Tod inlet, and at Bamberton on the other side of Saanich inlet, both on Vancouver Island, and at East Princeton, Similkameen. Only that at Tod inlet, however, has been a continuous producer on a comparatively large scale.

Clay products comprise an important industry in the neighborhood of Victoria, Vancouver Island, these including chiefly common brick, pottery, drain and sewer pipe, tile, etc. Bricks of various kinds, including ornamental and fire, and fireclay products generally, are made at works in Clayburn district 30 to 40 miles from Vancouver city.

Lime, sand, gravel and other materials are available for all building purposes in various parts of the province. Building stone includes granite, limestone, marble, sandstone, and slate. Marble is found on the west coast of Vancouver Island, on Texada Island, and in the neighborhood of Kootenay lake; from quarries in the last-mentioned district marble has been shipped east to the prairies.

Mineral Water.—The best known mineral springs in the province are those at Harrison lake; Haleyon and Leon, on Arrow lake; Ainsworth, on Kootenay lake, and the Sinclair springs in Northeast Kootenay. Mineral water is shipped from one or two of these springs, but not in very large quantity.

PERSONAL

Mr. A. A. Hassan is in New Brunswick examining manganese and pyrrhotite deposits. He will also make examinations of the Montague gold deposits and the Bradford gold mine in Nova Scotia.

Mr. A. G. Burrows, of the Ontario Bureau of Mines, has returned to Toronto from Northern Ontario.

Mr. C. W. Knight has returned to the Abitibi area which has been surveyed recently.

Mr. Samuel W. Cohen has returned to Montreal after a month's tour of inspection of mining properties in Northern Ontario, Nevada, and Colorado.

The Chicago Pneumatic Tool Co. announce that contract has been let and work started on the erection of an up-to-date addition to their Cleveland Plant, which is planned to double the present output. It is expected that work will be completed on the building itself about November first. The necessary equipment has been ordered and it is believed will be delivered and ready for installation by the time the building is completed, so that the additional production contemplated will be available very soon thereafter.

Dr. M. Y. Williams, who has been recently working in the Glencoe oil field is now at Dutton.

Mr. W. K. McNeil will have charge of the exhibit of the Ontario Bureau of Mines at the National Exhibition, Toronto.

Sir John W. Carson, President of the Crown Reserve Mining Company, Limited, to which company Samuel W. Cohen is Consulting Engineer, recently inspected the Alice property at Idaho Springs.

REFINING GOLD AT OTTAWA MINT.

Ottawa, Aug. 15.—Since the outbreak of war gold coin and gold bullion to the value of \$1,300,000,000 have been received at Ottawa by the Department of Finance as trustees for the Imperial Government and the Bank of England. How the work of the Royal Mint here has, in consequence, been increased is not generally realized. When these deposits of gold were received by the Department of Finance, it was necessary that their value should be ascertained and that a certain quantity of gold bullion should be refined. The heavy demand on the gold refinery at the Mint led to the construction of a second plant with a monthly output of a million ounces of fine gold. Through this extension the refinery has developed the largest capacity of any gold refinery in the world.

The special work of the refinery, due to the war, is shown by the following figures:

Gold bullion received for refining, 15,992,770 ounces.
Total gold bars produced, 14,048,803 ounces fine, value \$290,414,547.

Fine silver recovered, 1,175,000 ounces fine.

BOOK REVIEWS.

International Mining Law, by Theo. F. Van Wagenen. Price \$3.00. Published by McGraw-Hill Book Co., New York. For sale by Book Department, Canadian Mining Journal, Toronto.

This is an attractive little volume, bound in black leather, of 327 pages and index. The author gives a brief history of mining and mining law in America. Chapters are devoted to ancient mining laws in Germany, Spain, Mexico and Central and South America. Chapters are devoted to the Australian, South African, Canadian and European, as well as to the American system of Mining Law. Digests of mining laws in many countries are given.

The latter part of the book is devoted to chapters headed as follows: The prospector, extralateral rights; discovery of ore as a prerequisite to a valid location; leasehold vs. fee simple title; free prospecting vs. licensed prospecting; prospecting areas; defects and deficiencies of the American law; miscellaneous historical notes; conclusion.

