CANADIAN MINING JOURNAL

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ECHOES FROM C. M. I. ANNUAL.

The boys are all behind the new President and mean to give him a hearty support during his term of office.

Would it not be well to appoint a committee of Inspectors of Mines to consider accidents at each annual meeting?

The provision of safety appliances for mining inspectors might be considered as worthy of the attention of those who have charge of the next convention.

What has become of our old friend Conservation? The coy Research Council appears to have supplanted her in the affections of the members. But 'tis a fickle age!

In his address the Secretary of the Engineering Institute of Canada, Mr. Keith, expressed himself frankly and convincingly. The relations of the two institutes in the future should be most pleasant.

Mr. Dresser proved to be a real find as toast master. While we wish to see him President of the Institute before many years, in the meantime we would suggest to the Council that he be asked to become honorary official toast master.

It's too bad Cambrian was detained in the capital city. His odes in the Bulletin will not have quite the true ring for the next year. He would have found the meeting of 1919 a great inspiration for his muse. He would not need to draw on his imagination.

We believe it was due to the thoughtfulness of that good friend of the Institute, Mr. J. Stevenson Brown, that it was arranged to have the annual dinner in the Montreal Club. The members are much indebted to both the Club and to Mr. Brown. The Club was the pleasantest place in which any of the 21 dinners of the Institute has been held.

And some of the fellows have been infected with bacillum mutabile and want to change C. M. I. to C. I. M. M.! It will take an Act of Parliament to make the change, and to discard a name enshrined in sentiment, loyalty and tradition. But these are nothing—why not "keep up with the Jones"? Change Canadian Mining Institute to Canadian Institute of Mining and Metallurgy! That real mouthful, the new name of the A. I. M. E.—American Institute of Mining and Metallurgical Engineers—should serve as a warning. Then, if we make the change, to be consistent we shall have to insist on numerous other changes. The Department of Mines of the Dominion and of several of the Provinces shall have to become Departments of Mines **and Metallurgy**, with corresponding titles for the Ministers. At last accounts, the Bureau of Mines in Washington has not changed its name.

Weren't the boys glad to see Professor Kemp back again! The reception they gave him when he rose to speak at the dinner was unsurpassed.

Dr. Bradley Stoughton is another whom we all look forward to seeing at the annual gathering. We always knew on which side he was during all the years of the war. The mantle of Raymond has fallen on good shoulders.

Of course the new President of the A. I. M. E., Mr. Winchell, is a real northern zone man, as he comes from Minnesota. We all feel that he is one of us and hope that we shall see him frequently at our annual meetings.

The absence of the Hon. Martin Burrell at the meeting was regretted. Many of his old friends were expecting to see him. But Ministers of the Crown these days have especially heavy duties to perform and have to stick pretty closely to headquarters.

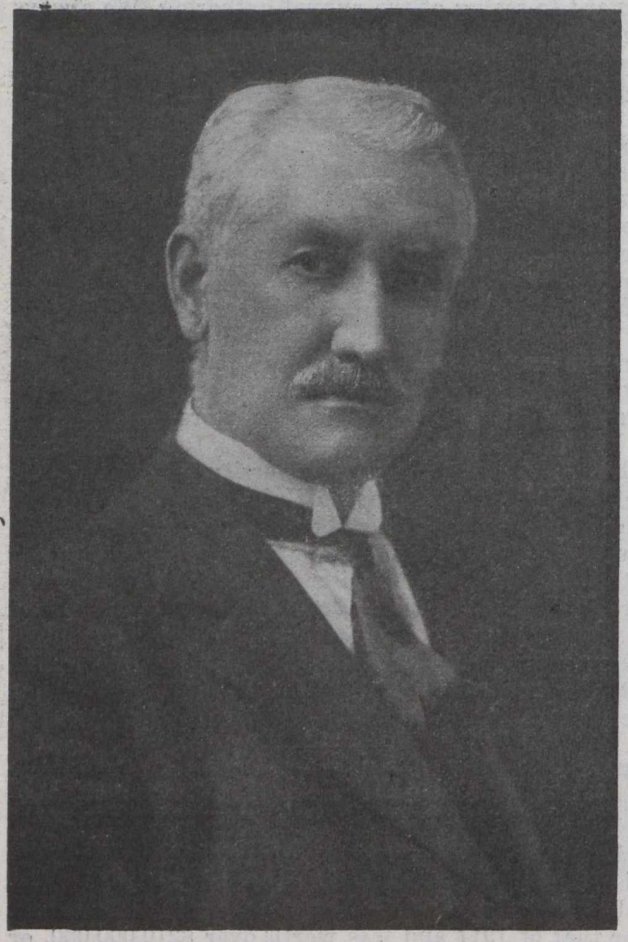
Dr. T. L. Walker of the University of Toronto and Dr. Wm. Goodwin of Queens University in the discussion on the proposal to establish a central research bureau at Ottawa, voiced the opinion of many when they stated that it would be wiser to develop the research work in the Universities. Dr. McCallum seems to be of the opinion that the Universities should concern themselves with non-economic problems. As a matter of fact, research in problems of the mining industry has already been well begun at some of our Universities.

Many regretted that formal statements of mineral production were not made at this meeting, as they have been at each of the preceding twenty annual gatherings of the Institute. According to Mr. McLeish's interesting preliminary report, Canada's mineral production in 1918 increased nearly 11 per cent. over that of 1917 and was worth over $210,000,000, or over $26 per capita, which is most satisfactory. In 1898, the year the Institute was founded, the per capita output was only $7.32; in 1908 it was $13.16. Thus the output per capita has almost doubled each ten years of the Institute's existence. One of the striking increases in Canada's mineral production during recent years is in connection with the prairie provinces. In a comparatively few years, judging from the discoveries that have been made, these provinces will also appear in the annual reports as important metal producers. Less than one hundred miles of the Hudson Bay railway to Port Nelson remain to be completed. It is not too much to hope that, when the great territories surrounding the Bay are made accessible to prospectors, very important mineral deposits will be discovered, and Canada's mineral output will be added to from this source. These territories contain rocks similar to those of the great mineral areas of Ontario, Michigan, Minnesota and other pre-Cambrian fields.

What happened to the talc producer of Madoc?

The description by Capt. L. B. Reynolds of tunneling at the front was for many the most intensely interesting feature of the splendid program. It was midnight before the audience ceased to ask questions.

Dr. Stansfield wants the metallurgists recognized by the inclusion of the word metallurgy in the name of the Mining Institute. Why not call it the Institute of geology, mineralogy, surveying, mapping, sampling and assaying, or the Institute of ore dressing and oil well drilling.



D. B. DOWLING,
Retiring President C. M. I.

Ex-treasurer Brown was very much afraid that our guests would not enjoy the program provided by certain members at the banquet. He pleaded tolerance for the men who so seldom had a chance to get in from the lonely mining districts to such a place as Montreal. He need not have been so specific. The noise producers do not all live at the mines.

The sudden change in market conditions that followed the signing of the armistice, resulted in less keen interest being evidenced in papers on 'war minerals.' A few months ago the papers on chromite by Dr. Robert Harvie and Mr. L. K. Fletcher would have been more interesting. They are, of course, valuable contributions, but, with the demand for chromite gone, the demand for information about chromite is naturally less.

Mr. Norman Fisher was present at the meeting, but comparatively few were aware of the fact. His beautiful mustache is no more.

The French evidently used to good advantage small tunnels about 2 feet by 2 feet. These stand up well when the ground is disturbed by explosions.

As Mr. Gibson says, the value of a mine is determined by the profit it produces and will continue to produce. Taxation based on mine valuation, is therefore in the end based on profits.

The New Zealanders made good records in tunneling at Arras. According to Capt. Reynolds they accomplished wonders in connecting the old galleries. They made tunnels 2 feet wide and 6 feet high.

D. H. McDOUGALL,
President and Manager Nova Scotia Steel & Coal Co.;
President C. M. I.

Professor Guess does not favor changing the name of the Canadian Mining Institute. After his experience with the passport examiner he is satisfied that the average citizen is more familiar with mining than with metallurgy.

Mr. George Mackenzie, the able representative of the Mines Branch who did practically all the work of the Munitions Resources Commission, and who, by the way, has just severed his connection with the Department to undertake the management of a Welland company, gave a well illustrated account of the prospecting work carried on by the Government in British Columbia last summer. The testing of the platinum placers were discontinued some months ago, before Mr. Mackenzie's drilling campaign was completed. Those who follow will find that a good start has been made.

Annual Meeting Canadian Mining Institute

The twenty-first annual meeting of the Canadian Mining Institute was held in the Windsor Hotel, Montreal, March 5 to 7, 1919.

An event of unusual interest was the unveiling of the Institute's "Honor and Service Roll," recording the overseas war services of members. This took place in the Rose Room of the Windsor Hotel on Thursday afternoon, and was an occasion that will long remain in the memories of members of the Institute. The ceremony was performed by Brigadier-General W. O. H. Dodds, C.M.G.

The memorial tablet is a very attractive and serviceable one. The names are engraved on bronze doors, which, when opened, disclose photographs. In a separate compartment are filled records concerning each man. To the secretary, Mr. Mortimer Lamb, belongs the credit for the design, and he is receiving many well deserved compliments. The tablet is to be given the place of honor in the council room at headquarters.

An admirable program was presented at all sessions of the meeting, but undoubtedly the subject that most intensely interested the members was the account of the work of Canadians on the Western front, particularly the work of the tunnelers. The simply told tale of the carefully performed tasks of the tunnelers was greatly appreciated.

The Institute can well be proud of the part its members played in the great struggle on the Western front. They will also profit by the technical experience gained under such unusual circumstances.

The programme for the several sessions was as follows:

WEDNESDAY, MARCH 5TH.

Morning Session: 9.30 a.m. to 1 p.m.

Presidential address by Mr. D. B. Dowling.

Appointment of Scrutineers.

Consideration of proposal to be submitted by Dr. Alfred Stansfield to change the name of the Institute.

(Chairman, Mr. Thos. W. Gibson.)

Discussion of the proposed amendments to the By-Laws.

Afternoon Session: 2.30 p.m. to 6 p.m.

(Chairman, Mr. J. B. Tyrrell.)

Presentation and discussion of the following papers:

"Molybdenum Mining," by Mr. J. C. Murray.

"Flotation Concentration of Molybdenite," by Mr. H. H. Claudet.

"The Production of Ferro-Molybdenum at Orillia," by Mr. B. C. Lamble.

"Occurrences of Chromite," by Capt. J. G. Ross.

"Occurrences of Chromite in Eastern Townships, and the Industrial Outlook," by Dr. Robt. Harvie.

"Concentration of Chromite," by Mr. L. K. Fletcher.

"The New Zinc and Lead Fields of Gaspe Peninsula," by Mr. A. Mailhiot.

"Mining Development in Northern Manitoba," by Dr. R. C. Wallace.

"Some Economic Aspects of the Falcon Lake District, Manitoba," by Mr. J. S. DeLury.

"An Investigation of Certain Canadian Platinum and Manganese Resources," by Mr. G. C. Mackenzie.

Evening Session: 7.30 p.m. to 10 p.m.

(Chairman, the President, Mr. D. B. Dowling.)

"The Operations of the British Forces in Palestine," (an illustrated lecture by Dr. H. M. Ami.)

"The Coronation Gulf Country" (illustrated), by Mr. K. G. Chipman.

"Deposits of Native Copper in the Canadian Arctic" (illustrated), by Mr. J. J. O'Neill.

THURSDAY, MARCH 6TH.

Morning Session: 9.30 a.m. to 1 p.m.

"American Institute Day."

(Chairman, Mr. John E. Hardman.)

Joint discussion with American Institute of Mining Engineers on "Principles of Mine Taxation." The subject will be introduced by Mr. R. C. Allen and Mr. Thos. W. Gibson.

Address by Mr. W. R. Ingalls on "Industrial Co-Operation."

Address by Sir John Willison on "The Re-Adjustment of Industry, with Special Reference to Mining."

2 p.m.:

Unveiling Institute's "Roll of Honour."

The ceremony of unveiling the Institute's "Roll of Honour" was performed by Brigadier-General W. O. H. Dodds, C.M.G.

Afternoon Session: 3 p.m. to 6 p.m.

(Chairman, Dr. J. B. Porter.)

Joint discussion with the American Institute of Mining Engineers on "A Uniform Mining Law for North America." The subject will be introduced by Dr. Jas. F. Kemp.

Joint discussion on "International Co-Operation in Mining." The subject will be introduced by Mr. Horace V. Winchell, President of the American Institute of Mining and Metallurgical Engineers.

"Co-Operation Among Small Mines, with a View to Increasing Efficiency of Operation," by Mr. R. W. Brigstocke.

"The Value of an Investment with Varying Yield," by Dr. A. C. Lane.

Evening Session: 8 to 10 p.m.

Evening entertainment to include moving pictures showing Canadians on the Western front; and addresses on Tunnelling on the Western front by Major R. W. Coulthard, Capt. L. B. Reynolds and other members who have returned from overseas military service.

FRIDAY, MARCH 7TH.

Morning Session: 9.30 a.m. to 1 p.m.

Iron and Steel and Metallurgical Session.

(Chairman, Mr. D. H. McDougall.)

"Some Equipment of a Modern Copper Smelter," by Mr. E. J. Carlyle.

"The Application of Pulverized Fuel in Blast Furnaces," by Messrs. E. P. Mathewson and W. L. Wotherspoon.

"Electric Smelting with Special Reference to Canadian Conditions," by Mr. Robt. M. Keeney.

"Titaniferous Iron Ores," by Dr. W. L. Goodwin.

"Iron Deposits on the Belcher Islands, Hudson Bay," by Dr. E. S. Moore.

Afternoon Session: 2.30 p.m. to 6 p.m.
(Chairman, Mr. Charles Fergie.)

"Internal Corrosion of Wire Cables and a Suggested Method for its Detection," by Mr. W. Fleet Robertson.

"A Scheme for Oiling Wire Cables in Place," by Mr. W. Fleet Robertson.

"Mining Methods at the Granby Company's Copper Mines at Anyox, B.C.", by Mr. E. E. Campbell.

"Mining Methods at the Mond Nickel Company's Mines, Coniston, Ont.," by Mr. Oliver Hall.

"Liquid Fuels, Their Uses, Production, Consumption and Sources in Canada," by Mr. B. F. Haanel.

"Experiments on the Gasoline Content of Natural Gas in Alberta," by Mr. D. B. Dowling.

"Rational Use of Coal for Power and Heat," by Mr. John Blizzard.

"The Use of Explosives for Mining," by Mr. H. Y. Russel.

7.30 p.m.

Annual Dinner in the Montreal Club, Dominion Express Building, St. James St., Montreal.

A few of the papers on the program were not presented. Mr. J. C. Murray, Dr. R. C. Wallace and Mr. J. S. DeLury were not in attendance. Dr. Wallace was taken suddenly ill on his way to the meeting, and spent the week in a Toronto hospital. Members will be pleased to learn that he has recovered sufficiently to allow him to undertake the return trip to The Pas His paper has been printed and was distributed at the meeting.

Mr. R. C. Allen and Dr. A. C. Lane were also unable to be present. Another American, Mr. H. C. Parmelee. managing editor of "Chemical and Metallurgical Engineering," presented a paper not on the program, but which in the opinion of many was one of the best things of the meeting. Mr. Parmelee discussed the industrial problem with unusual ability, and his paper will be a credit to the transactions of the Canadian Mining Institute.

Another absentee was Mr. E. P. Mathewson. The subject of pulverized fuel in blast furnaces was, however, ably presented by Mr. W. L. Wotherspoon. It was particularly gratifying to members to learn that Canadians, members of the Institute, are taking a leading part in the important new development in metallurgical practice. The kindly reference of Mr. Wotherspoon to the influence of the late David Browne in directing his attention to the possibilities of pulverized fuel was appreciated. The work of Mr. Cavers, another Canadian, and of the staff at Copper Cliff was also favorably commented on.

Mr. Fleet Robertson was not present, but his papers were presented, and will be published in due course. The paper of Mr. E. E. Campbell is not yet printed, but is said to be an exceptionally good one.

The proposed amendments to the by-laws did not meet with much opposition. There was little discussion on them. It would seem desirable that more publicity be given to the reasons for making the amendments.

