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Editor:

J. C. MURRAY, B.A., B.Sc.

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CIRCULATION.

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CONTENTS.

THE PORCUPINE DISASTER.

It was with sincere relief that the public learned, a few days after the Porcupine region had been swept by fire, that the loss of life was not nearly so large as was at first reported. In the excitement of the moment fears became rumours, and rumours became apparently authenticated facts. But before three days had elapsed the list of fatalities had dwindled from the hundreds to less than seventy-five.

Amongst the many Canadian cities and towns that immediately contributed to the relief of Porcupine, it were invidious to select any for special mention. No second appeal was necessary. Supplies and money flowed into the stricken town from every quarter. Even from London and New York money contributions were sent.

It is not invidious to express warm appreciation of the prompt action of the Temiscaming and Northern Ontario Railway Commission. Under the direction of Chairman Englehart, the orders were at once issued to exact no railway fares from the survivors of the fire. In short, the whole service was placed, as far as necessary, at the disposal of the sufferers.

On other pages of this issue are personal accounts of the tragedy. It is needless here to recount the details. The loss of life has been stated. The property loss cannot be more than very roughly estimated. In all probability it amounts to $2,000,000. This is serious enough. But the loss of time is quite as serious.

On the credit side of the account is the fact that in future much greater care will be taken, both in prevention of fires and in the construction of permanent buildings. It is already announced that the Dome Mining Company will erect an entirely fire-proof mill to replace the building that was destroyed. No doubt other companies will follow this example. Doubtless, also, the Ontario Government will reorganize its forest-protection system. It will also do its duty in the matter of enforcing restrictive regulations upon the storage of explosives. It is only by sheer good luck that many lives were not lost through the explosion of large quantities of dynamite. The control of this question must be taken up at once.

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Porcupine is being rebuilt with all haste. Next year hardly a trace of the havoc wrought will remain. The way of the prospector has been made easier. Large areas, almost impossible for the prospector before the fire, have been cleared. Yet it will not do to forget the awful lesson of July. Human life is infinitely more important than property. Places of refuge must be supplied at every forest-surrounded mine. The most practicable refuge is the "cyclone-cellar." In course

of time the mines themselves will be extensive enough to afford a safe breathing place for the men. Meanwhile, no chances need be taken.

GEOLOGY AND MINING.

That there must be a closer line of demarcation drawn between the mining geologist, the common or garden variety of geologist, and the mining engineer becomes every day more apparent. Not long ago the *Canadian Mining Journal* expressed the belief that no person who does not possess the academic degree has a right to append the letters "M.E." to his name. He may, of course, have every right to use the words "mining engineer."

It appears to us that of all professional men, the trained geologist does not require a superfluous queue of letters behind his cognomen. No matter how many alphabetic feathers may be stuck in his tail, they impress only the unthinking.

But the assumption of the title and status of mining engineer by the geologist is not merely a question of good taste. Not seldom it brings grave discredit upon both professions.

Recently we were shown several reports upon mining properties, reports written by a geologist. All of these properties lie in the same region. Each of these reports contained a summary of the superficial geology of the region, a summary couched in hypertechnical terms. To the mining possibilities one or two paragraphs were devoted. No recommendation was made as to methods of prospecting or scale of equipment. The whole pith of the document was contained in one sentence that indicated the writer's belief that the veins were of deep-seated origin.

Now this kind of thing may be "geology," but it is not "mining geology," nor is it "mining." As the reports in question were accompanied neither by assay-maps, nor by any data as to cost of supplies, transportation, labour, etc., etc., they were absolutely useless as guides to the investor. Whatever vague references to mining they contained were of such a nature as to furnish ammunition for colouring a prospectus.

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It is far from our intention to cast stones at the geologist *per se*. In initiative and in practical service he is second to none. But he gets into deep water when he confounds his proper functions with those of the mining engineer. The mining engineer often needs and requests the aid of the geologist, both in the prospecting stage and the later development of the mine. We have yet to hear of a mining engineer usurping the field of the geologist.

With the mining geologist, who is a relatively modern product, the case is different. His advice is required when geological problems arise affecting the future of a working mine, or in identifying the geological features of territory near established mines. Whilst his work necessarily indicates the scale upon which development may proceed, the actual plans for the future are determined by the engineer and modified by financial consideration.

In conclusion, it may be reiterated that the time has come for careful differentiation between the three branches of the profession. There will always be a certain amount of overlapping because the attainments and experience of every professional man vary. But in the undignified confusion of to-day there is little of reason and less of dignity.

IMPOSING ON EUROPE.

On another page will be noticed a letter, signed "Germanicus." The writer of this letter is intimately acquainted with conditions of promotion and investment both in Canada and Europe. His opinions are entitled to respectful consideration.

The four maxims that our correspondent develops are as follows:

"1. Every promising Canadian venture, which does "not require millions, can be financed in Canada or in "the United States.

"2. Every larger enterprise demanding millions "that can not be financed in the United States, because "the promoters have not the required connections there, "can be financed in London, provided it is sound.

"3. Every Canadian proposition that is being of-"fered on the other side of the ocean by Americans is "to be considered as suspicious.

"4. Every Canadian venture offered on the Con-"tinent, without a substantial reason for its being of-"fered there, or without a most intimate and direct "connection between Paris, Brussels, or Berlin, and "the promoters, is more than suspicious."

Strong exception may possibly be taken to these sweeping generalizations. For instance, we know of isolated cases where the promoter could not get a hearing in Canada or the United States, despite the fact that his scheme was exceptionally sound. Often, also, the vendor of a meritorious property feels that he will get better treatment on the other side of the Atlantic.

These exceptions, however, help to prove the rule. To-day when all kinds of industrial schemes and every variety of mining ventures are being taken over to Great Britain and Europe, when the whole of Canada is being raked over to secure something to sell, when, in fact, Canada has become the chief hunting-ground of the adventurer, the warnings of our correspondent are hardly exaggerated. Where they may be unfair to the few, they embody cautions that should be carefully observed with all.

As a matter of fact, Berlin and Paris seem to be the dumping-ground of bad Canadian enterprises. The average business man of both these cities is unbelievably ignorant of Canada. He hears only good of this country. And he becomes the ready dupe of the unscrupulous.

There are many reputable Canadians, of course, whose European connections permit them to lay proposals for investment before foreign investors. Our correspondent's strictures are not meant for them.

A NEW MILL.

In South Africa the Giesecke mill, a new modification of the tube-mill, is being tried out by the Mines Trials Committee.

The manufacturers of the mill claim that one Giesecke, with a capacity corresponding to 50 to 60 stamps, costs less than one-half the price of a stamp-mill of the same capacity.

The trial of the Giesecke is being conducted at the Geldenhins Estate. Here 50 stamps are hung up and the ore is being diverted to the Giesecke. The ore is in lumps as large as 7-inch cubes. The pulp at the discharge end of the mill is so fine that more than 80 per cent. passes a 200-mesh screen. Late reports place the capacity of the mill at 370 tons per day, the amount of water used being only 30 tons for each 100 tons of ore crushed.

The Giesecke mill is shorter than the standard size Rand tube mill. Of its entire length of 24 feet, one-quarter is of greater diameter than the rest of the cylinder. The larger end contains the larger steel balls, the portion of smaller diameter the smaller balls. The balls are in eight sizes, from 4-inch to 1¼-inch diameter. The two sections are divided by a screen or sizing plate. The steel balls weigh 23 tons in all, the liners 16½ tons, and the cylinder 15¾ tons. The charge is 50 tons, and the motive power required about 250 horse-power.

Amongst other claims advanced for the new mill, it is asserted that only a minimum of supervision is required and that lubrication is entirely automatic.

The Rand is making rapid strides in the metallurgy of gold. The existence of an official committee, whose duty it is to examine and test each notable invention or process, lends weight to any departures from fixed practice.

THE WESTERN STRIKE.

The strike of the coal miners in the Crow's Nest and western Alberta districts is causing very serious loss. According to the estimate of Mr. A. C. Flumerfelt, the miners and employers are dropping about $20,000 per day. As the strike began on April 1st, the grand total that the strikers will be out on August 1st reaches the figure of $2,000,000.

There seems to be no sufficient reason why work should not have continued whilst the dispute was being settled in a rational manner. If the Industrial Disputes Act means anything, if it is to be anything but an added source of expense and strife, it surely should be effective in promoting the continuance of work and the peaceful arbitration of differences.

What is really required is the abolition of the haphazard choice of inexperienced and inapt chairmen. This lesson was well illustrated by the satisfactory settlement of the Dominion Coal strike. In this case, Dr. Adam Shortt, an official of eminently sane and judicial mind, brought operators and employees together with a minimum of noise and friction. It is a grand pity that some similarly diplomatic person could not have been made chairman for the committee that reported upon the Western strike. Incidentally, all the futile exchange of amenities in the public press would then have been avoided.

It is clearly evident that Dr. Gordon, as chairman, was out of his depth. The wording of his report was indiscreet and painfully florid. Neither in experience nor in temperament is a man of his type suited to the task of dealing with problems in real life.

EXPORTS AND IMPORTS OF CANADIAN MINERALS.

During 43 years, covering the period 1868-1910, inclusive, according to the statistics collected in the Canada Year Book, a Government publication, Canada has exported mineral produce valued at $530,920,916. The great bulk of this has gone to the United States, that country taking no less than $475,292,324, or, roughly, 90 per cent. of the total. Great Britain is a bad second, with only $29,838,991 to her credit. The remainder, $25,789,601, was distributed in small amounts to many other countries. Thus, whilst we have shipped nine-tenths of our mineral exports to the United States, we have sent only 5.5 per cent. to Great Britain.

In the export returns for the year 1910, the relative position of Great Britain shows a slight improvement over the general average. Of our mineral exports she took about 9.5 per cent., whilst the United States took approximately 83.5 per cent.

Whatever errors there may be in these figures, and it is undeniable that our official statistics are far from correct, they are relatively accurate. In the aggregate, they probably do not wander from the truth by more than 10 or 15 per cent. A closer analysis of the distribution of exports is unnecessary. The comparison between our two chief customers is sufficient. And the facts must be faced, no matter what our feelings as private citizens may be.

There is room for speculation as to the probable effects of complete free trade in mineral commodities with Great Britain or the United States, or with both. There is no doubt about our present position.

A GENEROUS COMPANY.

More than passing notice is due the T. Eaton Company for the exemplary despatch with which a carload of provisions and clothing was sent to Porcupine. News of the fire reached Toronto on Tuesday evening, July 11th. On Wednesday a carload of 20,000 pounds

of provisions, clothing, blankets, bedding, and sundries, including large quantities of first-aid materials, was got together. On Thursday morning the whole lot was sent off by express, reaching Porcupine on Saturday morning. Nothing could have been more timely.

The incident shows what perfect organization, combined with human kindness, can accomplish.

EDITORIAL NOTES.

There are now 67 gold-producing companies operating in the Transvaal. Altogether 9,941 stamps are in commission.

What action the Government of Nova Scotia will take in regard to the flooding of the Port Hood submarine areas is not yet announced.

Keen interest is being manifested in gold mining in Lake of the Woods and Sturgeon Lake. A number of Toronto mining engineers and operators are developing prospects and re-opening abandoned mines.

Dr. A. S. Mackenzie has been elected president of Dalhousie University. Dr. Mackenzie's record in several professional chairs is thoroughly good. He is a Nova Scotian. He will probably occupy the chair of physics.

A strictly followed tradition has hitherto kept from the coinage of Mussulman countries the representation of living creatures. Now, however, the Bank of Morocco has placed with the Paris mint an order to strike silver coinage bearing the effigy of Mulai Hafid.

The British Radium Corporation, Ltd., a subsidiary of St. Ives Consolidated Mines, has already sold $50,000 worth of uranium oxide and radium extracted from pitchblende mined at the Trenwith mine, Cornwall, England.

Canadian coal is being tested by the United States navy. The flagship of the second division of the Pacific fleet, the "West Virginia," has taken on 900 tons each of Comox, Nanaimo, and South Wellington coal. The coal will be given a thorough test. Eleven days of steaming will be required to complete the trials.

The average annual profits of the Mond Nickel Company for the past five years have been £122,239. In 1911 the profits were £148,214. The authorized capital is £850,000. The preferred stock, £400,000 issued, pays 7 per cent. The ordinary shares have paid from 12½ to 16¼ per cent., and substantial dividends have been distributed on the £50,000 of deferred shares.

The Hillcrest Collieries, Limited, operating the Hillcrest coal mine, situated near Frank, Alberta, on July 15 paid its second dividend of 1¾ per cent. on its preferred stock. The total of dividend was $12,350. A similar amount having previously been paid, the total of dividends paid to date is $24,700.

Personal and General

Mr. J. B. Tyrrell has left for a short visit to London. He will return to Toronto in September. His London address is 224 Salisbury House, E.C.

Mr. R. B. Lamb, Toronto, is leaving on an extended trip to Cobalt, Porcupine and Swastika, to inspect properties with which he is connected.

Lieut.-Col. R. G. Edwards-Leckie and Captain Guy H. Kirkpatrick are inspecting several Portland Canal mining properties, including the Lordigordy, Rush-Portland, and American Creek.

Mr. Chester Wells Purington has taken offices at number 62 London Wall, London, E.C. Mr. Purington's specialty is the examination of mining properties in the Russian Empire.

Mr. C. F. Dike, jr., general manager the Crown Charter, Porcupine, visited Montreal and Toronto on business shortly after the fire. He has returned to Porcupine, accompanied by Mrs. Dike.

Mr. J. M. Turnbull, one of the mining engineers on the staff of the Consolidated Mining and Smelting Company of Canada, Ltd., has lately been engaged in examining mining properties in the Skeena district, B.C.

Mr. M. K. Rodgers, of Seattle, Washington, who, while working under a roving commission to find mines for the late Mr. Marcus Daly, chose the Nickel Plate group, in the Similkameen district, and the Hidden Creek group, near Observatory inlet, as likely to meet the requirements of his principal, is still giving attention to British Columbia.

Mr. W. C. Thomas, formerly manager for the Dominion Copper Company, at Boundary Falls, B.C., recently visited Portland Canal district, with a view to advising the company owning the Red Cliff copper mine concerning the selection of a site for a smeltery should it be found desirable to establish local copper reduction works for Red Cliff ore.

Mr. C. D. Emmons, of Eugene, Oregon, who is acting in an advisory capacity to the B. C. Oilfields, Ltd., of Vancouver, B.C., recently again went north to the scene of the company's operations, on the west coast of Graham island, of the Queen Charlotte group. A standard drilling plant is in use, and it is hoped oil will be found in the bores being put down.

Mr. W. H. Trewartha-James, general manager of the Tyee Copper Co., Ltd., has returned to his headquarters at Victoria, B.C., from a business visit to mining camps in south-eastern Alaska, southern Yukon, and northern British Columbia. The Tyee Company's mining and smelting business covers practically the whole Pacific coast, from the west coast of Mexico to Alaska.

Mr. W. Satchell Clarke, of Vancouver, B.C., is in charge of the B. C. Drilling and Dredging Company's drilling operations on Tulameen River, where the gravel is being systematically tested in prospecting for placer gold and platinum. At present work is being done along the river above the town of Tulameen, long known as Otter flat. Several streams tributary to the Tulameen yield both gold and platinum.

Mr. William Fleet Robertson, provincial mineralogist for British Columbia, is engaged this summer in examining, and obtaining information relative to the mineral-bearing district around Hazelton, in the Skeena River country, in which the occurrence of both metallic and non-metallic minerals is known, and prospectors have been at work during parts of several recent years.

The Geological Survey of Canada is also continuing field-work in this district.

Officials of the Granby Consolidated M., S. and P. Co., Ltd., were at Goose bay, Observatory inlet, last month, determining the nature of further development work to be done on the mining property the company has purchased from the Hidden Creek Copper Mining Co.; also deciding what surface improvements shall be made to ensure greater economy in the expenditure of the comparatively large sum appropriated for opening the mine, with the object of making its immense bodies of ore available for extraction at low cost.

Mr. D. A. McMillen, chief consulting engineer of the Globe Exploration Company, 64 Wall Street, New York City, is at present spending a few weeks in Central and Southern Mexico, where he is examining properties for the interest of his company. About August 1st he will go to the State of Sonora, where he will continue his investigations and examinations of certain silver properties. Mr. Horace H. Howard, also consulting engineer for the same company, is at present doing special consulting work in the Porcupine district. He was in Porcupine at the time of the disastrous forest fire and narrowly escaped death from burning.

Correspondence

CANADIAN PROJECTS AND THE EUROPEAN INVESTOR.

The Editor Canadian Mining Journal, City.

Sir,—The recent attempt to sell Porcupine mining stock on the Continent, stock in a prospect where no gold showings exist, on which no report of a mining engineer is published; and the further attempt to finance a coal-proposition in the Crow's Nest area, where the owners have only the hope of discovering the seams which their neighbours are supposed to have, induce me to issue a most energetic warning on the Continent, in order to safeguard future *bona fide* Canadian enterprises. This warning I have couched in the following maxims:

1. Every promising Canadian venture, which does not require millions, can be financed in Canada or in the United States.
2. Every larger enterprise demanding millions that can not be financed in the United States, because the promoters have not the required connections there, can be financed in London, provided it is sound.
3. Every *Canadian* proposition that is being offered by *Americans* on the other side of the Ocean is to be considered as suspicious.
4. Every Canadian venture offered on the Continent, without a substantial reason for its being offered there, or without a most intimate and direct connection between Paris, Brussels, or Berlin, and the promoters, is more than suspicious.

All of us have every reason to stop such proceedings.

Yours truly,

GERMANICUS.

The Spokane Asbestos Fire Brick Company will shortly erect in Spokane, Washington, U.S.A., works that will be equipped for the manufacture of various non-conducting materials. The asbestos property owned by the company is situated 14 miles south-east of Kamiah, Idaho.

ZINC ORE REDUCTION EXPERIMENTS.

In the course of an address on the Reciprocity issue he made at a public meeting held at Nelson, British Columbia, on July 10, Hon. Wm. Templeman, Dominion Minister of Mines, is reported by the Daily News to have said: "Some friends in this city asked me to-day concerning the matter of the experiments in connection with the reduction of zinc ores. Well, at present I have not very much that is specially new to say on this subject. I have some knowledge of the zinc question and also of lead. Some years ago we gave a bounty on the production of lead, and this has still a year or two to run. But what to do with our zinc ores has for years been a question with the miners of this country.

"At the request of the people of this city we took up the question of the electrical smelting of zinc ore. I had $50,000 set aside for carrying on experiments, and these experiments are still going on. I secured the services of W. R. Ingalls, of New York, who is said to be the greatest expert in zinc on this continent. We also submitted certain problems to be solved in the laboratory of McGill University by Professor Stansfield, a young electrical engineer, who has made great progress in the study of such problems, and the report of Dr. Haanel is that these experiments are meeting with considerable success, and he hopes at an early date to be able to make a report that will satisfy the mining interests, and that something definite will be achieved. However, I am frank to say that trying to discover a new process of zinc smelting is something that no one can say is certain to succeed.

"It has been suggested—why did we not negotiate an agreement with the United States for free admission of our zinc ore? Now that is something I am fully in favour of, until such time as we shall be able to smelt it successfully in Canada. Let me take you into my confidence and tell you this—that Hon. Mr. Fielding, at my request, pressed that very point on the American representatives, but was unable to get them to agree to admit zinc ores and lead, the interests on the other side being too strong. So we are still trying to discover a method of smelting our own zinc ores, and I hope we shall succeed. We shall keep on until the whole $50,000 shall have been spent, anyway; though we have not yet spent very much of the amount."

The opinion that bornite ore does not occur at depth is by no means uncommon, for it is frequently expressed in some copper mining districts. For instance, several years ago the manager of the Marble Bay mine, situated on Texada Island, British Columbia, was told by visiting mining men of experience and good professional standing that the bornite ore then being mined there would not "go down." However, it was afterwards proved that it did go down, for during the last year it has been mined on the 1,100-ft. level, and its continuation down to the 1,200-ft. level was expected with confidence. On July 1 The Mining Journal, London, England, included the following in its correspondence from Australia: "It is stated that at the North Mount Lyell mine, Tasmania, very rich ore continues to be won at the 1,100-ft. level. A specimen block of solid ore that has been brought to the surface is of marvellous richness. It weighs half a ton, and consists of bornite largely associated with copper glance, the copper contents being estimated at 60 per cent., while the approximate value of the specimen is £15. There are said to be hundreds, and probably thousands, of tons more of similarly rich ore existing in the stope whence came the specimen in question."

