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CONTENTS, JULY 1:

Editorials—Better wages and more work	217
—Developing mineral resources of the Empire	218
—Gold is needed	218
The Blairmore coal area, Alberta	219
Copper mining and refining in British Columbia, by E. Jacobs	220
First shipment of gold from the Rex mine, Manitoba	223
E. & N. coal rights on Vancouver Island	224
"Foghorn Macdonald on life in New York and London	225
The bounty on zinc	226
Personal and General	227
Special Correspondence	228
Markets	232

KEEP THE COAL CLEAN.

The Fuel Administration of the United States in enforcing its instructions regarding the proper preparation of coal. Six coal mines have been shut down for disregarding the clean coal regulations. Operators of many mines have been censured and warned to improve their methods. Good results are being obtained as a result of the regulations.

As the value of fuel is greatly depreciated by careless preparation, an increase in tonnage produced is worse than useless, if the increase is obtained by a corresponding increase in the percentage of waste in the coal shipped. "Keep the coal clean," should be the slogan of operators and miners alike.

Decrease in anthracite output in the United States in May was confined to grades used for domestic purposes, production of steam coal from culm banks having increased. Shortage of labor is said to be responsible for the decrease in freshly mined coal, inroads being made on labor by munition plants and other war industries in mining districts.

BETTER WAGES AND MORE WORK.

Better wages and more work, seems to be the solution of the labor problem. There is no doubt that most miners could do more work per day if they wished to and if they considered that they were getting a fair share of the profits derived from their labor. At present high wages are being paid; but there seems to be good reason to doubt whether it will be possible to continue without serious readjustment after the war. It would be very unfortunate if it should be found necessary to lower the wages and it is well to look to other means for keeping down the cost of production.

The mineral resources of Canada will be more rapidly developed if we can make mining more profitable to all who are engaged in it. It is not enough that a few companies should be very successful. Every man who works in or about a mine or metallurgical plant should have an opportunity to earn a decent living and to acquire a reasonable portion of the things that will make him and his family happy and will enable his children to obtain a good education. He should be recognized as a very useful citizen who is contributing directly to the wealth of the nation by his labor. His living conditions should not be only satisfactory to himself, but such as to attract young men from other occupations. We believe that this would be possible to a very great degree if by mutual understanding it was agreed that he would exert himself to do more work. If miners could be induced to work reasonably hard for eight hours a day, they could very well be paid better wages than have been possible in the past.

With regard to this, Mr. Wm. Frecheville says: "With regard to cost (of production), the efficiency of labor plays a very important part. Probably most metal mine managers would agree with the view that their workmen could, without hurting themselves, accomplish more than they do. There is a general feeling that the men, even when working on contract, do not let themselves go to the extent that they might, the explanation being that they often fear that if they do more, and in consequence make a good thing out of their contract, the price would be cut or reduced for the next monthly contract, with the result that they would have to work harder for the same wage. There is the further fact that the present system does not seem to bring out any community of interest between the men and the mine, and we all know how better results can, as a rule, be got by anyone who is interested in the result and works with his head as well as with his hands. These difficulties exist no doubt in other industries, and in some perhaps to a greater extent than in the metal mining industry, and they probably constitute the principal industrial problem awaiting solution in the after-war days, when we hope many of the difficulties and shortcomings we are now keenly conscious of will be seriously dealt with. On the one

hand are the men holding back, and on the other side increased working costs, and opportunities of production are not being utilized to the full. To the writer it seems that probably the key to the situation lies in the fact that the men who do the work are not, perhaps, obtaining their fair share of the wealth they produce and of the good things that are going. Starting from that proposition it should not be beyond the bounds of human ingenuity to devise some way by which, in conceding higher wages, more strenuous and intelligent labor should be obtained."

Greater effort on the part of the miner is fortunately not the only way in which costs can be reduced; but unless the worker is willing and industrious, attempts to increase efficiency are sometimes disheartening. It is not uncommon for managers to encounter opposition when they introduce improved methods and machinery which would allow the miner to get more work done without increased effort. It would be well if the workmen could be made to understand that their co-operation in increasing efficiency makes it possible for their employers to pay better wages. One of the easiest ways to make them understand this is to promptly reward those who earn more. There is sometimes difficulty in doing this, but where it is possible, as is the case under the contract system, it is very illuminating.

It is not enough, however, that the miner should be induced to use improved methods and machines. He should be made to see that it is to his advantage to devise improvements himself. He should understand that while inefficiency on his part helps to keep down the wages of both himself and his fellow workers, the industrious and intelligent worker is helping to increase wages as well as the profits of those who have supplied the capital which makes it possible to carry on the work.

DEVELOPMENT OF THE MINERAL RESOURCES OF THE EMPIRE.

At a meeting of the Royal Society of Arts, held in London, in February, Wm. Frecheville read a paper on the development of the mineral resources of the British Empire. Mr. Frecheville is a distinguished mining engineer and copies of his paper which have recently reached Canada will be read with great interest here. Lines of action which would aid development are clearly pointed out in his paper. Metals for construction and money to pay our debts will be needed in very great quantities after the war and it is incumbent on us to provide for the more vigorous development of our natural resources.

"Looking at the Empire as a vast estate, large parts of which still await exploration and development, the first and obvious step would be to find out what we have. While encouraging exploration and prospecting by others, it is suggested that the estate owner should himself take some active steps in the matter, and by means of the examination of the country by skilled men, ascertain the importance of known mineral dis-

coveries, the most likely ground for prospecting and generally the wisest policy to pursue to encourage the mining industry for the good of the community. In our Crown Colonies this should be done under the control of the Home Government. In other parts of the overseas Empire, the Governments of the great Dominions already give much attention to the development of their mineral resources; but the territories they administer are so huge there is ample scope for doing more if the means were available."

With regard to the great scope for expansion of the mining industry in Canada Mr. Frecheville says: "The mining centres are scattered through the known and prospected belt of country stretching from east to west, and the fact that they are absent on the little known and unprospected great northern country is in all probability not due to the non-existence of mineral deposits, but to their not having been found."

Referring to the difficulty of finding money in Canada to finance mining enterprises, Mr. Frecheville said that a very large copper deposit had recently been found in Manitoba, which had been proved to contain six or eight million tons of ore of a low grade, but which could be profitably worked on the huge scale on which Americans work their copper mines. \$5,000,000 is required to work this mine; \$2,500,000 for a railway and \$2,500,000 for a plant; but Canadians cannot provide the money. The Government was being asked to do a good deal and if they rose to the occasion they might do it. The South African Government is now offering mining areas on the Far Eastern Rand to tender, the Government taking a share of the profits on a sliding scale. Mr. Frecheville suggested that other parts of the Empire might well adopt the system.

GOLD IS NEEDED.

Since the selling price of gold remains fixed and the cost of mining and treating the ore has naturally risen during the war, it must be obvious that the present is not the most profitable time to mine gold. Anyone who imagines otherwise should consult the recent records of gold mining companies.

Since gold is not directly used in the manufacture of munitions, it is not surprising that a considerable portion of the public may be of the opinion that the war could be carried on just as well if the gold mines were closed down, and the miners employed on work that is commonly recognized as essential. As was pointed out by Mr. Hennen Jennings in an article recently published in the "Journal," the production of gold is necessary and every effort should be made to encourage it. With the public indifferent, we must depend upon the leading ability of governments. It is of interest to note that at least one leader in the United States government has strong views on the advisability of encouraging gold production. A Boston newspaper quotes Secretary McAdoo as saying:

"I fully appreciate that with rising cost of raw material and labor, and with a fixed value for their output, the gold miners of the world are facing difficul-

ties. I should be sorry, however, if for this reason there were any relaxation in the effort to produce gold. At no time has this country so much required the largest possible production of gold as at the present. Next to food and ammunition, gold is one of the most needed war essentials. The man or the community that maintains or increases the production of gold in the face of difficulty and discouragement is performing a patriotic service no less than the more obvious, but not more useful, services that are more in the public eye."

THE COAL SITUATION IN WESTERN CANADA.

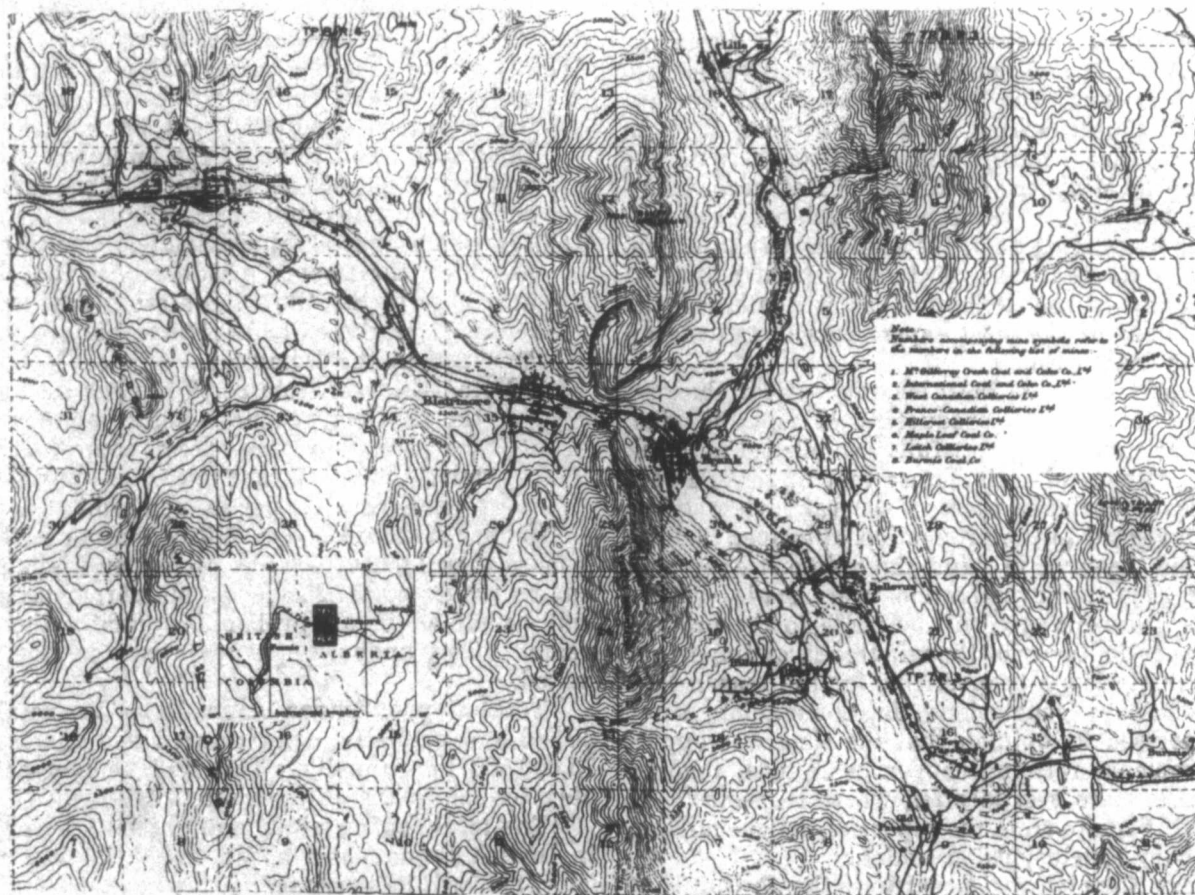
Mr. Grant Hall, vice-president of the Canadian Pacific Railway Co., has issued the following statement in regard to the coal situation in Western Canada:

"The fuel controllers say that the prospects for a supply of anthracite coal is no different from a few

tiful; when there was no abnormal demand for it for extraordinary uses; when there was no doubt of the supply from the United States. Now all precedents have been wiped out and I think the people owe it to themselves to seriously consider the situation and get in their supply, thus relieving the tension on railways and mine owners, but most of all on themselves."

