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In our March 1st issue we published three articles by officers of the Department of Mines, which help to show some of the lines along which much progress has been made recently. The summary of the preliminary report on production, prepared by the Division of Mineral Resources and Statistics, of which Mr. John McLeish is chief, is continued in this issue. The article by Mr. M. E. Wilson, of the Geological Survey, gives some idea of the character of the great molybdenite deposit developed at Quyon, Quebec. The article by Mr. Howells Frechett of the Mines Branch contains much useful information on the development of the magnesite industry in Canada. The credit for the preparation of these articles belongs to the Mines Department.

ONTARIO'S PLATINUM AND PALLADIUM.

The scarcity of palladium and platinum and the high price that can be obtained for these metals should draw more attention to the fact that we are not making proper use of the considerable quantities of these metals contained in the ores mined and smelted in the Sudbury district.

It is well known that the Sudbury nickel-copper mattes contain important quantities of the precious metals: gold, silver, platinum and palladium. The report of the Ontario Nickel Commission shows clearly that a large percentage of these metals is being wasted. The magnitude of the waste is, however, not commonly appreciated.

From the publications of the Ontario Bureau of Mines we know that there was produced in Ontario in 1916 80,010 tons nickel-copper matte. This matte contained at least 20,000 and possibly 30,000 oz. of platinum and palladium. In 1917 the production was 78,897 tons of matte. During the past two years, therefore, there has been produced in Ontario matte containing a very large amount of these precious metals. The exact amount is unknown to us; but 50,000 oz. for the two years is, perhaps a conservative estimate. Assuming \$100 per ounce as the value of these precious metals, we have the handsome amount of \$5,000,000 as the value of the platinum and palladium contained in ore mined in Ontario in the past two years.

Why does Canada get no credit as producer of the precious metals recovered from the mattes? How much is being recovered from the mattes in other countries and how much is being wasted? We have not the data necessary for the preparation of a reliable estimate; but we would not be surprised to learn that Ontario platinum and palladium wasted in the past two years amounted to over \$3,000,000.

In this connection the following paragraph from the report of the Ontario Nickel Commission is interesting: "The nickel-copper ores of Sudbury are capable of producing much more palladium than the whole of the present world's supply, together with a very large proportion of platinum, iridium and other metals of the platinum group." How much is being produced from Sudbury ores?

"Iron and Steel," a new journal, devoted to the steel and iron industry of Canada, is now being published by the Industrial and Educational Press, Montreal. The first two numbers contain much useful information and the journal merits a wide circulation among those interested in iron and steel production and manufacture. Mr. Alfred Stansfield is editor-in-chief and Mr. W. G. Dauncey is associate editor. Mr. Stansfield is secretary of the newly formed Iron and Steel Section of the Canadian Mining Institute.

The election of Mr. D. B. Dowling as president of the Canadian Mining Institute should result in increased activity in Institute affairs in the branches in coal mining districts. Mr. Dowling was nominated by members of the Rocky Mountain branch, and, as his headquarters are at Ottawa, the West will have the advantage of a representative in the East at all important Council meetings. Mr. Dowling is one of the senior officers of the Geological Survey and is, of course, familiar with the varied problems that the Institute has to deal with. His peculiar position as a link between East and West is one which suggests a special field of usefulness, and one which he can be counted upon to develop in the best interests of the Institute.

CORRESPONDENCE.

Bore-Hole Exploration.

Editor, Canadian Mining Journal:

Sir,—In your issue of January 15th, under the heading, "Bore-Hole Exploration," I note the statement that "the Knight and Stone double tube core barrel is considered the best double tube core barrel on the market." To experienced drill operators and those familiar with the various types of core barrels, it is unnecessary to comment on this statement, but as the article apparently was intended for general information on an interesting subject, a brief description of the types of double tube core barrels and their advantages may be of interest.

The so-called "Knight and Stone Core Barrel" is a modification of the old rigid type core barrel, which barrel consists of an outer and inner tube, rigidly connected, so that both turn together. The advantage of this type over the single tube is that the water passes between the two barrels and reduces washing of soft core to a minimum. The modification to this barrel mentioned is in a provision for returning part of the water through the inner tube and out into the hole at the top of the core barrel. The advantage claimed for this barrel is that the upward motion of water in the inner tube tends to lift the core. The theory is that if water passing down through a single tube barrel washes core out, then an upward stream should wash it in. In practice, the important thing is to reduce the washing to a minimum, so that when soft, decomposed or friable material is encountered, the flowing water in the inner tube defeats the very purpose of the double tube barrel, namely, to prevent washing. In gravel or material of similar nature, there is some advantage in this type of barrel, but for the ordinary soft ore, for which a double tube barrel is generally used, the old rigid type is preferable.

When it is desired to get accurate records in soft or friable material, such as clay, salt, soft ores, decomposed material or coal, or where it is important even in hard, solid formation, to get the maximum amount of ore, the standard Sullivan double tube core barrel, ball-bearing type, is by far the most reliable barrel. This barrel is more elaborate and expensive than either of the barrels referred to. It is so designed that the inner tube is suspended from ball bearings at the top and does not rotate with the outer tube.

That is to say, the outer tube, to which is attached the bit, does the cutting, and the inner tube passes over the core without friction or vibration and protects the core entirely from the washing effect that is objectionable in the single tube or rigid tube core barrel. No more convincing proof of the superiority of the ball-bearing type can be given than the fact that in drilling coal, which is one of the most difficult materials to core, the Sullivan barrel is in universal use.

I am sending you a cut of the ball-bearing core barrel, which I happen to have, and this will show clearly its construction. I regret that I do not have a cut of the rigid type, but, as stated, it simply consists of two barrels that are rigidly connected and turned together. In appearance, as far as the cut goes, they are very similar, but it will be readily understood that there is quite a difference in the action of these two barrels.

I have been in charge of drilling operations in various parts of the world for the past twenty-five years and I do not hesitate to say that where accurate records are desired, the double tube ball-bearing type core barrel is far superior to anything I have ever seen.

Yours, etc.,

E. J. HARRINGTON.

Flower Station, Ont., Feb. 25, 1918.

Composition of Natural Gas.

Editor, Canadian Mining Journal:

Sir,—Some little time ago there was an interesting correspondence with regard to the composition of natural gas, and probably, therefore, the following particulars in reference to something quite unusual may be of interest to your readers. The full text will be found in the 1918 Year Book and Souvenir Programme of the Spokane Mining Convention, on page 87:

"Natural gas and oil fields have not been developed to any extent in the Pacific North West, but there are indications of both oil and gas. . . . In at least one district natural gas has been found in quantities that suggest important possibilities, and the probability, also, of oil deposits of value. This district is Benton County, Washington, near the centre of the State. The Spokane—Benton Natural Gas Co. are the operators, and they propose to pipe the gas to Spokane, a distance of 120 miles. One well is producing one million cubic feet of gas per diem from a depth of 706 ft. A pond of water on the anticline keeps at one level all the time and has a scum of petroleum oil always showing on the surface.

"The analysis of the gas is the remarkable point, this analysis gave: methane, 76.6 per cent.; ethane, 12 per cent.; propane, 7.20 per cent.; butane, 8.80 per cent., and 0.40 per cent. of oxygen."

It may be remembered that in the writer's previous communication on this subject he referred to the occurrence of other gases than methane, and also of hydrogen. He is satisfied that if other gas well products were examined and reported on, we might have very valuable information in regard thereto.

The writer also thinks that the gas above reported on was probably a wet gas.

Yours, etc.,

JAMES ASHWORTH.

921 Drake St., Vancouver, B.C., Feb. 22, 1918.

Annual Meeting of the Canadian Mining Institute

The meeting of the Canadian Mining Institute, held in Montreal on March 6th, 7th and 8th, was a very successful one. The program proved interesting, large questions being dealt with in an able manner by those who undertook the preparation of papers on matters of national importance. Spirited discussion was aroused by some of the papers on fuels and the Friday morning session was enlivened by a spirited defence of the Commission of Conservation.

Iron and Steel Section Formed.

An event that may prove to be of great importance to the Institute was the foundation of a Section on Iron and Steel. Numerous representatives from the iron and steel industry attended the meeting and decided in favor of the suggestion that they should organize in the interests of the industry and that the Canadian Mining Institute, of which several are already members, is the organization with which they should affiliate. As it is the purpose of the Canadian Mining Institute to further the interests of mining and metallurgy in Canada, the formation of an Iron and Steel Section is a natural development. It is understood that the Section will have a very capable executive including: Robert Hobson, Hamilton, Ont.; Col. Thos. Cantley, Mark Workman, W. C. Franz, Dr. Alfred Stansfield, W. J. Janssen, H. M. Jacquays, J. A. Irwin, C. F. Bristol, Esmond Peck, G. H. Duggan and P. L. Miller, Montreal; J. J. Hartley, Kingston; J. H. MacDougall, Sydney, N.S.; F. Crockard, New Glasgow, N.S.; Geo. W. Watts and Wm. Inglis, Toronto; J. G. Morrow, F. A. Sherman and W. M. Curry, Hamilton, Ont.; Col. David Carnegie, Ottawa; Capt. David Kyle, Sault Ste. Marie; M. Deakins, Winnipeg; Fleet Robertson, Vancouver; Geo. McKenzie. This committee will start in on the work of organization at once.

President Cole's Address.

President A. A. Cole, in his address, emphasized the fact that Canada, because of her vast resources of raw materials, would be one of nature's most favored nations, and all must prepare to take advantage of this, and do what they could to encourage greater independence and national self-reliance in its national development. Their principal work must be carried on through Governmental departments, and the Institute had urged the consolidation and strengthening of the Department of Mines, an essential part of which was improving the financial status of the technical members of the staff. The work of the department should be extended so that not only would it deal with the mining and manufacture of minerals and mineral products, but could closely study markets in close co-operation with the Department of Trade and Commerce. Closer co-operation between the Department of Mines and the provincial bureaux should be encouraged, also co-operation among producers with the sanction and support of the Government should be a watchword within the industry.