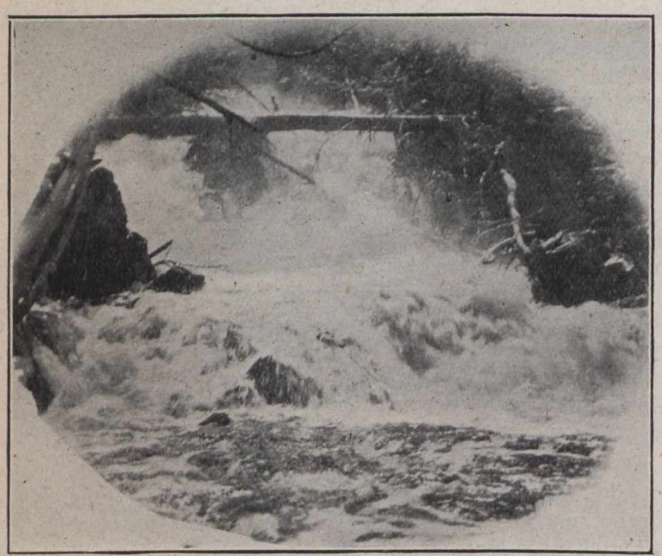
GOWGANDA & ELK LAKE RAILWAY

Special Report of A. B. Willmott for Operators.

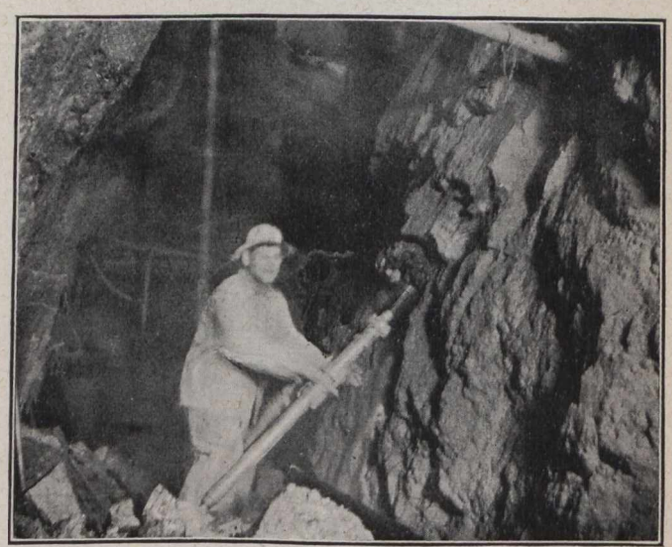
Mr. M. L. Foley, President,
The Gowganda & Elk Lake Mining Association,
Toronto, Ontario.

DEAR SIR,—

From March 12th to March 24, in company with Messrs. Cole and Mickle, representing respectively the Temiskaming & Northern Ontario Railway and the Provincial Government, I made an inspection of the working mines and some of the prospects in Elk Lake and Gowganda. The object in view was the determination of the probable freight which a railroad would secure if built through that section of country. While the snow roads afforded a quick and easy means of transport, the snow itself prevented the examination of many promising properties. In a few cases the prospectors had cleared off the snow from promising shows at considerable labour and expense. More frequently nothing was to be seen at many of the most promising prospects. We visited 23 properties in all. The names of 36 others, which are said to have promising veins, were handed to us by the local committee. Scores of other claims have been staked in the country, many of which will doubtless prove of equal value when developed.



Hanging Stone Falls, Gowganda



Stoping out Concentrating Ore at Millerett Mine

The adverse conditions under which development work is progressing in this district are so well known to you that it is superfluous for me to mention them. Nor need I present any argument to you as to the necessity for a railroad if the region under discussion is not to go back into its original wildness. The argument should rather be directed to the people of the Province of Ontario, who are quite as much interested as you in the subjection and development of this wilderness.

Why the People of Ontario are Concerned.

From a sentimental reason Ontario as a whole is interested in the development of Northern Ontario which constitutes two-thirds of the Province. It is important to us as Canadians that the uninhabited territory north of the Great Lakes should be settled. Wherever resources occur, be they timber or mineral or agricultural lands, the people of the Province are interested in seeing these utilized and prosperous communities founded.

Apart from the sentimental reason the people of old Ontario are concerned because the development of these resources adds to the revenue of the Province. The revenues from northern Ontario have in the past obviated the necessity of direct taxation. Elk Lake and Gowganda have contributed very largely, and if these revenues are to continue better facilities for the development of the country must be provided.

The whole of this territory is owned primarily by the people of Ontario. When a mining claim is leased to an individual they very properly require that assessment work shall be done, and that the property shall not lie idle. The principle lying back of this assessment work is that undeveloped properties are useless to the Province as a whole. The largest owner of undeveloped properties is the public itself. If it is right to require the private owners of mineral lands to develop these lands it is also right to require the public to develop their part. One cannot ask that the public shall go into the exploration of mining claims, but one can demand, and quite fairly, that the public shall bear their part of the cost of development by providing proper transportation facilities.

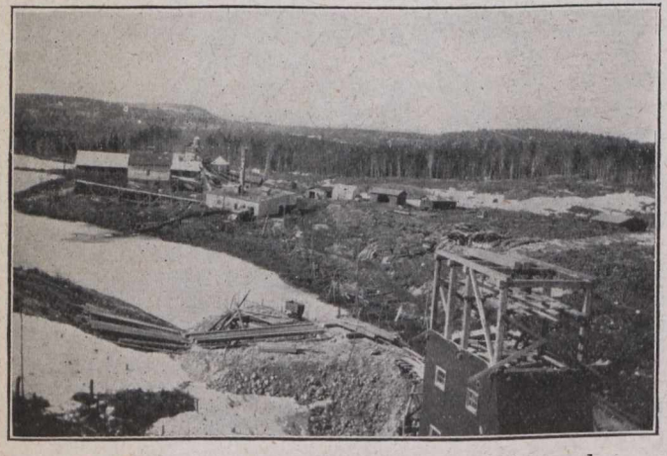
The people in older Ontario fail to realize the great distances between railroads in the north country. For instance, from Charlton, the terminus of the railroad, to Gowganda, a distance of about 45 miles, is considerably further than from Toronto to Hamilton, and, owing to the character of the roads, is quite as serious in the matter of freight as to have to haul by team from Toronto to Brantford.

The teaming of 100 h.p. boilers and other machinery from Toronto to Brantford, would be a most serious drawback to the development of the latter city if that were the only means of transport, and yet that is the condition in Gowganda. It is thus not surprising that the people in the north want railroads built by the province or that public assistance be granted private companies to encourage them to build. The increase

in value to the public of the unoccupied lands warrants such action.

Why a Railway is Necessary.

Compared with Cobalt, the Elk Lake-Gowganda district is a low grade camp, though in comparison with many silver districts of the world its ore would rank as high grade. Cobalt has the advantage not only of enormously rich ore, but of low freight rates, as compared with most mining camps. For this reason profits of mining there have been unusually great, and the necessity for close scrutiny of working costs has not arisen. In Elk Lake and Gowganda, on the contrary, the closest attention to detail is required and every expense must be carefully scrutinized just as in all industrial business. There are properties which could undoubtedly be made to pay, to the profit of their owners and to the advantage of the Province as well, if proper transportation facilities are afforded. The cost of supplies at present is tremendously high. For instance, hay at Charlton is worth $15 a ton, and at the Boyd-Gordon mine $38 a ton. One mine manager showed me ten tons of blacksmith coal which cost him in his shed $40 a ton. Properties on the west side of Gowganda Lake are paying $1.35 to $1.50 freight per hundredweight from the railway to their properties. At Hanging Stone the winter freight is $2 per hundredweight, and in summer $6 per hundredweight. When it is recalled that an average freight rate on Canadian railways is about 2 cents per ton-mile, and that the winter freight to the west side of Gowganda is 60 cents per ton-mile, or thirty times as much, the serious handicap from the lack of transportation is evident. Many items of consumption cannot be foreseen and have to be brought in in the summer time at a cost of $1.60 per ton-mile, or eighty times ordinary freight rates. This applies to the west side of Gowganda Lake. To Hanging-Stone Lake the charges are considerably higher.

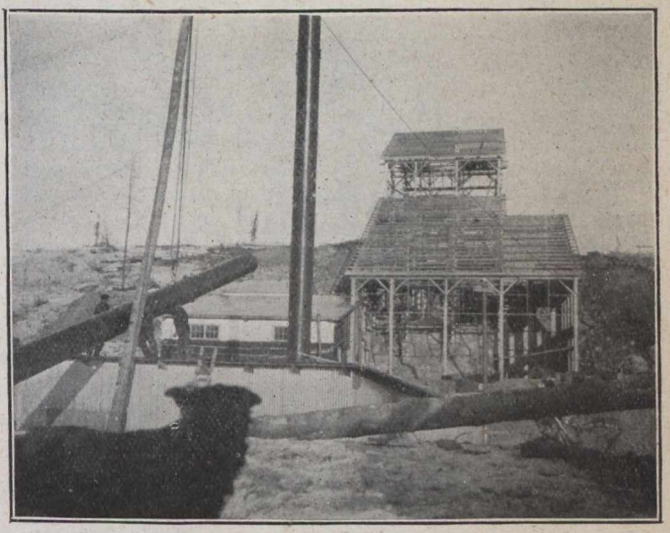


Raising No. 1 Shaft house, and camp in background, Millerett Mine.

The cost of labour is also greatly increased by the remoteness from transportation. In the first place, 25 cents a day on the average over Cobalt prices is paid to all employees. Moreover, the cost of board averages fully 25 cents a day more per head. At a prospect employing 50 men, this amounts to an increased cost for labour of $25 per day, or $7,500 per annum. To this is to be added the increased cost of all mining supplies, as dynamite, steel, tools, and fuel.

Another adverse condition is the loss of time in securing men and supplies. The mail service, particularly spring and fall, is interrupted, and annoying delays occur in securing repair parts and supplies not foreseen. The loss of time in securing men to take the place of some who may have suddenly ceased work is also vexatious and costly.

Still another serious handicap to the development of this region is the difficulty of interesting capital. Promoters and investors were readily taken to Cobalt on comfortable trains, and so easily and quickly were shown the possibilities of that camp. Such men can only be taken to Gowganda with any comfort in the winter time, when the very things which it is desirous to show them are hidden by a thick mantle of snow. In the summer time slow and laborious canoe trips, with exposure to uncertain weather and insect pests, prevent many a possible investor from investigating the camp. Undoubtedly had Gowganda had the same advantage as Cobalt, much more capital would have been invested, to the advantage of the camp and the Province generally.

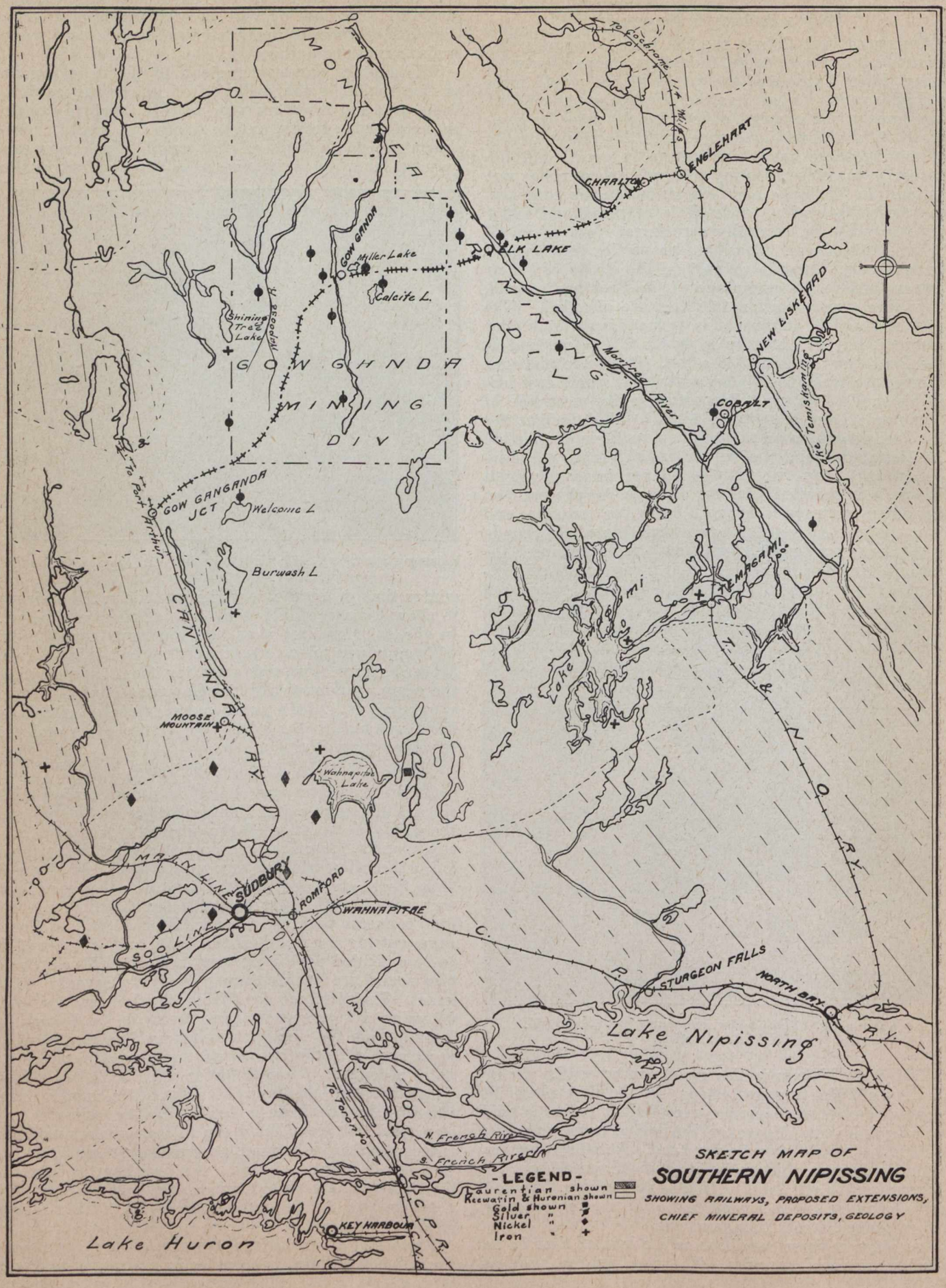


Raising a Stack on New Boiler House and Mill Framework behind

The Proposed Railroad.

On an accompanying sketch map the mining divisions of Gowganda and Montreal River are shown and the railroad facilities of the southern part of Nipissing district. It will be observed that the Temiskaming & Northern Ontario Railway runs a litle west of north from North Bay, and that the Canadian Northern Railway runs a little west of north from Sudbury. The first connects with the Grand Trunk Pacific at Cochrane, outside the limits of this map, and the second is to be extended north and west to Port Arthur. These two roads are approximately sixty to seventy miles apart. The proposed road from Charlton, on the Temiskaming & Northern Ontario Railway, to Gowganda Junction, on the Canadian Northern Railway, runs at right angles to the two roads, and would be about 95 miles in length. From Charlton via Elk Lake to Gowganda in a straight line is 40 miles. The country from Charlton to Elk Lake is fairly easy for railroad construction, but from Elk Lake to Gowganda numerous ridges have to be crossed, necessitating a considerable increase in length of road. Surveys have been made by the Temiskaming & Northern Ontario Railway, and I understand the proposed road would have a length of about 50 miles.

From Gowganda city to Gowganda Junction, on the Canadian Northern, is 38 miles in a straight line, and


GOW GANDA MINING DIV
To Cochrane 114 Miles
ENGLEHART
CHARLTON
GOW GANDA
Miller Lake
ELK LAKE
Calcite L.
Shining Tree Lake
Mattagassie R.
Montreal River
NEW LISKEARD
COBALT
T. & N. O. Ry.
To Temiskaming
To Port Arthur
GOW GANDA JCT
Welcome L.
Burwash L.
CAN. NOR. RY.
MOOSE MOUNTAIN
Wahnapitae Lake
MAIN LINE
SUDBURY
ROMFORD
WAHNAPITAE
SOO LINE
C. P. R.
STURGEON FALLS
NORTH BAY
Lake Nipissing
To Toronto
N. French Riv.
S. French River
KEY HARBOUR
C.N.R.
Lake Huron
-LEGEND-
Laurentian shown
Keewatin & Hurenian shown
Gold shown
Silver "
Nickel "
Iron "
SKETCH MAP OF
SOUTHERN NIPISSING
SHOWING RAILWAYS, PROPOSED EXTENSIONS,
CHIEF MINERAL DEPOSITS, GEOLOGY

a road would probably be built with a length not exceeding 45 miles. This road would largely follow the river valleys and would be easier constructed than that from Elk Lake to Gowganda city.

The character of railroad required may be a matter of opinion. Personally, I believe that for the present a cheaply constructed standard gauge road would serve every purpose. With rails of 60-pound weight and roadbed in proportion, cost of construction should be about $20,000 per mile. As traffic warranted it, this road could later be improved. If a road were completed through from the Temiskaming & Northern Ontario to the Canadian Northern, the capital cost would thus be $1,900,000. or say $2,000,000.

Richly Mineralized Area.

Before considering the amount of traffic for the proposed road, it would be well to consider the character of country through which it will run. On the accompanying map it will be noted that a wide band of rocks of Keewatin and Huronian age are shown as running northeast from the Georgian Bay, past Sudbury and Cobalt, to the Quebec boundary. These rocks are unshaded on the map. Adjoining them to the north and south, and cross-lined on the map, are granite and gneiss of Laurentian age. The latter are almost devoid of economic minerals. The former are the great mineral bearers of Ontario. These rocks carry the iron ores of Michipicoten and Moose Mountain, the copper ore of the north shore of the Georgian Bay, the nickel-copper ore of the Sudbury region, and the cobalt-silver ores of Cobalt and adjoining regions. The total value of the nickel and copper production of Sudbury, as compiled from returns published by the Geological Survey of Canada, amounts to no less a figure than $118,773,700. The value of the total output of the Cobalt camp in silver amounts to $48,327,280, in which no account is taken of the value of cobalt nickel and arsenic. After long investigation throughout the whole province, I am thoroughly convinced that the Huronian belt under consideration is the richest portion of the province in minerals.

On the map a few of the occurrences of silver throughout the Gowganda-Elk Lake district are shown, from which a very wide distribution of that metal is apparent. Scores of claims have been staked in this district with native silver showings, and many of these have been developed into encouraging prospects. Two, at least, are now in the position of producing mines, with every probability of being dividend payers. It is to be noted that in these properties the silver ore occurs in diabase, and that, contrary to general impression, dividend-payers have been found in this formation. At least six properties are located in the diabase of Cobalt and Gowganda which are in the dividend class. Numerous occurrences of native silver carrying several thousand ounces to the ton, were shown us. Undoubtedly some of these will make producing mines. Only a small fraction of the country has been trenched, and if the present population is induced to remain in the district through giving them railroad facilities, rich discoveries of silver will be made for years to come.

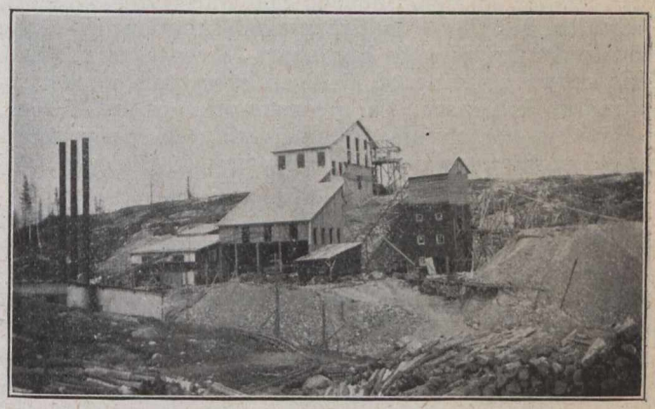
On the Wapoose River and near Shining Tree Lake, iron formation occurs similar in character to the Michipicoten iron range and the Vermilion iron range of Minnesota. I am told that one deposit on the Wapoose River is as promising in its surface appearance as was Moose Mountain. Unfortunately, none of our party has seen this property.

Fuel.

The prospects and mines are at present dependent on an inferior quality of wood as a source of power. At least 2¼ cords, even after drying for six months, are required to yield the equivalent of one ton of good coal. The wood is soon cut off a 40-acre claim, and then purchase must be made from adjoining claims. At the Millerett the cost of wood was stated to be as follows:

Stumpage to the Booth Company	12½c a cord
Stumpage to the Provincial Government	12½c a cord
Stumpage to claim owners	25c a cord
Total stumpage	$0.50
Cutting	1.25
Hauling	1 50
At the boiler in winter time	3.25
At the boiler in summer time	3.35
Average cost per cord	3.30
2¼ cords wood	7.42

Three-quarter lump best Pittsburg coal would be supplied at the Millerett for $4.25 by way of the Great Lakes, Key Harbour and the Canadian Northern or for $6:25 by all rail route via the Temiskaming & Northern Ontario Railway. The saving by the first route



Power plant, Mill, and No. 1 Shaft. All dumps to left of shaft are Concentrating Ore.

over wood fuel amounts to $3.17 per ton of coal or on the estimated consumption of the Millerett yearly namely 1,900 tons, $6,023. The cost of coal by the two different routes is estimated as follows:

Price of coal, f.o.b. Suspension Bridge	$2.50
Duty	.53
Freight by G.T.R. and T. & N. O. to Charlton 455 miles, being one-half cent on the former and three-quarters cent on the latter per ton mile	2.85
Freight, Charlton to Millerett, 50 miles at three-quarters cent per ton-mile	.37
Total	$6.25
Coal, f.o.b. boat Cleveland	$2.25
Duty	.53
Boat to Key Harbour and unloading	.57
C. N. R. to Gowganda Jct. and Government extension to Millerett, 155 miles, being one-half cent on the former and three-quarters cent on the latter per ton-mile	.90
Total	$4.25

There are already installed in Gowganda and Elk Lake boilers rated at 3,300 h.p. These would require annually about 23,000 tons of coal were they supplied altogether by coal. Many of the smaller ones not di-

rectly on the railroad would probably continue to use wood. As there are few water powers in the district it is probable that for many years, mines in this district will be supplied largely by coal.