THE BLAIRMORE COAL AREA, ALBERTA.

Alberta possesses by far the most extensive coal areas of any province of Canada—in fact, the greater part of the south-eastern section of the province seems to be underlain by coal. D. B. Dowling has estimated the known and mineable coal areas at not less than 30,000 square miles. On the eastern slopes of the Rocky Mountains the coals vary in character from bituminous coking and non-coking coals to anthracite. There is comparatively little anthracite; but much good bituminous coal.



The Blairmore Coal Area, Crownsnest District, Western Alberta

months ago and with this in view it seems to me imperative that consumers of coal should heed the warning. Speaking strictly from a railway point of view I would like to remind the people that prospects are very good, taking the time of year into consideration, for a good crop and you know how important it is that the crop be moved on time. Even a normal grain crop takes all the men and equipment that can be mustered when men are plentiful and with the scarcity that now exists it can easily be computed how impossible it will be to move both grain and coal in the same direction and give satisfaction to both.

"There have been times in the past when this company has helped out the domestic coal situation in the West by allowing dealers and others in time of severe weather to use from our stocks on hand, but I would like to remind all concerned that such action was in the days when coal was what one might well call plen-

The Geological Survey, Ottawa, has just published a topographical map of the Blairmore area. We reproduce part of it on this page on a much reduced scale. The location of the area near the Alberta-British Columbia boundary is shown on the small inserted map at the left.

This area is part of the Crownsnest Pass coal area, part of which is in British Columbia. It is generally referred to as the Crownsnest Pass District, Alberta. The mines operating here produced during 1917, 1,193,313 tons of coal. Mr. John Stirling, chief inspector of mines of Alberta, says that if these mines had been in operation fairly steadily, without increasing the present amount of development or men employed, the output might have been 1,779,888. If Western Canada needs coal, this area can supply much larger quantities than the demand last year warranted.

Copper Mining and Refining in British Columbia

By E. JACOBS.

It will be remembered that about three years ago there was appointed by the Minister of Militia and Defence "a Commission to Investigate the Feasibility of Refining Copper and Producing Metallic Zinc on a Commercial Scale in the Dominion of Canada." The members of that commission were: Hon. Lt.-Col. David Carnegie, M. Inst., C.E., Chairman, Ordnance Advisor to Shell Committee; Dr. Alfred W. G. Wilson, Chief of Metal Division, Mines Branch of Canada Department of Mines, Ottawa, and Dr. A. Stansfield, Professor of Metallurgy, McGill University, Montreal. The Commission was formed after several conferences, concerning the supply of copper and zinc for the British War Office contracts, with the Minister of Militia and Defence, General Hughes; the Chairman of the Shell Committee, Brig.-General Bertram; Mr. David Carnegie, Ordnance Advisor, and finally with Sir Robert Borden, the Prime Minister. The investigations of the commission covered a period from March to August, 1915. In 1916 the Imperial Munitions Board, Ottawa, with the approval of the Minister of Militia and Defence, authorized the publication of the report which was the outcome of the investigations of the commission and which, as stated by its chairman, included "information of value to many in the Dominion, as it contained the mature opinions of the most expert men in Canada on the subjects dealt with."

It is thought probable that, leaving out for the present the subject of the production of metallic zinc, which, by the way was successfully established at Trail, B.C., on a commercial scale before that of refined copper was also undertaken there, a general review of the situation in regard to the production of copper in British Columbia, keeping in mind the opinions expressed during the time the investigations were made, will be of interest. No reference will be made to the production of copper in Ontario, though this is of important and increasingly large proportions, for the reason that in its preliminary conclusions the commission, after having expressed its opinion that the time was opportune to commence refining copper in Canada, favored Trail, B.C., as "the best location where to begin." It may be well to quote from the report of the commission its preliminary conclusions, as under:

"Preliminary Conclusions Regarding the Refining of Copper in Canada.

"(1) We are of opinion that the time is opportune to commence refining copper in Canada.

"(2) The best location where to begin refining copper is, in our opinion, at the works of the Consolidated Mining and Smelting Company of Canada, Trail, B.C., because:

"(a) The works are owned and operated by Canadian capital.

"(b) The company is free to commence refining copper immediately, as it has no binding contracts with companies in the United States, such as exist for at least two years between the copper producers at the coast and the refineries in the United States.

"(c) The companies at the coast are all controlled by firms in the United States.

"(d) The Consolidated Mining and Smelting Company of Canada now possesses an efficient staff capable of managing a copper refinery.

"(e) As the electrolytic refining of lead has been carried on successfully at Trail for some years past the company is in a more favorable position to produce electrolytic copper more economically and at less initial cost of plant than any of the companies on the coast.

"(f) The establishment of a refinery at Trail would in no way interfere with the subsequent establishment of a refinery at the coast, should this be found advisable.

"Advantages of Refining Copper in Canada:

"(1) The establishment of a copper refinery in Canada means the beginning of a new industry, which will lead to the manufacture of copper products now imported from the United States and elsewhere, such as wire, bars, sheets, tubes, etc.

"(2) It means that the money value of the labor now enjoyed by the United States, in manufacturing the imported products, could be kept within the Dominion. The value of the imported products is upward of \$5,000,000 annually. This amount does not include the value of brass imported.

"(3) It means that as approximately one-third of the value of the copper produced in the Dominion now goes to the United States to pay the cost of refining, freight, and marketing, that amount would be saved to the Dominion.

"Note.—It costs from 8c to 11c per lb. to produce the finished product—ingot copper ready for the manufacturers—from copper ore in the mine. The market price of copper usually varies from 12c per lb. upward.)

"Copper Available.—Dr. Wilson estimates that there is more than 1,000,000,000 lb. of copper available in the known ore deposits of British Columbia, most of which will be mined in all probability during the next 15 years. The undeveloped resources cannot be estimated.

"Total Copper Mined Annually.—The total copper mined and partially manufactured in Canada is about 75,000,000 lb. annually. This will be increased probably to 100,000,000 lbs. within two years.

"The total copper mined and partially manufactured in British Columbia is about 45,000,000 lbs. annually. This, too, will be increased within the next two years."

It is of interest to note that Dr. Wilson's prediction as to an increase in the production of copper has been amply realized. The output of copper in the Dominion and British Columbia, respectively, during the last three years is shown in the following table:

Year.	Whole of Canada. British Columbia.	
	Lb.	Lb.
1915	100,785,150	56,692,988
1916	117,150,028	63,642,550
1917 (estimated)	108,860,358	57,717,535

(Note.—The foregoing figures are those of the Dominion Statistician, who obtains actual production of metallic copper.)

British Columbia Copper Producers.

The larger producers of copper from mines in British Columbia are the Granby Consolidated Mining, Smelting & Power Co., Ltd., operating in both the Boundary and Coast districts; the Britannia Mining and Smelting Co., Ltd., in the Coast district; the Canada Copper Corporation, Ltd. (formerly the British Columbia Copper

Co., Ltd.), in Boundary district, and the Consolidated Mining and Smelting Company of Canada, Ltd., in Rossland camp, Trail mining division. For a number of years the Boundary district produced more copper than any other in Canada, but in quite recent years its output has fallen off considerably while that of the Coast district of British Columbia has increased until now the latter is a long way in the lead in the province, with every indication of making further increase, while the Boundary district is showing a steadily diminishing production. In fact there does not seem to be a reasonable prospect of any early large increase in the production from interior district mines, not at any rate until the Canada Copper Corporation shall be making a considerable output of ore from its big mine on Copper Mountain, in Similkameen district, which may not be before the close of next year.

Three Principal Producing Districts.

Reverting to the report of the commission, Dr. Wilson's "Report on the Possibility of Producing Refined Copper in Canada," dealt first with the copper resources of the Dominion, and in this connection he mentioned three principal producing districts, namely (a) Kootenays, (b) Boundary, and (c) Coast. The situation to-day is different, in that the output of copper from mines in Kootenay and Boundary districts may be expected to be smaller in 1918 than in any year since it attained to considerable proportions in these districts. The chief reasons for this are that the Consolidated Company has quite lately very much reduced, if not entirely discontinued for the time being, production of ore at its mines in Rossland camp, in West Kootenay, while in Boundary district the smelting works of the Granby Co. and the Canada Copper Corporation, respectively, are not operating at full capacity, nor does the ore these companies are now mining contain as high an average of copper as that of a few years ago from the same mines. With only one company in Rossland camp now maintaining its normal production, namely, the Le Roi No. 2, Ltd., operating the Josie group of mines, from which an output of between 500,000 and 700,000 lb. of copper may be expected this year, with little copper ore being mined in Nelson mining division this year; with decreased tonnage and a smaller copper content in ore from Boundary mines, and with the Iron Mask, near Kamloops, being the only other mine worth mentioning among the smaller producers of copper in the interior districts, it seems evident that there must be expected a serious falling off in the output of copper from these districts this year.