The proposal to change the name of the Canadian Mining Institute to the Canadian Mining and Metallurgical Institute aroused a rather animated discussion. The objection to the proposed change is not that the metallurgists should not be properly recognized, but that there is no more reason for specifying metallurgy in the name of the Institute than for specifying any other branch of the mining industry. As pointed out by Dr. W. G. Miller, we might as well add geology, mineralogy, map making and other branches which are included under the broad term mining.

The papers presented will be published in the bulleting of the Canadian Mining Institute—some have already been published.

The Advisory Council's Program.

The program of the Advisory Council of Scientific and Industrial Research was outlined for members of the Institute by Dr. A. B. McCallum, the chairman of the Council. Considerable objection was aroused by the proposal to establish a central research bureau at Ottawa instead of developing the research departments of the various Universities. It was decided to hold a special session to discuss this proposal, and such was held on Friday morning, contemporaneous with the regular session in another room.

Dr. McCallum, at the special session, went more fully into the proposals and work of the Council, and a discussion in which a large number of members took part followed. Almost all the speakers favored encouraging research in the Universities, the research to be closely linked up with the industries of the several districts. Thus work in textiles might be undertaken at such centres of the textile industry as Toronto and Montreal, while the fishing industry would be looked after by institutions in the Pacific and Atlantic provinces.

Dr. McCallum seemed to favor the idea of having the Universities devote their attention to research in "pure" science, whatever that means. Those who are engaged in mining and metallurgy know that industrial research is being carried on in our leading Universities, and they believe that this should be encouraged rather than discouraged. They look on Dr. McCallum's porposals as an attempt to obtain Government approval for a plan which would make our University research laboratories less useful than they are. According to Dr. McCallum the public will not take their research problems to the Universities. That may be true in some industries; but it is not true of the mining industry. In any event is the Council's proposal designed to increase one's faith in our Universities?

There was this year great interest in the election for president. Mr. D. B. Dowling did not seek reelection and is to be congratulated for thus helping to put in operation what is generally regarded as a most desirable departure—the one year term. It has been so long the practice to keep a president in office for two years that no strong opposition has arisen when a president allowed his name to stand for election for a second term. At the same time there has been a growing impression that it would be better for the Institute to have a new president each year.

We cannot pass this reference to Mr. Dowling without expressing again the sympathy of mining men for him in the loss of his daughter in the influenza epidemic last fall.

To succeed Mr. Dowling two candidates were named: Mr. J. B. Tyrrel, of Toronto, and Mr. D. H. McDougall, of New Glasgow. The supporters of these two candidates did much campaigning, and as a result an unusually heavy vote was polled. The contest, a very friendly one, resulted in the election of Mr. McDougall. After hearing the address of the new president, the supporters of Mr. Tyrrell feel con-

fident that he will endeavor to carry out many of the things for which Mr. Tyrrell stood, and they will give him hearty support. Mr. Tyrrell, at the annual dinner, expressed himself as well satisfied with what Mr. McDougall said in his address. Mr. Tyrrell strongly urged that the Institute should endeavor to play a larger part in the affairs of the Dominion, and that it should take an active and prompt interest in matters affecting the industry.

President McDougall's Address.

President McDougall said:

"I have to express my great gratification at the compliment paid to Nova Scotia, and my deep appreciation of the honor conferred upon myself by your election of me as President of the Canadian Mining Institute. I shall endeavor to merit the confidence you have reposed in me by attention to the business of the Institute, and all that concerns its welfare and advancement.

"The Canadian Mining Institute, as mentioned by Mr. Hardman, its first President, in the March Bulletin, reached its majority this year, and I think all of us who have attended the sessions of our meeting this week must feel that as an Institute we are alive, virile and capable of greater things.

"Throughout all the meetings, and characterising all the papers that have been presented, there has been plainly observable a desire—nay more—an intention to utilise more completely the resources of Canada, and we must all have noticed further that it is not only the material resources of Canada that have been discussed, but the mental and spiritual forces of our people and our children.

"We welcome to our meeting eminent representatives of the mining industries of the United States, whose vast natural resources of coal and iron have materially aided the defeat of the Central Powers, knowing that behind the great material effort of the United States there was the impelling force of ideals common to the English speaking peoples, the spirit of liberty and rule by the people. We welcome you to Canada, and while we, as technical men, appreciate more than the general public the tremendous help you afforded in material effort, we wish to tell you that what we feel most deeply, and thank you for most, was your endorsation of our ideals, your recognition that our cause was righteous.

"We knew from the first that neutrality in moral questions was not possible, and felt that so soon as the Allied cause was seen by the United States to be a choice between good and evil, you would be with us—and you were.

"You have listened to the recitals of the work of our tunnelling corps—unvarnished records of work accomplished, and behind these records of professional duty, we feel the impulse of the spirit of patriotism and simple duty, that prompted men—members of our own Institute—to deeds of which they tell us very little, but as to which we can judge by the total defeat of our enemies that resulted.

"Yesterday there was unveiled a simple memorial of the war record of our members, which will always occupy the place of honor in whatever situation our Headquarters may be placed.

"You have heard papers touching upon some of the latent resources of Canada concerning the improvement of processes of extraction which may render valuable mineral deposits now considered of little account, and you have heard accounts of exploration in the far recesses of the Dominion. You have heard discussions on matters of education, of the mutuality of interests of the man who earns wages and the man who pays them, references to the new spirit that is abroad and which we must recognise or take the consequences, and all these things are evidence of the force that the Canadian Mining Institute is in our country, of our vitality, our great possibilities, and of the truth of our claim to represent the industry and its ramifications from coast to coast. I believe in the Canadian Mining Institute, am proud to be its President in the year of its majority, and it will be my endeavor to forward its interests to the full extent of my ability."

Mr. Tyrrell Advocates Greater Activity in Public Affairs.

Mr. Tyrrell, when called upon to address the members, said:

"I am here this evening as the representative of a large number of members of the Institute, a minority, it is true, but a minority that was almost a majority in the largest vote ever poled in any of our elections.

"It should be a source of pride to all that though the election was keenly contested, no unfriendly note was heard anywhere. We claim to be the Party of Progress, but after hearing the speech just made by Mr. McDougall, our President-elect, I think that we may consider him as also belonging to the same party, and that we can safely stand behind him in such measures as he may adopt for the welfare of the Institute as a whole, or of its members in particular.

"This Institute is composed chiefly of mining engineers, who are more or less responsible for the conduct and operation of the mines and metallurgical works of the country. In this capacity they are in constructive and administrative charge of great industrial enterprises. In this respect they are on a par with civil and other engineers, who are also in charge of constructive works, but there is this difference between them, that mining engineers find or produce the materials on which they operate, while the other engineers have all materials furnished to them. In fact, the enterprises with which our mining engineers are connected are part of a vast productive industry, which is second only to agriculture as the greatest productive industry in Canada, and the members of this Institute are bound by their duty as citizens to watch over the welfare of the industry with which they are so closely connected.

"No organisation in this Dominion can boast of having abler and more patriotic men than we have. Great numbers of our younger men offered themselves at once when their country called them. They gave their lives freely and quickly for the cause of civilization. We are fortunate in having some of them back with us to-night, and we are glad to say that others will soon be home, but these men who have returned or are returning gave their lives just as truly as those who rest beneath the soil in France or Flanders. They made splendid reputations for themselves, both as soldiers and engineers, so that the whole world recognizes their merit. Also the older men who stayed at home have conducted our mining and metallurgical operations with marked success.

"Our members, therefore, would be a credit to any organization, and individually no honest criticism can be offered against them. But in civil life they have

not co-operated as freely and closely as they should have done in order to obtain the most effective results, for the best results can only be obtained through close co-operation and co-ordination of effort.

"We come together at our annual meetings once every year, and we have pleasant social gatherings. They are delightful holidays, and most of our members deserve holidays after a year of more or less complete isolation at the mines. Besides enjoying ourselves, we read a few papers which are printed in our transactions, and are afterwards read by a dozen or more men who may be interested in the particular branch of the subject there discussed. We also add a little variety to our proceedings by discussing our own by-laws and endeavoring to make some changes in them. Probably interest in the by-laws is promoted by a very general feeling that the Institute ought to be more effective, and in default of any better idea the opinion becomes prevalent that it would be more effective if the rules governing it were altered.

"Although we have an organisation, the members of which are in executive control of the next to the largest producing industry of the country, the people constituting the outside public take very little interest in us, as we can see by glancing at the daily papers of this city. These papers are conducted by able, intelligent men, who see that anything good that the people will read is printed in them, and evidently the people will not care to read of our doings. Now the people elect the Members of Parliament and of the Government who govern the country, so that the Government, which is a thoroughly democratic one controlled by its electors, also takes very little interest in us. Farmers, fishermen, lumbermen, in fact men engaged in almost every other industry in the country are treated with more consideration by the Government than are the representatives of the mining industry. This should not be, and it need not be if we will co-operate and organise our forces better than we have been doing.

"It is right that we should meet here and have a pleasant time, and that we should be able to converse with each other for mutual instruction, but it is not right that we should go away from here and for twelve months lose sight of the fact that we are the rightful guardians of one of the great basic industries of the country, and that it is our duty to take on some of the responsibilities of such guardians.

"You may ask what we can do. Well, we can influence public opinion so that it will demand that in the mines as well as in other industries a man shall give honest work for a day's pay, that he shall be fairly paid for honest work, and that if anyone wishes to invest his savings in mining properties, or industries connected with mining, he will be guaranteed a fair and honest chance of reasonable returns for his investment.

"If the Government is considering the alteration of our mining laws, a committee of this Institute should be consulted, as we are the men who are most interested in the administration of mining laws, and in the results of their enforcement.

"In regard to taxes, we all know that the Government must have a revenue, and that the mines and associated industries must contribute their share of that revenue. Mining men are not slackers, they do not wish to avoid their proper proportion of the public burdens; but they should be consulted as to how a revenue can best be raised with least injury to the industry. We all know that a tax raised in one way may have a very depressing effect on an industry, while the same tax raised in another way may have but little influence on it. The members of this Institute are the men who have technical knowledge qualifying them to decide such questions and in the interest of the industry and of the country they should be consulted. As citizens of Canada they should insist that they be consulted.

"In case of disputes between miners and their employers, the rational place to look for an intelligent Board of Conciliation is among the members of this Institute, who are thoroughly familiar with mining conditions. Where is there anywhere else in Canada a group of men so capable of deciding on the merits of disputed questions in regard to the mining industry as in this Institute. Its members are the natural guardians of the welfare of everything connected with mining in Canada, and if they work together for the common good they will soon have the people and the Government in sympathy with them, and they will see development and progress on every side beyond what they ever hoped for in their most optimistic moments."

Brigadier General Dodds made many friends when he recounted the deeds of several well-known members of the Institute at the front. Needless to say, howver, no name was mentioned that stands higher in the affections of the Institute than that of the late Capt. O. E. Leroy.

Members were delighted to welcome again Professor Jas. F. Kemp of Columbia University, and to learn that his health is improving. Like Bradley Stoughton, Professor Kemp is looked upon as a "regular member" rather than as a visitor.

We missed Dr. A. C. Lane. Perhaps he had not completed his study of that problem "the value of an investment with varying yield," concerning which he was to address the meeting. Dr. Lane does not often miss a meeting of the Canadian Mining Institute.

Dr. Winchell, president of the American Institute of Mining and Metallurgical Engineers spoke a good word for mining in Canada. He has had much experience here, and he says that he always got fair treatment from the authorities.

According to prospectors who have worked in the Belcher Islands there is more good iron ore there than Dr. Moore's report would indicate. It is also claimed that the climatic conditions are not so unfavorable as Dr. Moore found them.

A rather novel method of transporting the powdered coal is in use at Copper Cliff. The coal is crushed at the reverberatory furnace plant, and forced by air to the blast furnace through a three-inch pipe.

The smelter men have of late years been making so many advances in reverberatory furnace practice that the blast furnace has become of much less importance in copper metallurgy than in the earlier years. The experiments now being carried on may result in such an advance in blast furnace work that the reverberatory will take second place again.

Confidence in the Future

The guest of honor at the banquet was His Excellency the Governor General. He was welcomed on behalf of the Institute, and was given an enthusiastic reception.

At the outset he congratulated the members of the Institute on the work they had accomplished during the three day business sessions. Although he craved their indulgence as being a mere onlooker, and not an expert, he thought there were several matters of interest on which one who was not an expert could treat.

"It is difficult to say which one of any particular industry was the dominating factor in winning the war," said His Excellency, "but unquestionably and undoubtedly primary consideration should be given to the character and determination of the people who were waging that war on our side. It is to the determination and strong character of our people, and the people of our Allies, that we must look for the determining factor in the result of the war. But even this character and this determination of the people would have been of little avail if we had not had wonderful natural resources behind us, and it is very largely due to the fact that the Allies were able, through their experience, their knowledge and their skill to turn these great resources into devices of war that we ultimately won."

Speaking of the great accomplishments during the war, he commented on the great results that will follow when all this enterprise, skill and power is turned to the task of construction.

"This is a work you, as engineers, are dealing with. This is a work which lies in front of you. We have witnessed during this period of war the most wanton and hideous waste imaginable. What we have to do now is to build up, and the only way in which we can build up is to do everything we can by wise economy and increased production. These are the problems which come before you, not as mere theorists, but as men engaged from hour to hour, from day to day, in the practical work of investigating natural phenomena, and working out their problems.

"Obviously, it is not for me, in my position, to attempt to lay down either rules of policy or rules of conduct. But certainly I may say that my experience here—very short, but if I may be allowed to say so, my very happy experience in Canada—teaches me that far greater attention ough to be paid than is paid at the present moment to research work and to the development of the natural resources of the country. And I cannot help thinking that, in facing the great problems which lie in front of us, those who are responsible for the administration and the conduct of affairs should proceed on these lines.

"Whatever money is required to be spent, that money should only be considered as an investment, and a very safe investment.

"There is one other matter to which I wish to refer to-night. Throughout the world to-day we are witnessing great upheavals. Many new theories are floating backward and forward, but it is for us now, without embarking on untrodden paths, to thoroughly recognize and realize, whether we are working with capital or working with labor, that their powers—the powers of capital and labor—lie together. We have only one object in view, and it is by co-operation, by unity and identity of purpose, by harmony, that we shall be able to achieve the best results. After all, gentlemen, that was what guided us in the war. We won the war, and we won it because all people threw their heart and soul into it. Each and everybody did his and her best, and we may all rest assured that, great as were the triumphs which were won on the field of battle, still greater triumphs can be won in the arts of peace.

"I have said on more than one occasion—and I do not hesitate to say it again—that I am an optimist. I have implicit faith in the inherent, sound commonsense of the citizens of the British Empire. We may do odd things sometimes; we may do the right thing in a very odd manner, but—I will not say invariably, because that would be egotistical—but I do say that we generally arrive at the right result.

"We have now reached the period in our history when it is time for stock-taking. We are possibly—I do not think we are, but we may be at the parting of the ways; we may be going to break into factions on one side or another. We may be going to wrangle about things which may eventually assume proportions which may very soon bring us to grief.

"I say we 'may be,' but I do not believe we 'are' going to take that course. We are going to take a higher course. We have the record of the war behind us. We know we possess great natural resources. We know we have a people of character and ability. If the fullest use is made of these resources and opportunities—and I believe the present is a great opportunity—we can look forward with great confidence to the future. You, gentleman, both in your individual and in your corporate capacity as a great institute, are closely identified and connected with many of the greatest industries of the country. You are able to take a leading and prominent part in the material development of the country's resources, and in guiding the policy and destiny of the Dominion. The responsibility is by no means a light one. But in your hands I know that it is safe."

For the first time, the members of the Mining Society of the Mining Society of Nova Scotia were present as members of the Canadian Mining Institute.

The meeting room was not a satisfactory one. The chairs were noisy, the heating poor and the lighting arrangement rotten. The program was so good that the members put up with many inconveniences with little complaint. But little credit for the success of the meeting can properly be given to the hotel management.

The serving of refreshments at the evening meeting on Thursday was much appreciated. The supply was apparently inexhaustible.