The coal requirements of the Temiskaming & Northern Ontario Railway at Englehart, which amounted last year to 22,645 tons, can also be much more cheaply supplied by way of the proposed railroad. The cost of coal delivered at Englehart by the present route and the proposed route work out as follows: Coal on board cars at Suspension Bridge costs 25 cents more per ton than the same coal on board boat at Cleveland. The freight rate on the Grand Trunk from Suspension Bridge to North Bay is $1.75, or approximately one-half cent a ton-mile. The same freight rate is allowed the Canadian Northern for a haul from Key Harbour to Gowganda Junction. The present rate on the Temiskaming & Northern Ontario from North Bay to Charlton is three-quarter cent per ton-mile, and for purposes of comparison this rate is assumed both on the present road and on the proposed road. Coal on board cars Suspension Bridge, duty paid $3.03, freight to North Bay $1.75, North Bay to Englehart $1., total $5.78. Coal, f.o.b. boat, Cleveland, duty paid $2.78, boat freight to Key Harbour and unloading 57 cents, Canadian Northern to Gowganda Junction 55 cents. Gowganda Junction to Englehart 78 cents, total $4.68. This shows a saving of $1.10 on every ton of coal required at Englehart. On a consumption of 22,645 tons, the saving per annum to the railway company on its own coal through importing by way of the new railroad, amounts to $24,909.50.

The coal requirements at Cochrane, a divisional point on the Grand Trunk Pacific, are now brought in all rail, by way of the Grand Trunk and the Temiskaming & Northern Ontario. A similar saving of $1.10 a ton can be made on all this coal by importing by way of Key Harbour. The probable consumption at Cochrane is unknown to me, but may be put at twice the consumption of Englehart. This should give the proposed road an additional freight tonnage of 50,000 tons, yielding in freight $38,500, at three-quarters cent per ton-mile. It is further to be noted that if the freight rate to Cochrane on coal can be reduced $1.10 a ton over the present rate a longer section of the Grand Trunk Pacific will be coaled from Cochrane, making that much more freight for the Temiskaming & Northern Ontario.

Probable Traffic.

The probable traffic for such a road is very hard to estimate accurately, and the figures given below must be accepted cautiously, but they are believed to be quite within the bounds of probabilities. The best developed mine in the region is the Millerett, and the manager of that property made the following estimate of the traffic he would furnish during the next two years:

Ore and concentrates, 400 to 500 tons per annum.
Coal, 1,800 to 2,000 tons per annum.
Supplies, 300 to 500 tons per annum.
An average of, say, 2,800 tons.

In addition he figured 400 to 500 passenger fares per annum between the Millerett and Charlton. He has paid out during the last two years for freight between the railroad and the mine $46,000. His freight in winter, when it is the cheapest, costs $20 a ton, or at the rate of 45 cents per ton-mile. He would consider that if his freights were divided by ten, that is, if brought down to $2 per ton, that it would be of the very greatest advantage. All operators recognize that the freight on the branch road should be higher than in older Ontario, and would raise no objections to this.

After seeing a large number of the properties in the district, I think one may fairly assume that with reasonable transportation facilities such as here advocated, at least ten operating mines similar to the Millerett may be looked for within a few years. Taking the average tonnage of these properties at 2,800 tons per annum and the average freight rate at $1.50 per ton as the average haul would be less than to the Millerett, the total freight would amount to $42,000 per annum. We may fairly assume that at least forty prospects would begin operation and that these would each require one-eighth of the supplies required by the better developed properties, making a total freight of $21,000. To these probable freight receipts from the mines must be added the freight requirements of the towns of Gowganda and Elk Lake. There will also be passenger fares, which should amount to $10,000 a year. Telegraph and express receipts should add something additional. There will be further the freight on a certain amount of pulp. On coal for the Grand Trunk Pacific the additional receipts should be $38,000. The total receipts from all these sources should be considerably over $100,000 annually. Should iron ore in commercial quantity be found, the receipts may easily be doubled. Assuming that working expenses will be sixty-five per cent., there would appear to be a profit of $35,000 for interest on capital account. To this is to be added the saving on coal for the main line of the Temiskaming & Northern Ontario, amounting to $25,000.

Financial Considerations.

The revenue to the Province of Ontario from the mining divisions of Montreal River and Gowganda the past four years has been as follows:

	Montreal River	Gowganda	Total
1907	9,441.15		
1908	25,177.25		
1909	49,395.67	$42,583.65	
1910	16,403.03	15,512.45	
	$100,417.10	$58,095.10	
Average	25,104.27	29,047.55	$54,151.82

This revenue included miners' licenses, fees and receipts from sale of lands, but does not include receipts from the sale of town lots in Smythe and Gowganda. It does not include the receipts from part of the Sudbury mining district around Welcome Lake, which would be served by the proposed railroad, but on the contrary does include some receipts from the southern part of the Montreal River division, which would not be served by the railroad. Some receipts are not included which were collected at Toronto, and this is particularly true of the first and second years.

I am convinced that if proper transportation facilities are not given these two mining divisions, that the receipts to the Province will rapidly dwindle almost to the vanishing point. If, on the contrary, a railway is built, the people who are in there will take fresh heart and will interest more capital in their properties, new properties will be discovered and the provincial revenue will continue. It will be noted that the average receipts total a little over $54,000, and probably nearly $50,000 is net. No income is here included from working mines. This might easily amount to $25,000 or more. It is very safe to assume that a railway will

add $50,000 per annum to the provincial revenues over what will be obtained without it.

Assuming that the railroad will cost $2,000,000 and that interest is payable at the rate of four per cent., the yearly charge will amount to $80,000. Against this we have net profits on the operation of the railroad as shown above, amounting to $35,000, additional net profits from miners' licenses, etc., of $50,000, and saving in coal to the railway of $25,000, a total of $110,000.

Conclusions.

I am aware that the figures given as the probable profits may be challenged and that such estimates are uncertain. Even if no profit could be made on the railroad, I would still urge on the people of the Province the desirability of the construction of the railroad. A good start has been made on the development and permanent settlement of this section of the Province. Should the people now there become discouraged and leave, it will put back the development of that section half a century. An estimate prepared by yourselves shows that the principal companies have already expended in that country three and a half million dollars, and the expenditure by individuals must largely increase this amount. You have taken your share in the risk of development, the people of the Province should bear their share in the risk, by constructing the transportation facilities which are absolutely necessary Nor do I believe that this expenditure on the part of the Province would be any great risk. Every railroad which has traversed this mineral belt has developed remunerative traffic. The Canadian Pacific at Sudbury has been the means of developing the largest nickel field in the world. The Temiskaming & Northern Ontario Railway at Cobalt, crossing the same belt, has developed the richest silver camp in the world. The Canadian Northern, crossing the same belt, has opened up some of the richest nickel and iron mines of the Dominion. A road from Gowganda Junction to Charlton will in all probability be the means of opening up similar mineral riches.

Had the promoters of the Canadian Pacific hesitated to build from Ottawa to Port Arthur until payable traffic could be shown, there would have been no Sudbury and its nickel mines. Had the promoters of the Temiskaming & Northern Ontario waited until payable traffic could have been shown, there would have been no Cobalt. Railroads into new territories are in a measure speculative, but so many of them have made good, and particularly in this mineral belt, that I have no hesitation in urging on the people of Ontario that this road should be constructed. Several railroads now under construction in the Province by private capital do not promise nearly as well. If private companies are willing to take the risk involved in these railroad undertakings for the possible profits that may accrue, surely the great Province of Ontario can afford to build a railroad from the Temiskaming & Northern Ontario to the Canadian Northern at Gowganda Junction through the richest mineral area of the Province.

All of which is respectfully submitted.

404 Lumsden Building, A. B. WILLMOTT.
Toronto, April 3, 1911.

MINERAL PRODUCTION OF BRITISH COLUMBIA IN 1910

(By E. Jacobs, Victoria, B.C.)

The Annual Report of the Minister of Mines of British Columbia for the calendar year 1910 was issued early in July. The net results may be gathered from the first two sentences of the review of the year by the Provincial Mineralogist, Mr. William Fleet Robertson, under the head "Progress of Mining," as follows: "The value of the mineral products of the Province for the year 1910 amounts to $26,377,066, which is considerably greater than that of any previous year. The tonnage of ore mined in the lode mines during the year was 2,216,428 tons, an increase over that of the preceding year of 158,715 tons, or 7.7 per cent." (It might have also been stated that this is the largest tonnage for any year since the commencement of lode mining in the Province.) A third sentence, appearing later in the review, is necessary to complete this brief summary of the year's results, namely, that "the production of coal made by the British Columbia collieries during 1910, amounting to 3,139,235 long tons, was the greatest in the history of coal mining in the Province."

Several of the statistical tables follow, these exhibiting, respectively, (1) the value of the mineral production of the Province for all years to 1910, inclusive; (2) the quantities and value of mineral products for three years, 1908-1910; and (3) the value of the production of the several districts and divisions into which the Province is officially divided.

In calculating the value of the products, the average prices for the year in the New York metal market, as shown by The Engineering and Mining Journal, have been used as a basis. For silver, 95 per cent.; for lead, 90 per cent.; and for zinc, 85 per cent. of such market prices have been taken. Treatment and other charges have not been deducted, except an allowance of 5 lbs. of copper to the ton of ore smelted for loss in the slags.

The quantity of ore shipped to smelteries or treated in concentrating or stamp mills has been obtained from certified returns received by the Provincial Department of Mines, as provided for by law. As regards "Other Materials" shown in the second table here reprinted, which item includes building-stone, lime, bricks, tiles, portland cement, etc., although it is not so stated in the report, it is known that the total value of these products appearing in the table is well within the actual value of the production of the year, additional details received after the table was made up having proved the estimate to be under, rather than over, the amount included.

Value of Total Production for all Years to 1910, Inclusive.

Gold, placer	$71,213,103
Gold, lode	60,811,067
Total gold	$132,024,170
Silver	31,095,602
Lead	24,645,605
Copper	60,743,405
Other metals (zinc, iron, etc.)	1,083,172
Total metalliferous	$249,591,954

Coal and coke	$114,012,596
Building materials, etc.	10,593,100
Total non-metalliferous	124,605,696
Aggregate value of production	$374,197,650

Summarizing the foregoing, the various classes of mineral production are as under:—

	Total value.
From placer mines	$ 71,213,103
From lode mines	178,378,851
From coal mines	114,012,596
From quarries, etc.	10,593,100
Aggregate value	$374,197,650

It is noteworthy that the aggregate value at the end of 1910 ($374,197,650) shows an increase in ten years of $222,042,442, or about 146 per cent., over that at the close of 1900 ($152,155,208). Comparing 1905 ($248,663,176) with 1900, the increase in five years was $96,507,968, or about 63.5 per cent., while the five-year period, 1906-1910, gave an increase of $125,534,474, or nearly 51 per cent., the aggregates at the end of 1905 and 1910, respectively, having been as shown above.

The quantities of the several minerals produced in the Province in all years is shown in the statistical tables to have been as under (placer gold, of which the quantity is not stated, being here approximated):—

	Quantity.
Placer gold (approximate estimate), oz.	4,000,000
Lode gold, oz.	2,952,736
Silver, oz.	54,648,387
Lead, lbs	613,914,820
Copper, lbs	415,353,709
Coal (net production, long tons), tons	32,429,071
Coke, tons	2,250,919

Quantities and value of mineral products for 1909 and 1910:—

	1909		1910	
	Quantity.	Value.	Quantity.	Value.
Gold, placer, oz.	.....	$ 477,000	.....	$ 540,000
Gold, lode, oz.	238,224	4,924,090	267,701	5,533,380
Totals, gold		$ 5,401,090		$ 6,073,380
Silver, oz.	2,532,742	1,239,270	2,450,241	1,245,016
Lead, lbs.	44,396,346	1,709,259	34,658,746	1,386,350
Copper, lbs.	45,597,245	5,918,522	38,243,934	4,871,512
Zinc, lbs.	.....	400,000	4,184,192	192,473
Totals, metalliferous		$14,668,141		$13,768,731
Coal, tons, 2,240 lbs.	2,006,476	7,022,666	2,800,046	9,800,161
Coke, tons, 2,240 lbs.	258,703	1,552,218	218,029	1,308,174
Totals		$ 8,574,884		$11,108,335
Other materials	.....	1,200,000	.....	1,500,000
Totals, non-metalliferous		$ 9,774,884		$12,608,335
Totals, metalliferous		14,668,141		13,768,731
Totals of yearly production		$24,443,025		$26,377,066

The foregoing table shows the production in 1910 as compared with 1909. In comparison with 1909, the following are the actual changes:—

	Quantities		Value	
	Increase.	Decrease.	Increase.	Decrease.
Gold, placer	.....	.....	$ 63,000	.....
Gold, lode, oz.	29,477	.....	609,290	.....
Total gold			$ 672,290	
Silver, oz.	.....	82,501	5,746	
Lead, lbs.	.....	9,737,600	.....	$ 322,909
Copper, lbs.	.....	7,353,311	.....	1,047,010
Zinc	.....	.....	.....	207,527
Total metalliferous			$ 678,036	$1,577,446
Coal, tons	793,570	.....	2,777,495	.....
Coke, tons	.....	40,674	.....	244,044
Other materials	.....	.....	300,000	.....
Totals			$3,755,531	$1,821,490
Less decreases			1,821,490	
Net increase			$1,934,041	

PRODUCTION OF MINERAL BY DISTRICTS AND DIVISIONS.

Names.	——Divisions—— 1909.	1910.	——Districts—— 1909.	1910.
Cariboo District	.....	.....	$ 247,000	$ 239,000
Cariboo Mining Division	$ 220,000	$ 218,000	.....	.....
Quesnel Mining Division	12,000	6,000	.....	.....
Omineca Mining Division	15,000	15,000	.....	.....
Cassiar District	.....	.....	234,498	283,807
East Kootenay District	.....	.....	4,766,215	6,121,832
West Kootenay District	.....	.....	5,169,749	5,088,186
Ainsworth Division	867,340	318,058	.....	.....
Slocan Division	704,737	845,106	.....	.....
Nelson Division	584,955	876,002	.....	.....
Trail Creek Division	2,875,084	2,966,096	.....	.....
Other parts	137,633	82,924	.....	.....
Boundary District	.....	.....	7,728,256	6,998,519
Osoyoos, Grand Forks & Greenwood Divisions	7,501,046	6,442,063	.....	.....
Similkameen, Nicola, Vernon	225,210	556,456	.....	.....
Yale, Ashcroft, Kamloops	2,000	.....	.....	.....
Lillooet District	.....	.....	16,676	9,832
Coast Districts (Nanaimo, Alberni, Clayoquot, Quatsino, Victoria)	.....	.....	6,280,631	7,635,890
			$24,443,025	$26,377,066

The quantity of lode gold was the largest produced in any year by 12,119 oz., the largest previous production having been in 1908, 255,582 oz.

The silver was the smallest production of that metal in 15 years, the highest having been in 1897, of 5,472,971 oz.

The output of lead was the smallest in any year since 1903, which was the year payment by the Dominion Government of bounty on lead mined in Canada was commenced. The maximum quantity produced in any year since 1903 was in 1905, 56,580,703 lbs. Before that, however, the maximum in all years had been reached, namely, in 1900, with a production of 63,358,621 lbs, which was prior to the practical closing by a tariff impost of the United States market to Canadian lead.

The production of copper was the smallest on official record in five years. The maximum yearly output shown in the report was that of 1908, of 47,274,614 lbs. The comparison, however, may not be a fair one, since it is understood that previous to 1910 the official figures showed the copper contained in the ore, as estimated by assay value, not that actually recovered by smelting. As mentioned earlier, a deduction was made last year, at the rate of 5 lbs. of copper per ton of ore smelted, for loss in the slags, so the 1910 figures are nearer those of actual production of marketable copper.

The decrease in output of zinc was due to forest fires having destroyed surface plants at the mines of two of the chief producers of this metal, and, as well, burned bridges and trestles along several miles of railway, thus depriving those mines of transportation facilities, which have not yet been renewed.

The net production of coal shows a comparatively large increase—of 793,579 long tons. A comparison of the figures of gross production, that is, including the coal made into coke, is rather less favorable, showing an increase of 738,635 tons. The gross output of the two years, respectively, was: For 1910, 3,139,235 long tons; for 1909, 2,400,600 tons. The quantities made into coke were: In 1910, 339,189 tons; in 1909, 394,124 tons.

Other materials, that is, non-metallic minerals, practically all for building purposes, are credited with a 25 per cent. increase. It is most likely these have been underestimated in quite recent years until 1910, for there has been a steadily enlarging use of materials in building and road and footpath construction in the larger cities of the Coast district during several years, and this is continuing in larger degree than in the past.

The comment of the Provincial Mineralogist on this table, which shows the proportions of the total mineral production of two successive years made in each of the mining districts and divisions into which the Province is divided, is as follows: "It will be noted that this year, for the first time in many years, the Coast district has the honor of first place on the list, followed, in order of importance, by the Boundary and East Kootenay districts, while West Kootenay—for many years the greatest producer of mineral in the Province—is relegated to fourth place. The Coast and East Kootenay districts owe a considerable percentage of their output to the coal mines situated within their limits, whereas in the other districts the production is almost entirely from metal mining."

The total tonnage of ore was produced by the several districts in the following proportions: Boundary, 76.75 per cent.; Rossland (Trail Creek div.), 11.35 per cent.; Fort Steele div. (East Kootenay), 5.22 per cent.; Coast, 1.90 per cent.; others, 4.7 per cent.

Mines that Shipped Ore in 1910.

The number of mines from which shipments of ore were made in 1910 was 83, and of those only 50 shipped more than 100 tons each during the year, while but 32 shipped in excess of 1,000 tons each. Of the latter, 8 are in Nelson mining division, 8 in Boundary district, 3 in Ainsworth division, 4 in Slocan district, 3 in Coast district, 3 in Trail Creek (Rossland) division, 2 in Fort Steele division (East Kootenay), and 1 in Trout Lake division (West Kootenay).

The following table shows the number of mines that shipped ore in 1910; the districts in which they are situated; the tonnage of ore produced in each district; and the number of men employed, both above and below ground:—

	Tons of Ore shipped.	No. of Mines shipping.	No. of Mines shipping more than 100 tons in 1910.	Men employed in these Mines. Below.	Above.	Total.
Cassiar:						
Atlin, Skeena & Queen Charlotte	4	1	..	4	4	8
East Kootenay:						
Fort Steele	115,762	5	3	229	84	313
Windermere-Golden	53	1	..	6	4	10
West Kootenay:						
Ainsworth	21,850	11	5	66	39	105
Slocan	44,466	20	11	220	79	299
Nelson	36,203	14	10	178	77	255
Trail Creek	253,471	9	5	492	149	641
Other Divisions	971	1	1	40	12	52
Boundary:						
Grand Forks, Greenwood, and Osoyoos	1,701,113	13	10	781	374	1,155
Ashcroft-Kamloops	12	1	..	6	3	9
Similkameen-Vernon	.....	..	..	..	..	..
Lillooet	443	3	2	9	4	13
Coast	42,080	4	3	143	104	247
Total	2,216,428	83	50	2,174	933	3,107

"An analysis of the above table shows, approximately, that, taking the Province as a whole, there were 713 tons of ore mined a year for each man employed about the mines. In this respect, however, the districts vary very materially, since, in the Slocan, the figures show 148 tons mined to the man in a year; in Nelson district, 142 tons; in Trail Creek, 395 tons; and in Boundary, 1,472 tons mined to the man employed.

"Such generalization, of course, does not apply exactly to any one mine, but only to the district, and in the first two districts mentioned the mines vary in character so greatly, some having high-grade shipping ores and others low-grade concentrating ores, that care must be taken not to carry these average figures too far."

Non-Shipping Mines.

Another table in the report shows the number of non-shipping mines in each of the several districts, including those idle, together with the number of men employed. There are in all 153 of such mines, of which 56 were worked last year and 97 were idle. In those worked, 304 men were employed above ground and 298 underground; total, 602.

Men Employed in Mining.

The total number of men employed in mining in the Province—in both coal and metal mines—is as under. It should be explained that in arriving at these figures the custom of the Department of Mines is, for instance, where 12 men are employed in a mine for 4 months, to count that as 4 men employed for 12 months, so that the total given is less than the actual number of individuals who worked in the mines during the year:—

In Metalliferous mines—	Above ground.	Under ground.	Total.
Shipping mines	933	2,174	3,107
Non-shipping mines	304	298	602
Total	1,237	2,472	3,709
In Non-Metalliferous Mines—			
Collieries	1,855	5,903	7,758
Grand total	3,092	8,375	11,467

Summary Review of Production.