As to the Coast district—there does not appear to be good reason to look for any appreciably large increase in output except the Granby Company shall make it. The Britannia Company is reported to have decided not to continue the policy of considerable expansion of operations planned earlier. So far as known, there is little promise of much production from smaller mines, neither in Howe Sound region nor on Texada and Vancouver Islands. Progress is reported from two mines in Sooke district, Vancouver Island, but their output cannot be large until much more ore shall have been developed. In Quatsino division of Vancouver Island, the Coast Copper Co., controlled by the Consolidated Mining and Smelting Co., has done much development work, but until a railway shall have been constructed to provide transportation facilities and arrangements made for reduction of the ore, no production of copper can be expected from that source. Neither is there assurance of much improvement soon

as regards copper mining properties on Moresby Island of the Queen Charlotte group, nor of any other part of the upper Coast district, except it be in the district about Observatory inlet outside of the parts controlled by the Granby Co. In Omineca division, in camps within reach of the Grand Trunk Pacific railway, there are copper properties, but the only one yet sufficiently developed to make a production of more than an occasional small shipment is the Rocher de Boule Copper Co.'s mine, which has already attained to a production of between 1,000,000 and 2,000,000 lb. of copper in a year.

More Specific Information.

The general situation to-day in regard to the production of copper in British Columbia having been outlined it may be desirable that more specific information be given in regard to the chief producing districts.

Kootenay.—Dr. Wilson stated in his report, concerning the Kootenays, that in 1914 Rossland made a production of 3,779,830 lb. of copper and Nelson 586,764 lb., together 4,366,594 lb. He added: "These are both tributary to the smeltery of the Consolidated Mining and Smelting Company of Canada (C.P.R.) at Trail. The Rossland ores are essentially gold ores; they, however, contain a small amount of copper in the form of a sulphide, not much more than one-half of one per cent., but sufficient to make it feasible to recover the gold by the methods of the copper smelter."

On May 3 "The Trail News" published the following: "One of the contributing causes of heavily curtailing gold-copper ore shipments from Rossland mines yesterday was the heavy mine taxes imposed by the Provincial Government. This, together with the heavy increase in cost of powder and everything else pertaining to mining—and the further fact that Rossland ores contain but a few pounds of copper to the ton, being most in gold value, is understood to have impelled the Consolidated Co. to lay off most of the miners employed in its Rossland mines. A few will be kept at development, and some shipments of ore will possibly be made—enough, perhaps, to keep one copper furnace at the company's smeltery at Trail in operation, together with the shipments of high-grade copper ore that are being received here from various custom sources, thus also keeping the copper refinery in operation. . . . At the Trail smeltery, all the copper furnaces but one have been blown out." The notice issued at Rossland by the Consolidated Co. reads as follows: "Large increases in the various items entering into the mining and smelting of Rossland ores, such as wages, cost of explosives, coke, steel, general mine and smeltery supplies, without adequate compensation in value by way of increased metal prices, coupled with increased taxation, has made it necessary for the company to suspend shipments from its Rossland mines indefinitely. An endeavor will be made to keep a small force on development work, and to place the remainder of the company's Rossland employees at the smeltery, the Sullivan mine, Kimberley, and other lead-silver properties of the company." It will thus be seen that the production of copper in the Kootenay districts is likely to be very small this year, with only one of the five copper blast furnaces at Trail being operated.

Boundary.—As to the Boundary district—in the Mines Handbook for 1918, it is stated concerning Granby Co.'s mines, that "Ore now being mined at Phoenix yields slightly less than 15 lb. copper and about 84c gold and silver per ton. . . . On the Gold Drop only 80,000 tons of ore remains to be extracted, and the Snowshoe, Curlew, and Monarch claims are almost worked out.

Practically all reserve tonnage is in the Ironsides." District newspaper statements are to the effect that only four of the eight blast furnaces at Grand Forks are being regularly operated. Ore reserves in the Granby mines in Phoenix camp were estimated to be about 3,576,000 tons as at June 30, 1917. Total blast-furnace capacity at the Granby smeltery at Grand Forks is stated to be 1,440,000 tons of ore per annum. There are three electrically-operated converter stands with ten 84 x 126 in. shells of barrel type; product is blister copper of 98.5 per cent. tenor, containing an average of 18 oz. silver and 4 oz. gold per ton.

The decreasing production of the British Columbia Copper Co., now the Canada Copper Corporation, is indicated by the following yearly output figures: In 1912, 11,146,811 lb. copper; in 1913, 8,296,902 lb.; 1914 and 1915 were broken years, with small production; in 1916, 5,196,239 lb. Figures for 1917 are not at hand. It will be seen that production in 1916 was less than one-half of that in 1912. Weed refers to the company's Mother Lode mine as being "now nearly exhausted," and adds, "It was only possible to operate the smeltery profitably because of the high price of copper." The company has, however, in its Lone Star property, situate just across the International Boundary line, in the State of Washington, approximately 300,000 tons of ore developed by drilling and other work, of which quantity it is stated that in April, 1916, 170,000 tons of 1.60% copper constituted the ore reserves. Comment made is: "Average assay value of Lone Star ore is higher than that of other Boundary district ores, but ore is silicious and as it contains alumina as well it is much more refractory. Most of the Lone Star ground is still unprospected." The Canada Copper Corporation's smeltery at Greenwood has three blast-furnaces, total capacity more than 2,000 tons of ore a day, but all are not in regular operation. In the converter-house there are two stands with 84 x 126 in. shells taking matte with from 25 to 55% copper and producing blister of 99 to 99.5% copper, containing 20 to 50 oz. silver and 5 to 10 oz. gold per ton.

Similkameen.—In strong and favorable contrast to the situation at the Canada Copper Corporation's Mother Lode property near Greenwood, is that at its Copper Mountain mine, near Princeton, Similkameen district. Weed states that the ore reserves here are estimated at 10,000,000 tons developed ore and 2,000,000 tons probable ore; assay value, 1.74% copper and approximately 35c a ton in gold and silver. "Careful geological study suggests the possibility of eventually doubling the present tonnage of assured ore." A published estimate of future operations is that with treatment of 1,000,000 tons per annum, a yearly output of 27,400,000 lb. of copper will be made. The life of the property, based on present ore reserves, is estimated at twelve years. A contract has been let for the construction of a railway about 13 miles in length from Princeton, and completion by the middle of 1919 is expected. Meanwhile, the erection and equipment of a 3,000-ton a day concentrating mill is to be proceeded with. Concentration will include the flotation process, a 40-ton experimental mill having satisfactorily demonstrated its suitability to Copper Mountain ore.

Coast.—Information supplied to Dr. Wilson was in effect that normal production of the Britannia mines, in Vancouver mining division, was 15,000,000 to 18,000,000 lb. of copper per annum and that when work under way in 1915 should be completed, production would be about 25,000 lb. per annum. It is probable

that the higher output has now been reached, but no official information to this effect has been received for use in this review. Higher costs of labor and materials, aggravated by increased Provincial Government taxation, are reported to have influenced the management of the Britannia Co. in the direction of curtailing the intended expansion of operations. Ore reserves were estimated to have been at the beginning of last year as follows:

Broken ore in stopes	919,322 tons, aver. 3.08% copper
Total ore developed	6,462,780 tons
Probable ore	6,756,350 tons
Possible ore	4,616,050 tons

Total 18,754,502 tons, aver. 1.97% copper

The Britannia ships selected ore and concentrate to the smelting works near Tacoma, Puget Sound, Washington. Figures for 1917 have not been received, but for 1916 they were: Product shipped, 55,186 dry tons. Average assay: Gold, 0.014 oz.; silver, 1.67 oz. to the ton; copper, 14.76%; zinc, 3.22%.

There is little to add to what has already been stated relative to the smaller mines in the lower Coast district, except that the normal production of the Marble Bay mine, on Texada island, is about 1,000,000 lb. of copper a year, though in some recent years its output has not reached that quantity. The ore is sent to the Tacoma smeltery.

While there is nothing very important to state concerning copper mining on Vancouver Island, it may be of interest to mention that the Tyee smeltery at Ladysmith, recently purchased by the Ladysmith Smelting Corporation, has two blast-furnaces, one 42 x 120 in. 200 tons, and one 48 x 160 in., 300 tons daily capacity. It has not yet been found practicable, though, by the present owners, to obtain sufficient ore to admit of operating except but for short periods, intermittently.

Progress in Copper Refining.

Colonel Carnegie was gracious enough to inform the Minister of Militia and Defence that the report of the commission of which he was chairman "contains the mature opinions of the most expert men in Canada on the subjects dealt with." As, however, a considerable proportion of those who busied themselves in gathering information for the benefit of the commission were laymen with but little knowledge of the subject of copper refining, it is not surprising to now find that their "mature opinions" have not since been realized. Even some of those who might have been fairly expected to be nearer facts in their forecast proved to be not entirely dependable. For instance, one well-known man, general manager for a large mining and smelting company, replying in January, 1915, to an inquiry from the mining committee of the Vancouver Board of Trade, is quoted in the report of the commission as having given reasons not favorable to the establishment of a copper refinery in British Columbia, closing his letter as follows: "For these reasons I am of the opinion that it is premature to consider the question at the present time." And yet before the close of the following year the Consolidated Mining and Smelting Co. had undertaken to carry into effect the establishment of an electrolytic copper refinery, and has since operated it successfully. There is an old adage which seems to have been lost sight of, namely, "never prophesy unless you know."

The production of electrolytically refined copper at Trail is now no longer a novelty, but is regarded as an ordinary part of the accomplishments of the metallur-

gical staff of the Consolidated Mining and Smelting Company, just as has for years been the production of refined lead, silver, and gold, and latterly, that of electrolytic zinc. Thus it has proved the practicability of establishing the industry of copper refining in British Columbia. Its own supply of blister copper has been augmented by the addition of that made at the smelting works of the Canada Copper Corporation at Greenwood, but there does not appear to be a present prospect of the output of the Granby Co. from its Grand Forks smeltery being also obtained. The outlook for a much larger supply from interior districts, therefore, so far as known to the public, does not just now seem to be favorable. The Granby Co. will no doubt continue for some time to come to ship its blister copper from its Grand Forks Smeltery to the refinery of the Nichols Copper Co. of New York, with which it has a contract.

Nor does there seem to be good reason to look for the establishment of a copper refinery on the coast of British Columbia in the near future, unless it shall be undertaken by the Granby Co., for outside of the copper production of that company and the Britannia Mining and Smelting Co. there is not likely to be any considerable quantity of copper available for refining purposes after allowing that the last mentioned company is under contract to ship to the Tacoma smeltery which already has its own copper refinery established, for four or five years longer. It may be that sources of copper supply not at present known to the writer may a little later become available, but there does not at the present time seem to be grounds for any other conclusion than that there is no warrant for expecting the copper refining industry to be established on the

Pacific coast of Canada in the near future, unless it be by the Granby Consolidated Mining, Smelting and Power Co. in connection with its big smelting works at Anyox, Observatory Inlet, B.C.