The old tunnels built centuries ago near Arras were used to good advantage by our soldiers. Apparently it was the practice of the builders of those days to excavate and build at the same time. The material for the buildings and walls came from the tunnels which were to form underground exits in time of danger. One much used tunnel was that, seven miles in length, which connected a monastry and a convent.

NOTES ON THE MINING INSTITUTE ANNUAL MEETING.

The record of progress in mining in Canada can in some measure be guaged by the nature of the annual meetings of the Canadian Mining Institute. At the meeting held this year there was abundant evidence that good progress is being made in many departments of the industry.

Production in 1918.

The reports on production presented by Mr. McLeish of the Mines Department, Ottawa, by Mr. T. W. Gibson, Deputy Minister of Mines, Ontario, and Mr. Theo Denis, Superintendent of Mines of Quebec, not only showed that the output of necessary minerals was well sustained in spite of the many difficulties, but also indicated that much has been accomplished in developing deposits that were idle when the war began.

The report of Dr. R. C. Wallace on developments in Northern Manitoba, showed that that province is to be counted on in the future as an important producer of minerals. The speed with which the deposits will be developed will evidently depend largely on what is done with the great deposits at Flinfon. If arrangements are made to build a railroad to Flinfon and erect a smelter there, the province of Manitoba will step at once into prominence. In any event, we may look for development of other properties in a smaller way.

Northern Exploration.

The excellent accounts of Mr. K. G. Chipman and Mr. J. J. O'Neill of explorations in the far north show that there are not lacking men who will endure any hardship necessary to determine what our resources are. They found no rich deposits, but they brought back information that will be of great value to future explorers.

M. E. S. Moore's account of the Belcher Island iron ore deposits was listened to with much interest. Mr. Moore is not enthusiastic over the possibilities of these deposits, but he placed on record a description of the iron formations in a part of Canada that was before the Flaherty expeditions practically unknown.

Such accounts of exploration as these of Chipman, O'Neill and Moore are indications that the Canadian Mining Institute is taking a proper interest in the development of the far north.

Gold Dust Firing of Blast Furnaces.

Of unusual interest to smelter men was the paper presented by L. H. Wotherspoon. Mr. Wotherspoon, who is consulting engineer for the International Nickel Company, gave in some detail an account of the experiments which have been carried on at Copper Cliff, Ontario. During the war there was naturally little opportunity to experiment at Copper Cliff. The furnaces were kept busy turning out the much needed nickel matter. Nevertheless, marked success was attained during the war, and now that the pressure is off we may expect that every opportunity will be given to the experimenters at Copper Cliff. We can only hope that progress will continue as successfully as the experiments indicate it will.

Mr. John Hardman's reminiscences of the early days of the Institute make good reading. The first president has always devoted much time and attention to the affairs of the Institute.

We hav'n't yet been advised by Lt.-pCol John J. Penhale, but we have no doubt that there was a branch meeting of the Canadian Mining Institute in France on March 5th to 7th.

A Hastings district branch of the Canadian Mining Institute has been organized. Mr. S. B. Upright is chairman, Geo. S. Gillespie vice-chairman and R. A. Elliott secretary.

Mr. Rickard was not present, but his paper on "The English Speaking Peoples" has been published in the Institute Bulletin, and will be read with interest by those who did not have the pleasure of listening to Mr. Rickard at the New York Meeting.

As a result of the careful work done by the tunneling companies at the front, we may expect to have important advances in the science of tunneling. There will also be available much useful and accurate information on theory and practice of explosives.

Mr. Gibson's paper on "Principles of Mining Taxation" is an important contribution. The Deputy Minister of Mines of Ontario pointed out the advantages of the profits basis for taxation. Those who have to pay taxes on mines which yield no profit will appreciate Mr. Gibson's remarks.

The discussion of "mining laws" is naturally of much interest to members of the Mining Institute for the law determines to a large extetn the activities of men. At present there is more than the ordinary interest because of propsed changes. The papers presented at the Mining Institute meeting are not yet available, but they will attract attention when printed.

The royalty clause of the mining regulations of the Department of the Interior needs revision. It is too indefinite. There is said to be no intention to charge excessive royalties but there is no guarantee that such will be the case after the miner has spent his money in exploration and development. Some limit should be fixed.

Mr. Brightstocke in his paper on co-operation among small mines touched on a matter of great importance. Too often the experience gained on ore property is not readily available for the neighbors. If owners of neighboring small mines shared the expense of securing the best technical advice there would be more progress at less cost.

Mr. Corless has to his credit many valuable contributions to the Institute. The paper on "Industry, Democracy and Education", presented at the Montreal and New York meetings is one of exceptional merit. Mr. Corless presents a strong case for industrial co-operation and education. He is an earnest thinker, and he has the advantage of being in close touch with his subject. He believes in recognizing the existence of unsatisfactory conditions and in applying his best efforts to improve conditions.

The Outlook for Mining in Northern Ontario

During the year 1918 mining was carried on as vigorously as possible in the metal mining districts of Ontario and in spite of shortage of labor and high cost of supplies a new record for production was made. The increase in value was however to a considerable extent to higher selling prices, the quantity produced being necessarily restricted.

Before the year had ended a great change took place in some branches of the industry. After the armistice was signed the demand for certain war materials faded away and the demand for common metals that have recently been used chiefly for war purposes also fell sharply.

In consequence there has been some decline in output in Ontario's greatest mining district, the Sudbury nickel-copper mines being no longer worked to capacity.

On the other hand, there has been a distinct revival of interest in gold mining. The conditions which had grown almost unbearable for gold mining companies have given place to much more favorable ones. Already there has been much improvement and the outlook is promising for far greater activity in the gold areas than has yet been witnessed. The leading gold mines struggled hard but successfully through a trying period and will immediately benefit by the changed conditions. Increase in the working forces is being made and plans for increasing production are well under way.

During the latter part of the war it was found necessary to close down some of the gold mines which could be operated profitably in normal times but not under the war conditions. These are now being reopened.

Other gold mines that have received little attention during the war will be active this year and there can be little doubt that before the year is out there will be a number of new producers on the list.

The improved prospect for gold mining has led to a revival of interest in gold properties everywhere and there is abundant evidence that there will be much exploration in northern Ontario gold areas.

The strong position of silver is greatly assisting the Cobalt silver mining companies. The decreased production of other countries is making the silver deposits of Cobalt more profitable than was expected. If the price stays near the present figure for any length of time it will be possible to market profitably a large amount of silver that would at the old prices have necessarily been left in the ground. It seems probable that there will be great activity in the Cobalt area this year to take advantage of the favorable conditions to get out low grade ore. The high price is also giving a great impetus to prospecting work which should result in further discoveries.

While the smaller demand for nickel and copper has resulted in some curtailment of output, the coming summer will be an active one at the nickel mines.

At the mine and smelter of the British America nickel company work has progressed rapidly during the winter. The Mond and International Nickel companies will have much work to do that could not be undertaken without interference with production. There may be a temporary slump in the market for nickel and copper; but the world needs these metals and the big companies will make use of the breathing spell to prepare for busy days ahead.

During the war the demand for building materials has been comparatively low. Now that a period of construction has been entered upon we may expect greater production of many non-metallic products.

Altogether the outlook for the mining industry of Ontario is very favorable. Changes are taking place rapidly and it is difficult to see far into the future, but so far as can be seen there is great activity ahead.

In Quebec during 1918 there was a large production of asbestos, pyrites, magnesite, chromite and molybdenite for war purposes. In spite of the lack of demand for structural materials the province made a new high record for mineral production. Naturally the cessation of hostilities has resulted in a great change in conditions and some of the minerals that were much in demand a few months ago are not wanted in large quantity now. On the other hand the demand for structural materials is sure to be large and will help to offset the falling off of demand for "war materials."

In the case of asbestos there is good reason to believe that the demand will continue. As Quebec is the world's chief source for asbestos and as many new uses are being found for this material, Quebec's chief mining industry is in a safe position.

Chromite mining is not expected to be very active in Quebec in the near future. Chromium is necessary for the manufacture of nickel-chrome steel and must be obtained in some quantity at all times; but it is unlikely that high prices will be obtained for for some time at least.

During the war there was developed in Quebec a great molybdenite mines. This mineral is not now in great demand, however. Nevertheless, there has been a gretaer appreciation of the value of molybdenum steel and it is probable that much more will be used in the future than was the case before the war.

PERSONALS.

Mr. Charles Camsell, head of the Geological Survey Branch in British Columbia, is in Ottawa arranging with the Geological Branch of the Dominion Mines Department, for the field work to be carried out in British Columbia during the coming season. It is understood that British Columbia is likely to be treated fairly well in this respect during 1919, thus permitting progress to be made on work which has been somewhat interfered with by the war, which took away many of the prominent young members of the Canadian Geological Survey Department. While East Mr. Camsell attended the convention of the Canadian Mining Institute. He expects to return to this Province in April.

J. K. Batchelder, superintendent of refineries for the Consolidated Mining & Smelting Company at Trail, B.C., died recently of influenza, followed by pneumonia. He was born at Wilton, N.H., on March 27, 1890, and graduated from the Massachusetts Institute of Technology, Boston, in June, 1913, in electro-chemistry. He came to Trail in August, 1913, and was in the smelter assay office from 1913 to 1915, in the zinc plant from 1915 to 1918, and made superintendent of refineries in February, 1917.

NORTHERN ONTARIO.

Companies Planning to Develop Skead Township Properties.

Five chartered mining companies are planning to do work this summer in the Skead township mining area, namely: Skead Gold Mines, Wisconsin-Skead Mines, Crawford-Skead Gold Mines, Fidelity Gold Mining Company, and the St. Paul & Minneapolis Gold Mines. The Crawford-Skead Gold Mines Company was recently organized for the purpose of operating the two claims owned by Harry Crawford, and plans have been outlined for doing considerable work this year. The Skead Gold Mines company also expects to do considerable work this summer, and is taking in material over the winter road with this end in view. Considerable surface work has been done on the properties of the other companies mentioned, and results to date have proven highly encouraging. Other property owners in the district are anticipating the performance of much assessment work in the next few months.

Ontario-Kirkland Sinking Shaft.

Although considerable delay was caused by lack of power in the early part of the current year at the Ontario-Kirkland property, the sinking of the shaft is now proceeding at a rapid rate and has already reached a depth of 150 feet. About four feet of sinking per day is being accomplished with the new electrically driven plant, which was installed during the latter part of the past year. The present plans call for the sinking of the shaft to a depth of 300-feet, where lateral work will be proceeded with. A number of veins occurring on the surface will be crosscut, and the most promising will be drifted upon. The vein on which the present shaft is being sunk is said to be still in the working at the depth of 150 feet. It is highly mineralized and the gold values obtaining are understood to be highly encouraging.

Burnside Mill in Operation.

The new mill at the Burnside property at Kirkland Lake was put in operation last week for the first time. This will add yet another small producer to the list of gold mines of the North Country, results of the first try-out of the mill having proven satisfactory. The new plant at the Burnside has a capacity of about thirty tons per day, and provision has been made in its construction for enlargement as soon as mining operations demand increased milling facilities. In the meantime the consolidation of the Tough-Oakes, Burnside and the Sylvanite continues to look promising. Such a merger would make available the 140-ton mill of the Tough-Oakes for the treatment of ore from all these properties, which are favorably situated to be economically worked under the one management.

Kirkland Lake Proprietary.

According to a circular letter recently issued by the Kirkland Lake Proprietary Gold Mines, a scheme of amalgamation and absorption of the properties and assets of the Tough-Oakes Mines, Ltd., the Burnsides Gold Mines, Ltd., the Sylvanite Gold Mines, and an important Cobalt company has been provisionally agreed to by the first mentioned company, being subject to the confirmation of their respective valuations by Mr. H. H. Johnson, consulting engineer for the Kirkland Lake Proprietary, and will be submitted for approval to the shareholders of the various companies after his report has been received. Mr. Johnson was expected to arrive in Canada last month and it was thought his report would be ready during the current month. The amalgamation should prove advantageous to all parties concerned as well as to the Kirkland Lake Proprietary, which holds a controlling interest in most of them as well as a considerable area of other claims. When the amalgamation is completed the absorbing company will own a continuous and compact block of claims aggregating over 600 acres in extent, situated in the centre of the Kirkland Lake gold field, and it is believed the results already obtained at several points on the various properties warrant the erection of a large central installation, which will insure quicker and more effective development with much lower working costs than have hitherto been possible. Active operations are now in progress on the Cobalt property and good developments are reported." This proposed amalgamation is looked upon with much favor by those interested in the North Country.

Lake Shore.

Official figures of production for the month of January at the Lake Shore Mines, Kirkland Lake, show gold bullion to the value of $45,162.42 thus establishing a new high record. The mill on the property was started on March 8, 1918, and much surprise was expressed when the first month's clean-up proved the ore treated to have averaged $23.43 per ton, which was the highest average of any gold producing mine in the Dominion. However, from month to month the grade of ore and quantity treated has shown a tendency to steadily increase, with the month just past breaking the record in both respects for year with the treatment of 1,725 tons of ore showing an average gold content of $26.12 per ton. The February figures of production will not be available until about the middle of the current month, but owing to the uniformity of production during the remainder of the year it is safe to estimate production for February at $45,000, while the output of the first week in March, which is necessary to complete the full year's operation of the milling plant may be safely given as $10,500, it will be seen that the grand total for the first year's operation of the property has resulted in a recovery of $515,892.17.

The official report for the month of aJnuary is as follows: 200-ft. level. The drift on the No. 2 vein east was advanced from 261 to 280 feet.

400-ft. level.—On No. 1 vein west the crosscut south was advanced from 20 to 49 feet. No. 1 vein west, was advanced, north branch, from 399 to 491 feet. No. 2 vein east, north branch, was advanced from 420 to 453 feet, while the south branch was driven ahead from 425 to 452 feet. No. 2 vein West was advanced from 192 to 214 feet.

The mill ran 90 p.c. of the possible running time, reducing 1,725 tons of ore and recovering therefrom $45,162.42."

McKinley-Darragh-Savage.

The new pumping equipment at the McKinley-Darragh-Savage Mines, Cobalt, is in readiness for the commencement of pumping the sands from the bed of Cobalt lake to the oil flotation plant completed last year. Formerly a bucket line excavator was used for this purpose, but the newly installed apparatus is much more efficient and will permit a capacity of 350 tons per day, thus adding to the production of this portion

of the plant. Underground work at the property is serving to produce sufficient profit to meet the dividend requirements of the company, which for a number of years have been maintained at a rate of 12 per cent. per annum, being paid in quarterly instalments of three per cent. The company has declared a regular dividend of three per cent, payable April 1st to shareholders of record March 8th. The annual meeting of the company was held March 8th.

Allied Gold Mines.

The second diamond drill hole on the property of the Allied Gold Mines, formerly known as the O'Donald property at Boston Creek, on the boundary line of the townships of Pacaud and Boston, has been started and will be driven to a depth of 600-feet. This second hole is being driven on the portion of the property lying adjacent to the property of the R. A. P. Syndicate, while the first core obtained was taken from the claim lying in the township of Pacaud and adjacent to the Patricia mine. Encouraging values were encountered in the first hole driven and further enlarged development is looked for on the property in the near future.

On the Cullen-Renaud claims, which also belongs to this company, it has been decided to continue the sinking of the shaft to a depth of 150-feet. This working has already passed the 50-foot depth, at which point results obtaining were highly satisfactory. This work will be accomplished by the aid of a steam plant, which will be replaced during the coming summer by electrically driven equipment for the more extensive development of the property.

McIntyre-Porcupine.

The big way in which the McIntyre-Porcupine Mines has been developed at the 1,000-foot level, coupled with the fact that plenty of efficient labor for construction purposes promises to be available in the near future, has given rise to reports that the milling facilities of the mine will be increased from the present capacity of 600-tons per day to 1,000-tons. This plan was under consideration at the time the war broke out and has been held in abeyance since. The orebody which provided so extensively at the 1,000-foot level has been proven to hold its width and values at a depth of 1,350-feet, and it is confidently expected will continue to much greater depth, indicating justifiable reason for great expansion at the property. Close to half a million tons of ore, which has a value of around $10 per ton has already been placed in reserve. With close to five million dollars in ore available and a large cash surplus, the mine and finances of the company are in a strong position, and reports of an early dividend disbursement appear to be well founded.