Under the head, "Progress of Mining," the Provincial Mineralogist reviews at some length the production of the several minerals. Only a brief summary of his comments can be given here, though.

Placer Gold.—Cariboo's production was $8,000 less than in 1909, due to a light snowfall the previous winter, the consequent shortage of water not admitting of all the sluices being cleaned up at the end of the gravel-washing season, so some of the gold had to be left in them for recovery in 1911 season. In Quesnel division of this district, the Quesnelle Hydraulic Gold Mining Co., of Philadelphia, Pa., made much progress with construction in connection with its water supply system for hydraulicking gold-bearing gravel, and expects to commence mining next autumn.

In Cassiar district, $275,000 was recovered in Atlin division, which sum shows an increase of $75,000 over the recovery of 1909 season. The North Columbia Gold Mining Co. took about $150,000 out of its Pine Creek mines. The Guggenheim placer mine was leased to and worked by the North Columbia Co. The Pittsburg-British Gold Co., which controls McKee creek, also had a good season, but its operations were on a smaller scale than those of the North Columbia. The total yield of other parts of Cassiar district was smaller than in 1909.

Of the $18,000 recovered in other parts of the Province, $7,000 was from Lillooet district and $3,000 from East Kootenay.

Lode Gold.—To a total of $5,533,380, Rossland mines contributed $2,465,455, Boundary $2,176,427, and Nelson (including Sheep creek) $761,359, all three showing increases over their production in 1909. About 76 per cent. of the lode gold is obtained from smelting ores also copper-bearing. The Hedley Gold Mining Co., operating a 40-stamp mill at Hedley, Similkameen (included in Boundary district), produced about $530,000 from its Nickel Plate group of mines. Two 20-stamp and several smaller mills in Nelson mining division recovered most of the lode gold credited to that division. There was a falling-off in the Coast and some other gold-producing districts.

Silver.—Slocan district, including Ainsworth and Trout Lake divisions, produced about 54 per cent. of the year's total output of silver, and Fort Steele mining

division 20 per cent., all from argentiferous galena. Forest fires in Slocan, and a lessened ore output from the St. Eugene mine, East Kootenay, combined to make the production of this metal smaller than in 1909. As a result of development, the outlook is good for an enlarged production in 1911, chiefly from Slocan mines.

Lead.—As in other years, most of the lead produced came from Fort Steele division, East Kootenay. The following table shows the production of the several mining divisions:—

Mining Division.	Lbs of lead.	Percentage of total.
Fort Steele	23,874,562	68.88
Ainsworth	2,558,353	7.38
Slocan	6,406,358	18.49
Nelson	1,245,844	3.59
Trout Lake	463,295	1.34
All others	110,334	0.32
Total	34,658,746	100.00

Copper.—The next following table shows the copper production of the various districts for the last three years:—

District.	1908. Lbs.	1909. Lbs.	1910. Lbs.
Boundary	40,181,790	40,603,042	31,354,985
Rossland	5,042,244	3,509,909	3,577,745
Coast and Cassiar.	1,997,337	1,297,722	3,078,090
Yolo-Kamloops ..	.....	.....	1,178
Nelson	53,243	186,572	231,936
Total	47,274,614	45,597,245	38,243,934

The proportions of production in 1910 were: Boundary, 82 per cent.; Rossland, 9.35 per cent.; Coast and Cassiar, 8.05 per cent.; Nelson, 0.60 per cent.

The average assays of the copper ores of the several camps, based upon copper recovered, were as follows: Boundary, 0.995 per cent.; Coast, 3.67 per cent.; Rossland, 0.705 per cent.

Zinc.—The total zinc output is from the Whitewater and Whitewater Deep mines in Ainsworth division, and the Lucky Jim and Van-Roi mines in Slocan division; there has not been any output from the zinc claims near Arrow Lake, nor those in East Kootenay. Forest fires last summer destroyed the surface plants of all but the Van-Roi, and the lease of the concentrating mill used by that mine expired in August, so there was no production of zinc at all during the latter part of the season. Shipments will be resumed after renewal of the destroyed plants and railway, and completion of the Van-Roi Co.'s new mill.

Other Minerals.—No iron ore was produced, there not being any iron blast furnaces in operation in the Province. Preparations to recover platinum in 1911 were being made, but none was obtained in 1910. Building materials showed substantially increased production. Drilling for oil was in progress in Sooke district, Vancouver Island. A deposit of oil shales, carrying a fair percentage of oil, has been found on North Thompson river, but this has not yet been proved of commercial value.

Work of Bureau of Mines in 1910.

The Provincial Mineralogist examined and reported on a small coal property in Boundary district; went to Mayne island and examined a deposit of crude pumice there; made a long trip to Tatlayoko lake, the headwaters of Homathko river, which flows into Bute inlet, and made a preliminary report as to its mineral probabilities; examined various mineral claims in Lillooet district, returning to the Coast by Pemberton meadows and Green lake; and subsequently examined the more developed mining properties on Boar river and tributaries, Portland Canal district.

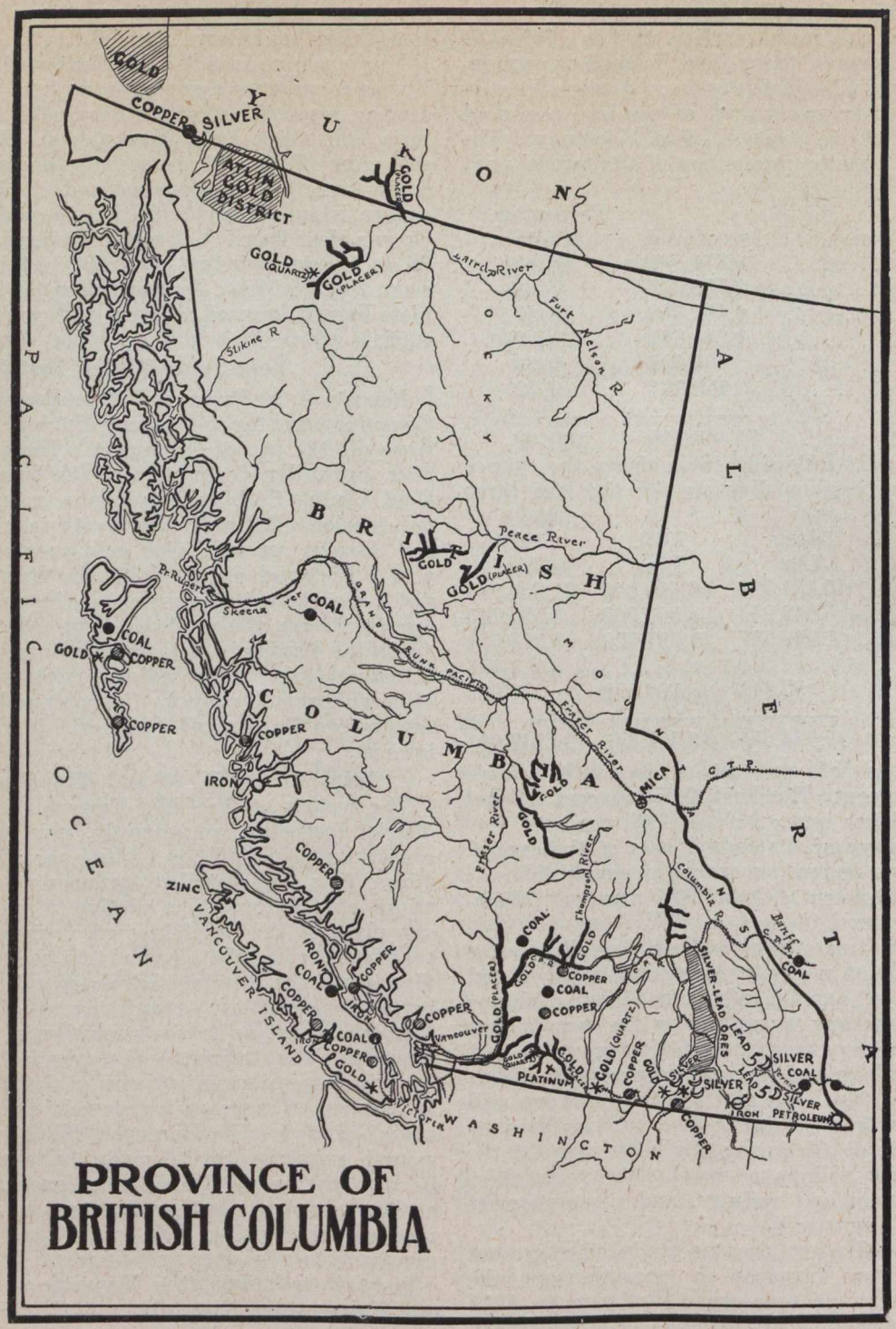
Two examinations for certificates of competency and license to practise assaying were held, in May and December, respectively, at the Provincial Assay Office, Victoria, and three candidates passed. Examinations for coal-mine officials—first—second—and third-class certificates—were held at Nanaimo and Cumberland, on Vancouver island; Merritt, in Nicola valley; and Fernie, Crow's Nest Pass. The total number of candidates was 78, as follows: For first-class, 20 (10 failed); for second-class, 20 (3 failed); for third-class, 38 (8 failed). Complete lists of licensed assayers and certificated coal-mine officials are printed in the Annual Report.

Reports of Mining Districts.

Reports of the Provincial Mineralogist and of the Gold Commissioners for the various districts and mining divisions fill 122 pp. of the report. Those on Cariboo district (including description of the Quesnelle Hydraulic Gold Mining Co.'s new hydraulic installation, in Quesnel division), Atlin division (with report of the Provincial Assayer on some rich gold-quartz claims on Taku arm); Portland Canal (with the Provincial Mineralogist's report on this division); Ainsworth, Slocan, Nelson (including Sheep Creek camp), Boundary, Lillooet (with the Provincial Mineralogist's special report), and Nanaimo (this last including reports by the Provincial Mineralogist on Tatlayoko district, and by the Provincial Assayer on Valdes and Lasqueti islands), are of much interest.

Inspection of Mines and Mine-Rescue Work.

The reports of the Chief Inspector of Mines and five district inspectors, respectively, give much information concerning the condition of both metalliferous and coal mines, lists and detailed statements of accidents in mines, etc. Information relative to mine-rescue work is also given by the Chief Inspector, who says: "It is very gratifying to be able to report that the several companies throughout the Province have responded very thoroughly to the statutory requirements of the Coal-mines Regulation Act as to the provision of mine-rescue appliances. The training of employees in mine-rescue work is progressing satisfactorily, though some difficulty is experienced in procuring a ready and economical supply of oxygen. The Hon. the Minister of Mines has caused enquiries to be made, with a view of establishing within the Province an oxygen-manufacturing and compressing plant, so that oxygen may be supplied readily and cheaply. This would seem to be absolutely necessary to efficiency and success. In addition to the colliery installations, the Department of Mines has established general installations of mine-rescue apparatus at Nanaimo and Cumberland (both on Vancouver island), Middlesboro (Nicola valley), and Hosmer (Crow's Nest Pass). Each of the various district inspectors of mines has graduated at a mine-rescue training course taken at the United States Mine-Rescue Training Station, at Seattle, Washington, and is consequently able to use, or direct the use of, the oxygen apparatus in an emergency." The Chief Inspector also gives a summary of the changes made in the Coal Mines Regulation Act when, last Spring, the act was consolidated and amended. In his introductory comments on this subject he says: "The various mining centres were visited by the Deputy Minister of Mines and the Chief Inspector, who held conferences with both the operators and the employees or their representatives. They re-



ceived numerous valuable suggestions, many of which were embodied in the completed bill, the main intent and purpose of which was to improve on the old act and introduce new measures for safety. Many valuable suggestions from the Report of the Royal Commission on Mines (Great Britain), 1906-1909, were also embodied in the bill, and upon all questions where any doubt existed the opinion of the Royal Commissioners was accepted as conclusive."

Miscellaneous Contents of Annual Report.

In addition to the contents already referred to, there is much other information contained in the Annual Report. Among other useful data are the lists of shipping mines, and of mineral claims Crown-granted in 1910. A full index completes a report, which has been carefully prepared by the Provincial Mineralogist; illustrated by numerous excellent half-tone reproductions of photographs of country, surface works at mines and mills, and other appropriate subjects; also with maps, diagrams, graphic tables, etc.; and well printed at the Provincial Government Printing Office. The report is obtainable gratis on application to the Department of Mines, Victoria, B.C.

Notes on a Discovery of a Telluride Gold Ore at Opasatica, and its Probable Relation to the Gold Ores of the Porcupine and Neighbouring Districts.*

By ROBERT HARVIE, JR., Montreal.
(Transactions Canadian Mining Institute.)

In the course of a short examination of the geological conditions obtaining in the Opasatica district, undertaken by direction of the Quebec Department of Mines, the writer observed certain new points of interest which it has seemed well to present in correlation with information obtained in the not far distant and evidently similar districts of Ontario, namely, Larder Lake, Porcupine and Abitibi.

Relative Positions of the Districts.

The Opasatica district is in Quebec, on the height of land around the north end of Lake Opasatica, or about forty miles in a direction slightly east of north from the north end of Lake Temiskaming. From Opasatica, the Larder Lake district lies in Ontario about fifteen miles to the south-west, the Porcupine district is about 100 miles a little north of west, Abitibi is about fifty miles to the north-west.

As the general geology will not be discussed, this may be dismissed with the statement that the succession of Keewatin, Laurentian and Huronian is similar to that so frequently described for Cobalt and the other areas in this Temiskaming district.

Opasatica.—The gold is associated with quartz-ankerite fissure veins, although in one instance the ore body is a rusty weathering dike of a dioritic rock cut across by very numerous quartz veins, which carry the values. The country rocks are of Keewatin or Huronian age. The largest vein observed averaged about two and a half feet wide in an exposure of one chain in length, and it may be said that all of those examined hold their width well. The gangue is quartz, partly massive, partly in free crystals, in both cases being commonly banded with ferruginous dolomite or ankerite and carrying sericite. In varying amount pyrite, chalcopyrite, petzite and free gold also occur. In some instances chalcopyrite forms a large proportion of the vein matter, and the wall rock on either side is also heavily charged with sulphides, probably chiefly iron pyrite.

The values are obtained both from free gold and from the telluride petzite, in which mineral there is about 24 per cent. of gold and 40 per cent. silver. The petzite was introduced later than the quartz and ankerite, being found in fractures in these minerals. The gold is chiefly in seams in the petzite. Petzite has a high metallic lustre of a steel grey colour, is heavy, has a low hardness, and altogether closely resembles galena, except that it lacks cleavage, and hence does not break into the cubes so characteristic of the latter. Owing to the small amount of work done so far, it is impossible to state what may be the relative importance of this telluride.

An assay of the pure chalcopyrite showed only half an ounce of silver and a trace of gold per ton; pyrite from the wall rock gave only 40 cents gold per ton. Apparently then, both these sulphides are unimportant as carriers of values.

*Larder Lake***—The gold is associated with irregular small quartz, or quartz and ankerite veins. The country rock is a rusty weathering rock consisting of ferruginous dolomite or ankerite, cut in a most complex manner by the gold-bearing veins mentioned above. In most localities it contains a large amount of chrome mica or fuchsite, from which the rock derives its characteristic green colour.

Porcupine.—The writer has not yet had an opportunity of visiting the Porcupine district, but the recent articles by R. E. Hore† seem to give an excellent account of the conditions, and his descriptions have been freely used for the present purposes.

The deposits at Porcupine are of various forms: single fissure veins, vein systems, large masses of irregular form, locally called "domes," and bands of carbonate rock so closely intersected by a multitude of small veins that the whole mass has to be mined together.

The country rock is usually either pyritic grey schist or rusty weathering mixed carbonates, belonging to the Keewatin. Less often it is a Huronian conglomerate. Serpentines also occur in the district.

The rusty weathering carbonate rocks are similar to those occurring at Larder Lake and contain the same green mica. The gangue is chiefly quartz and ankerite. In general the quartz is milky white and vitreous, but where it has been exposed to the weather it is coated with iron oxides. For a few feet from the surface, streaks and patches of this secondary material are found filling small cavities and crevices, evidently left by the weathering out of the ferrodolomite or ankerite. Pyrite is rather generally distributed through the quartz, but not in any great quantity. Copper pyrite is also found in small amount and occasionally galena and zinc blende. The gold occurs chiefly free, not only in minute fractures in the quartz, but more especially in the rusty cavities. It remains to be seen whether this seeming abundance in the cavities is actual, or only due to an apparent concentration as a residual after the weathering away of the ankerite.

Though no actual results have been published, it seems to be generally accepted that, while 50 per cent. to 65 per cent. of the gold is free milling, the remainder is held by the sulphides. On the other hand, mention is also made that "good assays have in several instances been obtained from very unlikely looking "bull" quartz." No report has yet been made of the presence of tellurides and it is quite possible, even probable, that having been overlooked they will account for the presence of gold in these veins.

*By permission of the Superintendent of Mines of Quebec.

**See M. E. Wilson: Summary Reports Geol. Survey of Canada, 1908 and 1909. Also R. W. Brock, Rept. of the Ontario Bureau of Mines, 1907.

†R. E. Hore, Can. Min. Jour.: Oct., Nov., Dec. 1910; Jan., 1911; see also Notes on the "Map of the Porcupine Gold Area," by Ont. Bur. Mines, 1910.

Abitibi.—In the Abitibi district, in addition to other types of deposits, the rusty weathering carbonate rocks containing chrome mica, are typically developed, although on a small scale. The occurrence is quite close to a chromiferous peridotite.*

Significant Features.

Enough has probably been said in the above brief descriptions to show certain resemblances between the deposits of these four districts. More particularly, free gold is found in quartz ankerite veins in or near occurrences of a rusty weathering carbonate rock characterised by containing a bright green mica, and, while although so far tellurides have only been reported from Opasatica, still it seems probable that on closer examination they will be found in the other districts also. It is still more noteworthy that on these very same points an equally close parallel can be drawn with the deposits of the famous Mother Lode district of California. This will be done while considering a few special features in more detail.

Green Mica.—The beautiful bright green colour which the rusty weathering carbonate rock shows in so many places is due to a chrome bearing mica, fuchsite or mariposite. These minerals both contain chromium, but, in addition, mariposite also bears lithium. Mariposite is a very common mineral of the gold veins of the Mother Lode district in California.** Tests for chromium and lithium are readily obtained from the Canadian material and a rough comparison by the flame colouration test of the Larder Lake and Mother Lode materials shows the amount of lithium to be comparable.

The Carbonate Rock.—The rusty weathering carbonate rock has been given various names according to the origin to which it has been ascribed. In the Mother Lode district where similar masses of carbonate are found, it is now generally accepted that they are due to the carbonization of a serpentine or peridotite, intrusions of which are found in the district. Peridotite hydrated and oxidised gives a serpentine; serpentine carbonated gives magnesite, siderite, and quartz. This origin would seem best to explain the Canadian occurrences. Serpentines and peridotites are found at Porcupine and Abitibi, and are known to be widely distributed in the north country. Chromium, as is well known, is generally associated with peridotites so that the presence of the chromium bearing mariposite is explained and supports this view of the origin of the carbonate rock.

Ferruginous dolomites containing a chrome mica have been reported from Aird Island, near the Spanish River, in Lake Huron. This is suggestive of a wide distribution of these unusual rocks.x

Telluride Ores and Their Significance.

Among the minerals found in the Mother Lode ore are numerous varieties of tellurides. Although by far the greater proportion of gold won has been obtained free, yet in a few mines the tellurides have yielded very important amounts. This fact affords another interesting point for correlation, since, as was mentioned above, petzite, a gold-silver telluride, is found associated with the gold at Opasatica.

At Opasatica the free gold is found chiefly in fractures in the petzite, so that apparently here also, as has proved to be the case in other deposits of telluride ores, the telluride has precipitated the gold, but the evidence yet obtained is too scanty to warrant assertion as to whether or not this has given a secondary enriched zone. At Cripple Creek, Colorado, in the zone of oxidation above the level of the ground water, the gold occurs free, having been largely left behind during the leaching of the tellurides. Below ground water level, the tellurides have not been leached, and not only do they still contain their original gold content, but, in addition, they have caught and retained any free gold passing down in solutions from the zone of oxidation, thus causing an important secondary enrichment. The presence of the tellurides at the surface at Lake Opasatica, indicates that the zone of oxidation has been removed by the heavy glaciation to which the district has been subjected. The present surface must therefore come either at the level of the zone of enrichment or below, but in either case, from this argument, it seems unwarrantable to expect any great increase in values with depth, such as is regularly found to be the case in the mines of the Western States.

Tellurides have not been reported as yet from the other districts, but it has been reported from Porcupine that some apparently unpromising veins have yielded good assay values, which values may well be due to the presence of tellurides. In other veins the free gold at the surface has been found to continue in slightly increasing quantity down to a depth of two hundred feet. It is quite impossible that in this instance the zone of oxidation has *not* been completely removed, in which case an enriched zone may be encountered beneath.