CANADIAN COLLIERIES.

Mr. Henry S. Fleming, Chairman of the Executive of the Canadian Collieries (Dunsmuir), Ltd., who recently visited Victoria, B.C., deprecated criticism which has been leveled against the Dominion Government for the disallowance of the Settlers Rights Amendment Act, 1917, declaring that the legislation was confiscatory, and that its effect would have been to give settlers coal lands on the security of which the company had raised and invested \$16,000,000 on Vancouver Island. He said that the company gave \$11,000,000 to the E. & N. Railway Company for the coal lands and mines and since had put \$5,000,000 into development. This money had been raised in Great Britain and United States financial centres and any legislative interference with the property thus mortgaged would result in shaking confidence in British Columbia securities.

CAN EXPORT MANGANESE ORE.

Permission has been secured from the Dominion Government for the export from Canada to the United States of 5,000 tons of manganese ore. Hon. Wm. Sloan, Minister of Mines, of British Columbia, has been advised of this action by Ottawa. The license applies particularly to the Curle property, near Kaslo, B.C., which has been opened recently and already has a considerable quantity of the mineral ready for shipment.

The Canadian Consolidated Mining & Smelting Co. is said to have acquired under bond a Fognhorn ~~our~~ heretofore 8,600 tons at Sturgeon Landing have been cleaned ty situated about 20 miles north

GOLD SHIPPED FROM REX MINE, MANITOBA.

The Pas, Man., June 14.—The first shipment of gold from the Rex mine, which is being developed by the Mines Exploration Syndicate, of which Makeever Bros. are the managers, left here last Monday in care of the Bank of Commerce for the mint at Ottawa. It consisted of 300 ounces, valued at \$6,000, and was the result of the mill's first month's run.

Walter Neal, the engineer in charge of the property, is to be congratulated on having got the mill in operation in the short space of time of 18 months, and having overcome many obstacles in the prosecution of the work incidental to the developing of a property where the means of transportation were so difficult to overcome.

Makeever Bros. have pushed work ahead on the Rex property energetically, and the development of the district will be greatly stimulated by their efforts. This enterprising firm, through its representative, Walter Neal, has now taken over the management of the Northern Manitoba Mining and Development Co.'s property, just south of the Rex at Herb lake. A crew of men are already at work, in charge of Archie Close as foreman. They are enlarging the shaft to two compartments and retimbering. As soon as this is done sinking will be resumed and work pushed with energy.

Returns for a shipment of six tons of ore from the N.M.M. & D. Co. property, just received from Trail, B.C., show a value of \$103.10 per ton in gold.

Application has been made to the Lieutenant-Governor for power to increase the capital stock of the Northern Manitoba Mining & Development Company, Limited, from \$250,000 to \$1,000,000, such increase to be divided into 750,000 shares of \$1.00 each.

ANOTHER GOLD DISCOVERY AT HERB LAKE.

The Pas, Man.—A sensational discovery of gold has been made by Paul Gasse, who located several claims on a dyke situated at the north end of Herb Lake, and which he has traced about 4,500 feet. It shows a width of from 50 to 100 feet and pans gold freely. Samples show an assay value of \$9.00.

In addition to the large dyke, about half a dozen veins of widths varying from 6 to 24 inches have been found. These are all heavily mineralized. All these finds have been made in the granite or gneiss formations at the north end of the lake, which have hitherto been shunned by prospectors as being of little use. About thirty claims have been staked around the original discovery. Amongst the lucky ones are Edgar Stuart, W. S. Brady, Marshall Ballard, O. Badger, Julian Campbell, Mike Hackett and others. Apex Extension claim, owned by J. C. Little, of this town, and Bob Hassett, well known prospector and ex-army man adjoins the new find.—The Pas Herald.

SHIPPING COPPER ORE FROM THE PAS.

The Pas, Man., June 14.—The Ross Navigation Company is having great difficulty in navigating the Big Stone rapids and waters of Cumberland lake, and the ore from the Mandy mine is very slow in coming down so far. But, as the water should now start rising, it is expected that in the course of a few days shipments will come through regularly. The C. N. R. spur is now completed, and everything in readiness to handle the barge loads of ore as they arrive.

Two cars of ore were sent out by C. N. R. on Monday last to the Consolidated Mining & Smelting Co. at Trail, B.C., and the shipments will be continued until

WHO OWNS THE COAL ?

The action of the Dominion Government in disallowing the British Columbia Provincial Government's Statute of 1917, known as the Settlers' Rights Amendment Act, has created a furor in British Columbia, because it has the effect of nullifying the claim of early settlers on what is known as the Esquimalt & Nanaimo Railway Co.'s land belt to the coal rights within that section of Vancouver Island, an area of 3,296 sq. miles, and because it confirms the title of the Canadian Collieries, Ltd., to the greater part of this coal. Interest is strengthened owing to the fact that the Granby Consolidated Mining & Smelting Co. purchased from settlers, who had obtained title under the Provincial statute, since vetoed by the Canadian Government, two blocks of coal land, which it has been engaged in developing and on which already it has spent about \$300,000. The company, therefore, finds itself in the position of having made a very considerable investment on property, the title to which, to put it mildly, is questioned. The importance of the issue may be better appreciated when it is stated that in a report made by Mr. B. D. Dowling, of the Canadian Geological Department, in 1915, the actual reserve of bituminous coal within this tract of land was placed at 1,060,000,000 tons.

Without going into the history of the controversy, as between the E. & N. railway company and the settlers, which extends over half a century and is somewhat intricate, it may be explained that the company came into possession of this block of land in 1884 as a subsidy for the construction of the railroad. The Government of British Columbia, anticipating the granting of such a subsidy, had reserved these lands in 1873, two years after the province became a part of the Canadian Confederation. Between 1873 and 1884 quite a number of settlers took up parts of these lands, in spite of the reserve which they claimed, and still claim, was not good in so far as it applied to the undersurface, or coal and other mineral rights. When the company got the block, it also was specified that it should have "all coal, coal oil, ores, stones, clay, marble, slate, mines, minerals and substances whatsoever thereupon, therein and thereunder." Thus there developed a direct issue between the early settlers and the railway company which became particularly acrimonious when it became clear that the coal resources were rich and extensive. In 1904, the British Columbia Government recognized the property rights of the settlers by giving them a year in which to record their claims. Many availing themselves of the opportunity, got provincial title to the coal, which the railway company fought through the courts and in Ottawa, without success. Finally, the company agreed to leave the settlers in peace on the Provincial Government giving 20,000 acres of other public lands in lieu of that alienated. Then it was represented by many other landowners that, not understanding the position, they had failed to make their application, and that it was not just to them that their claims, which were sound, should be disregarded. Consequently, in 1917, the present British Columbia Government passed the Act, since disallowed, which gave a further period for the registration of applications to coal rights in the belt. The gates thus thrown open, 179 applications were made, covering, according to a statement issued by the company, 33,000 acres, of which 90 per cent. of which refer to coal land. "The greater part of which, it is believed"

seams of commercial value." Some of these were investigated by the Provincial Government and a number allowed, and it is the latter which the Granby Consolidated Mining & Smelting Co. purchased and to which reference has been made.

One of the strong arguments of the Canadian Collieries (D) Co., in its petition for disallowance, was that, having purchased property, and mines, and the greater part of its coal rights from the E. & N. Company, it had pledged it as security in the issuance of a bond issue of £2,054,800 and in the sale of preference shares to the value of \$5,000,000. It was maintained, therefore, that any legislation which permitted the estrangement of any part of this property would have the effect of damaging the credit of British Columbia in the money markets of the world.

Development of Coal Properties by Granby Company.

In view of the position in which the Granby Consolidated Mining & Smelting Co. finds itself through the Dominion Government's attitude on the settlers' rights issue, it is interesting to show what it has done on the coal lands, the title to which now seems doubtful. A standard gauge railway has been built into the mine site, a distance of a mile, and part of it has been laid through sandstone rock, necessitating heavy cuts at places. At the end of the spur, the necessary grading for the different tracks at the mine yard is completed and some of the tracks are laid. A temporary tippie has been constructed at the mine yard, a little to one side of where the main tippie will be erected, and all preparations are made for the shipment of coal at any moment. Some seven hundred tons is lying at the mine mouth for shipment. Fifty acres of land have been cleared and graded for mine buildings and dwellings to accommodate employees. Nineteen substantial dwelling-houses are under construction and almost completed and foundations are in for a large number of permanent mine buildings, including office, mess house, store, lamp house, etc. A good substantial saw-mill has been erected capable of turning out 12,000 feet per day. A large brick smokestack and foundations for two 250-h.p. boilers have been completed and two sterling water tube boilers are on the ground ready for installation. Three slopes are in course of being driven for. The slope for the manway is now down a distance of 196 feet, and at the face, the coal is 11 feet in thickness and of good quality. At a point 175 feet down, a level has been driven to the right at right angles to the line of the slopes, and places are being driven back from the level to connect with the other two slopes which are being driven from the surface. This level has been driven in a seam which averages 11 feet in thickness, so that it may be said that all three slopes have 11 feet of coal at the faces. \$300,000 has been spent to date on this development and the mine will be ready to ship 300 tons a day within two months and by the end of the year should be producing 700 to 800 tons daily. When the investment at the mines is added to that at Anyox, the company's smelter centre, where by-product coke ovens are being installed, it will total in the neighborhood of \$1,000,000.

Extensive development work is being done at the Florence silver mine, according to F. R. Wolfle, manager and principal owner of the property. The mill has been operating since March 10 with one shift of men and on May 12 two shifts were put on. There are 60 men employed at the mine and mill. Mr. Wolfle expects the shipments of ore from the mill to be about 370 tons.

"Foghorn" Macdonald on Life in New York and London

The July number of "The American Magazine" features the story of Major Neil (Foghorn) Macdonald, who, at the age of 53, enlisted as a private in a machine gun company at Winnipeg in the early days of the war, and who has a distinguished record for service at the front. "Foghorn" has been well known in mining centres in Canada for many years, and he has been an outstanding figure in the Canadian army from the day he enlisted. The story which appears in the "American" will be read with much interest, especially by those who are fortunate enough to know him—and the number of these is great. Unfortunately, it is not permissible to print "Foghorn's" stories as he tells them, for he delights his audiences with the picturesque western language, of which he is a master. Neil is a fighter and no soldier knows better what he is fighting for.