Alexo.

During the last week in February the Alexo Mine at Porquis Junction shipped three cars of nickel ore containing approximately 280,000 pounds. This compares with 400,000 pound during the preceding week and brings the total up to 1,360,000 shipped during the month.

Cobalt Silver Ore Shipments.

An aggregate of 25 car loads of ore were shipped from the Cobalt camp during the month of February, containing approximately 2,011,367 pounds of ore. This compares with 25 cars containing 1,915,128 pounds in January and is also considerably higher than the December shipments.

HOLLINGER.

According to information just at hand the Hollinger Consolidated may spend upwards of $500,000 or perhaps as much as $750,000 this year on additions to its plant and equipment. Already a total of $3,230,943 has been spent on plant and development account since 1910, and the plant has a capacity of about 2,800 tons daily. By the way the labor situation is adjusting itself in favor of the gold mines, the Hollinger is expected to be operating at full capacity within a very short time. Pointing toward this is the fact, as stated a week ago in these columns, that another forty stamps were being pressed into service.

This has led to an analysis of the situation of the Hollinger mine and company on a basis of operating at full capacity. Although in 1918 the ore treated averaged close to $10 to the ton, and the reserve of $41,000,000 were made up of ore averaging $9.15 per ton, yet in the following analysis it has been deemed best to conservatively estimate the recovery at $9 per ton.

Reserve tonnage	4,489,080
Gold content per ton	$9.15
Total value	$41,080,005
Cost per ton	$4.50
Profit in sight	$20,540,000.02
Plus surplus	$2,071,287.01

It will be noted that costs have been estimated at $4.50 per ton, whereas during 1918 they averaged $4.94 per ton. The reduction is due to the expected big decline in costs which might reasonably decline to perhaps $4 per ton or less. Therefore, the above figures which show a visible probably profits of $20,540,000.00, and a surplus of $2,071,287.01 or a total of $22,611,000.00, are the result of an exceedingly conservative analysis. They do not take into account the fact that there are an additional forty veins on the Hollinger, opened up veins might comprise a small mine in itself, or perhaps an aggregate of forty small mines added to the already enormous resources of what is so far proven on the Hollinger.

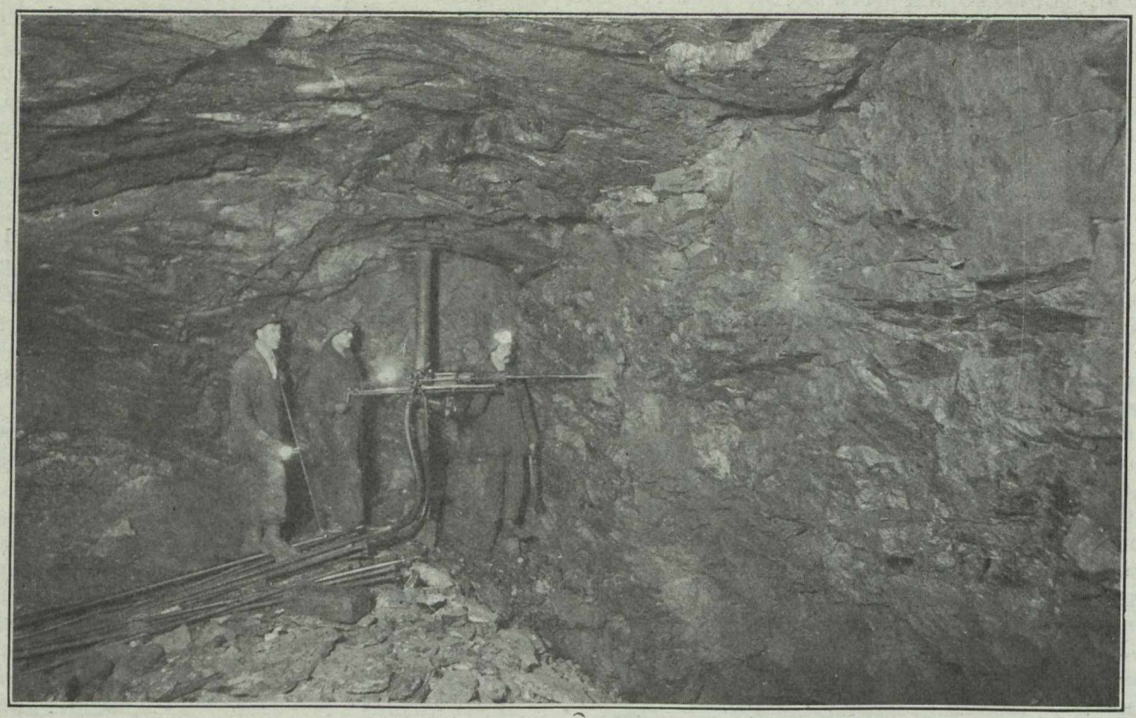
As for the output to be expected from the Hollinger, on a basis of its present milling capacity, the following is a concise summary of what may be expected.

Daily capacity	2,800 tons
Daily output	$25,200.00
Monthly output	$756,000.00
Annual output	$9,000,000.00
Daily cost	$12,600.00
Annual cost	$4,500,000.00
Annual profit	$4,500,000.00
Percentage on capital	18 per cent.

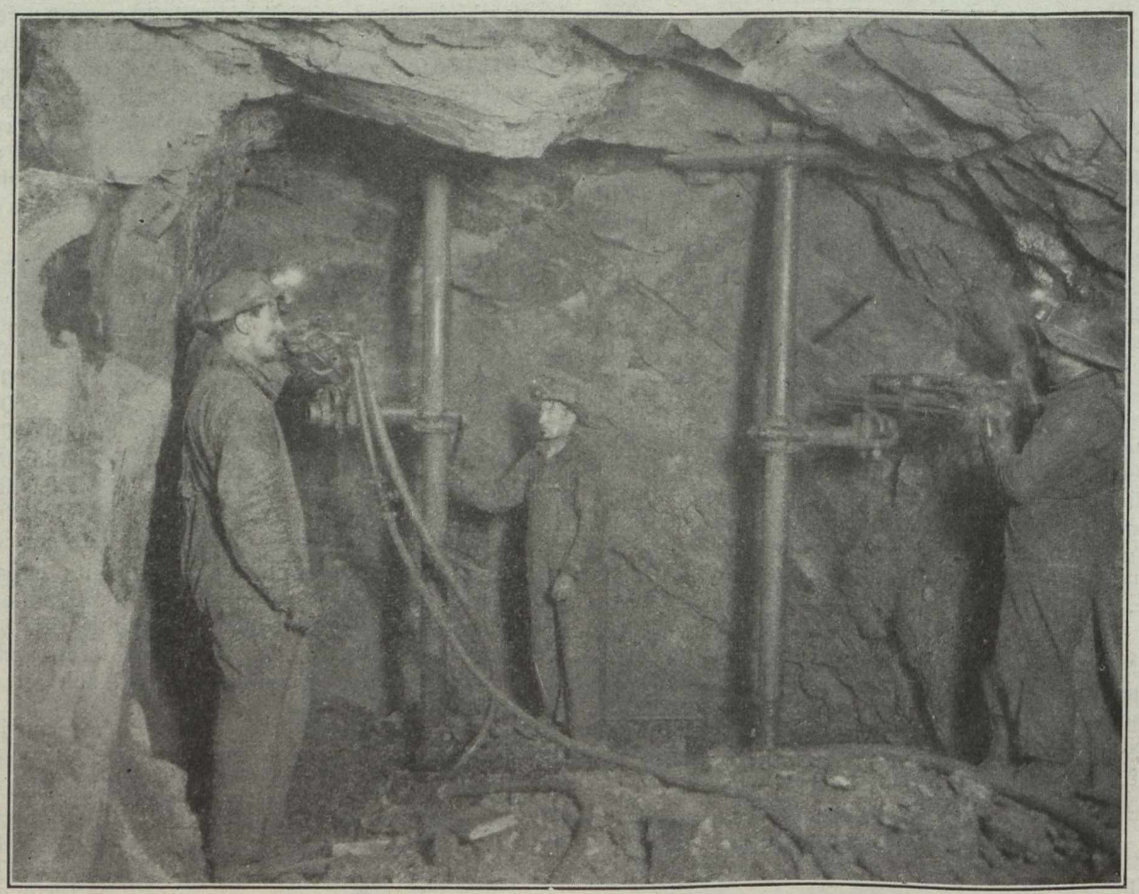
The Hollinger planned increasing its capacity to 3,800 tons daily, but the plan was deferred owing to the war. It is now considered probable this plan will be soon carried out. The following is an analysis of what might be expected, following such an enlargement to the mill:

Daily capacity	3,800 tons
Daily output	$34,200.00
Monthly output	$1,026,000.00
Annual output	$12,312,000.00
Daily cost	$17,100.00
Annual cost	$6,156,000.00
Annual profit	$6,156,000.00
Percentage on capital	25 per cent.

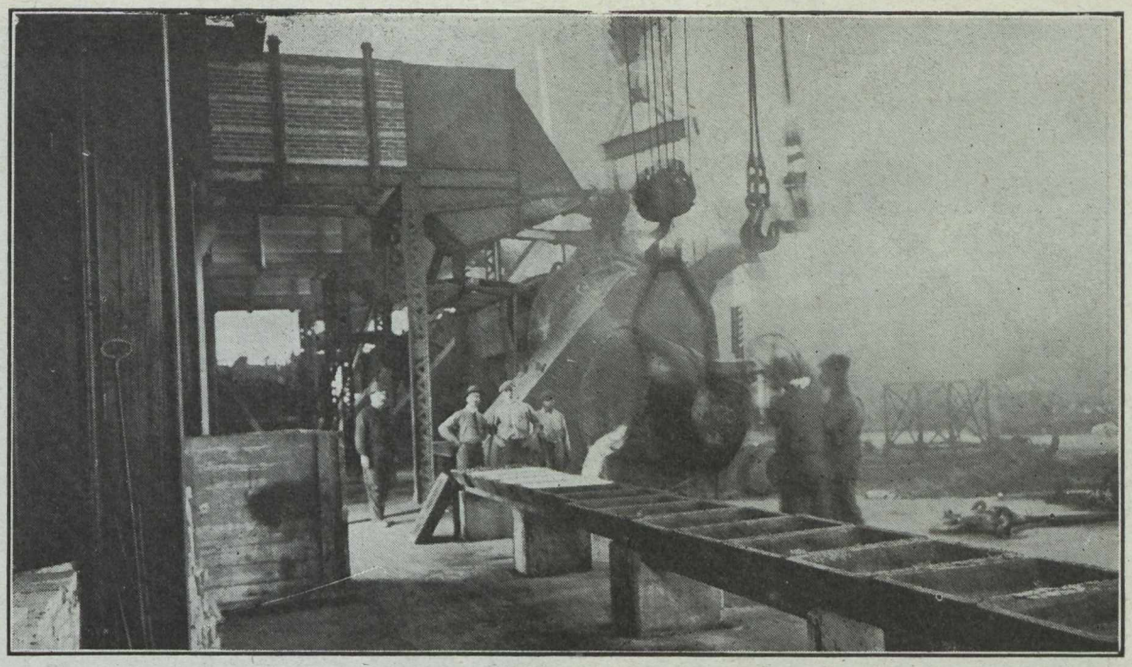
Such conveys a concise summary of the present situation, and the future possibilities with regard to the Hollinger.



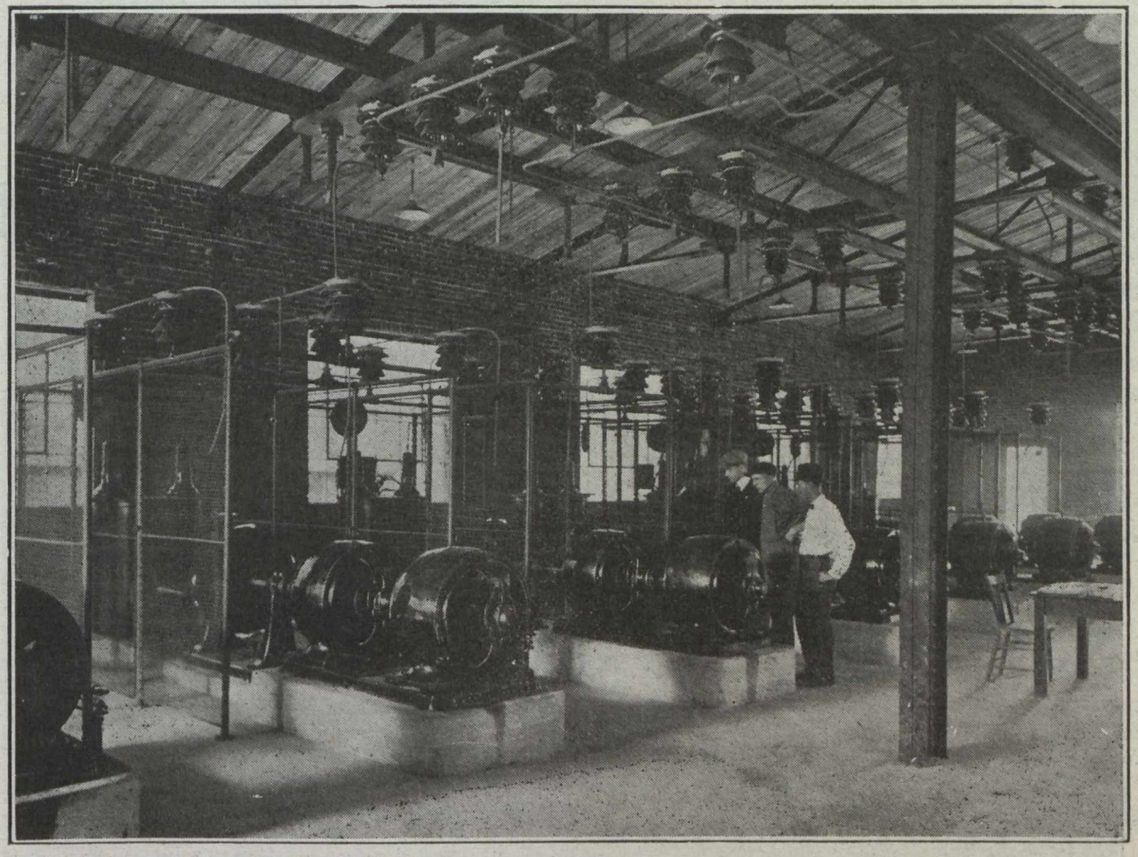
Stoping Nickel-Copper Ore at Creigh ton Mine, Sudbury, District, Ontario.



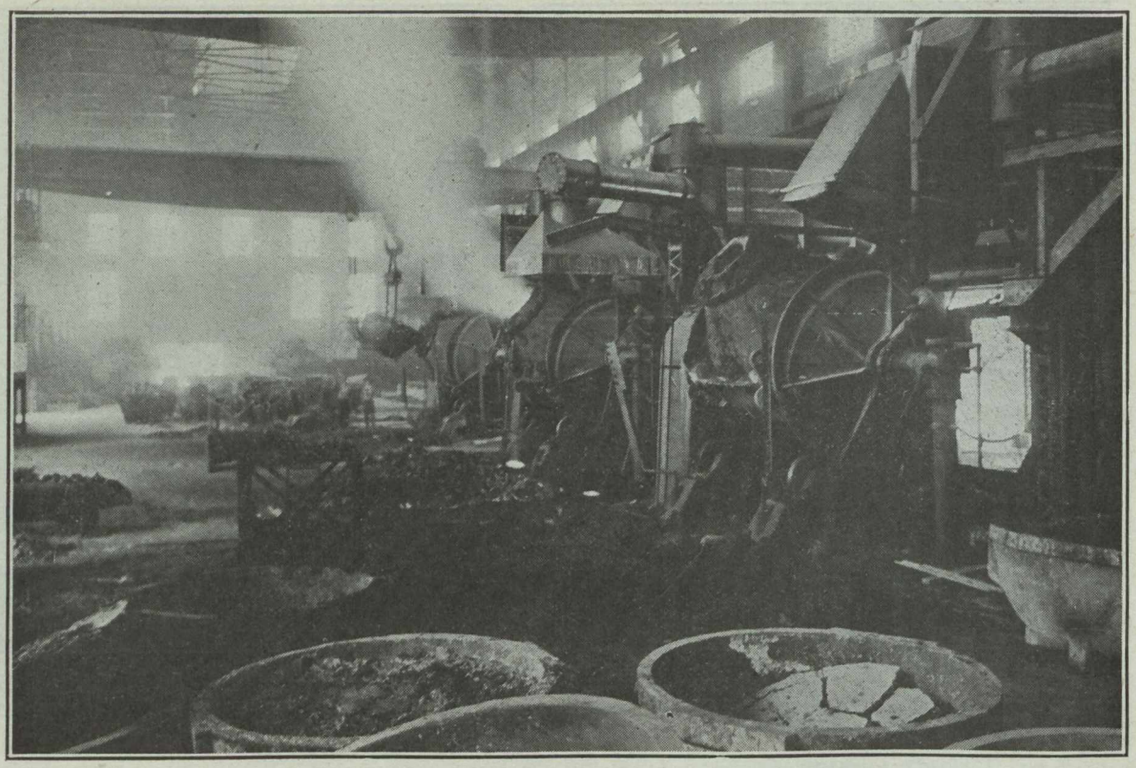
Drifting in Creighton Nickel-Copper Mine, Sudbury District Ontario.—Mining Nickel-Copper Ore in a Canadian Mine.