It may be mentioned that this is not the first discovery of a telluride in Eastern Canada. Petzite has been reported as occurring associated with argentite, galena, chalcopyrite and quartz in the gold ore of the "Huronian Mine," near Lake Shebandowan, in Western Ontario.*

While it has not been decided what is the source of the gold and since, moreover, in the Mother Lode district, it is found that in general the serpentine or its products the carbonate rock is unfavourable to values, it seems remarkable that, although some at least of the veins are of Post-Huronian age, still the gold seems to be most typically associated with Keewatin carbonate rocks. No explanation has been suggested for this.

Assaying and Milling.—The presence of tellurides complicates both the testing and the treatment of the ores. The full value of the gold present cannot be judged from inspection or even by panning, because the amount contained in combination in the petzite is not shown by either of these processes. For this reason it is very essential that ores should always be tested by fire assay. Similarly when planning a mill, it must be kept in mind that simple amalgamation or cyandition will not recover the gold and silver values of the tellurides. The ore requires to be thoroughly roasted before employing these processes.

*Ont. Bur. of Mines, 16th An. Rept., Pt. I., p. 219; also 18th, pt. I., page 270.

**F. L. Ransome, folio 63, U. S. Geological Survey.

xAm. Journal Science, XXXIII., p. 284, 1887.

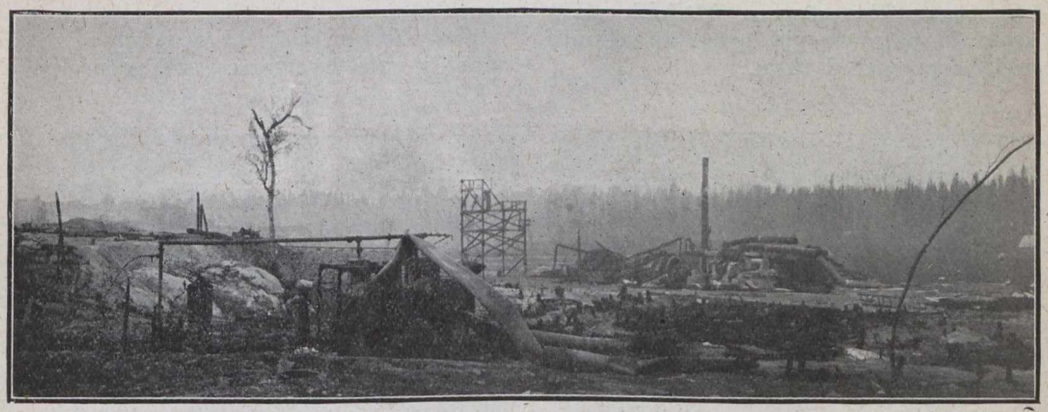
*Geol. Survey of Canada, New Series, Vol. III., p. 13, H.; Vol. IV., p. 61 T.; Vol. X., P. 59, H.

During the fiscal year ended June 30 last gold to the value of $10,273,000 was received at the United States assay office, Seattle, Washington. By far the greater part of this gold came from Alaska, but included in the total was $1,262,500 from British Columbia and Yukon Territory. As compared with the fiscal year ended June 30, 1910, there was a decrease of $1,858,000 in total value of gold received.

THE PORCUPINE FIRE.

By Alexander H. Smith.*

Porcupine, the first gold mining district in Ontario that has all the ear-marks of making good, has had more bad setbacks than it really deserves. The disastrous fire of July 11th, with its terrible toll of deaths by burning and drowning, must have saddened a large number who have taken an interest in its welfare and development.

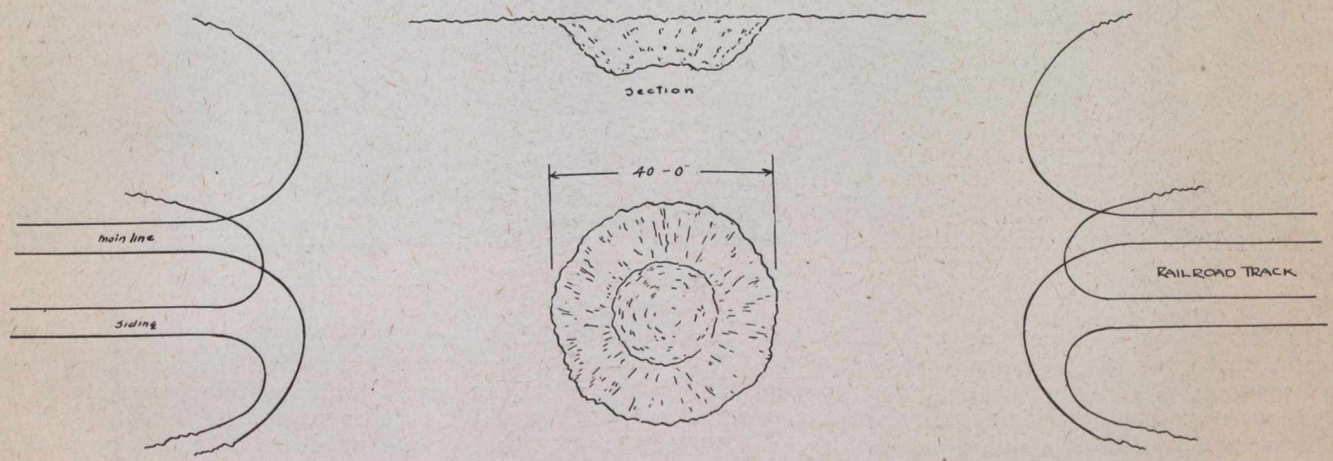


Remains of Dome Plant.

For months the weather had been exceedingly dry, and numerous fires had destroyed timber and mining plants, culminating in the fires of the 11th inst. Sunday, the 9th, numerous fires were seen raging throughout the district, aggravated by a high wind from the south-west.

On Monday the wind was not so high, and the people felt more secure. On Tuesday a high wind started from the west, and by 11 a.m. was blowing a gale and increasing in violence every minute. From Porcupine Lake numerous heavy plumes of smoke could be seen in all directions, and everyone with a knowledge of forest fires in Ontario knew that the district was "in for it," and that stories of disaster were soon to come in after it was all over. No one, however, thought that such a terrible death list would be the result.

Shortly after 1 p.m. the Dome whistle was heard in South Porcupine, indicating that that part of the district was in danger. About 2 o'clock fire was sweeping south of the town of South Porcupine and people were hastily burying their belongings and escaping to the lake. Then the wind seemed to increase even more and heavy smoke swept through the streets and obscured the sun. The people from the outside and the village began to go out into the lake by canoes and launches, and even wading along the south side, where the water was shallow. Considerable confusion existed at the water front, and the explosion of a car of dynamite and black powder on the railroad siding to the south, about an eighth of a mile away, must have struck terror into many, who perhaps thought the end of the world had come.

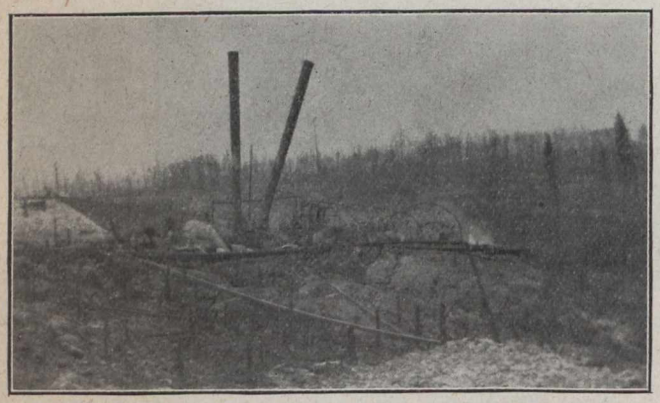


EFFECT OF EXPLOSION OF CAR OF DYNAMITE AND BLACK POWDER
SOUTH PORCUPINE JULY 11TH 1911
SHOWING BENDING OF RAILS AND CRATER ABOUT 40 WIDE AND 10 DEEP

Almost immediately the fire reached the village and drove into the water those who did not manage to get in a boat or had not started wading. The crowd skirt-

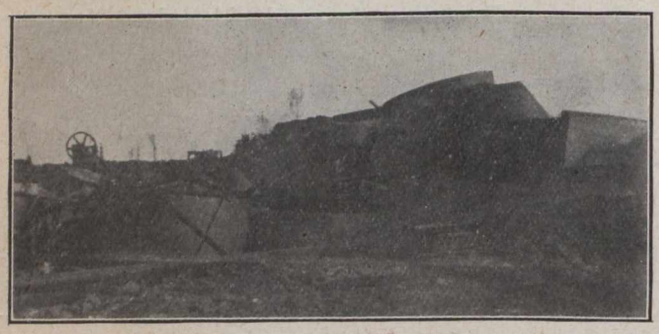
*Mining Engineer, South Porcupine, Ont.

ing the south shore were all safe, as the water was shallow, and one could wade out far from shore. Those in canoes were less fortunate, as many canoes were overloaded and capsized by a sea so high as to be almost inconceivable in such a small lake. During this time various detonations were heard, evidently magazines; and about 6 p.m. a very heavy shock, which proved to be a large magazine owned by the Hamilton Powder Co., situated a mile west of the town. By evening the smoke had cleared and a few houses at the little village of Pottsville and practically the whole of Golden City were found intact by those who had escaped from the south end. This was a blessing, as food and accommodation were to be had for most of the refugees. If Golden City had been destroyed the people would have starved until outside aid could have reached them.



Preston East Dome.

Dynamite Explosion.



Big Dome Mill.

Dynamite Explosion.

Wild rumours were pouring into Golden City, and, unfortunately, people were sure that most of them were all too true. The list of mining plants and buildings that were completely wiped out was known early on the morning of the 12th, and was as follows:—Vipond, Aura Lake Post-office, West Dome, Preston East Dome, Standard, Imperial, Dome, Philadelphia, and some smaller plants. Not a building was left at South Porcupine and Pottsville was almost completely wiped out.

The saddest part, however, was the terrible list of dead. The West Dome, where 20 were found dead in the shaft and four above ground; nine at the Dome; five at South Porcupine, and many known to be drowned in the lake added to the horror of the fire. Wild estimates were made, in which the numbers ran up into the hundreds, and naturally the question was put as to whether most of these deaths could have been prevented.

It is only just to say that in numerous instances the people did not realize the danger. For instance, at the West Dome the manager had successfully fought fires round his buildings and plant a number of times. At the Dome they did not realize that a terrific wind was blowing, and they had confidence in their fire-fighting appliances. When the smoke got thick people became confused and ran in wrong directions for safety.

On the evening of the 12th numerous tents were pitched at South Porcupine. On the 13th five bodies had been collected, and dead horses were cremated. Already men were stumping a lot in preparation for building. Parties were scouring the woods trying to locate missing ones, and the lake was being dragged. Homeless and hungry ones were being looked after as well as possible.

Men who can start things going so soon after such a calamity must be fighters, and naturally will take risks timid folk will not. It is just this fighting spirit that caused such a terrible loss of life. Numerous criticisms were offered in respect to the terrible loss of life at the West Dome. Was the management going to pack up and get to safety and not leave a hand to save plant and buildings? The same holds good for the Dome and also accounts for some of the lives lost in South Porcupine.

This is not going to be the last fire in the Porcupine district, but it is to be hoped that it will be the worst, and that it will teach some lessons that are badly needed. A small reservoir on the Dome provided a safe refuge for many men. A narrow creek did the same for many near the Preston East Dome. The small lakes on the east side would do the same. This means that larger and more thorough clearings must be done round the mining plants to secure their safety. The same country can be burned over more than once, as the Hollinger Company knows well.

The storing of high explosives in a heavily-wooded country like Porcupine is not properly understood. That a carload of black powder and dynamite was left on a siding in the track of a roaring bush fire shows either contempt for its contents, or carelessness on the part of the railroad not even excusable on account of the exigencies of construction.

The effect of this explosion was most interesting, as shown by the rough sketch; but it was the cause of one death. The Hamilton Powder Company's magazine was also a danger point, with the crudest fire protection. It is time more care was given to storage of explosives, and the Government would do well to examine, say, the South African regulations in this respect. The best lesson given by the fire was to prove the buoyant disposition of the people, who commenced clearing up and getting things into proper shape before the embers had cooled down. As time passes and the clearings grow bigger danger from fires of this description will vanish; but that will not be for some time. A death list of over seventy, and the destruction of so many valuable plants is a blow that would stagger even a well-established camp. That Porcupine, not two years old, should suffer such a blow is a calamity. As pointed out, however, she is strong enough to stand it and revive.

THE PORCUPINE FIRE.

By G. R. Rogers.*

During the month of June and the early part of July many fires were known to be blazing or smouldering in a south-westerly direction from Porcupine. On Sunday, July 2nd, a fire swept through a portion of Bristol Township; and, up to the time of the terrible holocaust, fires were raging in that section of the district. In Tisdale, Deloro, and Whitney Townships small fires were causing considerable trouble.

Owing to the extremely dry and excessively hot weather experienced during the two months previous to the fire, it was realized that, should a strong wind arise, the situation in Porcupine would be critical.

On the morning of Tuesday, July 11th, a soft south-west wind was blowing until noon. It then suddenly developed into a hurricane, travelling at a velocity of about seventy miles an hour, quickly fanning to roaring torrents of flame the many smouldering fires in the district. Judging from the extraordinary rapidity at which the fire was approaching, it was inevitable that all efforts to save South Porcupine from the flames were futile. Nevertheless, a number of men were out trying to block the fire, which they found impossible in the face of the raging wind and heavy volumes of black smoke.

Information gathered from some of the parties sent out by the Relief Committee goes to show that the main body of the fire originated in the eastern portion of the Township of Carscallen, or near the south-west corner of Bristol, and, rapidly spreading itself into a zone from twelve to fourteen miles wide, travelled in a north-easterly direction.

As nearly as can be ascertained, the mines known as the "Standard," "Imperial," "Apex," "Dome Lake," "Preston East Dome," "West Dome," and the "Dome Mines" were in the centre of the fire zone.

Fire in Porcupine, July 11.

*Mining Engineer, 8 Torrance Avenue, Toronto.

Some idea of the rapidity with which the fire was driven before the furious gale may be gathered by the fact that scarcely ninety minutes had elapsed from the time the plant of the "Porcupine Imperial Mines" was destroyed and the minute that South Porcupine and Pottsville were reduced to a smouldering bed of ashes, including all the surface equipment and plants of the mines above mentioned. The "Hollinger," the "Rea Mines," the "Success Mines," the "Pearl Lake," and several others in the Gillies Lake section were saved from the fire. Not only did this fiery furnace lap up with its hungry tongue of flame over two million dollars' worth of machinery and buildings, but it also carried with it the lives of a number of heroes who perished in a brave attempt to save the property of their respective employers.

At South Porcupine and Pottsville men and women stood at their posts of duty until the flames had already destroyed a number of shacks in the villages, and the fire could be seen making its way at terrific speed along the east shore of the lake in the direction of Golden City, and along the west shore to Pottsville. Realizing that the battle against the devouring fire was lost, upwards of a thousand terror-stricken people, including men, women, and children, made a wild rush to Porcupine Lake, although the lake resembled a raging sea canopied with thick volumes of black smoke, illuminated

Bob Weiss, Wife, Child, Carlos Warfield, Tracy, and Millard at Weiss House, West Dome.

Last Picture Taken of West Dome, Main Shaft.

with tongues of flame that imparted the lurid colouring of a tropical sunset. But the lake afforded the only possible means of escape.

Gasoline launches, canoes, and hurriedly-constructed rafts were quickly and willingly placed at the disposal of the women and children, who were taken to places of safety as soon as could be expected, considering that the men in charge of launches and canoes were working under appalling conditions. The manner in which the women and children were cared for can better be described by the fact that not one woman or child was drowned, while the lake is responsible for the deaths of seven men, who lost their lives while endeavouring to cross the lake in canoes.

While hundreds of people were in the water of Porcupine Lake, waiting for the fire to complete its destruction in the villages, a car containing several tons of dynamite and a quantity of blasting powder, standing on a siding at Construction Camp 6, caught fire, causing the dynamite and black powder to explode, breaking many windows in Golden City, as well as blowing a hole fifteen feet deep and forty-seven feet in diameter in the soft earth.

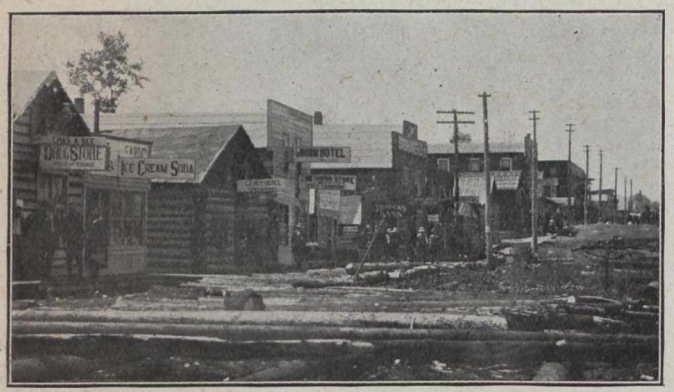
The fire made its way along the west shore of the lake to Pottsville, and in less than fifteen minutes the village was completely wiped out. It worked its way round the north end of the lake, heading in the direction of Golden City. When it was seen that Golden City was in the path of the flames it was feared that an attempt to save the city would meet with results similar to those experienced in trying to save South Porcupine and Pottsville. However, a number of special constables were sworn in to keep order and assist the bucket brigade in fighting the fire to save, if possible, the only place of shelter left. The fire encircled Golden City with alarming rapidity, and it is only due to the indefatigable manner in which the many willing hands fought the fire that the new buildings in Golden City

Fire Wagons in Porcupine Lake.

were saved. All the buildings north of the Murphy House and north of the road, also a number on the south road that leads from the railway station, were burnt to the ground.

During the several hours of trial and terror, in which hundreds of terror-stricken people were engaged in saving each other from the merciless fire that left everything in devastation, upwards of seventy brave men and women perished from suffocation, drowning, or burning.

At the West Dome Mines, situated only five miles from Golden City, Robert A. Weiss, manager of the property, together with his wife and daughter, and seventeen others, including Mr. and Mrs. Burt, of Cobalt,



Golden Avenue, South Porcupine, Before the Fire.

Mr. and Mrs. D. M. McQueen, of Kippen, Scotland, were suffocated in the shaft, where they sought safety from the fire.

On the surface of the property, near the shaft, was found the body of William King, head prospector of the "West Dome," who remained at the shaft and sacrificed his own life in a brave attempt to save the lives of the twenty unfortunate people who were at the bottom. The bodies of four other men were found about the works in positions indicating the fact that they also died while endeavouring to save the property. The "Dome Mines," which is adjacent to the "West Dome," on the east, suffered loss by fire to the extent of its entire surface equipment, including the forty-stamp mill, which was in the course of erection, together with the lives of twelve men, who perished during the conflagration.

When word reached Golden City of the awful catastrophe at the Dome and West Dome Mines a number of men formed themselves into rescue parties and proceeded to the mines to assist those who were left on the property in the sorrowful task of extracting the bodies of the unfortunate men and women from the underground workings.

The following day a committee of seven men was formed, with Mr. Cyril T. Young, Ex-Mayor of Haileybury, as Chairman, for the purpose of taking care of the dead and injured; and, when addresses could be obtained, communicating with their friends and relations. Parties also were sent out in the different sections of the burnt area to search for those who were reported missing. This resulted in the recovery of several bodies that otherwise might not have been found.

Golden Avenue After the Fire.

Great credit is due Mr. Englehart, Chairman of the T. & N. O. Railroad Commission, for his prompt action in sending a special train to bring out the hundreds of people who were rendered homeless after the fire.

CANADIAN PATENTS

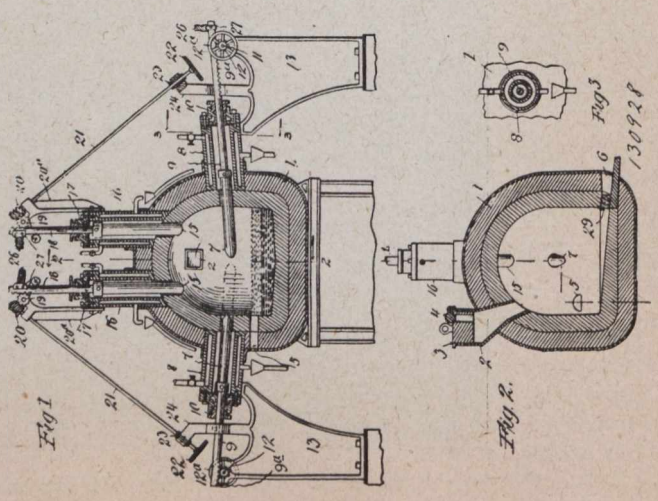
John W. Evans, Belleville, Ontario, Canada, 7th February, 1911, 6 years. Filed 14th January, 1911. Receipt No. 191,622.

Claim.—1. An electric furnace comprising a chamber, substantially horizontally disposed electrodes therein, a pair of separate electrodes independent of the first-named electrodes adapted to enter the material in the chamber, and means for operating said electrodes at will, the horizontal electrodes being arranged to produce an arc above the material in the chamber.