Organized action by the technical and industrial associations of the Dominion was advocated at the opening sessions. This came up in the course of a general discussion, and was approved in the following resolution, proposed by Dr. W. L. Goodwin, Kingston, seconded by Mr. R. H. Stewart and unanimously

adopted: "That, in the opinion of the Canadian Mining Institute, the time has come for the organization of the technical and industrial societies of the Dominion in such way as to enable them to take joint action in the interests of the Canadian industries, and that this subject be remitted by this meeting to the council of the institute for such consideration and action as will promote such organization."

The status of the metallurgical end of the society was also urged by Dr. Alfred Stansfield, of McGill University, with a proposal to change the name of the institute, so as to include the metallurgists, who form an important branch of the institute. In view of the amount of work that lay ahead of the meeting, Dr. Stansfield withdrew his resolution for a year, with the hope that it would not be lost sight of.

Work of J. E. Hardman and J. S. Brown Recognized.

A luncheon was held by the convention at the Windsor at one o'clock, at which the president, Mr. A. A. Cole, took the chair. He was greeted with considerable applause when he announced that a resolution had been unanimously passed by the council to commemorate the 20th annual meeting of the institute by conferring life memberships on their first member, Mr. John E. Hardman, of Montreal, and Mr. J. Stevenson Brown, of Montreal, who was for many years their treasurer.

The report of the council showed that there had been an increase in membership during the year. There were 125 members on active service, and eleven members had paid the supreme sacrifice at the Front. The total membership was 1,118, as against 1,066 in 1916. There had been 86 losses by death, resignation and removal. The treasurer's report showed a total of \$20,385, with a balance of \$1,990.

Considerable discussion took place during the afternoon session with regard to Government commissions, the general opinion being voiced by Dr. Miller, who considered that there had been too much commission business, and that work should be left more to individual enterprise.

This idea was supported by Dr. J. B. Porter, of McGill, who thought there had been too many commissions appointed. At the same time, he expressed the idea that there had been preposterous extravagance in mining and the utilization of fuel. To correct this, he thought that something might be done by appointing a central advisory body to give assistance to the legislative bodies already in existence. The need for this, he said, was shown by the wasteful methods of many small coal operators, who were simply "picking the eyes" of the mines by surface methods, and injuring their ultimate development.

Reconstruction Problems.

An interesting paper was read by Col. David Carnegie, of the Munitions Board, Ottawa, on "Some Problems in the Reconstruction of Industry."

In his address, Col. Carnegie dealt with two main problems—how to secure remunerative trade without unfair competition, and how to maintain efficient production with competitive co-operation. These two problems, he said, chiefly concerned the consumers, the sellers, the manufacturers and the workers.

With regard to the first problem, Col. Carnegie said that the great difficulty to be encountered was the indifference of people to rapid and revolutionary changes in industry, while the system of unfair competition in business really formed a public danger. This unfair competition, he said, was due to self-love and natural liberty. While not extolling German methods generally, he pointed out the excellent results that had been secured in Germany by the system of control.

For the solution of these problems, Col. Carnegie proposed a system which would utilize the best brains in each industry for controlling that industry. To this end he suggested the organization of two distinct bodies from each industry, one to secure trade and the other to encourage the production of materials. These national organizations, he suggested, should be called national and district trade boards, and district production boards, working under Government sanction.

Dr. A. W. G. Wilson read a paper on the stimulation of the mining industry after the war, pointing out that no other industry was independent of the mineral industry. Canada was economically dependent on other countries for many commodities, while many Canadian industries were wholly or in part controlled by foreign capital. Dr. Wilson said it was advisable

A motion was made by the President, seconded by Dr. Davidson, endorsing the need of educational reform as a basis for the removing of misunderstandings of the true relation of industry to the welfare of society which were the cause of the antagonistic relations between capital and labor, and the secretary was instructed to send copies of the paper to other technical and industrial societies asking them to consider the reforms advocated, so that joint action could be taken in bringing the matter to the attention of the educational authorities of the Dominion.

Many members spoke in favor of the papers, including Dr. F. H. Sexton, T. W. Gibson, deputy minister of mines for Ontario, C. J. Mackay, Toronto, Dr. Goodwin, Kingston, Prof. A. Stansfield, and others. Opposition to the scheme of Col. Carnegie was argued by G. G. S. Lindsay, of Toronto, who questioned the advisability of eliminating competition in the same manner as the Shell committee had done.

Vocational Re-education.

At the evening session Dr. F. H. Sexton gave an address on the vocational re-education of disabled soldiers from the mining industry. He pointed out that the majority of men considered unfit for further military service were not able to resume their mining



Some of the members of the Canadian Mining Institute at the Montreal Meeting, March 6th.

to consider whether some measure of the control should not be exercised by the Federal Government in connection with the establishment and location of basic industries, and whether it was not desirable to amend existing laws so that in the future the control of important mineral resources shall be vested only in the hands of residents of Canada or subjects of the British Empire. This action had been taken with respect to natural gas and petroleum resources, and it might be desirable to extend it to other similar resources that were essential for military purposes or to enable us to secure and maintain commercial independence.

The paper by C. V. Corless dealt with the Whitley scheme in force in England and pointed out that Canada would have to face the same problems as had been tackled in England, and the sooner capitalists realized this and discussed the inevitable question of the just distribution of the joint product of wealth the better. He emphasized the need of providing a sound social training in all technical institutions and of training oncoming citizens to exercise intelligently their increasing powers with their implied responsibilities, for labor had too long been left to the misguidance of half-baked Utopian social theories picked up from irresponsible but interested agitators and a cheap sensational press.

work, which required hard physical labor, but with the hearty co-operation of practically all mining companies the miners disabled by war were being trained for other occupations, and in many cases were able to earn more wages than in pre-war times.

He declared that the problem of re-establishing the returned disabled soldier was practically the first problem of reconstruction, and there was no better opportunity which had ever been offered to industry to perform a service which at once accorded in such a great degree to the best principles of national economy and the highest principles of applied Christianity.

In the discussion which followed Dr. Goodwin spoke of the classes being conducted at Kingston, and mentioned that the agricultural classes were the most popular with the soldiers.

Jas. McEvoy expressed the opinion that every returned soldier, whether disabled or not, should have an opportunity of re-education so that he could realize the higher ambitions that he had felt after taking part in the war.

A very well illustrated lecture on the Rio Tinto pyrites mines was presented by W. A. Carlyle. The enormous deposits have been worked for many centuries and the magnitude of the work was an eye opener.

Edgar Stansfield gave a brief talk on the work done at the laboratories at the capital, especially in regard to the testing of air in the mines and the carbonization of lignites. He said that the subject of the use of peat as fuel was receiving the special attention of the Department of Mines.

Fuel Problems.

Fuel economics was the subject spoken of by D. B. Dowling, who pointed out that should peace be proclaimed without the evacuation of France or Belgium, millions of tons and her iron reserves as metal by 1,025 millions of tons, and the manufactures of France would Germany would increase her coal reserves by 20,000 have to be confined to textiles and the non-metallies, and Germany would have the preponderance in coal and iron over all Western Europe, and would finally be able to lead the markets of the world. The speaker, however, pointed out there were other fuels which could be used in order to conserve the non-replaceable fuel. North America had the largest coalfields of any continent, but was also the most prodigal, and if the rate of consumption increased as in the past fifty years, the supply would be exhausted about the year 2100.

Unused Resources.

He suggested the burning of compressed straw, dead trees, and broken limbs from the forest. The water power resources of Canada totalled 18,800,000 horse power, of which at present only 1,813,200 was developed. Further research should be made to make of peat bog a solid fuel acceptable to town users.

The making of "slack coal," which was now wasted in the mines, a marketable product, was also a matter to which attention should be given. He referred to the wasteful methods in making coke, and suggested that if a large coking plant were established in Montreal, the gas produced could largely replace the use of coal and the coke could be shipped to Ontario. The recovery of the tar and other by-products would form a very important industry and supply much of the material now imported.

The Anthracite Situation.

That the coal shortage of the past winter was not the fault of the engineers and operators, or their employes, was asserted by Eli T. Conner, who spoke on the anthracite situation in the United States. The output from the anthracite region of Pennsylvania during 1917 was ten million tons more than in the preceding year, notwithstanding the shortage of sixteen to eighteen per cent. in labor. The men realized that coal was absolutely necessary to keep industries going and to prosecute the war, and, notwithstanding the fact that the working force was made up of eighteen or twenty nationalities, they were loyally responding to the calls made.

The output of bituminous coal last year was about 544,000,000 tons, and of anthracite coal about 77,000,000 tons, but there should have been about 60,000,000 tons more bituminous coal to meet the needs, and as a result anthracite had been used to make up the deficiency, even to the extent of using domestic coal for steam purposes for industries.

The principal reason for the shortage was the overloading of transportation facilities by all kinds of freight. The maximum amount of anthracite was now being produced, and it could not be increased unless the mines worked double shift which was impossible through the labor shortage.

Waste of Coal in Mining.

Speaking on the waste of coal in Canada, W. J. Dick said a large proportion of the coal mined in Canada was lost and wasted through caving of measures owing to the practice of mining lower seams of better quality first, with the result that by the caving in, the recovery of coal from the upper seams was generally impossible. In other countries leases were granted only on satisfaction being given the authorities that a proper scheme of operations was to be carried on. In Canada there was indiscriminate leasing of coal lands without restrictions, and if the mines were worked to their capacity the output would be 16,000,000 tons per annum. He deprecated the opening up of farmer or "snowbird" mines, about 400 of which had been abandoned in Alberta alone, as they had only destroyed the entrance to a coal field for large operations and were a menace to safety in the workings. He suggested that slack coal should be made into briquettes if a cheap binder could be found.