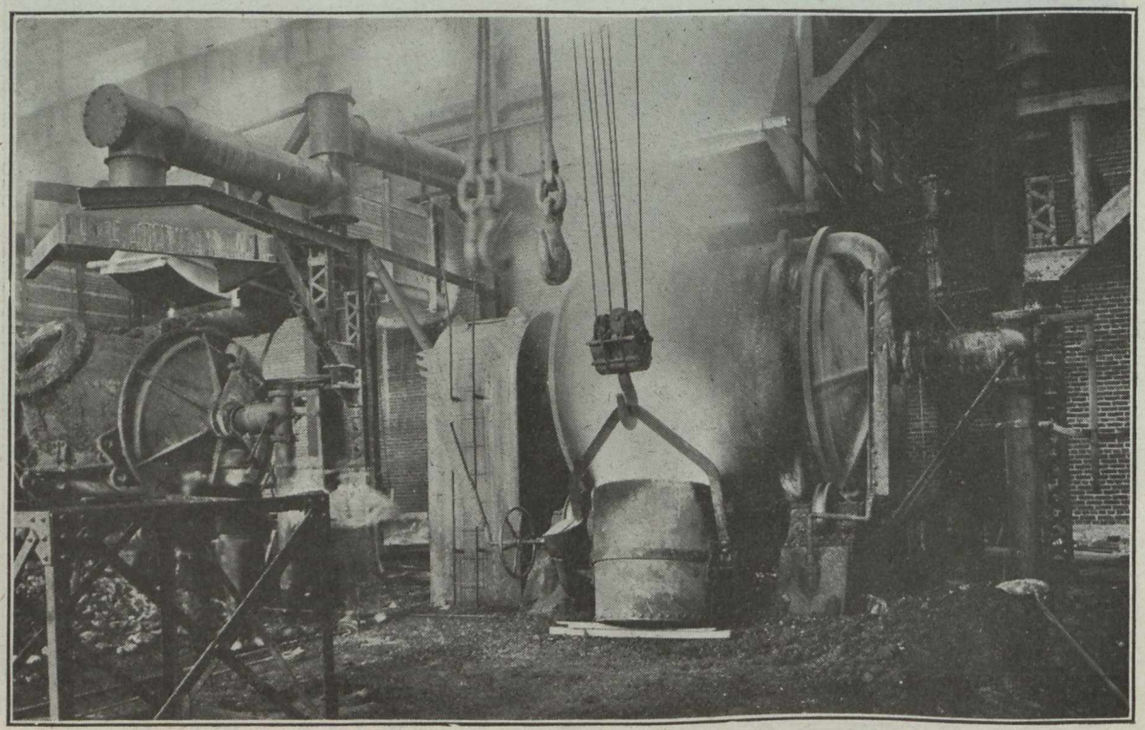
Pouring Copper at Port Colborne Nickel Refinery. Casting Blister into 400 lb. Blocks for Shipment to Copper Refinery.



Power House of Cottrell Dust Precipitation Plant. Refinery of International Nickel Co. of Canada, Port Colborne, Ont. Dust and Fumes are Collected from Nickel Furnace Flue Gases by High Tension Electrically Generated Here.



Copper Converters. The Cranes Used in Handling the Ladles Can Lift 50 Tons. Refinery of International Nickel Co., of Canada, at Port Colborne, Ont.



Pouring Molten Blister from a Converter into Casting Ladle After Being Separated from the Nickel.

Special Correspondence

BRITISH COLUMBIA.

Would Remove Duties on Mining Machinery. ..

Several resolutions of importance to the mining industry of British Columbia, in the event of their recommendations being translated into fact, were passed at the annual convention of the Associated Boards of Trade of Eastern British Columbia, which took place recently at Revelstoke, B.C.

One of these proposes that the duty shall be removed from machinery which is not manufactured in Canada. This, it is pointed out, would materially assist mining operators who are hard put to it to finance the development and the placing on a shipping basis of their properties and who, at the best, must conserve their resources to the utmost. It would mean substantial reductions on the cost of installation in British Columbia on concentrating mills and all manner of mining equipment which now comes from the United States exclusively. This resolution will be presented to the Dominion Government as expressing the sentiment of the mining communities and district of the eastern sections of the Province, and it will be pointed out that acquiescence in their wishes would not have the effect of injuring in any way the manufacturing interests of Canada.

Another suggestion which the Convention is sending forward to the Federal Administration at Ottawa has to do with the erecting and operation at different points in the province of plants for the testing and concentration of mineral ores with a view to ascertain improved methods of treating the complex ores of the Kootenay Districts and also to the end that the prospectors and operators may receive advice, without inconvenient loss of time, as to the proper equipment for the treatment of the ores of any special property in which they may be interested. Mr. F. A. Starkey, former President of the Associated Boards of Trade, in the course of a report of the year's mining and general industrial activity, told of the appointment of a committee of members of the organization to investigate the equity or otherwise of the schedule of rates charged by the Consolidated Mining & Smelting Co. of Canada at its Trail Smeltery for the treatment of custom ores. He expressed absolute confidence in the ability of the members of the Committee and of their intention to make the probe thorough and searching. It was necessary, however, that all who had complaints to make should do so without hesitation as, only by such co-operation, could those charged with the work of investigation satisfactorily discharge their duties.

Workmen's Compensation.

The coal miners of the Crowsnest Pass District, through the medium of Gladstone Local Union, No. 2314 U.M.W. of A., are petitioning for amendments to the Workmen's Compensation Act of British Columbia. They declare for a variety of reasons that changes should be made providing for the board being represented in the Crowsnest District by permanent representatives; for an increase of 100 per cent in the compensation allowed for dependents; for a clause permitting workmen to take proceedings at common law in case of serious injuries, and where it is suspected that the accident was caused by negligence; and for an amendment that will allow appeals from the decision of the Workmen's Compensation Board to the Court of Appeal.

Tudhope Electric Metals, Ltd.

A small electric furnace, designed primarily for the reduction of scrap metal, is to be installed on False Creek, Vancouver, by the Tudhope Electric Metals, Ltd. Construction has commenced and the plant is expected to be ready for operation in the course of a few months. It is likely that it will be used for the purpose of giving a practical test to the much discussed question of the feasibility of electrically treating the megnetite ores of British Columbia.

No Change in Wages at Trail.

Mr. S. G. Blaylock, Assistant General Manager of the Consolidated Mining & Smelting Company, in a recent statement asserts that there has been no change in the scale of pay at the Trail Smeltery since June 1, 1918. He explains carefully that any difference that may be found by the men in the bulk of their pay envelopes is due entirely to the recent decline in the price of metals. He then enumerates the various bonuses and their character allowed since the month of June last year.

Government Engineers Will Attend Convention.

All the mining engineers of the Government of British Columbia will attend the International Mining Convention to be held at Vancouver next month. They have been called in from their various districts for that purpose and probably each will submit a paper dealing with conditions and the future of the mining industry in the particular area over which he has supervision.

Cork Province Mine.

Arrangements are said to have been perfected for a loan of $20,000 from heavy stockholders of the Cork Province Mine, thus assuring retirement of endebtedness of $12,000, which will carry the company until shipping becomes possible in May or June. The loan is in the form of one-year first mortgage notes, bearing 8 per cent. with stock conversion privilege for half the amount. The property is situated on the south fork of Kaslo Creek, 12 miles from Kaslo, in the Ainsworth District of British Columbia. It is equipped with milling plant and flotation, hydro-electric power, sawmill, electric light system and all necessary buildings. A statement issued by the company after operations were temporarily discontinued a few months ago shows that a net profit of $12,000 monthly may be expected when operations are resumed, probably early in the month of April.

Britannia Mines, Ltd.

The Britannia Mines, Ltd., operating on Howe Sound, British Columbia, and one of the big producing mines of the province, has recently discharged many of its employees. Economic conditions rendered the reduction of the strength of the staff essential; but the company, in following the dictates of necessity, has been careful to eliminate those of its men who were of enemy alien origin. It is stated that it has dismissed 450 of this class in the course of the last few weeks, leaving about six hundred at the mines. All these are of British or Allied birth. Under an Order-in-Council recently passed by the Dominion Government, enemy aliens who are considered undesirable can be summoned before a judge named for the purpose, who may determine whether such persons should be interned as prisoners of war.

Operators Oppose Some Proposed Amendments to B. C. Act.

Representatives of the Coal Mine Operators of British Columbia waited upon the Executive Council of the Provincial Government on the 27th of February to register some objections to the amendments proposed by Hon. Wm. Sloan, Minister of Mines, at the present session of the legislature to the Coal Mines Regulation Act.

As is indicated by the summary of these amendments, which already has been published, the first change contemplated is the inauguration of a Minimum Wage Board which shall have power to fix districts in which such minimum wages as may be decided upon shall be made to apply. It is not stated, however, that the same wage shall be enforced for each district or that a minimum shall be applied to all the coal mining sections of the Province.

Such legislation, the operators assert, discriminates against the coal mining industry. They say it also discriminates against collieries, as a minimum may be applied to one and not to the other. It is "vicious," it is declared, for these reasons and because it places too much power in the hands of the Minister of Mines. Further they maintain that the establishment of a minimum wage will have a tendency to do away with contract work, under which system the coal mines of British Columbia are operated. They would have the effect of reducing production. It will, in their opinion, increase the cost of production and, the greater the cost of local coal, the larger proportion will be imported and consequently the greater the loss of revenue to the Province. The dealers, it is affirmed, were driven out of the coal market of California because of the production costs and, if it was to continue, would meet with a similar fate with regard to all the foreign markets.

Competition, it was declared, was becoming closer in the State of Washington and, when it was remembered that of the 2,000,000 tons produced in 1917 no less than 800,000 tons was exported, the seriousness of such a loss would be better appreciated. Moreover, any greater increase in production costs, which would mean beyond question a further advance in retail prices, would result in the encouragement of the replacement of coal by fuel oil. This transition was a factor which these interested in the coal trade had to face. If it persisted it simply meant that more and more capital which now was invested locally in locally produced fuel would be expended on an imported fuel and would fatten foreign profits.

Exception was taken to the proposal that the Lieutenant-Governor-in-Council should be given power by the Legislature to make such orders as may be deemed necessary from time to time for the further safeguarding of the lives of underground workers. The criticism offered was that it would result in uncertain conditions. Operators might be confronted from time to time with new regulations having the effect of disturbing their settled and smoothly working systems of management. They wished to make it clear, however, that they were anxious to co-operate at all times in all reasonable measures calculated to promote the safety of the miners. Their point was that the Provincial Executive was taking too much power to itself at the expense of the Provincial Legislature.

The delegation took advantage of the opportunity to protest, as well, against the enforcement of the provisions of the Eight Hour Act, which was passed by the Legislature in 1918, and which gives all those working above the surface around coal mines the same working day as those employed under-ground, namely, the Eight Hour Day. This law becomes effective on the 31st of next March and it was stated that, as it would tend to increase production costs, the wisdom of permitting it to remain without change should be made the subject of inquiry by commission.

There have been reports that the Provincial Government proposes increasing the tax on coal produced in British Columbia from 10 cents to 25 cents a ton. While the statement has been publicly made that such action is under consideration no pronouncement has been made from official circles. It is thought that this accounts for the fact that the operators took occasion, when meeting the Government, to submit a petition for the reduction of the present 10 cent a ton tax to 5 cents a ton. One of the arguments advanced in this connection was that in Alberta the tax is only 5 cents a ton and that British Columbia coal already comes into competition, to some extent, with that of the sister province. It also was asserted that the points already enumerated against any action being taken that would have the effect of increasing costs, which under present conditions were extremely high, applied to the question of taxation. It was essential that the burdens of the operators should not be made greater if the coal mining industry was to be maintained in a prosperous state.

The personnel of the Operators' Delegation was as follows: J. M. Savage, general manager of the Canadian Collieries (D), Ltd.; Thomas Graham, general superintendent of the Canadian Collieries (D), Ltd.; J. H. Payne, managing director of the Pacific Coast Coal Mines, Ltd.; R. M. Young, secretary of the Crow's Nest Pass Coal Co., Ltd.; R. S. Ord, manager of the Corbin Coal & Coke Co.; J. J. Grant, managing director of the Nanoose Collieries; H. Gallagher, secretary-treasurer of the B. C. Coal Mining Co.; E. N. Yarwood, representing the Canadian Western Fuel Co.; T. McNeil, secretary of the Western Coal Operators' Assn., and Mr. H. B. Robertson counsel for the Canadian Collieries (D), Ltd.

Kootenay Gold Exploration Co.

Nelson, B.C. — The Kootenay Gold Exploration Company, which operated the Granite-Poorman Mine is expected to resume operations shortly. Action has been taken towards the paying off of local creditors, and it is expected that the company named, which bonded the property from the old Kootenay Gold Company, will commence work without delay. J. J. Malone, of Nelson, is the liquidator for the latter concern.

Free Miners' League.

Prince Rupert, B.C.—The Free Miners' League of Central British Columbia, which proposes working for the advancement of the mining industry in the northern and central districts of the Province, was organized recently at Prince Rupert. Officers have been elected as follows: President, A. C. Garde; Directors, Messrs. P. R. Backus, J. C. McLennan, George Kerr, George Frizzell, J. Lorne MacLaren, and W. E. Fisher. Mr. W. C. Wilcox has been appointed secretary.

Lower Prices Necessitate Lower Wages.

Tacoma, Wn. — A number of British Columbia shipping mines, as well as other similar properties more immediately tributary to the Tacoma Smelter, have been seriously affected by the recent material reduction in payments on ore. Production in most cases has been reduced from forty to fifty per cent, and it is becoming in most instances a case of continuing operation merely for the sake of maintaining an organization that will be ready when market conditions improve. The Tacoma Smeltery is operating only one furnace, whereas it had three in blast a year ago. A reduction in the wages of employees amounting to 12½ per cent of what has been paid took effect on the 1st of March, the minimum wage for common labor being now $3.75 a day.

Anyox, B.C.—An interesting statement was made recently by the management of the Granby Consolidated Mining & Smelting Co.'s plant at Anyox, B.C., relative to the present condition of the copper market and the consequent necessity of reducing wages. It was announced that from the 1st of March the men's pay would be based on the sliding scale, which scale will be regulated by the price of copper. Certain other concessions are granted, however, which will serve to assure the workmen a good living return over the period of temporary depression, and which, in general, guarantees them just and equitable treatment.

It is pointed out that the copper market has practically collapsed, there not being a ten per cent purchase demand as compared with normal production. Copper produced at Anyox plant since October 1st is still unsold, and there is every likelihood that it will have to be disposed of at the present low market price, or less. Anyox copper in transit or on hand up to the middle of February was 16,448,000 pounds.

The company describes the subject of maintaining operations as a serious one, as each month's production, added to the amount already named, increases an already considerable burden, making the question of continuance a grave one.