The volume is a very interesting one and should prove of assistance to those who are interested in securing laws favorable to the development of mineral resources.

Mining Engineers' Handbook. Edited by Robert Peele. Price \$5.00. Published by John Wiley & Sons, New York. For sale by Renouf Publishing Co., Montreal.

This is a volume of 2,307 pages and index. The large number of subjects dealt with is shown by the fact that the index occupies 66 pages. The volume is attractively bound in red leather.

Besides the sections dealing with mineralogy, ore deposits, methods of prospecting, exploration and mining, and mining plant of all kinds, there are others, on certain branches of civil, electrical and mechanical engineering. Mr. Peele has recognized that the mining engineer in equipping and operating mines has to deal with many branches of engineering and he has, therefore, included data that would otherwise be unnecessary. A large number of specialists have contributed sections.

The 44 sections of the book are headed: Mineralogy, by A. J. Moses; Geology and Mineral Deposits by J. F. Kemp; Earth Excavation, by H. P. Gillette; Explosives, by H. G. Haskell, F. B. Holmes, A. La Motte, and F. J. Le Maistre; Rock Excavation, by H. P. Gillette; Tunneling, by D. W. Brunton and J. A. Davis; Shaft Sinking in Rock, by H. L. Carr; Shaft Sinking in Soft, Water Bearing Soils, by F. Donaldson; Boring by A. F. Taggart; Prospecting, Development and Exploitation of Mineral Deposits, by Jas. F. McClelland; Underground Transport, by E. C. Holden; Hoisting Plant, Shaft Pockets, and Ore Bins, by Wm. M. Weigel; Drainage of Mines, by R. Van A. Noriss; Mine Ventilation, by F. E. Brackett; Compressed Air Plant, by R. T. Dana; Electric Power for Mine Service, by G. R. Wood; Surveying, by C. B. Breed; Underground Surveying, by E. K. Judd; Mine Geologic Maps and Models, by R. H. Sales; Mine Organization and Accounts, by J. R. Finlay; Cost of Mining, by J. R. Finlay; Wages and Welfare, by E. K. Judd; Mine Air, Hygiene, Explosions and Accidents, by Geo. S. Rice; Mining Laws, by H. V. Winchell; Mine Examinations, Valuations, and Reports, by Wm. Y. Westervelt;

Aerial Tramways and Cableways, by E. B. Durham; Mechanical Conveyers, by L. De G. Moss; Ore Dressing, by R. H. Richards; Ore Sampling, by T. R. Woodbridge; Assaying, by E. J. Hall; Testing of Ores, by J. E. Clenell; Notes on Selling, Purchasing and Treatment of Ores, by A. L. Walker; Gold Amalgamation and Cyanidation, by E. L. Dufoureq; Preparation and Storage of Anthracite Coal, by Paul Sterling; Preparation and Coking of Bituminous Coal, by H. McKeen Conner; Mathematics and Mechanics, by C. H. Burnside; Chemical Notes and Tables; Elements of Hydraulics, by J. K. Finch; Engineering Thermodynamics by E. D. Thurston; Steam Engines, Boilers, Pumps, Turbines, Gas Engines, by H. L. Parr, E. D. Thurston, Jr.; and A. L. Herrick; Mechanical Engineering Miscellany, by C. W. Thomas and H. L. Parr; Electrical Engineering, by W. I. Shiekter; Elements of Structural Design, by J. K. Finch; Engineers' Tables.

The list of subjects dealt with and the names of the well known authorities who have contributed will be sufficient to interest any mining engineer in this volume. It contains a wealth of information in concise form and will doubtless be soon generally recognized as a very important contribution to mining literature. Metal miners will especially welcome it.

CHROMITE.*

By J. S. Diller.

Chromium is one of the important war metals, being extensively used as an alloy to harden steel in the manufacture of munitions.