Mr. White Defends Commission of Conservation.

James White, assistant to the Chairman of the Dominion Conservation Commission, accused the Canadian Mining Institute of sending to the Prime Minister a memorandum full of inaccuracies. He declared that unless there was an end to the "most scandalous and disgraceful attacks made on the Commission," he would have to place the matter before the Hon. Clifford Sifton, the Chairman, and raise a question of whether the Institute should continue to receive the grant from the Dominion Government. Mr. White denied emphatically that the work of the Department of Mines had been encroached on, and that it could never get the necessary funds to carry out the work which the Commission had been encouraged to undertake. He declared that from 1910 till 1916 \$770,000 had been turned back to the Treasury by the Mines Department as unspent, "yet the precious bulletin declared it could not obtain funds." The memorandum inferentially stated that power had been given the Commission by order in Council to appoint permanent officials or employees in the Civil Service; the veriest tyro knew that the Government could not abrogate its power in such a manner. He declared that the field work of the Commission in regard to mines and minerals had not aggregated one thousand dollars a year, and yet they were told they spent so much that the Mines Department had not the necessary funds.

As an indication of the good work done by the Commission, Mr. White said, they defeated the application for damming the St. Lawrence at the Long Sault by an alien corporation, and also an application under the guise of a canal charter, which, if granted, would have alienated to a corporation all the water-power of the Pigeon, Rainy, Winnipeg and Saskatchewan Rivers, between Lake Superior and the Rocky Mountains. A flood of other water-power legislation was withdrawn after that.

Mr. White said he did not think there was any man with the brain of a hen who could have written some of the statements contained in the memorandum. He asked the Institute to pass a resolution of regret.

The Chairman stated that the incoming Council would deal with the matter, and the meeting accepted this ruling.

Election Results.

The result of the ballot for the President and two Vice-Presidents was announced as follows: President,

D. B. Dowling of the Geological Survey, Ottawa; Vice-Presidents, H. E. T. Haultain of Toronto and J. A. Dresser of Montreal. As the election of Mr. Dowling leaves a vacancy in the Vice-Presidents, O. E. S. White-side was unanimously elected to the position.

Councillors elected by acclamation were: Alfred Stansfield, Montreal; N. R. Fisher, Haileybury; R. E. Hore, Toronto; E. P. Mathewson, Toronto; S. B. Wright, Deloro; Jules Charbonnier, Blairmore; W. P. Williams, Bellevue; R. H. Stewart, Vancouver; Geo. Wilkinson, Victoria; W. R. Wilson, Fernie.

THE MINISTER OF MINES ADDRESSES C.M.I.

The Secretary of State and Minister of Mines, the Hon. Martin Burrell, told members of the Canadian Mining Institute at their annual banquet, that it was not his intention to attempt to introduce any new Mining Act during the coming session. He believed that the whole attention of the Union Government should be devoted to doing everything possible to help win the war, and to avoid any legislation which might be of a controversial character. The expression of this sentiment was warmly applauded, despite the fact that there had been drafted what many considered an ideal mining act.

Mr. Burrell dealt at length with the relation of the Government of the country to the people, and said that the attitude of many had changed regarding the part a Government should play in connection with industries. It was possible that before the war was over the Government of the day would take a large step in advance and nationalize certain forms of industry rather than leave them in private hands. He would, however, be reluctant to think that any form of Government or any development of Canadian national life should proceed to nationalize in such a way that it would stop that wholesome strong stimulus of private enterprise and energy that had done so much to build up the country.

Some people had suggested that Government should be by experts, but he rather subscribed to George Russell's pregnant saying, that experts should be on top and not on bottom. It would be a foolish minister who did not do everything in his power to encourage specialism and be ready to be guided by expert advice when it was clear that expert advice was needed.

The Memorandum.

Referring to the memorandum submitted by the Institute to the Premier, and about which there had been some strong things said at the convention of the Institute that morning by a member of the Commission of Conservation, the Minister of Mines said it contained some pretty vigorous and sweeping criticism; but while not discussing them in detail, he was willing to subscribe to the spirit which had prompted them. He agreed that the mining industry would not only play a large part in the war, but would be of great importance in the vast reconstructive period which must follow. No man could avoid the conviction that some of the enormous problems that would face this country in the period subsequent to the war would be little less difficult than the problems of war itself. He did not see how the taxation of the country could be much less than it was to-day, and there would be the greatest necessity for stimulation and development in every conceivable way of every pound of national resources, including the brain and brawn of the citizens of the country.

Canadians had so to develop their resources that there would not be a transient development in war time but a strengthening and perpetual development in times of peace. With reference to the charge that there was

overlapping in the two branches of mines and geological survey, and that there had been such frequent changes of ministers that none stayed long enough to follow out any policy of continuity, he said that there must in every large governmental department be a certain amount of duplication but that it should be the duty of the ministers to eliminate this overlapping. The work should be correlated as far as possible and the money devoted to it directed to the proper channels, where it would be utilized in the public interest. As long as he was Minister of Mines he would give sympathetic and constant attention to the department. People must never lose sight of the paramount duty of carrying on the exploratory work on which all mining was based.

There were big problems facing the country, immense sums of money had been spent on the Hudson's Bay Railway, the wisdom of which had been questioned, but although it was to some extent a political railroad, he believed it would be of immense value from the mining point of view, as it rendered accessible to those doing exploring work a vast hinterland which might prove to be one of the greatest national assets of the future.

He hoped also to extend the valuable system of laboratories that existed at Ottawa to British Columbia, believing that they would not only help to solve immediate problems, but would give an immense stimulus to the country. Further east there were other problems, such as the lignite beds of Saskatchewan and Manitoba, and whatever the opinions held by experts of opposing schools, he maintained that if it was possible to provide for a better utilization of large bodies of material which constituted big national resources and which, in the conversion of their by-products could be of immense national benefit, then it was the duty of the Government to make an intelligent investigation and seek a solution of the problems.

Utilization of Peat.

Touching on the utilization of peat as fuel, Mr. Burrell stated that he had been studying the question for the past few weeks and was firmly convinced that something could be done to put the peat industry on an economical basis, and make accessible 120,000,000 tons of material which would be a valuable subsidiary fuel in this country. As a result of investigations, the authorities had come to fairly definite decisions in the matter and he hoped something would be done during the present session to carry on investigational and experimental work that would perhaps remove public scepticism.

Other Speakers at Banquet.

Bradley Stoughton, secretary of the American Institute of Mining Engineers, spoke of the part being played by the engineers of the United States in assisting the Government in its war work through different departments, and paid warm tribute to the heroism of the Canadian troops.

H. H. Vaughan, president of the Canadian Society of Civil Engineers, congratulated the institute on forming an iron and steel section and said that there was no need for conflict between the engineers and the mining institute as each should play its part and cooperate in the development of industry.

The president of the Mining Society of Nova Scotia D. A. Macdougall, also spoke, remarking that he believed that at the forthcoming meeting of that society a proposal would be submitted for affiliation with the Canadian Mining Institute, thus placing the latter body in a position to speak authoritatively for the whole mining industry of Canada.

At the concluding session of the Institute in the afternoon, a resolution was passed in favor of the daylight saving plan. B. Neilly, of Cobalt, was elected vice-president in place of O. E. Whiteside, who had been elected in the morning, but who had tendered his resignation from the office, feeling that the West was already sufficiently represented in the council of the Institute. A number of the members paid a visit to the Armstrong Whitworth plant on the South Shore during the afternoon.

A Collection of Tin Specimens

The Ontario Bureau of Mines has recently received from Mr. J. D. Millen, general manager of the Mount Bischoff Tin Mining Company, Tasmania, Australia, a very interesting collection of tin ores. There are in all about thirty-five specimens of ore and rock, and five samples of concentrates from the mill. Included in the collection are several very fine nuggets of water-worn cassiterite (SnO_2). The primary ore, as distinguished from the surface alluvial deposits, is innocent-looking enough. It would undoubtedly be passed over by most Canadian miners and prospectors. There is no geological reason why commercial deposits of tin may not be found in Canada, and for that reason the Bureau of Mines will be very glad to show these ores to anyone interested. As a matter of fact, very small quantities of cassiterite are already known to occur in the Yukon, British Columbia, Ontario, Quebec, New Brunswick and Nova Scotia.

It may be recalled that the tin occurrence at Mount Bischoff is the most important in Australia. The rocks on Mount Bischoff have been described as consisting of Paleozoic slates and quartzites with some sandstone and dolomite. These sediments are intersected by quartz-porphry dikes. The dikes on the upper part of the hill are greatly altered, the original constituents, with the exception of zircon, having been decomposed. In the altered part of the dikes, a great variety of minerals have been introduced, including topaz, tourmaline, quartz, siderite, cassiterite, arsenopyrite, pyrite, pyrrhotite and fluorite. Most of the ore occurs in the quartz-porphry dikes, and only to a minor extent in the Paleozoic slates.

In the early days, the mining was confined to the detrital or gravel deposits, which lie on the surface, and which are regarded as alluvial; these were very rich.

Mining commenced in the early seventies, the principal company, the Mount Bischoff Tin Mining Company, having distributed in the first thirty years of its activities ten million dollars in dividends.

It is to be hoped that, in the near future, Mr. Millen, who has made a very careful and detailed study of the Mount Bischoff deposits, will present a paper before some of our technical societies on the results of his investigations.

MR. GODSON'S WORK APPRECIATED.

The Daily Nugget of Cobalt speaks very warmly of the work of Mr. T. E. Godson, Mining Commissioner of Ontario. Referring to him in a recent issue, it says: "To Mr. Godson the prospectors and mining men of Northern Ontario indeed owe a debt of gratitude. His latest request that the fighting men of the country be extended every consideration and protection possible is but in accordance with his usual just policy."