2. An electric furnace comprising a chamber, electrodes therein arranged to produce an arc above the material in the chamber, electrodes independent of the first-named electrodes adapted to enter the material in the chamber, and means for operating said electrodes independently.

3. An electric furnace comprising a chamber, a pair of electrodes adapted to produce an arc within said chamber, a separate pair of electrodes adapted to enter the material in said chamber, and means for individually operating said electrodes at will.

No. 130,928. Electric Furnace. *Four électrique.*



4. An electric furnace comprising a chamber, electrodes adapted to extend across the same, and electrodes adapted to extend into the chamber at an angle to the first-named electrodes, one of the first and second-named electrodes being arranged to produce an arc between them, the second-named electrodes being arranged to enter the material in said chamber to pass electric current through said material.

5. An electric furnace comprising a chamber, substantially horizontally disposed electrodes adapted to enter said chamber to produce an arc, and a pair of electrodes arranged at opposite sides of the centre of the chamber and adapted to cross the path of the first-named electrodes, whereby an arc may be produced between one of the first and second-named electrodes and the second-named electrodes may enter the material to pass electric current through the same.

6. An electric furnace comprising a chamber, a pair of substantially horizontally disposed electrodes adapted to enter the chamber, and a pair of substantially vertically disposed electrodes adapted to enter the chamber and respectively aligned with the paths of the first-named electrodes, whereby arcs may be produced between one of the first and second-named electrodes at opposite sides of the furnace.

John W. Evans, Belleville, Ontario, Canada, 7th February, 1911; 6 years. Filed 14th January, 1911. Receipt No. 191,623.

Claim.—1. The method of reducing refractory material consisting in first applying heat to a body of material by an arc without the material to produce a molten mass, then cutting off such arc, and next heating said molten mass by passing electric current through a portion of the same.

2. The method of reducing refractory material consisting in subjecting the same to the action of an arc at an approximately central portion of the body of material, subjecting said material to an arc at a distance from said central portion, and subjecting said heated mass to electric current passing through a portion of the same.

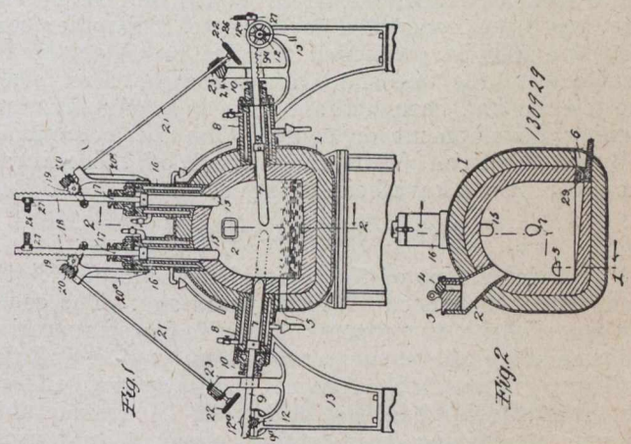
3. The method of reducing ore consisting in first subjecting a suitable ore mixture to the action of an arc to produce slag on the mass, then cutting off said arc, and next heating said mass by passing electric current through a portion of the same.

4. The method of reducing ore consisting in subjecting a suitable ore mixture to the action of an arc at an approximately central portion of said mixture to produce slag on the mass, subjecting said mass to an arc at a distance from said central portion, and subjecting said molten mass to electric current passing through the same.

5. The method of producing steel direct from iron ore consisting in first subjecting a mixture of iron ore, carbon and flux to the action of an arc to produce slag on the mass, then cutting off said arc, and next heating said molten mass by passing electric current through a portion of the same.

No. 130,929. Method of Reducing Refractory Materials.

Méthode de réduction de matériaux refractaires.



6. The method of producing steel direct from iron ore consisting in first subjecting a mixture of iron ore, carbon and flux to the action of the reflected heat from an arc at approximately the central portion of said mixture to produce a molten mass, subjecting said molten mass to an arc at a distance from said central portion, and subjecting said molten mass to electric current passing through the same.

7. The method of reducing refractory material consisting in first applying heat to a body of material by an arc to produce a molten mass, then cutting off such arc, and next heating said molten mass by passing electric current through a portion of the same, then cutting off said current and next refining said molten mass by applying heat to the same from an electric arc.

Voigt's Camp, Similkameen, B.C.

For some time negotiations have been in progress for the acquirement by New York and Boston men of the large mining property, situated on Copper Mountain, in the vicinity of Princeton, Similkameen, B.C., together with other interests owned by Mr. Emil F. Voigt and associates. The transaction has not yet been completed, but it may be shortly, so the following information is published with a view to conveying an adequate idea of the prospective value of the property and the considerable importance of the projected enterprise which may be expected to lead to the effective development of the property and the utilization of the large mineral resources it is believed to possess. Much of the information has been abstracted from a comprehensive report on the property made by Mr. C. W. Wheelock, of New York City, whose work in this connection extended over a period of three months, from November, 1909, to January, 1910, inclusive:

Location.—Voigt's camp is situated in Similkameen mining division of Yale district, British Columbia. On an air line it is about 120 miles east of Vancouver, 30 miles north of the International Boundary line, about 100 miles west of the Boundary district (where are situated the mines and smelteries of the Granby and British Columbia Copper Companies), and 300 miles north by west of Spokane, Washington, U.S.A.

Similkameen River at this point, flowing towards the north, adjoins some of the property on the west

side of the camp. The nearest town is Princeton, which lies some 10 to 11 miles to the north, and is the present terminal of the Great Northern Railway. From the camp Princeton is reached by a good wagon road, crossing one divide.

Altitude.—The camp is about 2,600 feet above sea level, 800 feet above the smeltery site, and 1,000 feet above the Similkameen River.

Climate.—The climate is good, both summer and winter, permitting outdoor operations to be carried on practically throughout the entire year. The rainfall is moderate and snowfall light.

Transportation.—The Victoria, Vancouver & Eastern Railway (part of the Great Northern Railway system) is extending its line westward, making a direct route from Spokane, Wash., to Vancouver, B.C. The line has been completed to Princeton. Further construction will be proceeded with as rapidly as practicable until the line shall be completed. Previously the district had been without railway communication, making development or construction work economically prohibitive. With the advent of the railway these conditions have been changed.

History of Development.

The development of the mineral deposits of Voigt's camp was commenced 10 or 11 years ago. The country was difficult to prospect owing to its comparative inaccessibility, the steepness of its mountains, and the undergrowth and fallen timber. It was at first believed the mineral veins ran east and west. A considerable amount of clearing, trail-cutting, open-cut, and prospect work was required to reach the various mineral locations and to ascertain the trend of the veins and their probable size. This work has been carefully and intelligently carried out, with the result that the occurrence of enormous veins or mineralized zones has been demonstrated. Approximately $125,000 has been expended in bringing the property to its present condition, besides years of time.

In area and contents the veins would, so far as the development work has proceeded, appear to exceed in both size and value those of the Boundary district, where probably some $8,000,000, including cost of railway construction, had to be expended in order to bring the mining properties to their present profitable basis.

The Voigt properties had been examined on occasions prior to 1907, and are said to have been favourably reported on. The most extensive sampling is said to have been when approximately 100 samples were taken. An average of these samples is stated to have returned 3.10 per cent. copper and $5.15 per ton in gold and silver. While averaging samples is ordinarily very misleading practice, the extensive mineralized area proven in this camp would tend to minimize the errors that ordinarily would occur, relying upon this method. Under the conditions as they exist there, careful work along these lines is the only way that an intelligent approximation of the value can be determined.

At the time the former examinations were made the nearest railways were 75 to 120 miles away, making the handling of an undertaking of this character economically impossible. The general conditions obtaining the past two years (1907-1909), in conjunction with the lack of transportation, have been a bar to further work. Now that the construction and operation of the railway to within six miles of the property have been accomplished, and an extension thereto has been surveyed, this mining enterprise is made, from a transportation standpoint, simple and easy, especially when compared with much of the work that has been done in many other places in British Columbia and elsewhere.

Area, Topography, Geology, etc.

Property.—Embraced in Voigt's group, in practically one compact body, are approximately 55 mineral claims and fractions; a tract of coal lands; a timber tract; a lake, and the land surrounding it, including smelter sites; and water-power rights on Similkameen River. Of the 55 mineral claims included, 35 are Crown-granted, and others are ready for Crown-grant.

Area.—The total area exceeds nine square miles. The acreage is as under:

	Acres.
Mineral claims	2,000
Lake and surrounding lands controlling further mineral areas	1,000
Coal lands	1,100
Timber lands	1,700
Total area	5,800

Topography and Roads. — The physical conformation of the country is characteristic of many parts of British Columbia. The mountains are steep and rugged, frequently cut by precipitous ravines. The slope of the sides runs from 25 to 30 deg. and in some cases 35 to 40 degrees.

Road-building, however, is for the most part comparatively inexpensive, and the Government is usually ready to bear at least a part of the cost. In addition to the excellent wagon road into camp, trails have been cut in all directions, making easy access to the various parts of the property.

Geology.—Geologically the district has features of unusual interest. Immediately to the north of the Voigt property are extensive coal measures, these continuing more or less intermittently for a distance of 50 or more miles to Nicola district, which has already been entered by the Canadian Pacific Railway. The coal is at various places lignite, or bituminous, respectively; some of it is coking coal. At Granite Creek, about 20 miles from Voigt's camp, there are large seams that are claimed to contain an excellent quality of coking coal. At Princeton and south to the Voigt properties the coal is a good grade of lignite.

Apparently the entire Voigt country was at one time covered by sedimentary rocks, which have been uplifted, broken, shattered, eroded, and carried away by natural agencies, leaving exposures of mineral-bearing igneous and altered rocks, and dikes. The mineralized area is 2 to 3 miles east and west, and 3 to 4 miles north and south. On the extreme east is granite; on the west there is an extensive dike of porphyritic rock, probably rhyolite, about 1,500 feet in width. Next come the series of veins or mineralized zones, varying in width from 100 to 800 or 1,000 feet. The western boundary is another porphyritic dike, 1,200 to 1,500 feet wide, which crosses the river, giving excellent exposures. Between these two large dikes is the mineral belt, containing the several veins, which are separated by smaller dikes, of like strike, varying in width so far as exposed from 20 to 60 feet.

Between the small dikes lie the veins of mineralized zones, some 26 in number. A striking feature in this connection is that all the workings examined, no mat-

ter how barren-looking the surface might appear, were found to contain, at very shallow depth, either pronounced evidence of copper rapidly coming in, or actual ore of commercial and profitable value. When it is considered that commercial ore is exposed in veins 100-300 feet wide and evidence exists of still wider veins of good ore, the size and great possibilities of operation may be better comprehended.

While the dikes are apparently all of similar general character and origin, the composition of the vein fillings varies greatly in character. Roughly, the ores east of the home camp are heavy in iron. In the central and southern parts more lime appears, principally in the form of calcite. To the west the ores are quite silicious. Broadly, the gangue is a highly altered diorite, or coarse andesite. The metallic contents occur as a replacement therein, due to the usual causes, from mineralized solutions under heat and pressure. The metals are principally chalcopyrite, bornite, arseno-pyrite, pyrite, hematite, magnetite, etc., with gold and silver in profitable quantities.

Development of Mining Properties.

In the aggregate a considerable amount of development work has been done, probably at least $40,000 to $50,000 worth. When, however, it is remembered that this work is scattered over several square miles it will readily be understood that it really amounts to little more than prospecting and does not give any adequate showing commensurate with the conditions at any one place. Such work as has been done is, though, of great value, and will simplify future development. Beside the many trenches, and open-cuts, some of them 200 feet or more long, there are several adits or tunnels from 10 to 110 feet in length, and shafts from 25 to 50 feet in depth. This work is all excellent in its way, showing as it does extensive orebodies, and demonstrating where the succeeding work should be done.

The deepest work in the camp has been done on claims south and southwest of Voigt's, but on the same line of mineralization. A shaft on the Sunset was sunk 190 feet; at 150 feet depth a cross-cut was driven 102 feet, all in ore without reaching the other wall. Diamond-drilling on other claims is reported to have shown good results, in one instance to 500-600 feet depth still showing good ore. This proves that the ore will go to depth. All geological conditions point to a similar conclusion. If the veins on the Voigt property go no deeper than 500 feet there would still be ore sufficient for a large smelter for many years to come, due to the great width of the veins.

Sampling.—Technically, no fair estimate could be made of developed tonnage. Considerable amounts of ore of commercial value, however, are exposed. The sampling, therefore, had to be done, not with a view of establishing tonnage, but rather to ascertain as far as possible the ore value in the bodies already demonstrated. Samples were taken along a distance of about two-and-a-half miles. (Note.—Full details are given in the report of results of assays of 27 samples, and of check assays). Eliminating four surfaces and five high-grade samples, and taking the remainder as representative of known orebodies of large dimensions, they show an average content of copper, 2.038 per cent., and gold and silver $0.968 per ton (calculating silver at 50 cents per oz.). The veins from which the five high-grade samples were taken (not included in the foregoing average value), will undoubtedly produce a sufficient tonnage to substantially increase the average value, in both copper and gold. However, taking the average as given above and estimating copper at 12 cents per pound, it gives a gross value of $5.84 per ton. From a tonnage of this value sufficient to supply a 1,500-ton smelter, the following results may, with good management, safely be expected, if, as is estimated, 85 per cent. of the copper and 90 per cent. of the gold and silver be recovered, and total costs be $3.50 per ton.

	Per Ton.		
Copper at	Net recovery	Net profit.	Net per day
10 cents	$4.332	$0.832	$1248
11 cents	2.678	1.178	1767
12 cents	5.024	1.524	2286
13 cents	5.370	1.870	2805
14 cents	5.716	2.216	3324
15 cents	6.062	2.562	3843

For a year of 330 operating days the net profits would be, with copper at 10 cents, $411,840; at 11 cents, $583,110; at 12 cents, $754,380; at 13 cents, $925,650; at 14 cents, $1,096,920; at 15 cents, $1,268,190.

Should ore be developed in bodies as large as surface exposures would indicate them to be, there is no reason why, under good management, costs should not be made equally as low as those of the Boundary district, especially as several items of cost—power, coke transportation charges, and better local conditions—would be distinctly in favour of the Voigt property.

Summary of Other Matters.

Mr. Wheelock's report goes into much more detail than that already given, and, too, in regard to other matters not here quoted, and some of the latter will be very briefly summarized.

Analyses indicate that with the addition of a small percentage of lime the ores will work easily and directly in a blast furnace. There are two available lime deposits close at hand. Cost of coke from Granite Creek or Nicola will probably be not more than $5.50 per ton, which would be $1 less than cost of Crow's Nest coke to Boundary smelters. There are several sites, near Smelter Lake and but a short distance from the site, for a hydro-electric power station, suitable for a smeltery.

In further developing the property, the topography of the country affords favourable conditions, as depths of from 600 to 1,400 feet could be gained by driving adits or tunnels 2,000 to 6,000 feet. Nearly all work would be by adits largely in ore, and all ore be handled by gravity. Local conditions are such that beyond an electric tramway for conveying ore from mine to smeltery, the ore could be handled automatically by gravity and at low cost.

Ample hydro-electric power for all mine, smeltery, tramway, and lighting purposes can be developed at a reasonable cost for installation of plant, on Similkameen River. There is an excellent site for a dam, and 5,000 h.p. could be developed.

There is estimated to be about 7,000 feet per acre of timber — red fir, some pine, etc. — which would give cheap timber for mining and construction uses for years.

The coal lands have not yet been developed, so their value is unknown.

A careful study of the property and conditions leads to the opinion that with proper development and management it should become a large copper mine, and that copper could be produced at eight cents per lb., or possibly less.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

Dominion Coal Output.

The production for the first half of July was uniformly good, being at the rate of 370,000 tons for the month. While the outputs this season are not actually as high as in some former years, their steadiness is remarkable, and the breaks caused by the pay-days are not so marked as in some previous seasons.

The new collieries at Lingan are beginning to count materially in the output figures. No. 14 Colliery is now producing over 1,000 tons daily, and the output for one day from the four new collieries is now nearly 2,500 tons, about one-sixth of the entire output.

The branch line to the Birch Grove Colliery is under construction, and will be completed during the autumn. This mine is producing about 1,500 tons per month at the present time. It is now known as Dominion No. 21, and is the first of a new series of mine numbers.

The North Atlantic Collieries at Port Morien were advertised to be sold at auction by the sheriff on the 13th July, but the sale has now been postponed until the 29th September. About 150 tons a day is being mined, and the development work is being kept up.

The Springhill Collieries have been constituted into a superintendence district under the scheme of organization used by the Dominion Coal Company, and will be known in future as "Dominion Coal Company District No. 5, Springhill." The output is rapidly increasing, and from the two slopes is now 1,200 tons daily.

The examinations for provincial certificates of competency for mine officials were largely attended. For managers' certificates 34 candidates presented themselves, of whom 16 were successful. For underground managers' papers 15 candidates were successful out of 31 applicants. For overmen's papers 21 passed out of 31 who sat for the examination. The rapid opening up of new collieries in Cape Breton has necessitated the appointing of many new managers, and the large number of aspirants for certificates of competency is evidence of the growing importance of the industry. When the Dominion Coal Company was incorporated in 1893 it operated only four collieries, namely, Dominion No. 1, Caledonia (No. 4), Reserve (No. 5), and International (No. 8). To-day this company has no less than 15 collieries, for each of which a manager is required. Cape Breton men will also play a large part in the opening up of the coalfields of the West, only now properly commencing. It is a very short-sighted national policy which requires miners to obtain certificates of competency for every Province of the Dominion in which they may elect to exercise their profession.

The Commissioner of Mines for Nova Scotia has engaged Mr. A. L. McCallum, of Halifax, to visit the coal mines of the Province and take barometric and thermometer readings underground, ascertain the humidity of the ventilating current and its velocity, and to take observations of the amount of dust in suspension in the mine air.

The British Home Office recently passed an order directing that a sufficient number of canaries, linnets, or other small birds, should be kept near the pit-top at every British colliery, in readiness for the use of rescue parties should the necessity for them arise. It has long been the custom for parties entering a mine after an explosion or fire to carry with them a small bird in a cage, and to judge by its behaviour whether or not the air was poisonous. The chief danger to such parties arises, of course, from carbon-monoxide, which cannot be detected by the ordinary evidence of the senses, as it is odourless and will support combustion. In the presence of carbon-monoxide a canary or linnet will fall from its perch long before men are affected, and by so doing give the signal for retreat. The Dominion Coal Company has obtained a number of canaries that are to be kept at the Central Rescue Station at No. 2 Colliery.

ONTARIO.

Porcupine, Swastika, and Gowganda.

For some weeks to come public interest will be diverted almost entirely from the activity of the mines to the reconstruction of the camp as a community. A drenching rain is now falling and the great uneasiness that has prevailed everywhere owing to the materials for another awful blaze is disappearing, and every man is getting extremely busy in his own business. It is certain that the disaster has taught the mining men of Northern Ontario a lesson that they will never forget. The fire here from Cochrane and north of the Transcontinental to Sudbury was not merely a bush fire in the ordinary acceptation of the term, but a cyclone fanning all the combustible materials in the virgin forest till it was like a blast furnace. The flames did not creep along the ground, but the carbon dust driven on the wings of the wind in the air roared out in great masses of detached flames. Good clearings were of no avail. At the Dome Mines, where 160 acres were swept clear of trees, the air was on fire. Flames shot out of the various buildings at once, and men fighting the blaze were at once surrounded and ringed in. Three-quarters of the loss of life was due directly to the attempt to beat back the waves of heat and smoke, and never again in the north country will it be possible to get a mining force to combat the fire unless they have some place of retreat.

This very matter is under consideration at the present time. Mr. Ambrose Monell, of the Dome Mines, now personally superintending the construction of the Dome Mines, is possibly responsible for the suggestion. He maintains that if a root house were provided at every mine where the men could retreat under circumstances such as occurred last week, not only would lives be saved but the men, knowing they had a safe retreat, would defend the property till the last moment. To be effective, however, every property and every prospect in northern Ontario so surrounded by the bush must be obliged to have this retreat where water should always be kept and proper ventilation provided. It should come under the supervision of the Inspector of Mines, and be as essentially a part of the equipment as a proper hoist and safety appliance on the cage. After such an awful lesson it is not likely that Porcupine mines will take any risks, but throughout the north, as fresh camps spring up, the materials for further tragedies are provided unless some such cyclone cellar is provided.

At the Dome Mines it is hoped that the compressor will be running again in a month's time, and the perfect organization which the Canadian Copper Company has at its call is being invoked to repair the damage as quickly as possible. Of the machinery, so intense was the heat, very little will be saved; but the foundations of the big mill appear to be sound. It is now expected that the mill will be constructed and ready to drop stamps by Christmas. While the design of the mill will be identical with that destroyed, the construction of the building will be entirely of concrete, steel and brick, so that in their case the Dome men will have a haven of refuge in the mill should there again be such a whirlwind of fire as swept over this country. In the eastern and southern portions of the Dome further bodies of quartz and schist have been opened up by the fire, and a gang of prospectors under Mr. Brand, former manager of the Standard Porcupine, will be put at work prospecting and sampling, while as soon as the compressor is working, test pits will be sunk. It is also desired to attain the 300-foot level in the three Dome shafts as soon as possible.