About a dozen minerals contain chromium, but chromite, often called chrome ore or chromic iron ore, is the only mineral of commercial importance as a source of chromium. Its theoretical composition is represented by the chemical formula $\text{FeO} \cdot \text{Cr}_2\text{O}_3$, according to which it contains 68 per cent Cr_2O_3 (chromic oxide) and 32 per cent FeO (ferrous oxide). In nature, however, more or less of the chromium is replaced by aluminum or iron, so that the percentage of chromic oxide varies with the degree of replacement from more than 60 per cent down to less than 10 per cent. The value of chromite depends on the content of chromic oxide, and the price of any grade of ore is based on the percentage of chromic oxide that the ore contains. High-grade domestic ore contains 40 per cent. or more of chromic oxide. Much of the domestic chromite is of low grade, although the greater portion of it is reported to be of high grade.

The principal present applications of chromite are for metallurgic use in the manufacture of ferrochrome to make munitions of war and for furnace lining in the form of crude ore or chrome brick. Several special steels, as automobile steel and airplane steel, contain chromium, but not all of them are of special importance in the war program.

The principal chemical uses of chromite are in the manufacture of bichromate of soda, bichromate of potash, chromic acid, and chrome alum, which are employed in the manufacture of dyes and pigments and for tanning leather.

For both metallurgic and chemical uses high-grade ores are much desired. Low-grade ores can be used to greater advantage in making the alloy ferrochrome than in making chemicals. This adaptability in the manufacture of ferrochrome renders it possible greatly to extend the production and utilization of the low-grade domestic ores.

* Extracts from a report published by the U.S. Geological Survey.

To discover, if possible, the causes of decline in the production of chromite in 1917, the United States Geological Survey sent out a questionnaire to all the chrome producers on its list, asking for statements of the maximum possible production of the mine during the last quarter of 1917 and the actual shipments of chromite from the mine during the same period, the difference being the deficiency in production due to one or more causes, of which the following may be noted: Bad weather, poor roads in winter, lack of funds, lack of shipping facilities, especially lack of cars as the result of the freight embargo, low prices, and uncertainty of market, particularly for low-grade ore. The last two are the most potent causes affecting small producers.

MARKETS

TORONTO MARKETS.

- Cobalt oxide, black, \$1.50 per lb.
- Cobalt oxide, grey, \$1.65 per lb.
- Cobalt metal, \$2.50 per lb.
- Nickel metal, 45 to 50 cents per lb.
- White arsenic, 12 cents per lb.

Aug. 29, 1918—(Quotations from Canada Metal Co., Toronto).

- Spelter, 11 cents per lb.
- Lead, 10¼ cents to 10½ cents per lb.
- Antimony, 18 cents per lb.
- Copper, casting, 30 cents per lb.
- Electrolytic, 29½ cents per lb.
- Ingot brass, yellow, 21 cents; red, 26 cents per lb.

Aug. 29, 1918—(Quotations from Elias Rogers Co., Toronto).

- Coal, anthracite, \$10.55 per ton.
- Coal, bituminous, nominal, \$9.50 per ton.

SILVER PRICES.

	New York cents.	London pence.
August 28	99½	49½

NEW YORK MARKETS.

August 21, 1918.

As quoted by Engineering and Mining Journal.

- Copper, 26 cents per lb.
- Lead, 8.05 cents per lb.
- Zinc, 9 to 9½ cents per lb.
- Aluminum, 33 cents per lb.
- Aluminum Sheets, 42 cents per lb.
- Antimony, 14¼ to 14½ cents per lb.
- Bismuth, \$3.50 per lb.
- Cadmium, \$1.50 to \$1.75 per lb.
- Quicksilver, \$125 per flask.

- Silver, maximum \$1.01½ cents per oz.
- Platinum, \$105 per oz.
- Palladium, \$135 per oz.
- Iridium, \$175 per oz.