INCIDENTS OF C.M.I. ANNUAL.

The Memorandum.

The now famous Memorandum, prepared by a committee of Council of the Institute and presented to the Prime Minister two or three weeks ago, received its due share of attention at the meeting. It was discussed at White heat in one of the sessions, and formed the text for a considerable part of the Minister of Mines' brilliant speech at the annual dinner.

The Major and the Maid, or Camouflage at the Smoker.

(J. W. E. an attractive "female" sauntering in his wife's clothes in the hallway near the entrance to the Smoker, catches the eye of the Major and instinctively draws him towards "herself.")

J. W. E.—"Were you at the war, sir?"

The Major (in most respectful and earnest tones) "Yes, ma'am, eighteen months."

(Then disclosure of indentity by J. W. E.)

Coal and Briquettes.

Overheard in the rotunda after the animated debate on coal briquettes; the first conceived but yet unborn offspring of the H.A.C.S.I.R. "I say, old man, if you have any financial interest in coal, developed or undeveloped, between the boundless plains and the wide Pacific, you are a fakir and a grafter, and to use a Sunday School expression, there is no health in you. Go off and sit down, and let not your voice be heard in connection with fuel. Eh what! Weren't you told so?"

Another Case of Mistaken Identity.

The Chairman of Smoker (in rapid fire, stirring tones during a lull in the proceedings). "Gentlemen, I understand we have the honor to have with us tonight Mr. Donnelly, inventor of the unsinkable ship. We shall be pleased if he will come to the platform and address us on a subject that is of great interest to the Allies and to the world in general."

John Donnelly, our most successful raiser of sunken ships, sitting in the southeast quarter of the room, surrounded by a group of Queen's men as usual, immediately "takes notice" and wonders what kind of stunt is to be pulled off on him. Those surrounding him also think the joke is now to be on him and raise a loud laugh. In the meantime, a stranger to the audience rises in the northwest quarter and approaches the chairman. He ascends the platform, and proves to be Donnelly, the inventor, of Washington, D.C., and other parts of the coast. In beginning his address he is somewhat flurried as he thinks the audience is laughing at his ship. Sinkable and unsinkable! But then Ignatius Donnelly, now gathered to his fathers, achieved fame by asserting that Bacon was Shakespeare, and vice versa.

The Institute's Twentieth Birthday.

The youth has reached manhood's estate. He is in khaki and can vote. His teething-measles-mumps stage bothered him but little. He was a robust infant. His parentage was good. The years have dealt lightly with many of those who were present at his birth. His godfather, the first president of the Institute, is still "one of the boys." G. R. and F., other past-presidents, prove that a youth spent according to Spartan laws defies time and that twenty years in their case mean but little. J. S. B. is just as lively on a St. Andrews night when the haggis is borne aloft, or when he is enticing the wily trout in Laurentide streams, as he was in '98. But many of the best are gone. Bell and Luckie and Hay, and the younger Fraleck and LeRoy. What good fellows they were!

THE COMMISSION OF CONSERVATION.

At the Friday morning session of the meeting of the Canadian Mining Institute, Mr. Jas. White, assistant to the chairman of the Commission of Conservation, proposed a resolution expressing the regret of the Institute that the memorandum contained serious errors of statement respecting the Commission of Conservation, which were set out in detail.

The motion was seconded by W. J. Dick, who stated that, as a member of the council, he had not seen the memorandum, which was drawn up by a committee. Had he seen it he could have pointed out the errors.

The Chairman ruled that the matter was one which must be dealt with by the council, and no doubt the incoming board would make any corrections that should be made.

Mr. White maintained it was a question of right or wrong and should be decided by the meeting. A serious wrong had been done in a document distributed from coast to coast and his resolution called for a contradiction of the misstatements. He did not care a rap for technicalities or points of order, he stood for right and justice and he wanted to know if he was going to get it.

The Chairman: You will get right and justice, but I don't think this meeting is the place for that motion. If the meeting wishes to put aside my ruling they can do so.

Dr. Goodwin said the statements needed to be investigated, and if the memorandum was incorrect and unjust, the wrong done should be remedied. But the council should investigate it, and the meeting should not be asked to pass a resolution without investigation. He moved the matter be referred to the council for consideration and action.

Mr. White: Every statement I have made is contained in public documents, and I can demonstrate them right here. I never thought there was any man with the brain capacity of a hen, who would write some of the statements contained in that memorandum.

Dr. Goodwin: Even a murderer caught red-handed is not hung without a trial.

Mr. White: I did not know this was a criminal trial—it is a question of whether the meeting is going to back up these misstatements or not.

The Chairman: I may be wrong, but I have given my ruling, and it is for the meeting to say whether that is upheld. I am sure the council will take action and see that any inaccuracies or misstatements or any false statements will be corrected and proper means taken to see they are put before the proper authorities so that there will be no misunderstanding as to their meaning.

The motion to refer to the incoming council was seconded by A. G. Burrows, Toronto, and was carried.

BIG RAIL ORDER.

Ottawa, March 11.—An order for 100,000 tons of steel rails, or enough to lay tracks on some 800 miles of railroad, has been placed by Hon. J. D. Reid, Minister of Railways, on behalf of the Government, with the Dominion Iron and Steel Company. The rails are to be manufactured at the company's plant at Sydney, Cape Breton, and all are to be delivered by the end of July next. Rolling will begin on April 1st and it is hoped that during April 10,000 tons can be ready for use in making replacements on Canadian railways. In May, June and July it is expected that the rail mill will be producing up to its full capacity, and

that deliveries will reach 30,000 tons a month. The rails will be heavy ones, probably 85 pounds to the yard, and will be suitable for renewals on railway main lines.

Preliminary Report on Production in 1917

(Extracts from a preliminary report published by the Department of Mines, Ottawa.)

By John McLeish.

(Continued from March 1 issue.)

Coke.

The total output of oven coke during 1917 was 1,231,865 short tons made from 1,978,893 tons of coal, of which 1,379,038 tons were of domestic origin and 599,855 tons imported. The total coke used, or sold by producers during the year was 1,245,862 tons valued at \$6,713,073, or an average of \$5.39 per ton. In 1916 the total output was 1,448,782 tons and the quantity sold by the producers was 1,469,741 tons, valued at \$6,049,412, or an average of \$4.19 per ton.

By provinces the output was: Nova Scotia 645,069 tons, a decrease of 8,767 tons; Ontario 375,014 tons (all from imported coal), a decrease of 77,488 tons; Alberta 31,196 tons, a decrease of 11,352 tons; and British Columbia 180,586 tons, a decrease of 119,310 tons.

The ovens operated during the year were those at Sydney and Sydney Mines, N.S., Sault Ste. Marie, Ont., Coleman, Alta., and Fernie, Michel and Union Bay, B.C.

At the close of the present year 1,657 ovens were in operation and 875 were idle.

The exports of coke in 1917 were 23,595 tons valued at \$137,318, as against 48,539 tons valued at \$221,334 in 1916. The imports of coke in 1917 were 970,106 tons valued at \$6,517,260 as against 757,116 tons valued at \$3,229,078 in 1916.

Recovery of By-Products.

Of the total output of coke 914,466 tons, or 74 per cent. was made in by-product recovery ovens and the recovery of by-products included: Ammonium sulphate 9,941 tons, and tar 8,277,078 gallons, as against 11,040 tons of sulphate of ammonia and 9,012,202 gallons of tar in 1916. There was also an important recovery of benzol, toluol, naphtha and naphthalene.

Fluorspar.

High prices have stimulated the mining of fluorspar at Madoc, Ontario, and production has increased from 1,284 tons valued at \$10,238, or an average of \$7.97, to 4,249 tons valued at \$68,756, or an average of \$16.08 in 1917.

There is an annual consumption of fluorspar in Canadian steel furnaces of from 10,000 to 15,000 tons.

Graphite.

The production of graphite in 1917, which was 3,714 tons valued at \$402,892, included 541 tons valued at \$106,305, or \$196.50 per ton, from Quebec and Baffin Island and 3,173 tons valued at \$296,587, or an average of \$93.47 per ton from mills in Ontario.

Graphite operators reported that of the total shipment 3,510 tons valued at \$372,167 were sold for export. The Customs records show exports of plumbago, crude ore, and concentrate, 112 tons, valued at \$7,455, and manufactures of plumbago valued at \$384,505.

It is of interest to note that a small shipment of high grade graphite was made during the year from deposits which were worked by the Hudson's Bay Company in the vicinity of Lake Harbour on Baffin Island. This graphite was sold to the Dominion Crucible Company at St. Johns, Que., who confirm the opinion of the Hud-

son's Bay Company that this graphite is of very high quality and comparable with the best Ceylon product.

Gypsum.

The total quantity of gypsum rock quarried in 1917 was 365,959 tons, of which 97,667 tons were calcined. The shipments of all grades totalled 339,418 tons, valued at \$887,170 and included lump, 226,846 tons, valued at \$251,960; crushed, 32,305 tons, valued at 51,869; fine ground, 4,843 tons, valued at \$19,222, and calcined, 75,424 tons valued at \$564,119. By provinces the shipments were: Nova Scotia, 218,588 tons valued at \$306,447; New Brunswick, 38,556 tons, valued at \$191,631; Ontario, 48,947 tons, valued at \$130,138; Manitoba, 33,347 tons, valued at \$258,934.

In 1916 the quantity quarried was 424,431 tons, of which 94,414 were calcined. The shipments included: Lump, 249,893 tons; crushed, 15,680 tons; fine ground, 6,096 tons, and calcined 71,246 or a total of 342,915 tons valued at \$738,598.

Exports of crude gypsum were 224,423 tons, valued at \$245,182, and of gypsum or plaster ground valued at \$146,384. The corresponding exports in 1916 were crude gypsum, 221,234 tons, valued at \$252,476, and gypsum or plaster ground valued at \$154,630.