It is safe to say that no miner in northern Ontario will ever take shelter in a shaft again in case of fire. In the holocaust

of July 11, not one man who went down a shaft and stayed there escaped suffocation. In the Pearl Lake area, with the exception of the Vipond, mining activity has not been interrupted one day. Until the T. & N. O. line is extended to Miller Lake the Hollinger is content to prospect and sample and mature plans for the new and larger mill. When better transportation is provided the machinery is to be hauled in.

The McIntyre has had a series of very rich and spectacular discoveries, both on the surface and underground. In a drift at the 100-foot the quartz vein sunk upon is now showing remarkable ore in both faces.

Under the control of the Drummonds the Jupiter is now assured of the systematic mining that its surface showings deserve. News has just been received that at sixteen feet from the shaft at the 100-foot level drifting north the vein has been cut. It exhibits four feet of as remarkable ore as on the surface, and there is now very little possibility that the option will not be taken up.

The Armstrong-Booth, in which Mr. E. P. Earle, of the Nipissing; Mr. Frank Armstrong, of New York, and Mr. David Fasken, of Toronto, are interested, has made remarkable progress. It definitely has the extension of the Jupiter on one of its claims and good assays have been obtained both on the surface and with the diamond drill at 180 feet. On its claim on the edge of Pearl Lake, near the No. 1 camp of the Bewick-Moreing, the four to six-foot lead of quartz is rich in visible gold. Near its own camp, just south of the Rea, the latest discovery has been made. The vein is much broken up on the surface but yields very rich specimens and the dirt contains so much gold that a rocker has been installed to pan it.

At the north end of Porcupine Lake, the Porcupine Lake Gold Mines will install a four to six drill compressor as soon as the machinery can be rushed in. While there is very little visible gold in the large ore body nearly every specimen of quartz panned gives a rich tail and the assays are always satisfactory.

The fire has aggravated the freight congestion at Porcupine and at the present time 150 cars are on the road to the camp between North Bay and Golden City. A siding to contain 250 cars is to be constructed, and even this accommodation will be strained, so large is the amount of business that will be done before the snow falls. As soon as lumber can be obtained South Porcupine will be rebuilt, and before the first snow the settlement will probably be almost as big as ever.

THE FATALITIES.

Hereunder is given a list, corrected up to date of going to press, of the Porcupine fire casualties. It is possible, but not probable, that this list may receive additions. Since the rescue parties, sent out to determine the fate of isolated prospectors, found no one in need of assistance, it is hoped that the tale of deaths is complete. The excitement caused by the first catastrophe news is, perhaps, sufficient excuse for the gross exaggerations that appeared in the newspapers.

Death List.

Jules Metayer (Le Bretton), telegraph French Consul at Montreal; buried northeast side lake.

Andre Le Roux, telegraph to manager Metropole Hotel, Montreal, was waiter there; effects given to wife here; buried Edwards Point.

Arpila Mondoux, Cobalt, telegraph to Lang McNabb advised; age 50; recovered.

Charles E. Adams, Phoenixville, Pa.; relatives advised; age 21; shipped by friends to McNabb.

William Taylor, Pearl Lake; telegraph to wife and three children in Reading, England (wired Lord Strathcona); buried at Pearl Lake.

R. A. Dwyer; Lawton wired brother in Butte, Montana; found and buried on United Porc. Gold Mines property.

Jos. Flynn, Bracebridge, Ont.; found and buried on United Porc. Gold Mines property.

Andy Youill, superintendent, Toronto; found and buried on United Porc. Gold Mines property.

Joe Fletcher, Cockermouth, Cumberland Co., England; sister, Mrs. B. Allen (same address); found and buried on United Porc. Gold Mines property.

One unidentified, found and buried on United Porc. Gold Mines property.

Pat Dwyer.

Wm. Moore, Cobalt; age 35; shipped.

Melvin Strain, Porcupine; relatives here; recovered.

Nathan Haas, Spokane, Wash.; brother, Ed Haas, Houghton, Mich., here; shipped.

Stan. Nicholson, Guelph; wife in Guelph advised; age 28; shipped.

Wm. Gore; wife here; age 43; buried.

T. R. Geddes; age 54; buried on Foley-O'Brien.

Mack Smith, New Liskeard; relatives advised; buried on Foley-O'Brien.

Thos. Bodin, man of same name living; buried on Foley-O'Brien.

Capt. Thos. Dunbar, of Kennedy & Dunbar, Pembroke; buried on Foley-O'Brien.

Harry Hardy, Dome Mines; telegraph P. M. Bath, England, assayer; boarded at southeast corner Adelaide and Peter Sts., Toronto (wired Lord Strathcona); buried here.

Fritz Manse, Dome Mines; Melbourne, Australia; aged 18; Buried at Dome.

John Whatmaugh, Dome Mines; Toronto student; age 22; buried at Dome.

Thos. John King, Dome Mines; Copper Cliff; age 55; buried at Dome.

Charles Jackson, Dome Mines; coloured; Pittsburg, Pa.; buried at Dome.

Archie Johnston, Dome Mines; Sudbury, Ont.; buried at Dome.

Leo H. Sulman, Dome Mines; London, Eng.; assayer; body shipped.

Stanley Fitzmaage, Dome Mines; Melbourne; age 27; buried.

Arta Alhod, Dome Mines; Kelso; died in transit.

Didelo Diepro, Dome Mines; died in Liskeard hospital.

Robert Weiss, West Dome; Butte, Mont.; age 60; buried.

Mrs. Robert Weiss, West Dome; Butte, Mont.; buried.

Weiss' child, West Dome; Butte, Mont.; buried.

James Rennie, West Dome; Edinburgh, Scot.; buried.

R. J. Welch, West Dome; Cache Bay, Ont.; buried.

John McLaughlin, West Dome; Venisoti, Ont.; shipped.

Wm. King, West Dome; Los Angeles, Cal.; buried.

Angus McDonald, West Dome; Turner Street, Ottawa; buried.

Mr. and Mrs. A. E. Burt, West Dome; Cobalt; buried.

John Destern, West Dome; Toronto student; buried.

Mr. and Mrs. D. M. Macqueen, West Dome; Kippen, Scot.; buried.

John Wall, West Dome; buried.

Harry Brookins, West Dome; wife here; buried.

John Saunch, West Dome; buried.

Hugh McLeod, West Dome; Glencoe Mills, Cape Breton; buried.

Lester Henninger, West Dome; buried.

J. W. Cranshaw, West Dome; Phoenix, Ariz.; buried.

Wm. McLean, West Dome; buried.

J. Paulin, West Dome; Montcerf, Ont.; buried.

Unidentified man, West Dome; buried.

J. Orr, West Dome; buried.

W. Beeita, West Dome; buried.

A. J. Ryan, West Dome; notified T. A. Dobbins, Manhattan Drilling Company, 50 Church St., New York; buried.

Victor Puera, West Dome; buried.

E. Sherrien, Ottawa; died in transit.

Hugh Meehan, Sudbury; brother notified at Sudbury; buried half mile south Goose Lake, in Shaw.

John McDonald, Eaginville; wife, same address, notified; brother in Deloro; buried half mile south Goose Lake, in Shaw.

Mike Johnson, found on Trout Creek, Nighthawk district; supposed to have committed suicide.

Marshall Morrison, Haileybury; found at corner Tisdale, Whitney, Shaw, and Deloro.

Fred Herbert, England; found at corner Tisdale, Whitney, Shaw, and Deloro.

Edward Cullen, Haileybury; Eagan claims.

Ormond Butler, Tangier, southeast Shaw.

Thomas Cooper, died New Liskeard.

John Bowers, died New Liskeard.

Pretro, Depaoli, died Copper Cliff.

John Bilo, died New Liskeard.

Arthur Hale, died Copper Cliff.

REPORTED MISSING.

Those missing, and where supposed to have been.

George Snowden Andrews; Pigeon Rapids, Mattagami.

Malcolm Black; Kamescotia.

William Black; Kamescotia.

Frank Byron.

Oscar Butler, of Tangier; found dead.

Harry Bruce.

Desire Bourdon.

— Barrette.

Tom Bascom; Bristol.

Sam Brown; working on Rowe claims, Langmuir.

Herbert Bentley; Price Township.

Roy Brady and companion, of Toronto; probably camping on Claim 3103-P, Shaw Township.

Fred Bidgood; advise John Bidgood, King Edward Hotel, Sudbury.

J. Coyne; Powell claims, Deloro.

Edward Cullen; 2021 Broadway, New York City; found dead.

T. Condil, Haileybury.

Thos. Croon; working on Rowe claims, Langmuir.

Fred Clarke, Brockville.

Russell Dale.

Harry Darce, or Dance; working for Martin Vair.

John S. Dekker, Porcupine; Cripple Creek.

Joe. Dudley; Price.

Joradius Darling; Telegram Merrill.

— Dalby; South Langmuir.

A. W. Dexter, Folkestone, Kent, England; Powell claims, Deloro.

Bill O'Flynn.

Flanerty Crawford; West Dome.

C. S. Feslier, Butte, Montana.

T. Gravelle; Whitesides-Cripple Creek.

Howard Genchon; wire Car Inspector C. P. R., Alex Mac.

Fred Herbert, found dead; 2 miles west of Shaw, near Powell claims, Deloro.

Henry Robert; Pearl Lake

T. W. C. Hutchins; Cripple Creek with Fred Hamilton.

Fred Hamilton; Cripple Creek.

Sylvia Hortell, of Sudbury.

O. Jelly.

Sam Jeveraux, Cobalt; Cripple Creek.

James Lefranier, Quebec.

— Lacroix, Haileybury.

Morris Mofft.

G. Morrison.

Wm Mogridge.

Arthur Motye.

John Murray.

John McKay, Cobalt; Deloro.

Tom McLeod; working on Rowe claims, Langmuir.

Marshall Morrison (found dead); last seen between Deloro and Tisdale lines.

A. Seircy McDonald, of Port Hawkesbury, informer.

J. Moss, Reno, Nevada.

— Murray, South Porcupine.

Hugh O'Donnell; Bristol.

Michael O'Neill, carpenter Foley-O'Brien; was with A. J. Ryan.

Oscar Patrice, Haileybury.

Geo. Payette; advise E. Payette, Haileybury.

James Sweeney.

Andrew Quesnel, of Sudbury.

Dennis Roberts, of Newfoundland; last seen in Langmuir and Carman.

Tim Robinson

A. W. Ross; Bristol.

Scotty Robb; Bristol.

Charlie Ross; Bristol-Cripple Creek.

Eric Ryerson.

J. J. Shea; Eldorado.

Ed. Sinclair, of Sault Ste. Marie, Mich; went to Cripple Creek.

Willie Thackery.

William Anthony Thompson.

C. Villeyea.

Chas. Villagracia; Powell claims, Deloro.

Cobalt.

The striking of good ore in the No. 23 shaft of the Nipissing opens up yet another section of this great property for profitable mining. A shaft was sunk to 100 feet and the vein drifted upon for some distance before good ore was struck. Such progress has been made at the new mill that more than half of the high grade ore now goes out in the shape of bullion.

At La Rose the two subsidiary properties of the Lawson and the Princess are providing more than half the output. The Princess now has a vein 120 feet long, resembling the McKinley-Darragh veins in character, namely rich stringers in an ore body twelve feet wide in some places. At the Lawson good ore is being taken out of the roof of No. 8, and development has now proceeded to such a point that No. 8 and No. 9 veins should soon be cut at the 200-foot level.

So far development at the 575-foot level of the Temiskaming has proven disappointing. While several rich patches of ore have been encountered no definite ore body has been located.

BRITISH COLUMBIA.

Last field-work season Mr. John A. Allan, of the Geological Survey of Canada, commenced a survey for a sheet that will include the Ice River district and an area about Field, B.C. The following are excerpts from his preliminary report, as printed in the "Summary Report" for 1910: "July and August were spent in the Ice River area proper, which is important because it contains one of the very few igneous intrusive masses which are at present known in the whole of the Rocky Mountain belt. This igneous mass is of the alkaline type, and contains sodalite deposits. This mineral has a limited

occurrence in Canada. . . . This district is especially known because of the somewhat rare occurrence of sodalite, which is found in the intrusive mass. This beautiful blue mineral has attracted many tourists into the valley, who wished to obtain specimens of this decorative stone.'' Following a further description of the occurrence of sodalite, Mr. Allan concludes his report thus: ''Before the material can be considered of economic importance, it will be necessary to find out its extent, which can only be ascertained by development of the property. This occurrence is worthy of consideration, as the material can be inexpensively worked, and the transportation problem is not a difficult one.''

Southeast Kootenay.—While occasional mention has been made in mining journals of the great size of the deposit of coal the Corbin Coal & Coke Company, of Spokane, Washington, has during the last three years been engaged in opening in the southern part of the Crow's Nest district, no conception of its astonishingly large proportions has been generally obtained. One principal reason for the comparative lack of information relative to this altogether unusual occurrence of coal is the fact that the Corbin company has persistently avoided publicity in this connection. Nevertheless, it is a fact that a phenomenally large body of coal is being explored, though as yet without any clear idea of how big it really it, development work not yet having reached the limits of the coal. From Mr. E. J. Roberts, managing director of the company, particulars of operations were recently obtained. Summarizing the information then supplied, the following brief account of the present situation at the company's mines is submitted: The mine that has during the last two years been producing coal is at a comparatively low elevation—about 500 feet above the tipple. The main entry there has been driven approximately 2,000 feet and the coal deposit found to be at its widest part on this level fully 300 feet in width. Beyond this wide part it has narrowed considerably, what appears to be a large point of rock having come into the coal. Development work is not being continued here, however, for there is so much coal available for mining that the driving of additional length of entry would only involve maintenance costs that are quite unnecessary so long as the further opening of the coal body in that part of the mine is not required to keep up the supply for shipment. At an elevation of about 1,200 feet above the main entry, on Coal Mountain, there occurs what is known locally as the ''upper big showing.'' About 400 feet lower down the mountain, or 800 feet above the main tunnel, there is another big outcrop of coal, known as the ''lower big showing.'' During the last six months these ''big showings'' have been partially prospected. An underground cross-cut proves the coal of the upper showing to be 96 feet in width where prospected by this working. Analyses of every 10 feet of coal give the following average percentages for 12 tests: Moisture, 0.87; volatile combustible, 18.47; fixed carbon, 67.86; ash, 12.80. The highest results were from the sample taken from the last 9 feet of coal cut in this tunnel, namely: Moisture, 0.45; volatile combustible, 15.70; fixed carbon, 77.40; ash, 6.45. The lower big showing has been cross-cut by an adit which at 370 feet from its portal entered slate rock. Analyses, 37 in number, of every 10 feet of coal passed through, gave the following general average percentages: Moisture, 0.73; volatile combustible, 20.03; fixed carbon, 64.25; ash, 15.00. The highest results were from coal cut between 20 and 30 feet in from the portal of the adit. They were as follows: Moisture, 0.60; volatile combustible, 22.49; fixed carbon, 68.31; ash, 8.60. This lower showing of coal has also been cut in pits sunk through the surface wash depths varying down to 15 feet, and the vertical depth of the underground working where it entered the slate is approximately 200 feet below the coal cropping in the pit immediately above it. This enormous deposit of coal continues to be a problem to those engaged in exploring it, and much more development work will be necessary ere it will be understood. Meanwhile, a commencement has been made to hydraulic the surface wash off it.

Tulameen.—The Similkameen Star says: ''Chas. Camsell has taken about half a ton of alluvial from the Tulameen diamond belt to be assayed at Ottawa.'' This is probably a somewhat inaccurate statement, but it is known that it was Mr. Camsell's intention to spend the latter part of June in searching for diamonds in the placer deposits in the vicinity of Olivine Mountain, from the peridotite of which mountain were last year taken the samples of chromite in which Mr. R. A. A. Johnston, mineralogist of the Geological Survey of Canada, when determining the nature of the chromium minerals, secured some insoluble crystals which, on subjecting them to further tests, he found to be diamonds. In his report on last year's field work, printed in the 1910 ''Summary Report'' of the Survey, Mr. Camsell observed: ''Placer deposits have been found in the streams which drain the peridotite, and in these it is to be expected that diamonds comparable in size and quality with those obtained in the laboratory will be found. These deposits may also contain stones of greater size, but in the placer mining for gold and platinum which has been carrid on in these streams for a number of years, although stones of commercial size on the sluice boxes should have attracted the attention of miners, the discovery of a diamond has not yet been recorded.'' The mineralogist of the Survey will closely examine all material that shall be sent to him from the Tulameen placer deposits. It is hoped that later in the season some black sand saved from placer mining operations, will be available for close examination for evidences of the occurrence of diamonds in the drift.

General News.—Six more men have been sent from Alberni to the Big Interior copper mine, Great Central Lake district, Vancouver Island. These will increase the working force to 14. The Alberni News says that 40 to 50 men will be employed all summer.

The next general meeting of the Western Branch of the Canadian Mining Institute will be held at New Denver, Slocan Lake. The date has not yet been definitely determined, but it will be during either the second or third week in September. It is intended to give especial attention to the reading and discussion of papers on subjects connected with mining in Slocan district.

From Barkerville comes information that after one of the deepest snowfalls experienced in Cariboo district for years, the spring was late and backward, so much time was lost in the early part of the hydraulicking season. However, when the letter containing this news was written, work was in full swing, the only fear being that warm rains and hot weather would melt the snow very quickly. Fortunately, though, a cool change had been experienced, so that fears of a short season were lessened for the time. The opening of some new placer mines was contemplated, but men were scarce, so that it was not then practicable to put in the requisite hydraulicking equipment and get water on the ground. Several parties had been trying to arrange for opening quartz properties, but it did not seem likely that much money would be spent this year in systematic and well-directed lode mining.

Mr. S. F. Griswold, managing director of the Inland Empire Mining and Milling Company, owning a property situated on Grenville Mountain, in the extreme western portion of the Rossland district, was recently reported to have said, for publication in Spokane, Washington; ''We are installing a 10-stamp mill, supplied by the United Iron Works of Spokane, on the Inland Empire Company's property. The mine is developed by a shaft to 300 feet, with 400 feet of drifting on three levels.

These workings show a 14-foot ledge, carrying free-milling ore, which we believe will average $30 a ton. The shareholders of the company, with the exception of my son and myself, are all Walla Walla (Washington) people. They have been interested in the property and quietly developing it for seven or eight years. The company is capitalized at $1,000,000, in shares of the par value of $100 each. Ten or twelve years ago there was considerable activity in the district, and the Provincial Government built a wagon road seven miles long, which passes our property and extends on to the Bonanza and Cascade mines. Both those properties at one time shipped considerable ore, and I have reason to believe that a Philadelphia operator will shortly arrive in Rossland to get them in shape for a resumption of production.''

GENERAL MINING NEWS.

NOVA SCOTIA.

North Sydney, July 20.—A fatal accident occurred at Sydney Mines at 1.30 this morning, the victim being John McIntyre, a resident of the Cranberry district. McIntyre was lying across the track at a point known as the hollow, when the two o'clock workingman's train bound to No. 1 Colliery passed over him, severing his legs just above the ankles. He lived only twenty minutes after the accident. The train was drawn by engine No. 11, in charge of Daniel Nicholson and John W. Young, and was making the run at barely an average speed.

Another accident attended with fatal results occurred at Reserve last evening which caused the death of Joseph Hennessy. The deceased had been working on a level and had a leg badly crushed by a heavy stone falling on it, which rendered amputation necessary. The shock of amputation proved too much for the young man, and he succumbed. The deceased was 28 years old.

The latest reports from Port Hood mine, which was flooded recently, indicate that the mine may yet be saved.

A well known mining man who returned from there yesterday, spoke interestingly of the situation. Panic is on, and the people are leaving the town as fast as they can get away. The merchants are left in a bad predicament, not only on their future business but on their accounts, as the miners are leaving the town.

The traveller referred to spoke of being in one man's store who had been starting an addition to his place when the disaster occurred, and of seeing the tears roll down his cheeks as he tried to tell how his plans had been shattered.

There seems to be still some reason to hope that the mines can be saved. The water flows in at the rate of 35,000 gallons a minute, but there are at Inverness two pumps which are each capable of taking out that much water in the same time. They were sent down to Inverness last year by the Government and were used there.

Halifax.—The Board of Examiners of Mine Managers, Underground Managers, and Overmen has completed the examining of the papers of the candidates for such positions in the coal mines of Cape Breton, Inverness, Pictou, and Cumberland. The number to take the examinations this year was the largest yet, and out of the 126 men to take the examinations, 71 were successful in passing. The large number to take the examinations is due to the interest that the men take in their work, and to the mining schools throughout the Province is due the credit for the large percentage of successful candidates.

Those who were successful in the examinations were as follows:

Cumberland County—For Underground Managers — James Fairlay, Moses Jones; For Overman — Jos. H. Smith, Edward Bradley.