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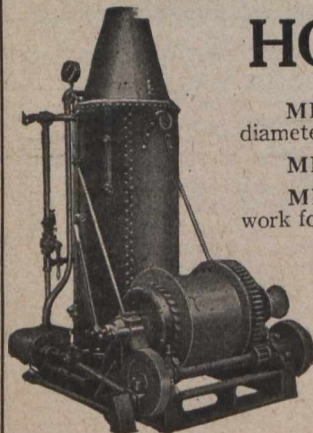
Closing prices, August 28, 1918:—

	Ask.	Bid.
Silver.		
Adanac Silver Mines, Ltd.07¾	.07¼
Bailey . . . . .	.04	.03½
Beaver Consolidaetd . . . . .	.26¾	.26
Chambers-Ferland . . . . .	.13	.11
Coniagas . . . . .	...	2.60
Crown Reserve . . . . .	.17½	.16
Foster . . . . .	.03	.01¾
Great Northern . . . . .	.03½	.03
Hargraves . . . . .	.04¼	.04
Hudson Bay . . . . .	...	20.00
La Rose . . . . .	.35	...
McKinley-Darragh-Savage . . . . .	.45	.44½
Mining Corporation of Canada	2.70	2.50
Nipissing . . . . .	...	8.75
Ophid . . . . .	.07	.06¾
Peterson Lake . . . . .	.09½	.09
Right of Way . . . . .	.04	.03
Seneca-Superior . . . . .	.01½	...
Silver Leaf . . . . .	.01½	.78
Temiskaming . . . . .	.29¾	.29¼
Trethewey . . . . .	.27½	.25
Wetlaufer . . . . .	.07½	.04½

Gold.

	Ask.	Bid.
Apex . . . . .	.03	.02½
Boston Creek Mines . . . . .	.20	...
Dome Cons. Mines . . . . .	.03	...
Dome Extension . . . . .	.14½	.14
Dome Lake . . . . .	...	.11
Dome Mines	9.00	8.85
Eldorado . . . . .	...	.½
Hollinger Consolidated	4.75	4.65
Hunton Kirkland G. M. . . . .	.03	.02
Kirkland Lake . . . . .	.35	.32
McIntyre	1.45	1.44
Newray Mines, Ltd. . . . .	.16½	.12
Porcupine Crown . . . . .	.12	.11
Vipond . . . . .	.14	.11
Schumacher20	.18
Teck-Hughes17¾	.16
West Dome09¾	.09¼
Wasapika Gold Mines, Ltd.30	.25

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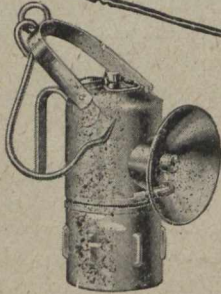
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Ontario in 1917 produced 46 per cent. of the total mineral output of Canada. Returns made to the Ontario Bureau of Mines show the output of the mines and metallurgical works of the Province for the year 1917 to be worth \$72,093,832, of which the metallic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

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

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HON. MARTIN BURRELL, Minister.

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MINES BRANCH

Recent Publications

- Iron Ore Occurrences in Canada, Vol. 1. 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 (Western Provinces). Vol. IV., by W. A. Parks, Ph.D.
- Feldspar in Canada. Report on, by H. S. de Schmid, M.E.
- Peat, Lignite and Coal; their value as fuels for the production of gas and power in the by-product, recovery producer. Report on, by B. F. Haanel, B.Sc.
- Annual Mineral Production Reports, by J. McLeish, B.A.
- The Coal-fields and Coal Industry of Eastern Canada, by F. W. Gray.
- The Value of Peat Fuel for the Generation of Steam. Bulletin No. 17, by John Blizard, B.Sc.
- Cobalt Alloys with Non-corrosive Properties. Report on, by H. T. Kalmus, B.Sc., Ph.D.
- Mining of Thin Coal Seams of Eastern Canada, by J. F. K. Brown
- The Mineral Waters of Canada. Vol. I., by John Satterly, M.A., D.Sc., and 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