"Foghorn" is an exponent of outdoor life, as will appear from the following reply to an interviewer's questions:

"I haven't got anything against New York. It's a nice-enough village to stay in for about a week. But if you want to come up to the fifty-seven year mark with a relish for food or a fight, you want to live in the open. That's the way I've lived. I can ride and canoe and hunt and tramp. I got up early and worked like the devil. And I went to bed when I was through, and slept like a baby. I ate honest food and plenty of it—when I could get it. My meals weren't always on time, a few days late now and then. But they never missed coming, if I waited long enough. I never wore out an office chair, and I never wore out myself—and that's something not many men of fifty-seven can say if they've lived in towns.

"As for London, or England itself, for that matter, well, if I was a German I wouldn't waste my breath saying: 'Gott strafe England!' The folks that have to live there don't need any more punishment than that. Which is a rotten shame, for they are as fine folks as you'll meet anywhere.

"What they've got in England isn't a climate. It's a calamity! They put a steam radiator in your room, to be sure, but that's just camouflage. If they ever turned any steam into it, the thing would blow up in sheer amazement. They bring you as much coal as you can hold in your two hands—if your hands are small—and they charge you a guinea for making it smoke a little. They don't have any heat in their houses, and they don't wear enough clothes to wad a gun with! They get so used to being half frozen that they think they like it. They'd have spontaneous combustion and catch fire if they ever got really warmed through.

"You can have your London and your New York for all I care. The big West and the North for me! Montana's the place to live. You could build a wall around that state and never have to go outside for anything you wanted except tropical fruits and cotton. A man's word is as good as his bond out there. They began living that way when the courts were few and feeble. And now they've trained up their courts in the way they should go, so that a man's word is still as good as his bond, even if he has to go to law to have it settled."

"Did you get your nickname of 'Foghorn' out there?" I asked.

"I guess so. I've had it so long I don't remember who began it. But I do remember one time I was telephoning from Butte to Missoula, and Bob Smith—used to be governor of Montana—was there and he said:

"'Foghorn, why in hell do you waste money telephoning clear across the state? Stick your head out of the window! They'll hear you just as well.'"

When I asked him about the army rations, we were sitting at a table in the palm room of a New York hotel. Don't mind his verbal trimmings. You wouldn't, if you heard them at first-hand. He gave a scornful glance at the food on the table and replied:

"Hell! I had more to eat in the trenches than a whole gold mine would buy here in New York! This morning, at breakfast, a waiter shoved two little rolls at me—you had to squint twice at the plate to see 'em at all.

"'What's that?' I said.

"'R-r-rolls!' the waiter stuttered.

"'Go to blazes!' I said. 'I could stick one o' them in each cheek and then have room left to whistle through 'em for more. When I get up in the morning, I'm a full-grown man with a full-grown appetite. I ain't a canary bird!'

"Over there in France, I could eat a whole box of bully beef," he went on, "twenty-four pounds to the box—and all I wanted to leave was the cans. They used to feed us well and we bought a lot of junk for ourselves, besides. Fresh eggs? Why, you could buy 'em there cheaper than you can steal 'em in New York!

"It ain't so much what you eat, anyway, as the appetite you bring to it. I walked a hundred and fifty miles once in four days with nothing to eat but half a skunk. It was good, too! Nothing the matter with it except its size. I wished it had been big as an elephant.

"The trouble with you city folks is that your menus are bigger than your appetites. Anyway, it takes all your strength to pick out some little morsel you think you can pay for. Get out into the open, and you won't care what you eat, so long as it's something you can get your teeth into."

NEW BRANCHES OF CANADIAN MINING INSTITUTE.

At the meeting of the Rocky Mountain branch of the Canadian Mining Institute in Fernie, on March 30th, the proposal to form a Northern Alberta branch was favorably discussed. On May 14th at a meeting held at the University of Alberta, it was decided that a branch be formed and the following officers were elected: Dr. J. A. Allan, chairman; N. C. Pitcher, vice-chairman; J. T. Stirling, secretary-treasurer; N. M. Thornton, A. C. Dunn, John Shanks, L. C. Stevens and Thomas Henderson.

The Manitoba branch was formed at a meeting held in the University of Manitoba on April 18th. The officers are Dr. R. C. Wallace, chairman; G. R. Bancroft and T. B. A. Price, vice-chairmen, J. S. De Lury, secretary-treasurer; E. V. Neelands, W. T. Neal, Capt. G. B. Hall, J. W. Harris, F. de Sieres, E. W. Jackson and E. E. Kain.

GRANBY.

The Granby Consolidated Mining, Smelting and Power Company has blown in its fourth furnace at Grand Forks, B.C., according to a report from that place. Three furnaces have been smelting almost as much ore in recent months as has been handled by four heretofore. The fourth was started to provide for an increase in the volume of ore reaching the plant.

THE BOUNTY ON ZINC

Victoria, B.C.—To the operators of the silver-lead-zinc properties of British Columbia the announcement that the Dominion Government has offered a bounty of 2 cents a lb. on all the zinc mined and smelted in Canada is of special interest. Owing to the special conditions this encouragement to the zinc industry will have a direct and no doubt a beneficial bearing on conditions in British Columbia; in fact, there is no doubt that it was designed with a twofold object in view, namely, the forestalling of the threatened closing down of the electrolytic zinc plant at Trail and the maintenance on a shipping basis of the many mines of the Slocan and East Kootenay Districts of British Columbia producing ore of the character in question. There has been some criticism in the Province on the ground that the bounty will be an aid to the Canadian Consolidated Mining & Smelting Company; but those most conversant with the problems which that concern has been and still is facing in dealing with the refractory ores referred to believe that the policy is warranted; that without a subsidy it would be impossible to keep the electrolytic plant going and avoid considerable loss; that the company probably would have been compelled so to do in view of the present quotation on ordinary prime spelter; and that such action not only would have thrown a large part of the Trail plant into inaction, but would have had a similar effect on many of the British Columbia mines which have been largely developed since the beginning of the war.

The refining of zinc in British Columbia dates from the beginning of the war, or rather a very short time afterwards. The story of the phenomenal rise in price of zinc is well known. Great Britain and her allies contracted for all there was available in the United States and quotations soared to 40 and 50 cents a pound. About that time the Imperial Munitions Board, having information regarding the very large bodies of zinc bearing ores of British Columbia, came to the Trail smeltery interests and said, in effect, "If you are in a position to build, equip, and operate an electrolytic zinc plant we will guarantee you a market for all your zinc at 15 cents a pound for a specified number of years." To this the company agreed and the plant was installed. The expense involved went over six figures and, as a result, it became possible to handle successfully the silver-lead-zinc ores of the Province. The company fulfilled its contract with the Imperial Munitions Board. For a time it was supplying zinc at 15 cents when the outside prices were 40 cents a pound and over, but it had the satisfaction of knowing that it was in no way subjected to the fluctuations of the market and, while its understanding with the Board endured, it would not be affected by the metal unloaded by plants which sprang up all over America following the shortage to which reference already has been made.

There came a time, however, and it was not long ago, when the contract expired. Then, if the company was to continue its production, the electrolytic zinc of British Columbia would have to meet in open competition the prime spelter of the Belgian or distillation process. The quotation, which approximately still prevails, 7 cents a pound, according to the company, would not permit the maintenance of the electrolytic plant. It was because of the development of this situation, and the possible consequences of the cessation of its operation, which induced the Dominion Government, from all accounts, to adopt the policy indicated. With the

2 cents bounty the company will be in receipt of 8 cents a pound for its product (at present prices) and, no doubt, with this advantage, will be able to carry on. If the price rises the bounty diminishes and is eliminated entirely when market price reaches 8 cents.

Advocates of the bounty in the Canadian Parliament said that it was not proposed that it should continue for all time. It was a temporary expedient having the object of tiding the industry over a critical stage. Experiments were in hand in relation to the electrolytic process which, it was hoped, would make it possible to recover the zinc at less expense than at present and thus make the balance more even as between the output of the electrolytic and the Belgian processes. It has been stated that the subsidy will operate to the disadvantage of the French Complex Ore Reduction Co., which has been supported financially by the Provincial Government, and which is expected to solve the problem of treating the complex ores of the Canadian West. The answer given is that the bounty applies throughout Canada and that the product of the French Complex Company, in common with that of all others in the Dominion, will derive equal benefit.

By way of further explanation of the Canadian situation it may be said that there now is no special market for electrolytic zinc. The Imperial Munitions Board is not taking it, because it has supplies sufficient to meet all its needs. The reserve was considerably increased when large quantities intended for the Russian Government had been left on the hands of the British authorities.

WILL USE COAL INSTEAD OF OIL.

The possibility of fuel oil being unobtainable from California because of war exigencies is occupying the attention of most of the large industrial corporations of British Columbia which have been dependent on that form of fuel. The Powell River Pulp Company, one of the largest industries of its kind in the Northwest, has arranged to make a rapid change from oil to coal, should developments make it necessary. The same is true of the Whalen Pulp & Paper Mills while Mr. W. P. Hinton, vice-president of the Grand Trunk Pacific Railway Co., who was in the West a few days ago, states that his company has made representations at Washington, D.C., with a view to ascertaining the attitude of the United States Fuel Administration to the reported shortage of California fuel oil. Mr. Hinton explains that his company is particularly interested because of the steamers which it is operating in the Pacific Northwest. It is the intention to reconvert the G.T.P. locomotives using fuel oil on the 800 miles of line westerly to Prince Rupert to coal burners, and in this connection the company is interested in the development of the Telkwa and other Northern British Columbia Collieries, which are tributary to the Grand Trunk Pacific Ry.

An increase of wages has been demanded by employes of the Canadian Consolidated Mining and Smelting Co. in several of its mines. In most instances the miners have accepted the company's offer of substituting the Rossland mines scale in the lead mines, which means an increase of approximately 15 cents a day. Some, however, have refused this proposal. At the Sullivan mine, Kimberley, B.C., an increase of 50 cents a day was asked, which would give muckers \$4.15 a day and miners \$4.65.

WHY THE ELDORADO TALC MINE HAS BEEN IDLE.