In all similar periods of depression, it is explained, the policy of the company has been to keep up production, and for many years prior to 1917 the sliding wage scale, based upon the price of copper, was in operation, a method of dividing extra profits with the men who help to produce, without their having to assume any of the responsibilities of operation or the risks of loss. This was regarded as fair by both parties.

In order to assimilate the extra cost of living at the company's property, and until such time as wholesale prices are reduced, the company will pay a bonus of 50 cents a day to each man. As a further measure the company announces that it will absorb a loss at its own store of purchases made by married employees living with their families at Anyox in a flat reduction of 10 per cent on all purchases made there. It is planned also to reduce the cost of board with every two-cent reduction in the price of copper until a minimum of $1 a day for board is reached. Beginning with the price of copper at 21 and 23 cents the special 50 cent bonus will be reduced 10 cents therefrom for each 2 cent increase in the price of copper until the special provision for the present extraordinary cost of necessities is eliminated at a point where the scale rate being paid is on the basis of copper at 29 and 31 cents.

The statement continues:

"This decided action is made necessary by the resulting conditions following a world-wide disruption, over which this company or you men have but little control. It has been delayed in order to give ample time for consideration both by you and the company's executives. It is based upon the fundamentally sound principles of justice and equity between us, and an endeavor to enlist your co-operation in keeping our industry operating at a time when so many similar and Allied industries are reducing or closing down entirely. Its further effect is to resume an arrangement between you and the company which automatically, month by month, furnishes you a method of participating in the better price received for our production, but which at the same time limits your loss when adverse market conditions prevail, as is the case at the present time.

"We hope that the present conditions will be of short duration, and that the coming spring will bring an early resumption of former business on a healthy normal scale, that will afford a solution of the perplexities of re-adjustment that seems so difficult to attain just now."

Grand Forks, B.C.—The report that it was the intention of the Granby Mining & Smelting Co. to close down its smeltery at Grand Forks is not borne out by recent developments. Another furnace was blown in a short time ago, and there now are three in operation, while a notice has been bulletined at the reduction works to the effect that it is the intention of the management to "continue operations as long as possible." With the posting of this notice announcement also was made of a further reduction of 25 cents a day per man in pay, this being in accordance with the sliding scale agreement governed by the price of copper. It is stated in this connection, however, that Granby employees still are receiving 50 cents a day better than pre-war days, and there is no disposition to find fault.

Minimum Wage for Coal Miners.

There has been some speculation as to the object of the Minimum Wage section in the amendments proposed by the Minister of Mines to the Coal Regulations Act of British Columbia. The consensus of opinion is that the intention is to drive the Chinese miners out of the coal mines of the province. In a few of the mines, it is stated, Chinese are employed at the faces, which is keenly resented by the white miners. It is the opinion that if the board, which the Government would have appointed, were to fix a minimum wage in district where this condition exists the effect would be to make it as economical to the company to employ white men and, as there is no doubt that the latter are much preferred, other conditions being anywhere near equal, the Orientals would be removed. When asked whether this was the explanation of the measure, the Minister of Mines had nothing to say. That the presumption is correct is further confirmd by the fact that the contemplated Minimum Wage Board is to be given power to denote special districts to which an investigation may be applied and for which a minimum rate of wage may be fixed.

Legislation re "Closed Towns."

The Act which proposes to open to some extent what are termed "closed towns" in British Columbia, and which applies to such centres as that of Anyox, the industrial community of the Granby Consolidated Mining & Smelting Co., was explained by Hon. T. D. Pattullo, Minister of Lands, the other day in opening the debate on the second reading of the measure. He said that the provision of the Bill had already been practically brought into force as to the town of Ocean Falls, by the terms of an agreement between the Government and the Ocean Falls Pulp Company. The Bill, he said, would give the right of entry to the communities affected to the public, though the actual ground covered by the works of the company would not be open any more than it would be in any other community. Major McIntosh, a returned soldier and member for the City of Vancouver, welcomed the measure, but thought it should go further. He understood that in some, if not all of the company towns the companies carried on all the business therein. Provision should be made permitting others to engage in business, which would give the returned soldier an opportunity. He had heard that some such towns were controlled by American firms, which sold only American goods to its employees, thus barring Canadian products. Mr. J. H. Hawthornthwaite, a Socialist Member, favored the measure, stating that laboring men were indignant over the continued existence of "closed towns," wherein the ordinary privileges of British subjects were denied them. Mr. J. W. deB. Farris, Attorney-General, sympathized with the workingmen on this question, but doubted whether it was possible to go any further. Under the Land Act it was provided that the Government might take over a one-quarter interest in townsites, but it was a question whether such industrial communities could be classified as townsites under the Act. Some towns were located in such peculiar physical conditions that it would be most unjust to step in and take one-quarter of the ground, thus seriously interfering with plants on which millions of dollars had been spent. He said that, under the legislation proposed, working men could go in and organize the workers if they saw fit.

From Anyox comes the report that the contemplated Bill does not meet wit hthe approval either of the men or of the company officials. The statement attributed to Mr. Hawthornthwaite that the employees live in "slave pens" is resented strongly, it being stated that they have first-class housing accommodation. It also is pointed out that during the war Anyox sent nearly 300 men to the war, and that at the last Victory Loan Drive Anyox subscribed more than half a million dollars, having a greater per capita of subscriptions than any other point in the Dominion of Canada. Not content with its pre-war record, Anyox is taking back every returned soldier who had a position with the company at the time of his enlistment, the general order being "a place must be found for every returned man."

The cost of living at Anyox, it is stated, during the past four years has been cheaper than any place similarly situated, either in the United States or Canada, owing to the fact that large supplies are purchased and resold to employees on such a basis that every year shows a deficit in the storekeeper's accounts, which loss is absorbed by the company. It is asserted that the statement of Major McIntosh that American supplies are bought in preference to those of Canadian origin is not correct. Such a condition is said to be unreasonable when it is remembered that there is a differential of 35 to 40 per cent on duty on such supplies. A prominent company official is quoted in this connection as saying that there is not an item of purchases made by this company outside of Canada that can be filled within the confines of the Dominion. Aside from certain machinery which is not manufactured in Canada, not a penny is spent for supplies in the United States which can be purchased here."

Horn Silver Mine.

Some fine samples of gold-silver ore have been brought from the Horn Silver Mine of Similikameen Valley by Mr. E, W. Condit, the manager. This is the largest gold-silver property of the Province. Work has been in progress there for three years and, during development, the mine has paid its way, producing 45 cars of ore which were shipped to the smelter at Grand Forks. The samples referred to are mainly argentite, 86 per cent silver, and the gold values amount to one ounce to every 300 ounces of silver. The ore extracted to date is valued at $69,000. Mr. Condit states that it is the intention to install a concentrating mill at the mine.

Silversmith Mines, Ltd.

Mr. Oscar V. White has resumed his former position as general superintendent of the Silversmith Mines, Ltd. He also is acting for Mr. Clarence Cunningham in directing operations at the Wakefield mine, near Silverton.

Developments in connection with the Silversmith continue to be encouraging. In a report received by local shareholders in the Rambler-Cariboo Mines, Ltd., regarding the operations of that property from May 1 to December 31st, 1918, it is shown that the earnings were at the rate of $3,000 monthly, or for the eight months approximately $24,000 net. As this was in spite of a serious snowslide, which swept away much of the tramway equipment and necessitated two months of reconstruction, the showing is considered satisfactory. W. A. Cameron, the mine superintendent, reports as follows: "During the period covered by the report (8 months), we have mined and milled 5,400 tons of material, from which we have produced 400 tons of lead concentrates. No shipments of crude lead were made. The concentrator was in operation six months. The other two months we were repairing damages caused by snowslides last spring. Owing to the scarcity of labor and the high cost of mining there was only 200 feet of development driven. This work consists of two raises. One from 1,300 to 1,200, and one from 1,200 to the level above. In the raise from 1,200 we have opened up a nice body of mill-feed, containing very good silver and lead values. The raise of 1,300 went through some small bunches of zinc with very little galena through it. We hope to open up some more ore off this raise, carrying better lead values, but so far the ore in here has not sufficient lead in it to make it of very much commercial value. In making an estimate of the amount of ore developed, I believe we have between twelve and fourteen thousand tons of mill-feed in sight, or sufficient to keep the concentrator in operation for over a year."

MINE WORKERS CONVENTION AT CALGARY.

The annual convention of District 18 of the United Mine Workers of America took place at Calgary, Alberta, during the week February 17th to 22nd inclusive, there being 64 delegates, of whom five were Great War Veterans, present.

One of the first important questions discussed was the problem of the re-establishing in civil life of the returned soldier. In this connection it was thought that this difficulty would be simplified in a measure by the shortening of the hours of labor. Three thousand of the miners of the District had joined the Canadian military forces and there were at present, it was said, two thousand miners without work. President-elect Christopher asserted that the conditions rendered the nationalization of the industry imperative.

After considerable debate the following self-explanatory resolution was carried:

"That this Convention goes on record as demanding for the returned men of the army and naval forces, that their membership in our organizations be held continuous, and that they be reinstated at the same class of labor in and around the mines where they were employed before enlisting or taking service in the army and naval forces; also that they should be given preference of employment where men are bing employed;

"We further recommend, realizing that the interests of the mass of the returned men and that of the body of Organized Labor are identical, that the District Executive Board be empowered to enter into negotiations with the representatives of the returned soldiers to consider means whereby justice may be secured for them—the returned soldiers — not at the expense or sacrifice of the worker, but as an act of true justice on the part of the nation, and that this Convention pledges itself to support any programme or adopt any means necessary to secure that end."

There was considerable discussion as to the merits and the demerits of the contract system of labor in the coal mines. The Corbin Local Union wished the Convention to insist on the abolition of the contract system; but it was pointed out by the international delegates present that, if this drastic resolution were passed, District 18 could not count on financial or other support from the international body. Finally a compromise was reached by the Convention going on record as opposed to the contract system. It is understood too, that all the local unions of the American continent will be circularized on this question.

It is stated that any suggestion that the objects of organized labor, as represented on this occasion, might be considered of a Bolshevist nature, was resented by the majority of the delegates. While some hold advanced socialistic opinions, which they are not backward in voicing in the heat of discussion, the following paragraph contained in a statement made by Robert Livett, an International delegate, was generally endorsed:

"The first step of the present workers towards reconstruction of society must be political. By this means we will be able to settle industrial conditions on a basis which will bring a fuller and better life. Reconstruction cannot be achieved by more trade or by a six-hour day, but must be gained by control of political power; that power in the hands of the workers can stop robbery and institute the production for the use of all; reconstruction will then be complete."

It may be stated incidentally that there is a strong sentiment in favor of the withdrawal of District 18 U. M. W. of A. from affiliation with the American organization and the establishment of a self-contained and independent Canadian body.

Coal Rights on Vancouver Island.

Some interesting new facts were brought to light by Hon. William Sloan, Minister of Mines, in speaking before the Provincial Legislature to the "Settlers' Rights Act, 1918," which proposes giving those holding property within the Esquimalt & Nanaimo Railway Belt, Vancouver Island, a further opportunity to make applications for their coal rights on the land to which they have surface title. He stated that there were some forty-five or more applications for such coal rights dealt with under the Settlers' Rights Act of 1904, which measure first opened the question by legislation, and that altogether Provincial Titles had been granted to 7,166 acres of coal bearing land within the boundaries of the railway holdings on the Island. Mr. Sloan pointed out that when the railway was first given title to these Island lands it had been granted an additional 86,346 acres to recompense it for property which had been alienated to settlers prior to 1884. He stated that to repay the company for the 7,166 acres of coal bearing land taken subsequent to 1904 another 20,000 acres had been deeded to the company. Of the total 2,210,000 acres which, it was computed, was included in the E. & N. Ry. Belt it was roughly estimated that there were 356,000 acres of a coal bearing character. It followed that there still remained to the E. & N. Ry. company or its successors some 366,000 acres of coal bearing lands.

The debate on the proposed 1918 Act is still in progress, but it is considered likely that it will be carried. Under its terms the settlers, or their heirs, will be allowed to apply for the coal rights on their lands and, if successful in proving that they have a legitimate claim, will be issued Provincial Titles. All this, however, is contingent on the stand taken by the Dominion Government. The latter exercised its prerogative last year and vetoed, or disallowed, the 1917 Act which was of an exactly similar nature. The contemplated action of the Provincial Government in taking the earliest opportunity to re-enact the legislation which, apparently, is repugnant to the Federal Administration has created an interesting situation. It would seem that a determined fight has been launched between the Province and the Dominion, it being the contention of the former's Government that the Dominion is infringing the authority of the Provincial Legislature in assuming to dictate on a subject affecting nothing more than "Property and Civil Rights." Jurisdiction to handle all matters coming under that heading was clearly allotted to the Provinces under the Terms of Union.

Considerable interest is manifested in British Columbia in the stand taken by the Canadian Mining Institute in deciding to urge upon the Dominion and the Provincial Governments of Canada the necessity of establishing a higher scale of wages to the technical workers in government departments. In deciding upon this course President D. B. Dowling suggested that Canada's vast natural resources would be developed to a greater extent than before and that the mining man might be expected to come into his own in the immediate future.

Fire at Anyox Smelter.

Fire broke out on Sunday, March 2nd, at the Anyox (B. C.), smelter of the Granby Consolidated Mining & Smelting Company's plant. It started at one of the converters and spread under the force of a northeast gale to the smelter proper and the ore bins. The loss is placed at approximately $50,000. The Anyox Fire Department was successful in checking the conflagration before it got a grip which might have been disastrous in its consequence. Repairs are in progress and it is expected that the plant will be in shape to permit full operation by the 15th of the present month.

Gold Crown Mines.

The Gold Crown Mines property, which is situated at Kleanza Creek, near Usk, and the ore of which contains good values in gold, copper and silver, may be developed this year. An American syndicate, which is represented by Mr. John Willman, is negotiating with the Government for the use of the water power of Kleanza creek. The water power is leased by the Cassiar Hydraulic company, which has not been operating for two years, and it is thought likely that a transfer of the lease will be effected. The Lucky Loop Group of Claims, owned by Messrs. Moody and Lowrie, has been leased to Messrs. Seeber, Roark, and McMann, who have been working steadily all winter. They have put in a 100 ft. tunnel and have a carload of hand picked ore ready for shipment. The values are expected to run to $10 in gold and $50 in copper at present prices. On the "Old Hickory" Mine drifting is to be continued this season by Mr. A. L. Kelch, who is returning from California shortly. A 200 ft. tunnel has been driven which shows up three feet of bornite and chalcopyrite ore. Messrs. French and Thompson, of the Kitselas Mountain Copper Company are expected to instal a concentrating mill at the mine this summer which will be of value of the development of this property and a boon to the owners of smaller properties in the district.

Developing Copper Deposits on Vancouver Island.

The development of a number of promising copper properties of Vancouver Island, B. C., is to be actively continued this summer. Generally speaking the policy of operators appears to be to proceed with the opening up and the blocking out of the orebodies in sight with a view to be in a position, with the readjustment of market conditions, to take immediate advantage of the improvement. Spokane operators were in Victoria recently examining one of the East Sooke properties, which are situated twenty-five or thirty miles out of the city. They are expected to be able to reach an early decision as to investment. A quantity of high-grade ore, and a large quantity of lower grade ore, have been blocked out at the Sunlock Mine, Jordan River. Reports from the Alberni District are favorable. Very little ore is expected to be shipped this year from the Dwedney Mine, Sidney Inlet, but it has been decided to proceed with the improvement of the concentrating facilities. The enlarged plant is expected to be ready by the month of August, and the production this year will be held for more favorable markets.

Copper at Head of Gun Creek.

Lillooet, B.C.—The discovery of a copper area at the head of Gun Creek on Copper Mountain in the Mackinnon Mountain Range, is reported, and it is stated that the deposit has been examined by Mr. Charles Camsell, of the Dominion Geological Survey Department, whose account of the same will be published shortly. Mr. Camsell visited the locality last summer, and is said to have formed a very favorable opinion of its possibilities. The survey made shows an orebody 800 feet wide by 2,500 feet long, exposed to a vertical depth of 200 feet, and is estimated to contain 30,000,000 tons in the exposed portions of the orebody. The ore, the accounts say, is of a higher grade than is usual in this Province. A sale is pending which, it is expected, will mean the development of the property in a large way.