Inverness County — For Manager — D. A. McCuish; For Overman — Mark Davidson.

Pictou County — For Manager — Robert Henderson, James Brown, E. E. O'Reilley, M. E. Copeley, Dan. Gillis, Henry Henderson, John H. McNeil, James F. McDonald; For Underground Manager — Phillip Kennedy, George W. Burnley, Jos. Chisholm, James A. Clarke; For Overman — Jno. H. McDonald.

Cape Breton County — For Manager — F. B. Ferguson, Thomas Merritt, D. H. McLean, James Connors, Alex. McDonald, Ed. Lockman, John Hunter, John A. McLellan, William R. Coll, Thomas M. Kavanagh, William T. Chew, F. R. Dunn, W. G. Ross, A. D. Matheson, P. E. Morrison, Angus McDonald.

For Underground Manager — Phillip Kelly, James Costello, John Bisson, John Young, John A. Ferguson, David Morrison, James W. Spencer, W. E. L. Hall, John D. McNeil, Michael J. McNeil, Edward Cameron, Alex. McKay, Rory V. McNeil, Scott M. Irvin, Alex. H. McVicar; For Overman — Fraser Hynes, John F. McKinnon, Thomas J. Casey, David A. Robertson, Edward Casey, Joseph Gillis, Richard Walsh, Fred Jardine, Joe D. McNeil, Evan Prothers, Robert E. Walton, George Morris, John T. Foster, William Slade, Allan McIsaac, Henry Testall, Malcolm M. McNeil, Duncan H. McLeod, Pat J. Lynch, Con. Ahern, Walter Donovan.

The Board of Examiners consists of Isaac Greenwell, Sydney, Chairman; John Higson, Stellarton, Vice-Chairman; R. D. Anderson, Halifax, Secretary; John Gray, Inverness; Henry McCarthur, Minudie, Cumberland Co.; Thos. Hale, Westville; A. B. McGillivary, Glace Bay.

Halifax, July 12.—Bonds of the North Atlantic Collieries Company, with a face value of $110,000, were sold here this morning at auction to T. F. Tobin, barrister, for $29,200, or one-quarter of their par value. The bonds were offered for sale on account of the recent failure of the company to pay interest on them.

ONTARIO.

Ottawa, July 13.—The report of the majority of the Board of Conciliation and Investigation which ineffectually endeavoured to settle the differences between the miners and operators of British Columbia and Alberta mines has been given out by the Minister of Labour. The board consisted of Rev. C. W. Gordon, D.D., Winnipeg, chairman; Mr. Colin MacLeod, of MacLeod, Alberta, representing the companies, and Mr. A. J. Carter, of Fernie, B.C., named by the employees. The mines affected are located in Eastern British Columbia and Southern Alberta, the number of men affected being about 6,000.

The board intimates that much of the trouble would have been avoided if tyrannical pit bosses, on the one hand, and meddlesome secretaries of some of the local unions on the other, were dismissed. There is said to be a lack of sincerity on the part of both employers and unions in dealing with the question of "open shop," and the recognition of the union. The board found an abnormally low scale for day wages, and abnormally high scales for the more difficult and dangerous employment known as "pillar" work, the discrepancy ranging $4.74 and $8.88 for an average daily wage on the same mine. In another mine, where the average net daily earnings of contract men for the year are $6, individual earnings vary from $8 to even $20 a day. The board found that out of 18 companies concerned, only four have paid any dividends, and these only intermittently, while in the past two years two-thirds of the mines have been operated at a loss. The board recommends that the rate for "pillar" cost be reduced, and the lower rate of wages increased, according to a schedule submitted. This schedule would increase the total day wages by about $280,000, and reduce the "pillar" scale by about $46,000, leaving a net increase in companies' pay rolls of $234,000 a year.

The schedule of wages recommended by the board is:

(1) That the day wage scale be increased as follows: 10 per cent. advance up to $3 a day; 8 per cent. advance for $3 to $3.50; 5 per cent. advance over $3.50.

(2) Differential of 5 cents to 7 cents per ton in all pillars presently without a differential, the application to be by mutual consent.

(3) Adjustment of the contract rate at the Lille mine so as to make the rate proportionate to the size of the seam.

(4) An advance of 3 per cent. on contract rates at Lethbridge.

(5) All other contract rates to remain unchanged.

After referring to the neglect of sanitation and of precautions against disease and overcrowding, the report says: "The board cannot but express its profound regret that nowhere could it discern indications of a sincere and earnest attempt on the part either of a company or of a local union to promote the social, moral, and intellectual well-being of the workers in the mines. Earnest and intelligent co-operation here would surely be productive of the best results."

Ottawa, July 24.—In consequence of communications received by the Minister of Labour from Hon. C. N. Mitchell, Acting Premier of Alberta, and Hon. Mr. Calder, Acting Premier of Saskatchewan, representing the probable grave effects upon their Provinces of a shortage of coal should the dispute in the western mines be prolonged, the Government is considering the duties on all coal imported into the western Provinces, pending the resumption of work in the mines.

Toronto, July 13. — The much-discussed flotation of the Booth-Armstrong properties in Porcupine is now in process of being underwritten, and will be placed on the market in the course of a fortnight under the name of the Plenarium Gold Mines, Limited.

The company is capitalized at $2,500,000, of which $500,000 will be held as treasury stock. The shares, which will have a par value of $5 each, probably will be listed at $2.50.

The directors of the new mine include: Mr. R. B. Watson, of the Nipissing and La Rose; Mr. W. S. Edwards, Mr. David Fasken, and Mr. E. P. Earl.

ALBERTA.

MacLeod, July 24.—Delegates to settle the coal strike, which has utterly destroyed business over a large area for six months, are in MacLeod to-day. Both sides to the dispute are present and the Presidents of the Boards of Trade of British Columbia and Alberta represent the people. The fuel situation could not be much worse on the prairies, where there is no wood to burn. President Barclay, Vice-President Pollock Secretary Moffat and other delegates are attending the meeting. All the delegates are anxious to see a settlement. The Crow's Nest towns are suffering from lack of business and the closing down of the enormous payroll has completely demoralized business. The prairie towns fear the prospects of a coal shortage.

BRITISH COLUMBIA.

Nelson, July 20.—The stamp mill at the Marvel mine, on Siwash Creek, in the Steamboat region, is doing excellent work. Dr. A. W. Mosely, of Vancouver, who is heavily interested in this property, recently visited the mine and mill and reports that the gold-saving apparatus recently added to the mill is working successfully and since the first of the month a saving of 80 per cent. of the gold values has been made.

Six stamps are in operation, working 18 hours per day, treating 24 tons of ore. Everything goes through the mill, the ore being obtained from the surface of the lead in a series of open cuts extending from wall to wall, a distance across the lead of 14 feet. The total product assays about $7 per ton. A Pelton wheel is used for the water power which runs the mill.

Vancouver, July 13.—Capitalized at $10,000,000, the British Columbia Steel Corporation, Limited, has announced that immediately at Port Mann construction will be undertaken of the first unit of the great steel plant, it is the ambition of the concern to build and operate. Plans have been decided upon for unit No. 1, which will cost $700,000.

A. P. Gillies, the moving spirit of the Corporation, has announced from Toronto, where the head offices are situated, that directors who have been chosen include the following local men: R. P. McLennan, president of the Bank of Vancouver; Robert Kelly, Clarence Marpole, Douglas Dominic Burns, John Stewart, of Foley, Welch & Stewart, and F. J. McDougall, barrister.

Material for use at the new plant has been thoroughly prospected and mined ready for use in the furnaces. The Canadian Northern has agreed to purchase from the new concern from 80,000 to 100,000 tons of rails for their system.

Vancouver. — Granby Consolidated has made payment of $250,000 on the bond for the purchase of an 80 per cent. interest in the Hidden Creek group of copper-gold mines on Goose Bay, Observatory Inlet, Portland Canal.

Development work, including diamond drilling has been in progress since the Granby was given a bond over a year ago. The property is now on a shipping basis, equipped with a compressor plant, ore bunkers and wharves and has several rich ore veins, but may be designated as a low grade proposition with enormous tonnage possibilities, one of the outcrops being over 40 feet wide.

The Hidden Creek group was purchased less than four years ago by J. T. Hillis, of Vancouver, from a syndicate, residents of Port Simpson, the price being $50,000. Two years ago Hillis, after doing certain development work, sold out in turn for $135,000 cash to M. K. Rodgers, of Seattle, and Tom Hodgins, of Butte. It is understood the Granby Company will ship Hidden Creek ore to the Ladysmith smelter until it erects its own reduction works at Goose Bay.

COMPANY NOTES

LA ROSE CASH.

La Rose, on July 1st, showed cash in bank and ore in transit and smelters $1,184,242, with ore sacked at mine ready for shipment at $162,311.

MOND NICKEL.

The report of the Mond Nickel Company, Limited, to 30th April last, to be submitted to the meeting on the 6th proximo, shows a balance to credit of profit and loss of £161,544. The directors propose to pay a dividend on the ordinary capital at the rate of 16¼ per cent. per annum (less income tax), and dividend on the deferred capital (less income tax) to the extent of £26,131, transferring to reserve £25,000 and to reserve suspense account £10,000, leaving to be carried forward £28,-139. In order to meet the increased demand, the directors decided to erect new and enlarged smelting works at Coniston, near Romford Junction, Ontario, Canada, where an excellent site of 3,700 acres of freehold land has been acquired for the purpose. Further capital will be required for the completion of these works and for other purposes, and the directors propose to make an issue of debenture stock, of which a prospectus will shortly be issued.

NIPISSING FINANCES.

Nipissing Mines' statement as of July 1 shows: Cash in bank, $803,205; ore in transit and at smelters, $364,118; ore sacked at mine ready for shipment, $251,957.

STATISTICS AND RETURNS

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending July 14, and those from Jan 1, 1911, to date:

	July 14. Ore in lbs.	Since Jan. 1. Ore in lbs.
Badger		55,200
Bailey		40,000
Barber		6,000
Beaver	66,000	845,208
Buffalo	50,324	1,456,184
Chambers-Ferland		703,000
City of Cobalt		557,980
Cobalt Lake	53,930	2,447,736
Cobalt Townsite	97,300	578,000
Colonial		88,000
Coniagas		2,171,734
Crown Reserve	133,419	1,408,839
Hargraves		161,100
Hudson Bay	62,830	648,790
Kerr Lake		1,382,090
King Edward		40,000
La Rose	147,051	3,301,924
McKinley-Dar.-Sav.	128,129	3,291,734
Nipissing	61,600	3,580,328
O'Brien	64,118	737,158
O'Brien, M. J.	47,000	47,000
Peterson Lake (Little Nip)		58,430
Provincial		40,510
Right of Way	66,047	708,995
Silver Cliff		106,680
Standard		102,813
Temiskaming	85,900	946,752
Thethewey		672,380
Wettlaufer		117,232

The shipments for the week were 1,063,648 pounds, or 531 tons.

The shipments from Jan. 1 to July 14 were 26,542,151 pounds, or 13,271 tons.

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending July 21, and those from Jan. 1, 1911, to date:

	July 14. Ore in lbs.	Since Jan. 1. Ore in lbs.
Badger		55,200
Bailey		40,000
Barber		6,000
Beaver		845,208
Buffalo	58,300	1,514,484
Chambers-Ferland	64,000	767,000
City of Cobalt		557,980
Cobalt Lake		2,447,736
Cobalt Townsite		578,000
Colonial		88,000
Coniagas	63,680	2,235,414
Crown Reserve	62,000	1,470,839
Hargraves		161,100
Hudson Bay		625,790
Kerr Lake	60,270	1,502,700
King Edward		40,000
La Rose	247,510	3,749,438
McKinley-Dar.-Sav.	125,620	3,417,354
Nipissing	65,870	364,208
O'Brien	64,210	801,368
O'Brien, M. J.		47,000
Peterson Lake (Little Nip)		58,430
Provincial	61,160	101,670
Right of Way		708,995
Silver Cliff		106,680
Standard		102,813
Temiskaming		946,752
Trethewey	66,440	738,820

Wettlaufer		117,232

The shipments for the week were 939,060 pounds, or 469 tons.

The shipments from Jan. 1 to July 21 were 27,481,211 pounds, or 13,740 tons.

B. C. ORE SHIPMENTS.

Week Ended July 8th.

B. C. Copper Co.'s Receipts.

Greenwood, B.C.

Mother Lode	5,182	170,741
Jackpot	440	16,890
Rawhide	4,980	104,140
Athelston	225	3,344
Napoleon	252	3,429
Unnamed	244	754
Other mines		33,252
Total	11,323	322,550

Granby Smelter Receipts.

Grand Forks, B.C.

Granby	15,805	612,460

Consolidated Co.'s Receipts.

Trail, B. C.

Centre Star	3,069	104,524
Sullivan	396	17,762
Le Roi No. 2	545	14,461
St. Eugene	127	3,527
Richmond-Eureka	32	1,377
Van-Roi	63	423
Le Roi	501	7,030
Ferguson	34	293
Rambler-Cariboo	31	954
Knob Hill	373	2,311
Emerald	27	938
Hope	29	327
Other mines		35,160
Total	3,237	209,087

Rossland Shipments.

Centre Star	3,069	104,524
Le Roi No. 2	545	14,461
Le Roi	501	7,030
Le Roi No. 2, milled	300	8,100
Other mines		428
Total	4,415	134,543

Boundary Shipments.

Granby	15,805	612,460
Mother Lode	5,182	170,741
Jackpot	440	16,890
Rawhide	4,980	104,140
Athelston	225	3,344
Napoleon	252	3,429
Unnamed	244	754
Other mines		33,252
Total	27,128	845,010

Slocan-Kootenay Shipments.

Sullivan	396	17,762
St. Eugene, milled	420	15,996
Richmond-Eureka	32	1,377
Van Roi, milled	800	12,249
Ferguson	34	293
Rambler-Cariboo	31	954
Knob Hill	373	2,311
Emerald	27	938
Hope	29	327
Queen, milled	420	11,130
Granite-Poorman, milled	250	6,750
Nugget, milled	110	2,970
Other mines		5,166
Total	2,922	78,223

TORONTO MARKETS.

July 25.—(Quotations from Canada Metal Co., Toronto.)

Spelter, 5.85 cents per pound.

Lead, 3.75 cents per pound.

Antimony, 8 to 9 cents per pound.

Tin, 45 cents per pound.

Copper, casting, 12.85 cents per pound.

Electrolytic, 12¾ cents per pound.

Ingot brass, 8 to 12 cents per pound.

GENERAL MARKETS.

Coal, anthracite, $5.50 to $6.75.

Coal, bituminous, $3.50 to $4.50 for 1¼-inch lump.

July 21.—Connellsville Coke (f.o.b. ovens):

Furnace Coke, prompt, $1.40 to $1.45 per ton.

Foundry Coke, prompt, $1.90 to $2. per ton.

July 21. Tin, Straits, 42.20 cents.

Copper, Prime Lake, 12.78 cents.

Electrolytic copper, 12.62½ cents.

Copper wire, 13.75 cents.

Lead, 4.57½ cents.

Spelter, 5.77½ cents.

Sheet zinc (f.o.b. smelter), 7.50 cents.

Antimony, Cookson's, 8.50 cents.

Aluminium, 19.75 to 20.25 cents.

Nickel, 40.00 to 45.00 cents.
Platinum, ordinary, $42.50 per ounce.
Platinum, hard, $44.50 per ounce.
Bismuth, $1.80 to $2.00 per lb.
Quicksilver, $5.00 per 75-lb. flask.

Silver Prices.

	New York cents.	London pence.
July 8	52⅞	24⅜
" 10	53	24 7/16
" 11	53	24 7/16
" 12	52⅞	24⅜
" 13	53	24 7/16
" 14	52⅞	24⅜
" 15	52⅞	24⅜
" 17	52⅞	24⅜
" 18	52⅞	24⅜
" 19	52⅞	24⅜
" 20	52¾	24 5/16
" 21	52¾	24 5/16

SHARE MARKET.

(Courtesy of Warren, Gzowski & Co.)

Porcupine Stocks.

Stock	Capital	Par	July 17.	
Apex	$1,000,000	$1.00	21½	22
Coronation	1,000,000	1.00	32	37
Foley-O'Brien	3,000,000	5.00	130	135
Det. New Ont.	1,000,000	1.00	50	51
Hollinger	3,000,000	5.00	1300	1375
Moneta	2,000,000	1.00	20	25
Pearl Lake	2,500,000	1.00	58	64
Preston East Dome.	3,000,000	1.00	35	36½
Porc. Tisdale	2,000,000	1.00	8	10
Porc. Imperial	2,000,000	1.00	13	15
Porc. Central	1,000,000	1.00	80	83
Porc. Canada	1,000,000	1.00	112	118
Porc. Northern	1,000,000	1.00	..	66
United Porc.	1,000,000	1.00	..	7
Porc. Gold	2,000,000	1.00	56	58½
West Dome	3,000,000	5.00	165	210
Rea	1,000,000	5.00	540	575
Swastika	1,000,000	1.00	56	58
Dome Extension	2,000,000	1.00	85	90
Dobie	1,500,000	5.00	..	275
Standard	1,500,000	1.00	5¾	6
Am. Gold Fields	2,000,000	1.00	150	160
Eldorado	500,000	.25	12	16
Gold Reef	1,000,000	1.00	23	27

Cobalt Stocks.

Bailey	5,000,000	1.00	4¼	4¾
[1]Beaver	2,000,000	1.00	44	47
[2]Buffalo	1,000,000	1.00	160	200
Chambers-Ferland	2,500,000	1.00	12½	13
City of Cobalt	1,500,000	1.00	10	15
Cobalt Central	5,000,000	1.00	1	3
Cobalt Lake	5,000,000	1.00	20½	21
Coniagas	4,000,000	5.00	700	730
[3]Crown Reserve	2,000,000	1.00	320	335
Foster	1,000,000	1.00	3	6
Gifford	1,500,000	1.00	1½	3
Great Northern	1,500,000	1.00	14	17
Green Meehan	3,000,000	1.00	2	2½
Hargraves	2,500,000	1.00	7	12
[4]Hudson Bay	25,000	1.00	80	100
[5]Kerr Lake	3,000,000	5.00	490	512½
[6]La Rose	7,500,000	5.00	400	430
Little Nipissing	1,500,000	1.00	2½	2¾
[7]McKinley-Darragh	2,500,000	1.00	170	171
Nancy Helen	500,000	1.00	1¼	3
[8]Nipissing	6,000,000	5.00	900	1000
Nova Scotia	2,500,000	1.00	10	12
Ophir	395,000	1.00	10	13
Otisse	2,000,000	1.00	1	1¾
Peterson Lake	3,000,000	1.00	8	10
Rochester	2,000,000	1.00	3¼	4
Right of Way	2,500,000	1.00	8¼	10
Silver Leaf	5,000,000	1.00	3	3¾
Silver Queen	1,500,000	1.00	4	8
[9]Temiskaming	2,500,000	1.00	42	44
[10]Trethewey	2,000,000	1.00	65 bid	..
[11]Wettlaufer	1,500,000	1.00	110	120
Braden Copper	10,500,000	5.00	4 15/16	5
[12]Brit. Col. Copper	3,000,000	5.00	4⅞	5
[13]Butte Coalition	15,000,000	15.00	18	18½
Ely Central	16,000,000	10.00	01	03
Ely Consolidated	10,000,000	10.00	7/16	½
First Nat. Copper	3,000,000	5.00	1¼	1⅜
Giroux	7,500,000	5.00	6¼	6½
Greene-Can.	60,000,000	10.00	6⅞	7
Inspiration	10,000,000	10.00	8½	8¾
Nevada Hills	5,000,000	5.00	3½	3⅝
Nev. Baltic	2,500,000	25.00	..	..
Ohio Copper	15,000,000	10.00	1½	1⅝
Ray Central	6,000,000	5.00	1⅝	1 11/16
Union Mines	2,500,000	5.00	5/16	⅜
[14]Yukon Gold	25,000,000	5.00	3 15/16	4
[15]Goldfields Con.	50,000,000	10.00	5⅝	5¾
[16]Nevada Con.	10,000,000	5.00	19	19⅛
Miami	3,500,000	5.00	21½	21⅞
[17]Granby	15,000,000	100.00	39½	39⅝
Con. Min. & Smelt.	7,500,000	100.00	48	52
Davis-Daly	6,700,000	10.00	¾	1
Con. Arizona	9,200,000	5.00	1 3/16	1 5/16
Rawhide Coalition	3,000,000	1.00	04	06
Ray Con.	10,000,000	10.00	17	17⅛
Chino	3,500,000	5.00	23½	23⅝

[1]3 per cent. [2]3 per cent. extra. [3]6 plus 3. [4]300 per cent. [5]5 plus 5 quarterly. [6]2 per cent. quarterly. [7]3 plus 7 quarterly. [8]5 and 2½ per cent. quarterly. [9]3 per cent. [10]10 per cent. [11]2½ plus 2½ per cent. quarterly. [12]2½ per cent. quarterly. [13]25 cents quarterly. [14]2 per cent. quarterly. [15]30 plus 20 cents. [16]37½ cents. [17]1 per cent.