Under a Madoe date line, the "Globe" recently published the following:

"The spirit of the British people is splendidly illustrated in a story that comes from the little mining village of Eldorado in the County of Hastings. The people of Canada will be surprised to hear that at the outbreak of war a brother of Sir Douglas Haig, the British Commander on the Western front, was in charge of a talc mine in this county, but they will not be surprised to learn that he went home to do his bit. Notwithstanding that he was sixty years of age, John Haig, elder brother of the Field Marshal, closed up his mining business and left for Britain, where he volunteered as a private. He gave his age as fifty and did not look a day older, it is said, the outdoor life having preserved his youthfulness. He was rejected, but did not give up the idea of going to the trenches. His brother, Sir Douglas Haig, did not know John was trying to enlist, for the latter apparently never told him. At all events, he did not use his influence to get a commission, but by his persistence and personality, he eventually secured a commission as second lieutenant, and is to-day a captain in a British infantry regiment, "somewhere in France." Mrs. Haig crossed the Atlantic with her husband and is nursing wounded soldiers, according to residents of the Eldorado district."

In this connection, it is interesting to note that the president of Eldorite Ltd., the company operating the Eldorado talc mine, is Sir Douglas Haig. His brother, John A. Haig, is managing director and was in charge on the property. The company owns the mine and mill at Eldorado, having taken over in 1914 the property of Canadian Talc and Silica Co.

RE-EDUCATION OF RETURNED SOLDIERS.

Ottawa, June 23.—The party of American technical educators who have been touring Canada, studying the work of industrial re-education of disabled soldiers, returned to Ottawa Friday morning and spent the day in conference with W. E. Segsworth, head of the Vocational Branch of the Department of Soldiers' Civil Re-establishment. They left for New York yesterday. They visited, Ottawa, Montreal, Ste. Agathe, Toronto, Winnipeg, Saskatoon, Edmonton, Calgary.

A member of the party said: "We have worked very hard, and our studies have been most valuable. One great surprise we had was in reference to the scope of the problem. Most of us, owing to having read a great deal of propaganda literature from France and other countries, were inclined to think that this work of re-education was limited to crippled men—that is, men with arms and legs off. We find, however, that these are only a small proportion of the disabled men who need re-education. A gunshot wound in the body or the head may produce a disability which in specific cases impairs vocational efficiency to a greater extent than the loss of an arm or leg. We were much impressed with the work that is being done in Canada, and were especially struck with the wonderful optimism of the men undergoing the training."

VIPOND.

Good ore is said to have been encountered at the 425 ft. level of the Vipond. Assays of samples across the workings show values of between \$20 and \$50 per ton, according to a wire received in Toronto by H. B. Wills.

JAMES DOUGLAS IS DEAD.

New York, June 25.—Dr. James Douglas, for many years president and lately chairman of the Board of Directors of Phelps, Dodge and Co., copper mine owners, died at his home here to-day in his 81st year.

Dr. Douglas was rated one of the foremost metal and mining authorities in the world. He was also a historian and writer of note and a philanthropist. He amassed a large fortune in his business.

He was born in Quebec, Canada, Nov. 4, 1837, was a distinguished graduate of Queen's University, Kingston, Ont., where he graduated in 1858, later receiving the degree of doctor of laws from McGill University for his work in the field of hydrometallurgy. In this he was associated with Dr. T. Sterry Hunt.

James Douglas, besides being an A.B. of Queen's University, studied medicine at Laval University, Quebec, and was professor of chemistry at Morrin College, Quebec. He acquired his first experience in mining and metallurgy through his connection with the Harvey Hill mines and other mining properties in Lower Canada, and left Canada in 1875 to take charge of the metallurgical operations of the Chemical Copper Company, a concern operating at Phoenixville, Pa., where he was first to separate, on a commercial scale, the precious metals from the copper by the electrolytic method of refining.

Dr. Douglas was Chancellor of Queen's University and its most munificent benefactor.

No. 3 MINE, CROWSNEST, RE-OPENED.

No. 3 Mine, Crow's Nest Pass Collieries, in which an explosion causing the death of 34 miners occurred on the 5th of April, 1917, has been opened to the face after fourteen months of work. When the inquest took place a few weeks after the accident only 22 bodies had been recovered. All now are accounted for, the majority having been found as the level was cleared and the last four about ten days ago when the face was reached. It is thought likely that the inquest will be re-opened, the verdict returned last April having been that "death was caused by an explosion, but from the evidence adduced the jury is unable to assign the primary cause." It is claimed by those who have held that the explanation of the disaster would be found when the scene at the most remote working place could be surveyed that the position in which the last four bodies were discovered to an extent bears out their contention. The evidence, however, seems to be conflicting. The men practically died at their posts. In each case their posture was such as would indicate that they had had some warning and had instinctively tried to shield their heads with their hands. One of their safety lamps was broken, and it is argued that this may have happened prior to the outbreak and be responsible for it. Mr. George Wilkinson, Chief Inspector of Mines, has left Victoria to make a careful examination of the mine and of the additional evidence secured.

Mr. E. P. Mathewson, until recently general manager of the British America Nickel Corporation, Toronto, has been appointed consulting metallurgist of the American Smelting and Refining Co., and its subsidiaries. His headquarters will be at the company's offices in New York.

SPECIAL CORRESPONDENCE

BRITISH COLUMBIA.

Mixing Canadian and American Lead Ores in B.C.

The wisdom of the imposition of an import duty on all raw ores coming into Canada was referred to during the closing days of the last session of the House of Commons. There is no doubt that, generally speaking, this would meet with considerable favor in British Columbia. It would not, however, be welcomed by the Canadian Consolidated Mining & Smelting Company, the largest smeltery of Western Canada. The argument against it appears to be very strong, and it is considered doubtful whether, under the circumstances, the Federal Administration would adopt such a policy. In the first place, referring only to this Province and without any special knowledge of the conditions in the other Provinces, the imports of ore from the United States are not sufficiently large to warrant it. Secondly, the importations that have taken place, if the representations of the smeltery officials are to be taken at their face value, have their basis in good sound reason. British Columbia lead ores carry excess zinc. A lead furnace cannot operate with over 12 per cent. zinc in the charge. As the British Columbia ores carry more, they must be diluted and consequently it is necessary to import from Washington lead ores nearly free from zinc. It goes without saying that the Canadian company in order to get this foreign lead must outbid the American smelteries nearer at hand and the former maintain that what they are doing is not to the disadvantage of the Canadian operators, from whom the complaints have come, but rather to their advantage as it is to render possible the treatment of their product.

Will Investigate Smelter Charges.

Within the next few months it is hoped that all matters of difference between the Canadian Consolidated Mining & Smelting Company and the mine operators of British Columbia will be satisfactorily adjusted. The Dominion Government has authorized the investigation of the company's schedule of charges and, in fact, its affairs in general, by a Commission. The personnel has been announced and seems to be satisfactory to all parties. It had been thought that its deliberations would have been in progress before, but delay has occurred owing to the fact that the Commissioners want a more exact definition of their powers. The inquiry, however, is to take place. It is assented to by the company, the management of which has agreed to throw everything open to scrutiny and it is believed that the outcome will be the establishment of a better understanding.

Dr. Stansfield Investigating B.C. Iron Smelting Possibilities.

Dr. Alfred Stansfield, D.Sc., A.R.S.M., F.R.S.C., Professor of Metallurgy at McGill University, Montreal, who has been commissioned by the British Columbia Government to make a special investigation and report on the adaptability of the iron ore of the Province to electric smelting, has arrived in Victoria and has the work in hand. He intends visiting Heroult, California, in the course of his researches, this being the only place in America where ores are being smelted electrically. The conditions at Heroult are believed to be much similar as to the quality of the ores handled and in other respects to those found in British Columbia which will make Dr. Stansfield's personal observations of value in the compilation of his report as to

costs of plant installation, quality and cost of product, etc., officials of the Heroult plant have assured the Canadian expert that he will be given every facility for the pursuit of his work at that point.

Making Pig Iron at Port Moody.

Pig iron is being cast from an electrically operated furnace in British Columbia, the new plant being that installed by the Aetna Iron and Steel Company at Port Moody. The pig is manufactured from scrap and the first runs were very satisfactory. It is a six ton furnace, with a capacity of about twenty tons of pig iron a day. Power is obtained from the Western Power Company of Canada, 1,300 h.p. being used in operation. Contracts for 2,000 tons of pig iron have been obtained, a portion of which will go to Japan.

Canadian Collieries New Plant in Operation.

The Canadian Collieries (D.) Ltd., has practically completed development work in connection with the opening of a new coal mine at South Wellington. The Douglas seam has been struck with a thickness of between 10 and 12 feet at the face. On Monday, the 17th June, the new tippie, screening plant, etc., was in operation for the first time and within a short time the output will be maintained, if expectations are realized, at between 750 and 1,000 tons a day. The product of this company at both its Extension and Comox Collieries, Vancouver Island, runs to about 70,000 tons a month.

Canadian Western Fuel Co. Opening a New Coal Mine Near Nanaimo.

The Canadian Western Fuel Company, of Nanaimo, B.C., has commenced operations on the sinking of a pair of shafts for the opening of a new mine on the company's farm near Nanaimo. These shafts are of ample dimensions, and are situated 150 feet apart. They are being sunk to tap the Wellington seam and will mean the area south-east of Jinglepot mine. Extensive drilling operations have been under way for some time to prove the measures and locate the best position to place the shafts. Excavating of the surface subsoil to bed-rock has been completed and concrete collars placed around the mouth of the shafts. Work on the hard stratified bed-rock commenced on Monday, the 17th of June. The seam will be uncovered at about 350 feet depth and if conditions are normal, coal should be reached in about four months. The cost of opening and equipping will involve an expenditure of about \$300,000. The company is producing upwards of 70,000 tons a month from its mines now in operation and looks forward to a considerable augmentation of this total. This will make the third new mine opened in the vicinity of Nanaimo, Vancouver Island, during the past year, the other two being now in coal. One was developed by the Canadian Collieries (D), Ltd., and the other by the Granby Consolidated Mining & Smelting Co.

The coal produced by the Vancouver Island (B.C.) mines during the month of May totaled 143,379 tons. This is 4,718 tons less than was produced in April, which is accounted for by the May holidays.