The imports of gypsum of all grades during 1917 were valued at \$35,460 and included: Crude gypsum, 64 tons, valued at \$999; ground gypsum, 282 tons, valued at \$5,355, and plaster of Paris, 3,101 tons, valued at \$29,106. The total value of imports in 1916 was \$43,291.

Magnesite.

The production of magnesite was confined to the deposits in Argenteuil county, Quebec. The shipments in 1917 were 58,090 tons, valued at \$728,275 and include crude ore, calcined magnesite (burnt in the lime kilns) and dead burnt clinker (sintered in rotary kilns after mixture with about 5 per cent of magnesite). The crude ore was sold at about \$10 per ton, the calcined at \$28.50, and the clinkered, or dead burned material at from \$40 to \$46 per ton. The shipments in 1916 were 55,413 tons valued at \$563,829, or an average of \$10.17 per ton, and 14,779 tons valued at \$126,584, or an average of \$8.56 per ton in 1915.

Petroleum.

The production of crude petroleum in 1917, while about 7,000 barrels greater than in 1916, was less than the production of any other previous year for which records are available. A bounty of 1½ cents per gallon is paid on the marketed productions of crude oil from Canadian oil fields, the administration of the "Petroleum Bounty Act" being under the Department of Trade and Commerce. According to the bounty record the production in 1917 in Ontario and New Brunswick was 205,332 barrels (8,186,614 imperial gallons). The average monthly price for crude oil during the year was \$2.33¼ at which rate the total production would be worth \$478,937. There was also a small production of crude oil in Alberta of which record has not yet been received. The specific gravity of this oil is below the standard specified in the "Petroleum Bounty Act" and no bounty is therefore paid thereon. According to press report based on inland revenue inspection records there was a recovery during the year from Alberta crude oils of 270,000 gallons of gasoline and refined illuminating oils.

The total production of crude oil in 1916 (exclusive of Alberta) was 198,123 barrels valued at \$392,284 compared with which the 1917 production shows an increase of about 3.6 per cent. in quantity but of over 22 per cent. in total value.

The price of crude oil at Petrolia was quoted at \$2.08 per barrel at the beginning of the year and was increased by 10 cents on January 8, 5 cents on January 30, 5 cents on April 16, and by 20 cents on August 20, running at \$2.148 throughout the balance of the year. The average monthly price for the year was 2.33¼ as against an average price of \$1.98 in 1916 and \$1.395 in 1915.

The Ontario production in 1917 was, according to the records of the Department of Trade and Commerce at Ottawa, 202,991 barrels. The production in barrels of the various fields as furnished by the Supervisor of Petroleum Bounties at Petrolia, was as follows, in barrels: Petrolia and Enniskillen, 74,267; Oil Springs, 46,902; Sarnia Tp., 4,493; Moore Tp., 6,282; Plymton Tp., 579; or a total for Lambton of 132,523 barrels; Bothwell, 29,682; Tilbury, 10,041; Dutton, 2,941; Onondaga, 382; Moza Tp., 20,998 and Thamesville, 6,420. The Bounty Supervisor states that "A new, extensive oil field at North Glencoe in the Tp. of Moza, in the County of Middlesex, has created a great deal of interest among oil producers and has already produced about 21,000 barrels."

This new production has offset a continued falling off in the production from the older fields.

The production by districts in 1916 was: Lambton, 142,208 barrels; Bothwell, 33,856 barrels; Dutton, 2,851 barrels; Tilbury, 16,296 barrels; Onondaga and Belle River, 1,663 barrels.

The production in New Brunswick, according to bounty records was 2,341 barrels in 1917 as against 1,345 barrels in 1916 and 1,020 barrels in 1915.

Exports of petroleum entered as crude mineral oil in 1917 were 2,130 gallons, valued at \$183, and of refined oil 28,212 gallons valued at \$6,558. There was also an export of naphtha and gasoline of 24,304 gallons valued at \$7,419.

The total value of the imports of petroleum and petroleum products in 1917 was \$21,455,326 as against a value of \$14,705,323 in 1916.

The total imports of petroleum oils, crude and refined, in 1917, were 378,224,746 gallons, valued at \$21,239,347. These oil imports included: Crude oil for refining, 183,105,102 gallons valued at \$8,411,730; petroleum and gas oils 142,455,582 gallons valued at \$4,521,854; and illuminating oils, 13,457,096 gallons, valued at \$1,093,560; lubricating oils, 5,315,811 gallons, valued at \$1,209,930; gasoline, 15,369,172 gallons valued at \$3,293,760, and other oils, products of petroleum, 18,521,983 gallons, valued at \$2,708,513. The imports of petroleum products included 1,620,634 pounds of paraffin wax valued at \$140,722, and paraffin wax candles 513,339 pounds, valued at \$75,257, or a total value of \$215,979.

The total imports of petroleum oils, crude and refined, in 1916 were 292,426,121 gallons, valued at \$14,604,476. The imports of paraffin wax and wax candles were 1,281,376 pounds valued at \$100,847.

Pyrites.

The total shipments of pyrites as sulphur ore in 1914 were 403,243 short tons valued at \$1,586,091 and containing a total sulphur content of 150,896 tons, or an average of 37.4 per cent. The average sulphur content varied among the shipping mines from 34.5 per cent. to 46 per cent. By provinces the shipments were: Quebec, 122,822 tons, valued at \$501,111; Ontario, 274,712 tons, valued at \$1,056,435; and British Columbia, 5,709 tons valued at \$28,545. Of the total shipments, about 341,676 tons, or 85 per cent., were exported to

the United States, according to producers' reports, the sulphur content of which was 126,106 tons.

The 1916 shipments of pyrites were 309,251 short tons, containing 116,980 tons of sulphur, or an average of 37.8 per cent., the increased production in 1917 being 93,992 tons, or 30 per cent. By provinces the shipments were: Quebec, 130,639 tons; Ontario, 177,552 tons, and British Columbia, 1,060 tons.

The Customs record shows exports of pyrites during 1917 as 279,646 tons, valued at \$974,200. Apparently the exports of copper pyrites from Quebec are not included in this record. Exports of sulphuric acid during 1917 were 18,955,100 pounds, valued at \$197,888, as against 3,151,700 pounds valued at \$74,527 in 1916. Imports of brimstone, or crude sulphur, in 1917, were 82,445 tons, valued at \$1,515,309 and in 1916, 73,467 tons, valued at \$1,186,618. Imports of sulphuric acid in 1917 were 216 tons valued at \$15,680, as against imports in 1916 of 2,403 tons, valued at \$115,173.

Salt.

The Canadian production of salt is still obtained entirely from southern Ontario and the yearly output has been slowly though steadily increasing. Total sales in 1917, including the salt equivalent of brine used for chemical manufacturing were about 138,909 tons, valued at \$1,047,792 as against 132,903 tons, valued at \$717,653 in 1916. These values are, as far as possible, exclusive of packages. The value of packages used in 1917 was \$403,879 and in 1916, \$309,603. By grades the production included: Table and dairy, 34,252 tons; common fine, 65,117 tons; common coarse, 37,398 tons; and land salt, 2,142 tons. The production by grades in 1916 was: Table and dairy, 35,045 tons; common fine, 54,596 tons; common coarse, 41,259 tons, and land salt, 2,003 tons.

The exports of salt in 1917 were 8,643 tons valued at \$94,364. The imports of salt were 170,810 tons valued at \$1,088,205 and included 44,973 tons of fine salt in bulk valued at \$184,792; 12,293 tons of salt in packages valued at \$120,665; and 113,544 tons of salt imported from Great Britain for the use of fisheries, valued at \$782,748. The total imports in 1916 were 101,208 tons valued at \$694,835.

Structural Materials.

The total value of the production of structural materials including cement, clay products, lime, sand and gravel, stone quarries, etc., for the year 1917 was \$19,102,571, an increase of \$1,635,385, or 9.4 per cent. over the 1916 value. This is the first increase in production of this class of products that has been recorded since 1913. The total having been \$17,467,186 in 1916, \$17,920,759 in 1915 and \$26,009,227 in 1914.

Cement.

The total quantity of Portland cement sold, or used in 1917 was 4,768,488 barrels of 350 pounds each valued at \$7,699,521 or an average of \$1.61 per barrel, as compared with 5,369,560 barrels sold, or used in 1916 valued at \$6,547,728 or an average of \$1.22 per barrel showing a decrease in quantity of 601,072 barrels or 11.2 per cent., but an increase in total value of \$1,151,793, or 17.6 per cent.

The total quantity of cement made in 1917 was 4,987,255 barrels, as compared with 4,753,033 barrels, an increase of 234,222 barrels or 4.9 per cent. Cement mills were slightly more active in 1917. The output was sufficient to increase stocks during the year by about 220,000 barrels whereas in 1916 the output was less than sales and stocks were drawn upon to the extent of about 620,000 barrels.

The total imports of cement in 1917 were 30,031 cwt. equivalent to 8,580 barrels of 350 pounds each valued at \$19,646, or an average of \$2.29 per barrel as compared with imports of 20,596 barrels valued at \$31,621, or an average of \$1.54 per barrel in 1916.

The total consumption of cement, therefore, neglecting a small export, was 4,777,068 barrels as compared with a consumption of 5,390,156 barrels, showing a decrease of 613,088 barrels, or about 11.4 per cent.

MURCHISON MEDAL AWARDED TO J. B. TYRRELL.

At the annual meeting of the Geological Society of London, held in London, England, on the 15th of February last, the president presented the Murchison Medal to J. B. Tyrrell, Mining Engineer, of Toronto. In making the presentation, he said in part:

"The Murchison Medal has been awarded to Mr. Joseph B. Tyrrell in recognition of the value of his many services to geological science. In the breadth of their scope, in the pioneer element which has so largely entered, in the practical benefits which have often followed, those services may stand as typical of Canada's contribution to Geology.