WHY CHANGE THE NAME?

There is now before the members a proposal to change the name of the "Canadian Mining Institute." Those who support the proposal say a change in name is desirable in order to indicate that the activities of the Institute cover the field of metallurgy, and they submit the name "Canadian Mining and Metallurgical Institute" as one that more fittingly covers the activities of the Institute.

Some members of the Institute who have little to do with the finding of ore deposits, their exporation, development and mining, or with ore dressing, seem willing enough to use the term "mining" in a general sense to cover everything in the mining industry except metallurgy. Some of our metallurgists like to consider their work as distinct from that of mining, and they favor the inclusion of the word "metallurgy" in the name of the Institute. The wishes of these men must be given due consideration. In fact, the desire of the metallurgists is properly the argument in favor of the proposed change. We would point out, however, that a change made to please some metallurgists may lead to unexpected difficulties.

By long custom the term "mining" has been used in two senses; first: as a broad general term concerning the whole industry from prospecting to marketing the refined product; second, in a restricted sense referring to the actual extraction of the ore. As used in the name of the Canadian Mining Institute and in most references to the mining industry and mining companies, the word includes a great variety of activities such as prospecting, mapping, sampling, stripping, equipping with machinery. developing, drilling, pumping, surveying, mining, hoisting, sorting, crushing, transporting, milling, concentrating, cyaniding, roasting, smelting, refining, etc. The processes in connection with gold, nickel and iron ore are in many respects quite different. Even greater are the differences between coal and silver mining. The terms coal mining, silver mining, nickel mining, are used to cover all the processes leading up to the preparation of coal, silver and nickel for the market.

It would, perhaps, be well if the word mining were not used in a special as well as in a general sense. Since it is so used, however, we may as well recognize the fact. We certainly need one word for the industry, and every attempt to decrease the certainty of the meaning of that word is objectionable. If we change the name Canadian Mining Institute to Canadian Mining and Metallurgical Institute we may please a few metallurgists; but we will have to find a new name for the mining industry. As soon as the word "metallurgy" is added to the name, the meaning of the word "mining" is changed. We have a useful and all inclusive name that covers all branches of the industry from oil well drilling to blast furnace practice. Should we give it up?

Principles of Mining Taxation*

By THOS. W. GIBSON.

The object of taxation is the raising of a revenue. Unless a tax accomplishes this, it is a failure. The right to take for public purposes a part of the moneys obtained from the carrying on of private enterprises is an attribute possessed only by a lawful government, and may indeed be called the supreme attribute of government.

In free, democratic communities this power must of necessity rest upon the just consent of the governed. Powers imply obligations, hence it is obviously the duty of a government in framing a system of taxation to provide one which, while effective in producing a revenue, is also just and impartial. It will be conceded that mines and mining property ought to bear a fair share of the public expenditure. The question is, upon what basis taxation should proceed.

Two separate taxing principles are usually contended for: (1) Taxation should be proportionate to the benefits received by the person or property taxed; (2) Taxation should be based on ability to pay.

A third is sometimes added; (3) Taxation should have reference to the extent and value of the natural resources enjoyed.

As applied to mining taxation, it is pointed out by those who support the first-mentioned basis, that mines being usually situated in rocky and hence sparsely peopled regions, mining companies are frequently obliged to construct roads, railways, telegraph and telephone lines, schools, water and sewerage systems, and many other amenities and conveniences of civilization, the cost of which in regions better suited for agriculture and consequently more thickly populated, has either been defrayed locally, or can be spread over a sufficiently large taxable group of people to materially lighten the financial burden on the mine. The mining company, it is argued, having made these outlays, should receive credit for them, and be relieved of taxation to a corresponding extent.

There may be some force in this contention, but the situation is capable of relief without attempting to place taxation upon so unworkable a basis as the value of benefits received. Who is to be the judge of these benefits, and how are they to be valued? The very existence of a mining company, and its ability to carry on business in peace and security, depend upon the prevalence of law and order, which is a result of good government. The state provides protection against violence, and courts of law for redress against wrong. The relationships among the social units of a modern well-governed state are so complex and interdependent as to make it impossible to fix with any degree of accuracy the money value of the services rendered by the whole, or in other words, the government, to any one unit.

Again, the state existing for the benefit of the individual units and extending its care and protection to all, it follows, in so far as property is concerned, that the greater the value the larger are the benefits which its owner derives from the state, and consequently the greater the tax he should pay. It would seem, therefore, that basis No. 1—benefits received —really occupies the same ground as basis No. 2, ability to pay.

The latter basis pre-supposes the possession of capital productively employed, for it is obvious that taxes could not long continue to be paid out of capital which remained unreplenished. Any tax upon legitimate industry which diminishes the amount of capital available or necessary for that industry is objectionable, for the reason that its effect must be to cripple, or in the end even to extinguish such industry. Moreover, the only source out of which an unremunerative enterprise can pay taxes is its capital. These considerations bring us at once to a recognition of the fact that the burden of taxation can properly be placed only on net earnings or profits.

Adverting to the third ground for taxation previously mentioned, namely, the value and extent of the natural resources owned or controlled, it is clear that this is a suggestion for the taxation of monopolies. Natural resources, though great, are limited, and cannot be equally enjoyed by all. A water power easy of development and capable of supplying electric current for a considerable body of people, becomes, let us say, the property of an individual or company. The owner being without competitors, is able to raise his charges to the highest point, which would probably be the level at which energy could be generated by steam or brought in from elsewhere. Few will deny that such profits are a fair subject of taxation.

In a real, though not in so complete a sense, the possession of a valuable deposit of ore constitutes a monopoly. All land does not contain mineral values; indeed, the proportion of valuable mineral land to the entire surface of the earth is very small, and the owners of mineral deposits are monopolists in the sense that they enjoy this advantage over the great majority of their fellow beings. Where such advantage enables them to make unusual profits, taxation is amply justified.

In the case of basis No. 3, what is really put forward for taxation is not so much the monopoly, real or fancied, as the profits which it ensures to the owner, and its application logically leads to the same conclusions as those drawn from basis No. 2, or even basis No. 1.

Now, mining is a business more than ordinarily subject to uncertainty of result, and if the capital invested in a mine is to be in danger of serious depletion by means of taxes, because "Dame Fortune's fickle smile" has not been won, the effect will not only be disastrous to the particular mine, but deterrent upon the engaging of capital in mining enterprises generally. On the other hand, it is true that mines are sometimes profitable on a scale far beyond that of an ordinary commercial business. I need not stop to multiply instances. The copper mines of Michigan, Montana and Arizona; the silver bonanzas of Virginia City and Cobalt; the gold mines and diamond diggings of South Africa, and the nickel deposits of Sudbury, will occur to your minds. Returns such as accrue from deposits like these are the sustaining force of the mining industry, and enable

*A paper presented at the Joint Sessions of the A.I.M.E. and C.M.I., New York, Feb. 17, 1919, and Montreal, March 6, 1919.

it to maintain a vigorous existence despite countless gross proceeds. These include wages of labor, superintendence, power, explosives, timber, transportation, expenses of marketing, administration, and similar charges. Depreciation of mine buildings and plant should be allowed for, on a basis that will amortize their cost during the lifetime of the mine. Mining machinery is valuable only so long as the mine is in operation; when the ore is exhausted it rarely has more than a scrap value.

Initial capital really invested, carefully distinguished from water, should be exempt from taxation, as until it is returned either in dividends or some other form, profits in the strict sense of the term cannot begin. By initial capital is meant the money invested in purchasing the land from the government and in opening up and equipping the mine. It is apparent that should the property be subsequently sold for a larger sum, it would not be equitable, so far as the state is concerned, to treat the additional cost to the new owner in a similar way, for the increase in value simply represents a capitalization of future profits, the express object of taxation.

Opinions may differ as to whether dividends to shareholders should be reckoned among the expenses of operation, and so go untaxed. It is not the practice of shareholders to refrain from dividing the profits of a paying mine until the entire capital investment is amortized, but rather to require a distribution to begin at the earliest possible moment. Prudent management, in most cases, will be satisfied if a yearly sinking fund is provided sufficient to wipe out capital before the exhaustion point arrives, and there is no unfairness in the state's request to be treated on the same basis as the shareholders themselves, and to require its tax to be paid out of the gross sum of net earnings, irrespective of dividends altogether. It may happen that the company instead of distributing its profits in dividends, will reinvest them wholly or partially in enlarging its operations or in new or improved machinery and equipment, or even in the purchase of additional properties. The destination of profits or the purposes for which they are used, being wholly within the control of the company, should not affect the right of the state to its share.

A more fundamental question in dealing with mining taxation, whether on the net profits, ad valorem, or any other plan, is provided by the fact that the assets of a mine are in the nature of things vanishing assets. The first bucketful of ore raised from a mine marks the beginning of the end. The rich storehouse which it has taken nature ages to fill is ransacked by man in a few years. Fairness requires that this special feature of the mining industry should be given full weight in any system of taxation.

This would not be a difficult problem if the end could be foreseen from the beginning, and if the years of a mine's life could, like those of a man's life, be estimated by actuarial methods. Borings, shafts and cross-cuts, in the case of large homogeneous masses such as bodies of iron or copper ore, may give reliable data for such a calculation, but in many cases these methods, besides being expensive, are difficult of application and uncertain in results. Besides, while the drill is at work and reserves are being blocked out, ore is being raised and treated, shareholders are clamoring for dividends, and the state is asking for taxes. The most that can be done in many instances is to make a conservative guess and proceed accordingly, subject to adjustment as development goes on.

The practical problem, however, for taxation and dividend purposes, is not how long will the mine last, but how soon can the initial capital investment be recovered? After such recovery, the entire net proceeds of the mine may safely be regarded as profit and treated accordingly.

Usually, it will be the part of wisdom to make the period for capital replacement as short as possible. Pressure for returns is imperious and not to be resisted, consequently it is not the usual practice of companies to amortize formally their capital out of net earnings, but rather to pay these out as dividends. The effect of large dividends on the market value of shares is usual practice of companies to amortize formally their capital paying mining companies, is almost invariably too high, since investors overlook the fact that a mine, unlike a farm, cannot be worked forever.

It is sometimes urged that the taxation of profits should be equated over a period of years so as to avoid heavy fluctuations of revenue, which are inconvenient to the state or local body, dependent upon mine tax receipts for financing. It should be remembered, however, that especially in precious metal mines, the rise and decline of a property cover usually a comparatively brief period. A mine can best pay a large tax when it is earning large profits, but when the end is in sight and profits dwindle, the ability to pay is lessened. The adoption of a 5 or even a 3-year term, would undoubtedly tend to shift the high point of taxation to a later period in the mine's history, and might entail a burden on the closing years which they could not rightly bear. On the whole, it seems advisable to close the account at the end of each year.

The net earnings or profits basis for taxation appeals to the sense of fairness. If the mine is a failure, the state receives nothing; if moderately successful, the state gets a moderate return; if it proves a bonanza, the state revenue benefits accordingly. The incidence of taxation is better adjusted than under any other form. Experience has shown it to be acceptable to the mining community itself, which is a strong recommendation. The taxing authorities must of necessity be clothed with sufficient powers of enquiry and examination, and adequate penalties provided for offences. Given these, the difficulty of enforcement is reduced to a minimum.

The fact is that in any method of mining taxation, excluding those which are admitted arbitrary in their nature, the underlying principle is taxation of profits. This is borne out by an examination of the ad valorem system in vogue in many states of the Union.

State Constitutions almost invariably have imbedded in them a provision that all properties shall be assessed for taxation, and that taxation shall be uniform. This provision precludes any method of taxation avowedly based on output or profits, as well as a specific tax of any kind on mining property or products. In a few of the states the constitution permits specific taxes, but the prevalent basis of taxation is the assessed value of tangible property, to which a uniform rate of taxatian is applied. Ordinarily, the requirement is for assessment at the actual value, but in practice this provision is disregarded,

and in most cases the assessment value is less than the real value. Some states have regularised this disregard, and provide that the assessment shall be for only a specified percentage of the actual value. The valuation is made by the local taxing authorities, and is the basis upon which is levied both state and local taxation.

Many states have now a State Tax Commission, also a Board of Equalization, which may or may not be the same body. The assessment of mining properties by local officials is naturally far from uniform, and the function of the Equalization Board is to adjust the valuation to a common standard. It is obvious that while within the area of a local taxing unit, be it town, city or county, if the same rule of assessment be applied to all properties, it is a matter of indifference whether the basis is 50 per cent, 75 per cent, or the full actual value, for the same rate is applied to all. For purposes of state taxation, however, it would be inequitable to collect the same rate on properties in a town assessed at 50 per cent or 75 per cent of their value, as upon properties in another town appraised at their full value, hence the necessity for the process of equalizing.

But even in estimating the amount at which a mine of any magnitude should be valued for taxation purposes, it is evident that a degree of skill and experience is required, little likely to be possessed by the local assessor. Mere guessing at the value produces endless confusion and irritation. In some of the states of first-class mining importance, notably Michigan and Minnesota, the Tax Commissioners determined to adopt some more scientific method. The Michigan mines are of iron and copper. The ore-bodies are extensive and valuable. Local conditions, chiefly the fact that the mines are confined to the northern peninsula, and the farming lands of the state to the lower peninsula, led to perennial dispute as to the share of taxation which the respective sections of the state should bear. In 1911 the State Tax Commission employed Mr. J. R. Finlay to survey and value the iron and copper mines for assessment and taxation purposes. In making this valuation, Mr. Finlay applied five factors:

1—The tonnage of ore contained in the mine.
2—The estimated life of the mines.
3—The cost of operating.
4—The annual receipts from sales of ore.
5—The rate of interest for ascertaining the present value of deferred production.

The diamond drill is the distinctive tool for exploring the iron mines of Michigan. Most of the mining companies who have been operating for any length of time had delimited their ore bodies by borings, and had ascertained their approximate dimensions, and consequently the reserve tonnage. Their average production during the four or five years previous, divided into their ore reserves, gave the probable life of the mine. Operating expenses deducted from receipts from ore sales gave the profit per ton; this figure, multiplied by the average output, gave the yearly profit, or in other words, constituted an annuity payable until the mine was worked out. The present value of this annuity, discounted at six per cent, Mr. Finlay set down as the valuation of the mine for taxation purposes. Taking a concrete case for clearness' sake, let us assume that Mr. Finlay was valuating the Ferrum mine. On the basis of the company's borings and allowing for probable undiscovered ore, the contents were 10,000,000 tons. The average production was 500,00 tons a year, hence the mine had a future lifetime of 20 years. The average cost per ton for operating was $3.00, and the average for ore sold $3.50, leaving a profit of 50 cents per ton; this, on 500,000 tons of ore, would give an annual profit of $250,000 for twenty years, the present value of which was $2,867,475. This sum would be the valuation of the Ferrum mine.

Iron mining in Michigan has had its ups and downs. In 1914, when the great struggle of the nations broke out, the average loss per ton of ore to the mining companies was $0.07712, yet the taxes collected from them, based on Mr. Finlay's valuations, were equal to $0.12009 per ton. In 1915 there was an improvement, and the output of the iron mines in that year was 13,151,612 tons, and the average selling price was $2.79402 per ton. Much of the ore is mined subject to royalty payable to the owner of the fee, the average being $0.23136 per ton. Including the royalty, the average on iron ore was $0.52380 per ton; out of this margin the royalty charge had to be met, and in addition, taxes equal to $0.13784 per ton. That is to say, the net profit remaining to the mining companies, after allowing for certain other smaller items, was $0.14674 per ton. Thus, after deducting expenses of production from the selling price, nearly one-half of what was left went as royalty to the fee owner, and the remainder was divided almost equally between the mining company and the tax collector. Before payment of the royalty the taxes amounted to 26.31 per cent of the profits, after payment of the royalty, to 47.13 per cent. Measured by pre-war standards, this was a heavy rate of taxation.

Mr. Finlay's method has the merit of being systematic, and it takes into account the essential factors of value, but it is evident that no allowance is made for the unexpected. A demand may arise for iron ore far in excess of anything previously known, with a corresponding increase in price and consequently in profits. On the other hand, stagnation may set in, prices may fall, and iron ore may become practically unsaleable. In the former case the valuation of the mine, based as it was on normal conditions, is too low; in the latter, too high.