The tonnage produced by the various collieries was as follows:

	Tons.
Canadian Western Fuel Co., Nanaimo Colliery . . .	63,807
Canadian Collieries (D), Ltd., Comox Colliery . . .	50,163
Canadian Collieries (D), Ltd., Extension Coll'y . . .	19,781
Pacific Coast Coal Mines, Ltd., S. Wellington . . .	7,660
Nanoose Collieries, Ltd., Nanoose Colliery	1,968

143,379

The coal produced by Vancouver Island Collieries for the five months up to and including May, 1918, totalled 717,266 tons, as follows:

	Tons.
Canadian Western Fuel Co., Nanaimo Colliery.	328,299
Canadian Collieries (D), Ltd., Comox Colliery.	232,255
Canadian Collieries (D), Ltd., Extension Coll'y	97,781
Pacific Coast Coal Mines, Ltd., S. Wellington.	42,764
Nanoose Collieries, Ltd., Nanoose Collieries...	16,167
	<hr/> 717,266

In spite of the fact that the Jingle Pot Mine, Nanaimo, has been closed all year; that Nos. 1 and 2 Slopes of the South Wellington Colliery of the Pacific Coast Coal Mines have been abandoned; that No. 4, Extension Colliery, of the Canadian Collieries (D), Ltd., also has been abandoned; that No. 6 Mine, Comox Colliery, Canadian Collieries (D), Ltd., has been closed; and that some of the other mines have been put on single shift because of lack of labor, the tonnage of the Island Mines has been maintained to last year's standard, within a few thousand tons. To date the Western Fuel Company has made a gain over last year's tonnage of 60,000 tons and the Nanoose Collieries a gain of 9,786 tons.

NORTHERN ONTARIO.

High Grade Ore at Green-Meehan.

In addition to the mining of considerable low grade ore at the Green-Meehan property, there is also considerable high grade being encountered. The property is now being worked under the name of Edwards and Wright and under this management a discovery of high-grade silver ore was made the last week in April in a vein encountered at a depth of 245 feet. The vein was found in the diabase, close to and running parallel with the diabase-Keewatin contact. Since that time considerable lateral work has been done with favorable results and last week another vein carrying commercial values was reported to have been found. Owing to the favorable turn in developments in this section of Bucke township a good deal of attention is being shown to the immediate vicinity and much activity is anticipated.

Adanac.

According to an official advice, Mr. Alfred R. Whitman, geologist, has stated concerning the Adanac mine that "The indications seem to be entirely favorable, and that there is every encouragement to continue the North crosscut at the 310-ft. level. The flat shearing for over 200 feet back from the present face of the crosscut shows such strength and consistency, dipping towards the south that it can probably be regarded as distinct evidence of the correctness of former calculations regarding the dip of the diabase contact which the crosscut is approaching. The flat shearing which is coming in from the west dipping from the south-east instead of being contradictory evidence, rather tends to confirm the contour of the contact on former plans drawn. The vertical joining also tends to confirm the evidence of inclined shearing. The most economical exploration will be to continue the present north crosscut for probably 150 feet further before driving branch cross-cuts. When that point is reached the branch cross-cuts if driven should go both to the right and left equal distances." The conditions at the property are considered to be highly favorable for the development of commercial ore in the near future.

Private Wire to New York.

The Cobalt branch office of Messrs. Kiely, Smith &

Amos has been purchased by the brokerage firm of Hamilton-B. Wills. Mr. A. A. Amos, who formerly handled the business, is being retained by the new owner as business manager. A direct wire service, the first of its kind to connect Cobalt and New York, has been installed and the inauguration was in the form of greetings between the Mayor of Cobalt and Mayor Hylan of New York City.

Extending Cobalt Area.

Considerable enthusiasm is apparent regarding the discovery of native silver made since the taking under option of forty acres of land on the west side of the Nipissing Central Railway from the N.C.R. by the Mining Corporation of Canada recently. This company is also negotiating for the purchase of two other claims, while a number of other Cobalt mining companies are also becoming interested in the district. Deals for properties now pending are: the Pride of Cobalt, and the Stratheona to the west of the track, and the Ruby Silver Mining and Development Company to the east, which property adjoins the Green-Meehan on the southwest. It is pointed out that a contact zone extends from the shore of Lake Temiskaming at a point known as Devil's rock and runs northwest for several miles through the township of Bucke. Considerable shearing occurs along this zone and a number of promising veins are in evidence. Enthusiasts declare that this heavy shear zone in Bucke township is the direction in which to look for the mother lode of Cobalt. While conservative mining men are sceptical, they look upon the peculiar structure of the Bucke township contact as decidedly interesting and worth investigation. In the meantime considerable exploration work is contemplated and the results of this will determine the correctness or otherwise of these different theories.

Kerr Lake Makes New Record.

During the month of May the greatest amount of silver for any single monthly period in its history was produced at the Kerr Lake Mine, the output amounting to approximately 268,213 ounces. As the company's working force is comprised of only about 105 men, the production from the property is around 2,500 ounces per man for the month. The cost of production at the property works out at a little over 25 cents per ounce and as the price of silver is close to the dollar mark, it therefore costs about twenty-five per cent of the total revenue for production, leaving a net profit in the neighborhood of seventy-five per cent. This indicates a net profit for the month of May of close to \$200,000, or at the rate of over \$6,000 daily. Compared with the month of April this is an increase of about sixty-seven thousand ounces of silver.

The company has introduced the "cafeteria" system of serving meals to its employes and has had it in force for the past fourteen months. The results of this method have been highly satisfactory, permitting of fewer waiters in the mess rooms and giving entire satisfaction to the management and employes alike.

Prospecting in Doherty District.

Considerable activity is apparent in the Doherty district. However, owing to the scarcity of men the work so far has consisted chiefly of trenching and sinking of test pits. In a number of instances discoveries of Cobalt bloom, and low silver values have been made. Results to date are considered to be highly encouraging.

Nipissing.

According to the monthly report of the Nipissing Mining Company for May, ore of an estimated value of

\$338,347 was mined and bullion and residue of an estimated value of \$581,625 shipped. Favorable developments at several levels in shaft 73 were encountered, a number of new veins being found. With one exception they are not wide, but produce both high and low grade mill ore. One of the veins is from two to four inches in width and contains assays from 2,000 to 3,000 ounces to the ton. All development faces continue to maintain their average width and assay. Extension of stopes at veins 96 and the Little Silver are giving extra tonnage. Exploration work at shaft No. 63 is proceeding but nothing of any value has been encountered to date. The diamond drill has completed a series of holes in R. L. 404 and is now drilling the first of a series of holes in R. L. 402. The total production for the month of May was \$338,347 and establishes a new high record for the current year and compares with an output of \$329,617 for the month of April. The production so far this year is the greatest in the company's history despite the fact of its being the fifteenth year of existence. An aggregate of fifty million ounces of silver now lies to its credit. That high grade ore still plays an important place in the aggregate production of the Cobalt camp is amply demonstrated by this month's statement under review, which shows 195 tons treated, which had an average silver content of 2,760 ounces to the ton.

Dome Mines.

The annual statement of the Dome Mines, Limited, was given out at the annual meeting held recently in Toronto. The ore reserves are estimated at \$9,945,000 as compared with \$11,979,000 for the year preceding. One dividend was paid during the current year. The surplus at the end of March, 1917, was \$697,051, as compared with \$524,797 at the end of the 1918 period. The most interesting facts appear to be that the ore reserves showed a decrease during the twelve months under review of \$1,033,242 owing to a revision of previous estimates. This statement is made evident by the fact that although the production amounted to \$1,030,758 the decrease in reserves amounted to \$2,034,000. Another disappointing statement is that in opening up the ore body "indicated" over a year ago by diamond drilling, which was supposed to have been 117 feet wide and to contain around \$17 to the ton, development work proved that the drill rods had deflected downwards and westwards and the hole is a drift hole in a narrow ore channel 12 to 20 feet wide instead of a crosscut hole in a horizontal plane as planned; showing plainly the unreliability of diamond drilling to prove value of ore bodies. A decidedly favorable feature in the report is the fact that 321,352 tons of broken ore remains in the mine, the costs of which has been absorbed in the current working costs. When the time arrives when the resumption of operations can be economically proceeded with, the large tonnage of ore broken will permit of operations being conducted profitably from the day of commencement. It has been decided not to recommence operations at the property until economic conditions improve and the management are disposing of some \$300,000 worth of supplies they have on hand and which while idle would show considerable depreciation in value. The main shaft is sunk to a depth of 1,250 feet at which point a crosscut is being run to the boundary of the Dome and Dome Extension to prove the ore bodies which, according to diamond drilling appear to be of good width and value at this point. While the ultimate successful future of the property is substantially assured, the development

will have to await a return of more favorable conditions.

Hollinger Pays Dividend.

A big surprise was sprung on the shareholders of Hollinger Consolidated Mines when a dividend was announced and paid on June 17th to shareholders on record as of June 10th. It is understood the payment does not represent the resumption of any regular dividend policy just at present, but that distributions will depend entirely on conditions. The outstanding capital of the company is a little over \$24,000,000, so that the distribution will amount to about \$246,000. The payment of the dividend was all the more surprising on account of it coming at the time when rumors were current to the effect that curtailment of operations at the property might be necessary.

Dome Extension.

Diamond drilling is reported under way at the Dome Extension mines on which the Dome Mines dropped their option during the past year awaiting a more favorable time for development. The drill hole is being sunk near the Dome line and has already been driven about fifty feet to bed rock. The operation is designed to discover the direction of the vein system.

Kirkland Lake.

The frame work for the mill at the Kirkland Lake Gold property of the Beaver Consolidated Mines is completed and part of the structure is already closed in. The work of installing the machinery has also commenced. The Beaver owns seven-eighths of the stock in this company. Three shifts are now being worked in the three-compartment shaft which is down to a depth of 200 feet in the barren rock. This working will, when completed, be the main shaft of the mine. Ore has been developed in the workings of this property to a depth of 700 feet in the old shaft. It is expected the new 150-ton mill on the property will be completed and in operation by the fall.

Vipond—North Thompson.

According to recent information the Vipond-North Thompson property is about to close down. Operations underground are being materially curtailed. The reason for the curtailment is the scarcity of labor and high cost of material, all of which makes it more desirable to leave the gold in the ground until such time as the margin of profit is more satisfactory.

Apex.

A meeting of the Apex directors was called for June 25th to consider plans for the development of the Bilsky property in Porcupine. It is evidently the purpose of the management to exploit the promising claim, but this will require further financing.

That Gowganda Road.

The work of repairing the roadway between Elk Lake and Gowganda is now under way under the supervision of Government engineers. Definite assurance has been given the mining interests of Gowganda that the road will be placed in good shape for traffic. Up to the present time upwards of a hundred thousand dollars has been spent on this thoroughfare. It is not known how much will be required to place the road in a satisfactory condition now. This matter, however, has been left chiefly in the hands of the engineers in charge. The main thing is that transportation to this increasingly active and promising mining district is being improved.