"During more than thirty years Mr. Tyrrell has been frequently engaged in exploring wide tracts of the little known lands of Northern Canada, making numerous prolonged journeys of a kind which demands no ordinary resolution and endurance. Besides thus adding largely to geographical knowledge by his own efforts, he has done much to make known the results of earlier explorers in the North. While helping very materially to develop the mineral resources of the Dominion, he has at the same time gathered much valuable information touching the older rocks of the region; and, uniting in his own person the geologist and the prospector, he has often shown by example how science and enterprise may go hand in hand, to the great advantage of both.

"On the side of pure science, however, his most notable researches have been made in the domain of Glacial Geology, where his wide acquaintance with the country has enabled him to arrive at conclusions of a large order. Prior to 1894 it was generally held that the ice which once overspread Canada, east of the Cordillera with its mountain-glaciers, emanated from a single centre of dispersal. Mr. Tyrrell first demonstrated the existence and approximate limits of a great ice-sheet, which he named the Keewatin, centring in the country west of Hudson Bay and distinct in origin from the Labradorian ice-sheet to the east. To these two he subsequently added a third, under the name of the Patrician Glacier, which had its gathering-ground to the south of Hudson Bay. His development of this thesis, involving a discussion of the relations in time and space of the ice-sheets radiating from different centres, must rank among the most important contributions to the Glacial history of North America.

"In forwarding to Mr. Tyrrell this token of recognition from the Council of the Geological Society, I beg, Sir, that you will add to our congratulations upon what he has already accomplished our hope that many years of activity still remain to him; and this wish will, I am sure, be echoed by his numerous friends on both sides of the Atlantic."

In Mr. Tyrrell's absence, Sir George Perley, High Commissioner for Canada, received the medal for him, acknowledging the honor in the following appropriate remarks:

"Mr. President and Members of the Geological Society: I am very happy to come here to-day and receive this medal on behalf of Mr. Tyrrell and I only regret that he is not here himself for that purpose. He was in London for some time last year; but, unfortunately, had to return to Canada last month, so that he has missed the pleasure of being with you to-day. As I live in Ottawa I have known Mr. Tyrrell for a long time. He is a native-born Canadian and was for many years connected with the Canadian Geological Survey. He showed much resource and energy in his work and it is very fitting that he should be recognized by your Society in this way.

"I may say that in our Dominion we are proud of our Geological Survey and of what it has done. We have a large country with great undeveloped mineral resources which the Geological Survey has done a great deal to help discover and utilize. Fortunately Canada has been able to assist more than could have been expected in providing minerals and metals during the war. Many supplies from enemy countries have been cut off and higher prices have encouraged enterprise. In consequence we have not only provided large quantities of nickel, but we have developed our copper, lead and zinc industries to a very considerable extent. Even so, I feel sure that our mineral and metal products will be greatly increased in the future and we believe that our resources in that direction have been hardly scratched. To exemplify this I would remind you that the wonderful silver deposits at Cobalt in Ontario were only discovered by chance, although lumbering had been carried on over that district for a great many years. The Ontario Government built a line of railway from the Canadian Pacific into the North country and in so doing crossed this great silver deposit, which is still producing heavily.

"As representing Canada, I am proud to receive this Medal on account of our Dominion, as well as on account of Mr. Tyrrell personally. It seems peculiarly appropriate at this time that this honor should be given by this old and important Society to a Canadian and we appreciate the same greatly.

"I accept the Medal on behalf of Mr. Tyrrell with grateful thanks, and it will give me much pleasure to forward it to him and communicate the very kind words with which you, Mr. President, have accompanied it."

THE UNSINKABLE SHIP.

Montreal, March 8.—The idea incorporated in the attempt made to render unsinkable the steamer Lucia, an Austrian vessel, taken over by the United States, came to its inventor, W. T. Donnelly, while building the dry-dock at Prince Rupert, B.C., he told the Canadian Mining Institute last night. The waste space in the Lucia is filled with buoyancy boxes.

Mr. Donnelly said at Prince Rupert he wanted to ballast the dock, and instead of putting stone in the bottom he experimented by placing a similar weight of wood on the wings of the dock, with the result that when pressure was put on the dock and it was driven lower into the water, the wooden ballast reversed its function and became additional buoyancy to such an extent that the dock was unsinkable.

Mr. D. B. Dowling, of Ottawa, has been elected president of the Canadian Mining Institute. Mr. H. E. T. Haultain, of Toronto, and Mr. J. A. Dresser, of Montreal, are elected councillors.

A Barytes Mine in Northern Ontario

"Almost unknown to the Canadian public there has been developed by Premier Langmuir Mines, in Northern Ontario, a mine for the production of barytes, a mineral used largely in the paint and chemical industries.

"The company owns 250 acres on the Night Hawk, a navigable river, in the Porcupine Mining Division, in what is known as the Night Hawk Lake area. A considerable portion of the property has been cleared and comfortable camps have been constructed for the workmen on the high ground overlooking the river.

"The baryte occurs in a system of veins, one of which is shown in the accompanying illustration. Considerable development has been done, including the running



of a tunnel 100 ft. in length and the sinking of a shaft which is now under way. The ore in sight is remarkably pure and white.

"A feature of this deposit that should not be overlooked is the fact that silver in both the native and sulphide forms is present in such amount as seems to warrant the hope that sufficient of this metal will be obtained to at least defray all operating costs.

"The company is now at work on the equipment of a mill for the treatment of the ore, the buildings for which are now all completed, and are partially shown in one of the illustrations. All are covered with asbestos fire proof material.



"Transportation from the mine to the Night Hawk river is provided for by a tramway, gravity being the only motive force required to carry the product to the barges of the company, by which it will be transported to Connaught Station on the T. & N. O. Ry., which will be the company's shipping point."

An Iron Industry for British Columbia

The subject of the establishment of an iron and steel manufacturing industry in British Columbia has lately been given much attention in Victoria and several less important towns on Vancouver Island, as, too, it had previously been considered in Vancouver. The present outcome of the numerous meetings and discussions, having as their chief object measures to utilize in the province the iron-ore resources of the Coast district, is that a committee representative of several public bodies has been selected to proceed to Ottawa with the purpose of seeking substantial aid from the Dominion Government to establish iron and steel works on the coast of British Columbia.

It seems to have been taken for granted by some of those prominent in this movement to endeavor to induce the Dominion and Provincial Governments to become financially responsible for the starting of an industry that heretofore no capitalists have shown themselves ready to undertake, that little dependable information is in the possession of the Dominion Government relative to the iron-ore resources of the British Columbia coast. The fact that investigations were made during recent years by Messrs. E. Lindeman, R. G. McConnell, C. H. Clapp, O. E. LeRoy, and other officials of the Canada Department of Mines, has either been ignored or was not known to those now advocating inquiry and investigation by the Dominion Government. Further, there is a wide discrepancy between statements made at meetings held recently on the British Columbia coast as to the quantity of iron ore known to be available and that estimated by men employed by either the Dominion or the Provincial Government to investigate the situation. For instance, one man claiming to be qualified to express a dependable opinion has been asserting that some 50,000,000 tons of iron ore is available on the British Columbia coast, against which there is the carefully prepared statement of Mr. W. M. Brewer, contained in a bulletin, published by the B. C. Department of Mines, on "The Iron-ore Deposits of Vancouver and Texada Islands," which comprise the chief known accessible deposits on the coast, that the "tonnage of ore available" is estimated by him at 12,888,200 tons, of which 470,000 tons is "actual ore," 4,537,600 tons is "probable ore," and 7,880,600 tons is "possible ore." Mr. Brewer made his investigations for the B. C. Department of Mines in 1916, as he stated in his report "principally for the purpose of bringing up to date the information regarding the iron ores already in the possession of the Bureau of Mines." In preparing his report, he had before him reports previously made for the B. C. Department of Mines by Mr. Herbert Carmichael and the Provincial Mineralogist, and those of Messrs. Lindeman, McConnell and Clapp, for the Canada Department of Mines. In addition, there were "reports from examinations made by mining engineers for private clients previous to 1910, which have not been published."

In March, 1917, there was submitted at a meeting of the Western Branch of The Canadian Mining Institute, held in Vancouver, a paper on "Opportunities for the Establishment of an Iron and Steel Industry in British Columbia." In the course of the discussion that followed, Mr. John M. Turnbull, who, after years of work as a field engineer for the Consolidated Mining and Smelting Co., is now professor of mining at the University of British Columbia, said, in part: "The difficulty in regard to ores is the problem of first import-

ance. I believe there are large quantities of magnetite ore on this coast, but we have no definite knowledge as to what quantity can be obtained and its probable average grade and character."

Mr. E. T. Hodge, professor of geology at the University of British Columbia, said, in part: "We hardly have a right to discuss questions of manufacture until we have settled the far more important matters of occurrence, quantity, availability, and smelting suitability of our iron ores. But, in view of the great ease of transportation from Vancouver to many Asiatic cities, we ought, with a proper supply of cheap iron ore, to become a manufacturing and distributing centre for iron machinery or other high-grade products. It has been stated that several of our iron deposits are suitable for smelting, but as scarcely any of these have been opened, we do not know to what geological type they belong and consequently cannot tell anything about their size or uniformity. We cannot, with advantage, build smelters until we have some definite idea as to tonnage, nor can we do so until we know the type of ore we have to treat. I think you will admit that, with the limited geological examination which our iron-ore deposits have received, except in a few instances, that we have only a faint idea as to the tonnage, and no conception as to the type of ores which a smelter would have to treat. Many of these facts must be known before we can plan definitely for a smelter and before we can interest capital in the manufacture of iron from our ores."