- Memoir 92. Part of the District of Lake St. John, Quebec, by John A. Dresser.
- Memoir 93. The Southern Plains of Alberta, by D. B. Dowling.
- Memoir 95. Onaping Map-Area, by W. H. Collins.
- Memoir 96. Sooke and Duncan Map-areas, Vancouver Island, by C. H. Clapp.
- Memoir 97. Scroggie, Barker, Thistle and Kirkman Creeks, Yukon Territory, by D. D. Cairnes.
- Memoir 98. Magnesite Deposits of Grenville District, Argenteuil County, Quebec, by M. E. Wilson.
- Memoir 99. Road material surveys in 1915, by L. Reinecke.
- Memoir 101. Pleistocene and recent deposits in the vicinity of Ottawa, with a description of the soils, by W. A. Johnston.
- Memoir 102. Espanola district, Ontario, by Terence T. Quirke.
- Map 63A. Moncton Sheet, Westmorland and Albert Counties, New Brunswick. Topography.
- Map 154A. Southwestern Yukon.
- Map 157A. East Sooke, Vancouver Island, British Columbia. Topography.
- Map 161A. Beaverton Sheet, Ontario, York and Victoria Counties, Ontario. Topography.
- Map 162A. Sutton Sheet, York and Simcoe Counties, Ontario. Topography.
- Map 163A. Barrie sheet, Simcoe county, Ontario. Topography.
- Map 167A. East Sooke, Vancouver Island. Geology.
- Map 168A. Deposits of stone and gravel available for a highway between Ottawa and Prescott, Ontario.
- Map 1662. Ottawa, Carleton and Ottawa counties.
- Map 1665. Stone available for road material, Hull to Grenville, Quebec.
- Map 1667. Slocan Mining Area, Kootenay District, B.C.
- Map 1677. Coleraine Sheet, Megantic and Wolfe Counties, Quebec.
- Map 1692. Amisk and Athapapuskow lakes, Saskatchewan and Manitoba.
- 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.
- 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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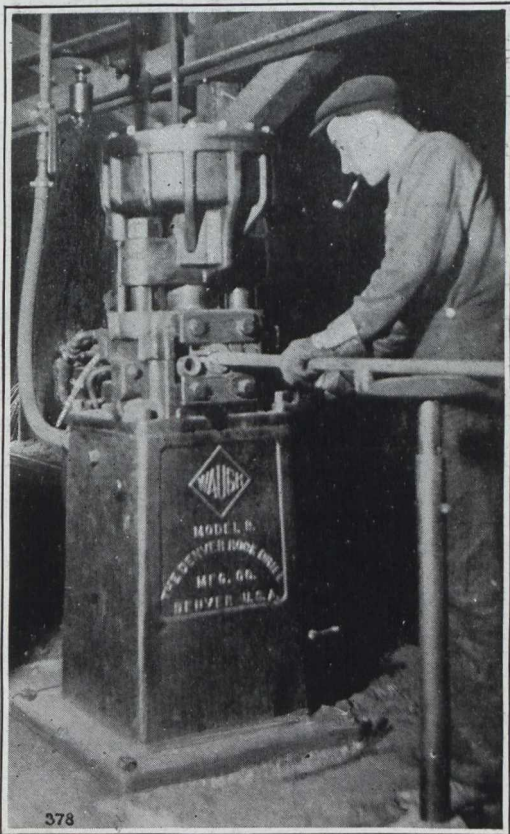
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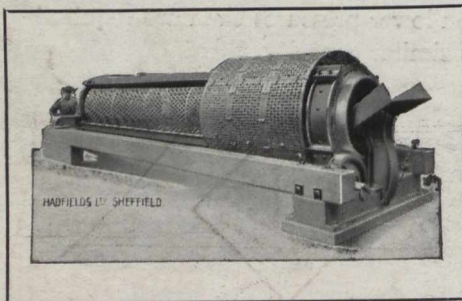
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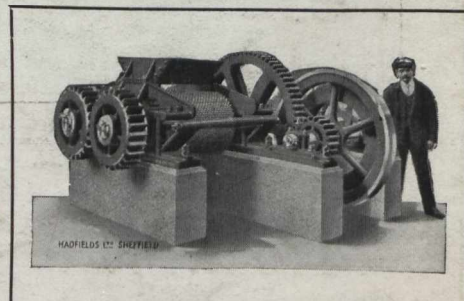
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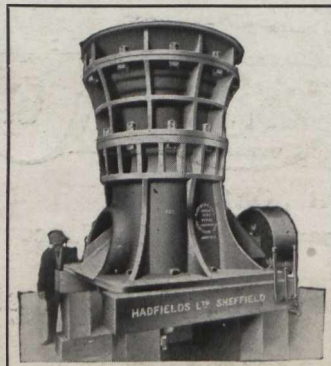
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