In Minnesota a similar method is in vogue, but a somewhat elaborate classification into productive and unproductive mines and prospects, with a varying standard of valuation in the several classes, has been worked out in the endeavor to arrive at equitable results.

The Finlay valuation of the Michigan iron mines gave them a total value of $129,000,000, which was a large increase over the total valuation under the old methods. The companies protested vigorously, and the Tax Commission reduced the valuation to about $90,000,000. At about this figure for a number of years, it remained practically stationary, the amount of ore brought in sight year by year about equalling the amount extracted.

In the case of the copper mines, the Finlay system had an entirely different result. The aggregate value reported was $69,000,000. This sum was so far below the value of the mining properties as shown by the market value of their shares, that the companies, fearful of bearish effects upon the stock market, demanded that their old assessments be restored. This

request the Tax Commission also granted, and the copper mine valuations remained at about their old figure.

Whatever may be urged in favor of the Finlay method of valuation as applied to the copper and iron mines of Michigan, and the iron mines of Minnesota, with their immense masses of ore capable of fairly accurate delimitation and ascertainment of quantities, and individually fairly uniform in quality, it is clearly inapplicable to deposits such as those of the precious metals, where the veins are small and subject to great irregularity in size and direction, and the value of their contents. The diamond drill cannot be depended upon to the same extent in disclosing the value of such deposits. There are other minerals of value notoriously pocketty and capricious in their habit; for all such the Finlay method is unsuited. Even where ore-bodies are large and of fairly uniform value, it could not in many cases be even tried, for the essential requirement in estimating tonnage, namely diamond drill borings on a sufficient scale, is lacking. Cases can be cited where mining companies, even after years of working, were uncertain or even ignorant of the size of their deposits. To take a notable instance from the Province of Ontario; the Canadian Copper Company working the Creighton nickel mine, were apprehensive that its productive limits were being reached, and consequently prepared to exploit the Frood mine, another large ore-body, but lower in nickel and copper contents. They built a town, laid out streets, equipped the new mine with machinery and hoisting plant, and began to work it. Concurrently they continued to explore the Creighton by diamond drilling, and encountered at lower depths unexpected and very large reserves of ore. It paid the Company to cease all work at the Frood, and to continue operations at the Creighton. Had a valuation been made of the Creighton mine on the Finlay plan before the reserves were disclosed, it would have fallen far short of the correct amount.

Undoubtedly one effect of the Finlay system in Michigan and Minnesota has been to discourage exploration for ore. As soon as the drill brings ore into view, it is subject to valuation and taxation, notwithstanding that it may not be actually worked for years. Every prudent mining company desires to know its position regarding reserves of ore, so that it may be justified in making adequate capital expenditures for the winning and treatment of the same, but if to establish new ore bodies is to materially increase their taxation, the result is apt to be a slowing down of the drill.

It is apparent that the Finlay and practically all other methods of mine valuation in the end rest on profits. Unless a deposit can be worked so as to yield a return greater than the cost of working, it has no real value. The controlling factor is the profit per ton or other unit of production. The sum any mine is worth depends upon the profit it is producing, and will continue to produce. When the object is revenue, not a sale, surely the more logical way is simply to tax the profits as they are realized. Since these cannot be accurately predicted, they cannot be accurately capitalized; nor is there any occasion to do so, for if they prove smaller than was expected, the tax is less and no injustice has been done; should they prove greater, the tax is larger in proportion. The net profit system automatically adjusts itself to the conditions for the time being, and takes account of all changes in expenses and returns.

Other methods than the taxation of profits have been attempted. One of these is an area tax— so much per acre, hectare, etc. This is a rough and ready method, and has no relation to value or ability to pay. An acre of barren rock pays the same tax as an acre of diamond-bearing earth, or of the richest quartz. A second method is a specified rate per unit of mineral, be it ton, pound, ounce or gallon. This has the same convenience of application as the acreage tax, but takes no account of profits or expenses. A ton of coal scraped from the last workings of a mine would pay the same rate as a ton produced from the richest and most easily worked seam; an ounce of gold wrung from ore carrying $2.00 a ton at a profit of ten cents, will pay as much as gold from $50.00 quartz; a gallon of petroleum from a well yielding a barrel a month, as much as a gallon from a gushing geyser. Such methods of taxation are easily applied, but are unscientific, and lack the essential feature of fairness.

There was an improvement in tons of ore shipped to the Trail Smelter during the week ending February 28, the total being 7,386 tons as compared with 6,921 tons during the previous week.

Cost of Coal in Vancouver.

There has been a revival in Vancouver of the agitation against the coal dealers because of what is termed the excesive cost of fuel to the consumers in view of the fact that the coal mines of Vancouver Island, the source of supply, are only some sixty odd miles distant. The discussion arose through the statement of T. Bulger, Dominion Fair Wage Officer, that the island miners obtained their domestic coal for $4.50 a ton with an extra dollar a ton for delivery. This was the same coal which was selling in Vancouver for $10.15 a ton. The dealers declare that their profit at the latter selling price is not more than from 40 to 47 cents a ton. They say that they buy their coal at $6.45 or $7.20 a ton loaded on the scow at Vancouver Island, but that added to that figure are such expenses as freight charges, insurance, unloading, screening, sacking, and delivery. These items, with the wages of all engaged in the operations at from $4 to $5 a day and a loss in screening of from 10 to 15 per cent., accounted for the difference between the purchase price at tidewater on the Island and in the cellars of the consumers. If the coal miners were getting their coal for $4.50 at the pit mouth the opinion was expressed by the dealers that they must be obtaining it at below cost. It was further explained that the reason that some dealers were able to sell at $10.15, and other were forced to charge $10.50 a ton was that the Fuel Controller had issued an order requiring the Canadian Western Fuel Company to sell at not more than $6.45 per long ton loaded on scows, while the Canadian Collieries (D), Ltd., were permitted to dispose of their coal at a higher figure, which they had fixed at $7.20 per long ton on scows. This decision had been reached after an investigation into the cost of production in the cases of the different collieries of the Island. The dealers' contention is that the prices to the consumers are based on expenses and a profit to them of not more than from 40 to 47 cents a ton.

FOR SALE

FOR SALE OR RENT.—1 Steam Hoist 7 x 12 Beatty double drum complete with boiler 100 lbs. pressure. 1 Vertical Boiler with all fittings, 25 H.P. 100 lbs. 1 Air Compressor, belt driven, Chicago pneumatic 12 x 300 cu. ft. at 100 lbs. 2 Cement Guns complete with all accessories. 1 McLaughlin Auto Truck new stake body. 2 Air Compressors, belt driven, Bury, 650 cu. ft. at 30 lbs. Burns and Roberts, Toronto.

WANTED.

WANTED—Ball Mill. Capacity about 50 tons per 24 hours. Preference given to Marcy Mill. Monarch Metal Company, Limited, Main St. W., Hamilton, Ont.

POSITION WANTED: Experienced Rope Splicer — both Steel and Manila Rope. Years at Aerial Tramway work. Best of references. Box No. 1, Canadian Mining Journal.

POSITION WANTED as Superintendent or Manager for Gold, Silver or Iron Mine. Also Assessment Work. Mining Properties for sale at Boston Creek. Capt. Albert Johnston, Boston Creek, Ontario.

Readjusting Wages at Anyox.

Announcement is made that the employees of the Granby Consolidated Mining & Smelting Co. at Anyox, B. C., who number approximately 1,200 men, have decided, after deliberating for six days over the company's proposal to return to the sliding scale of pay with certain other concessions, to reject such an arrangement for the continuance of the work of the smeltery. The vote showed a majority of only 19 in favor of refusing the terms offered. As a result the plant has been shut down and the men are losing at the rate of $7,500 daily in wages. There has been no trouble in the camp and it is hoped that in a few weeks, perhaps by the time the damage caused by the recent fire are repaired, an amicable settlement will have been reached.

THE GOLD MINES.

Slowly but surely the value of gold is increasing, the reason being that it is costing less to produce gold. Slowly but surely the cost of material is growing less, and, as the yardstick of commerce, an ounce of gold is worth more because it will noy buy more. Slowly but surely the efficiency of the mine workers is increasing, and as each man will now handle an increasing tonnage of ore each day; it follows that each man is producing gold at a greater rate than formerly, and the same wage for which he worked during the time when inefficiency caused curtailment at not a few gold mines.

CANADA
DEPARTMENT OF MINES

HON. MARTIN BURRELL, *Minister* R. G. McCONNELL, *Deputy Minister*

MINES BRANCH

Recent Publications

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

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

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

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

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

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

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

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

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

Summary Report of the Mines Branch, 1917.

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

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

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

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

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

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

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

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

GEOLOGICAL SURVEY

Recent Publications

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

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

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

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

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

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

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

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

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

Map 145A. Timiskaming county, Quebec. Geology.

Map 154A. Southwestern Yukon.

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

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

Map 174A. Blairmore, Alberta. Topography.

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

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

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

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

Map 1702. Klotassin, Yukon Territory. Geology.

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

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

May 1714. The Niagara peninsula, Ontario. Geology.

May. 1715. The Ontario peninsula. Geology.

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

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

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

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

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Northern Canada Supply Co.

Gears, Machine Cut:
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Fraser & Chalmers Engineering Works.
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Canadian Miners' Buying Directory.—(Continued from page 27.)

Gears:
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Northern Canada Supply Co.
The Hamilton Gear & Machine Co.
Fraser & Chalmers Engineering Works.
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Pneumatic Tools:
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Jones & Glassco.

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Pumps—Sand and Slime:
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R. T. Gilman & Co.
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Canadian Ingersoll-Rand Co., Ltd.
Fraser & Chalmers Engineering Works.
Fraser & Chalmers of Canada, Ltd.

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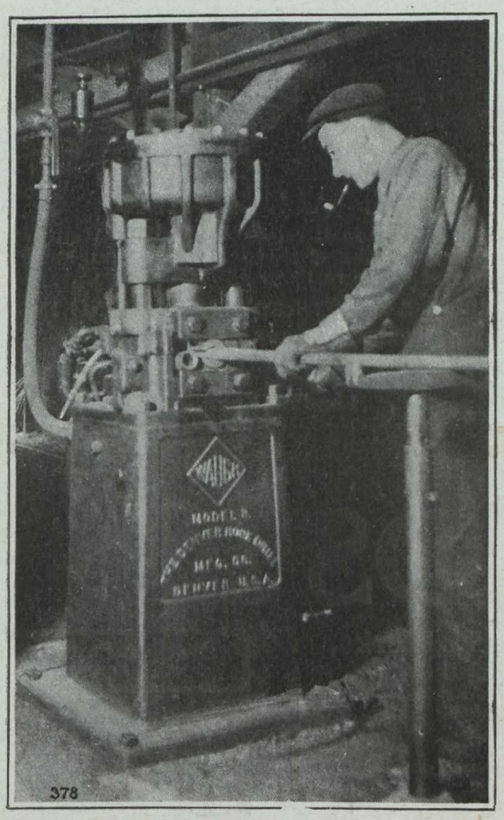

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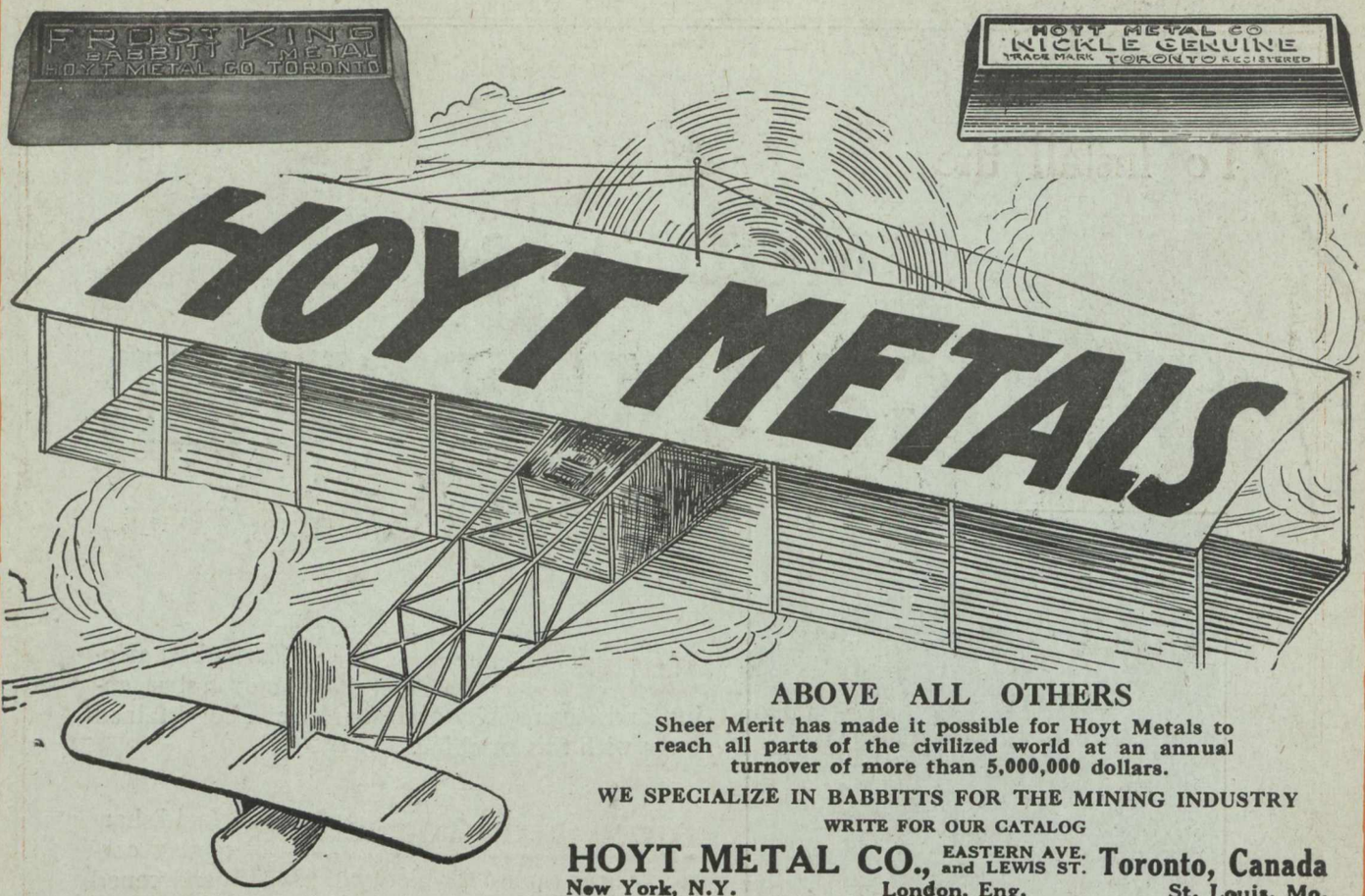

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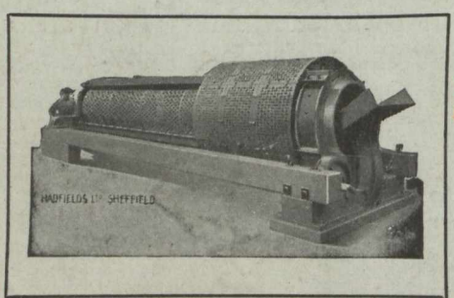

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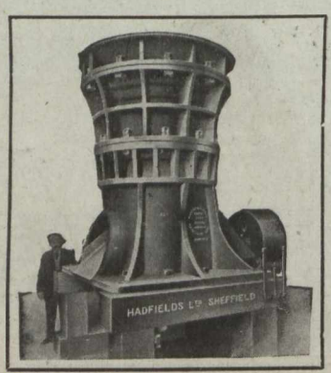

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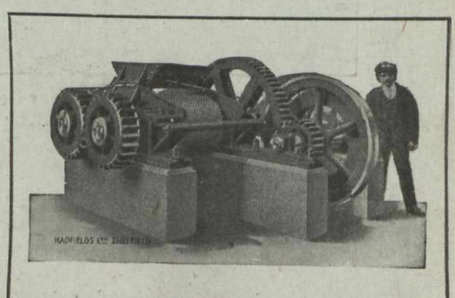

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