When the present session of the Legislative Assembly of British Columbia was opened recently, the Lieutenant-Governor, in the course of his address, said: "My Government is securing the services of an expert to advise on the electro-thermic treatment of iron ores, and measures for the encouragement of iron and steel industries will be presented for your consideration." In the address in reply, there occurs the following paragraph: "We warmly approve the action of the Government in securing expert advice on the electro-thermic treatment of iron ores, and we will give our best consideration to proposed measures for the encouragement of iron and steel industries." The member who moved the adoption of the address in reply, however, made the following comment on this subject: "Assuming that the Province possesses the iron-ore deposits and that conditions are favorable for the establishment of an iron and steel manufacturing industry, I doubt whether in going to Ottawa seeking assistance, this Province is doing the right thing. Here, on Vancouver Island, all the resources in generous abundance exist. Do not the people of British Columbia possess faith in themselves to develop their own wealth, especially in this time of Empire stress? I believe they do. Not alone would such an industry aid in winning the war, but would also build up the industrial development of the Province after the war is over, and especially to the end that industrial work may be available for the men on their return from the front. Why, in the face of the noble response for funds for the Victory Loan, the people of the Province could not also provide amply for industrial development, I do not know."

The delegates appointed to proceed to Ottawa have been told by the Vancouver Island members of the House of Commons that the Federal Government will likely ask them what evidence they have of a substantial industrial purpose on the part of the people of British Columbia in regard to the proposed iron and steel development, before any suggestion may be made as to the nature of the support it might give to such a

project. The suggestion that the Dominion Government undertake the business of development is quite out of the question. A concrete proposal will be required from the delegates. It was pointed out, too, that the labor situation in British Columbia appears to be a detrimental prospect which will have a bearing on the attitude of the Government. Also, the Government may require that it be given some definite information as to where a market is to be found for the products, should an iron and steel industry be established, as asked for.

The outcome of the movement is being awaited with much interest, but, meanwhile, no information has been made public indicating that capital is, or will be, available for the proposed undertaking.

WILL INVESTIGATE PEAT POSSIBILITIES.

Ottawa, March 11.—The Dominion Government and the Government of Ontario are to co-operate it is announced here, in comprehensive experimental work during the coming season in the possibilities of peat as a fuel. The question has been under consideration by the Recommendation and Development Committee of the Cabinet. Special attention has been given to it also by Hon. Martin Burrell, Minister of Mines, who has considered it with the technical officers of his department, with R. A. Ross, consulting engineer, of Montreal, who is a member of the Research Council, and with E. V. Moore, who constructed the first mechanical peat excavator built in Canada.

Toronto, March 12.—Wide powers to go ahead with the development of the fuel resources of Ontario are to be given the Government by legislation introduced in the House yesterday by Hon. G. Howard Ferguson, Minister of Lands, Forests and Mines. The Minister announced that it was the intention of the Government to appoint either a Fuel Controller or a commission to investigate the fuel resources of the province. To provide the money necessary for such an investigation the Government already had had \$100,000 set aside in the supplementary estimates.

The Minister explained to the House that the development of peat resources had been a matter of conference between the Dominion and Provincial authorities. Economy in operation was desired and for that reason it was necessary to avoid over-lapping between the two Governments. As soon as a working basis had been agreed upon a start would be made. The Minister said that new equipment had been devised for manufacturing peat into commercial form, and that experiments would be made with it. He emphasized the importance of finding the best labor-saving devices, since, if labor had to be relied upon to a large extent, the cost of production would be too large to ensure the future of the industry.

Mr. A. A. Hassan has for an indefinite period discontinued operations at the Great Falls gold mine in Maryland and is now at 666 Mansfield Place, Brooklyn, N.Y. He will open an office in New York City. Mr. A. A. Hassan, Jr., has joined the U.S. Aviation Corps and is now a first Lieutenant and Instructor in Aviation at Gerstner Field, Lake Charles, Louisiana. Mr. Hassan's younger son, Ennis, has also volunteered for the U.S. Flying Division.

Mr. D. C. Bard, consulting engineer to the Ladysmith Copper Corporation, has been examining mining property on Quadra Island, of the Valdes group.

SPECIAL CORRESPONDENCE

BRITISH COLUMBIA.

On his return to Victoria, at the end of February, Mr. R. F. Green, who represents West Kootenay in the Dominion House of Commons, stated that during an extended trip he had made recently through that district, he had found business conditions in the chief centres generally fair, with the exception of Slocan and Ainsworth, where mining operations have been affected by the action of the Consolidated Mining and Smelting Company in enforcing a new schedule of charges for the reduction of silver-lead and lead-zinc ores at its smelting works at Trail. In those two divisions, a number of the mines have been closed. At the same time, conditions are now nearly normal at Trail and Rossland, where labor difficulties and a shortage of coke had for a time necessitated a suspension of operations. In the mines in Rossland camp, about 500 men are now employed, as compared with approximately 600 before the suspension of mining, while at Trail about 1,300 men are engaged at the smelting and refining works, against 1,500 before the strike that took place last November. The difficulties between the Slocan and Ainsworth mine-operators and the Consolidated Company relative to quantities of ore the company has announced it will accept for smelting and the higher scale of charges it has demanded, have been under discussion for some time. The advisability of having a Federal investigation into the whole matter in dispute is being urged by the mine-operators. On the other hand, the smelting company is stated to be willing to submit its case for full consideration. Mr. Green expresses the hope that an amicable settlement of these difficulties will be reached.

In this connection, it may be mentioned that at the Northwest Mining Association's annual convention, held in Spokane, Washington, during the week of February 11-16, there was strong complaint made against the recent policy of the Consolidated Mining and Smelting Company, and bitter denunciation of what was asserted to be its intention to force the independent mine-operators out of the mining business in the West Kootenay district of British Columbia. To understand that the British Columbia mining men, who told of their present difficulties, occasioned largely by deferred settlements and increased charges, and of the discouraging prospects for silver-lead mining between much decreased returns from the smelting works and the considerable increase in taxation imposed by the Provincial Government, had a generally sympathetic audience, it should be remembered that by far the greater number of operating mines in the Ainsworth and Slocan mining camps have been in late years financed from Spokane, and that in a number of important instances, control of them is held in that city.

An example of the bad effect recent experience is having, may be found in the case of the Florence Silver Mining Company, with headquarters in Spokane, which company, after having for about six years steadily developed a mine in Ainsworth camp, in 1916-1917 erected and equipped a concentrator and entered on what it was planned should be a long period of production of silver-lead ore and zinc concentrate. On February 21, the Kaslo "Kootenain" printed the following:

"We have been up against this sort of thing ever since we got in a position to operate our mill," said

President F. R. Wolfe, of the Florence Silver Mining Co., the other day, referring to the latest circular received from the Consolidated Mining and Smelting Company. "Last year, every time we thought we had things right and in shape, along would come some new circular from the Consolidated Company that would upset the whole kettle of fish. This last affair is the crowning outrage of all. Personally, I do not kick quite so much on the increase, which is bad enough, as on the mode of settlement for lead, which is worse. If I let them take our lead and stack it away awaiting the getting of a better market price, I can come pretty near to guessing that they will sell it for me at the lowest price they can get.

"If ever there was a time that the independent silver-lead producers of that region should organize, it is right now. If we do not, the only thing I can see is for us to pocket our losses and get out.

"The Consolidated Company has things fixed so that it costs about the same for ore treatment if the producer ship to American smelting works or if he ship to Trail. With the Florence mine, we can do nothing else but lose money on our ores, if we ship to Trail and pay short-haul transportation charges without customs duty, and the exorbitant demands of the Consolidated Company. If we ship to the United States and pay long-haul freight charges and customs duty, with lower smelting charges, then it figures out about the same. It is certainly very cleverly arranged.

"If the duty is taken off Canadian lead ores going into the United States, then we may be able to operate the Florence mine and mill at about an even break. It would help some, perhaps, to keep things going until we get the smelting rate question adjusted so that there would be more in the nature of a square deal for the independent producer."

A Mineowners' Association.—Incidentally, it is of interest to note that another attempt is to be made to put life into an organization, named the British Columbia Mineowners' Association, which was launched at Nelson several months ago, but in which the mine-owners and mine managers of Kootenay district have not yet taken much interest, the meeting called to complete organization having lapsed by reason of the smallness of the number attending at the time and place at which officers and committee were to have been chosen and other preliminaries carried out. The announcement calling another meeting at Nelson states that "those who have not yet joined the organization will be given an opportunity of doing so. It is imperative that every Kootenay mine should be represented at this meeting, as matters of the utmost importance to all silver-lead and zinc-ore producers will be dealt with; and more especially the present intolerable smelting situation, which has rendered mine operation almost impossible. If plans do not miscarry, a series of resolutions will be drawn up to be submitted to the forthcoming annual meeting of the Associated Boards of Trade of Eastern British Columbia, the endorsement of which body will be sought. One of these resolutions will urge the Dominion Government to suspend the free importation of lead and zinc ores into Canada until such time as the United States shall permit ores of a similar character to go into the United States free of customs duty, or, in other words, until such time as there shall be reciprocity between the United States and Canada in respect to these ores. Another resolution will demand the regulation of lead and zinc smelting works in Canada as public utilities, and will advocate such works being taken over by the Govern-

ment, if necessary, to ensure that Canadian smelting charges on similar classes of ore shall not in any case be higher than those of custom smelters in the United States, realizing that Governmental action of this nature is absolutely necessary to conserve the mining industry of Canada and to stimulate the production of silver, lead and zinc ores from mines in British Columbia. A petition will also be prepared for presentation to the Dominion Government, along the lines indicated, such petition to be circulated for signature throughout the Province, with a view to obtaining legislative relief during the forthcoming session."

East Kootenay.

Published figures show the production of coal from mines in the Crowsnest district, Southeast Kootenay, to have been 75,162 long tons during the month of January, as compared with 35,698 tons in the corresponding month of 1917.