Gold in Teddy Bear District.

The formation in evidence in the Teddy Bear district is said to be very similar to that of the Lightning River

district. It is now presumed that the Teddy Bear gold finds occur in an extension of the rock formations outcropping in the Lightning River section, and if this proves to be true the whole will constitute a fairly large prospective area. The Teddy Bear is situated about seven miles west from the Ontario-Quebec boundary and the river empties into Lake Abitibi.

Metachewan.

The Mining Corporation of Canada is understood to be negotiating for the purchase of the Davidson property in the Fort Metachewan district. Mr. Charles Watson, manager of the company, recently visited the district making examination of the property. The Davidson property is well known by reason of the fact that it represents the first important gold discovery in this new district. Other discoveries of gold had been made prior to that on the Davidson, but they did not appear sufficiently important to attract prospectors or capital on anything but a small scale. The water power on the Montreal River in close proximity to the Fort Metachewan gold district has been optioned to the Mining Corporation. A considerable volume of water pours over the falls which has a drop of approximately 45 feet. By erecting a dam this head could at small expense be increased to about 60 feet without flooding a great deal of country. It is estimated that upwards of 5,000 h.p. could be developed. Should developments in the district warrant it this water power could be made available at reasonable cost.

McIntyre.

Official figures show that the McIntyre-Porcupine mines produced during the first quarter of the current year approximately \$430,000. This is at the rate of \$143,000 a month or \$1,716,000 per annum. This would appear to indicate a net profit of \$750,000 or \$800,000. The last dividend, payable June 15th, amounted to about \$180,000. Net earnings are therefore just about sufficient to make four such disbursements annually, or twenty per cent. on the company's issued capital. This achievement under present conditions goes far towards proving the strong physical condition of the mine.

Miller Independence.

A new vein about eight feet wide has been discovered at the north side of the Miller Independence property at Boston Creek. The new vein carries visible gold and gold tellurides. Heretofore the Miller Independence has been exploring veins which were narrow and the tonnage available was comparatively small. However, the new vein just discovered, providing it proves consistent with depth will remove this difficulty. The vein is situated on low ground and is well defined with a strike approximately east and west. The work of sinking a new shaft has commenced on high ground a short distance south from this vein and owing to the latter having a considerable dip to the south it is expected it will be encountered before reaching a very great depth.

Gold from Martin Property.

A gold bar, the first shipped from the property of the Martin mining company, situated on Lake Keniwisik, some 46 miles from the railway, near Amos station on the Transcontinental railway in North-Western Quebec has been sent out. Mr. Martin, the contractor who constructed the mill of the Hollinger Gold Mines, with a number of friends, owns the mine. The mill consists of two stamps, and the mining at present is being done from surface, the deepest shaft being down a depth of about thirty feet. A force of twelve men do the mining and milling and the employees are all shareholders of the company.

Elliott-Kirkland.

Drifting at the 400-ft. level of the Elliot-Kirkland property is under way and ore of a commercial grade has been encountered, thus establishing the fact that the vein is the westward continuation of the ore body of the Kirkland Lake Gold.

Kirkland-Porphry.

Work has been suspended at the Orr property in Kirkland Lake under option to the Kirkland-Porphry. A cash payment of approximately half a million dollars falls due about the 1st of September, and various rumors are current regarding the future financing of this big payment. Recent developments at the property have been of a decidedly encouraging nature and the present suspension of work would appear to be in no way due to lack of merit in the property. The continuation of the vein was recently cut at the 400-ft. level and showed a width of about 32 feet, 22 feet of which gave values of over \$20 to the ton.

Patricia.

The mill at the Patricia mine in Boston Creek district is being given a try out. Last week during an early test run a mishap occurred causing a breakdown. The part has been repaired and this week the mill is expected to receive a thorough trial. Meantime underground work is being carried on at record-rate. Drifting along the 200-ft. level is proceeding. Stopping operations are under way and the ore being encountered is of a high grade.

Hattie Gold.

A new gold discovery has just been made on the property of the Hattie Gold Mines, Limited, situated in the township of Coulson, north-east of Matheson. The vein is about six feet in width and contains visible gold and tellurides. The company has a gang of men trenching and stripping and the intention is to commence sinking as soon as possible, for which purpose a plant will be installed. It is proposed to drive the shaft to a depth of 300 feet.

Ontario Kirkland.

Arrangements have been completed for the erection of an electrically driven mining plant at the property of the Ontario Kirkland Mining Company, formerly known as the Hurd property and lying about two claims to the south from the Wright-Hargreaves. The work of construction for the transmission line is under way as is also the erection of additional camp buildings. There are a number of veins in evidence on the Ontario Kirkland on one of which a shaft has been sunk to a depth of 100 feet where results met with are understood to have been up to expectations. The initial development calls for the sinking of the shaft to a depth of 300-feet, where lateral work will be carried on.

Lake Shore.

Two gold bars of an approximate value of \$45,000 were shipped from the Lake Shore mine this week. These bars weighed 92 and 93 pounds respectively, and the fact of this shipment is taken as conclusive evidence of the satisfactory operation of the Lake Shore Mill.

Ankerite.

According to reports just to hand from Porcupine the suspension of operations at the Ankerite property of the Coniagas Mining Company has been decided upon. This decision was reached following a visit of some of the directors to the property. The cost of operations during the present abnormal period for both labor and material is said to be the reason for the contemplated temporary suspension of work.

The Canadian Ingersoll-Rand Co. have just issued a new catalogue of their direct lift vertical air hoists. The booklet is well illustrated, and gives complete details of the different types of valve used for various classes of work up to five tons capacity—the dust proof single acting, the dust proof air balanced, the dust proof double acting. Complete tables are given, including a useful table of the free air consumption of the hoists.

Sullivan Machinery Co. have published a new catalogue on Coal Mining Machines, No. 73. This bulletin describes in full detail the Ironclad Sullivan Coal Cutters, for both room and pillar and longwall mining. The Sullivan Machinery Company was first to bring out an electric chain mining machine, for operating in rooms, on the longwall or continuous cutting principle, which is now generally recognized as the most efficient method of cutting coal in use in this country. This bulletin describes the direct current and alternating current Ironclad, and Turbinair Ironclads, by means of which compressed air drive is made efficiently applicable to coal cutter work for the first time. Explosion proof Ironclads carrying the Government approval, as the result of U.S. Bureau of Mines tests, are also described, and the protective devices for gaseous mines illustrated.

A unique and handy little device for opening up the water hole in hollow steel has just been placed on the market by the Denver Rock Drill Manufacturing Company, Denver, Colorado, whose exclusive sales agents in Canada are the Canadian Rock Drill Company, Ltd., of Toronto. It consists of a punch and hammer set in an air feed cylinder, which drives the punch into the steel and withdraws it in combination with the hammer action. It is designed for use with their Model 8 Sharpener to be mounted on the pedestal back of the clamping vise, but it may be mounted separately or even adapted to other machines. The operation is extremely simple and a slight alteration of the control handle will either drive it forward or withdraw it. This device will open the water hole in a bit or shank in one-tenth the time required to perform such an operation by hand.

The U. S. Railroad Administration announced under date of May 28th that the pig iron rates will apply on pyrites ore from Sault Ste. Marie, Ontario, ex Goudreau, Ont., to Cincinnati, Cleveland, Columbus and Detroit, effective May 30th, and to the other Central Freight Association points effective June 30th, by the Minneapolis, St. Paul and Sault Ste. Marie Railway. The tariffs of the Duluth, South Shore and Atlantic Railroad will be issued to become effective on statutory notice.—“American Fertilizer.”

Shanghai, China, June 24.—An agreement has been virtually concluded between the Chinese and Japanese Governments, it has been learned by The North China News, under which the iron mines at Feng Huan Shan will be worked by the Chinese Government, and steel will be manufactured by the Chinese and Japanese. It is said that the Japanese will provide 20,000,000 yen to defray the expense of carrying out the work.

This means, it is said, that the Japanese will virtually acquire control of the entire output of the mine. At present they are negotiating for the right to participate in the working of the property. Pending decision, the final signing of an agreement has been delayed.

TORONTO MARKETS.

Cobalt oxide, black, \$1.50 per lb.
Cobalt oxide, grey, \$1.65 per lb.
Cobalt metal, \$2.25 per lb.
Nickel metal, 45 to 50 cents per lb.
White arsenic, 17 cents per lb.
June 26, 1918—(Quotations from Canada Metal Co., Toronto).
Spelter, 10½ cents per lb.
Lead, 10¼ cents per lb.
Antimony, 16 cents per lb.
Copper, casting, 28 cents per lb.
Electrolytic, 28½ cents per lb.
Ingot brass, yellow, 21 cents; red, 26 cents per lb.
June 26, 1918—(Quotations from Elias Rogers Co., Toronto).
Coal, anthracite, \$10.00 per ton.
Coal, bituminous, nominal, \$9.50 per ton.

SILVER PRICES.

	New York	London
	cents.	pence.
June 10	99½	48½
June 11	99½	48½
June 12	99½	48½
June 13	99½	48½
June 14	99½	48½
June 15	99½	48½
June 17	99½	48½
June 18	99½	48½
June 19	99½	48½
June 20	99½	48½
June 21	99½	48½
June 24	99½	48½

STANDARD MINING EXCHANGE.

Messrs. J. P. Bickell & Co. report the following closing quotations on the Standard Stock & Mining Exchange at the close of business, June 26, 1918:

Gold.		
	Bid.	Asked.
Apex .....	.03	.03½
Dome Extension .....	.09½	.10½
Dome Lake .....	.12¼	.15
Dome Mines	6.50	..
Hollinger	4.83	4.85
Imperial .....	.01	..
McIntyre	1.29	1.30
New Ray .....	.20	.20½
Porcupine .....	.13	.13½
Vipond .....	.12	.15
Preston East Dome .....	.02¼	.03
Teck-Hughes .....	.35	.40
West Dome .....	.06¼	.07
Silver.		
	Bid.	Asked.
Adanac .....	.08	.08½
Bailey .....	.03½	..
Buffalo .....	..	1.05
Beaver .....	.24	.26¼
Chambers Ferland .....	.12¼	.14
Coniagas .....	..	..
Crown Reserve .....	.18	..
Gifford .....	.02	.02¼
Great Northern .....	.03¼	.04
Hargraves .....	.04¼	.05
Hudson Bay .....	..	34.00
Kerr Lake	5.60	5.90
Larose .....	.41¼	.44
McKinley .....	.36¼	.39
Nipissing	8.95	9.00