Production of ore from metalliferous mines in the district, as shown by receipts at the Consolidated Mining and Smelting Co.'s works at Trail during 52 days of 1918, to February 21, inclusive, was 11,058 tons. Of this total, 10,069 tons was zinc ore from the Consolidated Co.'s Sullivan mine, 113 tons lead-silver ore from its St. Eugene mine, 812 tons silver-lead ore from the Paradise mine in Windermere division, and 64 tons from several small shippers.

West Kootenay.

Ainsworth.—Only one mine in Ainsworth camp had shipped ore to Trail in 1918 up to February 21, namely, the Consolidated Co.'s No. 1 mine, which made an output of 916 tons of silver ore.

The Bell mine, in Jackson basin, in the western part of Ainsworth mining division, during the same period shipped to Trail 183 tons of zinc ore, and the Lavinia, situated north of the northern end of Kootenay Lake, sent in 32 tons of ore.

Slocan.—It is claimed that at no previous time in the history of mining in Slocan district have similar conditions prevailed, since a number of mines have ore to ship, but cannot find a market for it at remunerative rates. The year's receipts at Trail from Slocan mines, to February 21, have totalled only 1,998 tons, of which 967 tons was from the Surprise, which now has two concentrating plants, and 795 tons was chiefly zinc ore from the Lucky Jim mine. This left only 236 tons received at Trail during seven weeks from all other mines in Slocan and Slocan City divisions.

Nelson.—Work has been resumed at the Consolidated Co.'s Molly Gibson mine, at the head of Kokanee creek, in the northeastern part of Nelson mining division, and in the third week of February 147 tons of silver-lead ore from that mine was received at Trail. The Beasley-Monarch, situated about ten miles downriver from Nelson, has shipped two cars, 52 tons, of copper ore to Trail this year. The Emerald, near Salmo, in the southern part of the division, which in the latter half of last year opened a fine shoot of lead ore, is again shipping to Trail, receipts in recent weeks having totalled 138 tons.

Rossland.—The total quantity of ore received at Trail from Rossland mines in seven weeks ended February 21 was 29,083 tons, of which 1947 tons was from the Josie group of the Le Roi No. 2, Ltd., and the remainder from the Consolidated Co.'s mines, as follows: Centre Star-War Eagle group, 13,796 tons; Le Roi, 12,656 tons, and White Bear, 684 tons.

Boundary.

Both the Granby Company and the Canada Copper Corporation continue to operate smelting works at

Grand Forks and Greenwood respectively, but no particulars of quantities of ore smelted are obtainable. Both receive custom ores, but their main supply comes from mines operated by themselves.

Shipments of copper-gold ore from the Consolidated Co.'s Emma Mine, near Eholt, have this year reached Trail to a total of 5,613 tons to February 21.

Yale.

The output of coal from mines in Nicola Valley was 16,151 long tons for the month of January, which total is a little smaller than for the corresponding month of 1917.

Little productive metal mining is being done in this district at present. The only mine known to be making shipments of ore is the Iron Mask, near Kamloops, from which 540 tons of copper ore was received at Trail during four weeks to February 21.

Coast.

Production of coal from Vancouver Island mines was smaller in January of this year than in the corresponding month of 1917. Published figures give the output for last January as having been 139,442 long tons, as compared with 145,480 tons for January, 1917.

The following information concerning the Howe Sound Company, which owns the Britannia Mining and Smelting Company, was published lately in Seattle: "Much interest has been expressed regarding the 1917 earnings of the Howe Sound Company, but it is officially announced that particulars will not be available for publication until after the annual meeting, which will be held on March 18. During 1916, the Howe Sound Company produced 16,288,835 lbs. of copper and earned \$1,574,860. From official sources, it is learned that the company made no particular effort to increase production during 1917, preferring to devote considerable time and attention to increasing the ore reserves, which it is believed will be shown to have been about 5,000,000 tons greater at the end of 1917 than at the end of 1916. It is understood that the gross earnings during 1917 have been running ahead of the showing made in 1916, but, in view of the large amount of development work the company has carried out, net profits may not be quite as large as those of a year ago."

NORTHERN ONTARIO.

Geological Structure of Kirkland Lake Area.

The mine operators of Kirkland Lake are considering a plan whereby a general study of the geological structure of that area can be made. Sufficient underground work has been accomplished along the main auriferous zone to make possible a comprehensive estimate of the various faulting, dips and depths of various formations, and their relation to the mineral deposition. The Kirkland Lake area has now passed the prospective stage, with three mills in the camp now producing. It is interesting to note the rapid development which has taken place in the camp during the past two years, when the adverse conditions caused by the war had to be contended with. Whether or not the camp is to be a large one remains for the future to decide. The plan to make a comprehensive study of the geological structure of the district is an important one for the Kirkland lake camp. The two most vital necessities for the carrying out of this work, will be a mutual co-operation of the mine operators of the

camp in permitting access to their lower workings and the agreement upon a geologist whose selection will be unanimously endorsed by all the interested parties.

Tough-Oakes.

Operations at the Tough-Oakes mine at Kirkland Lake have recently been attended with highly satisfactory results. During the past week in the course of drifting on a large vein at the 350-ft. level of the mine, a new vein was encountered. The new vein where cut carries values as high as \$150 to the ton, but the general average of the whole vein is said to be about \$20 per ton. The composition of the vein resembles that of the other high grade veins in the mine and the gold appears in finely decimated particles sometimes visible to the naked eye and sometimes in the form of tellurides. This recent development is one of the most important at the Tough-Oakes for a considerable time. Working forces at this mine are better than for some time past, which fact coupled with the favorable results of development is making possible the feeding of the mill at almost full capacity, as well as the development of surplus ore. During the past year the dividends paid by the Tough-Oakes amounted to \$65,187, making a total to date of \$391,125. The ore reserves of the mine are large and the grade sufficiently high to permit of a fair margin of profit even under the adverse conditions which are being encountered by gold mining companies due to the high cost of material and the scarcity of labor. The auriferous zone so far developed consists of thirteen high grade veins, developments on which have not been carried below the 500-ft. level. However, the geological structure as so far determined strongly indicates a continuation of the veins to deeper levels, and the Tough-Oakes would appear to be in line for a prosperous future.

TORONTO MARKETS.

- Cobalt oxide, black, \$1.50 per lb.
- Cobalt oxide, grey, \$1.65 per lb.
- Cobalt metal, \$2.25 per lb.
- Nickel metal, 45 to 50 cents per lb.
- White arsenic, 17 cents per lb.
- Mar. 11, 1918—(Quotations from Canada Metal Co., Toronto).
- Spelter, 11 cents per lb.
- Lead, 9½ cents per lb.
- Tin, 98 cents per lb.
- Antimony, 17 cents per lb.
- Copper, casting, 30 cents per lb.
- Electrolytic, 31 cents per lb.
- Ingot brass, yellow, 20 cents; red, 26 cents per lb.
- Mar. 11, 1918—(Quotations from Elias Rogers Co., Toronto).
- Coal, anthracite, \$10.00 per ton.
- Coal, bituminous, nominal, \$9.50 per ton.

SILVER PRICES.

	New York cents.	London pence.
Feb. 22	—	42½
Feb. 23	85½	42½
Feb. 25	85½	42½
Feb. 26	85½	42½
Feb. 27	85½	42½
Feb. 28	85½	42½
Mar. 1	85½	42½
Mar. 4	85½	42½
Mar. 5	85½	42½
Mar. 6	85½	42½

STANDARD MINING EXCHANGE.

Messrs. J. P. Bickell & Co. report the following quotations on the Standard Stock & Mining Exchange, as of close, March 8, 1918.

	Gold.	Bid.	Asked.
Apex04%	.04%
Boston Creek
Dome Extension09%	.10%
Dome Lake23	.24
Dome Mines		8.25	8.50
Imperial015%	.02
McIntyre		1.38	1.39
Hollinger		5.00	5.05
New Ray17	.18
Preston East Dome03½	.04
Teck-Hughes55
West Dome12½	.12%
Porcupine Crown18	.20
Vipond20	.25
	Silver.	Bid.	Asked.
Adanac08½	.09¼
Beaver27	.28
Coniagas		3.25	..
Crown Reserve21	.22
Ferland09½	..
Hargraves06¼	.06½
Hudson Bay	\$7.00
Kerr Lake		5.30	5.60
La Rose30	..
McKinley46%	.47
Nipissing		8.45	8.55
Temiskaming26½	.28
Trethewey15%	.16
Wettlaufer05	.05½

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- 2—40 ton standard gauge Switchers, cylinders 18 x 26, 140 lb. working pressure; haulage capacity 2,500 tons.
- 1—30 ton standard gauge Switcher, cylinders 14 x 24, 135 lb. steam pressure; haulage capacity 1,898 tons.
- 1—35 ton standard gauge Switcher, cylinders 14 x 24, 140 lb. steam pressure; haulage capacity 1,982 tons.
- 1—38 ton standard gauge Road Engine, cylinders 16 x 24, 140 lb. steam pressure; haulage capacity 1,443 tons.
- 2—50 ton standard gauge Road Engines, cylinders 17 x 24, 150 lb. steam pressure; haulage capacity 1,812 tons.
- 1—28 ton standard gauge Road Engine, cylinders 17 x 24, 150 lb. steam pressure; haulage capacity 980 tons.
- 1—45 ton standard gauge Road Engine, cylinders 17 x 24, 140 lb. steam pressure; haulage capacity 1,521 tons.
- 1—45 ton standard gauge Mogul, cylinders 17 x 26, 140 lb. steam pressure; haulage capacity 2,313 tons.

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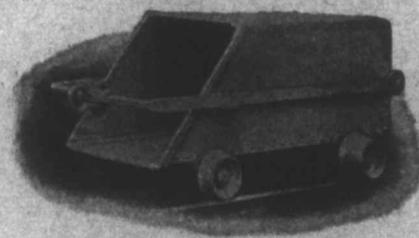


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